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Role of allied health professionals in fertility care: a scoping review

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ABSTRACT

Infertility significantly impacts people worldwide, with many pursuing medical treatments including Assisted Reproductive Technologies (ART). This scoping review explores the role of allied health professionals (AHPs) in fertility care and their integration into fertility care teams. A search of six databases yielded 12 studies identifying dietitians, nutritionists, counsellors, psychologists, social workers, and physical therapists (physiotherapists) as key AHPs in fertility care. The role of AHPs was broadly divided into two main areas: providing education and monitoring related to lifestyle modifications and fertility risk factors and offering psychological and psychosocial treatment and support. Dietitians educate patients on nutrition and lifestyle modifications to improve fertility. Mental health professionals, including psychologists, social workers, and counsellors, address the emotional stress of infertility and help patients cope with ART. Physical therapists perform therapies to increase chances of conception. The integration of AHPs into fertility care teams vary by location and facility practices with some working within healthcare teams and others independently. Despite guidelines, the incorporation of AHPs into fertility care is inconsistent, highlighting the need for a standardized approach. This review highlights AHP roles in providing education, lifestyle modification guidance, and psychosocial support which are valuable in enhancing patient care and potentially improving ART outcomes.

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KEYWORDS



Infertility; fertility care; allied health; assisted reproductive technologies; in vitro fertilization; IVF; role

Introduction

Infertility is a health issue that affects millions of people worldwide and can be attributed to the male partner, female partner, both partners, or be unexplained (Kissin et al., 2019; National Institute for Health and Care Excellence (NICE), 2017). Female causes are broadly categorized as ovulatory disorders, tubal damage, and uterine or peritoneal; in 90% of cases in males the cause is attributed to low sperm counts, low sperm quality, or both (Leaver, 2016; NICE, 2017). Other causes in males include anatomical issues, hormonal imbalances, and genetic defects (Leaver, 2016). Treatment of infertility is commonly described as requiring medical intervention in terms of medication or assisted reproductive technologies (ART) (Boivin et al., 2007), however allied health professionals (AHPs) are also involved fertility care (Langarizadeh et al., 2023; Patel et al., 2018; Wischmann & Thorn, 2022). While medical interventions are a significant aspect of fertility treatment, there are also non-

medical approaches that can enhance the chances of conception.

Depending on the infertility diagnosis, there are interventions other than ART that may increase the chance of spontaneous pregnancy or improve the effectiveness of ART (Homan et al., 2007). Some lifestyle modifications such as decreasing weight in obese patients are identified as being important first line interventions in infertile patients (Carson & Kallen, 2021). This is described in the NICE 'Fertility problems: assessment and treatment' guidelines (Carson & Kallen, 2021; NICE, 2017). These guidelines recommend that people concerned about delays in conception should initially be given information around modifiable lifestyle factors such as alcohol intake, smoking, caffeinated beverages, obesity, low body weight, medication and recreational drugs use, complementary therapy, and folic acid supplementation (NICE, 2017). Although modifying some lifestyle factors has been associated with increasing fertility, little direction

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from guidelines is given as to which profession(s) are best suited to effectively lead this for patients or whether a team approach is most appropriate (Homan et al., 2007; NICE, 2017).

Mental health support has been recognized as being an important component of caring for people with fertility problems (Di Trani et al., 2021). Infertility and the process of undergoing fertility treatment is associated with psychological distress and other mental health conditions (Sax & Lawson, 2022). The role that stresses play in contributing to infertility is controversial and appears to lack rigorous research, however, is not completely without merit (Langley, 2014; Sax & Lawson, 2022). Evidence does suggest that there is a relationship between psychosocial care, and decreased stress and concerns around medical procedures, and that compliance with treatment and lifestyle outcomes can be improved with psychosocial care (Gameiro et al., 2015). The European Society of Human Reproduction and Embryology (ESHRE) Guideline 'Routine psychosocial care in infertility and medically assisted reproduction – A guide for fertility staff' (currently under review) outlines how to incorporate psychosocial care into routine fertility care (Gameiro et al., 2015). The ESHRE guidelines also suggests that people can have needs that are behavioural such as lifestyle, exercise, nutrition, and compliance (Gameiro & Boivin, 2015). These needs in isolation or in combination may require different specialist health professionals to provide optimal fertility care (Homan et al., 2007).

