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Incorporating social determinants of health into individual care for people with type 2 diabetes

Thesis submitted by

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In fulfilment of the requirements for the degree of

Doctor of Philosophy (Health)

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First dedication

The first dedication in this thesis is to Professor Trisha Dunning

19 December 1946 to 14 October 2021

Trisha was one of my PhD advisors. More than that though, she was a wonderful leader, mentor and role model whose wisdom and experience taught me, and many others, how to care for people with diabetes, not only diabetes management, but how to truly ‘care’. I am grateful she touched my career and life. May she rest in peace.

*Like a beautiful old tree in the forest,
your felling leaves an irreplaceable whole.*

—Amanda Frier, 2021

Second dedication

The second dedication in this thesis is to my dog, Dexter.

With ardent loyalty Dexter lay on the floor beside me,
working on his ‘Dogtorate’, while I did my PhD.

Dexter

My Best Friend

In Loving Memory

02 May 2008 to 21 December 2021

Thank you for sharing your life with me.

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Thank you to you all.

Capstone Editing provided copyediting and proofreading services, according to the guidelines laid out in the university-endorsed national ‘Guidelines for Editing Research Theses’.

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Statement of the contribution of others

My advisory team, Associate Professor Sue Devine, Associate Professor Fiona Barnett, Dr Kris McBain-Rigg and Professor Trisha Dunning, provided guidance on study design, analyses and reporting and also provided ongoing feedback on all material contained in this thesis. All co-authors of the publications in this thesis have given permission for their inclusion (see Table 1).

Table 1. Contributions of others

Nature of contribution	Details of contribution	Name of contributors
Formal intellectual support	<ul style="list-style-type: none"> ▪ Supervision, advice, guidance and feedback on study designs, analyses, reporting, publications, thesis chapters and all other material contained in this thesis ▪ Final review of thesis 	<ul style="list-style-type: none"> ▪ A/Prof. Sue Devine, A/Prof. Fiona Barnett, Dr Kris McBain-Rigg and Prof. Trisha Dunning ▪ A/Prof. Sue Devine, A/Prof. Fiona Barnett, Dr Kris McBain-Rigg and Dr Meryl Churchill
Informal intellectual support	<ul style="list-style-type: none"> ▪ Advice and guidance on all aspects involved in conducting research and completing a PhD 	<ul style="list-style-type: none"> ▪ JCU Doctoral Cohort ▪ JCU Doctoral Cohort mentor, Dr Meryl Churchill
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Cultural oversight	<ul style="list-style-type: none"> ▪ Cultural guidance on overall research design and working with Indigenous Australians 	<ul style="list-style-type: none"> ▪ Dr Sean Taylor
Thesis artwork	<ul style="list-style-type: none"> ▪ Creation of infographic artwork 	<ul style="list-style-type: none"> ▪ ROUNDHOUSE The Creative Agency
Chapter 4 guidance: <ul style="list-style-type: none"> ▪ Study with Indigenous Australians ▪ Publication 4 	<ul style="list-style-type: none"> ▪ Cultural guidance, brokering, mentoring and recruitment of Indigenous Australians with type 2 diabetes mellitus. 	<ul style="list-style-type: none"> ▪ Zara Cassidy ▪ Robyn Reese ▪ Jennifer McWha
Formatting assistance	<ul style="list-style-type: none"> ▪ Initial formatting of thesis 	<ul style="list-style-type: none"> ▪ Dr Klaire Someray
Editorial assistance	<ul style="list-style-type: none"> ▪ Final formatting, proofing and editing of thesis 	<ul style="list-style-type: none"> ▪ Capstone Editing

Note. JCU = James Cook University; A/Prof. = Associate Professor; Dr = Doctor; Prof. = Professor.

Abstract

Background

Social determinants of health (SDoH) *determine* a person's health status. Type 2 diabetes mellitus (T2DM) has an increased prevalence among people with poor SDoH. Furthermore, suboptimal social determinants such as low income, inadequate employment, low-quality education, unsuitable transport, limited healthcare access and adverse living conditions combine and constrain T2DM self-management. Poor self-management increases the likelihood of adverse health outcomes. SDoH are usually considered and addressed at population and community levels and are not formally incorporated into an individual's care at the clinical level. Care for people with T2DM may be improved by incorporating SDoH into individual care at the clinical level. Utilising clinical settings to identify and respond to the self-management barriers imposed by an individual's social determinants may increase the self-management ability of people with T2DM and therefore, improve the associated health outcomes.

Research question

How can SDoH be incorporated into individual care for people with T2DM?

Aims

This research aimed to:

1. identify and explore the SDoH-related barriers and facilitators to T2DM self-management
2. identify and explore how to incorporate SDoH into individual care for people with T2DM.

Design

The research design was guided by the ‘Knowledge to Action Framework’ (K2AF). This framework has two components. The first component (Knowledge Creation) was informed by the phenomenologically-based exploratory, descriptive research reported in this thesis. Subsequently, the study findings informed the second component of the ‘Knowledge to Action Framework’ (Action Cycle), in which considerations for the application of findings were made.

Methods

This qualitative, exploratory, descriptive research used yarning circles, one-on-one interviews and focus groups as data collection methods. The studies were conducted in regional, rural and remote communities throughout North Queensland, Australia, and comprised three studies: (1) Indigenous Australians (people with T2DM and Indigenous health workers); (2) non-Indigenous people with T2DM; and (3) health professionals (HPs) who work with people who live with T2DM. Study participants were purposively recruited to participate in their respective studies. Data were collected via yarning circles, one-on-one interviews and focus groups. Data analyses and theme identification were conducted using a combination of deductive and inductive thematic analyses.

Findings

The total study participants ($N = 75$) included Indigenous Australians (health workers and people with T2DM) ($n = 14$), non-Indigenous people with T2DM ($n = 10$) and HPs who provide care to people with T2DM ($n = 51$). The three cohorts independently confirmed that suboptimal SDoH were indeed a barrier to T2DM self-management.

SDoH form part of Indigenous Australians’ holistic view of health. Care for Indigenous Australians with T2DM should revolve around a culturally responsive service that

accommodates an individual's unique circumstances. SDoH and other non-medical factors, including suitable transport, culturally appropriate diabetes education, support mechanisms, community service availability, and cultural awareness training for HPs should all be considered and incorporated into care for Indigenous Australians with T2DM.

Non-Indigenous people with T2DM expressed that in addition to SDoH, self-management is also affected by an individual's feelings about living with T2DM and mental health, competing priorities and their level of diabetes understanding. Study participants reported utilising various different support mechanisms to address SDoH-related issues. This included assistance from HPs, community supports, financial supports, personal supports and informal self-management support.

HPs who work with people with T2DM indicated that understanding, and formally incorporating SDoH into individual clinical care would be beneficial to practice, and is ultimately necessary for comprehensive diabetes management. They felt that incorporating SDoH into care for individuals with T2DM involves identification of, and action on the self-management barriers that suboptimal social determinants can inflict. Successful and sustainable incorporation of SDoH into individual care requires organisational and management support and leadership drive, guiding policies and procedures, adequate resources, a team member with a thorough understanding of T2DM dedicated to incorporating social determinants, SDoH champions, teamwork, validated tools to identify an individual's social determinant-related barriers, ongoing team education and training, respect of client privacy, client trust and rapport, and effective communication.

Conclusions

Incorporating SDoH into individual T2DM care at the individual clinical level requires a holistic, person-centred approach that accommodates an individual's culture, personal

circumstances and other external influences on their ability to self-manage the disease. Thus, a broader view of health is required. Considering the complex interactions between an individual's self-management ability and interpersonal, community and societal factors is necessary for SDoH to be incorporated into T2DM care. SDoH could be incorporated at the clinical intervention level (where HPs and people with T2DM interact), practice level (where the service is provided) and community level (where the people with T2DM live and where the T2DM service is located). However, successful and sustainable incorporation of SDoH into individual care for people with T2DM is dependent on organisational, management and leadership actuation and support.

Summary of recommendations

Successful and sustainable incorporation of SDoH into individual care for people with T2DM requires:

1. organisational drive and commitment, and supportive leadership
2. guiding policies and procedures
3. a commitment to person-centred care
4. a team member dedicated to incorporating SDoH, in conjunction with a whole-of-team commitment
5. ongoing team education, training and capacity building
6. action at the clinical intervention level, practice level and community level
7. validated individual SDoH assessment tools
8. resources to support incorporating the SDoH into individual clinical interventions
9. strong and effective relationships between people with T2DM and HPs
10. the capacity to address the identified SDoH-related issues
11. a comprehensive understanding of current community issues
12. a comprehensive understanding of supports utilised by the person with T2DM e.g. family, friends and other community services
13. a comprehensive understanding of community services and how they relate to SDoH
14. strong and effective partnerships with community services
15. continuous stakeholder involvement
16. continuous success and sustainability monitoring.

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List of abbreviations

AIHW	Australian Institute of Health and Welfare
CDC	Centers for Disease Control and Prevention
CDE	credentialed diabetes educator
CHA	community health advisor
CHW	community health worker
CLEAR	Community Links Evidence to Action Research
FTA	failure to attend
GP	general practitioner
HP	health professional
IHW	Indigenous health worker
IPWD	Indigenous people with diabetes
K2AF	Knowledge to Action Framework
NQ	North Queensland
NWQ	North West Queensland
PWD	people with diabetes
SAI	social adaptability index
SDoH	social determinants of health
SES	socioeconomic status
T2DM	type 2 diabetes mellitus
USA	United States of America
WHO	World Health Organization

Chapter 1: Introduction

1.1 Chapter outline

Chapter 1 introduces the research topic reported in this thesis, which is followed by a summary and ‘roadmap’ of the entire thesis structure. An infographic summarising the research is then presented. Subsequently, an introduction to social determinants of health (SDoH) and their relationship with type 2 diabetes mellitus (T2DM) is provided. This leads to the research question, aims, design and methodology. Next is a concise background on the researcher, both professionally and personally. Chapter 1 concludes with the first publication associated with this thesis: ‘Including social determinants of health in the clinical management of diabetes’, and a chapter summary.

1.2 Introduction to the research topic

This thesis explores how SDoH could be incorporated into individual care for people with T2DM. The impact of SDoH on T2DM self-management and the importance of this research are detailed in Chapter 1, and throughout the thesis.

1.3 Thesis overview

This is a PhD thesis by publication, and where relevant the publications are presented as chapters. The thesis comprises 10 chapters. Each chapter begins with a chapter outline, includes an ‘implications for practice’ comment, and ends with a chapter summary. Chapters 1 to 9 include infographic representations of the focus of the relevant chapter. The infographics have been included to bring a visual aspect to the thesis. Chapter 1 is an introductory chapter, which has been outlined above. Chapter 2 describes the theoretical framework (Knowledge to Action Framework [K2AF]) used to guide the research in this thesis, and justifies its use. Chapters 3

to 6 detail the four phases of the research. These four chapters present the literature review and three studies investigating how SDoH could be incorporated into individual care for people with T2DM. The studies gather the perspectives of Indigenous Australians, non-Indigenous people with T2DM and health professionals (HPs) who work with people who have T2DM. Chapter 7 synthesises the literature review and three studies; it draws together the findings described in the respective chapters (Chapters 3 to 6). This ‘synthesis’ provides direction for answering the research question. Chapter 8 presents the ‘products and tools’ that were conceptualised as a result of this research. Chapter 9 outlines the considerations to be made when applying the research findings in varying settings (based on the K2AF). The final chapter, Chapter 10 revises and critically discusses the research methodology, the study findings and their ‘synthesis’. Final implications for practice are also made. The strengths and limitations of this research are then reported, and conclusions are made. Chapter 10 closes with recommendations (based on the research findings) for incorporating SDoH into individual care for people with T2DM. Figure 1.1 outlines each chapter. Infographic 1.1 displays a visual representation of the research topic.

Appendices A–J include all published articles, ethics and site specific approvals, interview guides, study information sheet, study participant demographic forms, consent form and letters of support for this research.

Figure 1.1. Summary of thesis content

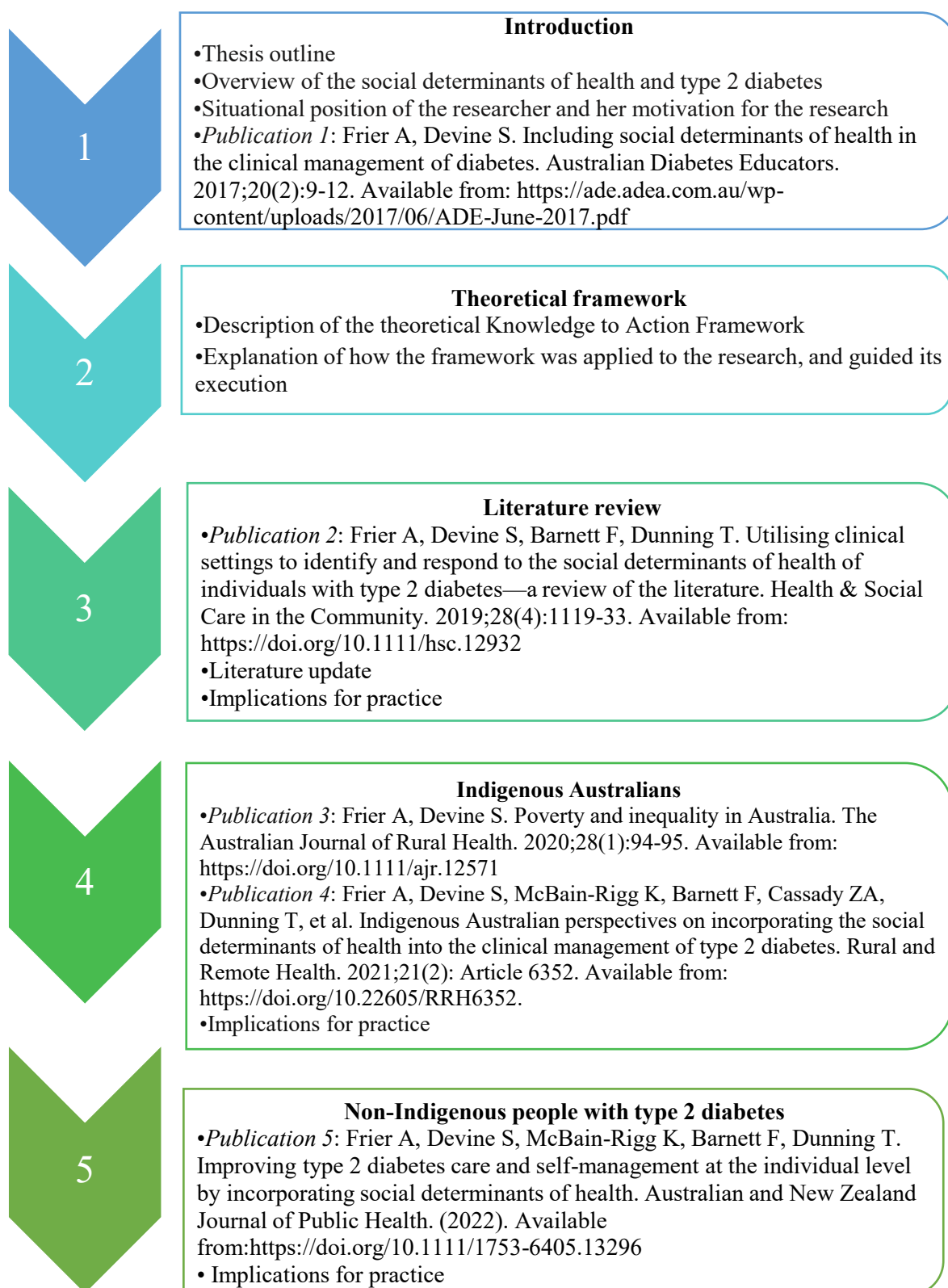
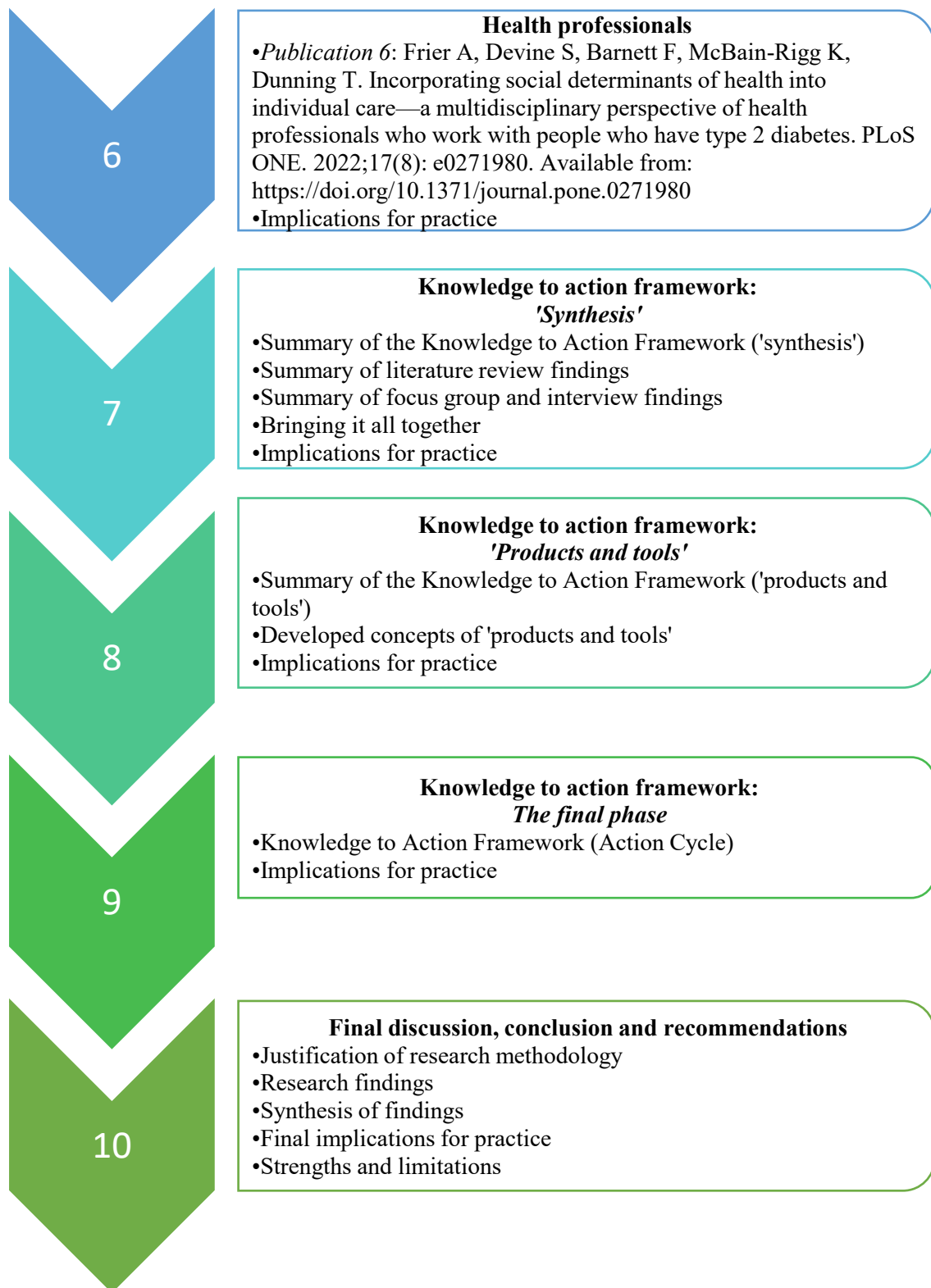


Figure 1.1. Continued



Note. Created by the author.

Infographic 1.1. Incorporating social determinants of health into individual care for people with type 2 diabetes

INCORPORATING SOCIAL DETERMINANTS OF HEALTH INTO INDIVIDUAL CARE FOR PEOPLE WITH TYPE 2 DIABETES

Social Determinants of Health

“ the societal conditions into which people are born, grow, live, work and age ”

- Addiction
- Early life
- Economic status (income)
- Education
- Employment
- Food security
- Healthcare access
- Housing
- Social exclusion
- Social support
- Stress
- The social gradient(1)



The social conditions in a person’s life **determine** their health.

Approximately

1.8 MILLION

Australians live with diabetes (2).



In Australia type 2 diabetes represents

85 - 90 %

of all diabetes cases (3).

Type 2 diabetes is highest amongst people who are socially disadvantaged (4).

- those who have poor social determinants of health.

Social determinants of health are usually considered at a population level (1).

- not at an individual or clinical level.

This research project looks into how the social determinants of health can be included into individual care for people with type 2 diabetes.

OUTCOME

An evidence based approach to incorporate the social determinants of health into individual care for people with type 2 diabetes.

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Note. Created by ROUNDHOUSE The Creative Agency.

1.4 Social determinants of health and type 2 diabetes mellitus

SDoH are known as the societal conditions into which people are born, grow, live, work and age. These involuntary life circumstances have a powerful influence on health. SDoH include early childhood environments, education, employment, income, food security, housing, transport, economic status, social support and access to healthcare.^{1,2,3} As the quality of people's SDoH decline, so can their health status. If a person is born into an affluent society with quality education, favourable life circumstances, opportunity and healthcare access, they have an increased chance of good health, because of their affluence. Conversely, unfavourable SDoH and the associated societal inequities lead to premature mortality, high morbidity, poor quality of life and suboptimal health-related choices.²⁻⁴

Proactive political and societal influence is necessary for sustained, population-wide improvement of SDoH.² This macro level approach, which includes policy change and 'whole-of-government' systems-based action on improving people's SDoH^{3,5}, would help reduce the risk factors associated with chronic diseases such as T2DM at the individual (micro) level. Essential advocacy and action toward this are underway across the globe, demonstrated by the increase in SDoH research, healthy public policies and practices, and guiding documents designed to improve people's SDoH.⁵⁻⁷

The momentum of these preventative, upstream approaches for addressing SDoH must continue for sustained health equity. Additionally, in developed countries like Australia, the relative affluence⁸ may mean complementary strategies that incorporate SDoH-related issues at midstream/community (meso) and downstream/individual (micro) levels are possible. By doing so, inequities resulting from disparate SDoH could be acknowledged and addressed at all points along the healthcare continuum, from preventative primary health care

(macro/upstream/population level) to treatment-based secondary and tertiary care (meso/community and micro/individual level).

While maintaining a focus on upstream approaches to addressing SDoH, the simultaneous acknowledgement of SDoH at a more downstream, micro level of healthcare may assist with identifying an individual's SDoH-related self-management barriers. More specifically for this thesis are the self-management barriers relevant to T2DM.

T2DM is a chronic health condition, typically managed individually at the treatment-based clinical level.⁹ In Australia, the prevalence of diabetes mellitus (Type 1 and Type 2) has more than tripled since 1990, with 85% to 90% being T2DM.¹⁰ Approximately 1.8 million Australians now live with this condition.^{6,10,11} Furthermore, including family members and carers, who also 'live with diabetes', approximately 2.4 million Australians are affected by the disease.¹⁰

For Indigenous Australians, diabetes rates are 3 to 6 times higher than non-Indigenous Australians, and Indigenous Australians are four times more likely to die from diabetes-related complications.⁶ Consequently, when combining Indigenous and non-Indigenous Australian statistics, diabetes is in the top five leading contributors to the total disease burden among people aged 25 to 74 years, and its complications contribute to 10% of all deaths in Australia.⁶

Complications of T2DM can include heart disease, stroke, kidney disease, retinopathy, heart failure and limb amputation.^{9,10,12} Lifestyle choices around smoking, nutrition, alcohol consumption and physical activity are associated with the development of T2DM and, in conjunction with medication adherence, are also central to managing the disease.⁹ These health-related behaviours are all directly influenced by an individual's SDoH.^{13,14} Furthermore, T2DM is far more common among those at socioeconomic disadvantage^{6,13} (i.e., people with

poor SDoH). People with poor SDoH are also less likely to partake in the self-management behaviours necessary for effective T2DM management.¹⁵

The increasing prevalence of T2DM and the associated comorbidities,^{6,9-12} combined with the well-documented association between inadequate SDoH and T2DM,¹³ infers plausibility that identifying and responding to an individual's SDoH-related self-management barriers may strengthen current approaches to diabetes care. Therefore, incorporating SDoH into individual care for people with T2DM may provide a progressive and valuable contribution to attaining improved health outcomes for people with T2DM and contribute to reducing its disease burden.

Progress towards incorporating SDoH into individual clinical care has commenced in the United States of America (USA), Canada and Australia.¹⁶⁻²¹ There is an emphasis on increasing the social accountability of healthcare providers, and strong advocacy for providing resources in clinical care to assist in addressing an individuals' SDoH issues and the associated social need.^{18,19} However, this recommendation is general in nature and lacks a specific focus on T2DM care.

Despite the increased prevalence of T2DM among the socially disadvantaged i.e. those with poor SDoH,^{6,13,14} there is a deficit in evidence suggesting that the inclusion of SDoH into T2DM care at the individual clinical level would improve health outcomes. Consequently, evidence-based support for incorporating SDoH into individual clinical T2DM care is required.

The *Australian National Diabetes Strategy 2021–2030* presents an opportunity to contribute to this shortfall by calling for research on diabetes prevention and care.²² The irrefutable connection between SDoH and T2DM self-management and prevention^{6,10,13} suggests a greater understanding of how to incorporate SDoH into individual, clinical T2DM care i.e. tertiary prevention, could contribute to filling this research void. Furthermore, the knowledge paucity

on SDoH and individual T2DM care may also underpin the lack of evidence-based guidelines, strategies and tools for incorporating SDoH into the individual care for people with T2DM. The research reported in this thesis contributes to reducing this resource dearth.

1.5 Research question

The research question is: how can SDoH be incorporated into individual care for people with T2DM? This question was answered by investigating and collating three differing perspectives. The first is the perspectives of Indigenous Australians (people with T2DM and health workers). The second is the perspectives of non-Indigenous people with T2DM, and the third is HPs who work with people with T2DM. Note that the term ‘people’ used throughout this thesis refers to people over 18 years of age.

1.6 Research aims

The research aims for each cohort were to:

1. Identify and explore the SDoH-related barriers and facilitators of T2DM self-management
2. Identify and explore how to incorporate SDoH into individual care for people with T2DM.

1.7 Research design and methodology

This qualitative research was conducted in regional, rural and remote communities throughout North Queensland (NQ), Australia. A phenomenologically-based, exploratory, descriptive research design was used. Phenomenology enabled this research to be based on the ‘lived experiences’ of the study participants and formed the basis of exploration into the research topic.^{23,24} The underlying phenomenological philosophy was enhanced by the K2AF.^{25,26} Chapter 2 provides a detailed explanation of the K2AF, and how it supported the phenomenological ‘lived experience’ approach to the research.²³⁻²⁶

A literature review was conducted on the research topic (see Chapter 3),²⁷ which informed the direction of the three subsequent studies. Study participants were purposively recruited²³ (see Chapters 4 to 6). The first study was with Indigenous Australians (people with T2DM and Indigenous health workers [IHWs]), the second study was with non-Indigenous people with T2DM, and the third study was with HPs who work with people who have T2DM.

Focus groups, interviews and yarning circles provided rich information that allowed a deep understanding of each cohort’s perspectives on T2DM and SDoH, and how SDoH could be incorporated into individual care for people with T2DM. The resultant data were analysed, and

themes were identified through a combination of deductive and inductive thematic analysis²⁸⁻
²⁹ using QSR NVivo 12 (QSR International; <http://www.qsrinternational.com/nvivo>) as the data management tool.

1.8 Situating the researcher

Upon graduating from nutrition and dietetics in 2003, my first role as a dietitian was in Mount Isa, North West Queensland (NWQ), Australia. Mount Isa is a mining town and is a place of opposing coexistence. There are residents with extremely high incomes, university education and solid employment. To the contrary, there are also people living impoverished lives with unacceptable SDoH. With a perplexing sense of guilt, I profess I was one of those university educated people with a reasonable income, employment and the accompanying life benefits. However, it was my experience in Mount Isa, and working with people whose strength and resilience is unabated, and often untold, that opened my eyes to the health disparities that occur in a developed and fortunate country like Australia. Put simply, I do not think this is fair, and I am grateful for this exposure to social injustice because it has directed the course of my career.

My work took me all throughout NWQ. I provided nutrition and dietetic services to many rural and remote communities in the region. This included Indigenous communities, mining communities, farming communities and communities with seemingly little industry at all. I saw first-hand how difficult life was for some people. There were droughts, floods, poor food supply, limited education and employment opportunities, and low-quality, expensive housing. People were required to travel hundreds and sometimes thousands of kilometres for their healthcare needs, or they just went without.

Of the many health issues people experienced, the one that stood out to me as being the most prevalent was T2DM. I completed a Graduate Certificate of Diabetes Education in 2005 to build my skills in this area. Although I was now equipped with more university qualifications,

I still felt underprepared to address the broader social issues that permeated people's lives. All I felt was an increased awareness of the devastating impact SDoH can have if they are not conducive to good health. Accompanying this was a great amount of frustration. Frustration because although I enjoyed being a clinician and working one-on-one with people, I knew true change could only be made through population and public health action. Despite this, I persisted with individual interventions because this was how services were delivered in the organisation I worked for. While I definitely considered people's SDoH in all treatment interventions, I still felt as though I was not helping anyone in a lasting way.

In 2007 my own personal health issues came about and I was required to seek specialist opinion and treatment in Sydney, New South Wales, Australia, because the required procedures were not available in Queensland. This involved frequent and lengthy visits to Sydney and was within the private health care system, all of which cost a great deal of money. I was educated enough to know I needed second and third opinions, which also cost more. I had no problems justifying this expense and felt it was just what had to be done. So of course, I did it without a second thought.

On one of the flights to Sydney, it dawned on me... 'this is what it means to have good SDoH. I can afford flights and accommodation, I am educated enough to research my condition and gain as many opinions as I feel necessary, I have ongoing support, and I am filled with hope because of these things'. I am also quite certain that if my SDoH were poor, I would probably not be here today. Fortunately, due to my favourable social circumstances, I am back to good health.

With this parallel grasp of how social determinants affect health, I continue my career working towards health equality for people living a poor life. My desire to work with individuals in clinical settings has remained. However, I have merged this with my intimate comprehension

of SDoH and my experiences in T2DM care to become the motivation for my PhD topic, incorporating SDoH into individual care for people with T2DM.

1.9 Publication 1: Including social determinants of health in the clinical management of diabetes.

Overview of Publication 1 ³⁰

Publication 1 was written to create awareness of, and introduce the research topic and represents the rationale for this research. It explains how including SDoH could enhance usual diabetes care and describes how this fits within the *Australian National Diabetes Strategy 2016–2020*. It outlines the prevalence of diabetes in Australia and describes the disease’s association with SDoH. A discussion follows on why SDoH should be included into clinical care and how this could be achieved. Publication 1 concludes with a reminder of health disparities occurring within Australia and how incorporating SDoH into the clinical management of diabetes could contribute to health equity.

Publication details

Status: PUBLISHED. This article is published in the *Australian Diabetes Educator* (see Appendix A).

Citation: Frier A, Devine S. Including social determinants of health in the clinical management of diabetes. *Australian Diabetes Educators*. 2017;20(2):9-12. Available from: <https://ade.adea.com.au/wp-content/uploads/2017/06/ADE-June-2017.pdf>

Contribution of authors: A Frier (conceptualisation, writing of original draft), S Devine (review and editing, supervision).

Note. The referencing and formatting in this publication is consistent with journal requirements and, therefore, may be inconsistent with the thesis referencing and formatting.

1.9.1 Introduction

Diabetes educators improve the lives and futures of people with diabetes by helping them improve their glycaemic management. Along with other approaches, behaviour change around smoking, nutrition, alcohol and physical activity are central to this improvement. However, despite passionate educator intent, and desperate client willingness, sometimes changes are not possible because of the environment the client lives, and has grown up in. These influences on diabetes self-management can be described as social determinants of health (SDoH). Addressing SDoH, even in a clinical setting, may lead to improved glycaemic management, and increased choice and control over life for people with diabetes.¹

1.9.2 What is already known?

It is known that people with poorer social and economic circumstances have worse health outcomes than their more affluent counterparts. More specifically, the development of diabetes and suboptimal management is more likely amongst individuals with poor SDoH.² Socioeconomic status (SES) is synonymous with SDoH, however, SDoH connect the social and economic contributors to SES with health outcomes. Specifically, SDoH include early childhood development, education, employment, food security, housing, transport, economic status, social support and healthcare access. As the quality of people's SDoH decline, so does their health status. Unfavourable SDoH and the resultant social inequities lead to premature mortality, higher morbidity, poor quality of life and suboptimal health-related choices.² Conversely, if a person is born into an affluent society with quality education, positive life circumstances, opportunity and healthcare access, they are more likely to be in good health.^{3,4}

The prevalence of diabetes in Australia has tripled since 1990,⁵ with 1.7 million Australians now living with diabetes.⁵ Of this population, diabetes is far more common among those at socio-economic disadvantage⁶, and people of lower SES are less likely to partake in the

self-management behaviours necessary for improved glycaemic management.⁷ Logical inference, therefore, suggests that understanding this health inequity and working within the SDoH of individuals with diabetes may be a further step in optimising diabetes management and quality of life for this population.

1.9.3 Why include the social determinants of health?

The solution to working within this social disparity is not an easy one. While addressing non-medical issues is not the typical focus in a clinical setting, the relationship between poor SDoH and a person's ability to better manage their diabetes is undeniable. High-level policy changes and upstream approaches to sustainably address the SDoH have gained traction and momentum. Nonetheless, while this essential work is under way, people are still living in circumstances that are not conducive to a healthful life, free of chronic disease.

The *National Diabetes Strategy*⁸ articulates seven goals designed to influence the practice of all health professionals working in diabetes care:

Goal 1: Prevent people developing type 2 diabetes.

Goal 2: Promote awareness and earlier detection of type 1 and type 2 diabetes.

Goal 3: Reduce the occurrence of diabetes-related complications and improve quality of life among people with diabetes.

Goal 4: Reduce the impact of pre-existing and gestational diabetes in pregnancy.

Goal 5: Reduce the impact of diabetes among Aboriginal and Torres Strait Islander peoples.

Goal 6: Reduce the impact of diabetes among other priority groups.

Goal 7: Strengthen prevention and care through research, evidence and data.

Goal one specifically focuses on preventing type 2 diabetes (T2DM). Although it is clearly identified that diabetes awareness, health behaviours and choice are integral for T2DM prevention,⁹ the causative link between the higher incidence and prevalence of diabetes in lower SES populations requires further consideration.^{5,10} The convolution of early life experience, income, education, housing, living environments, access to nutritious food and health care influence health-related choices and behaviours.⁴ Alarming, SDoH also have a biological impact on health. For example, a child of parents with poor SDoH is more likely to develop chronic conditions as an adult.¹¹ Consequently, the powerful influence of SDoH is fundamental in the Centers for Disease Control and Prevention (CDC) diabetes prevention programs.⁹

Though not explicit, goals five and six indirectly allude to the impact of SDoH on diabetes. Broadening interpretation to overtly include SDoH, in an Australian context, will add to a worldwide evidence expansion demonstrating the correlation between SDoH and diabetes self-care and management.^{10,12-16} Furthermore, assimilating SDoH into clinical management will enable SDoH to span the diabetes care continuum. This could then improve health outcomes for people with diabetes.¹

Goal seven's call for prevention and care through research, evidence and data, combined with the indivisible connection between SDoH and diabetes, innately requests advancement in this area. Currently, in Australia, SDoH research and action is necessarily conducted at policy and upstream levels. The additional incorporation of SDoH at a clinical level could further strengthen current approaches to diabetes prevention and care.

The remaining goals of the 'National Diabetes Strategy' also have an association with SDoH. The direct link between people's social and economic circumstances, quality of life and health outcomes (including diabetes)² infers plausibility that addressing SDoH, in a clinical setting,

may provide a progressive and valuable contribution to all seven goals, either directly or indirectly.

1.9.4 How to include the social determinants of health?

Though the connection between SDoH and diabetes has been identified, to date, there has been minimal emphasis or resources applied to specifically identifying and addressing SDoH on individual and clinical levels (micro level). Targeted integration and collaboration between health professionals, health services and community supports that acknowledge and focus on individual social needs are required to address SDoH on a clinical level.^{1,2} Furthermore, a deeper understanding of how an individual's SDoH and unmet social needs affect their ability to self-manage their diabetes is required. Once these are identified and explored, action can then be taken towards improving them. Validated questionnaires to assess the SDoH of clients with T2DM in clinical settings have been trialled by American researchers. Assessments include education level, employment, income, living and housing situations, expenditure capacity, safety, stress, substance use, and access to and use of social support.^{1,17} SDoH assessments were completed in parallel with usual clinical outcome measures. The specific assessment and documentation of clients' social needs allowed meaningful approaches for addressing SDoH to be incorporated into client care.^{1,17}

Utilisation of community health workers and collaboration with social support services within the community were recommended as the basis for assessing and addressing the SDoH of clients.^{1,17,18} The associated positive health outcomes, enhanced client care and feasibility of this approach have led to the inclusion of SDoH into T2DM quality improvement projects.¹ In addition to social support referral and collaboration, advocacy and partnerships are imperative to comprehensively address SDoH.¹⁹ The inclusion of SDoH into clinical settings contributes

to proactive influence at client, practice, community and population levels.^{10,14,19} It also implies merit for including SDoH in Australian clinical settings.

Understanding and addressing non-medical barriers to self-management is an important part of providing holistic, person-centred and team based diabetes care. However, extending this role to include a broader focus on SDoH is fundamental if vulnerable populations are to move towards achieving improved diabetes management and overall health outcomes. Of course, the necessary population-based strategies must continue; however, an extension of these strategies would value add to the overall approach to addressing the strong relationship between SDoH and diabetes. Furthermore, to ensure efficacy in an Australian context, locally based research is required to develop strategies that accommodate the diverse range of populations and communities across the continent, and the equally diverse SDoH they experience.

This approach is not intended to create additional work for diabetes educators and other clinical staff. Instead, the emphasis should be on enhancing their effectiveness and quality of care provided to people with diabetes. Consequently, research into the most beneficial approach and strategies for incorporating these non-medical aspects into diabetes management in a clinical setting, and in an Australian context is required. Assessment of an individual's SDoH, documentation, health literacy, staffing requirements and intervention and referral approaches are conceivable themes for initial investigation.^{1,17,19,20} Following that, evaluation of the effectiveness on both health outcomes and cost is necessary.⁸ Finally, flow-on effects that improve quality of life and overall wellbeing also deserve exploration.¹

1.9.5 Conclusion

In Australia we are fortunate to have choice and control over our life. This however, is not equally true for all of the population. People at greater socioeconomic disadvantage suffer the consequences of higher morbidity and mortality from all chronic diseases, including diabetes.²

Health professionals working within diabetes care are in the advantageous position to contribute to health equity. Broadening the focus of diabetes services to include SDoH on a clinical level could augment current contributions towards this. A desire for improved self-management and enriched lives for their clients is a probable motivator for all health professionals working with people who have diabetes. Indirectly, this then becomes a plea for action towards incorporating SDoH into diabetes management in clinical settings.

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1.11 Implications for practice

A social assessment is part of usual care for people with T2DM.⁹ However, developing a more in-depth and formalised approach, which uncovers SDoH issues and the associated social need that hinder self-management, may improve T2DM care. Thus, improved health outcomes may be more likely when more holistic care, that incorporates SDoH, is provided and people with T2DM can achieve their self-management goals.

1.12 Chapter summary

Chapter 1 has:

- provided an overview of the thesis content and purpose
- described SDoH, their impact on overall health, and how they are currently addressed
- outlined the prevalence of T2DM in Australia
- described the intertwined relationship between SDoH and T2DM
- announced the research question
- demonstrated a need to conduct research on incorporating SDoH into care for people with T2DM
- explained the researcher's professional and personal motivations for conducting this research
- included a publication introducing the research topic
- implied the benefits of this research for current T2DM practice.

Chapter 2 will describe and justify the use of the K2AF as a guide to the research reported in this thesis.

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Chapter 2: Theoretical framework

2.1 Chapter outline

Chapter 2 describes the theoretical framework, the K2AF, which was used to guide the qualitative research in this thesis. First, a description of the K2AF and an overview of how it guides the research is provided. Second, a diagrammatic representation of the research design based on this framework is presented. The implications for practice of using the K2AF are then discussed. Chapter 2 concludes with a summary and an introduction to Chapter 3.

2.2 What is the Knowledge to Action Framework?

The K2AF is a conceptual framework developed in Canada by Graham et al. in 2006.^{1,2} It was developed to assist the translation of evidence and research knowledge into workable practice (action) (i.e., knowledge to action) and is defined as a ‘process model’.^{3,4} Process models describe or guide the specific steps or phases required to translate knowledge and research into practice.⁴ An additional and critical aspect of the K2AF is integrating stakeholder input which is necessary for transferring evidence-based ‘knowledge’ into ‘action’.^{1,3}

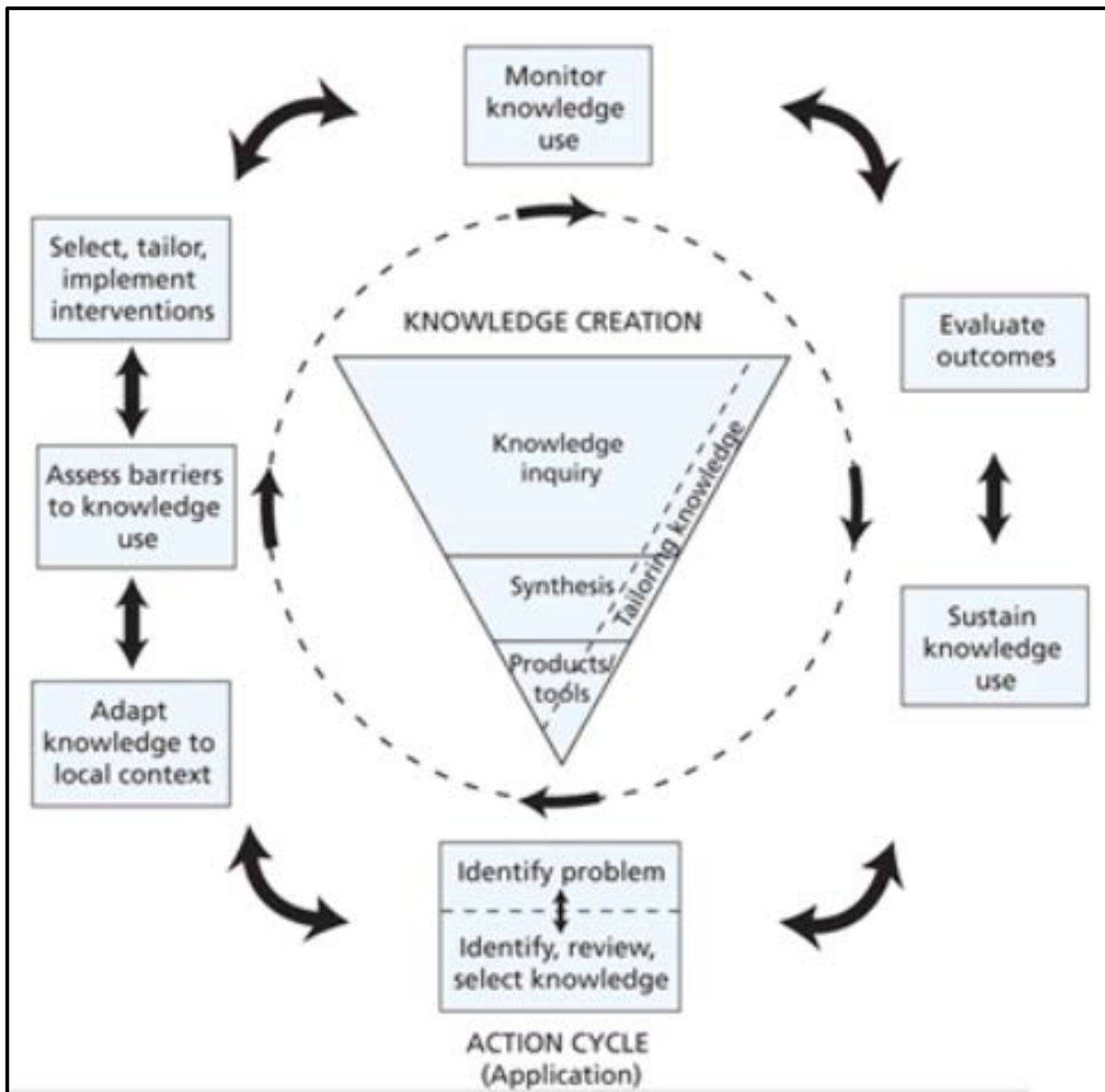
There are two components of the K2AF: (1) Knowledge Creation; and (2) the Action Cycle.¹ In the K2AF, the phases involved within the framework are dynamic and can all influence each other. The Knowledge Creation phase involves tailoring the knowledge to be specific to its desired setting and comprises ‘knowledge inquiry’, ‘synthesis’ and ‘products and tools’. Knowledge Creation is diagrammatically represented as a funnel to indicate the progression of the created knowledge, from ‘knowledge inquiry’, to ‘synthesis’ to the development of workable ‘products and tools’ (see the centre of Figure 2.1). The Action Cycle surrounds the Knowledge Creation funnel in the K2AF (see the outer circle in Figure 2.1). The purpose of the Action Cycle is to guide the application of the knowledge created into workable and

sustainable action that is relevant to the chosen setting. The bidirectional Action Cycle phases are:

- identifying problem (determine the ‘know/do gap’; identify, review and select knowledge)
- adapting knowledge to the local context
- assessing barriers to knowledge use
- selecting, tailoring, implementing interventions
- monitoring knowledge use
- evaluating outcomes
- sustaining knowledge use.

The Knowledge Creation and Action Cycle phases are continuous and interdependent. That is, knowledge is continually created and modified to suit its application.^{1,3} Figure 2.1 provides a diagrammatic representation of the K2AF.

Figure 2.1. Diagrammatic representation of the Knowledge to Action Framework



Note. Sourced from Graham I, Logan J, Harrison M, Strauss S, Tetroe J, Caswell W, Robinson N: Lost in knowledge translation: time for a map? *The Journal of Continuing Education in the Health Professions* 2006, 26, p. 19.¹

2.3 Why use the Knowledge to Action Framework to guide the research?

Despite the influence of SDoH on T2DM being well researched and understood,⁵⁻⁷ SDoH-related barriers to self-management are not identified and addressed as part of usual care for individuals with T2DM.^{8,9} This gap in action may be because SDoH are not formally incorporated on an individual level within clinical healthcare practice.¹⁰

Incorporating knowledge and understanding about the influence of SDoH on T2DM^{6,7} into the individual level of T2DM care may be assisted by utilising the K2AF.³ Using the K2AF to guide the incorporation of SDoH into T2DM care will combine empirical knowledge on the interplay between SDoH and T2DM⁵⁻⁷ with the lived experience of people with T2DM and the expertise of the HPs who work with them. The K2AF will also facilitate stakeholder involvement in all research phases and allow for the unique needs, barriers and facilitators of stakeholders to be considered and integrated.¹¹

Input from the stakeholders of T2DM care will add an experienced-based contextualisation dimension to other models of healthcare that acknowledge SDoH, such as the socio-ecological model of health.^{12,13} The socio-ecological model considers the broader multilayer influences on health and the related behaviours.^{14,15} This model has been used previously to demonstrate the effects of SDoH on T2DM. Accordingly, the acknowledgement of SDoH in T2DM care is encouraged in the relevant literature.^{12,16,17} While the imperative of deeply understanding and considering the influences of social determinants on T2DM self-management is irrefutable, the socio-ecological model of health does not *facilitate* stakeholder input and the contextualisation necessary for incorporating the SDoH into individual T2DM care. Alternatively, the K2AF *requires* stakeholder input and was specifically developed to guide the incorporation of evidence-based knowledge into healthcare practice. Therefore, using the K2AF to incorporate

SDoH into individual clinical care of people with T2DM facilitates contextualisation and application to the chosen setting.¹⁻⁴ Furthermore, utilising the K2AF to incorporate SDoH into individual clinical care for people with T2DM enables and facilitates the lived experience of the stakeholders to inform each stage of the research.¹⁸

2.4 Using the Knowledge to Action Framework to guide the research

The K2AF guided the design of the research reported in this thesis. The research has five phases. The Knowledge Creation component comprises Phases 1 to 4, each representing an aspect of the Knowledge Creation funnel (see Figure 2.1). Phase 5 involves the considerations to be made when applying the seven steps of the Action Cycle (see Figure 2.1). The stakeholders included in this research are those responsible for health service delivery to people with T2DM, people with T2DM and the SDoH-related services available in the chosen community.

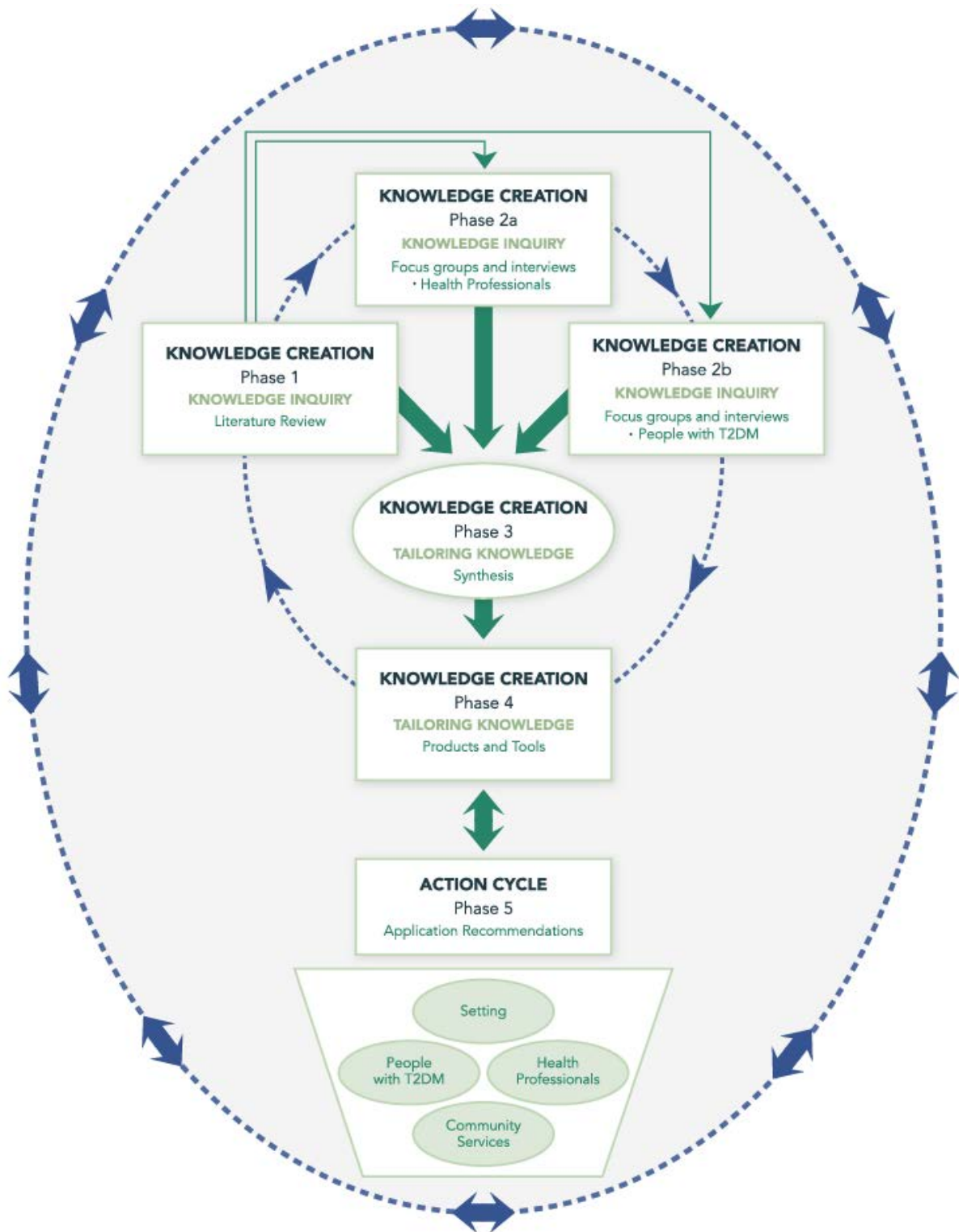
The phases of the research design are as follows:

- Phase 1 involved the literature review ('knowledge inquiry').
- Phases 2a and 2b comprised the focus groups and interviews with people who have T2DM and the HPs who work with them ('knowledge inquiry').
- Phase 3 includes the 'synthesis' ('tailoring knowledge').
- Phase 4 involves the 'products and tools' ('tailoring knowledge').
- Phase 5 is the Action Cycle (application considerations).

Infographic 2.1 provides a diagrammatic representation of the five-phase research design based on the K2AF. In this diagrammatic representation, the outer circle represents the seven steps of the K2AF Action Cycle. While full use of the K2AF relies on an interdependent and

continuous flow between the Knowledge Creation and Action Cycle,^{1,3} the research reported in this thesis aligns mostly with the Knowledge Creation component. It does not include the application of the findings because this was beyond the scope of the research in this thesis. Thus, only considerations and future research recommendations for the Action Cycle component can be made. Infographic 2.1 provides a diagrammatic representation of the research design.

Infographic 2.1. Research design using the Knowledge to Action Framework



Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

2.4.1 Identified problem

First, it is necessary to identify the problem. Identifying the problem is a part of the Action Cycle (see Figure 2.1).^{1,3} In this instance, the identified problem is: how can SDoH be incorporated into individual care for people with T2DM? The ‘know/do gap’³ associated with the identified problem involves extending the usual population- and broad setting-based approach to addressing SDoH¹⁹ and incorporating it into an individual level of T2DM care.

The outcomes of this research are intended to provide guidance on ‘working within’ the current SDoH circumstances of individuals to incorporate them into T2DM care, not necessarily to improve an individual’s current SDoH. Nonetheless, it is essential to note that improving the SDoH of individuals, such as healthier environments and living conditions and improved employment, working conditions and educational levels,^{19,20} should always remain on the agendas of government departments, local councils and health authorities.

2.4.2 Knowledge Creation: Phases 1 to 4

Knowledge Creation is a progressive process that refines and synthesises the acquired knowledge about the identified problem into usable ‘products and tools’. The Knowledge Creation process involves three stages, or generations, of knowledge. First-generation knowledge is elicited by building an understanding of current literature, practices and perspectives on the identified problem (‘knowledge inquiry’). Second-generation knowledge is when the findings associated with first-generation knowledge are synthesised and tailored to the specific situation (‘synthesis’), and third-generation knowledge is when the synthesised knowledge is further tailored to develop usable and well-informed ‘products and tools’³ (see Figure 2.1).

2.4.2.1 ‘Knowledge inquiry’

‘Knowledge inquiry’ (first-generation knowledge)³ has been separated into two of the five research phases: Phase 1, the literature review; and Phase 2, the focus groups and interviews. The focus groups and interviews are further separated to involve two of the main stakeholders associated with T2DM care: (1) HPs who work with people who have T2DM; and (2) people with T2DM.

2.4.2.1.1 Phase 1: literature review

The literature review was conducted to gain a global understanding of current research, practices and discourse on how clinical settings are utilised to incorporate SDoH into the care of individuals with T2DM. Additionally, the literature review findings assisted the formulation of questions for the focus groups and interviews²¹ (see Appendix B).

2.4.2.1.2 Phase 2: focus groups and interviews

2.4.2.1.2.1. Health professionals who work with people with type 2 diabetes mellitus

A multidisciplinary approach to T2DM care is essential for comprehensive diabetes management. T2DM management and care require input from endocrinologists, general practitioners (GP), nurses, diabetes educators, exercise physiologists, psychologists, social workers, dietitians, podiatrists and pharmacists.⁸ Engaging these integral stakeholders is vital to understanding how SDoH can be incorporated into the usual practices of these disciplines. Additionally, the perspectives of HPs who work with people who have T2DM will highlight foreseen barriers and facilitators to incorporating SDoH into the clinical care of individuals with T2DM.

2.4.2.1.2.2. *People with type 2 diabetes mellitus*

Person-centred care is essential for effective T2DM self-management.²² Understanding an individual's social situation (i.e., their SDoH) is integral to person-centred care.^{22,23} The influence of social determinants on the ability to self-manage T2DM^{5,6} suggests the SDoH-related self-management barriers of people with T2DM should be assimilated when determining how SDoH could be incorporated into individual care. Further, the necessity to include patient perspectives rests on the conviction that patients should be involved in their own care.²⁴

2.4.2.2 Tailoring knowledge

Tailoring knowledge leads to the production of second- and third-generation knowledge.³ The research design categorises the tailoring knowledge component of the K2AF into 'synthesis' (Phase 3) and the development of 'products and tools' (Phase 4).

2.4.2.2.1 Phase 3: 'synthesis'

Second-generation knowledge arises when the comprehension and insights elicited during the 'knowledge inquiry' (Phases 1 and 2) are synthesised. Synthesising the knowledge created from the literature review (global knowledge) and focus groups and interviews with relevant stakeholders (local knowledge) will impel consolidation of these perspectives and enable global evidence to be locally contextualised, thus, bridging the gap between global research and local knowledge on how SDoH can be incorporated into individual care for people with T2DM.¹⁴

2.4.2.2.2 Phase 4: 'products and tools'

The 'synthesis' of the reviewed literature and stakeholder perspectives will inform concepts for possible 'products and tools'. These concepts will require further refinement based on stakeholder input before they can be developed into usable knowledge translation tools, such

as decision aids and practice guidelines (third-generation knowledge). Further development will ensure these tools are specific to the end users of the knowledge, and support the incorporation of SDoH into individual care for people with T2DM.³ Note that it is beyond the scope of this research to fully develop the conceptualised ‘products and tools’.

2.4.3 Action Cycle: Phase 5

Following Knowledge Creation comes the implementation of the new knowledge and appropriate ‘products and tools’ into the chosen healthcare setting. Therefore, the Action Cycle of the K2AF is where the created knowledge is applied in the real-world context and is where the desired changes within the healthcare system occur. While there are seven steps to the Action Cycle,^{1,3} it is a dynamic and iterative process³ (i.e., they may occur simultaneously, progress in a back-and-forth manner or one step may inform and advance the next).

2.4.3.1 Phase 5: application considerations

Phase 5 of the research design outlines the considerations needed when following the steps of the Action Cycle (see Figure 2.1). As noted earlier in this chapter, only *application considerations* are made because applying the findings is beyond the scope of the research reported in this thesis. The *application considerations* are based on the findings of Phases 1 to 4.

The first step of the Action Cycle involves identifying the problem, which in this case is the posed research question: how can SDoH be incorporated into individual care for people with T2DM? The remaining steps of the Action Cycle rely on the knowledge created within the chosen healthcare setting, the people with T2DM in that setting and the HPs who work with them. Because the research findings have not been applied (or actioned), only the aspects to consider regarding community service availability, access and utilisation can be documented. For example, an outreach-based health service may utilise services in a community differently

from a centre-based service. Thus, the health service delivery model should be considered when applying the current research findings.

2.5 Implications for practice

Using the K2AF to guide the research design has enabled structured and formal inclusions and considerations of current literature, practical expertise and experiences of how SDoH can be incorporated into care for individuals with T2DM. When research is based on the K2AF, the findings will be evidence-based, contextualised and practically applicable to the clinicians who will be applying them.^{2,3}

2.6 Chapter summary

Chapter 2 has presented the research design based on the K2AF and described why the K2AF was the model of choice to guide the research design.

Chapter 3 will present the literature review, which explores the methods and strategies currently utilised in clinical settings to assess and address the SDoH of individuals with T2DM.

Chapter 3 will also provide an update of the current literature on this topic for the years 2017 to 2021.

2.7 Chapter 2 references

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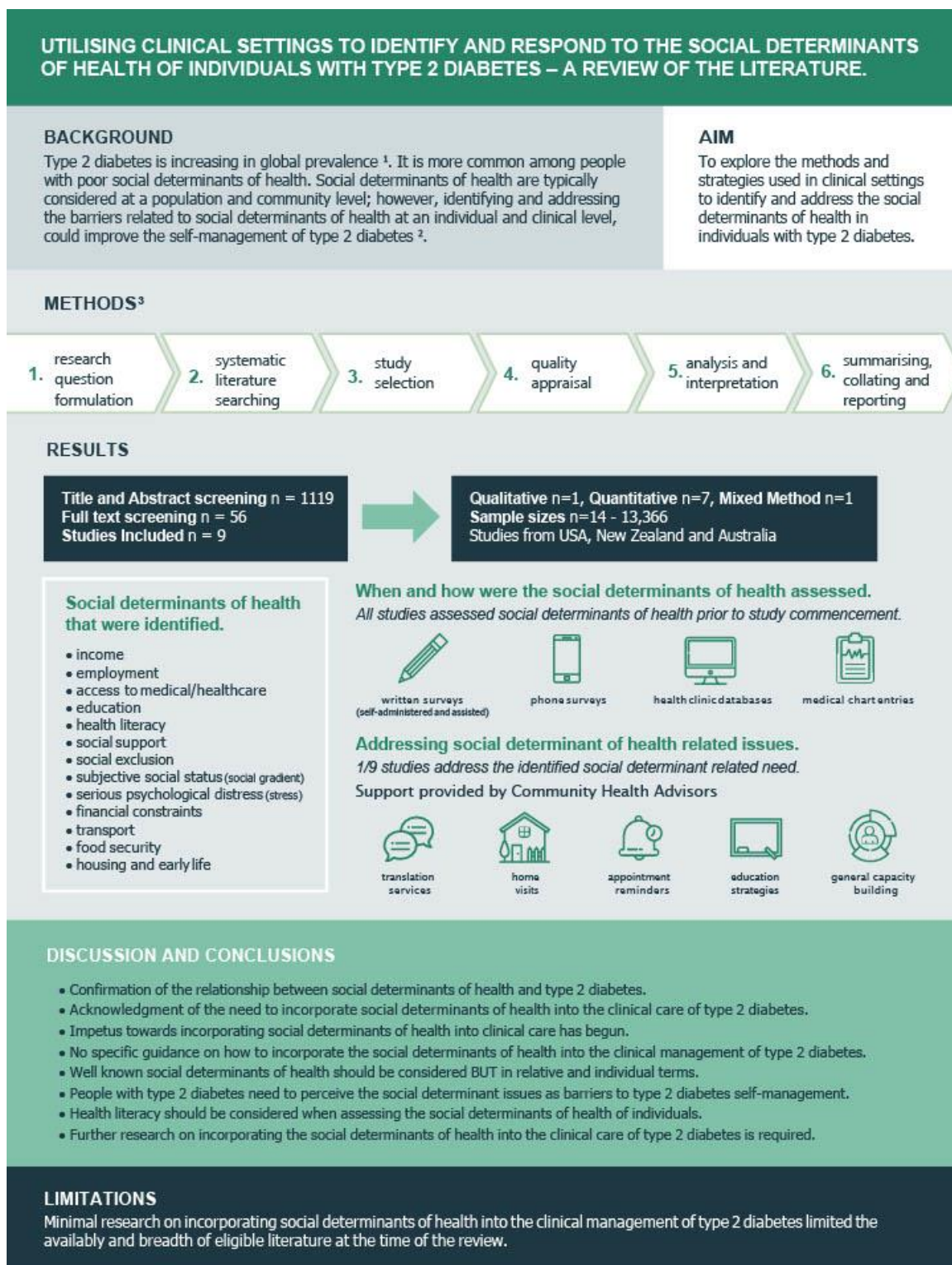
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Chapter 3: Literature review

3.1 Chapter outline

Chapter 3 contains the literature review titled, ‘Utilising Clinical Settings to Identify and Respond to the Social Determinants of Health of Individuals with Type 2 Diabetes—A Review of the Literature’. The chapter begins with Infographic 3.1, which summarises the literature review. The publication of this literature review follows: ‘Utilising clinical settings to identify and respond to the social determinants of health of individuals with type 2 diabetes—a review of the literature’. Next, a literature update for the years 2017 to 2021 is included. The implications for practice regarding the findings are then discussed. Chapter 3 closes with a chapter summary and a brief introduction to Chapter 4.

Infographic 3.1. Utilising clinical settings to identify and respond to the social determinants of health of individuals with type 2 diabetes—a review of the literature



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Note. Created by ROUNDHOUSE The Creative Agency.

3.2 Publication 2: Utilising clinical settings to identify and respond to the social determinants of health of individuals with type 2 diabetes—a review of the literature.

Overview of Publication 2¹

This literature review was conducted to determine the methods and strategies that have been utilised to incorporate SDoH into the clinical care of individuals with T2DM. It outlines the disease’s prevalence and describes its higher occurrence among people with poor SDoH. It explains that SDoH are not usually incorporated into clinical or individual care for people with T2DM, and how SDoH are mostly addressed at a population level, not clinically or individually. The literature review describes the systematic process followed and the identified results. The findings confirm a strong relationship between T2DM and SDoH and the need to incorporate SDoH into individual clinical care. Although SDoH have begun to be incorporated on an individual and clinical level in a small number of locations around the world, there remains little action specific to T2DM. This review determined that if SDoH are to be included in clinical care, the individual must perceive the SDoH issue as a barrier to T2DM self-management. It also determined that health literacy must be considered when incorporating SDoH into clinical care. Furthermore, the review highlighted that more research is required if SDoH are to be incorporated successfully into individual clinical care of people with T2DM.

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3.2.1 Abstract

Type 2 diabetes (T2DM) is increasing in global prevalence. It is more common among people with poor social determinants of health (SDoH). Social determinants of health are typically considered at a population and community level; however, identifying and addressing the barriers related to SDoH at an individual and clinical level, could improve the self-management of T2DM. This literature review aimed to explore the methods and strategies used in clinical settings to identify and address the SDoH in individuals with T2DM. A systematic search of peer-reviewed literature using the electronic databases MEDLINE, CINAHL, Scopus and Informit was conducted between April and May 2017. Literature published between 2002 and 2017 was considered. Search results (n = 1,119) were screened by title and abstract against the inclusion and exclusion criteria and n = 56 were retained for full text screening. Nine studies met the inclusion criteria. Review and synthesis of the literature revealed written and phone surveys were the most commonly used strategy to identify social determinant-related barriers to self-management. Commonly known SDoH such as: income, employment, education, housing and social support were incorporated into the SDoH assessments. Limited strategies to address the identified social needs were revealed, however community health workers within the clinical team were the primary providers of social support. The review highlights the importance of identifying current and individually relevant social determinant-related issues, and whether they are perceived as barriers to T2DM self-management. Identifying self-management barriers related to SDoH, and addressing these issues in clinical settings, could enable a more targeted intervention based on individually identified social need. Future research should investigate more specific ways to incorporate SDoH into the clinical management of T2DM.

3.2.2 Keywords

clinical settings, literature review, social conditions, social determinants of health, social need, socioeconomic factors, type 2 diabetes

3.2.3 What is known about this topic

- Social issues directly influence health, and are called social determinants of health (SDoH).
- Type 2 diabetes (T2DM) is more common among people with poor SDoH.
- SDoH are usually considered at a population level, not individually or clinically.

3.2.4 What this paper adds

- This is the first known literature review on how SDoH are incorporated into the clinical management of T2DM.
- Identified SDoH should be individually relevant and considered a barrier to T2DM self-management by the person with T2DM.
- There is a gap in formal methods and strategies to incorporate SDoH into usual clinical care for people with T2DM.

3.2.5 Background

Diabetes prevalence has increased globally over the past three decades, with type 2 diabetes (T2DM) accounting for 85%–90% of all diagnoses (Diabetes Australia, 2015; World Health Organization [WHO], 2016). People at socioeconomic disadvantage are more likely to develop T2DM and are more susceptible to suboptimal self-management due to the consequences of poor social determinants of health (SDoH) (Australian Institute of Health & Welfare [AIHW], 2014, 2016). This socially influenced health disparity suggests a need to investigate strategies

to optimise healthcare provision so that social disadvantage and SDoH are acknowledged and incorporated into the standard practice of T2DM care.

Social determinants of health are described as ‘the societal conditions in which people are born, grow, live, work and age’ (WHO, 2003). More specifically, they include early childhood development, education, employment, food security, housing, economic status, social support and healthcare access (Centres for Disease Control & Prevention [CDC], 2013; WHO, 2003). Social determinants influence both good and poor health. If a person is born into an affluent society with quality education, positive life circumstances, opportunity and healthcare access, the likelihood of good health is increased. To the contrary, when a person’s lifespan is permeated with poor education, low economic status, unemployment, inadequate housing and limited access to quality health care, it is probable that their health status will be of poor quality, and they will have a shorter life expectancy (WHO, 2003).

Sustainable change towards improved SDoH requires political and social influence (Marmot & Wilkinson, 2006). Essential advocacy and action are underway at population and community levels (Keleher & MacDougall, 2016; Marmot & Wilkinson, 2006; Solar & Irwin, 2010); however, while the approaches to address the causes of poor SDoH are occurring, the immediate and individual needs of people who live in circumstances contrary to a healthy life also require attention.

Despite the increasing prevalence of T2DM, especially amongst those at social disadvantage with poor SDoH (AIHW, 2014, 2016; Diabetes Australia, 2015; WHO, 2016), there are currently no published guidelines on how to consider T2DM and SDoH simultaneously, particularly at a clinical level. Living with suboptimal SDoH impedes the lifestyle choices essential for effective T2DM self-management (Royal Australian College of General Practitioners [RACGP], 2016). Therefore, including strategies that identify and account for

SDoH-related barriers may augment usual care by allowing additional interventions to be instigated as part of standard clinical practice. This may be an additional step towards improving health outcomes for people with T2DM.

Health services could embed SDoH as part of standard practice. Identifying SDoH-related barriers to T2DM self-management could provide health professionals with insight into their clients' life circumstances. Understanding an individual's SDoH and the associated health disparities could then help health professionals to develop more contextualised interventions (Baum et al., 2013; Newman, Baum, Javanparast, O'Rourke, & Carlon, 2015). The limited guidance to enable such an approach is stemmed from an overall deficit of supportive policies, frameworks and structure (Baum et al., 2013). This may also explain the lack of guidelines to incorporate SDoH into the clinical management of T2DM.

Although considering non-medical issues is not the main focus in clinical settings, the relationship between poor SDoH and the ability to self-manage diabetes is supported by an extensive evidence base (Brown et al., 2004; Kumari, Head, & Marmot, 2004; Marmot, 2005; WHO, 2003). Therefore, the formal incorporation of SDoH into usual clinical management of T2DM deserves more in-depth consideration and strategic progression.

Incorporating SDoH into T2DM clinical care by identifying, considering and subsequently addressing the related self-management barriers could improve T2DM outcomes by enabling the ability to make the positive lifestyle choices required for effective T2DM self-management. This in turn, could help reduce the personal suffering that often accompanies the burden of living with diabetes.

3.2.6 Methods

3.2.6.1 Aim of the review

This literature review aimed to explore methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM. It is worth noting the word ‘address’ and its synonyms should not be interpreted as resolving the SDoH issue. Instead, the correct interpretation is the strategies used to accommodate for the identified SDoH issue. For example, if it had been identified that a patient has limited transport options which would therefore impact their healthcare access, then arranging appropriate transport could alleviate the consequences of these SDoH issues.

The initial focus on identifying individuals’ SDoH-related issues was to gain insight into what factors were included, and how and when SDoH identification could be incorporated into routine T2DM clinical care. Strategies and recommendations to address the identified SDoH issues were then explored to determine how the related barriers to T2DM self-management could be addressed.

3.2.6.2 Systematic approach

The varied methodologies used in the reviewed studies indicated the suitability of an integrative approach to the literature review (Whittemore & Knafl, 2005), however its iterative and interpretive nature is similar to that of a scoping review (Arksey & O’Malley, 2005). Consequently, the current review borrowed from both styles of literature review. Both follow a systematic process, which includes:

1. research question formulation
2. systematic literature searching
3. study selection (informed by inclusion and exclusion criteria)

4. quality appraisal
5. analysis and interpretation
6. summarising, collating and reporting

(Arksey & O'Malley, 2005; Whitemore & Knafl, 2005).

3.2.6.3 Search strategy

The PRISMA protocol (Liberati et al., 2009) for searching literature guided a systematic search of the computerised databases MEDLINE, CINAHL, Scopus and Informit. Keywords, synonyms and associated truncations, including MeSH terms, were categorised into three groups: SDoH, T2DM and clinical setting (Table 3.1).

Table 3.1. Categorised groups of keywords, synonyms and truncations

Group	SDoH	T2DM	Clinical Setting
Synonyms & truncations	health social determinants	adult onset diabetes	primary care clinic
	social determinants of health	ketosis resistant diabetes	health service
	social determinants	mody	health services
	socioeconomic	maturity onset diabetes	community healthcare providers
	socioeconomic factors	maturity-onset diabetes	health centre
	socio-economic factors	NIDDM	health centres
	socioeconomic status	non-insulin dependent diabetes	health clinic
	health status disparity	noninsulin dependent diabetes	health clinics
	health status disparities	slow-onset diabetes	health care providers
	health disparity	slow onset diabetes	community health workers
	health disparities	stable diabetes	community health worker
	social conditions	type 2 diabetes	clinic setting
	social circumstances	type II diabetes	family medicine
	societal conditions		medical care
	societal circumstances		medical centre
	societal factors		health workers
	SES		health worker
		healthcare providers	
		healthcare provider	
		health personnel	
		clini*	

Note. SDoH = social determinants of health; T2DM = type 2 diabetes mellitus; SES = socioeconomic status.

The search was limited to papers published between 2002 and 2017, English language and human studies. The 15-year search scope was applied to identify publications influenced by *Social Determinants of Health: The Solid Facts* (second edition) (WHO, 2003). This publication was considered important because it preceded an increasing evidence base

concerning the influence of social determinants on health. The keywords were combined to obtain the primary search results.

Titles and abstracts were screened to ensure all of the included articles discussed clinical settings, identification and/or addressed the SDoH-related issues of individuals with T2DM. Incorporating the keywords (or their synonyms) *identification** and/or *address** into the search strategy appeared to eliminate pertinent articles; thus manual screening of titles and abstracts was necessary. After the initial screening and duplicate removal, the full text of the articles were read in brief. The inclusion and exclusion criteria were then applied to the remaining articles (see Table 3.2).

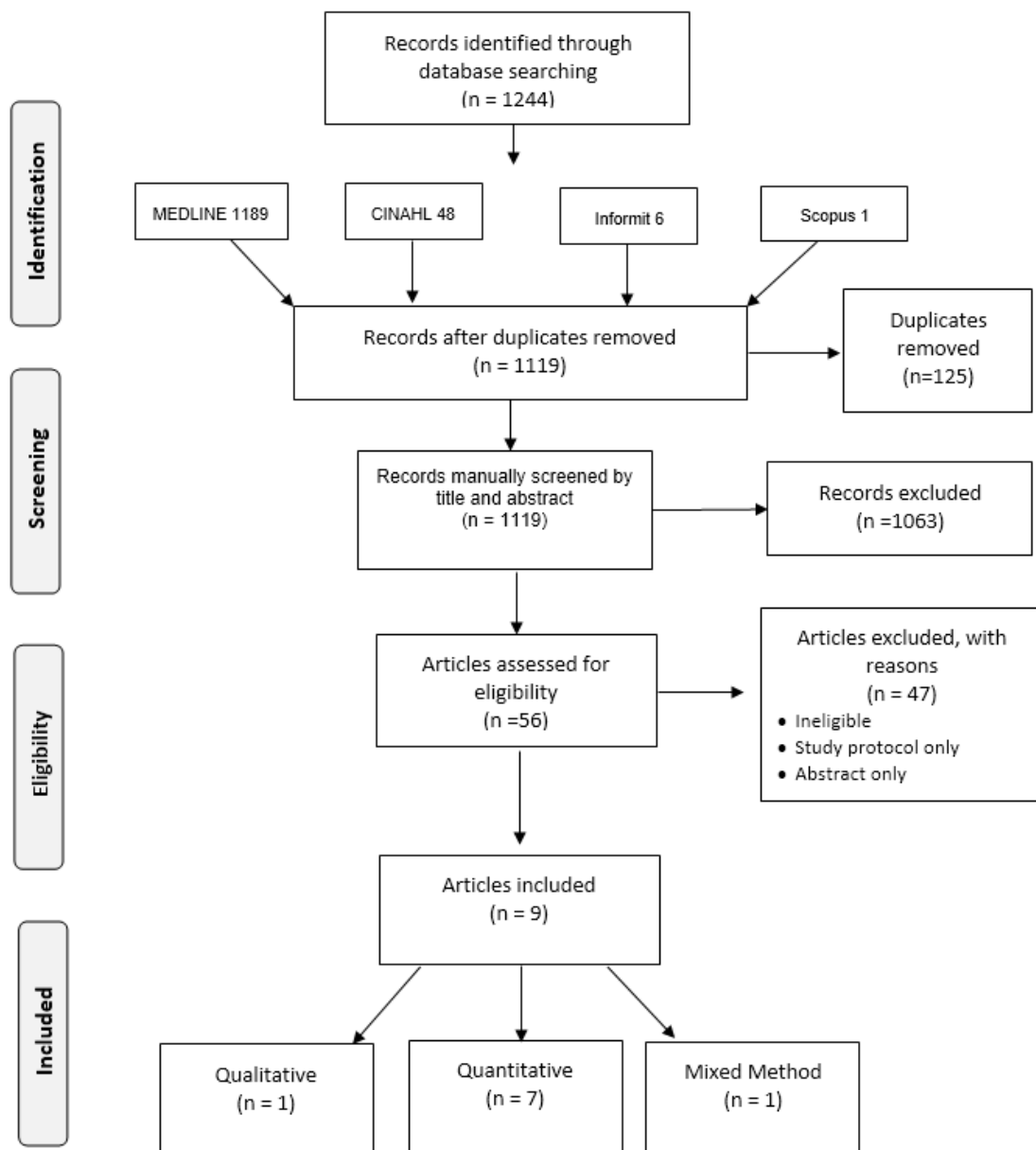
Table 3.2. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
≥18 years	<18 years
SDoH and T2DM in clinical settings AND <i>identifying*</i> SDoH of individuals (strategies to identify/screen/assess/measure) AND/OR	type 1 diabetes gestational diabetes
<i>addressing*</i> SDoH (recommendations only to include) AND/OR	acute settings
<i>addressing*</i> SDoH (practical strategies to address)	area/region identification* of SDoH issues rather than on an individual level
published in a peer-reviewed journal	policy/upstream approaches to <i>addressing*</i> SDoH (only) rather than on an individual level

Note. SDoH = social determinants of health; T2DM = type 2 diabetes mellitus.

The search identified 1,244 articles. One hundred and twenty-five duplicates were removed, leaving 1,119 articles. Title, abstract and text screening reduced the remaining articles to 56. The inclusion and exclusion criteria were applied to these 56 articles. Nine articles remained and were included in the review. Figure 3.1 outlines the process followed to identify, screen for eligibility and to include and exclude articles.

Figure 3.1. PRISMA flowchart of article identification, screening eligibility and inclusion



Note. Created by the author.

3.2.6.4 Critical review, data extraction and analysis

Each study was critically reviewed using the McMasters critical appraisal tools for both quantitative and qualitative studies depending on the methodology used (Law et al., 1998; Letts et al., 2007). One study used mixed methods; therefore, both quantitative and qualitative McMasters appraisals were conducted for that study (Loh, Jaye, Dovey, Lloyd, & Rowe, 2015). The reviewed studies were then summarised and collated for comparison and interpretive analysis. Commonly known SDoH (WHO, 2003) provided a reference for determining which SDoH were identified (Table 3.3). The methods used to elicit this information were also ascertained during the study reviews (see Table 3.4)

Table 3.3. SDoH factors included in the reviewed studies

SDoH factor	Included in screening
access to medical/health care	9/9 studies
income	8/9 studies
education	7/9 studies
employment	7/9 studies
social support	7/9 studies
subjective social status (social gradient)	6/9 studies
psychological or emotional distress (stress)	6/9 studies
financial constraints	3/9 studies
transport	3/9 studies
health literacy	2/9 studies
food security	1/9 studies
housing	1/9 studies
social exclusion	1/9 studies
early life	1/9 studies

Note. SDoH = social determinants of health.

Table 3.4. Summary table of the methods used to identify social determinants of health issues

Study Title	Citation	Methods Used to Conduct SDoH Screening
Patient perceptions of a community-based care coordination system	Gimpel et al., 2010	Modified risk assessment tool (survey). The survey was designed to identify social concern and need. Also provided a description of SES indicators in participant descriptions i.e. education, employment and income. No indication if survey was self-administered or assisted
Independent effects of socioeconomic and psychological social determinants of health on self-care and outcomes in T2DM	Walker, Gebregziabher, Martin-Harris, & Egede, 2014a	Numerous individual and validated assessment tools; <ul style="list-style-type: none"> - Survey assessing household income, years of education and employment status - Social Support Survey - Subjective Social Status –pictorial ladder to indicate perceived social status. - Perceived Stress Scale - Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted
Relationship between SDoH and processes and outcomes in adults with T2DM: validation of a conceptual framework	Walker, Gebregziabher, Martin-Harris, & Egede. 2014b	Numerous individual assessment tools; <ul style="list-style-type: none"> - Interview survey assessing household income, years of education and employment status - Social Support Survey - Subjective Social Status –pictorial ladder to indicate perceived social status. - Perceived Stress Scale - Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted
Quantifying Direct Effects of SDoH on Glycemic Control in Adults with T2DM	Walker, Gebregziabher, Mulugeta, Martin-Harris & Egede, 2015a	Numerous individual assessment tools; <ul style="list-style-type: none"> - Interview survey assessing household income, years of education and employment status - Social Support Survey - Subjective Social Status –pictorial ladder to indicate perceived social status. - Perceived Stress Scale - Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted
Understanding the influence of psychological and socioeconomic factors on DM self-care using structured equation modelling	Walker, Gebregziabher, Mulugeta, Martin-Harris, & Egede, 2015b	Numerous individual assessment tools; <ul style="list-style-type: none"> - Interview survey assessing household income, years of education and employment status - Social Support Survey - Subjective Social Status –pictorial ladder to indicate perceived social status

Study Title	Citation	Methods Used to Conduct SDoH Screening
		<ul style="list-style-type: none"> - Perceived Stress Scale - Short version of the Test of Functional Health Literacy in Adults <p>Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted</p>
SDoH in adults with T2DM- Contribution of mutable and immutable factors	Walker, Smalls, & Egede, 2015	<p>Numerous individual assessment tools;</p> <ul style="list-style-type: none"> - Interview survey assessing household income, years of education and employment status - Social Support Survey - Subjective Social Status –pictorial ladder to indicate perceived social status. - Perceived Stress Scale - Short version of the Test of Functional Health Literacy in Adults <p>Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted</p>
Dunedin's free clinic: an exploration of its model of care using case study methodology	Loh, Jaye, Dovey, Lloyd, & Rowe, 2015	<p>Retrospective data collection via journal entries, patient encounters, medical certificates, patient medical records and databases. Also provided a description of SES indicators in participant descriptions i.e. unemployment, sickness benefits, and accommodation</p>
Socioeconomic Barriers to DM Self-care: Development of a Factor Analytic Scale Social Support and Lifestyle vs. Medical DM Self-Management in the Diabetes Study of Northern California (DISTANCE)	Rose, 2005 Rosland et al., 2014	<p>Phone surveys based on items that indicate SES barriers to T2DM self-care i.e. cost/finances, transport, food security, safety and health literacy</p> <p>Self-administered/report questionnaire. Included comprehensive SDoH assessment i.e. access to medical/health care, income, education, employment, social support, social gradient, stress, financial constraints, transport, health literacy, food security, housing, social exclusion, early life. Also included many other T2DM management related components. 185 questions in total</p>

Note. SDoH = social determinants of health; SES = socioeconomic status; DM = diabetes mellitus; T2DM = type 2 diabetes mellitus.

3.2.7 Results

3.2.7.1 General characteristics of studies

Seven of the nine studies included in the review were quantitative, one was qualitative, and one used a mixed method design. Four articles were published in 2015. Three were published in 2014, and one in 2010 and 2005, respectively. The age of participants in the reviewed studies ranged from 30–75 years. Sample sizes for eight of the studies ranged from $n = 24$ to $n = 615$. The remaining study was extremely large at $n = 13,366$. Seven of the studies were completed in the USA, one in New Zealand and one in Australia.

Only one study intentionally investigated the value of identifying and addressing the SDoH-related issues of individuals with T2DM in a clinical setting. The remaining studies did not purposefully investigate identifying and/or addressing SDoH-related needs; however, their methodology indirectly included these factors. Five of the nine articles were written by the same authors using the same dataset. Each article reported separate interactions and relationships between T2DM and SDoH using different statistical analyses to investigate the specific issues considered in each study. Each study was published individually and met the inclusion criteria for the current review. Consequently, these five studies were appraised individually. All studies included a description of their ethics or approval procedures. Table 3.5 provides an overview of the articles included in the review.

Table 3.5. Summary of articles reviewed

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
Gimpel et al., 2010	Patient perceptions of a community-based care coordination system	To assess the efficacy of including CHW as care coordinators into education programs/groups to address social concerns and provide clinical support to patients with T2DM and depression	Exploratory/focus groups	4 focus groups	Community- based setting. Dallas USA “Project Access Dallas-care coordination system” N = 24	Participants reported the support of community-based workers as a helpful inclusion Benefits were also reported in participating in groups e.g., social support and understanding	Identifying Modified risk assessment tool (identifying social concerns, risk of developing T2DM, depression) Addressing Include strategies to address SDoH (e.g., how use public transportation and facilitating access to healthcare. Incorporated the use of community health workers
Walker, Gebregziabher, Martin-Harris, & Egede, 2014a	Independent effects of socioeconomic and psychological social determinants of health on self-care and outcomes in T2DM	To investigate independent effects of socioeconomic and psychological SDoH factors on DM knowledge, self-care and QoL	Cross-sectional	Statistical analyses to provide information on individual and collective contribution of different SDoH to T2DM	Adult primary care clinic, USA N = 615	T2DM knowledge and self-care: Significantly associated with SES and psychological components of SDoH T2DM outcomes: Significantly associated with higher SES and, self-efficacy and , lower diabetes distress and perceived stress QoL Significantly associated with higher education, lower depression, lower	Identifying Participants completed validated questionnaires. Addressing Not Included Recommendations for further research to inform future interventions designed to improve self-care and outcomes for patients with T2DM

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
Walker 2014b	Relationship between SDoH and processes and outcomes in adults with T2DM; validation of a conceptual framework	To validate a conceptual framework that clarifies the pathways linking SDoH to health outcomes of people with T2DM	Cross-sectional	Path analysis used to determine if SDoH factors independently predict glycaemic control or show an association with mediators/moderators of T2DM care components	Adult primary care clinic, USA (N = 615)	psychological distress, lower perceived stress and higher social support Significant paths were associated with SDoH and glycaemic control through direct association and mediators/moderators of diabetes care components	Identifying Participants completed validated questionnaires Addressing Recommendation to include SDoH in future research and T2DM intervention
Walker, Gebregziabher, Mulugeta, Martin-Harris & Egede, 2015a	Quantifying direct effects of SDoH on glycaemic control in adults with T2DM	To investigate if self-care is the pathway through which SDoH impact T2DM outcomes	Cross-sectional	Structured equation modelling investigated the relationship between SDoH, self-care and glycaemic control	Adult primary care clinic, USA (N = 615)	An association between self-care and SDoH is suggested but is not mediated by self-care; a direct relationship identified between psycho-social determinants of health and glycaemic control	Identifying Participants completed validated questionnaires Addressing Interventions should take psychosocial factors into account as independent influences on T2DM outcomes rather than influences on self-care
Walker, Gebregziabher, Mulugeta, Martin-Harris, & Egede, 2015b	Understanding the influence of psychological and socioeconomic factors on DM self-care using structured	To develop and test latent variables of SDoH that influence diabetes self-care.	Cross-sectional	Confirmatory factor analysis identified the latent factors underlying socioeconomic determinants, psychosocial determinants and self-care; structured	Adult primary care clinic, USA (N = 615); self-efficacy, psychosocial distress and social support also had an	Psychosocial factors can be separated into three latent constructs: psychological distress, social support and self-efficacy; better self-care is associated with lower psychological distress,	Identifying Participants completed validated questionnaires Addressing Consider psychosocial, self-efficacy, social

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
	equation modelling			equation modelling was used to investigate the relationships between the above determinants and self-care	influence over behaviour	higher social support and higher self-efficacy	support and psychological distress separately rather than collectively; incorporate behavioural and psychological strategies in future T2DM interventions
Walker, Smalls & Egede, 2015	SDoH in adults with T2DM; contribution of mutable and immutable factors	To increase understanding of the role of multiple SDoH factors on glycaemic control of individuals with T2DM. To identify which SDoH factors are mutable and immutable	Cross-sectional	Statistical analysis using a hierarchical model with HbA1c as a dependent variable with block independent variables (i.e., demographics, socioeconomic, psychosocial, built environment, clinical, and knowledge/self-care)	Adult primary care clinic, USA (N = 615)	Significant associations with HbA1c included self-efficacy, social support, comorbidity, insulin use, medication adherence and smoking behaviour; SDoH factors that drive glycaemic control are modifiable and, therefore, worthy of inclusion in health interventions	Identifying Participants completed validated questionnaires Addressing Recommendations for greater acknowledgement of SDoH required to reduce the commodities associated with glycaemic control; recommendations for DM education and skills training to include SDoH factors
Loh, Jaye, Dovey, Lloyd, & Rowe, 2015	Dunedin's free clinic: an exploration of its model of care using case study methodology	To determine if the services provided met the social vulnerability needs of clients.	Mixed methods; descriptive (nested case study)	Created a profile of patient needs using various measures; then applied an analytic matching technique to assess the degree of	Community-based free health clinic, NZ (N = 406); nested case study (n = 21); medical certificates	Patient needs complicated by coexisting social vulnerability; suggested a degree of fit between the services provided	Identifying Collected patient needs through journal entries, patient encounters, self-administered

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
				alignment between services provided and patient needs	(<i>n</i> = 278); justice use (<i>n</i> = 80); surveys completed (<i>n</i> = 27)	and the needs of the patients; highlighted importance of a model of care that caters for patients with complex social needs	surveys, medical certificates issued, hospital admissions, justice system use and computer database records Addressing Not included
Rose, 2005	Socioeconomic barriers to DM self-care: development of a factor analytic scale	To describe the development of a measurement tool for assessing SES barriers to T2DM self-care.	Cross-sectional; part of a mixed-methods study investigating socio-cognitive factors/barriers accompanying DM self-care (quantitative component)	Theoretical constructs followed by telephone surveys to develop SES assessment measures; Factor analysis on SES-related diabetes self-care barriers	Diabetes register from Fairfield division of general practitioners, Australia (<i>N</i> = 105)	SES barriers identified through the factor analysis consist of ‘place barriers’ and ‘information barriers’; SES cost-related barriers failed to form one factor in the analysis; further development required	Identifying Phone survey developed using theoretical constructs Addressing Not included
Rosland et al., 2014	Social support and lifestyle v. medical DM self-management in DISTANCE	To examine the relationship between social support and T2DM self-management/lifestyle behaviours and self-management/medical behaviours	Cross-sectional	Self-management and social support, including SDoH factors, assessed using the DISTANCE questionnaire and administrative data; Poisson regression models to estimate of self-management behaviours at high and low levels of social support	Integrated, managed care consortium, California, USA, (<i>N</i> = 13,366)	Clearer association with high levels of self-support and positive self-management/lifestyle behaviours compared to medical behaviours	Identifying DISTANCE survey specifically designed to assess self-management behaviours of T2DM patients; Includes social support and SDoH factors Addressing Not included

Note. SDoH = social determinants of health; CHW = community health worker; T2DM = type 2 diabetes mellitus; USA = United States of America; DM = diabetes mellitus; QoL = quality of life; SES = socioeconomic status; DISTANCE = diabetes study of Northern California.

3.2.7.2 Identification of SDoH-related issues

3.2.7.2.1 What was included?

Although identifying SDoH issues was not the primary focus for most of the reviewed studies, all embedded SDoH screening into their study protocol. Identification of social need was conducted as part of the study design or within participant descriptions, or both. Overall, SDoH factors included; income, employment, access to medical/health care, education, health literacy, social support, social exclusion, subjective social status (social gradient), serious psychological distress (stress), financial constraints, transport, food security, housing and early life. Table 3.3 displays the identified SDoH factors and the number of studies that included them in their screening process.

3.2.7.2.2 When and how was it done?

All studies completed the SDoH assessment prior to commencing the research protocol. Various approaches were used to gather the desired information. These were: written surveys (self-administered and assisted), phone surveys, health clinic databases and records, and medical chart entries. Table 3.4 provides a summary of the strategies and methods used to assess the SDoH-related issues of individuals.

3.2.7.2.3 Addressing SDoH-related issues

Only one of the nine studies included specific strategies to address the identified SDoH-related needs of people with T2DM (Gimpel et al., 2010). The provided support was guided by the participant's identified social need obtained in the initial SDoH assessment. Community health workers undertook a care coordination/case management role which involved assisting study participants to navigate the healthcare system independently. Examples of CHW assistance included arranging translation services, home visits, appointment reminders, supporting health education strategies, and teaching participants how to use public transport. Enrolment in the

program also involved cost reduction of consultations and medications for participants. This strategy addressed financial constraints and issues associated with low income (Gimpel et al., 2010).

Walker et al.'s five studies (2014a, 2014b, 2015a, 2015b, 2015) demonstrated multiple interactions and relationships between T2DM and SDoH. Consequently, they recommended SDoH be incorporated into T2DM management and interventions. Their recommendation did not provide any insight into how to address SDoH issues. However, the authors did recommend further research be conducted to inform and improve self-care and outcomes for people with T2DM by incorporating SDoH-based strategies (Walker et al., 2014a). Use of the same dataset for these five studies is acknowledged and discussed in the limitation section of this review.

The remaining three studies acknowledged the relationship between SDoH and T2DM; however, none of the studies provided any specific recommendations or strategies about how to incorporate SDoH into T2DM care (Loh et al., 2015; Rose, 2005; Rosland et al., 2014).

3.2.8 Discussion

The aim of this literature review was to explore the methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM. Review of the approaches used to identify SDoH-related issues revealed informative factors that could inform routine SDoH assessments in the clinical setting (

4). Although practical strategies to address the identified SDoH-related barriers to T2DM self-management were limited, the associated recommendations provided valuable insight to inform future intervention and research.

3.2.8.1 Identifying social need

Social determinants of health mean that the social factors in a person's life determine their health status and outcomes (Marmot & Wilkinson, 2006). The interdependent relationship between SDoH, T2DM and health outcomes was clear in Walker et al.'s five articles (2014a, 2014b, 2015a, 2015b, 2015). The SDoH factors they included were: income, education, subjective social status, serious psychological distress, access to health care and social support. These closely align with the key SDoH factors described by leading health organisations (AIHW, 2016; CDC, 2013; WHO, 2011).

Although Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) demonstrated an unequivocal interdependence between T2DM and SDoH, they did not indicate whether the participants regarded the SDoH-related issues as barriers to effective T2DM self-management. In contrast, Gimpel et al. (2010) used focus groups to evaluate the effectiveness of CHWs employed to screen and address the social and economic concerns of individuals with or at risk of T2DM and depression. Their SDoH screen was completed using a modified health risk assessment survey (

). The findings indicated the primary concerns of participants were condition-specific and self-management education, financial constraints, effective communication, respect, access to medication and transport. The qualitative nature of data collection enabled participants to share their personal experiences about how poor SDoH and social vulnerability affected their self-management of T2DM.

Social vulnerability information was collected retrospectively by Loh et al. (2015) (Table 3.4). Identifying SDoH-related issues in a retrospective manner, such as reviewing medical records and patient encounter data, as done by Loh et al., possibly negates articulation of current barriers to T2DM self-management, and may reflect the researchers' interpretation of SDoH-

related barriers rather than the actual barriers encountered by the person with T2DM. Focusing on perceived barriers to T2DM self-management would enable personal insights based on lived experience and current circumstances to be explored and documented (Liamputtong, 2013).

Rosland et al. (2014) asked about current situations and perceived barriers to self-management using a self-administered survey. This survey specifically assessed the perspectives of people with diabetes (Kaiser Permanente, 2005), and is part of a longitudinal study in Northern California (Kaiser Permanente, 2017; Moffet et al., 2009). The long but comprehensive survey (185 questions) incorporated; income, employment, education level, health literacy, transport, healthcare access, social gradient, social support, social exclusion, emotional distress, early life, housing and food security. Using personal perspectives on well-known SDoH could bring greater meaning and relevance to identifying SDoH-related barriers to the self-management of T2DM.

Rose (2005) also assessed patient views about barriers to T2DM self-management. The study was undertaken to inform the development of a tool to measure the socioeconomic barriers for people with diabetes. Participants in the study completed a phone survey, which used a five-point Likert scale to assess socioeconomic barriers to diabetes self-management. The findings were inconclusive, with sample size inaccuracy identified as a possible cause. Nonetheless, the author stressed the need to investigate the socioeconomic impact on diabetes outcomes and discussed the importance of continued progression on a reliable and valid measure of socioeconomic barriers to diabetes self-care (Rose, 2005).

Employment and income were two of the most frequently assessed SDoH (7/9 and 9/9, respectively). These SDoH constituents are interrelated because employment status can affect level of income, and insufficient income can increase financial constraints. The three studies that included financial constraints (Gimpel et al., 2010; Rose, 2005; Rosland et al., 2014)

incorporated the consequences of personal income status, which provided some insights into how this SDoH factor can be a barrier to T2DM self-management.

Lack of income and financial constraints also limit healthcare access when people cannot afford adequate health care (Keleher & MacDougall, 2016; WHO, 2003). Limited access to healthcare is a known barrier to achieving good health (WHO, 2011). All of the reviewed studies included access to medical/health care, which highlights the importance of asking people about their healthcare access and prioritising it in an SDoH assessment.

Ability to access health services is also limited by a lack of transport (Keleher & MacDougall, 2016; New South Wales Council of Social Service[NCOSS], 2012). This association is widely acknowledged throughout the literature (AIHW, 2016; WHO, 2011, 2003). Rosland et al. (2014) qualified this by including questions on how transport deficits contribute to reduced healthcare access. Despite the well-defined relationship between transport and healthcare access, only three studies included transport in their SDoH screening (Table 3.3).

Insufficient transport, employment and income can also exacerbate social exclusion as a lack of these can inhibit people's ability to access social networks (Keleher & MacDougall, 2016). Seven of the nine reviewed studies incorporated social support, and Rosland et al. (2014) also included social exclusion. The interaction between social support, social exclusion and T2DM management was evidenced in Strom and Egede's (2012) systematic literature review. They concluded that higher levels of social support contributed to positive T2DM outcomes and the associated lifestyle behaviours.

Healthy lifestyle behaviours are integral to optimal T2DM self-management (Egger, Binns, & Rossner, 2011; RACGP, 2016). In addition, effective diabetes self-management depends on adequate health literacy, which is augmented by quality education (Kim, 2016; Kim & Lee,

2016). Education is a widely recognised SDoH factor (AIHW, 2016; CDC, 2013; WHO, 2011); accordingly, seven of the nine reviewed studies included education when assessing an individual's SDoH.

Rosland et al. (2014) and Rose (2005) combined education and health literacy with individual perspectives by considering the reading ability and comprehension of their study participants. This suggests that screening for health literacy in place of educational attainment may be a more informative inclusion in an SDoH assessment. Wallace, Carlson, Malone, Joyner, and Dewalt (2010) and Welch, Van Geest, and Caskey (2011) advocated for health literacy rather than education level, to be incorporated into patient screening. Their use of health literacy assessment tools negated interpretation of education quality and level and allowed for a more current and relevant assessment to be completed. Of note, the authors did acknowledge the limitations of health literacy screening tools (Wallace et al., 2010; Welch et al., 2011).

Interestingly, despite the importance of considering health literacy, the reviewed studies appeared to provide minimal assistance to help participants complete SDoH screens. Rose (2005) conducted phone interviews, which would have enabled provision of verbal explanations when needed. The remaining studies relied on written responses, which could increase the likelihood of systematic measurement error (Büettner & Muller, 2011) and contribute to inaccurate responses.

Social positioning is a well-established SDoH (AIHW, 2016; CDC, 2013; WHO, 2011). Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) and Rosland et al. (2014) used an assessment tool to measure social positioning. This SDoH assessment item was subjective and asked individuals to indicate their perceived position within society. It was not specified how this perception extended to T2DM self-management; however, social positioning has a well-known

relationship with health status (Marmot, 2003; WHO, 2003) and renders it deserving of more in-depth investigation into the value of including it in an SDoH assessment.

Food security, housing, addiction and early life are also well-recognised SDoH (AIHW, 2016; CDC, 2013; Marmot, 2003; WHO, 2011, 2003), as is their relationship with the self-management of T2DM (WHO, 2003; Yu & Raphael, 2004). Rosland et al. (2014) were the only authors to consider these SDoH factors. However, because of their well-known association to health, their inclusion in an SDoH assessment also requires further exploration.

Stress is arguably one of the most critical aspects to consider when identifying an individual's SDoH (Marmot & Wilkinson, 2006; WHO, 2003)-related barriers to T2DM self-management. It can occur as a 'result of social and psychological circumstances' (WHO, 2003). The studies by Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) and Rosland et al. (2014) incorporated stress in their SDoH assessment. They measured it in individually relevant terms; however, the perceived impact of stress on T2DM self-management could not be interpreted.

Stress is increased with the coexistence of insufficient income, unemployment, social exclusion, inadequate transport, poor housing and food insecurity. This harmful accumulation of SDoH factors leads to people feeling they lack control over their lives (Keleher & MacDougall, 2016; WHO, 2003); in turn, this affects T2DM self-management (Brown et al., 2004; WHO, 2003; Yu & Raphael, 2004).

The evident multi-factorial and interconnected nature of SDoH confirms that no single SDoH constituent works in isolation (Brown et al., 2004). Consequently, the convoluted and expansive impact of the SDoH combined with their apparent effect on T2DM self-management should be considered collectively when identifying SDoH-related barriers in the context of diabetes self-care.

3.2.8.2 Addressing the identified social need

Very few tangible strategies for addressing the identified SDoH-related issues were identified. Individual SDoH circumstances and whether they were perceived as barriers to T2DM self-management appear to be central to how and what should be addressed. In addition, targeted and formalised integration of SDoH into clinical care through collaboration and partnerships between health services, community supports and social services is required (Baum et al., 2013; Freeman, Javanparast, Baum, Ziersch, & Mackean, 2018; Newman et al., 2015). Though this provides an informative starting point, further work in the area is needed, including the development of guidelines and policies (Baum et al., 2013).

Community health workers in Gimpel et al.'s study (2010) provided support based on the patient's perception of the identified SDoH issues as barriers to T2DM self-management. In addition to providing condition-specific education, the CHWs developed individualised patient care plans and provided support such as referrals to social and healthcare services, assistance with medication and screening, transport assistance, translation services, health education, home visits, appointment reminders and supported links to other community services. Gimpel et al. (2010) also suggested group-based interventions could be helpful and have a role in empowering participants by improving T2DM knowledge, self-management capacity and providing condition-specific social support.

Social support was identified by Rosland et al. (2014) as being linked with lifestyle-related self-management behaviours. The authors acknowledge the worthiness of future investigation into the provision of social support to improve diabetes self-management. Appointing CHWs to focus on enhancing social support could help address SDoH-related barriers to T2DM self-management. This notion is supported by J. Freeman (2016) and McCalmont et al. (2016) who advocate for CHWs to work as part of the clinical team to address SDoH-related issues.

It is also noteworthy that participation in the program discussed by Gimpel et al. (2010) included a cost reduction of medications and treatment services. This is an important inclusion as it addresses barriers associated with limited income and financial constraints. This strategy was depicted as an enabler to T2DM self-management by study participants.