Studies investigating the role of AHPs in the care of people with fertility challenges are limited. Although AHPs treat people with fertility problems, their role and purpose as a presence in a fertility care team is uncertain. Therefore, this review aims to investigate the role of AHPs in the care and treatment of people with fertility problems and their potential place amongst fertility care teams.

Methods

This scoping review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for scoping reviews and has no protocol registered (Tricco et al., 2018).

Search strategy

A scoping review was conducted to address the question 'What are the roles of allied health professionals in fertility care?'. To identify studies that were relevant

to the research question, six databases were searched including CINAHL, Emcare, Medline, PsycINFO, Scopus, and Web of Science. Development of terms used for the search were based around infertility, fertility treatment, allied health (general), individual allied health professions and multi/interdisciplinary/team care. Search terms and operators were modified according to the requirements of the databases, with recommended words and MeSH subject headings from Medline, Emcare, and CINAHL used to develop terms for keyword searches. Examples for search terms used in Medline and Scopus are described in Table 1. No limitations were applied to the database searches.

Study selection

Duplicate records were removed, with remaining records titles and abstracts screened for compliance with predetermined inclusion criteria. Titles were screened for inclusion primarily in reference to fertility care and the inclusion of allied health professionals. Additionally, records were excluded if the subject was not human, and the topic was fertility preservation, contraception, or abortion.

Remaining records were full text screened, with studies eligible for inclusion in this review if: i) the study population included either people experiencing fertility problems or allied health professionals who provided fertility care; and ii) the study reported on interventions by allied health professionals for people experiencing fertility problems or reported on services provided by allied health professionals for people experiencing fertility problems. Exclusion criteria included: studies not in English; articles that were not primary research (reviews, commentaries, book chapters, editorial, conference abstracts, and case reports were excluded); articles in which allied health was not included; articles that were not role or service related; and articles that were abstract only with no full text able to be sourced.

This process was independently conducted by two authors (AM, ST) who reviewed article titles, article abstracts, and then full text to identify articles for inclusion. At each step, a third author (BG) resolved any disagreements.

Data charting

Review of selected studies was completed and summarized into a table of six headings including author, year, country, health profession, aim, study design (including participants and method), key findings,

Table 1. Search strategy in Medline and Scopus.

Database	#	Searches	Results
Medline	1	exp Reproductive Techniques, Assisted/	81565
	2	exp Infertility/	74952
	3	exp Fertility Clinics/	149
	4	reproductive techniques/ or fallopian tube patency tests/ or ovulation detection/ or ovulation prediction/ or reproductive techniques, assisted/ or exp tocolysis/	16915
	5	exp Reproductive Medicine/	24798
	6	1 or 2 or 3 or 4 or 5	163941
	7	exp allied health personnel/ or nutritionists/ or occupational therapists/ or physical therapists/ or psychotherapists/	60647
	8	counselors/ or exp allied health personnel/ or health educators/ or nutritionists/ or occupational therapists/ or physical therapists/ or psychotherapists/	61799
	9	exp allied health occupations/ or psychology, medical/	54128
	10	Psychotherapists/	210
	11	Counselors/	696
	12	Nutritionists/	1826
	13	exp Dietetics/	8361
	14	exp Exercise Therapy/	65127
	15	Physical Therapists/	3347
	16	Social Workers/	1158
	17	exp Occupational Therapists/	775
	18	Patient Care Team/	69775
	19	Interdisciplinary Research/	648
	20	Interdisciplinary Studies/	1328
	21	7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20	255386
	22	6 and 21	666
Scopus	1	('infertility' OR 'reproductive sterility' OR 'sterility' OR 'sub-fertility' OR 'subfertility' OR 'assisted reproductive technic*' OR 'IVF' OR 'in vitro fertili*' OR 'fertility clinics' OR 'fertility care' OR 'infertility care' OR 'reproductive te*' OR 'infertility service*' OR 'infertility clinic') AND ('allied health' OR 'psychologist*' OR 'dietitian' OR 'Nutritionist' OR 'dietetics' OR 'Exercise phys*' OR 'exercise therapist' OR 'physiotherap*' OR 'physical therapist' OR 'Social work*' OR 'occupational therap*' OR 'psychologist' OR 'healthcare assistant*' OR 'paramedical personnel' OR 'Exercise therap*' OR 'Mental health services' OR 'Mental health practitioner' OR 'Multidisciplinary' OR 'Interdisciplinary' OR 'Health care team' OR 'Patient care team' OR 'counselor' OR 'counsellor' OR 'integrated health care' OR 'patient centred care')	3144