Though not specific to T2DM, momentum towards addressing SDoH in clinical settings has commenced in Canada and the USA (Andermann, 2013, 2016, 2018; Page-Reeves et al., 2016). In particular, the ‘Community Links Evidence to Action Research’ (CLEAR) Collaboration incorporates SDoH factors in the toolkit they have developed. The CLEAR Collaboration toolkit provides general direction on SDoH screening domains in clinical settings. It also outlines a ‘patient level, practice level and community level’ approach to addressing identified social issues (Andermann, 2013). Health professionals who have used the toolkit indicate that it provides contextualised guidance about how to screen for and address the SDoH-related issues of vulnerable patients in clinical settings (Naz, Rosenberg, Andersson, Labonté, & Andermann, 2016). The toolkit was not specifically developed for T2DM; therefore, determining its applicability and clinical relevance is required before extrapolating it into diabetes care.

Combining the CLEAR toolkit approach with including CHWs as part of the clinical team to specifically address SDoH issues may enhance the recommendations provided by the CLEAR Collaboration (Andermann, 2013). Benefits similar to this were identified by Hunt, Grant, and Appel (2011). Their review of 16 articles found obvious benefits of incorporating CHWs into T2DM management because of their capacity to work at patient, health professional, health clinic and community levels. A broad interpretation of CHW was applied in the Hunt et al. (2011) article by using the term ‘community health advisor’ (CHA). Their definition of a CHA included CHWs, peer and various health and diabetes support workers. The CHAs provided

transport, support for appointments and emotional issues, various social support activities and assistance with literacy and comprehension (Hunt et al., 2011). The authors concluded that CHA's services are highly effective and valued by both participants and healthcare providers. Similar assistance was described in the reviewed study by Gimpel et al. (2010). The value of including CHW/CHA input to address SDoH-related issues for individuals with T2DM and in clinical settings appears persuasive and is well supported (Andermann, 2016; Gimpel et al., 2010; Hunt et al., 2011; Naz et al., 2016).

Supporting client literacy and comprehension is an integral role of a CHW/CHA (Gimpel et al., 2010; Hunt et al., 2011). People with lower levels of education are accurately presumed to have worse health literacy (Keleher & MacDougall, 2016; Kim, 2016; Wallace et al., 2010). The 'inability for individuals to access, understand, appraise and communicate health information within the healthcare system and the wider community' (Keleher & MacDougall, 2016) contributes to reduced healthcare access, suboptimal self-management (Welch et al., 2011) and contributes to a cascade of poor health outcomes resulting from poor SDoH. Poor health literacy leads to an inability to optimise diabetes education and support services and, therefore, can lead to a deficit in diabetes knowledge and understanding. In turn, this can affect an individual's ability to achieve optimal T2DM self-management (Bains & Egede, 2011; Schillinger, Barton, Karter, Wang, & Adler, 2006). The quality of diabetes care is, therefore, dependent on a health professional's ability to accommodate for client health literacy levels (Wallace et al., 2010).

The benefit of including diabetes education that is sensitive to health literacy is supported by Kim and Lee (2016). Their systematic review and meta-analysis of 13 relevant articles focused on strategies to accommodate for patients with low health literacy. They found an overall improvement in glycaemic management when health literacy was addressed. This provides

convincing support for the integration of health literacy into diabetes self-management interventions (Kim & Lee, 2016; Wallace et al., 2010).

3.2.9 Limitations

The term ‘social determinants of health’ was only defined in the MEDLINE electronic database at the beginning of 2014, although it entered mainstream literature in approximately 2003. Prior to 2014 the phrases ‘socio-economic status’ , ‘socioeconomic factors’ and ‘social conditions’ were used. To overcome this, a variety of synonyms were used in the search strategy; however it is possible some relevant literature may have been missed.

Including the terms ‘identifying’ and ‘addressing’ (and their synonyms) in the electronic database search inaccurately narrowed the search results to zero, and subsequently, they were not used. Similarly, an unmanageable amount of literature was produced when the synonyms of ‘health equity’, ‘equality’, ‘inequity’ and ‘inequality’ were included. Consequently, manual screening of titles and abstracts was necessary prior to applying the inclusion and exclusion criteria. This may have limited the search and is, therefore, worthy of acknowledgement.

Use of the same dataset in the five articles by Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) limited the breadth of the current literature review by reducing the total number of approaches used to identify the SDoH of individuals with T2DM in clinical settings. Although SDoH were only identified once, each study used different statistical analyses to describe separate interactions between SDoH and T2DM, and thus, all were included in the review.

Expanding the search to include other chronic diseases such as heart disease and stroke may have yielded more results as the influence of SDoH on these conditions is also acknowledged (WHO, 2003), however, this would have detracted from the specific focus on T2DM.

Furthermore, this limitation also sheds light on the paucity of research currently done on SDoH in clinical settings, where T2DM is usually managed.

3.2.10 Conclusion

Social determinants of health and T2DM are interdependent, and inadequate self-management of T2DM is more common in those with poor SDoH (AIHW, 2014, 2016). Consequently, the benefit of considering SDoH in conjunction with T2DM self-management was evident in the literature. The aim of the literature review was to explore methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM. The literature did not reveal any specific guidelines; however, synthesis' of the reviewed studies and associated literature revealed informative direction for future research.

Identifying social need in a clinical setting requires an individualised approach. Considering the individual's personal circumstances and whether they perceive the SDoH-related issue as a barrier to T2DM self-management brings relevance to well-recognised SDoH. Thereby, incorporating an individualised approach to assess SDoH-related barriers to T2DM self-management into clinical settings could enable a more targeted approach to usual clinical care.

Considering health literacy rather than education level may enhance the usability and application of SDoH assessments by allowing for improved comprehension of the terminology frequently used in T2DM care. Furthermore, accommodating for health literacy is crucial when identifying SDoH-related barriers and when addressing SDoH-related issues. This, combined with the expertise and skills of CHWs, may be advantageous when devising strategies to incorporate SDoH into the clinical management of T2DM.

The impetus towards including SDoH in clinical settings has begun in Canada and the USA (Andermann, 2013, 2016; Page-Reeves et al., 2016), and the strategies outlined in the CLEAR toolkit (Andermann, 2013) could be contextualised and then incorporated into the clinical management of T2DM.

Current efforts to advance T2DM management could be enhanced by incorporating innovative approaches that include the SDoH as part of standard clinical practice. Contextualising and progressing current approaches used in clinical settings to identify and address SDoH-related barriers to T2DM self-management could enable this approach. Furthermore, it is an opportunity to expand strategies that address SDoH and contribute to improved health equity in general.

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3.2.12 Conflict of interest

All authors declare that there are no conflicts of interest.

3.2.13 Author's contributions

The review was led by AF. SD and FB provided methodological guidance, including design, search strategy, appraisal and synthesis of the reviewed articles. Literature searching was conducted by AF. This included searching databases, importing records, removing duplicates and record screening. Appraisal of article quality, synthesis and interpretation of findings was conducted by AF, with final results confirmed by SD and FB. AF led the writing of the review. SD, FB and TD provided guidance on the overall content and structure of the literature review. SD, FB and TD were responsible for critically revising the literature review. All authors (AF, SD, FB and TD) read and approved the final manuscript.

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3.4 Literature update

The initial search was conducted for literature published between 2002 and 2017.¹ A repeated search was conducted on 30 December 2021 for literature published between 2017 and December 2021 to ensure all current literature was included in this thesis. The systematic process reported in the initial literature review was replicated (see Section 3.2.6). The exact keywords, synonyms and truncations were used for searching the electronic databases. The inclusion and exclusion criteria, critical review of the articles, data extraction and analysis utilised in the initial literature review were applied again in the literature update.

3.4.1 Search results

A total of 294 articles were screened by title and abstract against the inclusion and exclusion criteria. Of those, six were retained for full text screening against the inclusion and exclusion criteria; two were included in the literature update.^{2,3} The search identified the initial literature review reported in Chapter 3,¹ which was also excluded from the literature update.

3.4.2 Summary of findings

As with the initial literature review, both studies included in the literature update did not identify an individual's SDoH for the purpose of incorporating them into individual clinical care for people with T2DM. Instead, they collected SDoH information for the purpose of their individual study aims. Accordingly, interpretive analysis was again necessary to determine how an individual's SDoH was assessed, when it was assessed and what particular SDoH were included.

Campbell et al.² used participant data from their previous studies ($N = 615$). Interestingly, these studies were included in the initial literature review.^{1,4-8} On recruitment, study participants completed a series of SDoH-related assessments. A summary is provided in Table 3.5 (Walker

et al. studies). The study included in the literature update aimed to examine whether the social adaptability index (SAI)⁹ provided superior explanatory models for self-care and diabetes outcomes. They utilised the previously collected data on household income, years of education and employment status, which were scored according to the SAI. A series of multilinear regression models measured the association between the SAI and self-care behaviours. Their statistical analysis found no significant relationship between the SAI and self-care behaviours. This is a noteworthy finding; however, it is beyond the scope of this literature update to interpret further. The purpose of the literature update was to identify new (post-initial search) methods and strategies used to assess and respond to the SDoH of individuals with T2DM in clinical settings. While income, education level and employment status are well-known SDoH¹⁰ and, therefore, a necessary inclusion when assessing an individual's SDoH, the use of 'non-current' data and quantitative methodology in Campbell et al.² study meant the findings did not add to the aim of the initial literature review reported in this thesis.¹

The study by Santana Amaral et al.³ aimed to identify the factors associated with level of T2DM knowledge using a quantitative methodology. SDoH-related information was collected before study commencement, in participants' home environments, via interviews using socio-demographic and clinical questionnaires. Relevant to SDoH were education level, occupation, family income and housing (i.e., number of residents in a house). The statistical analysis demonstrated that higher socioeconomic and educational characteristics were two factors that increased the odds of improved diabetes knowledge. This finding is not surprising because the link between education level, SES and T2DM understanding is well established.¹¹⁻¹³ The quantitative nature of the study provided little contribution to the aim of the initial literature review. However, data collection conducted in a person's residence may create a more comfortable environment, as was attested by Santana Amaral et al.³ However, practically, it may raise privacy concerns for the person with T2DM and safety issues for those collecting

the data. Further, this approach may not be sustainable or practical for T2DM services and would depend on available resources. These elements would need to be considered if entry into private residences were conducted. Finally, neither study in the literature update considered responding to the identified SDoH issues. Table 3.6 summarises the articles included in the literature update.

3.4.3 Conclusion

The studies in the literature update have added no further insights about utilising clinical settings to identify and respond to the SDoH of individuals with T2DM. Importantly though, the lack of progression specific to T2DM supports the necessity of conducting further research on this topic. However, it should be noted that since 2017, numerous studies and reviews have investigated and discussed assessing the SDoH at the individual level in clinical settings.¹⁴⁻¹⁸ This literature is not specific to T2DM but has added substance to the content of this thesis and has been cited accordingly throughout.

Table 3.6. Summary of articles reviewed in literature update

Citation	Title abbreviation	Aim	Design	Methodology	Setting and sample	Findings	Methods and strategies to identify and address SDoH issues
Campbell et al. (2017) ²	Use of SAI to explain self-care and diabetes outcomes	To examine whether the SAI alone or its components provide a better explanatory model for self-care and diabetes outcomes	Cross-sectional	Multilinear regression	Two primary healthcare settings, South Carolina, USA (N = 615)	In populations with T2DM, the SAI was not significantly associated with any self-care behaviours	Identifying Validated questionnaires including SDoH factors and a SAI score; SDoH factors included education level, employment status and income Addressing Not included
Santana Amaral et al. (2021) ³	Factors associated with knowledge of the disease in people with T2DM	To identify factors associated with the knowledge level of the disease in people with T2DM	Cross-sectional	Quantitative analysis of data, descriptive analysis, Shapiro–Wilk test, Pearson’s chi-squared test, logic regression model	Primary healthcare network, Northeast Brazil (N = 412)	Socioeconomic and educational characteristics are factors contributing to T2DM knowledge	Identifying Interviews with a socio-demographic questionnaire; SDoH factors included education level, occupation, family income, housing (number of residents in-house) Addressing Recommendations made to improve T2DM education quality

Note. SAI = social adaptability index; T2DM = type 2 diabetes mellitus; SDoH = social determinants of health; USA = United States of America.

3.5 Implications for practice

The undeniable connection between T2DM and SDoH highlights an important research area. While current literature calls for SDoH to be incorporated into the clinical care of individuals with T2DM, there is little understanding about how this might be done. Consequently, the opportunity arises to investigate this topic. Once understood and integrated into practice, improved outcomes for people with T2DM may be more achievable due to the potential mitigation of SDoH-related self-management barriers.

3.6 Chapter summary

Chapter 3 has reviewed the literature on incorporating SDoH into the clinical management of T2DM. This highlighted a need for research specific to T2DM when incorporating SDoH into individual and clinical care. Chapter 3 also provided an update on the current literature relating to this topic.

Chapter 4 will detail the research conducted concerning Indigenous Australians and T2DM. This includes the perspectives of Indigenous people with diabetes (IPWD) and Indigenous health workers (IHWs).

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Chapter 4: Indigenous Australians

4.1 Chapter outline

Chapter 4 contains the first of the three perspectives on incorporating SDoH into the individual clinical management of T2DM—that is, the perspective of Indigenous Australians. The chapter begins with Publication 3: ‘Poverty and inequality in Australia’, which considers SDoH in individual clinical care, particularly regarding Aboriginal and Torres Strait Islander people. Following that is a visual representation of the study conducted with Indigenous Australians. Publication 4 is then included: ‘Indigenous Australian perspectives on incorporating the social determinants of health into the clinical management of type 2 diabetes’. The implications for practice of the research findings are then presented. Chapter 4 closes with a summary and a brief introduction to Chapter 5.

4.2 Publication 3: Poverty and inequality in Australia.

Overview of Publication 3 ¹

This short discussion piece was written to create awareness of the poverty and inequality that currently exists in Australia, particularly among Aboriginal and Torres Strait Islander people. It was published under the 'Practical Practice Pointers' category of *The Australian Journal of Rural Health*. A comparison is made to extreme poverty in Africa, and attention is drawn to the relative poverty inflicted on some of the Australian population. It finishes with 'Practical Practice Pointers' for people who work with Aboriginal and Torres Strait Islander people who have chronic diseases, such as T2DM. These pointers are intended to help incorporate SDoH into usual clinical care.

Publication details

Status: PUBLISHED. This article has been published in the *Australian Journal of Rural Health* (see Appendix D).

Citation: Frier A, Devine S. Poverty and inequality in Australia. *Australian Journal of Rural Health*. 2020;28(1):94-5. Available from: <https://doi.org/10.1111/ajr.12571>

Contribution of authors: A Frier (conceptualisation, writing of original draft), S Devine (reviewing and editing, supervision).

Note. The referencing and formatting in this publication is consistent with the journal requirements and, therefore, may be inconsistent with the thesis referencing and formatting.

4.2.1 Introduction

Bono conducted a talk for the TED community in 2013 about extreme poverty, health and inequality in Africa.¹ The level of poverty amongst Australia's poor and socially disadvantaged pales in comparison. What is most concerning however, is that poverty at all in Australia seems inconceivable because it is a developed nation with one of the world's richest economies.² Nonetheless, when applying the Australian measures of poverty, health and social disadvantage, it becomes clear that poverty is very real in some Australian populations, particularly among Aboriginal and Torres Strait Islander people. In parts of remote Australia, poverty rates reach almost 54%.³

Australian measures of poverty relate to standard of living, with income being the central indicator. In actuality, poverty is much more multidimensional than this.^{3,4} Alarming, a more holistic approach to understanding poverty in Australia may well indicate that poverty levels are even higher than currently described.⁴ The occurrence of poverty in a developed nation accentuates its complexity and highlights the multi-factorial components that contribute to poor health, even in developed countries such as Australia.

Many have written about the relationship between poverty and poor health, with poverty resulting from a culmination of inadequate "social determinants of health" such as income, employment, housing, education, transport, social support and access to health care.⁵

Social determinants of health for Aboriginal and Torres Strait Islander people also encompass culture, spirituality, family and connection to traditional land.⁵ When considering the social determinants of Aboriginal and Torres Strait Islander people's health, this extended view should be considered. This shift from a biomedical model requires a two-way dialogue between Aboriginal and Torres Strait Islander people and health professionals to incorporate traditional knowledge systems.

The health disparities between Aboriginal and Torres Strait Islander people and non-Aboriginal and Torres Strait Islander Australians are widely documented.⁵ Research in Australia is also clear about the relationship between social determinants of health and chronic diseases such as type 2 diabetes (T2DM).⁵ Aboriginal and Torres Strait Islander people have diabetes rates 3-6 times higher than that of the non-Aboriginal and Torres Strait Islander population and are amongst the most socially disadvantaged in the country.⁵ Health professionals working with Aboriginal and Torres Strait Islander people affected by poverty and inequality should apply an approach to client care that accommodates for the influence of the social determinants of health. An approach considerate to the social determinants of health could help to identify the multiple areas impacting on health and therefore provide a platform for more effective client care. Understanding inequalities related to the social determinants of health is essential for effective health management and care. This is particularly relevant for chronic conditions such as T2DM because of their strong relationship with lifestyle and living conditions.⁵

Australia may not have Bono to create awareness and advocate for continued action on poverty and social disadvantage among Aboriginal and Torres Strait Islander people. However, because it is a developed nation, continued advocacy and action on poverty and the related disparities between Aboriginal and Torres Strait Islander people and non-Aboriginal and Torres Strait Islander Australians could contribute to positive change, and help to eliminate the unnecessary and avoidable poverty and inequality in Australia. Poverty and inequality in a developed nation such as Australia are arguably as disgraceful as they are in Africa.¹

4.2.2 What can ‘on the ground’ health professionals do?

1. Always consider social determinants of health when developing care plans.
2. Ask Yourself:
 - Is this person able to do what I suggest?
 - Have I explained this in a way they understand?
 - Can they afford it?
 - Do they have transport?
 - What other social and economic factors might hinder them?
 - Are there family, cultural or spiritual aspects that I should consider?
 - How can I help this person to deal with these issues?
3. Train and involve Aboriginal and Torres Strait Islander health practitioners.
4. Work with local people towards solutions to local social determinants of health problems.
5. Create awareness and advocate for action on poverty and inequality in your local community.
6. Participate in council and community meetings and keep action on poverty and inequality on local and national agendas.

4.2.3 Conflict of interest

All authors declare that there are no disclosures or conflicts of interest.

4.3 Publication 3: references

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4.4 Publication 4: Indigenous Australian perspectives on incorporating social determinants of health into the clinical management of type 2 diabetes.

Overview of Publication 4 ²

The first viewpoint reported in this thesis is how SDoH could be incorporated into the clinical management of T2DM from an Indigenous Australian perspective. Publication 4 details the aims, methods and results of the study and discusses the identified themes. The study's limitations are also reported. Indigenous Australian perspectives are captured through the lenses of IHWs and IPWDs. Five themes revolving around a central theme of providing a culturally responsive service were identified (six in total). Cultural responsiveness, flexibility when providing support to IPWDs, appropriate education for IPWDs and HPs, support mechanisms for IPWDs, suitable transport and the availability of support services in the community are all essential components of incorporating SDoH into the clinical management of T2DM for Indigenous Australians. Furthermore, it was identified that the holistic view of health held by Indigenous people innately includes the SDoH. The publication concludes by suggesting that incorporating SDoH into clinical care for IPWD may contribute to narrowing the unacceptably large health gap between Indigenous and non-Indigenous Australians. Infographic 4.1 provides a visual representation of the study.

Publication details

Status: PUBLISHED. This article is published in *Rural and Remote Health* (see Appendix E).

Citation: Frier A, Devine S, McBain-Rigg K, Barnett F, Cassady Z, Dunning T, et al. Indigenous Australian perspectives on incorporating the social determinants of health into the clinical management of type 2 diabetes. *Rural and Remote Health*. 2021;21(2): Article 6352. Available from: <https://doi.org/10.22605/RRH6352>


Contribution of authors: A Frier (conceptualisation, participant recruitment, data collection and analysis, writing of original draft), S Devine (conceptualisation, data analysis, reviewing and editing, supervision), K McBain-Rigg (data analysis, reviewing and editing, supervision), F Barnett (conceptualisation, reviewing and editing, supervision), T Dunning (reviewing and editing, supervision), Z Cassady (participant recruitment, data collection), R Reese (participant recruitment, data collection).

Note. The referencing and formatting in this publication is consistent with the journal requirements and, therefore, may be inconsistent with the thesis referencing and formatting.

Infographic 4.1. Indigenous Australian perspectives on incorporating social determinants of health into the clinical management of type 2 diabetes

INDIGENOUS AUSTRALIAN PERSPECTIVES ON INCORPORATING THE SOCIAL DETERMINANTS OF HEALTH INTO THE CLINICAL MANAGEMENT OF TYPE 2 DIABETES.

Background



Type 2 diabetes and social disadvantage are directly related - Social disadvantage is an accumulation of undesirable social determinants of health (1, 2).

In Australia, social disadvantage and type 2 diabetes are highest amongst the Indigenous population (2).

Health for Indigenous Australians encompasses social and cultural determinants of health (2, 3, 4).

Indigenous Australians have diabetes rates 3 -6 times higher than the non-Indigenous, and are among the most socially disadvantaged in the country, with the worst social determinants of health (2).

Social determinants of health are usually considered at a population level - not at an individual or clinical level (5).

Aims

This study aimed to draw on the combined perspectives of Indigenous people with diabetes and Indigenous health workers to;

1 Explore social determinants of health related self- management barriers and facilitators to managing type 2 diabetes from an Indigenous Australian perspective.

2 Explore strategies to incorporate the social determinants of health into usual clinical care for Indigenous Australian people who have type 2 diabetes.

Research design

Qualitative study using an exploratory, descriptive approach.

Infographic 4.1. Continued

Methods

Cultural advisors and cultural mentors guided all stages of the research.

Interviews and small yarning circles.

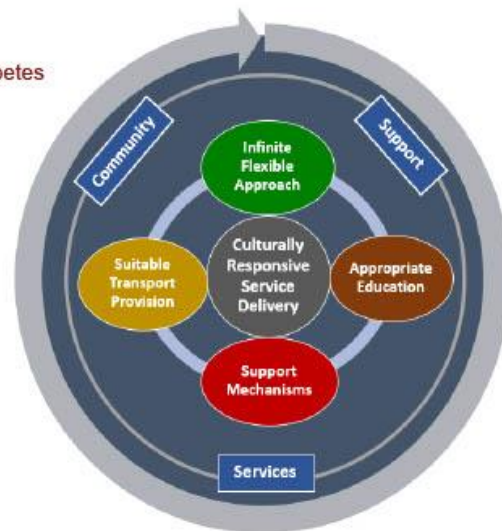
7 Indigenous health workers and 7 Indigenous people with diabetes.

Deductive and inductive thematic analysis (NVivo 12)

Findings

Health services for Indigenous Australians with type 2 diabetes should revolve around 'Culturally Responsive Service Delivery' (8) and should consider;

- An 'Infinite Flexible Approach' to accommodate for the holistic nature of Indigenous Australian health.
- 'Appropriate Education' for health professionals to understand Australian Indigenous culture, and for Indigenous people to understand diabetes.
- 'Support Mechanisms' which can include family, friends, health professionals and community supports.
- 'Suitable Transport Provision' that will enable Indigenous Australians access to the health care they need.
- 'Community Support Services' that are accessible to Indigenous Australians, and work collaboratively with other community services to provide care and support.



Limitations



Small number of participants in the study.



Not all participants were contactable for member checking.



Representative of the North Queensland population only.

Conclusion

Indigenous Australians have a holistic view of health that innately includes the social determinants of health. Therefore the approach to incorporating social determinants of health into the clinical management of people who have type 2 diabetes should reflect this holistic approach.

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- Ethics Approval - Queensland Health HREC/18/QTHS/128 and JCU H7480.

Note. Created by ROUNDHOUSE The Creative Agency.

4.4.1 Abstract

4.4.1.1 Introduction

Type 2 diabetes mellitus and social disadvantage are related. In Australia, this association is most pronounced among Indigenous Australians (Aboriginal and Torres Strait Islander peoples). Indigenous Australians are among the most socially disadvantaged in the country, having the worst social determinants of health (SDoH). SDoH are typically addressed at a population level, and not on an individual or a clinical level. However, the SDoH-related needs of individuals also require attention. The adverse link between type 2 diabetes and SDoH suggests that simultaneous consideration at an individual clinical level may be beneficial for type 2 diabetes care and self-management. Identifying and addressing SDoH-related barriers to type 2 diabetes self-management may augment current care for Indigenous Australians.

This study aimed to combine the perspectives of Indigenous Australians with type 2 diabetes and Indigenous health workers to explore the SDoH-related barriers and facilitators to self-managing type 2 diabetes and how SDoH could be incorporated into the usual clinical care for Indigenous Australians with type 2 diabetes.

4.4.1.2 Methods

Under the guidance of a cultural advisor and Indigenous health workers, seven Indigenous Australians with type 2 diabetes and seven Indigenous health workers from rural and remote north Queensland, Australia, participated in a series of semi-structured, in-depth face-to-face interviews and yarning circles. A clinical yarning approach to data collection was used, and both an inductive and a deductive data analysis were applied. Data were analysed, and themes were identified using Nvivo v12.

4.4.1.3 Results

Study participants described a holistic view of health that innately includes SDoH. Specific to type 2 diabetes care, participants identified that culturally responsive service delivery, suitable transport provision, an infinite flexible approach to accommodate for individuals' unique social circumstances, appropriate client education and appropriate cultural education for health professionals, support mechanisms and community support services were all essential components. These were not seen as separate entities, but as interrelated, and all were required in order to incorporate SDoH into care for Indigenous Australians with type 2 diabetes.

4.4.1.4 Conclusion

SDoH are implicit to the Indigenous Australian holistic view of health. Consequently, an approach to type 2 diabetes care that complements this view by simultaneously considering SDoH and usual type 2 diabetes clinical management could lead to enhanced type 2 diabetes care and self-management for Indigenous Australians.

Keywords: Aboriginal, Australia, health workers, Indigenous Australians, social determinants of health, Torres Strait Islander, type 2 diabetes

4.4.2 Introduction

Type 2 diabetes mellitus and social disadvantage are related; that is, when people live in disadvantaged situations, they are more likely to develop type 2 diabetes.¹ In Australia, this association is highest among Indigenous Australians (Aboriginal and Torres Strait Islander peoples). Indigenous Australians have type 2 diabetes rates 3–6 times higher than that of non-Indigenous Australians and are among the most socially disadvantaged in the country.²⁻⁴

Social disadvantage is an accumulation of suboptimal social determinants of health (SDoH), which include income, employment, housing, education, transport, social support and access to health care.⁵ For Indigenous Australians, social determinants also combine with cultural determinants to influence health. Cultural determinants include culture, spirituality, family and connection to traditional land.^{2,4,6}

SDoH are typically addressed at a population level, with the aim of achieving sustained health equity, social justice and generational improvement of people's lives.^{5,7,8} While the necessity of a population approach is difficult to contest, people's immediate, idiosyncratic health needs must also be addressed. The connection between SDoH and the increased prevalence of type 2 diabetes suggests simultaneous consideration of SDoH and type 2 diabetes, at individual and clinical levels, may be beneficial. Addressing the direct relationship between poor SDoH and type 2 diabetes management⁹ warrants investigation, particularly in an Indigenous Australian context.

Both Indigenous and non-Indigenous Australians with type 2 diabetes are expected to understand the disease and achieve management goals.¹⁰ Effective diabetes management often involves substantial lifestyle adjustment, which can be an impossible task for people with poor SDoH. The combined challenge of lifestyle change and poor SDoH could be reduced for

Indigenous Australians if the intricacies of culture, spirit, family and connection to land² were incorporated into type 2 diabetes care.

Routinely considering SDoH when providing type 2 diabetes care, and understanding how these affect an Indigenous person's way of life, could help health professionals and other service providers develop more contextualised interventions. Subsequently, identifying and addressing the associated self-management barriers could assist Indigenous Australians in achieving their type 2 diabetes management goals.

To date, clear guidance on how to include SDoH into clinical health management has been scarce, which may stem from an overall deficit in organisational level guidance, such as policies and procedures for taking action on SDoH in healthcare settings.¹¹ However, multinational momentum towards screening for and addressing SDoH issues in clinical healthcare settings has begun.¹²⁻¹⁸ These approaches could provide helpful guidance on how to incorporate SDoH into the clinical management of type 2 diabetes. In addition, it is imperative that the perspectives of Indigenous people are considered. Specific to this study is the perspective of Indigenous Australians.

The purpose of this article is to report the viewpoints of Indigenous health professionals who work with people with type 2 diabetes (IHWs) and Indigenous Australians with type 2 diabetes (Indigenous Australians with diabetes) on how the SDoH of Indigenous Australians can be incorporated into the clinical management of type 2 diabetes.

This study aimed to draw on the combined perspectives of Indigenous Australians with diabetes and IHWs to explore:

1. the SDoH-related self-management barriers and facilitators to managing type 2 diabetes from Indigenous Australian perspectives
2. strategies to incorporate SDoH into the usual clinical care for Indigenous Australians with diabetes.

4.4.3 Methods

4.4.3.1 Design

This qualitative study used an exploratory, descriptive approach¹⁹ to combine the insights of Indigenous Australians with diabetes and IHWs. The intent was to increase understanding of how the social determinants affect Indigenous health, and the self-management of type 2 diabetes, and ways SDoH can be incorporated into the usual clinical care for Indigenous Australians. The six core values of the National Health and Medical Research Council (NHMRC) guidelines for conducting research with Aboriginal and Torres Strait Islander peoples and communities were integral to the research design. The core values are spirit and integrity, cultural continuity, equity, reciprocity, respect and responsibility.²⁰ Fidelity to the guidelines was assured through the guidance of cultural advisors, cultural mentors and cultural brokers and is documented throughout this paper.

4.4.3.2 Situating the researcher

The primary researcher (AF) is a non-Indigenous female diabetes educator and dietitian. For approximately 5 years, she lived and worked in remote Indigenous communities throughout North and Western Queensland, Australia. Currently, she resides in a regional city of North Queensland and works collaboratively with IHWs who provide outreach health services to rural

and remote communities. Being witness to the SDoH-related challenges some Indigenous Australians with diabetes endure stimulated her motivation to investigate this topic. To avoid misinterpretation of the data, a reflexive mindset was adopted, whereby self-reflection and self-awareness of personal context and experiences were maintained throughout all stages of the research project.²¹ Furthermore, to enhance cultural appropriateness, she consulted regularly with cultural advisors and cultural mentors and worked with cultural brokers on all aspects of the project.

4.4.3.3 Setting

Two health services, both with offices in Cairns and Townsville (North Queensland), participated in the study. One is a government service, the other a not-for-profit organisation. Both services provide diabetes care to regional, rural and remote Indigenous communities within their service districts as part of their regular service provision (seven communities in total). They are not community-controlled health services; however, they prioritise the needs of Indigenous Australians by including IHWs on the team, providing regular outreach services to Indigenous communities and working with local Indigenous services and agencies.

Data were collected through small yarning circles and individual interviews. AF conducted all interviews and yarning circles. In accordance with cultural guidance, Indigenous Australians with diabetes only participated when an IHW was present, or if the IHW ascertained that they were comfortable and the circumstances were appropriate for autonomous participation. Consequently, to ensure culturally safe voluntary participation, it was necessary for AF to join the IHWs (ZC and RR) on their scheduled community visits.

The interviews and yarning circles were conducted in locations where participants felt most comfortable. The locations included meeting rooms, waiting rooms, outdoor grassed areas and private residences.

4.4.3.4 Participant recruitment

A non-probability, purposive sampling approach¹⁹ was adopted. This was to ensure all participants were IHWs who worked with people who have type 2 diabetes or Indigenous Australians with diabetes. Study details were provided to all participants in written form. Attention was paid to participant literacy level (particularly Indigenous Australians with diabetes); consequently, a detailed verbal explanation was also provided to ensure full cognizance of the study. In total, 14 people participated in the study (seven Indigenous Australians with diabetes and seven IHWs). All study participants were over 18 years of age. Written consent was attained prior to participation. Before providing consent, AF read the consent form to participants and provided a verbal explanation (if desired).

4.4.3.4.1 Indigenous Australians with diabetes

AF was a member of the clinical staff in one of the participating organisations. To avoid influence, and to increase the trustworthiness of the study,¹⁹ three colleagues (two IHWs and one non-Indigenous diabetes educator) recruited all Indigenous Australians with diabetes in a face-to-face manner, independent of AF. After each individual agreed to participate, the IHWs personally introduced the Indigenous Australians with diabetes to AF prior to participation in the yarning circles or interviews.

4.4.3.4.2 Indigenous health workers

Also, to minimise influence, IHWs from the same organisation as AF were informed about the project and invited to participate through their supervisor, with emphasis placed on the voluntary nature of participation. IHWs from both organisations were then invited to participate in the study via email, which was followed up by a verbal invitation (between two days and 1 month post-email).

4.4.3.5 Data collection

Study participants were offered the choice of taking part in a yarning circle or a one-on-one interview. Demographic information, duration of diagnosis and IHW title and qualifications were collected in a short questionnaire completed prior to the yarning circles/interviews. This was collected to reflect the variety of genders, age, years of type 2 diabetes diagnosis and level of IHW experience and qualifications. There were no specific requirements for yarning circles to consist of IHWs and Indigenous Australians with diabetes separately; rather, natural formation of the groups was preferred because the aim of the study was to analyse the combined perspectives of IHWs and Indigenous Australians with diabetes.

Yarning was the most appropriate method of data collection because it enables participants to tell their stories, in their voices, based on their lived experiences.²² By incorporating aspects of clinical yarning,²³ the stories of Indigenous Australians became a vehicle to understanding their experience of type 2 diabetes. Combining traditional yarning with aspects of clinical yarning allowed for the necessary clinical information about type 2 diabetes and SDoH to be elicited in a culturally congruent manner.^{22,23}

Two one-on-one interviews (one female IHW, one male Indigenous Australian with diabetes) and five small yarning circles ($n = 2$, $n = 2$, $n = 2$, $n = 3$, $n = 3$) were conducted (see Table 4.1 participant details). Only one yarning circle ($n = 3$) was of mixed gender. This was a group of IHWs who felt comfortable participating in this manner. Gender differences between AF and all participants were discussed (prior to interview/yarning circle) with an IHW (ZC or RR), who acted as a cultural broker. One yarning circle of female Indigenous Australians with diabetes ($n = 2$) was co-facilitated by an IHW because it was decided her presence would create a more culturally safe and comfortable environment. To enable consistency in data collection,

AF conducted all interviews and yarning circles. With consent, all interviews and yarning circles were audio-recorded for future transcription.

Table 4.1. Yarning circle participant details

Yarning circle number	Indigenous health workers (<i>n</i>)	Indigenous Australians with diabetes (<i>n</i>)	Gender
1	2		2 female
2		2	2 female
3	1	1	2 male
4		3	3 female
5	3		1 male 2 female

4.4.3.6 Data analysis

Data analysis was guided by the six steps for thematic analysis outlined by Braun and Clarke:²⁴ data familiarisation, initial coding, searching for themes, reviewing themes, defining and renaming themes, and producing the report.

AF transcribed all audio recordings, which allowed for more accurate transcription and for data analysis to develop and deepen reliably. Rigour of the study was increased by a sample of these transcripts being reviewed by the second researcher (SD). The initial appraisal was to review the relevance of the questions asked and to commence independent identification of emerging themes.

Transcripts were imported into Nvivo v12 (QSR International; <http://www.qsrinternational.com/nvivo>) for thematic analysis.¹⁹ A combination of deductive and inductive data analysis was applied during initial coding, which enabled simultaneous targeted exploration into SDoH issues and open exploration of participant perspectives.²⁵ The theoretical framework used for the deductive analysis was based on well-known SDoH⁵ (see Table 4.2). A deductive approach was incorporated to identify examples of how SDoH can affect the ability of Indigenous

Australians with diabetes to self-manage their type 2 diabetes. The inductive analyses and a phenomenological approach enabled deep exploration of participant experiences¹⁹ of type 2 diabetes through an SDoH lens.

Table 4.2. SDoH framework used for deductive analysis

Social determinants of health
Addiction
Early life
Economic status (income)
Education
Employment
Food security
Healthcare access
Housing
Social exclusion
Social support
Stress
The social gradient
Transport

Triangulation continued throughout the analysis phase with regular analytical discussions on coding and theme development between AF and SD. The third researcher (KMR) reviewed the initial codes (established by AF and SD) and concurred with their accuracy. After minor modifications and clarification of terminology, all three researchers agreed on the final themes.

Following final theme consensus, member checking was completed with five of the seven IHWs (two were not contactable). The identified themes were discussed and explained to confirm the accuracy of interpretation and subsequent findings. The Indigenous Australians with diabetes were not contactable because of the transient nature of their lifestyles.

Consequently, the IHWs (ZC and RR) who organised recruitment and assisted with facilitating a yarning circle confirmed the accuracy and incorporation of the responses.

4.4.3.7 Ethics approval

Ethics approval for the study was granted by the Human Research Ethics Committee of Queensland Health (HREC/18/QTHS/128) and James Cook University (H7480). Importantly, this approval requires demonstrated adherence to the NHMRC *Ethical Conduct in Research with Aboriginal and Torres Strait Islander Peoples and Communities: Guidelines for Researchers and Stakeholders*.²⁰

4.4.4 Results

Fourteen Indigenous Australians participated in the study. Seven participants were Indigenous Australians with diabetes, and seven were IHWs. Participant characteristics are outlined in Tables 4.3 and 4.4.

Table 4.3. Characteristics of Indigenous Australians with type 2 diabetes

Participant	Gender	Age	Duration of Diabetes
1	Female	67	10 years
2	Female	57	2.5 years
3	Female	42	8 months
4	Female	55	>20 years
5	Female	51	10 years
6	Male	56	13 years
7	Male	61	3 years

Table 4.4. Characteristics of Indigenous health workers

Participant	Gender	Age	Current role ⁺	Qualification	Experience (years)
1	Female	48	Advanced Health Worker	Postgraduate	>20
2	Female	43	Care Coordinator	Certificate 3	2
3	Female	57	Senior Care Coordinator	Certificate 4	6.5
4	Female	49	Outreach Worker	Certificate 3	~ 3
5	Male	29	Outreach Worker	Certificate 3	2
6	Male	49	Health Worker	Certificate 3	5
7	Male	34	Outreach Worker	Diploma	8

Note. Sourced from: Australian Indigenous HealthInfoNet²⁶ and Australian Government²⁷.

+ Description of Indigenous health worker roles in this study: 'health worker' = Aboriginal and Torres Strait Islander people who are qualified to provide flexible, holistic and culturally sensitive health services to Aboriginal and Torres Strait Islander clients;²⁶ 'care coordinator' = IHWs who work as part of the Closing the Gap Integrated Team Care program to encourage and support eligible Aboriginal and Torres Strait Islander people to access the services they need to treat their chronic disease according to the general practitioner care plan;²⁷ outreach worker = IHWs who work as part of the Closing the Gap Integrated Team Care program to encourage and support Aboriginal and Torres Strait Islander people to access health services and help to ensure that services are culturally competent.²⁷

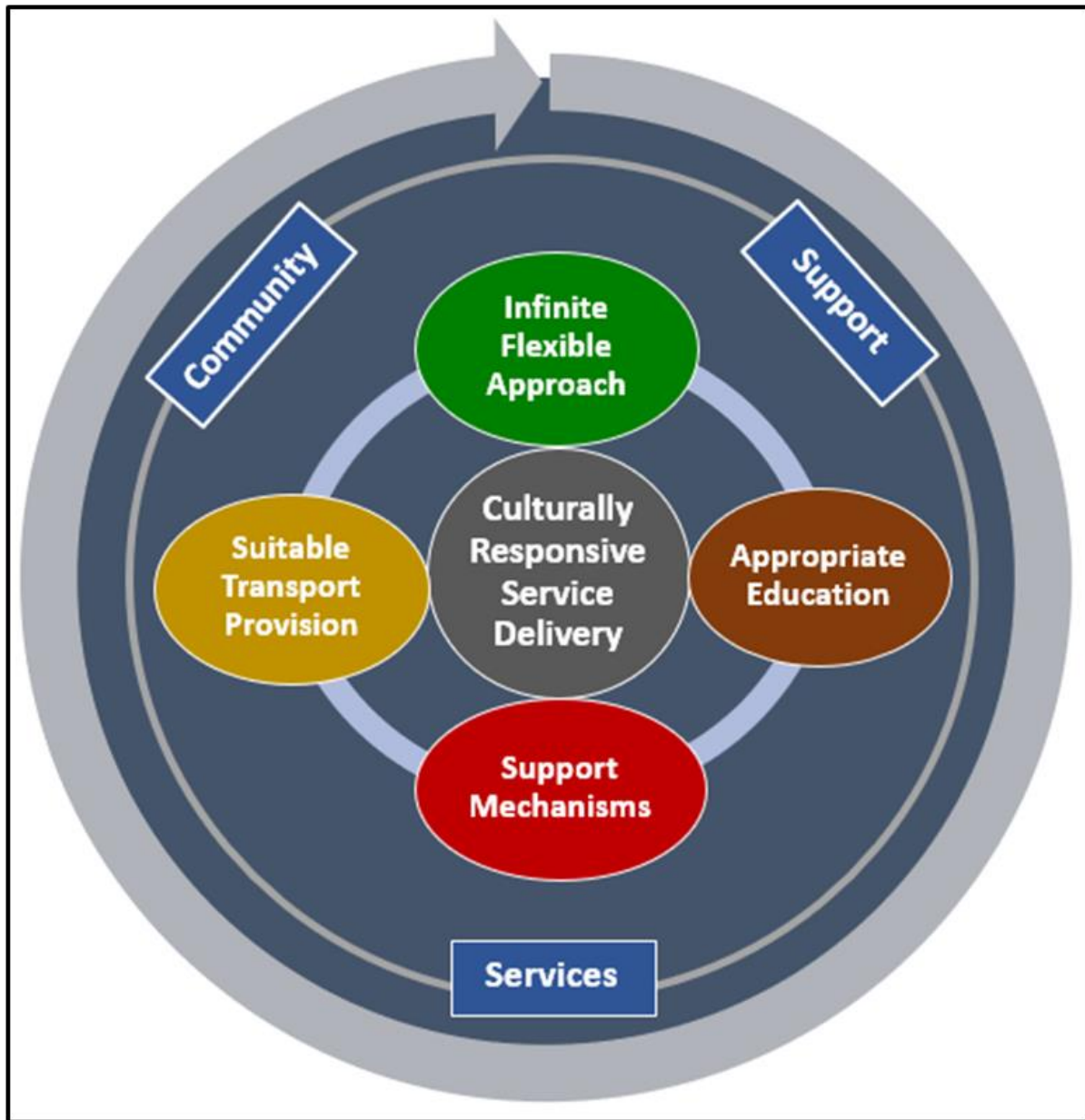
Incorporating SDoH into the clinical management of type 2 diabetes for Indigenous Australians involves a central theme of culturally responsive service delivery. In addition, five individual yet interrelated themes emerged as being essential for SDoH to be identified, navigated and incorporated into the usual clinical care for Indigenous Australians with diabetes (six in total).

The six themes were:

- culturally responsive service delivery
- an infinite flexible approach to service delivery
- appropriate education for both Indigenous Australians with diabetes and non-Indigenous health professionals
- support mechanisms for Indigenous Australians
- suitable transport provision
- community support services.

Figure 4.1 provides a diagrammatic representation of these interrelated themes.

Figure 4.1. The six identified themes for the social determinants of health in clinical care for Indigenous Australians with type 2 diabetes



Note. Created by the author.

4.4.4.1 Theme 1: culturally responsive service delivery

Both Indigenous Australians with diabetes and IHWs discussed aspects that suggested a culturally responsive service should be provided when identifying and accommodating the unique needs of Indigenous Australians as part of diabetes care. Participant comments suggested that a culturally responsive service fundamentally requires an all-encompassing, holistic approach:

It's that whole, holistic, you know, not just their health, it's everything! (IHW 7)

More specifically, IHWs and Indigenous Australians with diabetes indicated that incorporating SDoH into care for Indigenous Australians in a culturally responsive way encompasses client involvement in their own care, IHW roles in providing care and service delivery approaches for Indigenous Australians with diabetes, generational acknowledgement and inclusion in care, and effective communication. Each aspect is detailed below.

4.4.4.1.1 Client involvement in their own care

Indigenous Australians with diabetes reported their desire to be involved in all of their own healthcare decisions. They felt this would allow them the opportunity to contemplate the appropriateness and achievability of the suggested type 2 diabetes self-management strategies.

IHWs reinforced this notion. They discussed the necessity of client involvement to ensure the appropriateness of interventions and an understanding of self-management activities. Furthermore, the IHWs emphasised the importance of Indigenous Australians with diabetes establishing their own self-management goals:

It's always best to ... run it past with the client ... and always get consent from them because it's their own right, you know, yeah ... And um, listen. Jot things down, let them

do the talking ... Ah, you as a health professional, you be just, be taking notes, help them through and then you and the client sit down and work out a strategy. (IHW 1)

Have a meeting with the client, with the patient, and see if they got a good understanding with what's going on. (IHW 2)

4.4.4.1.2 IHW roles in providing care

Indigenous Australians with diabetes portrayed IHWs as key to achieving the fundamentals of type 2 diabetes self-management, such as attending medical appointments, understanding medications, navigating health systems and accessing various other community support. They expressed an appreciation for the diverse range of support the IHWs provided:

[IHW] has been a big help to everybody around this area ... She's from [location], and she comes up here, and you know, wants to know if everything is all right—how are youse, and you know, you need anything? (Indigenous person with diabetes [IPWD] 1)

The IHW commentary augmented this and exemplified their supportive attitude regarding client care. They portrayed an unbounded willingness to provide support for the diverse range of issues faced by Indigenous Australians with diabetes:

So, we understand. And a lot of people come to us needing help. And it might be something that's very private and stuff. And they'll talk to us, and we can either guide, support, be there with them ... So, we walk with them. (IHW 6)

We absolutely back our mob up ... because it helps us to help them. You know. The client with their health journey, because, you know, you are doing stuff that, you know, and we link up ... So, we're using and working together with community members for somebody's health journey. (IHW 6)

4.4.4.1.3 Service delivery approaches

Health services delivered to Indigenous Australians with diabetes centred on them feeling comfortable, respected and safe. Providing type 2 diabetes care in this manner was appreciated, and the IHWs perceived this as a fundamental part of their role. This approach also appeared to assist with client engagement in health care:

Comfortable, yeah ... Go out to their own environment ... It's coming down to respect, you know, in making them comfortable, and make sure they're engaging and all that, you know. (IHW 7)

Instead of just going to the doctor, it's just a quick visit and, blah blah, and home again. Whether it's just to sit down or even watch a thing on the TV screen and whatever. (IPWD 2)

4.4.4.1.4 Generational acknowledgement and inclusion in care

Including a generational approach to type 2 diabetes care was articulated by both Indigenous Australians with diabetes and IHWs. There was a strong desire to prevent type 2 diabetes spanning generations and negatively affecting the lives of young people. Intergenerational learning and understanding was seen as a possible approach to prevent the consequences of type 2 diabetes experienced by older generations:

I don't want my grannies [grandchildren] to grow up to be like me, like, either jabbing themselves or taking tablets for the rest of their lives. (IPWD 4)

But what we need to do is just get the younger children—primary school all the way up to high school. Get some Elders, and you know, some parents to come and work together. (IHW 6)

4.4.4.1.5 Effective communication

Two-way communication between Indigenous Australians with diabetes and non-Indigenous health professionals was most effective when facilitated by an IHW. This assisted the Indigenous Australians with diabetes to better understand health care and enabled IHWs to reiterate and clarify the messages delivered:

Yeah, and we're having those conversations on trips to the GPs, or after they're seen the doctor, even stuff to help them understand in the consult, we just, probably break it down for them on the way home. (IHW 4)

4.4.4.2 Theme 2: infinite flexible approach

The lives of IPWD were permeated with competing priorities that hindered effective T2DM self-management. These were all enmeshed with SDoH and required a multitude of strategies and services to adequately address and navigate them. The IHWs required an 'infinite flexible approach' to be able to walk alongside IPWD to help them navigate these circumstances so, eventually, they can prioritise T2DM self-management.

The extent and diversity of SDoH-related competing priorities as identified by IHWs and described by IPWD are displayed in Table 4.5.

Table 4.5. Examples of competing priorities to type 2 diabetes self-management for Indigenous Australians

Identified by Indigenous Health Workers	Described by Indigenous People with Diabetes
<p><i>Well, money to buy the medications. I mean, you got, you get some medications free from Closing the Gap and then sometimes you still gotta pay. And um, you know, they might be down to the last seven dollars or something like that. And have got to buy some bread for the house, instead of buying ... their medication. (IHW 2)</i></p>	<p><i>I'd buy the specials. (IPWD 2, when asked if they would purchase a more expensive, healthier option or a junk food option that was on special)</i></p>
<p><i>They haven't been educated at the beginning. How would they understand anything? You know, they go through life just working out how to get through life! (IHW 6)</i></p>	<p><i>If there is, ah, if there is a disconnect towards light, electricity, the money will go towards the bill other than attending to the appointment. (IPWD 5)</i></p>
<p><i>So, I've got a client now that I take to get wound care, um, and she is probably going to get her toe amputated soon. Um, she's in an overcrowded house as well, but she's got no place to go ... They make a mess, they run around, outside, come run inside. So, you've got all those sort of things into play. (IHW 3)</i></p>	<p><i>I wanted to have a cigar, so I went and bought a packet of cigarettes instead of the insulin, you know, maybe things at home are escalating. (IPWD 2)</i></p>
<p><i>Well, the, probably one of the biggest problems with, like, Indigenous people. It is the housing. Some of them don't have houses, they still have adult children living with them, or they have family staying to visit, and stay for, you know, long periods of time ... um, so I guess doctors, you know, they should take that into consideration a bit. (IHW 3)</i></p>	<p><i>That's another thing. It's hard to save money for, like off your pay week. It's hard to save money for that when you living like. I live from pay to pay, see, and I make my money last till the next pay. And I just get to the next pay. So, it's hard for me to, anything in between. To fork out \$100, you know to go down for ... That's cutting me short for my week, you know. To my next pay. (IPWD 2)</i></p>
<p><i>There's been times when they hadn't had bread and stuff for, you know. (IHW 7)</i></p>	<p><i>Yeah, and then you've gotta worry about those ... When they was going to school, you gotta worry about the books and all of it, and stuff. (IPWD 4)</i></p>
<p><i>Yeah, like, you know they tell, they tell us, you know, what they have in their personal issues and that, yeah. (IHW 7)</i></p>	<p><i>Well, me power went off, so me and the dogs just shared what food was there. (IPWD 1)</i></p>

Note. IHW = Indigenous health worker; IPWD = Indigenous people with diabetes.

4.4.4.3 Theme 3: appropriate education

There were two elements to appropriate education. First was the quality, timing and frequency of cultural awareness training for non-Indigenous health professionals. The IHWs felt that cultural awareness training should begin at university level and continue throughout the health professional's career:

Yeah, there is always room for improvement

The length of time that runs?

Maybe ongoing? (IHW 2, 3, 4)

And that's probably what needs to be done at the [university] level, before the doctors are even put out from the uni ... yeah, at the general medical training. (IHW 2 and 3)

The second element related to client education. Understanding type 2 diabetes health messages depended on congruency between learning styles and health professional delivery. This included identifying, acknowledging and allaying fears about type 2 diabetes and enabling a thorough understanding of type 2 diabetes and its management through the use of visual and practical education strategies:

Everything needs to be visual. (IHW 2)

You need to try and show them in other ways how to understand. And it has to be visual. (IHW 6)

And we've got a few deadly doctors here, um, that will sit down, take the time, go through a care plan, and say, 'do you understand what this is all about? Would you like [IHWs] to explain it a bit better' ... All that sort of stuff ... They feel like they're important. They feel like someone cares ... And that's where you find them ... wanting to go back to that same doctor all the time. (IHW 6)

Underlying the effectiveness of client education was a disparity in health literacy between non-Indigenous health professionals and Indigenous Australians with diabetes:

Like, myself, I can't read properly. (IPWD 1)

4.4.4.4 Theme 4: support mechanisms

Varying types of support mechanisms used by Indigenous Australians with diabetes were identified. This ranged from type 2 diabetes-specific support, such as that provided by the IHWs, to support provided by family members and indirect support such as workplaces and church groups:

It's the support network you gotta have. (IPWD 6)

Our jobs are to support our community members to engage, and ah, with our GP practices and mainstream allied health services so to connect to those services so that they can be supported. (IHW 6, regarding specific support provided by IHWs)

When they get home, that conversation is going to continue. It's not just gonna be the patient not knowing how to explain it to any one time. Whether it be their wife, their husband, their child that's looking after them ... so that one person in the household has got an understanding of what they're going through, and then the conversation can continue at home. (IHW 2, regarding family support)

Plus, I'm a Christian too ... yeah, I feel more relaxed and more, more down to earth. You know, to be going to church and friends in the church and family in the church and that, you know. It's, yeah, it's, you know, it's a good thing to be, you know, going to church, being a Christian. (IPWD 2, regarding indirect support)

4.4.4.5 Theme 5: suitable transport provision

The ability for Indigenous Australians with diabetes to access the necessary healthcare services for comprehensive type 2 diabetes care relied on access to suitable transport at an appropriate time. Both IHWs and Indigenous Australians with diabetes lamented the ongoing insufficiency and inadequacy of transport:

There is a big problem with transport ... still, there is a big problem. (IHW 6)

Like I say, transport! ... Yeah, to get there, and like home ... One of the ladies out [remote location] she uses the ambulance to get her to take it to [regional location] and bring her back sort of thing. (IPWD 4)

One IHW spoke of resorting to putting Elders on a Greyhound bus to attend medical appointments in a regional town 2.5 hours away because she had no other choice. Her words articulate the disgraceful lack of transport options:

We've got communities that don't have that, so that's a very difficult ... So, what happens is, they either gotta go, they've got a go on the Greyhound bus ... Now, these are Elders ... It's just wrong! ... We've had to transport people ourselves because they're ... you know they don't want to go because they're scared ... They don't understand what's going on. (IHW 6)

4.4.4.6 Theme 6: community support services

The ability and approaches used by IHWs to attend to SDoH issues relevant to Indigenous Australians with diabetes depended on the support services available in the community. The extent of support provided relied on collaboration and the working relationships the IHWs had with these services. The IHWs also required a comprehensive understanding of non-Indigenous

services to effectively apply them in an Indigenous context to ensure appropriate referrals and support are provided:

If they have community centres, like [rural locations], really good. They support with um, food relief, um, housing, DV [domestic violence] and stuff like that. (IHW 6)

So, we link up with the co-op that would be, that is good with working and understanding, you know, using your, um, bush medicines, food and stuff, and then I'd interact with that as well. (IHW 6)

Oh ... the understanding ... understanding of both worlds. (IHW 1)

4.4.5 Discussion

This study aimed to combine the perspectives of IHWs and Indigenous Australians with diabetes to gain insight into the SDoH-related barriers and facilitators to type 2 diabetes management and how SDoH could be formally incorporated into the usual clinical care of Indigenous Australians with diabetes. Not surprisingly, the findings confirmed that culture should be the foundation of health service delivery for Indigenous Australians with diabetes. The findings also highlighted that the Indigenous view of health innately encompasses SDoH.

Australian Aboriginal and Torres Strait Islander peoples' view of health is holistic and includes culture, spirituality, tradition, social and emotional wellbeing, as well as physical health. Furthermore, this view of health considers the individual and community as unified and inter-reliant. When realised, this concept empowers and enables an individual's full potential to be reached and community wellbeing to be achieved.^{2,6,28,29} Therefore, health service delivery for Indigenous Australians should parallel this all-encompassing perspective of health.³⁰

The identified themes for incorporating SDoH into the usual clinical care for Indigenous Australians with diabetes reflect a holistic approach to health care and corresponded with the Indigenous Allied Health Australia description of cultural responsiveness. This definition states that cultural responsiveness:

holds culture as central to Aboriginal and Torres Strait Islander health and wellbeing; involves ongoing reflective practice and life-long learning; is relationship focused; is person and community centred; appreciates diversity between groups, families and communities; requires access to knowledge about Aboriginal and Torres Strait Islander histories, peoples and cultures.³⁰

Culturally responsive service delivery is even more crucial when providing services for Indigenous Australians with diabetes who live in socioeconomic disadvantage (those with poor SDoH).^{31,32} Poor SDoH can hinder optimal type 2 diabetes management through financial limitations, inadequate housing, insufficient transport, poor access to healthy food, lack of support and an inability to access quality health care.^{29,33} Given the inseparable association between poor SDoH and type 2 diabetes,³⁴ the obligation for health professionals to identify and address these issues is apparent.¹⁷ The findings of this study substantiate this and indicate that subsequent troubleshooting around these issues would indeed assist Indigenous Australians with diabetes in achieving improved type 2 diabetes self-management.

The challenges related to SDoH are exacerbated when Indigenous Australians with diabetes reside in rural and remote locations.^{31,33} This was echoed in the current study and amplifies the need to identify strategies to incorporate SDoH into clinical care. Indigenous health services in rural and remote regions require local contextualisation for optimal service delivery.⁴ In addition, flexibility, client education, health professional training, client support, generational

change, transport and community services are intertwined with providing culturally responsive and person-centred care.^{30,35}

IHWs are required to embrace their holistic view of health to accommodate for and support the vast range of competing priorities to self-management that Indigenous Australians with diabetes can have. Poor SDoH and the associated coping strategies (e.g., smoking and alcohol consumption) can also hinder the lifestyle improvements necessary for optimal type 2 diabetes management and general good health.^{5,10} This perpetuating, negative cycle is widely acknowledged in the literature^{2,36,37} and requires an understanding that competing priorities can take precedence over type 2 diabetes self-management.³¹ By integrating an infinite flexible approach into usual care, IHWs could then have the capacity to assist Indigenous Australians with diabetes with the diverse and ongoing SDoH issues that can arise, so that type 2 diabetes self-management could eventually become the primary goal.

The effectiveness of non-Indigenous health professionals' involvement in care for Indigenous Australians with diabetes hinges on cultural respect, awareness, sensitivity, safety and competence (cultural responsiveness).³⁰ Appropriate education for health professionals first requires non-Indigenous health professionals to understand the expansive impact of colonialism and transgenerational trauma on the health and wellbeing of Indigenous Australians.⁶ Second, an unending reflexive empathy for the cultural and health belief differences between Indigenous and non-Indigenous Australians is essential.^{29,30}

The voices of the IHWs in the current study resonated the requirement of localised and frequent training around cultural practice. Their consensus lamented a rhetorical nature to current cultural awareness training that leaves non-Indigenous health professionals ill-equipped to truly appreciate the impact of Australian Indigenous culture on health management. Their discontent with current practice coincides with an apparent scarcity of literature supporting the

effectiveness of cultural awareness training on health outcomes³⁸ and a lacking consensus on a cultural competence curriculum for health professionals.³⁹ However, these assertions are not specific to Australian Indigenous cultures and, thus, should be extrapolated with contextual prudence.

The importance of cultural responsiveness is acknowledged extensively throughout the literature.^{29,30,38,40} The literature suggests that inept cultural practices by non-Indigenous health professionals can result in miscommunicated health messages, reduced healthcare access, lack of self-management confidence and general distrust of non-Indigenous health workers.²⁹ To minimise these avoidable situations, cultural education and training (cultural competency) should be contextually relevant³⁷ and should be ongoing.⁴¹

Cultural competency is generally incorporated into undergraduate training of health professionals;³⁹ however, the quality, frequency and localised nature of this training are difficult to determine. Consequently, a consistent curriculum for all Australian health professionals may contribute to an enhanced understanding of how providing a culturally responsive service can improve health outcomes for Indigenous Australians.

Effective type 2 diabetes management also requires proficient health literacy. Understanding medications, reading food labels, comprehending written and verbal instructions, navigating healthcare systems and providing informed consent are crucial for type 2 diabetes self-management.⁴² The formidable link between education levels, health literacy and diabetes is well documented.^{42,43} The IHWs in the current study indicated that mainstream education and literacy levels were low among many of the Indigenous Australians with diabetes they work with. This, combined with unacceptably high rates of type 2 diabetes among Indigenous Australians,² reinforces the need for the appropriate education around type 2 diabetes self-management strategies for Indigenous Australians with diabetes.

The distinctive learning styles of Indigenous Australians should also be considered. Visual learning appears to be the most effective learning style among Indigenous populations across the world.⁴⁴ Concurring sentiments from IHWs and Indigenous Australians with diabetes in the current study highlighted the importance of this in type 2 diabetes education. A visual and practical approach to client education facilitates comprehension that accommodates for individual learning styles and culture, despite health literacy levels.^{42,44} An example of a visual and interactive diabetes teaching tool for Indigenous Australians can be found on the Australian Indigenous HealthInfoNet website.⁴⁵ In addition to considering learning styles, any education to Indigenous Australians with diabetes should consider and respect local culture and be delivered in a meaningful way so it empowers informed decisions about their own healthcare.⁴⁶

Providing care for Indigenous Australians with diabetes involves support derived from family, friends, health professionals or various community-based services. This diverse range of support mechanisms can provide support specific to type 2 diabetes self-management or psychological, social and emotional wellbeing, and general physical support such as assisting with transport.^{47,48} This was supported by an Australian study by Black et al.,⁴⁷ which indicated that people with type 2 diabetes relied heavily on informal supports such as spouses and significant others, neighbours and community organisations. This qualitative study was not specific to rural and remote Indigenous Australians; however, it endorses the importance of support mechanisms to enhance self-management for all people with type 2 diabetes.

The benefits of social support are well known⁵ and were inferred in the current study. Indigenous Australians with diabetes and IHWs reported a reliance on support mechanisms. Involvement of family members was seen as crucial, and participation in community support groups was also advantageous. This was also a key finding in the Conway et al.'s study,²⁹ where the value of engaging family groups, local community groups and IHWs to enable

comprehensive care for Indigenous Australians was described. Furthermore, lack of these supports was seen as a barrier to type 2 diabetes care and self-management.

The absence of transport can impede social participation and access to health care.^{5,49-51} The experiences of IHWs and Indigenous Australians with diabetes in the current study confirmed that lack of suitable transport provision is a major obstacle to accessing healthcare and type 2 diabetes self-management. Inadequate transport options, particularly in rural and remote communities, can force IHWs to use undesirable transport modalities in a desperate effort to support Indigenous Australians with diabetes, such as resorting to public transport for community Elders, as described in the results (see Section 4.3.4.5).

Inadequate transport has also been described in previous studies as a barrier to self-management, healthcare access and good health.^{48,52} The relevance of transport provision intensifies when Indigenous Australians with diabetes live in rural and remote communities, as access to appropriate transport is more unattainable than in larger centres⁵¹ and contributes to higher non-attendance rates and decreased healthcare access.^{50,52}

A well-documented and obvious solution to this type 2 diabetes self-management barrier is for health services to provide suitable modes of transport.^{52,53} Of course, there is an increased cost associated with this strategy; however, it is insignificant when compared to the high financial burden of hospitalisation, ambulance utilisation and aeromedical retrieval,⁵⁴ all of which can be a result of poorly managed type 2 diabetes. By investing in resources and services that support Indigenous Australians with diabetes to effectively self-manage their health, such as transport provision, the costs associated with improperly managed health care could be reduced.

Despite transport deficits being a well-known barrier to optimal health, and the strong advocacy for health services to provide transport,^{48,51-53} the current study identified that inadequate transport remains an existing and problematic issue in this region. Services for Indigenous Australians with diabetes could potentially improve healthcare access and, therefore, type 2 diabetes outcomes and reduce healthcare expenditure by merely providing suitable transport as a routine part of health service delivery.

Assisting Indigenous Australians to access and engage with community support services is an integral part of the IHW's role.²⁶ Effectiveness in this role pivots around collaborative relationships and partnerships with available support services,⁵⁵ an in-depth knowledge of service capacity, reach and scope, and facilitating ongoing access and engagement.^{53,55} Without this role, access to vital services could be inhibited because of cultural differences and social barriers¹¹ for Indigenous Australians. Furthermore, the absence of culturally appropriate services within the community restricts service use.⁵³

Davy et al.⁵³ provide a broad description of access in their 'Accessibility framework for Indigenous people accessing Indigenous primary health care services'. This framework has five main components: approachability, acceptability, availability, affordability and ability to engage. It may provide guidance for IHWs to work with community organisations to enhance accessibility and engagement for Indigenous Australians with diabetes. Conceivably, this framework could improve access and engagement of previously 'inaccessible' community support services for Indigenous Australians with diabetes. Using the framework may not solve the issue of unavailable services within the community; thus, lack of community services requires further research. Nonetheless, improving the accessibility of currently available services is likely to improve care for Indigenous Australians with diabetes.

The six themes identified in the current study may assist health professionals and health services in incorporating SDoH into the clinical management of type 2 diabetes for Indigenous Australians. They are interrelated and seen as the ‘whole being a sum of its parts’, which reflects a holistic approach to Indigenous Australian health. Locally contextualising these themes to other communities may contribute to a broader reduction in the disparities between Australian Indigenous and non-Indigenous health resulting from poor SDoH.

4.4.5.1 Limitations

Despite extensive effort to ensure the voices of all participants were correctly portrayed, it was not possible to contact the Indigenous Australians with diabetes for member checking because of the transient nature of their lifestyles. This issue was discussed with ZC and RR, and instead, their comments and perspectives were collated and explained in detail to ZC and RR. This was seen as the most appropriate approach to addressing this issue, as ZC and RR have strong and enduring relationships with all the Indigenous Australians with diabetes who participated in the study.

The study was relatively small ($N = 14$) and, therefore, may not reflect the views of all IHWs and Indigenous Australians with diabetes. However, both IHWs and Indigenous Australians with diabetes provided service to, or lived in, numerous North Queensland communities ($n = 7$). The identified themes were highly consistent across all interviews and yarning circles and may indicate a reasonable level of transferability to other North Queensland communities; however, the validity should be considered if the ‘SDoH approach’ is to be applied elsewhere.

Finally, the findings are not representative of all Indigenous populations across Australia and only reflect a North Queensland perspective. This is not necessarily a limitation; however, it requires acknowledging. Consequently, the authors recommend caution in directly transferring this SDoH approach to other regions and strongly recommend local contextualisation first.

4.4.6 Conclusion

Incorporating SDoH into clinical care for Indigenous Australians with diabetes requires a holistic approach that reflects the Indigenous view of health and wellbeing.^{6,29} This study confirmed that cultural responsiveness should be at the centre of care provided to Indigenous Australians with diabetes. Care is then enhanced by applying an infinite flexible approach to type 2 diabetes management. Indigenous Australians with diabetes also require support people and other support mechanisms to walk with them on their type 2 diabetes journey. Appropriate education about type 2 diabetes for Indigenous Australians with diabetes and ongoing cultural competence training for health professionals are also essential components. Finally, but equally important, is the provision of transport that suits the specific needs of Indigenous Australians with diabetes and the availability and accessibility of supporting services within the local community.

Suboptimal type 2 diabetes self-management among Indigenous Australians, because of poor SDoH, may be preventable and, therefore, calls for supplementary approaches to diabetes care. Incorporating SDoH as part of the usual clinical care, and assisting Indigenous Australians with diabetes to overcome SDoH barriers or enable self-management despite them, could improve health outcomes. Furthermore, incorporating SDoH into the usual clinical care of type 2 diabetes may help to narrow the unacceptable health gap between Indigenous and non-Indigenous Australians.⁴

4.4.7 Acknowledgements

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4.6 Implications for practice

The overall health of Indigenous Australians is substantially lower than that of non-Indigenous Australians,³ which is unacceptable. Understanding and working within the complexities of Indigenous health could be made easier by considering the findings of this study, especially because SDoH are an innate part of Indigenous health and wellbeing.² Consequently, current care for Indigenous people who have T2DM could be enhanced by incorporating SDoH into usual clinical care in a culturally appropriate manner.

4.7 Chapter summary

Chapter 4 has:

- introduced the topic of poverty and inequality in Australia with particular relevance to Aboriginal and Torres Strait Islander people by including a short publication on this topic
- included an infographic introducing Publication 4 ¹
- included Publication 4, which was conducted with Indigenous Australians on their perspectives of how SDoH could be included in the clinical management of T2DM.²

Chapter 5 will detail the study conducted with non-Indigenous people with T2DM.

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Chapter 5: Non-Indigenous people with type 2 diabetes

5.1 Chapter outline


Chapter 5 presents the perspectives of non-Indigenous Australians with T2DM on how SDoH could be incorporated into the individual clinical care of people with T2DM. First, Infographic 5.1 illustrates the study conducted with non-Indigenous people who have T2DM. Also included is the associated publication, Publication 5: ‘Improving type 2 diabetes care and self-management at the individual level by incorporating social determinants of health’. The study findings are then discussed in terms of their implications for practice. Finally, a chapter summary is provided, and a brief introduction to Chapter 6 is included.

Infographic 5.1. Improving type 2 diabetes care and self-management by incorporating social determinants of health at the individual level—perspectives of people with type 2 diabetes

IMPROVING TYPE 2 DIABETES CARE AND SELF-MANAGEMENT BY INCORPORATING SOCIAL DETERMINANTS OF HEALTH AT THE INDIVIDUAL LEVEL – PERSPECTIVES OF PEOPLE WITH TYPE 2 DIABETES

INTRODUCTION

- **Socially disadvantaged people:**
 - have an increased likelihood of developing type 2 diabetes
 - experience many self-management challenges.
- The injustice of social disadvantage is underpinned by suboptimal social determinants of health (1-3).
- **Social determinants of health:**
 - are often addressed at a population level, not individually
 - directly affect the health of the individual.
- Incorporating social determinants of health into individual care for people with type 2 diabetes may improve self-management (4).



AIMS


To draw on the perspectives of people with type 2 diabetes to:

1. Explore social determinant related barriers and facilitators to type 2 diabetes self-management.
2. Identify and explore how to include social determinants of health into individual care for people with type 2 diabetes.

METHODS

- 3 North Queensland diabetes services
- Purposive recruitment
- Interviews and focus groups
- Deductive and inductive thematic analysis (NVivo 12)

RESULTS



RESEARCH DESIGN

Qualitative study using an exploratory, descriptive approach.

LIMITATIONS

- Small number of participants (n=10)
- North Queensland only

CONCLUSION

People with type 2 diabetes reported barriers and supports that call for a socio-ecological approach to individual care. The socio-ecological model of health considers social determinants (5) and could enable the intertwined influence of social determinants of health to be incorporated into individual care for people with type 2 diabetes.

Other barriers to type 2 diabetes self-management:

- competing priorities
- mental health issues and negative feelings
- lack of understanding about type 2 diabetes.

9 people with type 2 diabetes and 1 carer

Poor social determinants of health were inter-related with self-management challenges.

People with type 2 diabetes utilised:

- health professional support
- community support
- financial support
- personal support
- self-management support.

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Ethics Approval - Queensland Health (HREC/18/QHS/128) & James Cook University, Australia (H7480).

Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

5.2 Publication 5: Improving type 2 diabetes care and self-management at the individual level by incorporating social determinants of health

Overview of Publication 5

Person-centred care is vital when supporting individuals to self-manage their T2DM.¹ Publication 5 reports the study conducted with people who have T2DM and portrays their perspectives on SDoH-related barriers to T2DM self-management. It also suggests how SDoH could be incorporated into clinical care for individuals with T2DM. It details the aims, methods and results of the study and includes the study limitations. Study findings identified barriers to self-management incurred by people with T2DM that were related to SDoH. Additionally, the impact of competing priorities, mental health, T2DM understanding and feelings about living with T2DM were identified as important considerations. People with T2DM utilised HP support, community support, financial support, personal support and other informal self-management supports. The study identified that both self-management barriers and the associated supports are multilayered and complex. Accordingly, Publication 5 discusses and concludes that the multi-level approach of the socio-ecological model of health² may assist the incorporation of SDoH into individual clinical care for people with T2DM.

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Contribution of authors: A Frier (conceptualisation, participant recruitment, data collection and analysis, writing of original draft), S Devine (conceptualisation, data analysis, reviewing and editing, supervision, F Barnett (conceptualisation, reviewing and editing, supervision), K McBain-Rigg (data analysis, reviewing and editing, supervision) T Dunning (reviewing and editing, supervision).

Note. The referencing and formatting in this publication is consistent with journal requirements and, therefore, may be inconsistent with the thesis referencing and formatting.

5.2.1 Abstract

5.2.1.1 Objective

Suboptimal social determinants of health impede type 2 diabetes self-management. They are usually considered at population and community levels, not individually. The study objective was to draw on perspectives of people who have type 2 diabetes to identify and explore the impact of social determinants on self-management, and ways to incorporate them into individual care.

5.2.1.2 Methods

Purposively selected participants chose to partake in focus groups or interviews. Data were analysed, and themes identified through deductive and inductive thematic analysis.

5.2.1.3 Results

Social issues hinder type 2 diabetes self-management. Additionally, an individual's feelings and poor mental health, competing priorities, and understanding about diabetes are important considerations. Support was provided via health professionals, community supports, financial support, personal support and informal self-management support.

5.2.1.4 Conclusions

Social determinants of health could be formally incorporated into individual care for people with type 2 diabetes if a socio-ecological view of health is taken, as it considers the broader social and environmental circumstances in people's lives.

5.2.1.5 Implications for public health

- Care for people with type 2 diabetes could be transformed if social determinants of health are formally assessed and responded to at an individual level.

- A socio-ecological view of health in individual care and clinical settings would enable social determinants of health to be formally incorporated into type 2 diabetes care.

5.2.1.6 Introduction

Socially disadvantaged people are more likely than those of greater affluence to develop T2DM.¹ Disadvantaged people also encounter more challenges when managing T2DM because of their life circumstances.¹⁻⁴ Underpinning the injustice of social disadvantage are poor SDoH such as low income, suboptimal education, inadequate transport, limited healthcare access and adverse living conditions.²

Advocacy and action to improve SDoH at population and community levels occur in political and societal arenas.² This approach is necessary to achieve sustained, population-wide improvement of people's SDoH. However, because adverse social determinants negatively affect health outcomes at the individual level, incorporating SDoH into individual care is also important.

While SDoH are often not considered at individual or clinical levels, momentum towards integrating the SDoH of individuals into clinical healthcare settings has begun. Individual SDoH assessments have been developed and trialled,⁵ recommendations on levels of care in which SDoH could be incorporated have been made,⁶⁻⁸ and a review on how an individual's SDoH are assessed and addressed in clinical settings has been conducted.⁹ However, the progressive addition of incorporating SDoH into individual care is not standard practice and, of relevance to this paper, lacks a specific focus on T2DM.⁹

Effective self-management of T2DM often requires various lifestyle modifications,³ which could be difficult for people with poor SDoH. Social determinants are not currently incorporated into T2DM practice guidelines,³ and may explain why SDoH can be overlooked

in individual care for people with T2DM. The absence of resources for incorporating SDoH into T2DM care was highlighted in a literature review by Frier et al.⁹ Their review investigated methods and strategies used to assess and address the SDoH of individuals with T2DM in clinical settings and revealed an absence of tools or guidance to support this.

Enhancing current T2DM practice by formally assessing and responding to SDoH issues as part of usual T2DM care may provide insight into self-management barriers arising from poor SDoH. Then, strategies to overcome or work within these barriers could be devised. Ultimately, this could result in improved self-management for people with T2DM.

This study explored SDoH-related barriers to T2DM self-management. In addition, it investigated ways in which SDoH can be formally incorporated into the usual clinical care for individuals who have T2DM.

5.2.2 Methods

5.2.2.1 Study design

This qualitative study used a phenomenological, exploratory, descriptive approach¹⁰ to draw on the perspectives of people with T2DM to increase understanding of how SDoH affect self-management and ways SDoH could be formally incorporated into individual clinical care. Phenomenology was an essential element to the research design as it enabled study participants to discuss their perspective on the phenomenon of ‘living with T2DM and how SDoH affects this’, thus, allowing ‘lived experience’ to inform the research findings.^{10,11}

5.2.2.2 Situating the researcher

The primary researcher (AF) is a dietitian and diabetes educator with approximately 18 years of experience providing diabetes care throughout rural, remote and regional North Queensland (NQ), Australia. This experience has provided exposure to SDoH challenges that can occur for

people with T2DM, and has motivated this research. Reflexivity assured continual self-reflection and self-awareness of AF's role and experiences throughout data collection, data analysis and report writing.¹² AF reflected on each participant interaction. These reflections considered her role and experiences' effect on the content and delivery of questions and her thoughts and perceptions about participant responses. This insight was also maintained during data analysis and report writing.

5.2.2.3 Aims

The aims of this study were to draw on the perspectives of people who have T2DM to:

1. explore SDoH-related T2DM self-management barriers and facilitators
2. identify and explore how to include SDoH into the usual care for individuals who have T2DM.

5.2.2.4 Setting

Three health services in NQ, Australia, participated in the study. Two were government services ($n = 1$, $n = 4$ participants), and the other was a not-for-profit organisation ($n = 5$ participants). These services provide diabetes care to regional, rural and remote communities across the NQ region.

5.2.2.5 Participant recruitment

Staff members from the participating health services assisted with purposive recruitment.¹⁰ The participating health service staff informed people with T2DM about the project and invited them to volunteer for the study. In addition, AF attended waiting rooms to inform potential study participants about the study. If in agreement, potential participants were later contacted by AF to answer any specific questions they may have had about the study and to confirm participation.

5.2.2.6 Data collection

Study participants chose to partake in a focus group or one-on-one interview. This choice enabled greater participant control over the researcher/participant interaction. The focus groups and interviews were held in meeting rooms rather than clinic rooms to create a relaxed and comfortable environment. None of the participants were known to each other or the researcher prior to the study. Demographic information and duration of diagnosis were collected using a short questionnaire. Participants were asked semi-structured, open-ended questions that explored their experience of living with T2DM and the barriers and facilitators to self-management. Intertwined were colloquial language prompts that encouraged discussion on well-known SDoH (see Table 5.1) and how these affected the self-management of T2DM.

Table 5.1. Social determinants of health framework used for deductive analysis

Social determinants of health
Addiction
Economic status (income)
Education
Employment
Food security
Healthcare access
Housing
Social exclusion
Social support
Stress
The social gradient
Transport

Note. Sourced from Wilkinson and Marmot.²

AF, the second and third researchers (SD) and (FB) developed the interview guide, which was informed by a literature review on the topic.⁹ Interviews and focus groups were audio-recorded, and informed consent was gained immediately before commencement of each interview/focus group. Data saturation was inferred when no new topics of discussion arose among study participants (approximately $n = 7$ participants). Three subsequent interviews were conducted to reinforce topic consistency.

5.2.2.7 Data analysis

Data analysis was guided by the six steps for thematic analysis outlined by Braun and Clarke.^{10,13} Data collected from the focus group and interviews were amalgamated as only one small focus group eventuated ($n = 4$). All focus group and interview recordings were transcribed and then reviewed manually by AF. A sample of these transcripts was reviewed independently by SD to enable independent identification of themes and increase study rigour.

Transcripts were thematically analysed using a combination of deductive and inductive data analysis.¹⁴ The combination of deductive and inductive analysis enabled targeted exploration into SDoH issues (deductive analysis) and open exploration of participant perspectives (inductive analysis) to be conducted simultaneously.^{10,14} Deductive analysis was based on a framework of well-known SDoH (see Table 5.1) and was conducted to identify examples of how SDoH can affect T2DM self-management. The phenomenological approach to the inductive analyses (to understand the lived experience of people with T2DM) enabled deep exploration of participant experiences¹³ of T2DM through a SDoH lens and how these issues could be formally incorporated into T2DM care.

Regular analytical discussions on coding and theme development were conducted between AF, SD and the fourth researcher (KMR). These discussions fostered reflexivity, critical discussion and transparency of the analysis process. Member checking was conducted via phone. Of the

10 participants in the study, four confirmed correctness of the findings. One declined participation in the member checking process, and the remaining five were not contactable.

5.2.2.8 Ethics approval

Ethics approval was granted by the Human Research Ethics Committee of Queensland Health (HREC/18/QTHS/128) and James Cook University, Australia (H7480).

5.2.3 Results

Six interviews and one focus group were conducted. Three females and seven males aged between 42 and 79 years (mean age = 64.3 years) participated in the study. One study participant was the carer of a person with T2DM. The person with T2DM they cared for was unable to attend on the day but wanted their perspective represented. On analysis, there were no differences between responses given by the carer or people with T2DM. Duration of T2DM diagnosis ranged between 3 and 25 years. All participants were non-Indigenous. Indigenous Australian perspectives are reported in a separate paper (see Section 4.3).¹⁵

5.2.3.1 Interview and focus group findings

Two major themes were identified. The first theme involved T2DM self-management barriers (Theme 1: barriers to T2DM self-management). This concept is divided into five subthemes, which are detailed in Section 5.2.4.1.1. The second major theme pertains to the supports utilised by people with T2DM to surmount the identified barriers (Theme 2: diverse support). Theme 2 is also divided into five subthemes (see Section 5.2.4.1.2). The list below displays the subthemes of Theme 1 and Theme 2.

The five subthemes of Theme 1: barriers to T2DM self-management were:

- social determinant challenges
- competing priorities
- poor mental health
- understanding T2DM
- feelings about living with T2DM.

The five subthemes of Theme 2: diverse support were:

- self-management support
- health professional support
- community support
- financial support
- personal support.

5.2.3.1.1 Theme 1: barriers to type 2 diabetes mellitus self-management

The five subthemes of Theme 1 (see Section 5.2.4.1) are the barriers to self-management identified among people with T2DM.

5.2.3.1.1.1. Social determinant challenges

Commonly known SDoH (see Table 5.1) were at the core of many self-management barriers described by people with T2DM. While study participants seemed unaware of the relationship between poor SDoH and T2DM, they portrayed SDoH issues as having negative coactions on each other.

Almost all people with T2DM lamented about the vast impediment financial insecurity had on many aspects of life. Financial expenditure associated with having T2DM, budgetary constraints and minimal income appeared to hinder optimal T2DM management. Participants often discussed how a low income restricted the necessary aspects of T2DM self-management, for example, purchasing medications and affording appropriate nutrition. The quote below demonstrates that restricted finances limited healthy food choices:

My eating habits have changed somewhat over a period of time; don't have the money.

I'm financially struggling, so I've just got to try and find the cheapest sort of thing.

(PWD 8)

Financial burden also led to an inability to afford transport. This deficit was further compounded by limited access to other suitable transport modes and deepened SDoH-related barriers to T2DM self-management. One participant described the protracted effort required to attend medical appointments due to unaffordable taxi fares:

I have to ... catch the bus to [1st shopping centre] and walk across the road to [2nd shopping centre], and sometimes I have to catch—like, to come to a hospital appointment, I have to catch a bus from [suburb] to [3rd shopping centre] to the hospital. (PWD 2)

The impact of unsuitable transport and limited finance extended beyond attending medical appointments and, the consequent reduced healthcare access. Reduced transport options and financial inadequacy also overflowed to obstruct other aspects of life; for example, their shortfall seemed to intensify social isolation. The quote below demonstrates the distress and social isolation that can occur when transport options are limited:

Devastated. Because the kids are all ... daughter lives in the [suburb far away]. I hardly ever see her. She's got a baby. I hardly ever see him. (PWD 6)

5.2.3.1.1.2. Competing priorities

Self-management of T2DM was often peripheral to the competing priorities in people's lives. People with T2DM reported being concerned about their own health but often placed the needs of family members and loved ones first. The competing priorities described included legal issues, incarcerated family members, death of loved ones, illness of friends and family and other health conditions such as cancer, back pain, arthritis, knee replacements and depression. These issues took precedence over T2DM self-management and seemed to add worry and stress. The example below demonstrates how T2DM self-management can be jeopardised by the stress and worry associated with competing priorities:

*And you are worried about them [loved ones], you're not worried about your sugar [T2DM], and it creeps up on you ... It's another thing, and I know, unfortunately, **you** have to be on the backburners, because of everything else that was stressing me out. (PWD 9)*

5.2.3.1.1.3. Poor mental health

Poor mental health appeared chronic among people with T2DM. Depression was overtly articulated, and there was no doubt that study participants felt T2DM was contributing to, or even causing, their depression. At times, poor mental health appeared to be associated with the complexities and challenges of self-management tasks. For example, the requirement of regular blood glucose testing and the anticipated results contributed to elevated anxiety, stress and worry. This overflowed and impacted the daily activities of people with T2DM. Furthermore,

mental health fragility increased when self-management strategies were ineffectual. The quotes below affirm the burden on mental health that T2DM and self-management can instigate:

I found when I was testing twice a day, morning and night, you'd become anxious about what you're doing during the day because of what impact it's going to have on you. I think that's where my stress kicks in ... I get so stressed worrying about the readings [blood glucose levels]. (PWD 2)

When I can't get it back into the singles [blood glucose levels], and that sort of gets me down. (PWD 7)

5.2.3.1.1.4. *Understanding type 2 diabetes mellitus*

Understanding the intricacies of T2DM and self-management depended on the quality of education provided by the health professionals. Some people described feeling overwhelmed by complicated explanations. On other occasions, people with T2DM felt the explanations they received were inadequate and they were given conflicting advice from different health professionals. There was a hesitancy to ask for clarification as the people with T2DM felt the health professional knew what they were talking about and, therefore, they (the person with T2DM) should have been able to comprehend the message. In the quotes below, the person with T2DM assumed the health professional was the expert and had provided T2DM education appropriately.

Interviewer (AF): *How do you go with understanding some of the messages that we [health professionals] talk to you about; do we make it clear to you?*

PWD 6: *Well, the way [health professional], she can't talk to people. She's all—all scientific ... yeah ... You can't—you just think, oh, they must know what they're doing.*

Many study participants felt the solution to providing well-understood T2DM education was simple. Health professionals merely needed to confirm understanding and encourage people with T2DM to ask questions:

Just keep talking until they understand. But also, I mean, I know I'm not the dumbest person on the planet, and there are other people who don't understand things ... Just encourage them to ask questions. (PWD 6)

5.2.3.1.1.5. *Feelings about living with type 2 diabetes mellitus*

How people with T2DM feel about living with a chronic disease such as diabetes was identified as an important point to consider. There were mixed feelings about living with the T2DM diagnosis. Some people expressed frustration and disdain associated with having T2DM and the self-management requirements, as shown below:

I hate it. Absolute pain in the arse. (PWD 6)

It's very frustrating! And I get very, sort of very cranky because I can't—I can't get it out of the area where it is, and that, back into the single figures [blood glucose levels], you know. (PWD 7)

Diverging from the above dismayed view of T2DM, other people appeared to display a blasé attitude:

I know that I've got it [T2DM], and so I have to take pills, and I have to inject, but it's still me, and I do it, cruise along, virtually like I've always cruised along. (PWD 10)

For some, T2DM created stress, worry and anxiety. The one carer in this study described distressing feelings about her responsibilities:

I panic, but I get very stressed ... I'm so scared ... it feels like it's all on me, and I just feel like I've got the world on me. (PWD 1 [carer])

Overall, study participants felt living with T2DM affected many aspects of their life and was an unavoidable impost, as articulated below:

It just affects you on so many different levels [living with T2DM] that you become conscious of it all the time; you're never away from it. It's just always there. (PWD 2)

No single feeling or emotion was dominant amongst people with T2DM; however, their varying perceptions suggest that insight into how people feel about living with T2DM is a valuable inclusion in T2DM care.

5.2.3.1.2 Theme 2: diverse support

Support, in its varying modes, was identified as a vital component of T2DM care to address SDoH-related barriers to self-management. The self-management challenges described by people with T2DM were contended through various support mechanisms, depending on the pertinent issue.

5.2.3.1.2.1. Self-management support

People with T2DM articulated a multitude of undertakings involved with self-management. Support with self-management was provided to people with T2DM by carers, family, friends and community services. This included healthy eating and shopping accordingly, attending medical appointments and pharmacy visits. In addition to one-on-one support, other informal self-management support strategies were beneficial to people with T2DM, such as Webster-paks (multi-dose medication blister packs). Webster-paks enabled people to take medications correctly while maintaining their independence. People with T2DM appreciated the support to meet their self-management requirements. The person below overtly described

a sense of safety from the medication adherence support that was provided (i.e., his Webster-pak):

I felt safe giving me self the medication through me blisters [Webster-pak]. (PWD 10)

5.2.3.1.2.2. *Health professional support*

Health professionals of multiple disciplines provided expertise and guidance to help their clients with T2DM self-management. While people with T2DM did not elaborate on the specifics of the support provided by each discipline, they discussed the many health professionals involved in their care. The person with T2DM below alludes to the varying disciplines involved in T2DM care:

I see [Name]—that's my psychologist—once a month. My doctor and my diabetes nurse every three months. I go to the hospital [diabetes centre]. (PWD 7)

People with T2DM expressed appreciation for the support provided by health professionals. Furthermore, some attained a 'peace of mind' from the health professional support they received, as is suggested in the quote below:

Interviewer (AF): *[asked at a diabetes clinic] So, what's been good then; what's been helpful for you?*

PWD 4: *Just the fact of coming here and keeping an eye on it [T2DM].*

5.2.3.1.2.3. *Community support*

People with T2DM utilised supports available within the community, for example, community transport services. Accessing community services enabled people with T2DM to maintain independence and participate in general life activities such as shopping, attending appointments and social outings. However, people with T2DM also expressed a desire for increased

community support options. This included both T2DM-specific and other community supports.

The person with T2DM below describes a desire for more community support groups:

It probably would [the support of others would be helpful] ... maybe a group might be an idea but, even a diabetic group, or something. (PWD 8)

The utilisation of existing community supports and the desire for increased support options within the community demonstrate the importance study participants placed on community support.

5.2.3.1.2.4. Financial support

With restricted finances identified as a major barrier to T2DM self-management, almost all study participants expressed the necessity of financial assistance to enable effective T2DM self-management. The below conversation with a person with T2DM highlighted the potential detriment lack of finances can have:

Interviewer (AF): *Without the pension?*

PWD 7: *I'd have been having to just die because it's expensive. There's no way I could have afforded it [living with T2DM].*

Interviewer (AF): *Oh, so you get the subsidy for your scripts?*

PWD 7: *Yeah. Otherwise, I wouldn't be buying it.*

Interviewer (AF): *And so, if you didn't have that support, you wouldn't buy the medication at all?*

PWD 7: *No, no! I wouldn't. I'd just take whatever comes.*

Financial support such as pensions and government subsidies for medications undoubtedly assisted the participants with T2DM in the study to manage their condition.

5.2.3.1.2.5. *Personal support*

People with T2DM discussed varying supports that were personal to them, including the support of family members and also of companion animals. Personal support was not necessarily related to T2DM self-management. Nonetheless, being able to lean on these supports, whatever they were, provided fortitude and companionship, as is demonstrated in the quotes below:

It was amazing when I was here in hospital; it was just astonishing. And my son who works 600 kilometres away, he, of course, came up, but 5 am every morning and that, I slowly arise in ICU [the intensive care unit] and I just seen this big face there ... It was just so beautiful. Just holding my hand ... It's just beautiful. And, of course, they give you the strength. (PWD 2)

I've got a dog at home too, which is sort of good company. (PWD 9)

Contrary to the above quotes, the absence of personal support exacerbated feelings of social isolation and aloneness, as indicated below:

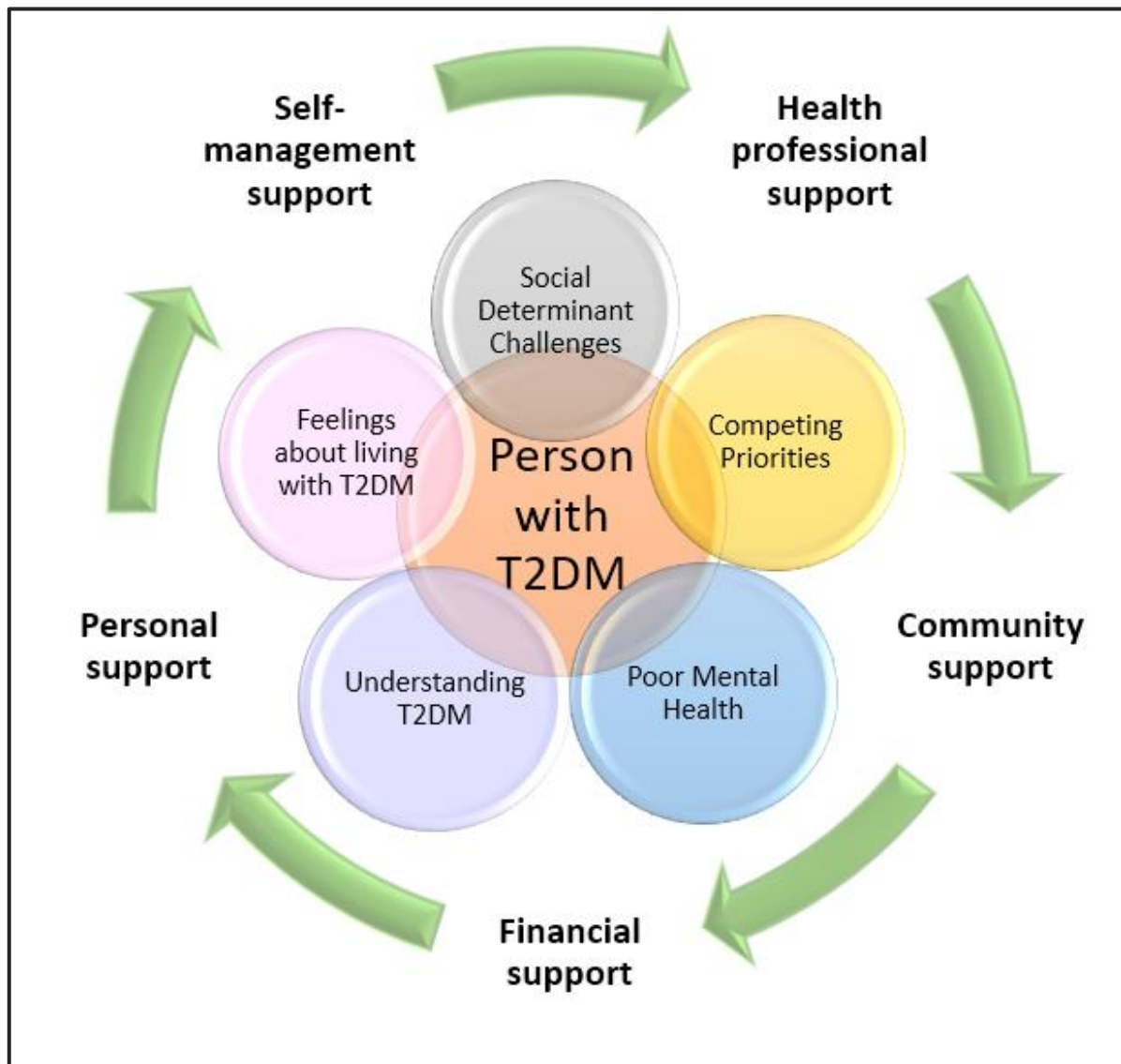
Interviewer (AF): *I heard you just say that you don't feel like you've got any support?*

PWD 3: *No, I haven't. I mean, my children keep to themselves ... Now, I could get sick and go to hospital, and nobody gives a [swear word]. Nobody gives a damn whether I'm in hospital or anything. Nobody will come and visit or anything.*

The conflicting outlooks identified between those who had personal supports to lean on and those who did not exemplify the feelings of isolation and aloneness that can occur when personal support is unavailable to people with T2DM.

Figure 5.1 provides a diagrammatic representation of the themes. The diagram displays the ‘barriers to T2DM self-management’ in the centre of the diagram (Theme 1) and the ‘diverse support’ utilised by people with T2DM to assist in surmounting these barriers in the outer circle of the diagram (Theme 2).

Figure 5.1. Diagrammatic representation of identified themes



Note. T2DM = type 2 diabetes mellitus. Created by the author.

5.2.4 Discussion

A person-centred approach enhances T2DM care.^{3,16} To enable this and empower successful T2DM self-management, insight into an individual's social context is beneficial.³ This study aimed to draw on the perspectives of people with T2DM to explore SDoH-related self-management barriers and facilitators, and identify how SDoH could be formally incorporated into the usual individual care for people with T2DM.

In this study, well-known SDoH such as income, transport and social isolation were identified as barriers to self-management. This is not a surprising finding as these well-known SDoH² are common hindrances for T2DM self-management.¹⁷ In addition, and possibly also influenced by an individual's life and societal circumstances,² were the competing priorities in the lives of people with T2DM, understanding of T2DM, poor mental health and how people felt about living with T2DM, all affected self-management. These identified barriers to self-management are all interrelated. For example, feelings about living with T2DM, competing priorities, social determinant challenges or lack of understanding about T2DM could all affect a person's mental health. Conversely, poor mental health could have diverse repercussions for any or all of these components.

The study findings portrayed a connected and cogent relationship between T2DM and individual, societal, financial and environmental factors. Consequently, an approach to T2DM care that includes the external influences on a person's ability to manage the condition may be required. The multilayered influence on T2DM self-management suggests applying a socio-ecological model of health, such as that developed by Dahlgren and Whitehead,¹⁸ may assist in incorporating SDoH into individual care for people with T2DM by encouraging a broader view of the influences on T2DM self-management. The socio-ecological model of health includes and extends a biomedical, individualistic responsibility for health and

recognises the influence of community, living, working and social conditions on an individual's lifestyle and, subsequently, their health^{18,19} (i.e., their SDoH).

The socio-ecological model of health has previously been used to investigate the influences on T2DM self-management in a low socioeconomic Australian population.²⁰ In line with the issues reported by people with T2DM in the current study, the authors confirmed multiple influences on T2DM self-management. The influences they identified were individual (e.g., motivation), interpersonal support (e.g., health professionals, friends and family), organisational (e.g., healthcare access issues) and community level (e.g., self-management support services). These layers compound to affect health in general and, more specifically, the behaviours required for T2DM self-management.^{18,19}

Adopting a socio-ecological approach to incorporate SDoH into the usual clinical care of individuals with T2DM could help identify the influences on self-management, which may then catalyse strategies to action or work within these issues. Furthermore, it could enhance current practices around understanding the individual and broader social circumstances of people with T2DM.

Diabetes education provided to people with T2DM could become more personalised when there is a deep understanding of how a person's social circumstances influence their self-management. An example specific to the findings in this study could be budgeting support to assist with the financial difficulties described by people with T2DM in the current study. Personalising T2DM education would enable a targeted approach to each individual's identified SDoH-related barriers, empower improved self-management and accommodate for varying health literacy levels.²¹

Poor mental health and feelings about living with T2DM was also a barrier to T2DM self-management in this study. Disabled self-management resulting from a poor mental and emotional status is well documented and forms an integral part of T2DM management guidelines.^{3,22} It is argued that effective diabetes care is not possible without considering emotional status.²³ People with T2DM in the current study highlighted the importance of this through overt expressions of depression affecting their T2DM self-management and the noticeable undertone of stress and anxiety.

There is an association between mental health and SDoH.¹ Understanding the mental and emotional status of each unique individual by providing person-centred care and incorporating a holistic, socio-ecological view of health and wellbeing¹⁶ amplifies the likelihood of identifying the relevant emotional and psychological aspects of living with T2DM.²³

After identifying T2DM self-management barriers, appropriate support that facilitates effective self-management could be arranged. Apposite support could also stem from a socio-ecological framework. A socio-ecological view would provoke a broader and multifaceted interpretation of support requirements, similar to the support utilised by people with T2DM in this study (health professional support, self-management support, community support, financial support and personal support). A broader view could help address the complex needs of people with T2DM more comprehensively. This may be through connecting people to support not typically considered to be health-specific, such as transport and housing departments or other available social support and community services. Acknowledging the influences on health beyond the healthcare system, and arranging support accordingly may assist people with T2DM to overcome or make self-management progress despite SDoH-related barriers. Consequently, the support provided could then become a facilitator of effective T2DM self-management.

The association between social support and improved glycaemic management is not a new concept. Previous studies have shown the effectiveness of social support on T2DM outcomes.^{24,25} Furthermore, Strom and Egede²⁶ consolidated the importance of social support in their systematic review. Their definition of social support included formal support, such as that provided by health professionals, and informal support, such as friends and family. They reviewed 37 articles and determined that higher levels of social support indeed contribute to improved outcomes for people with T2DM.²⁶ The people with T2DM in the current study also concur the advantage of both formal (health professional support and financial support) and informal supports (self-management support, community support and personal support).

5.2.4.1 Limitations

The themes in the current study were identified from the perspectives of people with T2DM in regional, rural and remote NQ, Australia. Similar research, conducted in other locations, may lead to different theme development due to the divergent influences on people's lives stemming from geographic location. Accordingly, geographic location will require consideration if replicating this study. Consideration should also be given to the use of purposive sampling and voluntary study participation. While it was essential to recruit people with T2DM to discuss the self-management challenges associated with SDoH, and voluntary study participation is necessary, the life circumstances of participants may have influenced their choice to participate and, thus, the findings. Finally, only half ($n = 5$) of the participants were contactable for member checking; however, those who provided feedback confirmed the correctness of the findings.

5.2.4.2 Conclusion

People living with T2DM often have poor SDoH.¹ A socio-ecological model of health considers the multilayered and intertwined influence of culture, socioeconomic, environment, living and working conditions, and social and community networks on an individual's lifestyle.¹⁸ Using a socio-ecological view of health to incorporate SDoH into the individual care of people with T2DM could provide insight into SDoH-related barriers to self-management and guide a person-centred approach to individual care. Following comprehensive identification of SDoH-related barriers, coinciding support based on a socio-ecological model of health could be arranged. Ultimately then, improved self-management of T2DM may be achieved.

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5.4 Implications for practice

In this study, the social circumstances of people with T2DM undoubtedly influenced their ability to self-manage the condition. Understanding the social circumstances of people with T2DM is core to person-centred care.¹ While it is recommended in clinical care to consider the social circumstances of people with T2DM,^{1,3} the practice is not formalised and may be stemmed from a ‘medical model’ view of T2DM care.⁴ The findings of this study reflected influences on self-management similar to those included in the socio-ecological model of health (i.e., individual, relationship, community, environmental and societal influences on health).² Accordingly, an approach to T2DM care that is more reflective of a socio-ecological model of health may facilitate a more inherent inclusion of SDoH into individual clinical care for people with T2DM. Changing from a ‘medical model’ thinking about T2DM would not alter the need for medical management; instead, being guided by the socio-ecological model would enhance current practices around T2DM clinical care by incorporating people’s SDoH.

5.5 Chapter summary

Chapter 5 included Infographic 5.1 which summarises the study conducted with people who have T2DM. The chapter also includes Publication 5 (see section 5.2) which reports the perspectives of people with T2DM on incorporating SDoH into individual clinical care.

Chapter 6 discusses HPs’ perspectives on how SDoH can be incorporated into individual clinical care for people with T2DM.

5.6 Chapter 5 references

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Chapter 6: Health professionals

6.1 Chapter outline


Chapter 6 focuses on how SDoH could be incorporated into the individual clinical care of people with T2DM from a HP perspective. The chapter begins with Infographic 6.1, which visually summarises the relevant study. Following that is the publication of this research (see Section 6.2), which is currently under review by *PLOS ONE Journal*. Publication 6 is titled ‘Incorporating social determinants of health into individual care—a multidisciplinary perspective of health professionals who work with people who have type 2 diabetes’. The implications for practice from the research findings are then discussed. Chapter 6 concludes with a chapter summary and a brief introduction to Chapter 7.

Infographic 6.1. Incorporating social determinants of health into clinical care for individuals with type 2 diabetes—health professionals’ perspectives

INCORPORATING SOCIAL DETERMINANTS OF HEALTH INTO CLINICAL CARE FOR INDIVIDUALS WITH TYPE 2 DIABETES – HEALTH PROFESSIONAL PERSPECTIVES.

INTRODUCTION

- Health professionals strive to provide quality, person-centred care for people with type 2 diabetes(1).
- Person-centred care is especially beneficial when working with people who live in disadvantaged situations, with suboptimal social determinants of health(2).
- Social determinants of health include; income, employment, education, transport, social support and health care access(2, 3).
- The Commission on Social Determinants of Health provides guidance on how to address social determinants at broad population and community levels(4).
- Guidance on incorporating social determinants of health at an individual, clinical level is limited. Especially for type 2 diabetes(5).



AIMS




To draw on the perspectives of health professionals who work with people with T2DM to identify and explore:

1. Social determinants of health related issues, and their repercussions on people with type 2 diabetes, and the health professionals that work with them.
2. How to include social determinants of health into usual clinical care for people who have type 2 diabetes.

METHODS

- 5 North Queensland diabetes services
- Purposive Recruitment
- Interviews and Focus Groups
- Deductive and inductive thematic analysis (NVivo 12)

RESULTS

 **44** INTERVIEWS +
  **2** FOCUS GROUPS =
  **51** HEALTH PROFESSIONALS

endocrinologists, general practitioners, a medical registrar, a public health physician, an enrolled nurse, a practice manager, diabetes educators, dietitians, podiatrists, clinical exercise physiologists, physiotherapists, psychologists, social workers, occupational therapists, a speech pathologist, nurse practitioners and nurse navigators.

RESEARCH DESIGN

Qualitative study using an exploratory, descriptive approach.

LIMITATIONS

- Only representative of diabetes services in North Queensland, Australia.
- Minimal consideration of models of health care.

CONCLUSIONS

Incorporating social determinants of health into individual, clinical care for people with type 2 diabetes could improve self-management and enhance patient-centred care.


RESULTS

44 INTERVIEWS + **2** FOCUS GROUPS = **51** HEALTH PROFESSIONALS

endocrinologists, general practitioners, a medical registrar, a public health physician, an enrolled nurse, a practice manager, diabetes educators, dietitians, podiatrists, clinical exercise physiologists, physiotherapists, psychologists, social workers, occupational therapists, a speech pathologist, nurse practitioners and nurse navigators.

Incorporating social determinants of health into clinical care for individuals with type 2 diabetes;

- could enhance person-centred care.
- could increase health professional self-worth when social determinant related barriers to self-management are surmounted.
- requires respect of privacy, trust, rapport, communication skills and type 2 diabetes knowledge.
- should be ongoing, and the identified barriers should be actioned.
- requires management support, guiding policies and procedures, validated tools, team champions, teamwork, ongoing education and training, and adequate resources.



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Ethics Approval - Queensland Health (HREC/18/COTHS/128) & James Cook University, Australia (H0463)

Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

6.2 Publication 6: Incorporating social determinants of health into individual care—a multidisciplinary perspective of health professionals who work with people who have type 2 diabetes.

Overview of Publication 6

In Publication 6, a multidisciplinary cohort of HPs provide insights into how SDoH could be incorporated into individual clinical care for people with T2DM. The publication details the study's aims, methods, results and limitations. A discernible impact of social determinants on an individual's diabetes self-management was reported, and the need for SDoH to be incorporated into an individual's care was asserted. If SDoH are to be successfully and sustainably incorporated into individual care for people with T2DM, a dedicated team member responsible for assessing and addressing an individual's SDoH is required. However, this team member must also have a thorough understanding of T2DM. In addition, the necessity of client privacy, trust and rapport is postulated. Successful incorporation of SDoH also requires a whole-of-team approach, appropriate tools and resources, education and training, guiding policies and procedures, and management support. Incorporating SDoH into individual care for people with T2DM could improve self-management capacity and enhance person-centred care.

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Contribution of authors: A Frier (conceptualisation, participant recruitment, data collection and analysis, writing of original draft), S Devine (conceptualisation, data analysis, reviewing and editing, supervision, F Barnett (conceptualisation, reviewing and editing, supervision), K McBain-Rigg (data analysis, reviewing and editing, supervision) T Dunning (reviewing and editing, supervision).

Note. The referencing and formatting in this publication is consistent with the journal requirements and, therefore, may be inconsistent with the thesis referencing and formatting.

6.2.1 Abstract

Social determinants of health (SDoH) and type 2 diabetes mellitus (T2DM) are interrelated. The prevalence of T2DM is increased amongst those with suboptimal SDoH. Poor SDoH can also negatively impact T2DM self-management. Social determinants of health are mostly considered at population and community levels, rather than individually or clinically. This qualitative study combines the perspectives of a multidisciplinary cohort of health professionals to identify and explore the impact of social determinants on self-management, and ways they could be incorporated into individual clinical care. Purposively selected participants chose to partake in an in-depth, semi-structured, one-on-one interview or focus group. Data were analysed, and themes identified using a combination of deductive and inductive thematic analysis. Fifty-one health professionals volunteered for the study. Two small focus groups (n=3 and n=4) and 44 one-on-one interviews were conducted. The identified themes were: 1) Support for incorporating SDoH into T2DM care, 2) Effect of SDoH on T2DM self-management, 3) Identifying and addressing social need, 4) Requirements for incorporating SDoH into T2DM individual clinical care. Health professionals reported that poor social determinants negatively affect an individual's ability to self manage their T2DM. Person-centred care could be enhanced, and people with T2DM may be more likely to achieve self-management goals if SDoH were included in individual clinical care. To achieve successful and sustained self-management for people with T2DM, health professionals require a thorough understanding of T2DM and the effect of social determinants, respect for client privacy, client trust and rapport, effective communication skills, validated tools for assessing SDoH, team/SDoH champions, teamwork, ongoing education and training, adequate resources, guiding policies and procedures, and management support. Incorporating SDoH into individual, clinical care for people with T2DM was strongly supported by health professionals. If embraced, this addition to care for individuals with T2DM could improve self-management capacity and enhance person-centred care.

6.2.2 Introduction

Health professionals (HPs) strive to provide quality, person-centred care for people with diabetes.¹ Person-centred care is especially beneficial when working with people who live in disadvantaged situations. Socially disadvantaged people have a higher prevalence of T2DM, and face more barriers when self-managing their diabetes.²⁻⁴ Social disadvantage is an accumulation of suboptimal SDoH which include income, employment, housing, education and health literacy, transport, social support and access to healthcare.^{2,5}

SDoH are typically addressed at a population level and aim to achieve sustained health equity, social justice and generational improvement of people's lives.^{2,6,7} Momentum towards this was strengthened following the Commission on Social Determinants of Health's (CSDH) report.⁷ The commission's overarching principles guide action on SDoH at global, national and local levels. Upstream, population approaches directed at political, societal and economic improvement are the foundation of the CSDH's purpose of lasting health equity and social justice.^{2,7,8}

Advocacy and action towards health equity and social justice is progressing; however, until permanent improvement of people's lives is achieved, a substantial proportion of the population will continue to live in socially disadvantaged situations, with poor SDoH. As a consequence, their ability to manage chronic conditions, such as T2DM, is impeded.

Similar to the clear evidence base supporting action on SDoH,^{2,6,7} the association between SDoH and T2DM is well established.^{4,9-11} While assessing and addressing non-clinical issues such as SDoH is not the major focus in clinical T2DM settings, the necessity to do so is emphasised by the entwinement of socioeconomic factors and overall health.^{2,7,12} To date, clear guidance on how to include SDoH into individual clinical healthcare is scarce. This may stem from a shortfall in supportive policies and organisational guidance for taking action on SDoH

in healthcare settings.¹³ However, international momentum towards screening and addressing SDoH issues on an individual level in clinical healthcare settings has begun.¹⁴⁻²⁰ These approaches could provide helpful guidance for the incorporation of SDoH into the clinical management of T2DM.

Once contextualised to specific regions, diabetes services could embed SDoH as part of usual clinical care for individuals with T2DM. The integration of SDoH into T2DM clinical practice could provide health professionals with insight into their client's life circumstances and broader SDoH-related barriers to T2DM self-management. Thoroughly understanding an individual's SDoH and their impact on self-management may assist HPs to deliver a more comprehensive person-centred intervention¹ and lead to greater improvement in health outcomes for their clients.

The current study combined viewpoints from a multidisciplinary range of health professions involved in diabetes care. The aims were to investigate how SDoH affects T2DM self-management and ways to incorporate SDoH issues into individual clinical care. The findings will contribute to the body of evidence supporting the affliction of suboptimal SDoH on T2DM.²¹ Furthermore, they will inaugurate momentum towards incorporating SDoH into the usual clinical care of people with T2DM.

6.2.3 Methods

This qualitative study used an exploratory, descriptive approach.²² The intent was to increase understanding of how SDoH affects the self-management ability of people with T2DM, and the relevance for HPs who work with them. The qualitative design also enabled HP experience and insight to inform how SDoH could be incorporated into usual clinical care for people with T2DM.

6.2.3.1 Research aims

The aims of the study were to draw on the perspectives of HPs who work with people with T2DM to

1. identify and explore SDoH-related issues and their repercussions on people with T2DM and the HPs that work with them
2. identify and explore how to include SDoH into usual clinical care for people who have T2DM.

6.2.3.2 Situating the researcher

The primary researcher (AF) is a dietitian and diabetes educator. She has provided diabetes care throughout rural, remote and regional North Queensland, Australia (NQ) for over 18 years. This experience has provided exposure to the SDoH challenges people with T2DM can endure and has motivated her to investigate the topic reported in this paper. A reflexive mindset was adopted to ensure self-reflection and self-awareness of personal context, and experiences were considered during all stages of the research.²³

6.2.3.3 Setting

Health professionals who work with people who have T2DM from five health services in NQ participated in the study. Three were government services, one was a not-for-profit organisation, and one was a fee-for-service provider. These health services provided both community centre-based and outreach diabetes care to rural, remote and regional communities across the NQ region.

6.2.3.4 Participant recruitment

Employees from the five NQ diabetes service providers were purposively selected. Purposive sampling assured a sample reflecting the wide range of HPs involved in diabetes care were

recruited.²² AF commenced recruitment by conducting face-to-face introductory meetings with managers at each diabetes service. A detailed explanation of the research project and information sheets were provided. Management briefed their staff about the study, provided information sheets and invited voluntary participation. Upon volunteering, suitable dates and times for study involvement were negotiated between AF, the staff member and their manager. To achieve sample heterogeneity, AF maintained regular communication with managers via phone, email and face-to-face meetings to encourage recruitment activities until all disciplines involved in T2DM care were represented.

6.2.3.5 Data collection

Participants chose to take part in either an in-depth, semi-structured, one-on-one interview or focus group. AF conducted all interviews and focus groups to maximise consistency between the two data collection methods. Using an informal and conversational style and meeting rooms rather than clinic settings added to a relaxed and comfortable environment for study participants. Demographic information, profession and years of experience were captured using a written questionnaire prior to each interview/focus group. AF and the second researcher (SD) developed the interview guide, which was informed by a literature review on the topic.²⁴ A third researcher (FB) reviewed the interview guide for participant suitability and research question adherence, with no major changes suggested. Open-ended questioning elicited understanding of SDoH in relation to T2DM, and insights on how SDoH could be incorporated into clinical care. The interview/focus group questions were piloted with two credentialled diabetes educators. Data saturation was inferred when no new responses from HPs emerged. Interviews and focus groups were audio-recorded, and informed consent was gained immediately before commencement of each interview/focus group.

6.2.3.6 Data analysis

Data analysis was guided by Braun and Clarke's six steps for thematic analysis.^{25,26} All audio recordings were transcribed and then reviewed manually by AF. A sample of these transcripts were reviewed independently by SD, enabling independent theme identification and increased study rigour. Transcripts were thematically analysed using QSR NVivo v12 (QSR International; <http://www.qsrinternational.com/nvivo>) as the data management tool. Deductive and inductive data analyses were conducted simultaneously.^{25,27} The deductive analysis was based on a framework of well-known SDoH (see Table 6.1).² A phenomenological approach to the inductive analyses facilitated deep exploration of HPs' experiences^{22,26} of working with people who have T2DM through a SDoH lens and how these insights could be incorporated into clinical care. Analytical discussions on coding and theme development were conducted between AF, SD and the fourth researcher (KMR). Member checking involved providing a detailed explanation of the identified themes to the diabetes service managers via email. Managers then communicated the themes to study participants and invited feedback. In addition, two feedback sessions were provided to study participants ($n = 8$ and $n = 6$). There were no recommended changes to the identified themes.

Table 6.1. Social determinants of health framework used for deductive analysis

Social determinants of health
Addiction
Early life
Economic status (income)
Education
Employment
Food security
Healthcare access
Housing
Social exclusion
Social support
Stress
The social gradient
Transport

6.2.3.7 Ethics approval

Ethics approval was granted by the Human Research Ethics Committee of Queensland Health (HREC/18/QTHS/128) and James Cook University, Australia (H7480).

6.2.4 Results

6.2.4.1 Participant characteristics

Forty-four one-on-one interviews and two small focus groups ($n = 3$ [dietitians] and $n = 4$ [one podiatrist and three registered nurses/credentialed diabetes educators]) were conducted (a total of 51 participants). Participants included 10 males and 41 females aged between 22 and 64 years (median = 38.5 [interquartile range = 29–50]). Years of diabetes experience ranged from 0.25 to 40 years (median = 8 [interquartile range = 4–15]). Participating disciplines included endocrinologists, general practitioners, a medical registrar, a public health physician,

an enrolled nurse, a practice manager, diabetes educators, dietitians, podiatrists, clinical exercise physiologists, physiotherapists, psychologists, social workers, occupational therapists, a speech pathologist, nurse practitioners and nurse navigators. Participant qualifications included certificate, diploma, undergraduate and postgraduate levels, with most participants holding postgraduate qualifications. Table 6.2 displays the participant's discipline, role and demographic information. All study participants were non-Indigenous as the perspectives of Australian Aboriginal and Torres Strait Islander health workers are published in a separate paper (see Section 4.3).²⁸

Table 6.2. Health professional's demographic and career information

Factor	Number (N=51)
Demographic Factors	
Female	41 (80.0%)
Male	10 (20.0%)
Median years of age (IQR)	38.5 (29–50)
Education level	
Postgraduate	34 (67.0%)
Undergraduate	15 (29.0%)
Diploma of nursing	1 (2.0%)
Certificate IV (business)	1 (2.0%)
Experience/discipline	
Median years of diabetes experience (IQR)	8 (4–15)
Registered nurse/CDE	9 (17.6%)
Dietitian	7 (13.7%)
Podiatrist	4 (7.8%)
Endocrinologist	3 (5.9%)
General practitioner (clinic specialising in diabetes)	3 (5.9%)
Physiotherapist	3 (5.9%)
Occupational therapist	3 (5.9%)
Registered nurse/nurse navigator	2 (3.9%)
Registered nurse/diabetes educator (not credentialled)	2 (3.9%)
Clinical exercise physiologist	2 (3.9%)
Psychologist	2 (3.9%)
Social worker	2 (3.9%)
Public health physician (specialist diabetes centre)	1 (2.0%)
Medical registrar (specialist diabetes & endocrinology centre)	1 (2.0%)
Nurse practitioner/CDE	1 (2.0%)
Nurse practitioner/nurse navigator/CDE	1 (2.0%)
Clinical nurse consultant/registered nurse/CDE	1 (2.0%)
Endorsed enrolled nurse (specialist diabetes centre)	1 (2.0%)
Dietitian/CDE	1 (2.0%)
Speech pathologist	1 (2.0%)
Practice coordinator (clinic specialising in diabetes)	1 (2.0%)

Note. IQR = interquartile range; CDE = credentialled diabetes educator.

6.2.4.2 Focus group and interview findings

During data analysis, the issues discussed during the focus groups and the one-on-one interviews were similar. In addition, the number and size of the focus groups ($n = 3$ and $n = 4$) were very small. Accordingly, data from the focus groups and interviews were amalgamated, and themes were identified collectively.

The identified themes were:

1. support for incorporating SDoH into T2DM care
2. effects of SDoH on T2DM self-management
3. identifying and addressing social need
4. requirements for incorporating SDoH into T2DM clinical management.

6.2.4.2.1 Support for incorporating social determinants of health into type 2 diabetes mellitus care

Overwhelmingly, HPs indicated that understanding and incorporating SDoH into clinical care for people with T2DM would be beneficial to practice and is ultimately necessary for comprehensive T2DM care. Study participants felt that increased awareness of SDoH-related self-management barriers would lead to more individualised, achievable and effective management strategies based on each person's social circumstances:

So those are the sort of things [SDoH-related barriers], that if we know, what are the barriers. It makes it easier for us to go ahead and design a treatment that suits the person ... and I think we've got enough in our hands at the moment, the various medications that we have, we can individualise a treatment and design a treatment that meets their needs. (HP 2, an endocrinologist)

Furthermore, many HPs reported a deflated professional self-worth because they were unable to help people with T2DM achieve their self-management goals because of SDoH-related barriers:

Sometimes you feel a bit despondent, with, you know. Not with the work you do with people, I always love to work with people and feel like you can possibly help them in a positive way, but sometimes I just feel that I can't really make a big difference because there's these things ... [SDoH-related barriers]. (HP 19, a registered nurse/credentialed diabetes educator)

While the value of incorporating SDoH into the clinical care of T2DM was clear, HPs expressed privacy-related concerns that may arise when exploring the personal social issues of people with T2DM. Table 6.3 provides a summary of the privacy concerns raised by HPs.

Table 6.3. Privacy-related issues raised by health professionals

Health professional's concerns about the privacy of people with T2DM
Invasion of privacy by delving into personal issues
Raising personal and sensitive issues—'hitting nerves'
People with T2DM may choose not to divulge SDoH information due to embarrassment and pride
Inability of people with T2DM to see the correlation between their SDoH and T2DM self-management
Potential for people with T2DM to become defensive when raising personal issues
People with T2DM may feel health professionals are being nosy

Note. T2DM = type 2 diabetes mellitus; SDoH = social determinants of health.

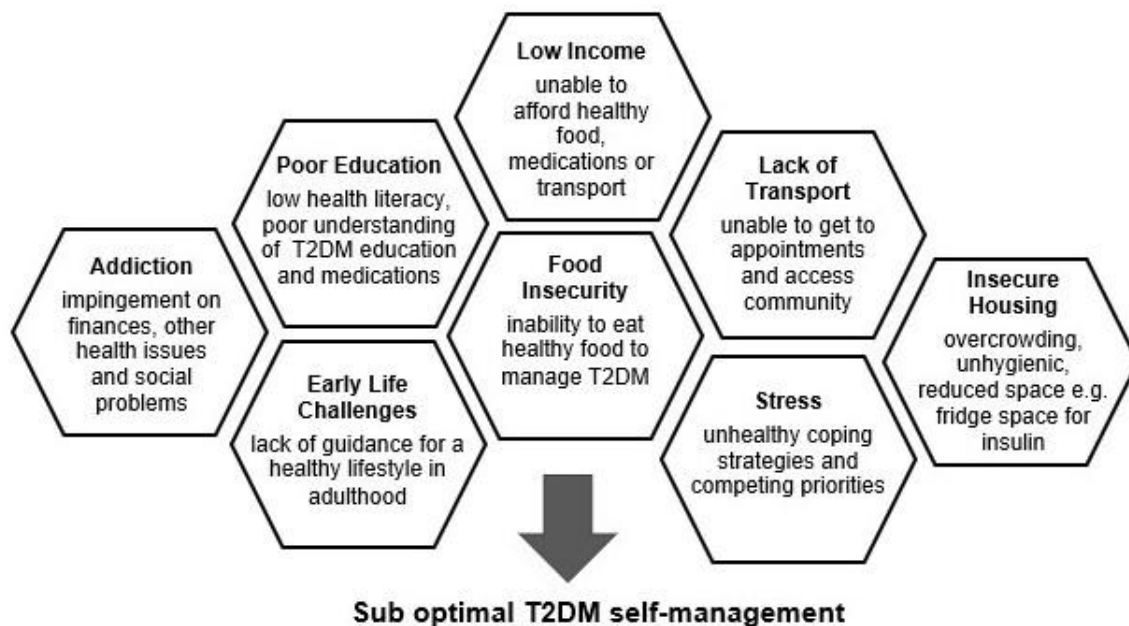
6.2.4.2.2 Effect of the social determinants of health on type 2 diabetes mellitus self-management

T2DM self-management was unquestionably affected by people's SDoH. HPs described two layers of effect. The first was on the personal ability of people with T2DM to achieve self-management goals. The deductive analysis framework² helped identify that deficits in any SDoH can create barriers for T2DM self-management. However, the most reported hindrances to self-management were limited access to suitable transport, financial concerns and minimal social support. As a result, people with T2DM could not attend diabetes-related appointments, afford healthy food and medications, or rely on support people to assist with self-management difficulties. Most notably, HPs felt it was the aggregation of poor SDoH that leads to suboptimal self-management rather than the result of one single social determinant.

I mean, it's overcrowding, people haven't got employment, people haven't got access to food ... throw in the gambling, throw in the drugs ... and oh my God, it's a nightmare ... It's just an absolute nightmare! (HP 21, a registered nurse/credentialed diabetes educator)

Figure 6.1 displays examples of the interconnected SDoH circumstances encountered in practice by HPs. The HPs described these individual SDoH issues as combining and collectively contributing to suboptimal T2DM self-management.

Figure 6.1. The combination of social determinants of health contributing to suboptimal type 2 diabetes mellitus self-management



Note. T2DM = type 2 diabetes mellitus. Created by the author.

The second effect was not a direct consequence of an individual’s SDoH; instead, it was related to health service processes and how these can exacerbate negative SDoH, specifically healthcare access. The role health services can play in hindering healthcare access was identified in this study. HPs frequently raised high ‘failure to attend’ (FTA) rates. While a small number of HPs felt it was purely PWD choice to attend their appointments (or not), most indicated health services had a responsibility to facilitate access to healthcare to reduce high FTA rates:

I think the other thing is those patients would be labelled as FTAs, and they may have called up and spoken to someone, but because there was limited, I suppose, ability to put—[support], around that, they’d be marked as FTA. So, then they’d sort of get labelled as a patient with FTAs all the time, but that’s actually not the issue; it’s that

they have actually genuinely tried, or they wouldn't see the letter in time. (HP 12, a registered nurse/nurse navigator)

6.2.4.2.3 Identifying and addressing social need

All HPs agreed there were two main aspects to incorporating SDoH into T2DM clinical care. These were identifying the social needs of PWDs and addressing this identified social need.

6.2.4.2.3.1. Identifying social need

Participants suggested that SDoH could be assessed using a validated tool. Home visits to witness living environments were also discussed; however, many HPs aired concerns that home visits would add time and resources to an already excessive workload. They felt something quick and easy was required to assure SDoH assessments were part of usual practice, such as a checklist that identified the issues relevant to each PWD.

Participant consensus confirmed the initial SDoH assessment should be conducted when the person with T2DM first engages a T2DM service. It was felt that this information would inform all areas of T2DM care:

So, and on an initial assessment [first T2DM appointment], it's a valid thing to do, and it sets the tone for conversation, too, around the client. You know, a more personalised approach to that person. (HP 9, a nurse practitioner/credentialed diabetes educator)

Timeframes for repeated SDoH assessment varied from three months to two years. Some HPs commented on the many life events that can occur for people with T2DM and suggested this be the indicator for reassessment:

If any big issues come up, then it probably needs to be reassessed [SDoH reassessment], like if they have a marriage breakdown or something. (HP 8, a medical registrar)

When determining who should identify social need, HPs described the necessity of rapport, trust, effective communication and an understanding of T2DM. They concurred that a qualified HP should be responsible for conducting the SDoH assessment rather than administration or a community worker. Expanding this concept, HPs with more experience or higher positions within the T2DM team attested that it was each and every HP's responsibility because SDoH is integral to person-centred T2DM care:

At the end of the day, it's what we should all be doing, but you know from that person-centred approach, all of the [SDoH] come into that, don't they! (HP 14, a registered nurse/credentialed diabetes educator)

6.2.4.2.3.2. *Addressing identified social need*

HPs expressed that assurance of improved T2DM outcomes would increase the likelihood that incorporating SDoH into clinical care would be embraced. They also felt understanding SDoH-related self-management barriers would only be useful if corrective action could be taken on the identified issue:

I think if a patient [person with T2DM] has already had a social assessment. It would only be of benefit if something is done about it. (HP 3, an endocrinologist)

Substantiating this was unanimity in having a position within the T2DM team solely responsible for assisting people with T2DM to navigate identified SDoH-related barriers. The stipulation of being a team member was to assure regular feedback and continuity of care. For similar reasons, HPs also stressed a need for external referral feedback and lamented its current shortfall.

As with identifying SDoH-related barriers, trust, rapport, communication and T2DM understanding were rudimentary to addressing social need. In addition, experience in the social

arena and strong community networks and relationships were paramount. As such, the two most prominently suggested HPs were nurse navigators and social workers:

The other thing that was a light in the darkness was nurse navigators. The principle of that whole thing is identifying the individual's needs in their life, not their medical need. So, a lot of work that happens there, by the navigators [nurse navigators], is around their social, psychological, situation, to get that sorted out, and then they can address their health care. (HP 1, a public health physician)

I think social work is in a good place to answer, I guess, a lot of those kinds of practical questions that lie outside of my scope of knowledge and the kind of connections I have with the community. Social work has a lot of those things ... Yeah, I think social work's important. I think social work, particularly in the practical side of things, of helping people to access services, and access things, can be, is very valuable, I think. (HP 43, a psychologist)

When the nurse navigators and social workers in the study described their roles and responsibilities, congruity with the stated requirements was evident and, therefore, confirmed their suitability to the role. Furthermore, they agreed with this proposition.

6.2.4.2.4 Requirements for incorporating the social determinants of health into type 2 diabetes mellitus clinical care

For SDoH to be sustainably incorporated into clinical care for people with T2DM, HPs felt there were some fundamental requisites. Management support, team champions, guiding policies and procedures, ongoing education and training, teamwork, and adequate resources (staffing, time, intervention tools and referral follow-up processes) were all described as facilitators to incorporating SDoH into the clinical care of people with T2DM.

6.2.5 Discussion

Suboptimal SDoH and T2DM are often mutually inclusive;²⁹ however, they are usually addressed separately, with disparate approaches for mitigating their undesirable health effects. SDoH are usually considered at a population level and T2DM at an individual clinical level.^{2,3} This study sought to investigate HP's perspectives on how SDoH could be incorporated into the clinical care of individuals with T2DM and to understand the affliction of SDoH on T2DM. The diverse range of HPs in this study is representative of the multidisciplinary approach to T2DM care³ and, therefore, adds to the study's credibility.

The findings reflected an interconnection between the coalescence of poor SDoH and suboptimal T2DM self-management. HPs in the current study expressed a strong desire to include SDoH into clinical care for people with T2DM. This appeal was bolstered in a recent pilot study by Neadley et al.³⁰ The pilot study was conducted in a disadvantaged population of Adelaide, Australia. Study participants (patients) felt collecting SDoH information at an individual level would benefit both patients and healthcare providers by improving communication, identifying patient service needs and highlighting previously unrecognised issues. Furthermore, the authors reported that the patients were comfortable divulging sensitive information.³⁰ This patient assurance may appease privacy concerns expressed by HPs in the current study.

Concurrence between patients in the study by Neadley et al.³⁰ and HPs in the current study was also noted in their equivalent concern for the time constraints of healthcare providers. Participants in both studies inferred a person dedicated to collecting SDoH-related information was a possible redress. Patients suggested a researcher³⁰ and HPs felt a team member with experience in T2DM was required. Though differing in who should collect the information, the

corresponding perspective of a dedicated role to assist with time management emphasises the imperative of considering HPs time and workload when incorporating SDoH into clinical care.

The inclusion of an individual dedicated to SDoH-related issues was also identified in a literature review conducted by Frier et al.²⁴ The review revealed the benefit of community health workers/community health advisors for addressing SDoH issues.²⁴ Combining the requisite of extensive T2DM knowledge for this role (suggested by HPs in the current study), is an important consideration when incorporating SDoH into the clinical care of individuals with T2DM. Furthermore, a dedicated team member may indicate management commitment and support and increase the likelihood of appropriate resources and tools to enhance this approach.

HPs in the current study also felt that any tool used to collect individual SDoH information should be validated. The social health screening tool used by Neadley et al. was developed with input from patients and clinicians, who confirmed its appropriateness for use. Though the tool has been tested in a ‘proof-of-concept study’, it has not been validated, and the authors recommend further pilot studies to discern efficacy.^{19,30} The SDoH-related issues it is designed to identify are the same as those experienced by people with T2DM,^{3,4} so, conceivably, it would also apply to this cohort. However, if the social health screening tool were applied in a T2DM-specific community clinical setting, it would require validation.

The consistency between patients and HPs asserts merit for collecting SDoH-related information at an individual and clinical level. Though the study by Neadley et al.³⁰ did not exclusively include people with T2DM and was in an inpatient setting, transferability to all chronic diseases and community clinic settings is easy to conceive. This notion was corroborated by Kusnoor et al.,³¹ whose study findings supported the feasibility of collecting SDoH and behavioural information from individuals in community clinical settings.

The value of collecting SDoH information from people with T2DM could be enhanced if the self-management barriers they incite became surmountable. In addition to a team member being dedicated to collecting SDoH information, HPs in the current study felt the person in this role could also assist people with T2DM in taking action on the identified SDoH issues. Andermann³² also advocated this and suggested patient facilitators or navigators could assist with support service access. The HPs' suggestion of nurse navigators or social workers suitability for this role is indeed logical; however, it would depend on the model of care the health service is operating within. For example, if nurse navigators or social workers did not work within the team, an alternate team member would be required. Subsequently, all team members should be trained to ask about SDoH and ensure the identified issues are actioned, either by referral, connection with appropriate services or other means such as direct support for the identified SDoH issue.^{19,32} This sentiment also emerged in the current study and reiterates the importance of a whole-of-team approach that includes a dedicated role to focus on an individual's SDoH circumstances.

If people with T2DM were able to achieve their self-management goals, the feelings of professional ineffectiveness expressed by HPs in the current study could be ameliorated. The futility and despondence they reported may relate to an inability to respond to SDoH barriers, as was identified in a study conducted among Australian primary health care services.¹³ The authors suggested this may be due to the discrepancies between comprehensive and selective primary health care.¹³ Selective primary health care focuses on individuals, behaviour and disease, whereas comprehensive primary healthcare involves a broader view of health and considers the underlying disease causes (i.e., SDoH).³³ The predicament of low professional self-worth reported by HPs in the current study may also be underpinned by the conflict between selective and comprehensive primary healthcare. The services they work within are

oriented towards a selective approach; however, addressing SDoH issues requires a more comprehensive course of action.³³

T2DM management is usually centred around biomedical and behavioural interventions,³ which is converse to the comprehensive primary healthcare approach required for SDoH resolve³⁴ Extending the biomedical view of T2DM care by incorporating SDoH into the individual clinical management for people with T2DM may lean towards selective primary health care; however, acknowledging and acting on the influence of SDoH in clinical settings is an additional step towards addressing the impedance adverse social circumstances can have on optimal health. Importantly though, it should not be intended to replace a comprehensive approach to primary health care.

The focus of this study was on the SDoH of individuals in clinical settings and how SDoH influence the self-management of T2DM. However, there was also the incidental emergence of health provider processes compounding SDoH-related barriers for people with T2DM. In this case, healthcare access was allegedly inhibited because of ineffective appointment-making processes that resulted in high FTA rates. Access to healthcare is a well-known SDoH⁴ and is often accounted for in health equity initiatives.³⁵⁻³⁷ The majority of effort towards improving healthcare access pivots around reducing barriers such as lack of transport, affordability and distance from healthcare with little, if any, focus on the barriers health services themselves create.³⁷ Therefore, if incorporating the SDoH of individuals with T2DM into clinical care is to be optimised, additional consideration of institutional barriers is fundamental.

6.2.5.1 Limitations

This study was conducted in rural, remote and regional communities throughout NQ, Australia, and, therefore, may not be representative of other T2DM services within Australia or internationally. In addition, participants in the current study worked under varying health

service delivery models (i.e., centre-based and outreach services). Though all HPs conveyed comparable views about the influence of SDoH on T2DM self-management and how to incorporate them into individual care, this perspective may not necessarily be true for every health service delivery model. If contextualising an approach that includes SDoH in the clinical care of individuals with T2DM, the model of health care delivery and the region in which it is applied would need to be considered. Lastly, the viewpoints of pharmacists (who also work with people who have T2DM) were not captured due to their employment being outside the boundaries of ethics requirements. Given the overall consensus of the relatively large multidisciplinary sample in this study, it is likely that pharmacists' perspectives would be consistent with the reported findings.

6.2.6 Conclusions

A multidisciplinary cohort of HPs who work with people who have T2DM in NQ, Australia, provided insight into how SDoH could be incorporated into individual clinical care for people with T2DM. There was strong acknowledgement of the influence SDoH can have on T2DM self-management and ensuing support for this novel approach to T2DM care. The study revealed that successful and sustainable implementation requires management support and a team member dedicated to this role. In addition, formally incorporating SDoH into the clinical care of individuals with T2DM would require validated tools that support the collection of appropriate information and subsequent action on the identified SDoH-related barriers to T2DM self-management. The findings of this study suggest that collecting SDoH information and appropriately intervening to assist people with T2DM to surmount the barriers they impose would contribute to the person-centred care required for optimal T2DM self-management.¹

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6.4 Implications for practice

Publication 6 demonstrated that HPs recognise the imperative of incorporating SDoH into individual care for the health outcomes of people with T2DM to be improved. However, the comprehensive incorporation of SDoH into individual care requires a paradigm shift so that health service organisations can enable and support the broader view of healthcare that is required. If SDoH are to be incorporated into individual care for people with T2DM, healthcare delivery should move away from the traditional biomedical view of T2DM, which focuses on the disease and individual responsibility. Instead, a model that acknowledges the broader influences on an individual's ability to self-manage their health could facilitate the incorporation of SDoH into an individual's T2DM care. An example of such a model is the socio-ecological model of health, which recognises the individual but also their relationships with others, the features of the community and society in which they live, and the influence of the wider environment on their health.¹⁻³ For the socio-ecological model or similar health models to influence health care delivery and enable the incorporation of SDoH into individual care, endorsement and leadership from upper management are required. Subsequently, the successful inauguration of incorporating SDoH into care for individuals with T2DM may well pivot on management patronage. If this is achieved, developing policies, procedures, tools and modifications to service delivery could progress the possibility and sustainability of this approach.

6.5 Chapter summary

Chapter 6 included Infographic 6.1, which summarises the study conducted with HPs who work with people who have T2DM, and the associated publication (Publication 6, see Section 6.2). This publication provided HPs' perspectives on how SDoH could be incorporated into the individual care of people who have T2DM.

Chapter 7 presents Phase 3 of the K2AF-based research design and synthesises the findings of the literature review and the studies with Indigenous Australians, non-Indigenous people who have T2DM and HPs.

6.6 Chapter 6 references

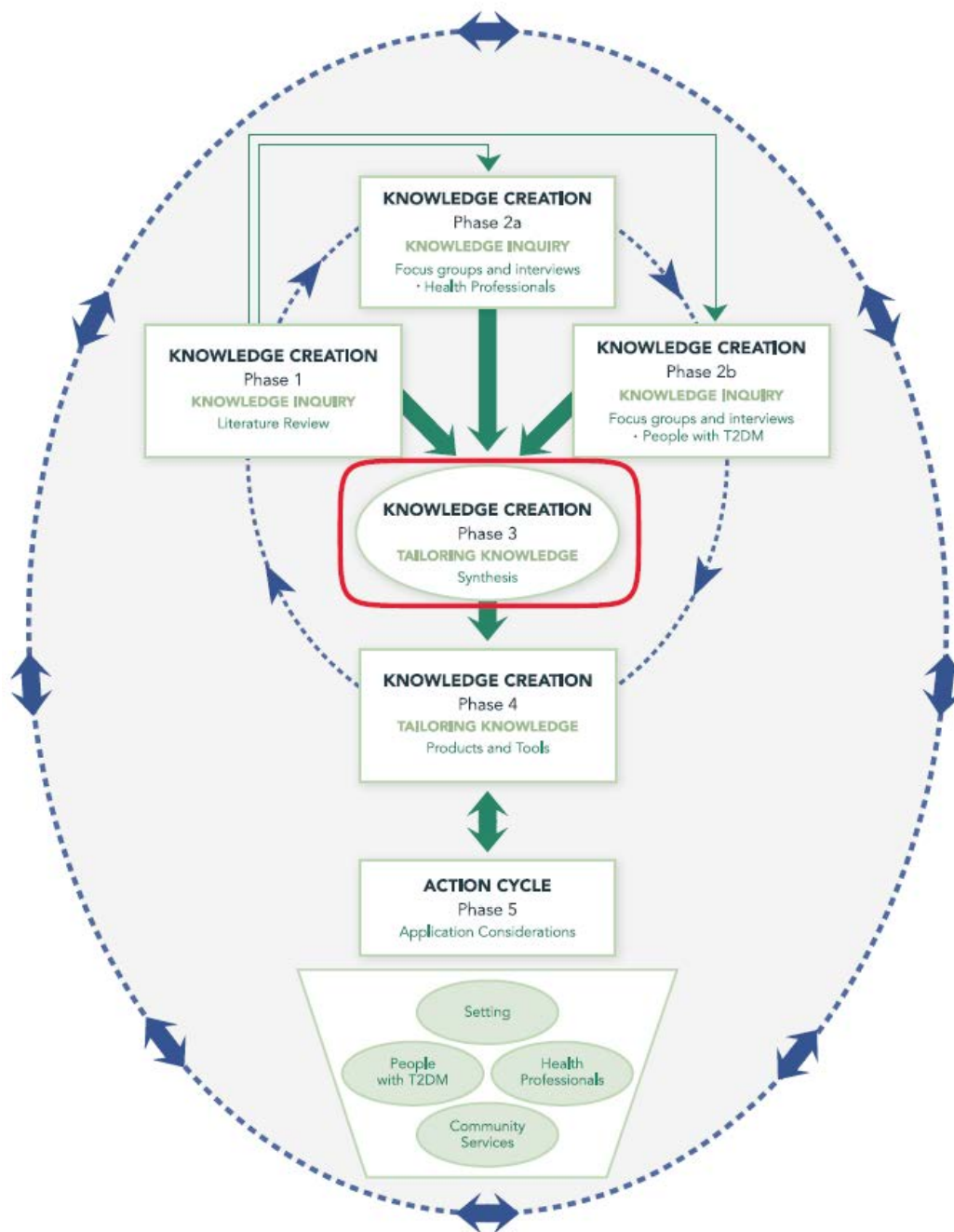
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Chapter 7: Knowledge to Action Framework: 'synthesis'

7.1 Chapter outline

Chapter 7 presents the 'synthesis' component of the K2AF, which is Phase 3 of the research design. A visual representation of the 'synthesis' phase is provided in Infographic 7.1. An overview of the K2AF 'synthesis' and how it has been assimilated into the research design is then provided. This is followed by summaries of the literature review and the three studies reported in Chapters 3 to 6. The findings of each study are then categorised into three 'levels' in which SDoH could be incorporated into individual care for people with T2DM (clinical intervention, practice and community). The implications for practice of this synthesis are then discussed. Chapter 7 closes with a summary of the content and an introduction to Chapter 8.

Infographic 7.1. Knowledge to Action Framework research design: ‘synthesis’



Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

7.2 Knowledge to Action Framework: ‘synthesis’ of the research findings

According to the K2AF, ‘synthesis’ involves drawing together the individual components of the ‘knowledge inquiry’ to determine the collective findings and is part of tailoring the knowledge to its intended context.¹⁻³ In this instance, the literature review findings and the perspectives of Indigenous and non-Indigenous people with T2DM and the HPs who work with them are integrated to form the ‘synthesis’ component of the K2AF.

An innovative approach that incorporates SDoH into individual care was identified while reviewing the literature and is reported in the associated publication⁴ (see Chapter 3). The CLEAR Collaboration developed this approach. The CLEAR Collaboration is based at McGill University in Montreal, Canada, and was formed by an international group of researchers and policymakers in 2010. They aim to increase understanding of how clinical health workers can address the social causes of poor health, create the associated practice tools for supporting disadvantaged people and promote action on the SDoH at a local level.⁵

The CLEAR Collaboration approach suggests including SDoH in individual clinical care at three levels: patient, practice and community.^{6,7} The CLEAR Collaboration approach has been modified slightly in this thesis. That is, the ‘patient’ level has been renamed to ‘clinical intervention’ level (justified in section 7.3.4). The three levels of care are then used to demonstrate how SDoH can be incorporated into individual care for people with T2DM.

Sections 7.3 to 7.6 summarise the literature review and the studies conducted with Indigenous Australians, non-Indigenous people with T2DM and HPs. Note that some portions of these summaries are only included as dot points because the full details of the studies are provided in the relevant chapters (Chapters 3 to 6). The findings of each are then collated and integrated

into the clinical intervention, practice and community levels of T2DM care. This integration represents the ‘synthesis’ component of the K2AF-based research design.

7.3 Summary of literature review

7.3.1 Aim of the literature review

The literature review (see Chapter 3) aimed to explore the methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM.

7.3.2 General findings of the literature review

The literature review found that:

- there was confirmation of the relationship between SDoH and T2DM and a strong acknowledgement of the need to incorporate SDoH into the clinical care of individuals with T2DM
- global momentum has begun to include SDoH in individual clinical care, but there is minimal literature specific to T2DM
- formal guidance on how to identify or address the SDoH-related self-management barriers of individuals with T2DM in clinical care was indeterminable from the reviewed literature.

7.3.3 Identifying and addressing the social determinants of health-related barriers to type 2 diabetes mellitus self-management

The literature review found that:

- when identifying SDoH-related T2DM self-management barriers, well-known SDoH should be assessed, but it is more useful to consider them in a way that is relative to the individual and if that individual perceives the SDoH issue as a self-management barrier
- health literacy is important to consider when assessing an individual's SDoH and when supporting them to address the identified issue
- a team member specifically dedicated to identifying and addressing the SDoH-related needs of individuals with T2DM will help ensure SDoH are thoroughly incorporated into clinical care
- limited strategies to 'address' the identified SDoH-related barriers to T2DM self management were identified.

7.3.4 Incorporating social determinants of health

The CLEAR Collaboration approach suggests that SDoH can be incorporated at the:

- patient (clinical intervention) level
 - for this thesis, 'patient level' is replaced with 'clinical intervention level', which is more reflective of the language used by HPs in the relevant study (see Chapter 6); therefore, SDoH can be incorporated into the 'clinical interventions' of all disciplines that provide T2DM care

- practice level
 - a practice that provides a service to people with T2DM could incorporate SDoH
- community level
 - the community in which a health service is delivered could provide the services required to address people's SDoH-related barriers.

7.4 Summary of Indigenous Australian study

7.4.1 Aim of the study

The study in Chapter 4 (see Section 4.3) aimed to combine the perspectives of Indigenous people with T2DM and IHWs to identify SDoH-related barriers and facilitators to managing T2DM and identify strategies to include SDoH into the usual clinical care for Indigenous Australians with T2DM.

7.4.2 General findings of the study

This study found that the Indigenous Australians in the study considered SDoH as an innate part of their holistic view of health.

7.4.3 Identifying and addressing social determinants of health-related barriers to type 2 diabetes mellitus self-management

The study found that:

- person-centred care is central to identifying and addressing SDoH-related barriers
- when working with Indigenous people who have T2DM, the involvement of an IHW is essential to assist with barrier identification and when taking action on the identified SDoH-related barriers
- culturally safe environments are required to ensure holistic and comprehensive care for Indigenous Australians with T2DM
- Indigenous Australians with T2DM must be involved in identifying and addressing the SDoH barriers relevant to them.

7.4.4 Incorporation of social determinants of health

The study found that:

- Indigenous Australians require culturally responsive service delivery for culturally appropriate incorporation of SDoH
- it is important to maintain ongoing flexibility in service delivery to accommodate the many SDoH-related competing priorities experienced by Indigenous Australians
- high-quality and regular cultural awareness training for non-Indigenous HPs is required to enhance cultural competence and build the capacity to work alongside Indigenous Australians

- support services within the community are required to assist Indigenous Australians in addressing SDoH.

7.5 Summary of non-Indigenous people with type 2 diabetes mellitus study

7.5.1 Aim of the study

The study in Chapter 5 (see section 5.2) aimed to draw on the perspectives of people who have T2DM to explore SDoH-related self-management barriers and facilitators and identify and explore how to include SDoH into the usual care for individuals who have T2DM.

7.5.2 General findings of the study

This study suggested that a socio-ecological view of health may be useful when incorporating SDoH into the clinical care of individuals with T2DM.

7.5.3 Identifying and addressing social determinants of health-related barriers to type 2 diabetes mellitus self-management

The study found that:

- well-recognised SDoH need to be considered when identifying SDoH-related barriers to T2DM self-management
- an individual's competing priorities, mental health, understanding of T2DM and feelings about living with T2DM are important
- supports for addressing SDoH issues should include HP support, community support, financial support, personal support and self-management support

- person-centred care is central to identifying and addressing SDoH-related barriers.

7.5.4 Incorporating social determinants of health

SDoH could be inherently incorporated into T2DM care if service provision fostered a socio-ecological view of health.

7.6 Summary of health professionals study

7.6.1 Aim of the study

The study in Chapter 6 (see section 6.2) aimed to draw on HPs' perspectives to identify and explore SDoH-related issues and their repercussions for people with T2DM and the HPs that work with them. It also aimed to identify and explore how to include SDoH into usual clinical care for people who have T2DM.

7.6.2 General findings of the study

This study found that:

- there was confirmation of the interconnection between poor SDoH and suboptimal T2DM self-management
- HPs strongly supported the notion of incorporating SDoH into the clinical care of individuals with T2DM
- incorporating SDoH into care for people with T2DM could enhance a person-centred approach to diabetes care
- HPs' self-worth could also be improved by assisting people with T2DM to surmount SDoH-related barriers to self-management

- services providing T2DM care must ensure they themselves do not impose barriers related to SDoH (i.e., healthcare access).

7.6.3 Identifying and addressing the social determinants of health-related barriers to type 2 diabetes mellitus self-management

The study found that identifying and addressing SDoH barriers to T2DM requires:

- the availability and use of validated assessment tools to assess an individual's SDoH and identify the barriers they impose
- the capability within the healthcare team (adequate staff and time resources) to address the identified SDoH issues
- SDoH clinical intervention guides that assist HPs to ensure SDoH are considered all throughout a person's T2DM care
- effective communication between HPs and people with T2DM
- trust and rapport between HPs and people with T2DM to allow non-confrontational and safe disclosure of personal and possibly sensitive SDoH issues that may not necessarily be identified in usual individual clinical care
- that the team member designated to address the identified SDoH issues has comprehensive T2DM knowledge to understand how the SDoH issue could affect T2DM self-management.

7.6.4 Incorporating the social determinants of health

The study found that:

- organisational commitment and leadership with management that supports the incorporation of SDoH into T2DM care are essential
- guiding policies and procedures supporting the incorporation of SDoH into T2DM care are required
- all members of the T2DM care team should be involved to ensure individuals' SDoH are considered at all points of interaction with the T2DM team; however, the team should also include a staff member dedicated to ensuring SDoH are thoroughly *assessed* and *addressed* as part of their usual T2DM care (e.g., a nurse navigator or social worker)
- comprehensive and sustainable incorporation of SDoH into individual care of people with T2DM requires supportive and ongoing education and training for all team members on SDoH and how they affect T2DM self-management.

7.7 Synthesising the research findings into the clinical intervention, practice and community levels of type 2 diabetes mellitus care

The subjectivity of the ‘synthesis’ approach described in this section would typically be reduced by the iterative process of the K2AF, which requires the relevant stakeholders to inform the ‘synthesis’ process.¹⁻³ It is beyond the scope of this thesis to gain further stakeholder input. Nonetheless, it is necessary to demonstrate adherence and fidelity to the entire K2AF process.

The next step in the ‘synthesis’ involves integrating the findings from Sections 7.3 to 7.6 into three levels of T2DM care (clinical intervention level, practice level and community level). All findings were critically considered and allocated to the appropriate level of T2DM care. Although further stakeholder input is beyond the scope of this thesis, the necessity of stakeholder input is acknowledged, and relevant considerations are made in Chapter 9, which comprises Phase 5 of the research design.

7.7.1 Clinical intervention level

Numerous enablers for incorporating SDoH into individual care for people with T2DM at the clinical intervention level have been identified in this thesis. HPs felt a validated ‘individual SDoH assessment tool’ is required to help identify SDoH-related self-management barriers. The literature review (see Chapter 3) suggested that the identified SDoH-related barriers to T2DM self-management should be relevant to each individual.⁴ For example, a well known SDoH, transport, may not necessarily be problematic for everyone because it depends on an individual’s circumstances and their ability to access suitable transport. The individual relevance of SDoH-related self-management barriers could be included when devising an

individual SDoH assessment tool for people with T2DM. Relatedly, HPs also called for tools that support their clinical interventions to incorporate SDoH into T2DM care.

Discussing social circumstances during discipline-specific interventions may uncover personal and sensitive issues. Consequently, HPs emphasised the importance of rapport, trust and effective communication to encourage an environment of comfort, privacy and safety. These characteristics are pivotal to person-centred T2DM care,⁸ which was identified as central to incorporating SDoH into individual care for people with T2DM.

Numerous applications of a person-centred approach were revealed as necessary for incorporating SDoH into individual care for people with T2DM:

- The Indigenous Australians in this study (see Chapter 4) expressed a need for cultural responsiveness, cultural safety and the ability to consider cultural requirements essential to incorporating SDoH into individual care for Indigenous people with T2DM.⁹
- People with T2DM (Indigenous and non-Indigenous) discussed various competing priorities in their lives; consequently, a person-centred approach to T2DM care requires the flexibility to consider these issues even if not directly T2DM-related.
- Poor mental health and negative feelings about living with T2DM were identified as barriers to self-management; while not usually considered SDoH, their hindrance to self management warrants consideration in T2DM clinical interventions.
- The delivery of T2DM education should be individually targeted and delivered in a manner that considers culture and cultural requirements, health literacy and client understanding.

- T2DM interventions require an understanding of each individual's support mechanisms so the identified SDoH issues may be more readily addressed.

Finally, after identifying SDoH-related self-management barriers, HPs expressed the requirement to *address* the identified barriers so people with T2DM can achieve their self-management goals. Note that the capability of T2DM teams to address the identified SDoH related barriers to T2DM self-management has been allocated to the practice level to increase the sustainability of this approach (see Section 7.7.2).

7.7.2 Practice level

HPs believe incorporating SDoH into individual clinical T2DM care at a practice level requires an overarching organisational commitment with supportive management and leadership. With organisational, management and leadership actuation, the necessary policies and procedures could be developed and integrated into T2DM care service delivery. Supportive policies and procedures would also ensure that individual SDoH assessment tools, associated intervention tools and staff education and training are available to enhance and support T2DM care. Furthermore, the HPs felt a person-centred philosophy should underlie all aspects of care provision.

In addition to this foundation, HPs proposed a whole-of-team approach. They articulated that this team should include a team member (with comprehensive T2DM knowledge) dedicated to ensuring SDoH are incorporated into all aspects of T2DM care (i.e., an 'SDoH champion'). For example, a nurse navigator or social worker with expertise or training in T2DM may have appropriate skills for this role. However, the most suitable discipline/team member would be specific to each T2DM service and may depend on staffing capacity. The SDoH champion could also be responsible for building community relationships, understanding community dynamics and facilitating action on the identified SDoH issues (see Section 7.7.3).

Furthermore, all team members, including administration, clinical and reception staff, should be actively involved in ensuring an individual's SDoH are thoroughly considered and incorporated into all points of their interactions with a T2DM practice. Incorporating SDoH into all interaction points of T2DM care delivery would enable and bolster the person-centred approach required at the clinical intervention level (see Section 7.7.1).

7.7.3 Community level

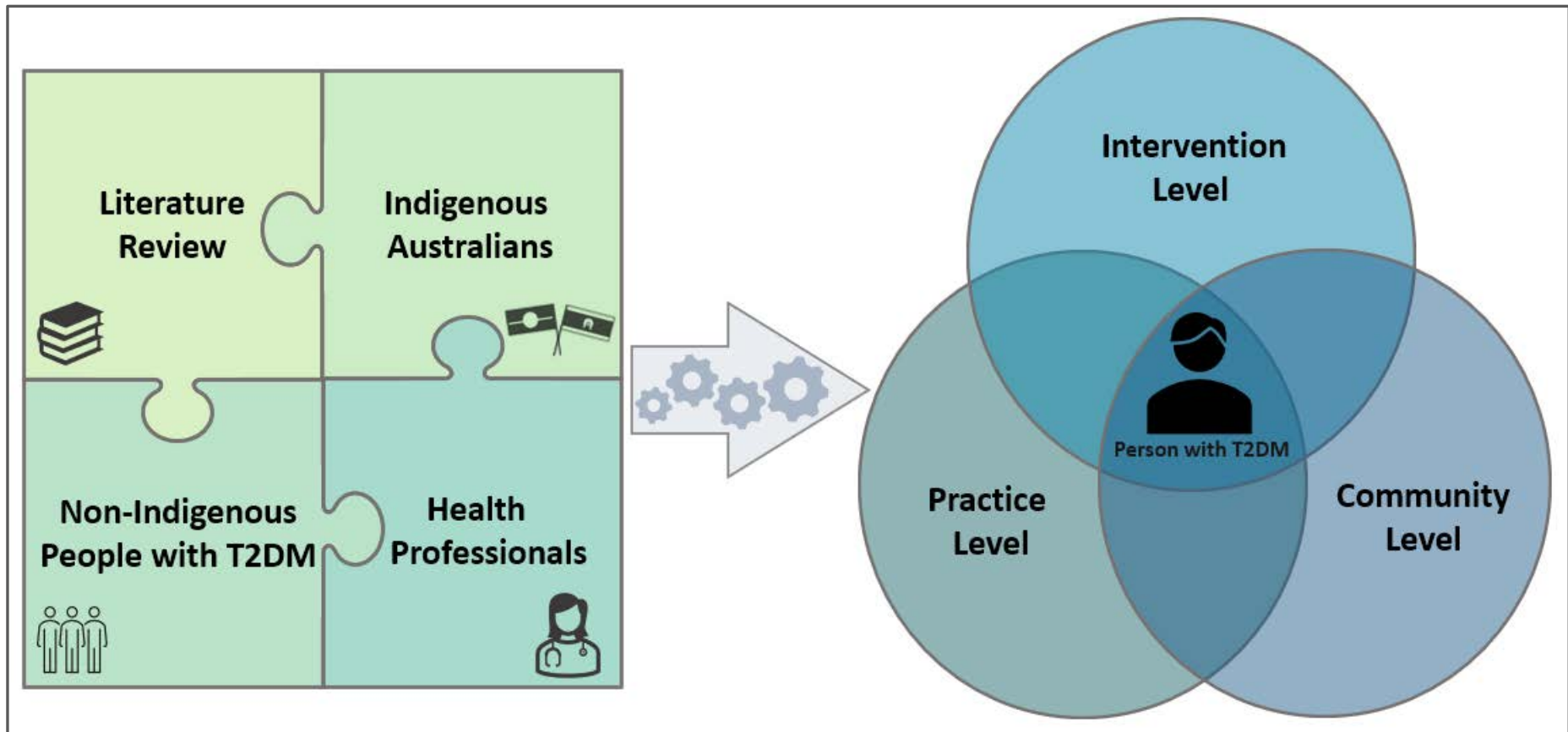
Access to, and working relationships with community services are required if SDoH are to be comprehensively incorporated into a T2DM practice, especially if the identified SDoH issues are to be addressed. The SDoH champion (see Section 7.7.2) could be central to discerning how these services and broader supports may allay SDoH-related self-management barriers. Consequently, in addition to T2DM knowledge, the SDoH champion on the T2DM team would require a comprehensive awareness and understanding of community support not necessarily related to T2DM (e.g., financial support, housing support, transport, counselling and other support agencies [government and non-government]). Furthermore, the SDoH champion should understand the community dynamics and situations that may affect the SDoH of the citizens. For example, a drought affected community may experience flow-on effects on food supply, employment, income and other related issues. In addition to obvious disruptions to SDoH factors, these serious concerns are likely to shift priority from T2DM self-management to livelihood and, sometimes, survival. A shift in priority was described in the findings of the study with non-Indigenous people with T2DM (see Chapter 5), they indicated that competing priorities in people's lives can indeed hinder T2DM self-management.

The success of incorporating SDoH at the community level relies on robust, effective and sustained partnerships with available community services, including sectors not traditionally viewed as health-related (as mentioned above). Building and maintaining these relationships

may entail the ‘SDoH champion’ being involved in community groups and committees, local government boards and other counsel bodies, etc.

Figure 7.1 provides a visual representation of the ‘synthesis’. The findings from the literature review and the three studies (Indigenous Australians, non-Indigenous people with T2DM, and health professionals (see Chapters 3 to 6) have been integrated into clinical intervention, practice and community levels of T2DM care.

Figure 7.1. Visual representation of the 'synthesis'



Note. T2DM = type 2 diabetes mellitus. Created by the author.

7.8 Implications for practice

The synthesised findings reported in Chapter 7 provide direction on how SDoH can be incorporated into the individual care of people with T2DM. That is, to recognise and mitigate the SDoH-related barriers to T2DM self-management, comprehensive understanding and action on the suboptimal social circumstances in people's lives is necessary. Therefore, to enable comprehensive incorporation of SDoH into T2DM care and increase social accountability, SDoH could be incorporated (1) into T2DM clinical interventions, (2) into T2DM service delivery practices, and (3) reach beyond the healthcare setting into the communities in which people live.

7.9 Chapter summary

Chapter 7 has presented Phase 3 of the research design, the 'synthesis' component of the K2AF.

Chapter 8 will present Phase 4 of the research design, the 'products and tools' component of the K2AF.

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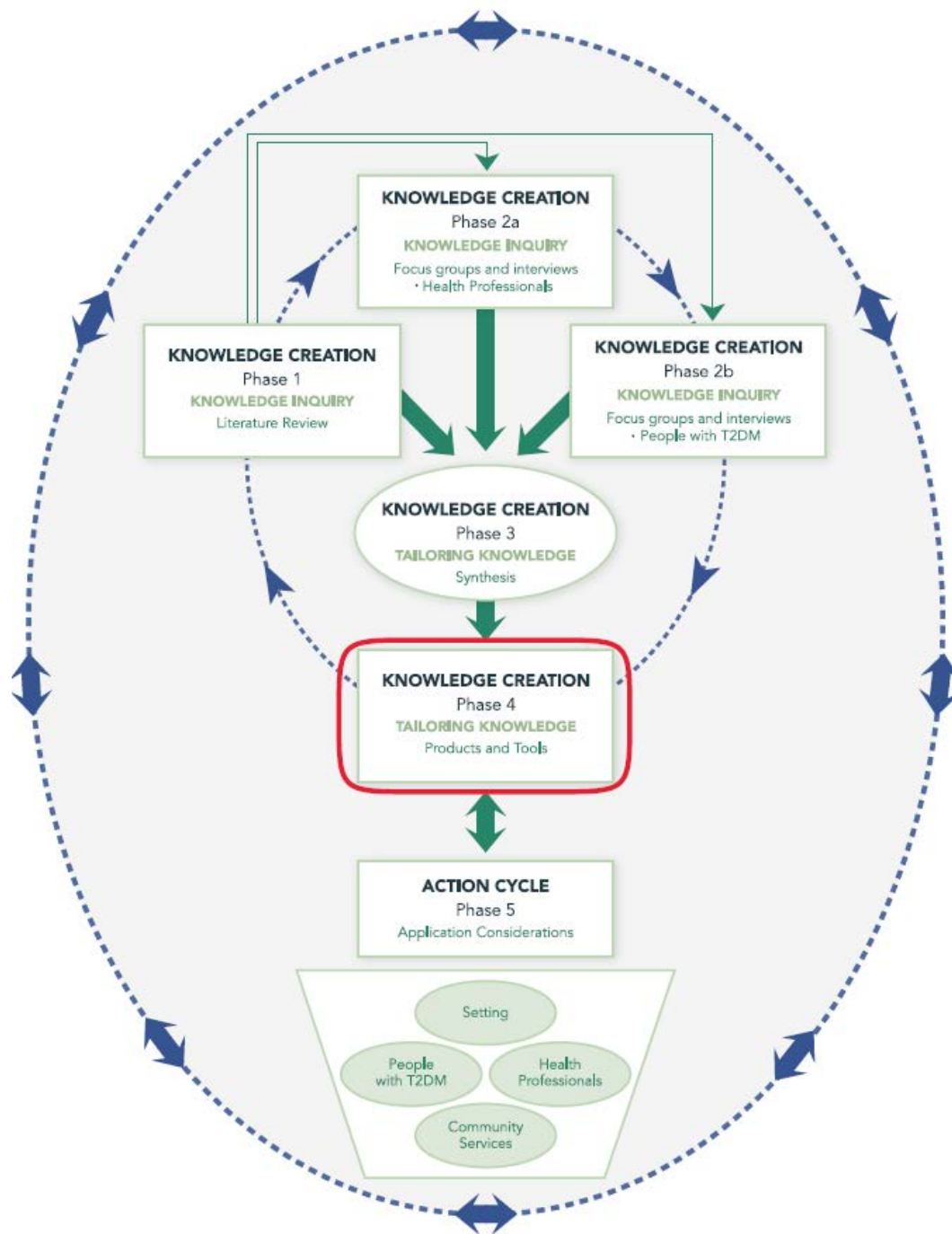
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Chapter 8: Knowledge to Action Framework: 'products and tools'

8.1 Chapter outline

Chapter 8 presents the 'products and tools' component of the K2AF as it applies to the research in this thesis (Phase 4 of the research design). The chapter begins with Infographic 8.1 which provides a visual representation of this phase. Three conceptual flow charts represent the 'products and tools' based on the 'knowledge inquiry' and 'synthesis' phases of the K2AF.¹⁻³ The flowcharts are in the concept stage only; however, the notion of these flowcharts is to encourage the consideration and inclusion of SDoH during HP interventions and when scheduling appointments. Note that complete development of these flow charts is beyond the scope of this thesis as ongoing stakeholder involvement is required for them to evolve into workable, contextualised 'products and tools'.² Lastly, the implications for practice of these flow charts are discussed. Chapter 8 closes with a summary of the content and an introduction to Chapter 9.

Infographic 8.1. Knowledge to Action Framework research design: ‘products and tools’



Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

8.2 Knowledge-based ‘products and tools’

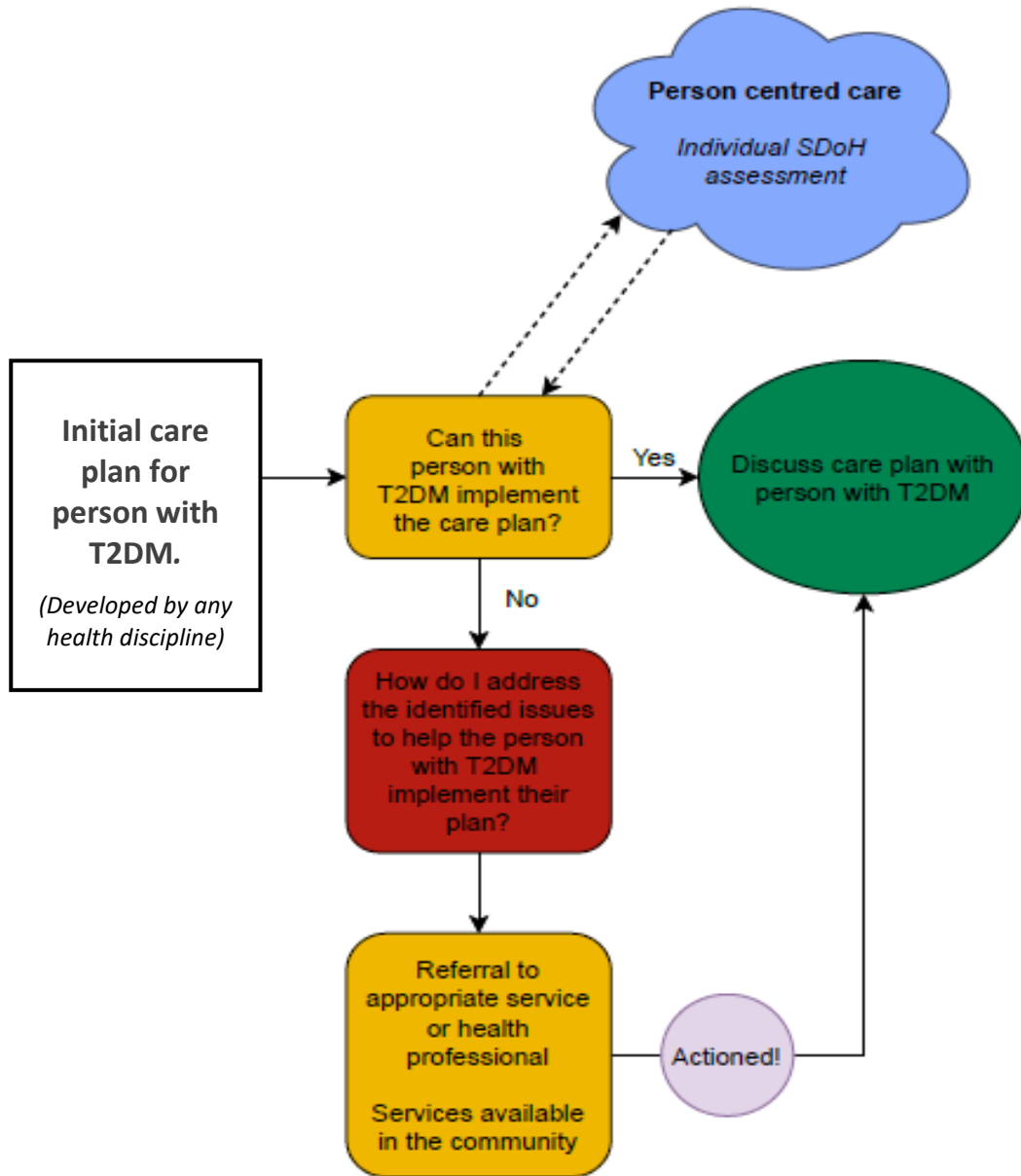
The final step in the Knowledge Creation phase of the K2AF is ‘products and tools’. This component involves further tailoring the acquired knowledge to be specific to the context in which it will be applied. Knowledge-based ‘products and tools’ are an essential part of the K2AF and involves utilising the outcomes of the ‘knowledge inquiry’ and ‘synthesis’ phases of the K2AF to devise workable, contextually relevant ‘products and tools’.¹⁻³ Fidelity to the K2AF also requires stakeholder involvement when developing contextually relevant ‘products and tools’.²

As per the K2AF-based research design, the literature review and study findings (see Chapters 3 to 6) informed the ‘products and tools’ reported in this thesis. Most notably, the literature review (see Chapter 3) did not identify specific guidance on incorporating SDoH into individual care for people with T2DM. With this deficit in mind, the flowcharts were conceptualised while conducting interviews with HPs who work with people who have T2DM (see Chapter 6). The HPs’ collective descriptions of possible strategies to guide practice and prompt the incorporation of SDoH provided meaningful information that was sufficient for the flow chart conceptualisation. Subsequently, a feedback session with six HPs was conducted. Although only described conceptually, the consensus was that the flowcharts would be a helpful addition to guide the interventions of all disciplines involved in T2DM care and when scheduling appointments. Participants felt these tools would ensure SDoH-related barriers are considered. They described the flowcharts as a simple yet effective tool for incorporating SDoH into individual care for people with T2DM. Additionally, they felt that using the flowcharts would not increase their current workload. As the study findings reported in Chapter 6 indicated, this aspect of the feedback is important; even though HPs depicted irrefutable value in including SDoH in individual care, concerns were expressed about a potential increase in

workload. However, it is important to note that the flowcharts require more extensive stakeholder consultation and contextualisation before their usefulness can be confirmed.

Figure 8.1 displays a flow chart that is applicable to any discipline and was conceptualised to guide initial consultations. The flow chart complements person-centred care and is intended to be used after assessing the individual's SDoH-related self-management barriers. The intention is to guide and prompt HPs to confirm the achievability of the care plan and the subsequent course of action to be taken by the HP so the person with T2DM can act on their care plan and, ultimately, achieve their self-management goals.

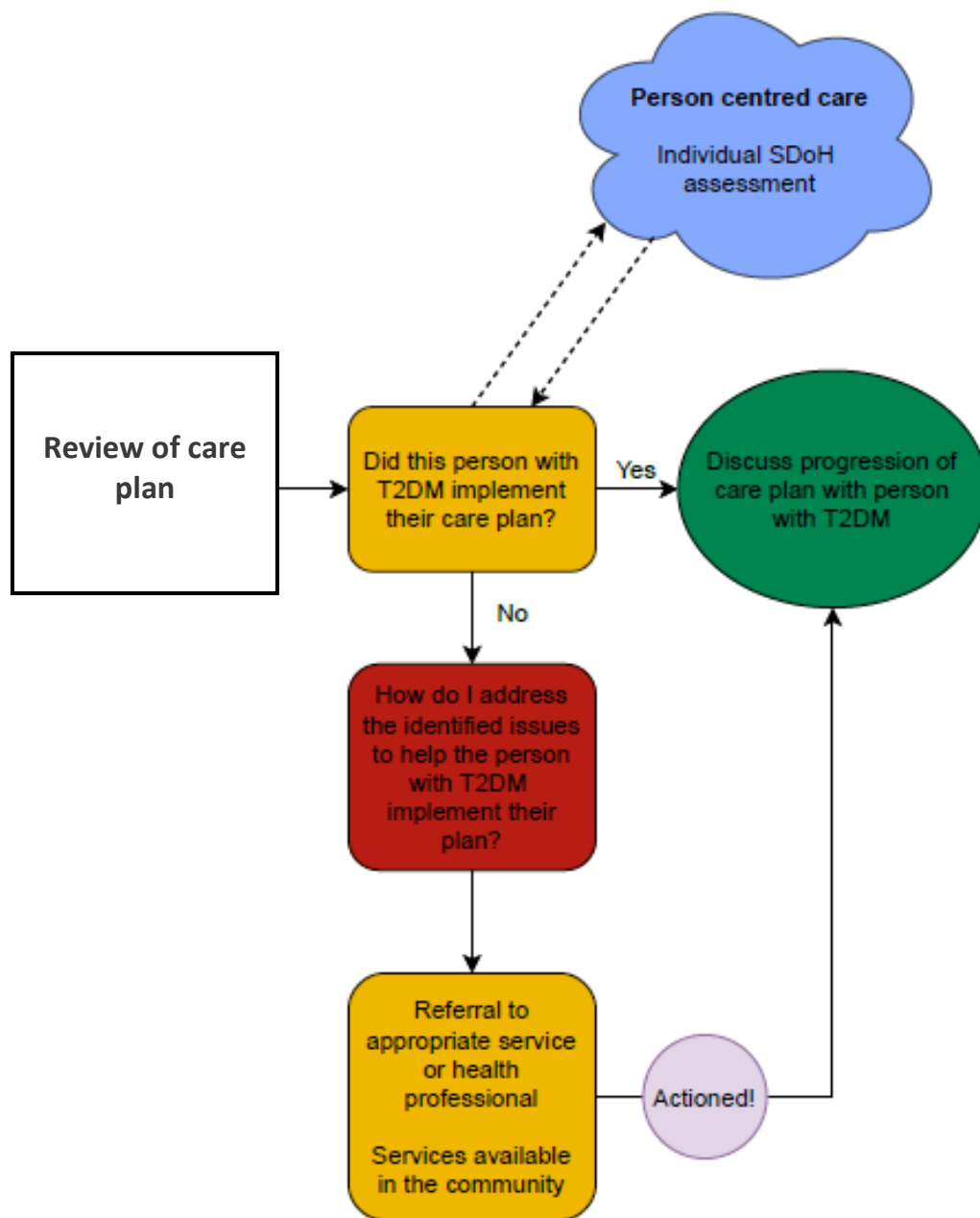
Figure 8.1. Flow chart to guide the inclusion of the social determinants of health into initial consultations



Note. SDoH = social determinants of health; T2DM = type 2 diabetes mellitus. Created by the author.

The flow chart in Figure 8.2 is intended to be used during review consultations. Its purpose is to gauge whether a person with T2DM has actioned the strategies negotiated in the initial care plan. If required, it guides the relevant course of action the HP can take to arrange support to surmount any SDoH-related barriers that may have occurred. Conversely, if the care plan was successfully implemented, progression with the T2DM intervention may continue.

Figure 8.2. Flow chart to guide the inclusion of the social determinants of health into review consultations

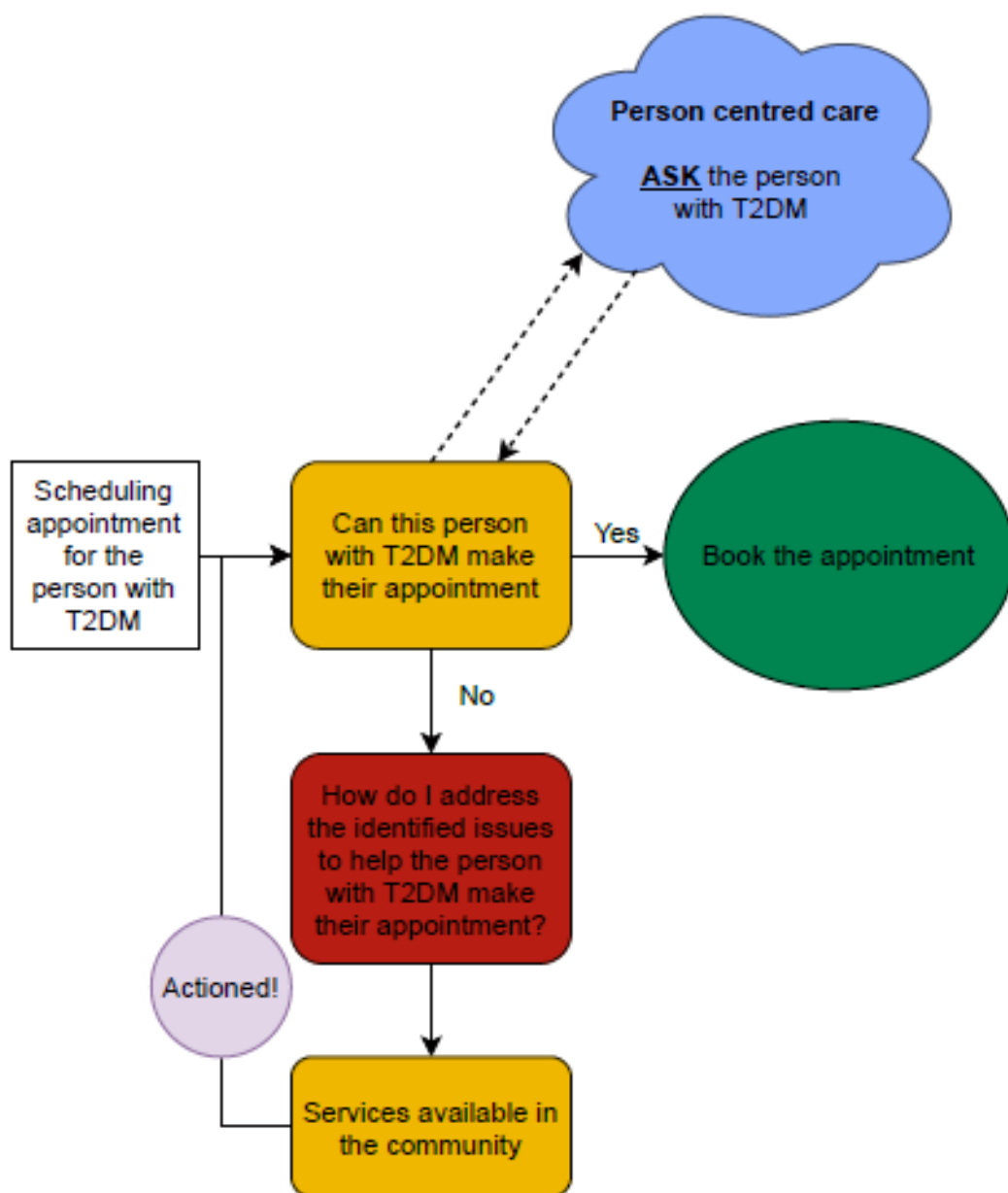


Note. SDoH = social determinants of health; T2DM = type 2 diabetes mellitus. Created by the author.

The final flow chart (see Figure 8.3) was designed for reception/administration staff to consider SDoH when scheduling appointments. The flow chart also extends a person-centred approach. It involves simply asking the person with T2DM if they are able to attend the appointment. Then, if any SDoH-related barriers inhibit attendance, the flow chart guides a course of action

to mitigate them. Considering the SDoH-related barriers when scheduling appointments could minimise attendance barriers imposed by health services. Of relevance, the study with HPs who work with people who have T2DM (see Chapter 6) revealed that health services themselves could inadvertently impose attendance barriers. Therefore, using a tool similar to this may reduce such barriers.

Figure 8.3. Flow chart to guide the inclusion of the social determinants of health into appointment scheduling



Note. T2DM = type 2 diabetes mellitus. Created by the author.

8.3 Implications for practice

The ‘knowledge inquiry’ and ‘synthesis’ components of the K2AF have informed the concept behind the flowcharts described in Chapter 8 (see Figures 8.1 to 8.3). However, the usability and effectiveness of these flow charts is not possible to gauge until extensive stakeholder input is attained. Stakeholder feedback is necessary to ensure the flowcharts are appropriately contextualised and usable within the relevant T2DM service. The application and usefulness of the flowcharts will then depend on organisational, management and leadership commitment to incorporating SDoH into care for individuals with T2DM.

8.4 Chapter summary

Chapter 8 described and presented three ‘concept’ flow charts (see Figures 8.1 to 8.3) to guide HP interventions and appointment scheduling to assist in incorporating SDoH into individual care for people with T2DM.

Chapter 9 will outline the final component of the K2AF, the Action Cycle (Phase 5 of the research design) and describe considerations to be made when applying the thesis findings in varying contexts and settings (guided by the steps in the Action Cycle).

8.5 Chapter 8 references

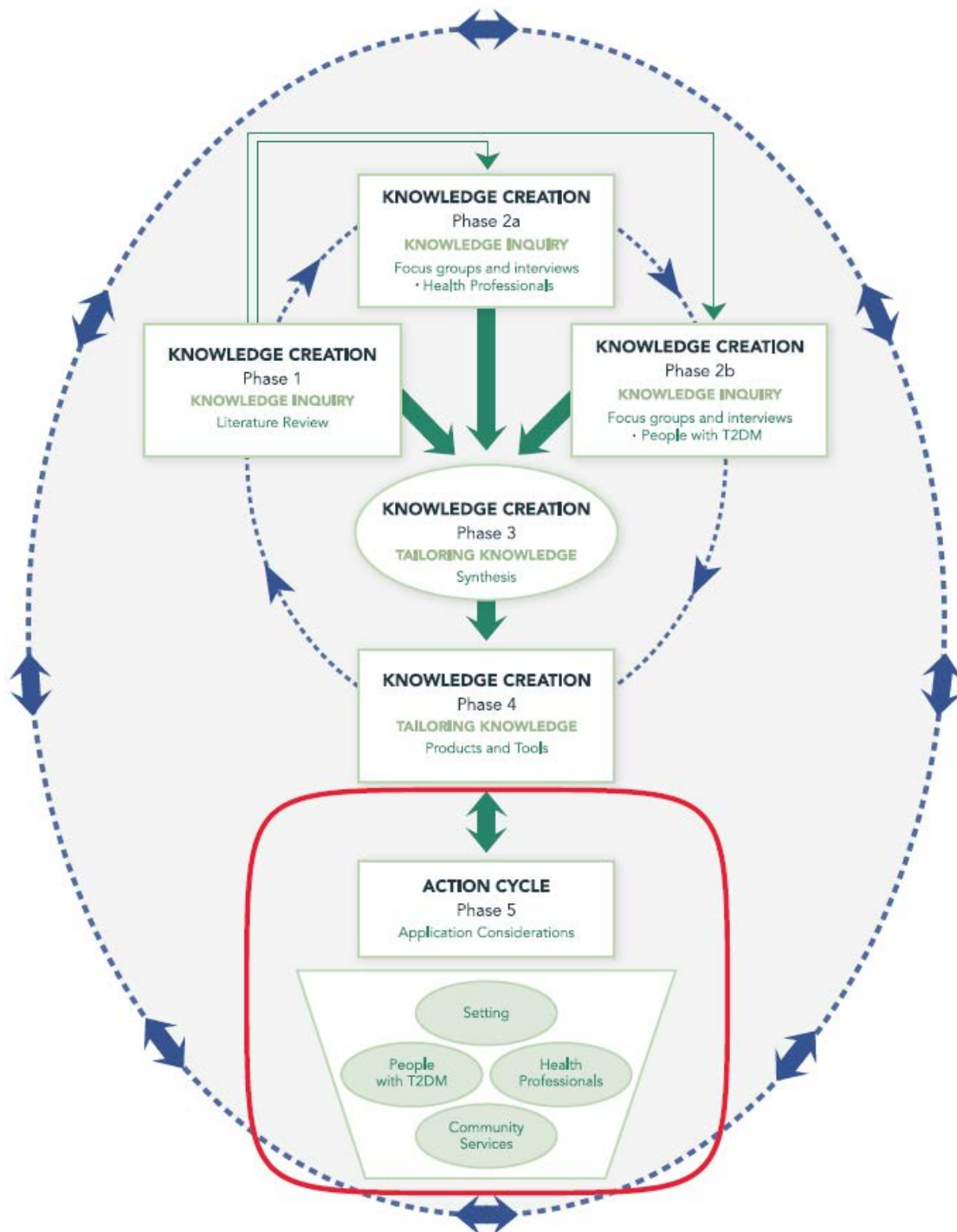
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Chapter 9: Knowledge to Action Framework: 'the final phase'

9.1 Chapter outline

Chapter 9 describes the final phase of the K2AF, the Action Cycle (Phase 5 of the research design). The brief chapter begins with a visual representation of the Action Cycle in Infographic 9.1. The chapter outlines aspects to consider when applying the findings of this research in different settings. The purpose of Chapter 9 is to demonstrate complete fidelity to the K2AF. However, only *considerations* are made because the full application of the Action Cycle is beyond the scope of this thesis.

Infographic 9.1. Knowledge to Action Framework research design: Action Cycle



Note. T2DM = type 2 diabetes mellitus. Created by ROUNDHOUSE The Creative Agency.

9.2 Knowledge to Action Framework: Action Cycle

To utilise the K2AF in its entirety it is necessary to include the steps outlined in the Action Cycle. The Action Cycle follows the Knowledge Creation component of the K2AF and is designed to guide the implementation of the recently created knowledge into the chosen healthcare setting.^{1,2}

The Action Cycle of the K2AF includes the following seven steps:

1. identify problem (determine ‘know/do gap’, identify, review, select knowledge)
2. adapt knowledge to local context
3. assess barriers/facilitators to knowledge use
4. select, tailor, implement interventions
5. monitor knowledge use
6. evaluate outcomes
7. sustain knowledge use.

Each step of the Action Cycle is dynamic and multi-directional, and each step may influence the other.¹⁻³

Every step of the K2AF requires stakeholder input (for both the Knowledge Creation and Action Cycle).^{1,2} However, acquiring ongoing stakeholder feedback was beyond the scope of the research reported in this thesis. Furthermore, the research design (see Chapter 2) did not include implementing the knowledge acquired from this research. Thus, only considerations for the implementation/application have been made for the Action Cycle. The considerations made stem from the study findings and conclusions, the implications for practice of each study and literature appraisal. Combined consideration of the acquired knowledge is given to the setting where a T2DM service is situated, people with T2DM, HPs who work with them and

services available within the community. In this thesis, the term ‘knowledge use’ refers to the identified strategies and ‘products and tools’ that could be used to help to incorporate SDoH into individual care for people with T2DM. Please see Chapter 2 for details on the Action Cycle phase of the K2AF.

9.3 Considerations when applying the research findings

Step 1 of the Action Cycle (identifying the problem) in this instance is the research question posed in this thesis: how can SDoH be incorporated into individual care for people with T2DM?

Step 2 (adapt knowledge to local context) is where the first considerations begin. If considering incorporating SDoH into the care of individuals with T2DM, the knowledge created and identified in this research must then be adapted to suit the setting in which it will be applied.

Possible considerations are as follows:

- the differences and similarities between the chosen application context and where the research was conducted, for example
 - the location/region (e.g., NQ versus the chosen location)
 - how T2DM services are delivered (e.g., centre-based or outreach)
 - the variety of health professions contributing and available to the T2DM service
 - the team dynamics and organisational culture
 - the resources available to the T2DM team
 - the data and client management processes
 - the leadership and management support
 - the demographics and cultural background of the people with T2DM
 - the services available within the chosen community

- the necessary stakeholders within the chosen context
- the support available and accessible to the person with T2DM e.g. family, friends, community and within society in general
- considering whether adaptations to the created knowledge are necessary, and, if so, how will these be documented and what processes will be implemented to support the adaptation.³

When considering how SDoH can be incorporated into the care of individuals with T2DM within the chosen context, barriers and facilitators to using the acquired knowledge should also be considered (Step 3, assess barriers/facilitators to knowledge use). The factors identified when adapting to the chosen setting (e.g., organisational culture and leadership) may be a barrier or facilitator when adopting knowledge to the chosen context. It is important to consider their influence³ and how this may effect the incorporation of SDoH into individual T2DM care within the chosen setting.

After the barriers and facilitators to knowledge use have been assessed, Step 4 of the Action Cycle is possible (select, tailor, implement interventions). This step involves selecting and tailoring suitable strategies to incorporate SDoH into individual T2DM care within the chosen setting. This process may involve further literature appraisal, community mapping, concept or intervention mapping and strategy profiling.³ Furthermore, the involvement of the stakeholders identified in Step 2 of the Action Cycle is imperative when selecting, tailoring and implementing the chosen strategies, as it is in all aspects of the K2AF.²

The remaining steps (Steps 5 to 7) involve monitoring, evaluating and sustaining knowledge use.¹⁻³ Step 5 (assessing knowledge use) may refer to the attitudes and beliefs of the T2DM team and people with T2DM and adopting the approach to incorporate SDoH into usual

practice. Step 6 (evaluate outcomes) could involve implementation successes and failures, team compliance and the effectiveness of the chosen strategies. Step 7 (sustaining knowledge use) depends on monitoring and evaluation outcomes. The strategies used may need to be modified to ensure the sustainability of incorporating SDoH into individual care for people with T2DM.³

As mentioned in section 9.2, the seven steps of the Action Cycle do not need to occur sequentially; the steps may be addressed in a back-and-forth manner; they may also be considered simultaneously. However, each step must be included, as is the case when applying the K2AF in its entirety.^{2,3}

9.4 Implications for practice

Though the considerations made in Chapter 9 were based on the research reported in this thesis and the associated literature, they are only a preliminary step to the judicious fulfilment of the Action Cycle. Applying the ‘acquired knowledge’ (the research findings reported in this thesis and the associated ‘products and tool’) in earnest requires widespread stakeholder input for authentic application to the chosen context or setting.

9.5 Chapter summary

Chapter 9 identified the relevant components to consider when applying the research findings based on the Action Cycle of the K2AF.

Chapter 10 will critically summarise the findings reported in this thesis, provide the final implications for practice, discuss the strengths and limitations of the research and provide recommendations and conclusions.

9.6 Chapter 9 references

1. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge translation: time for a map? *The Journal of Continuing Education in the Health Professions*. 2006;26(1):13-24. Available from: <https://doi.org/10.1002/chp.47>
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Chapter 10: Final discussion and recommendations

10.1 Chapter outline

Chapter 10 is the final chapter of this thesis. It begins with a reminder of the research question, its importance and a brief justification of the research methodology. Subsequently, the key findings of the three studies reported in this thesis are summarised. This is followed by a discussion on how the synthesised findings provide insights and directions for incorporating SDoH into individual care for people with T2DM. The final implications for practice in the context of people with T2DM, HPs and healthcare services are then discussed. Following that, the research strengths and limitations, and future directions for research are detailed. Chapter 10 closes with overall conclusions and recommendations for incorporating SDoH into individual care for people with T2DM.

10.2 The research question and its importance

The increasing prevalence of T2DM combined with the disease's well-documented interconnection with SDoH¹⁻⁷ implores a change in care provision for individuals with T2DM. Incorporating SDoH into individual T2DM care by *identifying* and *addressing* the SDoH-related barriers to self-management may delay or possibly even prevent diabetes-related complications.^{4,8,9} Furthermore, if implemented successfully and sustainably, incorporating SDoH into T2DM care may reduce the long-term preventable burden and health inequities associated with this prevalent yet avoidable chronic disease.

The research question was: how can SDoH be incorporated into individual care for people with T2DM? The answers to this question provide preliminary steps towards an innovative approach to T2DM care.

The research aimed to:

1. identify and explore the SDoH-related barriers and facilitators to T2DM self-management
2. identify and explore how to incorporate SDoH into individual care for people with T2DM.

10.3 Justification of the research methodology

The literature review in this thesis (see Chapter 3) did not reveal any specific research on how SDoH could be incorporated into the micro level of care for people with T2DM, i.e. at individual and clinical levels.¹⁰ Similarly, no related literature has explored the perspectives of people with T2DM or the HPs who work with them. Combining the K2AF process, which requires continual stakeholder input,^{11,12} with the phenomenologically-based, exploratory, descriptive approach of this qualitative research^{13,14} enabled lived experiences of people with T2DM and the HPs that work with them to be acknowledged and integrated when answering the research question. Consequently, the insights of these stakeholders have delineated approaches for incorporating SDoH into individual care for people with T2DM.

10.4 Key findings of the three studies

The perspectives of people with T2DM and the HPs who work with them (Indigenous and non-Indigenous) were drawn together to understand how SDoH could be incorporated into T2DM care (see Chapters 4 to 6). Though the three studies identified varying considerations for incorporating SDoH into individual care, their collective findings provided foundational answers to the research question and identified areas for further research.

The first study reported in this thesis was conducted with Indigenous Australians (see Chapter 4).¹⁵ The findings indicated that incorporating SDoH into care for Indigenous people with

T2DM requires a holistic approach that is centred around cultural responsiveness. The identified SDoH- and culturally-related issues were; the need for culturally appropriate education, suitable transport to enable healthcare access, flexibility to accommodate individually diverse SDoH burdens, varying support mechanisms (T2DM specific and personal) and community-based support service availability. Finally, those working with Indigenous people require ongoing cultural education to appreciate and understand Indigenous Australian culture and its entwinement with SDoH.

In the second study, non-Indigenous people with T2DM (see Chapter 5) described SDoH as a more ‘external’ influence on T2DM self-management (compared to the Indigenous Australians consulted in Chapter 4). Study participants confirmed that suboptimal SDoH could indeed hinder T2DM self-management and that SDoH-related issues often competed for priority with managing their own health and wellbeing. Though not typically considered SDoH, this study identified that an individual’s feelings about having T2DM, their mental health status and level of understanding about T2DM also require acknowledgement in T2DM care. These findings emphasise the imperative of considering interpersonal, societal and environmental influences¹⁶ on T2DM self-management. Additionally, people with T2DM relied on support provided by HPs, financial assistance, support within their personal networks and support within the wider community. Consequently, identifying and utilising these various support mechanisms is also important when incorporating SDoH into the individual care of people with T2DM.

HPs in the third study (see Chapter 6) concurred with the sentiments portrayed in the above two studies (see Chapters 4 and 5). They expanded on this agreement by articulating that a person-centred approach based on client trust, mutual respect and rapport is central to T2DM care. Furthermore, this study established a clear consensus that the formal incorporation of SDoH would enhance person-centred care. The HPs stipulated that the success and

sustainability of this addition to T2DM care would depend on organisational, management and leadership drive to endorse the required resources, guiding policies and procedures, and provision of the associated training. HPs also stressed that after *identifying* an individual's SDoH-related self-management barriers, it is necessary to *address* the identified issues to surmount their self-management impedance. They suggested a whole-of-team approach; however, they felt it was essential to include 'SDoH champions' (with advanced T2DM knowledge) dedicated to ensuring SDoH is incorporated into all aspects of T2DM care.

10.5 Incorporating the social determinants of health into individual care for people with type 2 diabetes mellitus

The aggregated findings of the above three studies (see Chapters 4 to 6) point towards the imperative of person-centred care. Best practice person-centred T2DM care involves people self-managing their condition in the context of their own culture, health beliefs, lifestyle, personal circumstances, values and preferences. A person-centred approach also involves a person's support networks, support people and other support mechanisms.^{8,17-19} The influence of these factors on T2DM self-management was clearly articulated by people with T2DM and HPs (Indigenous and non-Indigenous). The congruity between the three studies' findings and best practice approaches to person-centred care emphasises how diabetes care extends beyond clinical T2DM outcome measures and requires a person-centred, holistic approach that includes SDoH.^{8,17,19}

Integrating person-centred care within a healthcare team requires leadership commitment to inspire and effectuate this holistic approach.²⁰ The necessity of a whole-of-system approach when incorporating SDoH was also attested by an American coalition of social work organisations. They instigated a consensus study that considered the integration of social work and social care into healthcare²¹. The identified recommendations revolved around the

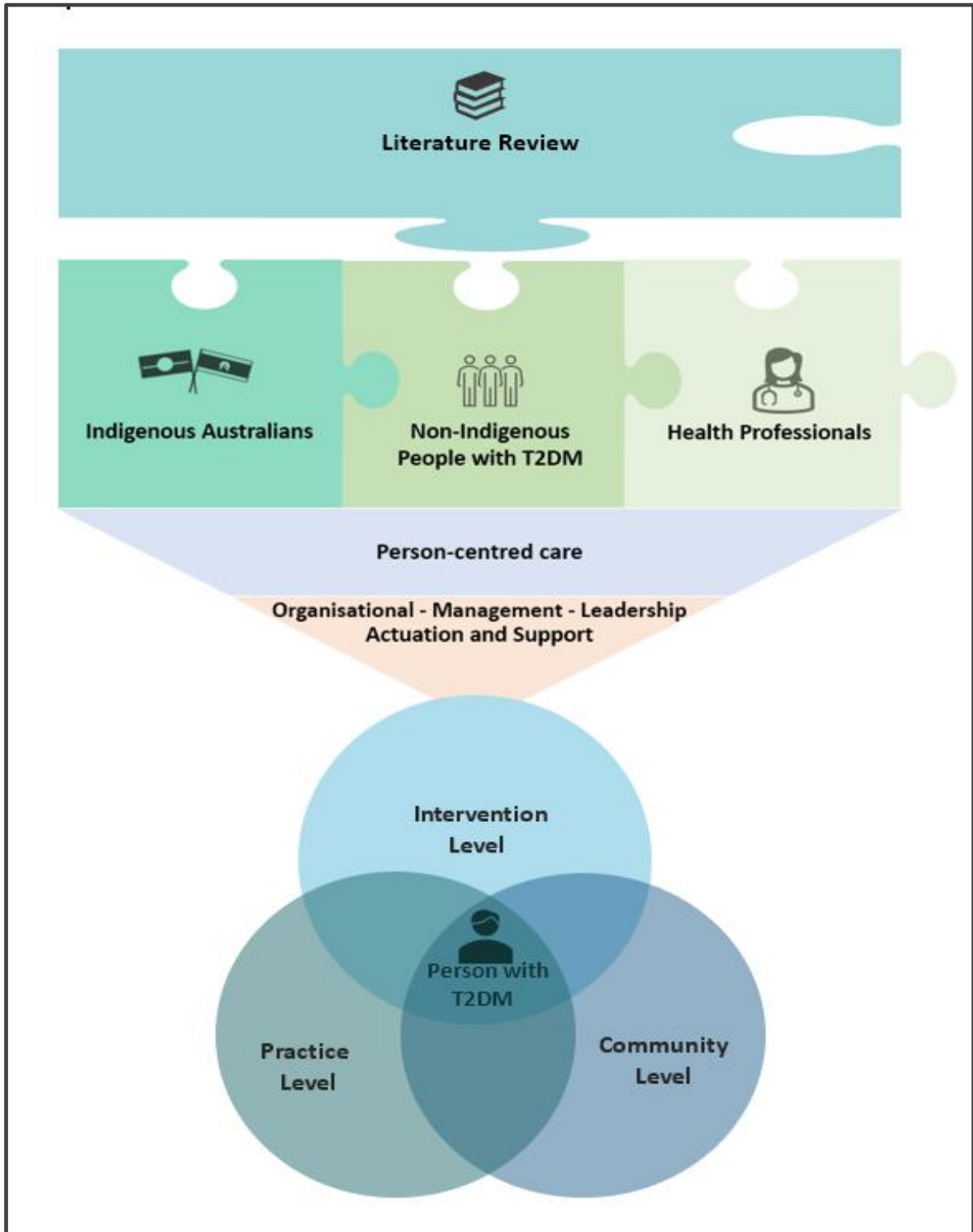
necessity of supportive health delivery systems, workforce preparedness, adequate infrastructure, sufficient funding and sustainability strategies to facilitate the comprehensive incorporation of SDoH into healthcare settings.²¹ The study with HPs (see Chapter 6) revealed unison with the above concepts, which solidified their call for multi-level leadership actuation and ongoing support to successfully and sustainably incorporate SDoH into person-centred T2DM care.

An underpinning of organisational, management and leadership instigation and momentum would increase the likelihood of developing guiding policies and procedures. Further stakeholder consultation and collaboration are necessary to determine the required policies and procedures.^{12,22} However, conceivable topics could include practice guidelines that incorporate SDoH, relevant referral processes, documentation and data management of identified SDoH-related issues, client consent, SDoH screening frequency and other relevant workplace procedures that ensure SDoH are incorporated into all levels of T2DM care.

Appraisal of the literature related to the research topic identified three levels of T2DM care in which SDoH could be incorporated (clinical intervention, practice and community).^{10,23} While the three levels of T2DM care have been described as separate entities thus far, a person-centred, whole-of-system approach, where the person with T2DM is at the centre of their own care, encourages the three levels to overlap. Therefore, combining and synthesising the literature review and pertinent findings of the three studies in this thesis into clinical intervention, practice and community levels (see Chapter 7), revealed another requirement for comprehensively incorporating SDoH. That is, an interconnected and holistic approach to incorporating SDoH into T2DM care at the clinical intervention, practice and community levels is necessary. Figure 10.1 provides a visual representation of how SDoH could be incorporated

into individual care for people with T2DM based on the literature review, aggregated research findings and the associated literature.

Figure 10.1. The research process, and how social determinants of health could be incorporated into individual care for people with type 2 diabetes mellitus



Note. T2DM = type 2 diabetes mellitus. Created by the author.

Description of Figure 10.1. The initial literature review (see Chapter 3) did not identify any applicable methods or strategies for incorporating SDoH into individual care for people with T2DM. The reveal of such gaps and the identified appeal for incorporating SDoH into T2DM care demonstrates the pertinence of this research. The aggregated perspectives of Indigenous Australians and non-Indigenous people with T2DM, and HPs (Indigenous and non-Indigenous) indicated that person-centred care, and organisational, management and leadership actuation and support are the core requirements for incorporating SDoH into individual care for people with T2DM. SDoH should be collectively integrated into the clinical intervention, practice and community levels of T2DM care to increase the likelihood of the success and sustainability of this approach.

10.6 Final implications for practice

Efforts to incorporate individual SDoH assessments in clinical settings are increasing; however, many of these approaches do not assess an individual's collective SDoH, nor do they determine how suboptimal SDoH directly affect T2DM self-management and the related health outcomes.²³⁻²⁷ Furthermore, prior to this research, there were no known approaches for incorporating SDoH into clinical T2DM settings or individual care for people with T2DM. These deficits in research and the lack of specific guidance for incorporating SDoH into T2DM care at the micro level (individual and clinical levels) provided the opportunity to progress this innovative approach to T2DM care.

The formal inclusion of SDoH into care for individuals with T2DM could transform clinical care and client self-management by revealing and addressing previously unidentified self-management barriers.²⁷ Furthermore, if SDoH-related issues are investigated and dealt with sensitively, people with T2DM may be gratified by the support and reaped health benefits

of a holistic view of health that focuses on SDoH, which, incidentally, is necessary for person-centred diabetes care.¹⁷

Holistic health is a component of the Indigenous Australian belief system.^{28,29} For Indigenous Australians, holistic health considers physical health as being inseparable from social, emotional, spiritual and ecological health and wellbeing. This holistic view of health pertains to the individual but also includes family and the wider community.³⁰ Though the term ‘SDoH’ has a non-Indigenous foundation, social determinants contribute to this holistic view of health and markedly influence Indigenous health and wellbeing,^{30,31} and, specific to this topic, the increased prevalence of T2DM.^{3,32,33} Consequently, cultural safety and responsiveness are paramount for improving Indigenous Australian holistic health and wellbeing, as was identified as the central theme in the study with Indigenous Australians in this thesis (see Chapter 4).¹⁵

A culturally safe and responsive approach to T2DM care includes unending IHW involvement.^{15,33} Incorporating SDoH into care provision may equip IHWs to embrace and assert their holistic view of health that innately consider the social as well as cultural influences on Indigenous Australians’ health and wellbeing.

Incorporating a holistic, culturally responsive service that includes SDoH may be particularly useful in mainstream healthcare settings. Simultaneous acknowledgement of cultural and social issues could encourage non-Indigenous HPs to consider the combined, broader influences on the health of Indigenous Australians and also to consider the different worldviews towards health and knowledge. The success of this would depend on appropriate education and training around cultural safety and culturally responsive service delivery.³⁴ Subsequently though, the influence of culture and SDoH could then be placed at the centre of care provision for Indigenous people and, therefore, better meet the social needs of this population group. Furthermore, unifying and amalgamating Indigenous and non-Indigenous views of health

(where culturally appropriate) may enhance the quality of care provided to Indigenous Australians because embracing a holistic view of health that acknowledges and incorporates culture and SDoH may augment best practice clinical care.

The AIHW has recognised the influence of poor SDoH on the unnecessarily wide health gap between Indigenous and non-Indigenous Australians.³ If SDoH are formally incorporated into T2DM care in a culturally responsive and safe manner that facilitates the holistic view of Indigenous Australian health,^{15,28,29,33} this health gap may be narrowed.

A broader understanding of the external influences on health is the rationale behind the socio-ecological model of health. In this model, the role of the individual in their own health is considered; however, a socio-ecological view of health also includes broader factors such as community, environmental and societal influences on health.³⁵ To address T2DM from a socio-ecological standpoint a multisectoral approach is required. This includes sectors not typically considered to be health, such as education, employment and housing, and may include a range of community-based services.^{16,36}

Socio-ecological, multisectoral-informed practice in clinical settings would be helpful when incorporating SDoH into individual care for people with T2DM. The focus on broader issues that influence health would encourage the utilisation of services other than health (mentioned above) to assist in addressing the identified SDoH-related self-management barriers.

In conflict with the socio-ecological model of health, current thinking and training on T2DM care primarily revolves around a medical model.^{8,16} Reorienting a ‘medical model’ view of health to a ‘socio-ecological’ vantage requires a major paradigm shift with a greater emphasis on social accountability in clinical settings and a more robust evidence-base to support this approach.²⁵ Of relevance to this thesis, the evidence deficit is particularly noticeable in T2DM

clinical settings.¹⁰ Therefore, further research and advocacy are required before incorporating SDoH into individual clinical T2DM care i.e. at a micro level is tangible. Furthermore, prudent change to a socio-ecological view would require mindfulness not to ‘medicalise’ social care as the application environment would be in clinical settings which are currently informed by the ‘medical model’. Nonetheless, a change in mindset that approaches health from a broader socio-ecological perspective³⁵ could augment the incorporation of SDoH into individual clinical care.

Incorporating SDoH into clinical care could result in an approach to healthcare that reduces hospitalisations, increases medication adherence, enhances holistic person-centred care and may also be more cost-effective.²⁵ However, as previously mentioned, there continues to be limited evidence on how to incorporate SDoH into clinical settings,²⁴ which likely explains the minimal progress in incorporating SDoH into usual individual care and practice guidelines.

The attitudinal adjustment required for a transition in thinking that reflects a socio-ecological view of health requires organisational and management drive (as was identified in the study with HPs, see Chapter 6). Without high-level organisational and management support, the success and sustainability of incorporating SDoH into individual care for people with T2DM as part of usual clinical practice may be unlikely.

Presupposing the above impediment was surmounted, for SDoH to become an inherent inclusion in individual T2DM care, training and education would be required and should begin in the early stages of a HP’s education.³⁷ The requirement for medical management of T2DM would not be neglected. Instead, education and ongoing training on incorporating SDoH into T2DM care would encourage a broader understanding of the factors that influence medical management of the disease.^{16,35,36,38} Consequently, identifying and addressing the SDoH-

related issues relevant for each individual and specific to T2DM self-management could enhance medical and clinical care provision to people with T2DM.

Though this thesis is specific to T2DM, it is easy to draw similarities with the management of most other lifestyle-related conditions.³ For example, medication adherence, dietary management, physical activity and smoking cessation are central to T2DM care⁸, they are also integral to managing many other health conditions.³ Moreover, these healthy lifestyle behaviours are all hindered by suboptimal SDoH.^{3,8,37,38} Therefore, the congruity with care and management of most lifestyle-related health conditions suggests a similar approach could be adopted when incorporating SDoH into other areas of clinically based individual care (micro level). Much more research in the relevant settings is required to progress the area; however, this thesis has contributed to the increasing body of evidence calling for the incorporation of SDoH into clinical and individual levels of care^{23,25,39,40} and has provided evidence-based directions and insights into how this could be achieved.

10.7 Research strengths and limitations, and future directions

An overall strength of the research reported in this thesis is the use of the K2AF to guide the research design. Using the K2AF as a guide ensured the relevant stakeholders (people with T2DM and HPs) were represented in all research phases.^{11,12} Furthermore, stakeholder representation facilitated the lived experience basis¹⁴ of the three studies reported in this thesis (see Chapters 4 to 6). The relevance of the research findings was likely increased by including the lived experiences of people with T2DM and the HPs who work with them. Continued guidance from the K2AF when applying these research findings will incite comprehensive contextualisation and application to the chosen T2DM healthcare setting, and provide an evidence-based and workable approach for incorporating SDoH into T2DM care, that includes end user perspectives (i.e., people with T2DM and the HPs who work with them).

While stakeholder input informed the research process, a more comprehensive representation of stakeholder viewpoints could have been achieved. For example, the number of people with T2DM was comparatively lower than the HPs who work with them and, therefore, may have under-represented the perspectives of these critical stakeholders. Relatedly, other stakeholders in the provision of T2DM care may also include the organisations providing the T2DM service, the communities where the services are provided and, with relevance to SDoH, the services that are not typically considered health (e.g., transport, housing, education, food providers and various relevant community organisations). Input from these stakeholders was not obtained in the current research; however, their roles in an approach to individual T2DM care that incorporates SDoH are acknowledged. Future research should include these important stakeholders' viewpoints. Additionally, a comprehensive assessment or mapping of relevant stakeholders in the chosen setting should be conducted to identify all relevant stakeholders. With particular reference to the Indigenous Australian study (see Chapter 4), further involvement of culturally specific bodies is required (in addition to cultural advisors, mentors and brokers). For example, community-controlled health organisations and other culturally specific support agencies and networks are necessary stakeholders in Indigenous health. In addition, if further research with Indigenous Australians is to be conducted, a co-design methodological approach is encouraged. This would bring surety of Indigenous leadership and ownership of the research and enhance cultural appropriateness and safety.

The research in this thesis was conducted in regional, rural and remote NWQ communities. This region may not be representative of other T2DM services or communities throughout Queensland, Australia or internationally. However, the possible transferability limitations may be minimised by using the K2AF to guide future research. The K2AF stipulates contextualisation to the chosen setting; as such, considerations of the specific settings should form a part of this contextualisation.

Also concerning settings, study participants provided or received services from either centre-based or outreach T2DM services. No delineation was made between these different approaches to service delivery because the relevance of centre-based or outreach services was indeterminable from the information gathered in the reported studies. Accordingly, service delivery models (e.g., centre-based, outreach and telehealth) also require consideration in future research.

This is the first time an evidence-based investigation into how SDoH could be incorporated into individual care for people with T2DM has been conducted. The methodology and findings have provided preliminary steps towards this approach to T2DM care and have paved direction for future research, particularly (but not essentially) using the K2AF. This thesis focused on the Knowledge Creation component of the K2AF, which meant it was challenging to maintain fidelity to the Action Cycle. This thesis only includes *considerations* for the Action Cycle because the research scope rendered stakeholder input unattainable for this phase of the K2AF. However, proper application with stakeholder input that informs the Action Cycle is necessary to progress in this area of research.

Finally, this research focused on individual clinical care and enhancing social accountability at the micro level. While this is not a limitation of the research, progression in this area must not negate the importance of more midstream/meso and upstream/macro approaches directed at ‘improving’ people’s SDoH and therefore achieving a possible consequence of preventing, or at least reducing the onset of T2DM in the first place.

10.8 Conclusion

The research question underpinning this thesis was: how can SDoH be incorporated into individual care for people with T2DM? The research aims were: (1) to identify and explore the SDoH-related barriers and facilitators to T2DM self-management; and (2) to identify and explore how to incorporate SDoH into individual care for people with T2DM.

The research findings demonstrated that people with T2DM and the HPs who work with them perceive that suboptimal SDoH indeed negatively affects T2DM self-management i.e. people's social needs. If SDoH were incorporated into individual care, people with T2DM may be more likely to achieve their self-management goals. The person-centred approach required for T2DM care could be enhanced if SDoH-related barriers to self-management were more formally considered and embedded into usual care. With the required support and resources, SDoH could be incorporated into three levels of T2DM care: (1) the clinical intervention level, where the direct interaction between HPs and people with T2DM occurs; (2) the practice level, where T2DM healthcare services are provided; and (3) the community level, where a person with T2DM lives.

Incorporating SDoH into individual T2DM care supports a socio-ecological view of health. A socio-ecological influence on healthcare provision would thereby enhance social accountability in clinical settings. Adopting this broader approach to healthcare provision would require a paradigm shift from a medical model viewpoint. This shift in the approach to healthcare provision would depend upon organisational and management ambition to change, and leadership that supports incorporating SDoH into care for individuals with T2DM. However, for this reformative approach to healthcare to occur, much more supporting research and advocacy is required.

Using a knowledge translation framework such as the K2AF to transition the evidence-based concept of social factors *determining* health into individual clinical care would encourage stakeholders to inform the process, assure contextualisation to the chosen setting, and increase the likelihood of the success and sustainability of this approach.

Enhancing individualised, person-centred, holistic T2DM care in clinical settings by incorporating SDoH is likely to improve self-management and, consequently, reduce the poor health outcomes often associated with the disease. Eventually, if this approach to care is widely embraced, a reduction in the overall burden of T2DM and its complications may be observed.

10.9 Recommendations for incorporating social determinants of health into individual care for people with type 2 diabetes mellitus

Based on the K2AF-guided ‘synthesis’ of the research findings and the Action Cycle considerations, the following recommendations for incorporating SDoH into individual care for people with T2DM are as follows:

1. Organisational and management drive and commitment to incorporating SDoH into individual care for people with T2DM are necessary for the required shift from a medical model approach to a socio-ecological view of T2DM service delivery.
2. Supportive leadership within T2DM care teams is required to incorporate SDoH into individual care for people with T2DM.
3. Policies and procedures that guide practice on incorporating SDoH into individual care of people with T2DM are required; for example, policies and procedures might include the frequency of SDoH screening, documentation, referral processes, data management, consent, staffing requirements and work procedures.
4. Three areas should be considered for a comprehensive inclusion of SDoH into T2DM individual care, these are, the clinical intervention level (where people with T2DM and HPs interact), the practice level (the healthcare service provided to people with T2DM) and the community level (where the person with T2DM lives).
5. All stakeholders from each level of T2DM care (clinical intervention, practice and community) must be involved in all aspects of the transition to an approach to service delivery that incorporates SDoH at the individual level.

6. HPs who work at the clinical intervention level require:
 - a. ongoing education and training on the relationship between SDoH and T2DM care
 - b. validated SDoH assessment tools to identify barriers to T2DM self-management
 - c. resources to support their interventions to incorporate SDoH into their usual care
 - d. effective communication, trust and rapport with the person who has T2DM to ensure discussions of a sensitive nature are conducted in a safe and comfortable manner
 - e. an understanding of cultural backgrounds and the cultural responsiveness required
 - f. a person-centred approach to T2DM care
 - g. the capacity within the T2DM care team to be able to *address* the identified SDoH barriers to T2DM self-management.

7. A practice that provides SDoH-based care to people who have T2DM requires
 - a. leadership that supports, encourages and facilitates incorporating SDoH
 - b. ongoing education and training on how SDoH affects T2DM self-management and how to incorporate this into usual care
 - c. a person-centred ethos to all areas of healthcare service delivery, this includes (but by no means exhausts); understanding and acting upon each individual's influences on their life (i.e., their social determinants), culture and providing a culturally responsive service, the competing priorities of the person with T2DM, health literacy levels and support mechanisms that will help each person individually

- d. a whole-of-team approach to incorporating SDoH into individual care, with a team member (SDoH champion) dedicated to ensuring SDoH are incorporated into all levels of client interaction
 - e. the SDoH champion to facilitate and assist the person with T2DM to seek and attain the most appropriate strategy to address their SDoH-related barriers to self-management. Note that it may not be possible to improve a person's SDoH circumstances; rather, they could work on reducing the effects of the identified SDoH-related barriers to T2DM self-management.
8. The T2DM team should be aware of current societal issues occurring within the community and understand how these may impact people's lives and their ability to self-manage their T2DM (e.g., flooded roads may affect food supply).
 9. The T2DM team, and particularly the member dedicated to incorporating SDoH (SDoH champion) should have a comprehensive understanding of supports utilised by the person with T2DM e.g. family, friends and other community services
 10. The SDoH champion should have extensive knowledge of organisations and services within the community, and outside the health arena to help address an individual's SDoH issues.
 11. Develop and sustain workable partnerships with community organisations equipped to assist people with T2DM to address their SDoH-related issues.
 12. Ensure success and sustainability monitoring is factored into incorporating SDoH into individual care for people with T2DM.

10.10 Chapter 10 references

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Appendices

Table A. List of appendices

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B	Interview and focus group guides
C	Publication 2
D	Publication 3
E	Publication 4
F	Ethics and site-specific assessment approvals
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H	Study participant demographic forms
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Appendix A. Publication 1

7/7/2017

ADE | Including social determinants of health in the clinical management of diabetes

Australian
Diabetes
Educator

Volume 20, Number 2 - June 2017

Including social determinants of health in the clinical management of diabetes

Feature Article

BY **Amanda Frier** and **Sue Davine**

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Appendix B. Interview and focus group guides

Appendix B1. Health professionals

Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - Phase 2

Focus Groups Question Guide

Health professionals working with people who have T2DM

1. Introductions and rapport building (aim to create a relaxed environment) e.g. how long have you worked in diabetes, experiences etc
2. Brief explanation of the focus group purpose
3. Can you please talk about some of the nonclinical barriers that people tell you about (or that you are aware of) with regard to managing T2DM?
 - o *Depending on the responses, probe and facilitate discussion around the following.*

Commonly known social determinants of health (not necessary to use SDoH specific terms)					
Addiction	Economic Status (income)	Employment	Housing and home situation	Health Literacy (education)	Healthcare Access
Social Exclusion	Social Support e.g. childcare, supportive family and friends or other social groups	Stress	Transport	Food Security	Early Life (prevention of T2DM in future generations)

4. Do you feel that these (as discussed above) could be considered, and then addressed to help people manage their T2DM?
 - *If yes ask questions 5*
 - *If no explore*
5. How could these (as discussed above) be considered and addressed in T2DM management?
 - o *While asking these questions probe and facilitate discussion by asking*

Who	When
What	How
Where	Why

- o *If necessary probe and facilitate discussion around both assessing SDoH related issues and approaches for addressing them*
- 5a. If the final consensus is 'yes' these factors should be considered and addressed in the management of T2DM.
- o What barriers might there be
 - o What facilitators could there be.....?

Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - Phase 2

- 5b. If the final consensus is 'no' these factors should not be considered and addressed in the management of T2DM.... explore this further.
- 6. Which groups in the community seem to be the most disadvantaged because of the issues discussed above?
 - o *Facilitate discussion onwho... what...why...why not...in what way?*
- 7. Finalise discussion and ask if participants they have any questions or comments at all
- 8 Inform participants will happen next in the research project....

THANK THEM VERY MUCH !

Appendix B2. People with diabetes

Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - Phase 2

Focus Groups Question Guide People who have T2DM

1. Introductions, rapport building and purpose of focus groups (aim to create a relaxed environment).
2. Can you please talk about what it means for you to have T2DM?
3. Can you please talk about what it means for you to manage your diabetes well?
 - o *Whilst participants are answering these questions gauge the terminology and language used and use this throughout the rest of the focus group.*
4. Can you please talk about some of the things that make it hard to manage your T2DM well?
 - o *In addition to the responses given by the group, probe and facilitate further discussion around the following.*

Commonly known social determinants of health (use layman's terms)					
Addiction	Economic Status (Income)	Employment	Housing and home situation	Health Literacy (education)	Healthcare Access
Social Exclusion	Social Support e.g. childcare, supportive family and friends or other social groups	Stress	Transport	Food Security	Early Life (prevention of T2DM in future generations)

5. Thinking about the things you have just talked about, what would make it easier for you to manage your T2DM?
6. Do you think these things should be considered, and addressed in your T2DM management?
 - *If yes ask questions 7*
 - *If no explore*
7. How do you feel these things (as discussed above) should be considered, and addressed to help you manage your T2DM?
 - o *While asking these questions probe and facilitate discussion by asking*

Who	When
What	How
Where	Why

- o *If necessary probe and facilitate further discussion on both assessing SDoH related issues and approaches for addressing them*

Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - Phase 2

- 8a. If the discussion is around 'yes these factors should be considered, and addressed to help manage your T2DM?
- Can you think of things that would make it hard to consider and address as part of your T2DM management? Is there anything else that we have not talked about, that makes T2DM management hard?
 - What things might help to make this easier,?
- 8b. If the discussion is around 'no these factors should be considered, and addressed to help manage your T2DM? Explore with:

Who	When
What	How
Where	Why

8. Finalise discussion and ask if participants they have any questions or comments at all
9. Inform participants will happen next in the research project.

THANK THEM VERY MUCH !

Appendix C. Publication 2

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REVIEW ARTICLE

Health and
Social Care in the community

WILEY

Utilising clinical settings to identify and respond to the social determinants of health of individuals with type 2 diabetes—A review of the literature

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Abstract

Type 2 diabetes (T2DM) is increasing in global prevalence. It is more common among people with poor social determinants of health (SDoH). Social determinants of health are typically considered at a population and community level; however, identifying and addressing the barriers related to SDoH at an individual and clinical level, could improve the self-management of T2DM. This literature review aimed to explore the methods and strategies used in clinical settings to identify and address the SDoH in individuals with T2DM. A systematic search of peer-reviewed literature using the electronic databases MEDLINE, CINAHL, Scopus and Informit was conducted between April and May 2017. Literature published between 2002 and 2017 was considered. Search results ($n = 1,119$) were screened by title and abstract against the inclusion and exclusion criteria and $n = 56$ were retained for full text screening. Nine studies met the inclusion criteria. Review and synthesis of the literature revealed written and phone surveys were the most commonly used strategy to identify social determinant-related barriers to self-management. Commonly known SDoH such as; income, employment, education, housing and social support were incorporated into the SDoH assessments. Limited strategies to address the identified social needs were revealed, however community health workers within the clinical team were the primary providers of social support. The review highlights the importance of identifying current and individually relevant social determinant-related issues, and whether they are perceived as barriers to T2DM self-management. Identifying self-management barriers related to SDoH, and addressing these issues in clinical settings, could enable a more targeted intervention based on individually identified social need. Future research should investigate more specific ways to incorporate SDoH into the clinical management of T2DM.

KEYWORDS

clinical settings, literature review, social conditions, social determinants of health, social need, socio-economic factors, type 2 diabetes

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1 | BACKGROUND

Diabetes prevalence has increased globally over the past three decades, with type 2 diabetes (T2DM) accounting for 85%–90% of all diagnoses (Diabetes Australia, 2015; World Health Organisation [WHO], 2016). People at socio-economic disadvantage are more likely to develop T2DM and are more susceptible to suboptimal self-management due to the consequences of poor social determinants of health (SDoH) (Australian Institute of Health & Welfare [AIHW], 2014, 2016). This socially influenced health disparity suggests a need to investigate strategies to optimise healthcare provision so that social disadvantage and SDoH are acknowledged and incorporated into the standard practice of T2DM care.

Social determinants of health are described as 'the societal conditions in which people are born, grow, live, work and age' (WHO, 2003). More specifically they include; early childhood development, education, employment, food security, housing, economic status, social support and healthcare access (Centres for Disease Control & Prevention [CDC], 2013; WHO, 2003). Social determinants influence both good and poor health. If a person is born into an affluent society with quality education, positive life circumstances, opportunity and healthcare access, the likelihood of good health is increased. To the contrary, when a person's lifespan is permeated with poor education, low economic status, unemployment, inadequate housing and limited access to quality healthcare, it is probable that their health status will be of poor quality, and they will have a shorter life expectancy (WHO, 2003).

Sustainable change towards improved SDoH requires political and social influence (Marmot & Wilkinson, 2006). Essential advocacy and action are underway at population and community levels (Keleher & MacDougall, 2016; Marmot & Wilkinson, 2006; Solar & Irwin, 2010); however while the approaches to address the causes of poor SDoH are occurring, the immediate and individual needs of people who live in circumstances contrary to a healthy life also require attention.

Despite the increasing prevalence of T2DM, especially amongst those at social disadvantage with poor SDoH (AIHW, 2014, 2016; Diabetes Australia, 2015; WHO, 2016), there are currently no published guidelines on how to consider T2DM and SDoH simultaneously, particularly at a clinical level. Living with suboptimal SDoH impedes the lifestyle choices essential for effective T2DM self-management (Royal Australian College of General Practitioners [RACGP], 2016). Therefore, including strategies that identify and account for SDoH-related barriers may augment usual care by allowing additional interventions to be instigated as part of standard clinical practice. This may be an additional step towards improving health outcomes for people with T2DM.

Health services could embed SDoH as part of standard practice. Identifying SDoH-related barriers to T2DM self-management could provide health professionals with insight into their clients' life circumstances. Understanding an individual's SDoH and the associated health disparities could then help health professionals to develop more contextualised interventions (Baum *et al.*, 2013; Newman,

What is known about this topic

- Social issues directly influence health, and are called social determinants of health (SDoH).
- Type 2 diabetes (T2DM) is more common among people with poor SDoH.
- SDoH are usually considered at a population level, not individually or clinically.

What this paper adds

- This is the first known literature review on how SDoH are incorporated into the clinical management of T2DM.
- Identified SDoH should be individually relevant, and considered a barrier to T2DM self-management by the person with T2DM.
- There is a gap in formal methods and strategies to incorporate SDoH into usual clinical care for people with T2DM.

Baum, Javanparast, O'Rourke, & Carlon, 2015). The limited guidance to enable such an approach is stemmed from an overall deficit of supportive policies, frameworks and structure (Baum *et al.*, 2013). This may also explain the lack of guidelines to incorporate SDoH into the clinical management of T2DM.

Although considering non-medical issues is not the main focus in clinical settings, the relationship between poor SDoH and the ability to self manage diabetes is supported by an extensive evidence base (Brown *et al.*, 2004; Kumari, Head, & Marmot, 2004; Marmot, 2005; WHO, 2003). Therefore the formal incorporation of SDoH into usual clinical management of T2DM deserves more in-depth consideration and strategic progression.

Incorporating SDoH into T2DM clinical care; by identifying, considering and subsequently addressing the related self-management barriers could improve T2DM outcomes by enabling the ability to make the positive lifestyle choices required for effective T2DM self-management. This in turn, could help reduce the personal suffering that often accompanies the burden of living with diabetes.

2 | METHODS

2.1 | Aim of the review

This literature review aimed to explore methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM. It is worth noting the word 'address' and its synonyms should not be interpreted as resolving the SDoH issue. Instead, the correct interpretation is the strategies used to accommodate for the identified SDoH issue. For example, if it had been identified that a patient has limited transport options which would

therefore impact their healthcare access, then arranging appropriate transport could alleviate the consequences of these SDoH issues.

The initial focus on identifying individuals' SDoH-related issues was to gain insight into what factors were included, and how and when SDoH identification could be incorporated into routine T2DM clinical care. Strategies and recommendations to address the identified SDoH issues were then explored to determine how the related barriers to T2DM self-management could be addressed.

2.2 | Systematic approach

The varied methodologies used in the reviewed studies (Table 3) indicated the suitability of an integrative approach to the literature review (Whittemore & Knafl, 2005), however it's iterative and interpretive nature is similar to that of a scoping review (Arksey & O'Malley, 2005). Consequently the current review borrowed from both styles of literature review. Both follow a systematic process which includes;

1. research question formulation
2. systematic literature searching
3. study selection (informed by inclusion and exclusion criteria)
4. quality appraisal
5. analysis and interpretation
6. summarising, collating and reporting.

(Arksey & O'Malley, 2005; Whittemore & Knafl, 2005).

2.3 | Search strategy

The PRISMA protocol (Liberati et al., 2009) for searching literature guided a systematic search of the computerised databases MEDLINE, CINAHL, Scopus and Informit. Keywords, synonyms and associated truncations, including MeSH terms, were categorised into three groups; SDoH, T2DM and clinical setting (Table 1).

The search was limited to papers published between 2002 and 2017 English language and human studies. The 15-year search scope was applied to identify publications influenced by 'Social Determinants of Health: The Solid Facts (second edition)' (WHO, 2003). This publication was considered important because it preceded an increasing evidence base concerning the influence of social determinants on health. The keywords were combined to obtain the primary search results.

Titles and abstracts were screened to ensure all of the included articles discussed clinical settings, identification and/or addressed the SDoH-related issues of individuals with T2DM. Incorporating the keywords (or their synonyms) identification* and/or address* into the search strategy appeared to eliminate pertinent articles, thus manual screening of titles and abstracts was necessary. After the initial screening and duplicate removal, the full text of the articles

were read in brief. The inclusion and exclusion criteria were then applied to the remaining articles (Table 2).

The search identified 1,244 articles. One hundred and twenty-five duplicates were removed, leaving 1,119 articles. Title, abstract and text screening reduced the remaining articles to 56. The inclusion and exclusion criteria were applied to these 56 articles. Nine articles remained and were included in the review. Figure 1 outlines the process followed to identify, screen for eligibility and to include and exclude articles.

2.4 | Critical review, data extraction and analysis

Each study was critically reviewed using the McMasters critical appraisal tools for both quantitative and qualitative studies depending on the methodology used (Law et al., 1998; Letts et al., 2007). One study used mixed methods; therefore, both quantitative and qualitative McMasters appraisals were conducted for that study (Loh, Jaye, Dovey, Lloyd, & Rowe, 2015). The reviewed studies were then summarised and collated for comparison and interpretive analysis (Table 3). Commonly known SDoH (WHO, 2003) provided a reference for determining which SDoH were identified, and how frequently they were included (Table 4). The methods and strategies used to elicit this information were also ascertained during the study reviews (Table 5).

3 | RESULTS

3.1 | General characteristics of studies

Seven of the nine studies included in the review were quantitative, one was qualitative and one used a mixed method design. Four articles were published in 2015. Three were published in 2014 and one in 2010 and 2005 respectively. The age of participants in the reviewed studies ranged from 30–75 years. Sample sizes for eight of the studies ranged from $n = 24$ to $n = 615$. The remaining study was extremely large at $n = 13,366$. Seven of the studies were completed in the United States (USA), one in New Zealand and one in Australia.

Only one study intentionally investigated the value of identifying and addressing the SDoH-related issues of individuals with T2DM in a clinical setting. The remaining studies did not purposefully investigate identifying and/or addressing SDoH-related needs; however their methodology indirectly included these factors. Five of the nine articles were written by the same authors using the same data set. Each article reported separate interactions and relationships between T2DM and SDoH using different statistical analyses to investigate the specific issues considered in each study. Each study was published individually, and met the inclusion criteria for the current review. Consequently these five studies were appraised individually. All studies included a description of their ethics or approval procedures. Table 3 provides an overview of the articles included in the review.

TABLE 1 Categorized groups of keywords, synonyms and truncations

Group	SDoH	T2DM	Clinical Setting
Synonyms & truncations	Health social determinants	Adult onset diabetes	Primary care clinic
	Social determinants of health	Ketosis resistant diabetes	Health service
	Social determinants	MODY	Health services
	Socioeconomic	Maturity onset diabetes	Community healthcare providers
	Socioeconomic factors	Maturity-onset diabetes	Health centre
	Socio-economic factors	NIDDM	Health centres
	Socioeconomic status	Non-insulin dependent diabetes	Health clinic
	Health status disparity	Noninsulin dependent diabetes	Health clinics
	Health status disparities	Slow-onset diabetes	Health care providers
	Health disparity	Slow onset diabetes	Community health workers community
	Health disparities	Stable diabetes	health worker
	Social conditions	Type 2 diabetes	Clinic setting
	Social circumstances	Type ii diabetes	Family medicine
	Societal conditions		Medical care
	Societal circumstances		Medical centre
	Societal factors		Health workers
	SES		Health worker
			Healthcare providers
			Healthcare provider
			Health personnel
			Clini*

TABLE 2 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
≥18 years	<18 years
SDoH and T2DM in clinical settings AND	Type 1 diabetes
Identifying* SDoH of individuals (strategies to identify/screen/ assess/measure) AND/OR	Gestational diabetes
Addressing* SDoH (recommendations only to include) AND/OR	Acute settings
Addressing* SDoH (practical strategies to address)	Area/region identification* of SDoH issues rather than on an individual level
Published in a peer-reviewed journal	Policy/upstream approaches to addressing* SDoH (only) rather than on an individual level

3.2 | Identification of SDoH-related issues

3.2.1 | What was included?

Although identifying SDoH issues was not the primary focus for most of the reviewed studies, all embedded SDoH screening into their study protocol. Identification of social need was conducted as part of the study design or within participant descriptions, or both. Overall, SDoH factors included; income, employment, access to medical/healthcare, education, health literacy, social support, social exclusion, subjective social status (social gradient), serious psychological distress (stress), financial constraints, transport, food security, housing and early life. Table 4 displays the identified SDoH factors, and the number of studies that included them in their screening process.

3.2.2 | When and how was it done?

All studies completed the SDoH assessment prior to commencing the research protocol. Various approaches were used to gather the desired information. These were: written surveys (self-administered and assisted), phone surveys, health clinic databases and records, and medical chart entries. Table 5 provides a summary of the strategies and methods used to assess the SDoH-related issues of individuals.

3.3 | Addressing SDoH-related issues

Only one of the nine studies included specific strategies to address the identified SDoH-related needs of people with T2DM (Gimpel et al., 2010). The provided support was guided by the participant's identified social need obtained in the initial SDoH assessment. Community health workers undertook a care coordination/case management role which involved assisting study participants to navigate the healthcare system independently. Examples of CHW assistance included arranging translation services, home visits, appointment reminders, supporting health education strategies, and teaching participants how to use public transport. Enrolment in the program also involved cost reduction of consultations and medications for participants. This strategy addressed financial constraints and issues associated with low income (Gimpel et al., 2010).

Walker et al.'s five studies (2014a, 2014b, 2015a, 2015b, 2015) demonstrated multiple interactions and relationships between T2DM and SDoH. Consequently, they recommended SDoH be incorporated into T2DM management and interventions. Their recommendation did not provide any insight into how to address SDoH issues. However, the authors did recommend further

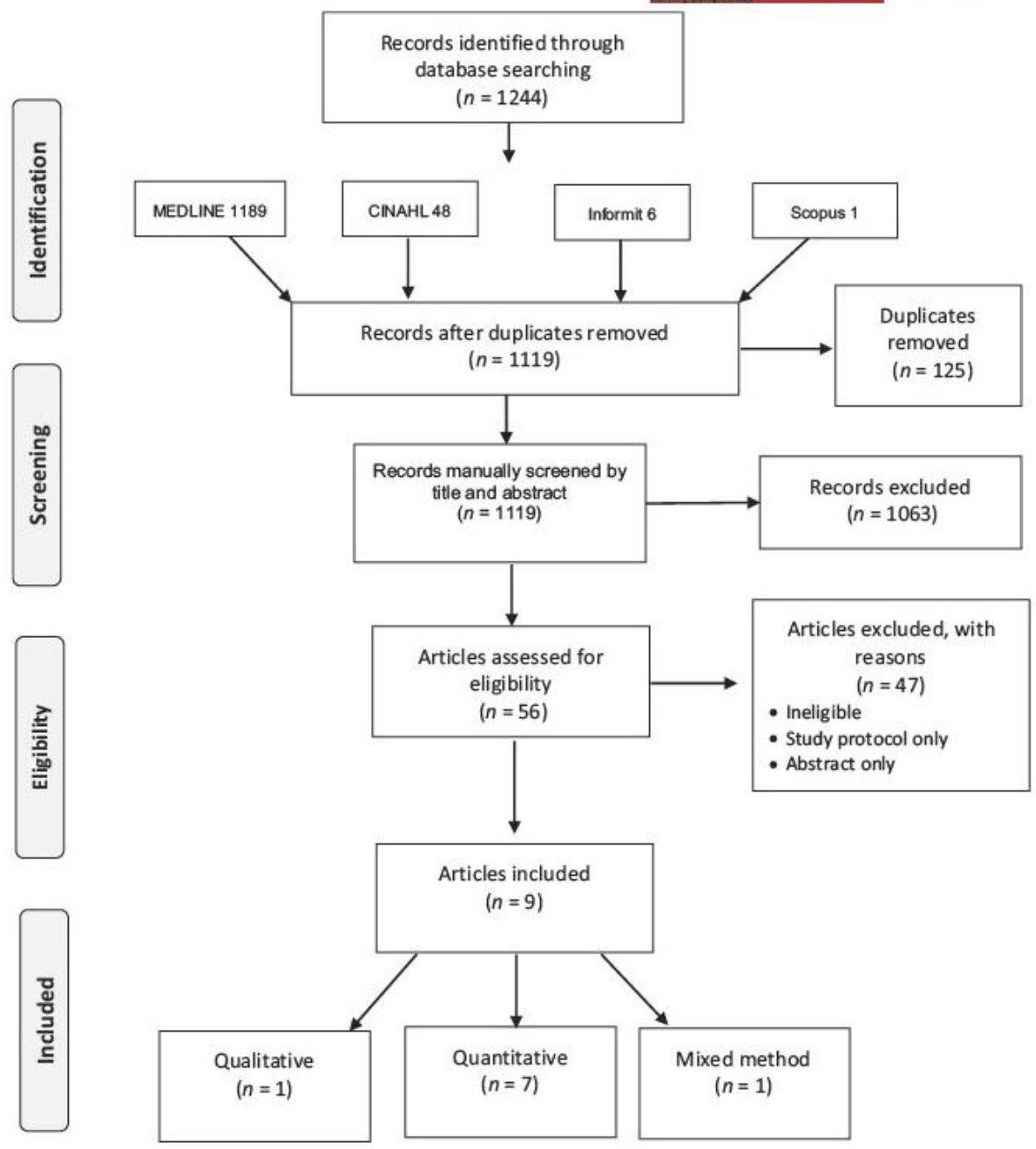


FIGURE 1 PRISMA flowchart of article identification, screening, eligibility and inclusion

research be conducted to inform and improve self-care and outcomes for people with T2DM by incorporating SDoH-based strategies (Walker et al., 2014a). Use of the same data set for these five studies is acknowledged and discussed in the limitation section of this review.

The remaining three studies acknowledged the relationship between SDoH and T2DM; however none of the studies provided any specific recommendations or strategies about how to incorporate

SDoH in into T2DM care (Loh et al., 2015; Rose, 2005; Rosland et al., 2014).

4 | DISCUSSION

The aim of this literature review was to explore the methods and strategies used in clinical settings to identify and address the SDoH

TABLE 3 Summary of articles reviewed

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
Gimpel et al. (2010)	Patient perceptions of a community-based care coordination system.	To assess the efficacy of including CHW as care coordinators into education programs/groups to address social concerns, and provide clinical support to patients with T2DM and depression	Exploratory	Focus groups	Community-based setting, Dallas USA 'Project Access Dallas-care coordination system' N = 24	Participants reported the support of community-based workers as a helpful inclusion. Benefits were also reported in participating in groups e.g. social support and understanding	Identifying Modified risk assessment tool (Identifying-social concerns, risk of developing T2DM, depression) Addressing Include strategies to address SDoH, for example, how use public transportation and facilitating access to health-care. Incorporated the use of community health workers
Walker et al. (2014a)	Independent effects of socioeconomic and psychological social determinants of health on self-care and outcomes in T2DM	To investigate independent effects of socio-economic and psychological SDoH factors on DM knowledge, self-care and QoL	Cross-sectional	Statistical analyses to provide information on individual and collective contribution of different SDoH to T2DM	Adult primary care clinic USA N = 615	T2DM knowledge and self-care: Significantly associated with SES and psychological components of SDoH T2DM outcomes: Significantly associated with higher SES and self-efficacy and lower diabetes distress and perceived stress QoL: Significantly associated with higher education, lower depression, lower psychological distress, lower perceived stress, and higher social support	Identifying Participants completed validated questionnaires Addressing Not included Recommendations for further research to inform future interventions designed to improve self-care and outcomes for patients with T2DM
Walker et al. (2014b)	Relationship between SDoH and processes and outcomes in adults with T2DM: validation of a conceptual framework	To validate a conceptual framework that clarifies the pathways linking SDoH to health outcomes of people with T2DM.	Cross-sectional	Path analysis used to determine if SDoH factors independently predict glycaemic control, or show an association with mediators/moderators of T2DM care components	Adult primary care clinic USA. N = 615	Significant paths were associated with SDoH and glycaemic control through direct association and mediators/moderators of diabetes care components	Identifying Participants completed validated questionnaires Addressing Recommendation to include SDoH in future research and T2DM intervention

(Continues)

TABLE 3 (Continued)

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
Walker et al. (2015a)	Quantifying Direct Effects of SDoH on Glycemic Control in Adults with T2DM	To investigate if self-care is the pathway through which SDoH impact T2DM outcomes	Cross-sectional	Structured equation modelling investigated the relationship between SDoH, self-care and glycaemic control	Adult primary care clinic USA N = 615	An association between self-care and SDoH is suggested, but is not mediated by self-care A direct relationship identified between psychosocial determinants of health and glycaemic control	Identifying Participants completed validated questionnaires Addressing Interventions should take psychosocial factors into account as independent influences on T2DM outcomes, rather than influences on self-care
Walker et al. (2015b)	Understanding the influence of psychological and socioeconomic factors on DM self-care using structured equation modelling	To develop and test latent variables of SDoH that influence diabetes self-care	Cross-sectional	Confirmatory factor analysis identified the latent factors underlying socio-economic determinants, psychosocial determinants and self-care Structured equation modelling was used to investigate the relationships between the above determinants and self-care	Adult primary care clinic USA N = 615 Self-efficacy, psychosocial distress and social support also had an influence over behaviour	Psychosocial factors can be separated into three latent constructs; psychological distress, social support and self-efficacy Better self-care is associated with lower psychological distress, higher social support and higher self-efficacy	Identifying Participants completed validated questionnaires Addressing Consider psychosocial, self-efficacy, social support and psychological distress separately rather than collectively Incorporate behavioural and psychological strategies in future T2DM interventions
Walker et al. (2015)	SDoH in adults with T2DM-Contribution of mutable and immutable factors	To increase understanding about the role of multiple SDoH factors on glycaemic control of individuals with T2DM To identify which SDoH factors are, mutable and immutable	Cross-sectional	Statistical analysis using a hierarchical model with HbA1c as a dependent variable with block independent variables i.e. Demographics, socio-economic, psychosocial, built environment, clinical and knowledge/self-care	Adult primary care clinic USA N = 615	Significant associations with HbA1c included self-efficacy, social support, comorbidity, insulin use, medication adherence and smoking behaviour SDoH factors that drive glycaemic control are modifiable and therefore worthy of inclusion in health interventions	Identifying Participants completed validated questionnaires Addressing Recommendations for greater acknowledgement of SDoH required to reduce the commodities associated with glycaemic control. Recommendations for DM education and skills training to include SDoH factors

(Continues)

TABLE 3 (Continued)

Citation	Title abbreviation	Study goal	Study design	Study methodology	Setting and sample	Study findings	Methods and strategies used to identify & address SDoH issues
Loh et al. (2015)	Dunedin's free clinic: an exploration of its model of care using case study methodology	To determine if the services provided met the social vulnerability need of clients	Mixed method Descriptive (nested case study)	Created a profile of patient need using various measures. Then applied an analytic matching technique to assess the degree of alignment between services provided and patient need	Community-based free health clinic NZ N = 406 <ul style="list-style-type: none"> nested case study medical certificates n = 278 justice use n = 80 surveys completed n = 27 	<p>Patient need complicated by coexisting social vulnerability. Suggested a degree of fit between the services provided and the need of the patients. Highlighted importance of a model of care that caters for patients with complex social need</p>	<p>Identifying Collected patient need through journal entries, patient encounters, self-administered surveys, medical certificates issued, hospital admissions, justice system use, and computer database records</p> <p>Addressing Not included</p>
Rose (2005)	Socioeconomic Barriers to DM Self-care: Development of a Factor Analytic Scale	To describe the development of a measurement tool for assessing SES barriers to T2DM self-care	Cross-sectional Part of a mixed method study investigating socio-cognitive factors/barriers accompanying DM self-care (quantitative component)	Theoretical constructs followed by telephone surveys to develop SES assessment measures Factor analysis on SES-related diabetes self-care barriers	Diabetes register from Fairfield division of GPs, Australia N = 105	<p>SES barriers identified through the factor analysis consists of 'place barriers' and 'information barriers' SES cost-related barriers failed to form one factor in the analysis Further development required</p>	<p>Identifying Phone survey developed using theoretical constructs</p> <p>Addressing Not included</p>
Rosland et al. (2014)	Social Support and Lifestyle versus. Medical DM Self-Management in the Diabetes Study of Northern California (DISTANCE)	To examine the relationship between social support and T2DM self-management/lifestyle behaviours, and self-management/medical behaviours	Cross-sectional	Self-management and social support, including SDoH factors assessed using the DISTANCE questionnaire, and administrative data Poisson regression models to estimate ARR of self-management behaviours at high and low levels of social support	Integrated managed-care consortium, California, USA N = 13,366	<p>Clearer association with high levels of self-support and positive self-management/lifestyle behaviours compared to medical behaviours</p>	<p>Identifying DISTANCE survey specifically designed to assess self-management behaviours of T2DM patients. Includes social support and SDoH factors</p> <p>Addressing Not included</p>

TABLE 4 SDoH factors included in the reviewed studies

SDoH factor	Included in screening
Access to medical/healthcare	9/9 studies
Income	8/9 studies
Education	7/9 studies
Employment	7/9 studies
Social support	7/9 studies
Subjective social status (social gradient)	6/9 studies
Psychological or emotional distress (stress)	6/9 studies
Financial constraints	3/9 studies
Transport	3/9 studies
Health literacy	2/9 studies
Food security	1/9 studies
Housing	1/9 studies
Social exclusion	1/9 studies
Early life	1/9 studies

of individuals with T2DM. Review of the approaches used to identify SDoH-related issues revealed informative factors that could inform routine SDoH assessments in the clinical setting (Table 5). Although practical strategies to address the identified SDoH-related barriers to T2DM self-management were limited, the associated recommendations provided valuable insight to inform future intervention and research.

4.1 | Identifying social need

Social determinants of health mean that the social factors in a person's life determine their health status and outcomes (Marmot & Wilkinson, 2006). The interdependent relationship between SDoH, T2DM and health outcomes was clear in Walker et al.'s five articles (2014a, 2014b, 2015a, 2015b, 2015). The SDoH factors they included were: income, education, subjective social status, serious psychological distress, access to healthcare and social support. These closely align with the key SDoH factors described by leading health organisations (AIHW, 2016; CDC, 2013; WHO, 2011).

Although Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) demonstrated an unequivocal interdependence between T2DM and SDoH, they did not indicate whether the participants regarded the SDoH-related issues as barriers to effective T2DM self-management. In contrast, Gimpel et al. (2010) used focus groups to evaluate the effectiveness of CHWs employed to screen and address the social and economic concerns of individuals with, or at risk of T2DM and depression. Their SDoH screen was completed using a modified health risk assessment survey (Table 5). The findings indicated the primary concerns of participants were: condition specific and self-management education, financial constraints, effective communication, respect, access to medication and transport. The qualitative nature of data collection enabled participants to share their

personal experiences about how poor SDoH and social vulnerability affected their self-management of T2DM.

Social vulnerability information was collected retrospectively by Loh et al. (2015) (Table 5). Identifying SDoH-related issues in a retrospective manner, such as reviewing medical records and patient encounter data, as done by Loh et al., possibly negates articulation of current barriers to T2DM self-management, and may reflect the researchers' interpretation of SDoH-related barriers, rather than the actual barriers encountered by the person with T2DM. Focusing on perceived barriers to T2DM self-management would enable personal insights based on lived experience and current circumstances to be explored and documented (Liamputtong, 2013).

Rosland et al. (2014) asked about current situations and perceived barriers to self-management using a self-administered survey. This survey specifically assessed the perspectives of people with diabetes (Kaiser Permanente, 2005), and is part of a longitudinal study in Northern California (Kaiser Permanente, 2017; Moffet et al., 2009). The long but comprehensive survey (185 questions) incorporated: income, employment, education level, health literacy, transport, healthcare access, social gradient, social support, social exclusion, emotional distress, early life, housing and food security. Using personal perspectives on well-known SDoH could bring greater meaning and relevance to identifying SDoH-related barriers to the self-management of T2DM.

Rose (2005) also assessed patient views about barriers to T2DM self-management. The study was undertaken to inform the development of a tool to measure the socio-economic barriers for people with diabetes. Participants in the study completed a phone survey, which used a five-point Likert scale to assess socio-economic barriers to diabetes self-management. The findings were inconclusive with sample size inaccuracy identified as a possible cause. Nonetheless, the author stressed the need to investigate the socio-economic impact on diabetes outcomes, and discussed the importance of continued progression on a reliable and valid measure of socio-economic barriers to diabetes self-care (Rose, 2005).

Employment and income were two of the most frequently assessed SDoH (7/9 and 9/9 respectively). These SDoH constituents are interrelated, because employment status can affect level of income, and insufficient income can increase financial constraints. The three studies that included financial constraints (Gimpel et al., 2010; Rose, 2005; Rosland et al., 2014) incorporated the consequences of personal income status, which provided some insight into how this SDoH factor can be a barrier to T2DM self-management.

Lack of income and financial constraints also limit healthcare access when people cannot afford adequate healthcare (Keleher & MacDougall, 2016; WHO, 2003). Limited access to healthcare is a known barrier to achieving good health (WHO, 2011). All of the reviewed studies included access to medical/healthcare, which highlights the importance of asking people about their healthcare access, and prioritising it in an SDoH assessment.

TABLE 5 Summary of methods used to identify SDoH issues

Study title	Citation	Methods used to conduct SDoH screening
Patient perceptions of a community-based care coordination system	Gimpel et al. (2010)	Modified risk assessment tool (survey). The survey was designed to identify social concern and need. Also provided a description of SES indicators in participant descriptions i.e. education, employment and income. No indication if survey was self-administered or assisted
Independent effects of socioeconomic and psychological social determinants of health on self-care and outcomes in T2DM	Walker et al. (2014a)	Numerous individual and validated assessment tools: <ul style="list-style-type: none"> • Survey assessing household income, years of education and employment status • Social Support Survey • Subjective Social Status –pictorial ladder to indicate perceived social status. • Perceived Stress Scale • Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income. No indication if assessment tools were self-administered or assisted
Relationship between SDoH and processes and outcomes in adults with T2DM: validation of a conceptual framework	Walker et al. (2014b)	Numerous individual assessment tools: <ul style="list-style-type: none"> • Interview survey assessing household income, years of education and employment status • Social Support Survey • Subjective Social Status –pictorial ladder to indicate perceived social status. • Perceived Stress Scale • Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income No indication if assessment tools were self-administered or assisted
Quantifying Direct Effects of SDoH on Glycemic Control in Adults with T2DM	Walker et al. (2015a)	Numerous individual assessment tools: <ul style="list-style-type: none"> • Interview survey assessing household income, years of education and employment status • Social Support Survey • Subjective Social Status –pictorial ladder to indicate perceived social status. • Perceived Stress Scale • Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income No indication if assessment tools were self-administered or assisted
Understanding the influence of psychological and socioeconomic factors on DM self-care using structured equation modelling	Walker et al. (2015b)	Numerous individual assessment tools: <ul style="list-style-type: none"> • Interview survey assessing household income, years of education and employment status • Social Support Survey • Subjective Social Status –pictorial ladder to indicate perceived social status. • Perceived Stress Scale • Short version of the Test of Functional Health Literacy in Adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income No indication if assessment tools were self-administered or assisted
SDoH in adults with T2DM- Contribution of mutable and immutable factors	Walker et al. (2015)	Numerous individual assessment tools: <ul style="list-style-type: none"> • Interview survey assessing household income, years of education and employment status • Social support survey • Subjective social status–pictorial ladder to indicate perceived social status. • Perceived Stress Scale • Short version of the test of functional health literacy in adults Also provided a description of SES status indicators in participant descriptions i.e. education, employment and income No indication if assessment tools were self-administered or assisted
Dunedin's free clinic: an exploration of its model of care using case study methodology	Loh et al. (2015)	Retrospective data collection via journal entries, patient encounters, medical certificates, patient medical records and databases. Also provided a description of SES indicators in participant descriptions i.e. unemployment, sickness benefits, and accommodation

(Continues)

TABLE 5 (Continued)

Study title	Citation	Methods used to conduct SDoH screening
Socioeconomic Barriers to DM Self-care: Development of a Factor Analytic Scale	Rose (2005)	Phone surveys based on items that indicate SES barriers to T2DM self-care i.e. cost/finances, transport, food security, safety and health literacy
Social Support and Lifestyle versus. Medical DM Self-Management in the Diabetes Study of Northern California (DISTANCE)	Rosland et al. (2014)	Self-administered/report questionnaire. Included comprehensive SDoH assessment i.e. access to medical/healthcare, income, education, employment, social support, social gradient, stress, financial constraints, transport, health literacy, food security, housing, social exclusion, early life. Also included many other T2DM management-related components. 185 questions in total

Ability to access health services is also limited by a lack of transport (Keleher & MacDougall, 2016; New South Wales Council of Social Service [NCOSS], 2012). This association is widely acknowledged throughout the literature (AIHW, 2016; WHO, 2011, 2003). Rosland et al. (2014) qualified this by including questions on how transport deficits contribute to reduced healthcare access. Despite the well-defined relationship between transport and healthcare access, only three studies included transport in their SDoH screening (Table 4).

Insufficient transport, employment and income can also exacerbate social exclusion as a lack of these can inhibit people's ability to access social networks (Keleher & MacDougall, 2016). Seven of the nine reviewed studies incorporated social support, and Rosland et al. (2014) also included social exclusion. The interaction between social support, social exclusion and T2DM management was evidenced in Strom and Egede's (2012) systematic literature review. They concluded that higher levels of social support contributed to positive T2DM outcomes and the associated lifestyle behaviours.

Healthy lifestyle behaviours are integral to optimal T2DM self-management (Egger, Binns, & Rossner, 2011; RACGP, 2016). In addition, effective diabetes self-management depends on adequate health literacy, which is augmented by quality education (Kim, 2016; Kim & Lee, 2016). Education is a widely recognised SDoH factor (AIHW, 2016; CDC, 2013; WHO, 2011): accordingly, seven of the nine reviewed studies included education when assessing an individual's SDoH.

Rosland et al. (2014) and Rose (2005) combined education and health literacy with individual perspectives by considering the reading ability and comprehension of their study participants. This suggests that screening for health literacy, in place of educational attainment may be a more informative inclusion in an SDoH assessment. Wallace, Carlson, Malone, Joyner, and Dewalt (2010) and Welch, Van Geest, and Caskey (2011) advocated for health literacy rather than education level, to be incorporated into patient screening. Their use of health literacy assessment tools negated interpretation of education quality and level, and allowed for a more current and relevant assessment to be completed. Of note, the authors did acknowledge the limitations of health literacy screening tools (Wallace et al., 2010; Welch et al., 2011).

Interestingly, despite the importance of considering health literacy, the reviewed studies appeared to provide minimal assistance to help participants complete SDoH screens. Rose (2005) conducted

phone interviews, which would have enabled provision of verbal explanations when needed. The remaining studies relied on written responses which could increase the likelihood of systematic measurement error (Büettner & Muller, 2011), and contribute to inaccurate responses.

Social positioning is a well-established SDoH (AIHW, 2016; CDC, 2013; WHO, 2011). Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) and Rosland et al. (2014) used an assessment tool to measure social positioning. This SDoH assessment item was subjective, and asked individuals' to indicate their perceived position within society. It was not specified how this perception extended to T2DM self-management; however, social positioning has a well-known relationship with health status (Marmot, 2003; WHO, 2003) and renders it deserving of more in-depth investigation into the value of including it in an SDoH assessment.

Food security, housing, addiction and early life are also well recognised SDoH (AIHW, 2016; CDC, 2013; Marmot, 2003; WHO, 2011, 2003), as is their relationship with the self-management of T2DM (WHO, 2003; Yu & Raphael, 2004). Rosland et al. (2014) were the only authors to consider these SDoH factors. However because of their well-known association to health, their inclusion in an SDoH assessment requires also further exploration.

Stress is arguably one of the most critical aspects to consider when identifying an individual's SDoH (Marmot & Wilkinson, 2006; WHO, 2003)-related barriers to T2DM self-management. It can occur as a 'result of social and psychological circumstances' (WHO, 2003). The studies by Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) and Rosland et al. (2014) incorporated stress in their SDoH assessment. They measured it in individually relevant terms; however the perceived impact of stress on T2DM self-management could not be interpreted.

Stress is increased with the coexistence of insufficient income, unemployment, social exclusion, inadequate transport, poor housing and food insecurity. This harmful accumulation of SDoH factors leads to people feeling they lack control over their lives (Keleher & MacDougall, 2016; WHO, 2003); in turn, this affects T2DM self-management (Brown et al., 2004; WHO, 2003; Yu & Raphael, 2004).

The evident multifactorial and interconnected nature of SDoH confirms that no single SDoH constituent works in isolation (Brown et al., 2004). Consequently, the convoluted and expansive impact of the SDoH combined with their apparent effect on

T2DM self-management should be considered collectively when identifying SDoH-related barriers in the context of diabetes self-care.

4.2 | Addressing the identified social need

Very few tangible strategies for addressing the identified SDoH-related issues were identified. Individual SDoH circumstances and whether they were perceived as barriers to T2DM self-management appear to be central to how and what should be addressed. In addition, targeted and formalised integration of SDoH into clinical care through collaboration and partnerships between health services, community supports and social services is required (Baum et al., 2013; Freeman, Javanparast, Baum, Ziersch, & Mackean, 2018; Newman et al., 2015). Though this provides an informative starting point, further work in the area is needed, including the development of guidelines and policies (Baum et al., 2013).

Community health workers in Gimpel et al.'s study (2010) provided support based on the patient's perception of the identified SDoH issues as barriers to T2DM self-management. In addition to providing condition specific education, the CHWs developed individualised patient care plans and provided support such as; referrals to social and healthcare services, assistance with medication and screening, transport assistance, translation services, health education, home visits, appointment reminders, and supported links to other community services. Gimpel et al. (2010) also suggested group-based interventions could be helpful, and have a role in empowering participants by improving T2DM knowledge, self-management capacity and providing condition-specific social support.

Social support was identified by Rosland et al. (2014) as being linked with lifestyle-related self-management behaviours. The authors acknowledge the worthiness of future investigation into the provision of social support to improve diabetes self-management. Appointing CHWs to focus on enhancing social support could help address SDoH-related barriers to T2DM self-management. This notion is supported by J. Freeman (2016) and McCalmont et al. (2016) who advocate for CHWs to work as part of the clinical team to address SDoH-related issues.

It is also noteworthy that participation in the program discussed by Gimpel et al. (2010) included a cost reduction of medications and treatment services. This is an important inclusion, as it addresses barriers associated with limited income and financial constraints. This strategy was depicted as an enabler to T2DM self-management by study participants.

Though not specific to T2DM, momentum towards addressing SDoH in clinical settings has commenced in Canada and the USA (Andermann, 2013, 2016, 2018; Page-Reeves et al., 2016). In particular, the 'Community Links Evidence to Action Research' (CLEAR) collaboration incorporates SDoH factors in the toolkit they have developed. The CLEAR collaboration toolkit provides general direction on SDoH screening domains in clinical settings. It also outlines

a 'patient level, practice level and community level' approach to addressing identified social issues (Andermann, 2013). Health professionals who have used the toolkit indicate that it provides contextualised guidance about how to screen for and address the SDoH-related issues of vulnerable patients in clinical settings (Naz, Rosenberg, Andersson, Labonté, & Andermann, 2016). The toolkit was not specifically developed for T2DM, therefore determining its applicability and clinical relevance is required before extrapolating it into diabetes care.

Combining the 'CLEAR toolkit' approach with including CHWs as part of the clinical team, to specifically address SDoH issues, may enhance the recommendations provided by the CLEAR collaboration (Andermann, 2013). Benefits similar to this were identified by Hunt, Grant, and Appel (2011). Their review of 16 articles found obvious benefits of incorporating CHWs into T2DM management because of their capacity to work at patient, health professional, health clinic and community levels. A broad interpretation of CHW was applied in the Hunt et al. (2011) article by using the term community health advisor (CHA). Their definition of a CHA included CHWs, peer and various health, and diabetes support workers. The CHA's provided transport, support for appointments and emotional issues, various social support activities, and assistance with literacy and comprehension (Hunt et al., 2011). The authors concluded that CHA's services are highly effective and valued by both participants and healthcare providers. Similar assistance was described in the reviewed study by Gimpel et al. (2010). The value of including CHW/CHA input to address SDoH-related issues for individuals with T2DM and in clinical settings appears persuasive and is well supported (Andermann, 2016; Gimpel et al., 2010; Hunt et al., 2011; Naz et al., 2016).

Supporting client literacy and comprehension is an integral role of a CHW/CHA (Gimpel et al., 2010; Hunt et al., 2011). People with lower levels of education are accurately presumed to have worse health literacy (Keleher & MacDougall, 2016; Kim, 2016; Wallace et al., 2010). The 'inability for individuals to access, understand, appraise and communicate health information within the healthcare system and the wider community' (Keleher & MacDougall, 2016) contributes to reduced healthcare access, suboptimal self-management (Welch et al., 2011) and contributes to a cascade of poor health outcomes resulting from poor SDoH. Poor health literacy leads to an inability to optimise diabetes education and support services, and therefore can lead to a deficit in diabetes knowledge and understanding. In turn, this can affect an individual's ability to achieve optimal T2DM self-management (Bains & Egede, 2011; Schillinger, Barton, Karter, Wang, & Adler, 2006). The quality of diabetes care is therefore dependent on a health professional's ability to accommodate for client health literacy levels (Wallace et al., 2010).

The benefit of including diabetes education that is sensitive to health literacy is supported by Kim and Lee (2016). Their systematic review and meta-analysis of 13 relevant articles focused on strategies to accommodate for patients with low health literacy. They found an overall improvement in glycaemic management when

health literacy was addressed. This provides convincing support for the integration of health literacy into diabetes self-management interventions (Kim & Lee, 2016; Wallace et al., 2010).

5 | LIMITATIONS

The term 'social determinants of health' was only defined in the MEDLINE electronic database at the beginning of 2014, although it entered mainstream literature in approximately 2003. Prior to 2014 the phrases socio-economic status, socio-economic factors and social conditions were used. To overcome this, a variety of synonyms were used in the search strategy; however it is possible some relevant literature may have been missed.

Including the terms 'identifying' and 'addressing' (and their synonyms) in the electronic database search inaccurately narrowed the search results to zero, and subsequently they were not used. Similarly an unmanageable amount of literature was produced when the synonyms of health equity, equality, inequity and inequality were included. Consequently manual screening of titles and abstracts was necessary prior to applying the inclusion and exclusion criteria. This may have limited the search, and is therefore worthy of acknowledgement.

Use of the same data set in the five articles by Walker et al. (2014a, 2014b, 2015a, 2015b, 2015) limited the breadth of the current literature review by reducing the total number of approaches used to identify the SDoH of individuals with T2DM in clinical settings. Although SDoH were only identified once, each study used different statistical analyses to describe separate interactions between SDoH and T2DM, and thus all were included in the review.

Expanding the search to include other chronic diseases such as heart disease and stroke may have yielded more results, as the influence of SDoH on these conditions is also acknowledged (WHO, 2003), however this would have detracted from the specific focus on T2DM. Furthermore, this limitation also sheds light on the paucity of research currently done on SDoH in clinical settings, where T2DM is usually managed.

6 | CONCLUSION

Social determinants of health and T2DM are interdependent, and inadequate self-management of T2DM is more common in those with poor SDoH (AIHW, 2014, 2016). Consequently the benefit of considering SDoH in conjunction with T2DM self-management was evident in the literature. The aim of the literature review was to explore methods and strategies used in clinical settings to identify and address the SDoH of individuals with T2DM. The literature did not reveal any specific guidelines; however, synthesis of the reviewed studies and associated literature revealed informative direction for future research.

Identifying social need in a clinical setting requires an individualised approach. Considering the individuals' personal

circumstances and whether they perceive the SDoH-related issue as a barrier to T2DM self-management brings relevance to well-recognised SDoH. Thereby incorporating an individualised approach to assess SDoH-related barriers to T2DM self-management into clinical settings could enable a more targeted approach to usual clinical care.

Considering health literacy rather than education level may enhance the usability and application of SDoH assessments by allowing for improved comprehension of the terminology frequently used in T2DM care. Furthermore, accommodating for health literacy is crucial when identifying SDoH-related barriers, and when addressing SDoH-related issues. This combined with the expertise and skills of CHWs may be advantageous when devising strategies to incorporate SDoH into the clinical management of T2DM.

The impetus towards including SDoH in clinical settings has begun in Canada and the USA (Andermann, 2013, 2016; Page-Reeves et al., 2016), and the strategies outlined in the CLEAR toolkit (Andermann, 2013) could be contextualised and then incorporated into the clinical management of T2DM.

Current efforts to advance T2DM management could be enhanced by incorporating innovative approaches that include the SDoH as part of standard clinical practice. Contextualising and progressing current approaches used in clinical settings to identify and address SDoH-related barriers to T2DM self-management could enable this approach. Furthermore, it is an opportunity to expand strategies that address SDoH and contribute to improved health equity in general.

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CONFLICT OF INTEREST

All authors declare that there are no conflicts of interest.

AUTHOR'S CONTRIBUTIONS

The review was led by AF. SD and FB provided methodological guidance including design, search strategy, appraisal and synthesis of the reviewed articles. Literature searching was conducted by AF. This included searching databases, importing records, removing duplicates and record screening. Appraisal of article quality, synthesis and interpretation of findings was conducted by AF with final results confirmed by SD and FB. AF led the writing of the review. SD, FB and TD provided guidance on the overall content and structure of the literature review. SD, FB and TD were responsible for critically revising the literature review. All authors (AF, SD, FB and TD) read and approved the final manuscript.

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Appendix D. Publication 3

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Poverty and inequality in Australia

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Appendix E. Publication 4



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ORIGINAL RESEARCH

Indigenous Australian perspectives on incorporating the social determinants of health into the clinical management of type 2 diabetes

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ABSTRACT:

Introduction: Type 2 diabetes mellitus and social disadvantage are related. In Australia, this association is most pronounced among Indigenous Australians (Aboriginal and Torres Strait Islander peoples). Indigenous Australians are among the most socially disadvantaged in the country, having the worst social determinants of health (SDoH). SDoH are typically addressed at a population level, and not on an individual or a clinical level. However, the SDoH-related needs of individuals also require attention. The adverse link between type 2 diabetes and SDoH suggests that simultaneous consideration at an individual, clinical level may be beneficial for type 2 diabetes care and self-management. Identifying and addressing SDoH-related barriers to type 2 diabetes self-management may augment current care for Indigenous Australians.

This study aimed to combine the perspectives of Indigenous Australians with type 2 diabetes and Indigenous health workers to explore the SDoH-related barriers and facilitators to self-managing type 2 diabetes, and how SDoH could be incorporated into the usual clinical care for Indigenous Australians with type 2 diabetes.

Methods: Under the guidance of a cultural advisor and Indigenous health workers, seven Indigenous Australians with type 2 diabetes and seven Indigenous health workers from rural and

remote north Queensland, Australia, participated in a series of semi-structured, in-depth face-to-face interviews and yarning circles. A clinical yarning approach to data collection was used, and both an inductive and a deductive data analysis were applied. Data were analysed, and themes were identified using NVivo v12.

Results: Study participants described a holistic view of health that innately includes SDoH. Specific to type 2 diabetes care, participants identified that culturally responsive service delivery, suitable transport provision, an infinite flexible approach to accommodate for individuals' unique social circumstances, appropriate client education and appropriate cultural education for health professionals, support mechanisms and community support services were all essential components. These were not seen as separate entities, but as interrelated, and all were required in order to incorporate SDoH into care for Indigenous Australians with type 2 diabetes.

Conclusion: SDoH are implicit to the Indigenous Australian holistic view of health. Consequently, an approach to type 2 diabetes care that complements this view by simultaneously considering SDoH and usual type 2 diabetes clinical management could lead to enhanced type 2 diabetes care and self-management for Indigenous Australians.

Keywords:

Aboriginal, Australia, health workers, Indigenous Australians, social determinants of health, Torres Strait Islander, type 2 diabetes.

FULL ARTICLE:

Introduction

Type 2 diabetes mellitus and social disadvantage are related; that is, when people live in disadvantaged situations, they are more likely to develop type 2 diabetes¹. In Australia, this association is highest among Indigenous Australians (Aboriginal and Torres Strait Islander peoples). Indigenous Australians have type 2 diabetes rates 3–6 times higher than that of non-Indigenous Australians, and are among the most socially disadvantaged in the country^{2–4}.

Social disadvantage is an accumulation of suboptimal social determinants of health (SDoH), which include income, employment, housing, education, transport, social support and access to health care⁵. For Indigenous Australians, social determinants also combine with cultural determinants to influence health. Cultural determinants include culture, spirituality, family and connection to traditional land^{2,4,6}.

SDoH are typically addressed at a population level, with the aim of achieving sustained health equity, social justice and generational improvement of people's lives^{5,7,8}. While the necessity of a

population approach is difficult to contest, people's immediate, idiosyncratic health needs must also be addressed. The connection between SDoH and the increased prevalence of type 2 diabetes suggests simultaneous consideration of SDoH and type 2 diabetes, at individual and clinical levels, may be beneficial. Addressing the direct relationship between poor SDoH and type 2 diabetes management⁹ warrants investigation, particularly in an Indigenous Australian context.

Both Indigenous and non-Indigenous Australians with type 2 diabetes are expected to understand the disease and achieve management goals¹⁰. Effective diabetes management often involves substantial lifestyle adjustment, which can be an impossible task for people with poor SDoH. The combined challenge of lifestyle change and poor SDoH could be reduced for Indigenous Australians if the intricacies of culture, 'spirit', family and connection to land² were incorporated into type 2 diabetes care.

Routinely considering SDoH when providing type 2 diabetes care, and understanding how these affect an Indigenous person's way of

life, could help health professionals and other service providers develop more contextualised interventions. Subsequently, identifying and addressing the associated self-management barriers could assist Indigenous Australians in achieving their type 2 diabetes management goals.

To date, clear guidance on how to include SDoH into clinical health management has been scarce, which may stem from an overall deficit in organisational level guidance, such as policies and procedures for taking action on SDoH in healthcare settings¹¹. However, multinational momentum towards screening for and addressing SDoH issues in clinical healthcare settings has begun¹²⁻¹⁸. These approaches could provide helpful guidance on how to incorporate SDoH into the clinical management of type 2 diabetes. In addition, it is imperative that the perspectives of Indigenous people are considered. Specific to this study is the perspective of Indigenous Australians.

The purpose of this article is to report the viewpoints of Indigenous health professionals who work with people with type 2 diabetes (IHWs) and Indigenous Australians with type 2 diabetes (Indigenous Australians with diabetes) on how the SDoH of Indigenous Australians can be incorporated into the clinical management of type 2 diabetes.

This study aimed to draw on the combined perspectives of Indigenous Australians with diabetes and IHWs to explore:

1. the SDoH-related self-management barriers and facilitators to managing type 2 diabetes, from an Indigenous Australian perspective
2. strategies to incorporate SDoH into the usual clinical care for Indigenous Australians with diabetes.

Methods

Design

This qualitative study used an exploratory, descriptive approach¹⁹ to combine the insights of Indigenous Australians with diabetes and IHWs. The intent was to increase understanding on how the social determinants affect Indigenous health, and the self-management of type 2 diabetes, and ways SDoH can be incorporated into the usual clinical care for Indigenous Australians. The six core values of the National Health and Medical Research Council (NHMRC) guidelines for conducting research with Aboriginal and Torres Strait Islander peoples and communities were integral to the research design. The core values are spirit and integrity, cultural continuity, equity, reciprocity, respect, and responsibility²⁰. Fidelity to the guidelines was assured through the guidance of cultural advisors, cultural mentors and cultural brokers, and is documented throughout this paper.

Situating the researcher

The primary researcher (AF) is a non-Indigenous, female diabetes educator and dietitian. For approximately 5 years she lived and worked in remote Indigenous communities throughout North and Western Queensland, Australia. Currently she resides in a regional city of North Queensland and works collaboratively with IHWs who

provide outreach health services to rural and remote communities. Being witness to the SDoH-related challenges some Indigenous Australians with diabetes endure stimulated her motivation to investigate this topic. To avoid misinterpretation of the data, a reflexive mindset was adopted, whereby self-reflection and self-awareness of personal context and experiences were maintained throughout all stages of the research project²¹. Furthermore, to enhance cultural appropriateness, she consulted regularly with cultural advisors and cultural mentors, and worked with cultural brokers on all aspects of the project.

Setting

Two health services, both with offices in Cairns and Townsville (North Queensland), participated in the study. One is a government service, the other a not-for-profit organisation. Both services provide diabetes care to regional, rural and remote Indigenous communities within their service districts as part of their regular service provision (seven communities in total). They are not community-controlled health services; however, they prioritise the needs of Indigenous Australians by including IHWs on the team, providing regular outreach services to Indigenous communities, and working with local Indigenous services and agencies.

Data were collected through small yarning circles and individual interviews. AF conducted all interviews and yarning circles. In accordance with cultural guidance, Indigenous Australians with diabetes only participated when an IHW was present, or if the IHW ascertained that they were comfortable, and the circumstances were appropriate for autonomous participation. Consequently, to ensure culturally safe voluntary participation, it was necessary for AF to join the IHWs (ZC and RR) on their scheduled community visits.

The interviews and yarning circles were conducted in locations where participants felt most comfortable. The locations included meeting rooms, waiting rooms, outdoor grassed areas and private residences.

Participant recruitment

A non-probability, purposive sampling approach¹⁹ was adopted. This was to ensure all participants were IHWs who worked with people who have type 2 diabetes, or Indigenous Australians with diabetes. Study details were provided to all participants in written form. Attention was paid to participant literacy level (particularly Indigenous Australians with diabetes); consequently, a detailed verbal explanation was also provided to ensure full cognizance of the study. In total, 14 people participated in the study (seven Indigenous Australians with diabetes and seven IHWs). All study participants were over 18 years of age. Written consent was attained prior to participation. Before providing consent, AF read the consent form to participants, and provided a verbal explanation (if desired).

Indigenous Australians with diabetes: AF was a member of the clinical staff in one of the participating organisations. To avoid influence, and to increase the trustworthiness of the study¹⁹, three

colleagues (two IHWs and one non-Indigenous diabetes educator) recruited all Indigenous Australians with diabetes in a face-to-face manner, independent of AF. After each individual agreed to participate, the IHWs personally introduced the Indigenous Australians with diabetes to AF prior to participation in the yarning circles or interviews.

Indigenous health workers: Also to minimise influence, IHWs from the same organisation as AF were informed about the project and invited to participate through their supervisor, with emphasis placed on the voluntary nature of participation. IHWs from both organisations were then invited to participate in the study via email, which was followed up by a verbal invitation (between 2 days and 1 month post-email).

Data collection

Study participants were offered the choice of taking part in a yarning circle or a one-on-one interview. Demographic information, duration of diagnosis and IHW title and qualifications were collected in a short questionnaire completed prior to the yarning circles/interviews. This was collected to reflect the variety of genders, age, years of type 2 diabetes diagnosis, and level of IHW experience and qualifications. There were no specific requirements for yarning circles to consist of IHWs and Indigenous Australians with diabetes separately; rather, natural formation of the groups was preferred because the aim of the study was to

analyse the combined perspectives of IHWs and Indigenous Australians with diabetes.

Yarning was the most appropriate method of data collection because it enables participants to tell their stories, in their voices, based on their lived experience²². By incorporating aspects of clinical yarning²³, the stories of Indigenous Australians became a vehicle to understanding their experience of type 2 diabetes. Combining traditional yarning with aspects of clinical yarning allowed for the necessary clinical information about type 2 diabetes and SDoH to be elicited in a culturally congruent manner^{22,23}.

Two one-on-one interviews (one female IHW, one male Indigenous Australian with diabetes) and five small yarning circles ($n=2$, $n=2$, $n=2$, $n=3$, $n=3$) were conducted (see Table 1 participant details). Only one yarning circle ($n=3$) was of mixed gender. This was a group of IHWs who felt comfortable participating in this manner. Gender differences between AF and all participants were discussed (prior to interview/yarning circle) with an IHW (ZC or RR), who acted as cultural broker. One yarning circle of female Indigenous Australians with diabetes ($n=2$) was co-facilitated by an IHW because it was decided her presence would create a more culturally safe and comfortable environment. To enable consistency in data collection, AF conducted all interviews and yarning circles. With consent, all interviews and yarning circles were audio-recorded for future transcription.

Table 1: Yarning circle participant details

Yarning circle number	Indigenous health workers (n)	Indigenous Australians with diabetes (n)	Gender
1	2		2 female
2		2	2 female
3	1	1	2 male
4		3	3 female
5	3		1 female, 2 male

Data analysis

Data analysis was guided by the six steps for thematic analysis outlined by Braun and Clarke²⁴; data familiarisation, initial coding, searching for themes, reviewing themes, defining and renaming themes, and producing the report.

AF transcribed all audio recordings, which allowed for more accurate transcription and for data analysis to develop and deepen reliably. Rigour of the study was increased by a sample of these transcripts being reviewed by the second researcher (SD). The initial appraisal was to review the relevance of the questions asked, and to commence independent identification of emerging themes.

Transcripts were imported into NVivo v12 (QSR International; <http://www.qsrinternational.com/nvivo>) for thematic analysis¹⁹. A combination of deductive and inductive data analysis was applied during initial coding, which enabled simultaneous targeted exploration into SDoH issues, and open exploration of participant perspectives²⁵. The theoretical framework used for the deductive analysis was based on well-known SDoH⁵ (see Box 1). A deductive

approach was incorporated to identify examples of how SDoH can affect the ability of Indigenous Australians with diabetes to self-manage their type 2 diabetes. The inductive analyses and a phenomenological approach enabled deep exploration of participant experiences¹⁹ of type 2 diabetes through an SDoH lens.

Triangulation continued throughout the analysis phase with regular analytical discussions on coding and theme development between AF and SD. The third researcher (KMR) reviewed the initial codes (established by AF and SD) and concurred with their accuracy. After minor modifications and clarification of terminology, all three researchers agreed on the final themes.

Following final theme consensus, member checking was completed with five of the seven IHWs (two were not contactable). The identified themes were discussed and explained to confirm the accuracy of interpretation and subsequent findings. The Indigenous Australians with diabetes were not contactable because of the transient nature of their lifestyles. Consequently, the IHWs (ZC and RR) who organised recruitment and assisted with facilitating a yarning circle confirmed the accuracy and

incorporation of the responses.

Social determinants of health
Addiction
Early life
Economic status (income)
Education
Employment
Food security
Healthcare access
Housing
Social exclusion
Social support
Stress
The social gradient
Transport

Box 1: SDoH framework used for deductive analysis.

Ethics approval

Ethics approval for the study was granted by the Human Research Ethics Committee of Queensland Health (HREC/18/QTHS/128) and James Cook University (H7480). Importantly, this approval requires demonstrated adherence to the NHMRC Ethical conduct in research with Aboriginal and Torres Strait Islander Peoples and communities: guidelines for researchers and stakeholders²⁰.

Results

Fourteen Indigenous Australians participated in the study. Seven participants were Indigenous Australians with diabetes and seven were IHWs. Participant characteristics are outlined in Tables 2 and 3.

Incorporating SDoH into the clinical management of type 2 diabetes for Indigenous Australians involves a central theme of culturally responsive service delivery. In addition, five individual yet interrelated themes emerged as being essential for SDoH to be identified, navigated and incorporated into the usual clinical care for Indigenous Australians with diabetes. The six themes were:

- culturally responsive service delivery
- an infinite flexible approach to service delivery
- appropriate education for both Indigenous Australians with diabetes and non-Indigenous health professionals
- support mechanisms for Indigenous Australians
- suitable transport provision
- community support services.

Figure 1 provides a diagrammatic representation of these interrelated themes.

Theme 1: Culturally responsive service delivery

Both Indigenous Australians with diabetes and IHWs discussed aspects that suggested a culturally responsive service should be provided when identifying and accommodating the unique needs of Indigenous Australians as part of diabetes care. Participant comments suggested that a culturally responsive service fundamentally requires an all-encompassing, holistic approach.

It's that whole, holistic, you know, not just their health, it's everything! (IHW 7)

More specifically, IHWs and Indigenous Australians with diabetes indicated that incorporating SDoH into care for Indigenous Australians in a culturally responsive way encompasses client involvement in their own care, IHW roles in providing care and service delivery approaches for Indigenous Australians with diabetes, generational acknowledgement and inclusion in care, and effective communication. Each aspect is detailed below.

Table 2: Characteristics of Indigenous Australians with type 2 diabetes

Participant	Gender	Age (years)	Duration of diabetes
1	Female	67	10 years
2	Female	67	2.5 years
3	Female	42	8 months
4	Female	35	>20 years
5	Female	61	10 years
6	Male	66	13 years
7	Male	61	3 years

Table 3: Characteristics of Indigenous health workers^{26,27}

Participant	Gender	Age (years)	Current role [†]	Qualification	Experience (years)
1	Female	48	Advanced health worker	Postgraduate	>20
2	Female	43	Care coordinator	Certificate 3	2
3	Female	57	Senior care coordinator	Certificate 4	6.5
4	Female	49	Outreach worker	Certificate 3	~3
5	Male	29	Outreach worker	Certificate 3	2
6	Male	49	Health worker	Certificate 3	5
7	Male	34	Outreach worker	Diploma	8

[†] Description of Indigenous health worker roles in this study

Health worker – Aboriginal and Torres Strait Islander person who is qualified to provide flexible, holistic and culturally sensitive health services to Aboriginal and Torres Strait Islander clients [ref. 26].

Care coordinator – an IHW who works as part of the ‘Closing the Gap – Integrated Team Care program’ to encourage and support eligible Aboriginal and Torres Strait Islander people to access the services they need to treat their chronic disease according to the general practitioner care plan [ref. 27].

Outreach worker – an IHW who works as part of the ‘Closing the Gap – Integrated Team Care program’ to encourage and support Aboriginal and Torres Strait Islander people to access health services and help to ensure that services are culturally competent [ref. 27].



Figure 1: The six identified themes for the social determinants of health in clinical care for Indigenous Australians with type 2 diabetes.

Client involvement in their own care: Indigenous Australians with diabetes reported their desire to be involved in all of their own healthcare decisions. They felt this would allow them the opportunity to contemplate the appropriateness and achievability of the suggested type 2 diabetes self-management strategies. IHWs reinforced this notion. They discussed the necessity of client involvement to ensure the appropriateness of interventions, and an understanding of self-management activities. Furthermore, the IHWs emphasised the importance of Indigenous Australians with diabetes establishing their own self-management goals.

it's always best to ... run it past with the client ... and always get consent from them, because it's their own right, you know, yeah ... And um, listen. Jot things down, let them do the talking ... Ah, you as a health professional, you be just, be taking notes, help them through and then you and the client sit down and work out a strategy (IHW 1)

Have a meeting with the client, with the patient, and see if they got a good understanding with what's going on ... (IHW 2)

IHW roles in providing care: Indigenous Australians with diabetes portrayed IHWs as key to achieving the fundamentals of type 2 diabetes self-management, such as attending medical appointments, understanding medications, navigating health systems and accessing various other community support. They expressed an appreciation for the diverse range of support the IHWs provided.

[IHW] has been a big help to everybody around this area ... She's from [location] and she comes up here, and you know, wants to know if everything is all right – how are youse, and you know, you need anything? (Indigenous person with diabetes (IPWD) 1)

The IHW commentary augmented this and exemplified their supportive attitude regarding client care. They portrayed an unbounded willingness to provide support for the diverse range of issues faced by Indigenous Australians with diabetes.

So we understand. And a lot of people come to us needing help. And it might be something that's very private and stuff. And they'll talk to us and we can either guide, support, be there with them ... So we walk with them. (IHW 6)

we absolutely back our mob up ... because it helps us to help them. You know. The client with their health journey, because, you know, you are doing stuff that, you know, and we link up ... So we're using and working together with community members for somebody's health journey. (IHW 6)

Service delivery approaches: Health services delivered to Indigenous Australians with diabetes centred on them feeling comfortable, respected and safe. Providing type 2 diabetes care in this manner was appreciated, and the IHWs perceived this as a fundamental part of their role. This approach also appeared to assist with client engagement in health care.

Comfortable, yeah ... Go out to their own environment ... It's coming down to respect, you know in making them comfortable, and make sure they're engaging and all that, you know (IHW 7)

instead of just going to the doctor it's just a quick visit and, blah blah, and home again. Whether it's just to sit down, or even watch a thing on the TV screen and whatever (IPWD 2)

Generational acknowledgement and inclusion in care: Including a generational approach to type 2 diabetes care was articulated by both Indigenous Australians with diabetes and IHWs. There was a strong desire to prevent type 2 diabetes spanning generations and negatively affecting the lives of young people. Intergenerational learning and understanding was seen as

a possible approach to prevent the consequences of type 2 diabetes experienced by older generations.

I don't want my grannies [grandchildren] to grow up to be like me, like, either jabbing themselves or taking tablets for the rest of their lives. (IPWD 4)

But what we need to do is just get the younger children, primary school all the way up to high school. Get some elders, and you know, some parents to come and work together. (IHW 6)

Effective communication: Two-way communication between Indigenous Australians with diabetes and non-Indigenous health professionals was most effective when facilitated by an IHW. This assisted the Indigenous Australians with diabetes to better understand health care and enabled IHWs to reiterate and clarify the messages delivered.

yeah and we're having those conversations on trips to the GPs, or after they're seen the doctor, even stuff to help them understand in the consult, we just, probably break it down for them on the way home. (IHW 4)

Theme 2: Infinite flexible approach

The lives of Indigenous Australians with diabetes were permeated with competing priorities that hindered effective type 2 diabetes self-management. These were all enmeshed with SDoH and required a multitude of strategies and services to adequately address and navigate them. The IHWs required an infinite flexible approach to be able to walk alongside Indigenous Australians with diabetes to help them navigate these circumstances so that eventually they can prioritise type 2 diabetes self-management.

The extent and diversity of SDoH-related competing priorities as identified by IHWs and described by Indigenous Australians with diabetes are displayed in Table 4.

Table 4: Examples of competing priorities to type 2 diabetes self-management for Indigenous Australians[CG1] [SW2]

Identified by Indigenous health workers	Described by Indigenous Australians with diabetes
<p>... well money, to buy the medications. I mean you got, you get some medications free from closing the gap and then sometimes you still gotta pay. And um, you know, they might be down to the last seven dollars or something like that. And have got to buy some bread for the house, instead of buying ... Their medication. (IHW 2)</p> <p>... they haven't been educated at the beginning. How would they understand anything, you know, they go through life just working out how to get through life! (IHW 6)</p> <p>... so I've got a client now, that I take to get wound care, um, and she is probably going to get her toe amputated soon. Um, she's in an overcrowded house as well, but she's got no place to go ... They make a mess, they run around, outside, come run inside. So you've got all those sort of things into play. (IHW 3)</p> <p>... well the, probably one of the biggest problems with, like, Indigenous people. It is the housing. Some of them don't have houses, they still have adult children living with them, or they have family staying to visit, and stay for, you know, long periods of time ... um, so I guess doctors, you know, they should take that into consideration a bit ... (IHW 3)</p> <p>There's been times when they hadn't had bread and stuff for, you know. (IHW 7)</p> <p>Yeah like, you know they tell, they tell us, you know, what they have in their personal issues and that, yeah. (IHW 7)</p>	<p>I'd buy the specials. (IPWD 2) [when asked if IPWD would purchase a more expensive healthier option, or a junk food option that was on special]</p> <p>If there is, ah, if there is a disconnect towards light, electricity, the money will go towards the bill other than attending to the appointments (IPWD 5)</p> <p>I wanted to have a cigar, so I went and bought a packet of cigarettes instead of the insulin, you know, maybe things at home are escalating ... (IPWD 2)</p> <p>... that's another thing. It's hard to save money for, like off your pay week. It's hard to save money for that when you living like. I live from pay to pay, see, and I make my money last till the next pay. And I just get to the next pay. So it's hard for me to, anything in between. To fork out \$100, you know to go down for ... That's cutting me short for my week, you know. To my next pay. (IPWD 2)</p> <p>... yeah, and then you've gotta worry about those ... When they was going to school, you gotta worry about the books and all of it, and stuff. (IPWD 4)</p> <p>... well me power went off, so me and the dogs just shared what food was there (IPWD 1)</p>

IHW, Indigenous health worker. IPWD, Indigenous person with diabetes.

Theme 3: Appropriate education

There were two elements to appropriate education. First was the quality, timing and frequency of cultural awareness training for non-Indigenous health professionals. The IHWs felt that cultural awareness training should begin at university level and continue throughout the health professional's career.

yeah there is always room for improvement

the length of time that runs?

maybe ongoing? (IHW 2, 3, 4)

and that's probably what needs to be done at the [university] level, before the doctors are even put out from the uni ... yeah, at the general medical training (IHW 2 and 3)

The second element related to client education. Understanding type 2 diabetes health messages depended on congruency between learning styles and health professional delivery. This included identifying, acknowledging and allaying fears about type 2 diabetes, and enabling a thorough understanding of type 2 diabetes and its management through the use of visual and practical education strategies.

everything needs to be visual (IHW 2)

You need to try and show them in other ways how to understand. And it has to be visual. (IHW 6)

And we've got a few deadly doctors here, um, that will sit down, take the time, go through a care plan, and say 'do you understand what this is all about? Would you like [IHWs] to explain it a bit better' ... All that sort of stuff ... They feel like they're important. They feel like someone cares ... And that's where you find them ... wanting to go back to that same

doctor all the time. (IHW 6)

Underlying the effectiveness of client education was a disparity in health literacy between non-Indigenous health professionals and Indigenous Australians with diabetes.

like myself, I can't read properly. (IPWD 1)

Theme 4: Support mechanisms

Varying types of support mechanisms used by Indigenous Australians with diabetes were identified. This ranged from type 2 diabetes-specific support, such as that provided by the IHWs, to support provided by family members, and indirect support such as workplaces and church groups.

... it's the support network you gotta have. (IPWD 6)

Our jobs are to support our community members to engage, and ah, with our GP practices and mainstream allied health services so to connect to those services so that they can be supported (IHW 6 (specific support provided by IHWs)[CG3] [SW4] [CG5])

when they get home, that conversation is going to continue. It's not just gonna be the patient not knowing how to explain it to any one time. Whether it be their wife, their husband their child that's looking after them ... so that one person in the household has got an understanding of what they're going through and then the conversation can continue at home. (IHW 2 (family support))

Plus I'm a Christian too ... yeah I feel more relaxed and more, more down to earth. You know, to be going to church and friends in the church and family in the church and that, you know. It's, yeah it's, you know, it's a good thing to be, you

know, going to church, being a Christian. (IPWD 2 (indirect support))

Theme 5: Suitable transport provision

The ability for Indigenous Australians with diabetes to access the necessary healthcare services for comprehensive type 2 diabetes care relied on access to suitable transport, at an appropriate time. Both IHWs and Indigenous Australians with diabetes lamented the ongoing insufficiency and inadequacy of transport.

There is a big problem with transport ... still, there is a big problem (IHW 6)

like I say, transport! ... Yeah to get there, and like home ... One of the ladies out [remote location] she uses the ambulance to get her to take it to [regional location] and bring her back sort of thing. (IPWD 4)

One IHW spoke of resorting to putting Elders on a Greyhound bus, to attend medical appointments in a regional town 2.5 hours away, because she had no other choice. Her words articulate the disgraceful lack of transport options.

... we've got communities that don't have that, so that's a very difficult ... So what happens is, they either gotta go, they've got a go on the Greyhound bus ... Now these are elders ... It's just wrong! ... We've had to transport people ourselves because their ... you know they don't want to go because they're scared ... They don't understand what's going on. (IHW 6)

Theme 6: Community support services

The ability and approaches used by IHWs to attend to SDoH issues relevant to Indigenous Australians with diabetes depended on the support services available in the community. The extent of support provided relied on collaboration and the working relationships the IHWs had with these services. The IHWs also required a comprehensive understanding of non-Indigenous services to effectively apply them in an Indigenous context to ensure appropriate referrals and support are provided.

If they have community centres, like [rural locations], really good. They support with um, food relief, um, housing, DV [domestic violence] and stuff like that. (IHW 6)

So we link up with the co-op that would be, that is good with working and understanding, you know, using your, um, bush medicines, food and stuff and then I'd interact with that as well. (IHW 6)

Oh ... the understanding ... understanding of both worlds. (IHW 1)

Discussion

This study aimed to combine the perspectives of IHWs and Indigenous Australians with diabetes to gain insight into the SDoH-related barriers and facilitators to type 2 diabetes management, and how SDoH could be formally incorporated into the usual clinical care of Indigenous Australians with diabetes. Not

surprisingly, the findings confirmed that culture should be the foundation of health service delivery for Indigenous Australians with diabetes. The findings also highlighted that the Indigenous view of health innately encompasses SDoH.

Australian Aboriginal and Torres Strait Islander peoples' view of health is holistic and includes culture, spirituality, tradition, social and emotional wellbeing, as well as physical health. Furthermore, this view of health considers the individual and community as unified and inter-reliant. When realised, this concept empowers and enables an individual's full potential to be reached, and community wellbeing to be achieved^{2,6,28,29}. Therefore, health service delivery for Indigenous Australians should parallel this all-encompassing perspective of health³⁰.

The identified themes for incorporating SDoH into the usual clinical care for Indigenous Australians with diabetes reflect a holistic approach to health care, and corresponded with the Indigenous Allied Health Australia description of cultural responsiveness. This definition states that cultural responsiveness:

holds culture as central to Aboriginal and Torres Strait Islander health and wellbeing; involves ongoing reflective practice and life-long learning; is relationship focussed; is person and community centred; appreciates diversity between groups, families and communities; requires access to knowledge about Aboriginal and Torres Strait Islander histories, peoples and cultures³⁰.

Culturally responsive service delivery is even more crucial when providing services for Indigenous Australians with diabetes who live in socioeconomic disadvantage (those with poor SDoH)^{31,32}. Poor SDoH can hinder optimal type 2 diabetes management through financial limitations, inadequate housing, insufficient transport, poor access to healthy food, lack of support and an inability to access quality health care^{29,33}. Given the inseparable association between poor SDoH and type 2 diabetes³⁴, the obligation for health professionals to identify and address these issues is apparent¹⁷. The findings of this study substantiate this and indicate that subsequent troubleshooting around these issues would indeed assist Indigenous Australians with diabetes in achieving improved type 2 diabetes self-management.

The challenges related to SDoH are exacerbated when Indigenous Australians with diabetes reside in rural and remote locations^{31,33}. This was echoed in the current study and amplifies the need to identify strategies to incorporate SDoH into clinical care. Indigenous health services in rural and remote regions require local contextualisation for optimal service delivery⁴. In addition, flexibility, client education, health professional training, client support, generational change, transport and community services are intertwined with providing culturally responsive and person-centred care^{30,35}.

IHWs are required to embrace their holistic view of health to accommodate for and support the vast range of competing priorities to self-management that Indigenous Australians with diabetes can have. Poor SDoH and the associated coping strategies (eg smoking and alcohol consumption) can also hinder

the lifestyle improvements necessary for optimal type 2 diabetes management and general good health^{5,10}. This perpetuating, negative cycle is widely acknowledged in the literature^{2,36,37} and requires an understanding that competing priorities can take precedence over type 2 diabetes self-management³¹. By integrating an infinite flexible approach into usual care, IHWs could then have the capacity to assist Indigenous Australians with diabetes with the diverse and ongoing SDoH issues that can arise, so that type 2 diabetes self-management could eventually become the primary goal.

The effectiveness of non-Indigenous health professionals' involvement in care for Indigenous Australians with diabetes hinges on cultural respect, awareness, sensitivity, safety and competence (cultural responsiveness)³⁰. Appropriate education for health professionals first requires non-Indigenous health professionals to understand the expansive impact of colonialism and transgenerational trauma on the health and wellbeing of Indigenous Australians⁶. Second, an unending reflexive empathy for the cultural and health belief differences between Indigenous and non-Indigenous Australians is essential^{29,30}.

The voices of the IHWs in the current study resonated the requirement of localised and frequent training around cultural practice. Their consensus lamented a rhetorical nature to current cultural awareness training, that leaves non-Indigenous health professionals ill equipped to truly appreciate the impact of Australian Indigenous culture on health management. Their discontent with current practice coincides with an apparent scarcity of literature supporting the effectiveness of cultural awareness training on health outcomes³⁸, and a lacking consensus on a cultural competence curriculum for health professionals³⁹. However, these assertions are not specific to Australian Indigenous culture, and thus should be extrapolated with contextual prudence.

The importance of cultural responsiveness is acknowledged extensively throughout the literature^{29,30,38,40}. The literature suggests that inept cultural practices by non-Indigenous health professionals can result in miscommunicated health messages, reduced healthcare access, lack of self-management confidence and general distrust of non-Indigenous health workers²⁹. To minimise these avoidable situations, cultural education and training (cultural competency) should be contextually relevant³⁷ and should be ongoing⁴¹.

Cultural competency is generally incorporated into undergraduate training of health professionals³⁹; however, the quality, frequency and localised nature of this training are difficult to determine. Consequently, a consistent curriculum for all Australian health professionals may contribute to an enhanced understanding of how providing a culturally responsive service can improve health outcomes for Indigenous Australians.

Effective type 2 diabetes management also requires proficient health literacy. Understanding medications, reading food labels, comprehending written and verbal instructions, navigating healthcare systems and providing informed consent are crucial for type 2 diabetes self-management⁴². The formidable link between

education levels, health literacy and diabetes is well documented^{42,43}. The IHWs in the current study indicated that mainstream education and literacy levels were low among many of the Indigenous Australians with diabetes they work with. This, combined with unacceptably high rates of type 2 diabetes among Indigenous Australians², reinforces the need for the appropriate education around type 2 diabetes self-management strategies for Indigenous Australians with diabetes.

The distinctive learning styles of Indigenous Australians should also be considered. Visual learning appears to be the most effective learning style among Indigenous populations across the world⁴⁴. Concurring sentiments from IHWs and Indigenous Australians with diabetes in the current study highlighted the importance of this in type 2 diabetes education. A visual and practical approach to client education facilitates comprehension that accommodates for individual learning styles and culture, despite health literacy levels^{42,44}. An example of a visual and interactive diabetes teaching tool for Indigenous Australians can be found on the Australian Indigenous HealthInfont website⁴⁵. In addition to considering learning styles, any education to Indigenous Australians with diabetes should consider and respect local culture and be delivered in a meaningful way so it empowers informed decisions about their own health care⁴⁶.

Providing care for Indigenous Australians with diabetes involves support derived from family, friends, health professionals or various community-based services. This diverse range of support mechanisms can provide support specific to type 2 diabetes self-management, or psychological, social and emotional wellbeing, and general physical support such as assisting with transport^{47,48}. This was supported by an Australian study by Black et al⁴⁷, which indicated that people with type 2 diabetes relied heavily on informal supports such as spouses and significant others, neighbours and community organisations. This qualitative study was not specific to rural and remote Indigenous Australians; however, it endorses the importance of support mechanisms to enhance self-management for all people with type 2 diabetes.

The benefits of social support are well known⁵ and were inferred in the current study. Indigenous Australians with diabetes and IHWs reported a reliance on support mechanisms. Involvement of family members was seen as crucial, and participation in community support groups was also advantageous. This was also a key finding in the Conway et al's study²⁹, where the value of engaging family groups, local community groups and IHWs to enable comprehensive care for Indigenous Australians was described. Furthermore, lack of these supports was seen as a barrier to type 2 diabetes care and self-management.

The absence of transport can impede social participation and access to health care^{5,49-51}. The experiences of IHWs and Indigenous Australians with diabetes in the current study confirmed that lack of suitable transport provision is a major obstacle to accessing health care, and type 2 diabetes self-management. Inadequate transport options, particularly in rural and remote communities, can force IHWs to use undesirable transport modalities in a desperate effort to support Indigenous

Australians with diabetes, such as resorting to public transport for community Elders, as described in the results section.

Inadequate transport has also been described in previous studies as a barrier to self-management, healthcare access and good health^{48,52}. The relevance of transport provision intensifies when Indigenous Australians with diabetes live in rural and remote communities, as access to appropriate transport is more unattainable than in larger centres⁵¹ and contributes to higher non-attendance rates and decreased healthcare access^{50,52}.

A well-documented, and obvious, solution to this type 2 diabetes self-management barrier is for health services to provide suitable modes of transport^{52,53}. Of course, there is an increased cost associated with this strategy; however, it is insignificant when compared to the high financial burden of hospitalisation, ambulance utilisation and aeromedical retrieval⁵⁴, all of which can be a result of poorly managed type 2 diabetes. By investing in resources and services that support Indigenous Australians with diabetes to effectively self-manage their health, such as transport provision, the costs associated with improperly managed health care could be reduced.

Despite transport deficits being a well-known barrier to optimal health, and the strong advocacy for health services to provide transport^{48,51-53}, the current study identified that inadequate transport remains an existing and problematic issue in this region. Services for Indigenous Australians with diabetes could potentially improve healthcare access, and therefore type 2 diabetes outcomes, and reduce healthcare expenditure by merely providing suitable transport as a routine part of health service delivery.

Assisting Indigenous Australians to access and engage with community support services is an integral part of the IHW's role²⁶. Effectiveness in this role pivots around collaborative relationships and partnerships with available support services⁵⁵, an in-depth knowledge of service capacity, reach and scope, and facilitating ongoing access and engagement^{53,55}. Without this role, access to vital services could be inhibited because of cultural differences and social barriers¹¹ for Indigenous Australians. Furthermore, the absence of culturally appropriate services within the community restricts service use⁵³.

Davy et al⁵³ provide a broad description of access in their 'Accessibility framework for Indigenous people accessing Indigenous primary health care services'. This framework has five main components: approachability, acceptability, availability, affordability and ability to engage. It may provide guidance for IHWs to work with community organisations to enhance accessibility and engagement for Indigenous Australians with diabetes. Conceivably, this framework could improve access and engagement of previously 'inaccessible' community support services for Indigenous Australians with diabetes. Using the framework may not solve the issue of unavailable services within the community; thus lack of community services requires further research. Nonetheless, improving the accessibility of currently available services is likely to improve care for Indigenous Australians with diabetes.

The six themes identified in the current study may assist health professionals and health services incorporate SDoH into the clinical management of type 2 diabetes for Indigenous Australians. They are interrelated and seen as the 'whole being a sum of its parts', which reflects a holistic approach to Indigenous Australian health. Locally contextualising these themes to other communities may contribute to a broader reduction in the disparities between Australian Indigenous and non-Indigenous health resulting from poor SDoH.

Limitations

Despite extensive effort to ensure the voices of all participants were correctly portrayed, it was not possible to contact the Indigenous Australians with diabetes for member checking because of the transient nature of their lifestyles. This issue was discussed with ZC and RR, and instead their comments and perspectives were collated and explained in detail to ZC and RR. This was seen as the most appropriate approach to addressing this issue, as ZC and RR have strong and enduring relationships with all the Indigenous Australians with diabetes who participated in the study.

The study was relatively small ($N=14$) and therefore may not reflect the views of all IHWs and Indigenous Australians with diabetes in North Queensland. However, both IHWs and Indigenous Australians with diabetes provided service to, or lived in, numerous North Queensland communities ($n=7$). The identified themes were highly consistent across all interviews and yarning circles and may indicate a reasonable level of transferability to other North Queensland communities; however, the validity should be considered if the 'SDoH approach' is to be applied elsewhere.

Finally, the findings are not representative of all Indigenous populations across Australia, and only reflect a North Queensland perspective. This is not necessarily a limitation; however, it requires acknowledging. Consequently, the authors recommend caution in directly transferring this SDoH approach to other regions, and strongly recommend local contextualisation first.

Conclusion

Incorporating SDoH into clinical care for Indigenous Australians with diabetes requires a holistic approach that reflects the Indigenous view of health and wellbeing^{6,29}. This study confirmed that cultural responsiveness should be at the centre of care provided to Indigenous Australians with diabetes. Care is then enhanced by applying an infinite flexible approach to type 2 diabetes management. Indigenous Australians with diabetes also require support people and other support mechanisms to walk with them on their type 2 diabetes journey. Appropriate education about type 2 diabetes for Indigenous Australians with diabetes, and ongoing cultural competence training for health professionals, are also essential components. Finally, but equally important, is the provision of transport that suits the specific needs of Indigenous Australians with diabetes, and the availability and accessibility of supporting services within the local community.

Suboptimal type 2 diabetes self-management among Indigenous

Australians, because of poor SDoH, may be preventable, and therefore calls for supplementary approaches to diabetes care. Incorporating SDoH as part of the usual clinical care, and assisting Indigenous Australians with diabetes to overcome or enable self-management despite them, could improve health outcomes. Furthermore, incorporating SDoH into the usual clinical care of type 2 diabetes may help to narrow the unacceptable health gap

between Indigenous and non-Indigenous Australians⁴.

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Appendix F. Ethics and site-specific assessment approvals

Appendix F1. Queensland Health ethics approval letter

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Appendix F2. James Cook University ethics approval letter

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Appendix F3. Townsville Hospital and Health Service approval letter

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**Appendix F4. Cairns and Hinterland Hospital Health Service approval
letter**

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Appendix G. Study information sheets

Appendix G1. Health professionals



INFORMATION SHEET - Health Professionals

PROJECT TITLE: Incorporating social determinants of health into the clinical management of type 2 diabetes - Phase 2.

Health professionals always strive to improve how they care for people with type 2 diabetes. Gaining insight into the challenges and barriers that people with diabetes face in their lives will help understand the 'nonclinical' reasons that can make it hard for people to manage their diabetes. These 'nonclinical' reasons are also known as the 'social determinants of health' (SDoH). Assessing how SDoH may impact an individual's ability to manage their diabetes, and determining strategies to address them may improve the overall ability of clients to achieve optimal diabetes management.

You are invited to take part in a research project that may help health professionals gain understanding into the things in life that make it hard for clients to manage their diabetes, and also ways to help address these. This study will investigate the best way to include SDoH into the usual 'clinical care' of people with type 2 diabetes. This study is being conducted by Amanda Frier and will contribute to her PhD studies at James Cook University.

If you agree to be involved in this study, you will be contacted by the principal researcher (Amanda Frier) and invited to participate in focus groups of up to 8 people, or if you prefer, one-on-one interviews. The focus groups and interviews are expected to take approximately one hour of your time. The focus groups or interviews, with your consent, will be audiotaped. The focus groups and interviews will be conducted at the <insert site-specific information>. Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice.

Your responses and contact details will be strictly confidential. The data from the study will be used in research publications and reports. You will not be identified in any way in these publications or reports.

If you think any of your clients who live with a type 2 diabetes might be interested in this study, please pass on a client information sheet to them so they can contact Amanda to volunteer for the study, if they wish.

If you have any questions at all, please contact - **Amanda Frier**

Principal Investigator:
Amanda Frier (PhD candidate)
College of Public Health, Medical and Veterinary Services.
James Cook University Australia, Townsville, QLD. 4811.
Phone:
Mobile:
Email: amanda.frier@my.jcu.edu.au

Supervisor:
Dr. Sue Devine
College of Healthcare Sciences.
James Cook University Australia, Townsville, QLD. 4811.
Phone:
Email: sue.devine@jcu.edu.au

This study has been reviewed and approved by the Townsville Hospital and Health Service Human Research Ethics Committee. If you have any concerns or complaints about the ethical conduct of this research you should contact the Chairperson on 07 4433 1440 or TSV-Ethics-Committee@health.qld.gov.au.

Refreshments will be provided

Appendix G2. People with diabetes



INFORMATION SHEET - People with type 2 diabetes

PROJECT TITLE: Incorporating social determinants of health into the clinical management of type 2 diabetes – Phase 2.

Health professionals always strive to improve how they care for people with type 2 diabetes. Insight into the challenges and barriers that people with diabetes face in their lives, will help health professionals to understand the 'nonclinical' reasons that can make it hard for people to manage their diabetes. Also understanding what can help people to look after their diabetes will assist health professionals to work with individuals to develop ways to make diabetes management easier.

You are invited to take part in a research project that will help health professionals gain understanding into the things in life that make it hard to manage diabetes, and ways to help address these. This study will investigate the best way to include these 'nonclinical' aspects into the usual 'clinical care' of people with type 2 diabetes. This study is being conducted by Amanda Frier and will contribute to her PhD studies at James Cook University.

If you agree to be involved in this study, you will be contacted by the principal researcher (Amanda Frier) and invited to participate in focus groups of up to 8 people, or if you prefer, one-on-one interviews. The focus groups and interviews are expected to take approximately one hour of your time. The focus groups and interviews, with your consent, will be audiotaped. The focus groups and interviews will be conducted at the *<insert site-specific information>*.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice.

If you agree to be involved in this study your participation will not affect the care you receive from your diabetes service providers and other health professionals in any way.

Your responses and contact details will be strictly confidential. The data from the study will be used in research publications and reports. You will not be identified in any way in these publications or reports.

If you know of any other people that live with a type 2 diabetes that might be interested in this study, can you please pass on this information sheet to them so they can contact Amanda to volunteer for the study?

If you have any questions at all, please contact - **Amanda Frier**

Principal Investigator:
Amanda Frier (PhD candidate)
College of Public Health, Medical and Veterinary Services.
James Cook University Australia. Townsville, QLD. 4811.
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Email: amanda.frier@my.jcu.edu.au

Supervisor:
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Phone:
Email: sue.devine@jcu.edu.au

This study has been reviewed and approved by the Townsville Hospital and Health Service Human Research Ethics Committee. If you have any concerns or complaints about the ethical conduct of this research you should contact the Chairperson on 07 4433 1440 or TSV-Ethics-Committee@health.qld.gov.au

Refreshments will be provided

Appendix H. Study participant demographic forms

Appendix H1. Health professionals



**Queensland
Government**



Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - *Phase 2*

Written Questions for Health Professionals

1. What is your profession?

2. Are you a credentialled diabetes educator?

3. Are you male or female ?

4. What is your age ?

5. What is your level of education?

certificate - diploma - degree - postgraduate studies

6. How long have you worked with people who have diabetes?

7. Do you work in a 'diabetes centre' based facility? i.e. hospital based service or community based service.

8. Do you provide outreach diabetes services? -----

- Face-to-face
- Telehealth

~ Thank You ~

Appendix H2. People with diabetes



Project title: Incorporating social determinants of health into the clinical management of type 2 diabetes? - *Phase 2*

Written Questions for people who have type 2 diabetes

1. Are you Male or Female?

2. What is your age?

3. Are you Indigenous or non-Indigenous?

4. What is your country of origin?

5. How long have you had type 2 diabetes?

~ Thank You ~

Appendix I. Study participant consent form

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Appendix J. Letters of support

Appendix J1. Townsville Hospital and Health Service

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Appendix J2. Cairns Diabetes Centre

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Appendix J3. Northern Australia Primary Health Limited

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Appendix J4. The Diabetic GP Clinic

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Appendix J5. Cultural mentor

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