outcome and recommendations (Table 2). The studies were grouped into allied health disciplines and the CIHC domains that were addressed by each study were identified. The Canadian Interprofessional Health Collaborative (CIHC) Framework's six competency domains were used as a base to theme data from the twelve studies (Canadian Interprofessional Health Collaborative [CIHC], 2010). The intention of this scoping review was to identify the roles that allied health professionals have in providing fertility care, hence the quality of records in this review are not appraised as is typical of scoping reviews (Tricco et al., 2018).

Results

Selected studies

Figure 1 illustrates the PRISMA flow diagram for the scoping review process, which was utilized to illustrate the search strategy for this scoping review (Page et al., 2021). Searching of the six databases produced 9348 records. Following removal of duplicates, 7310 records remained which were screened based on their title and abstract content. 81 reports then remained which were sought for retrieval. 10 reports were unable to be retrieved and were subsequently excluded, with

the remaining 71 reports assessed for eligibility. At the completion of the screening of full texts, 59 records were excluded for not addressing the criteria, with reasons including: (i) full text was not available in English; (ii) the report was not a primary research article; (iii) the report was not Allied Health related; (iv) the report was not allied health role related; (v) the report was abstract only. Following the full text review, 12 reports were selected as suitable for inclusion in this review (Figure 1). The studies published ranged in date from 2009 to 2024. While three studies were published in Iran (3) (Langarizadeh et al., 2022, 2023; Nadjarzadeh et al., 2023), studies were also based in Italy (2) (Di Trani et al., 2021; Spoletini et al., 2022), Australia (1) (Bell, 2012), Canada (1) (Langley, 2014), Germany (1) (Petra et al., 2024), Indonesia (1) (Puspitaningrum et al., 2022), Japan (1) (Yano & Ohashi, 2010), Spain (1) (Espinós et al., 2017), and the United States (1) (Rice et al., 2015).

The studies investigated allied health involvement with people experiencing fertility problems. Five of the studies included dietitians and nutritionists (Espinós et al., 2017; Langarizadeh et al., 2022, 2023; Langley, 2014; Nadjarzadeh et al., 2023), six centred around mental health professionals (psychologists, social workers,

Table 2. Summary of included studies relevant to allied health professionals' role in fertility care.

Author (Year) Country Profession	Aim	Study design Participants Method	Key findings	Outcome and recommendations	CIHC domains addressed			
					Role	Team	Conflict Leadership Communication Patient	
Dietitian / Nutritionist Langley (2014) Canada Dietitian	To design a nutrition screening form to assess female patients with fertility problems for nutrition and other lifestyle factors that could negatively impact fertility.	Observational study 300 females with fertility problems Survey containing open-ended and closed-ended questions to provide self-reported lifestyle habit and to identify nutrition-related risk factors for infertility	Three times more women were screened as requiring a nutrition referral than those requesting one. Nutrition and lifestyle factors related to infertility were able to be identified via the use of the screening form.	Outcome: Simple lifestyle modifications can optimize fertility while assisting more successful reproductive outcomes. Recommendation 1: Nutrition screening should be included in initial evaluation of people with fertility problems where a dietitian is uniquely qualified as a team member.	✓	✓	✓	✓
Espinós et al. (2017) Spain Dietitian	To evaluate whether a 12-week diet and exercise intervention implemented by a dietitian before an IVF cycle would influence pregnancy rates in obese women.	Prospective pilot study (study and control group) 41 (21 study, 20 control) females with fertility problems (BMI of 30–40 kg/m ²) Experiment with study group undergoing a 12-week diet and exercise programme before ART and control group with no intervention	Intervention group had significantly higher cumulative birth rate (61.9% vs 30%, P = 0.045).	Outcome: A 12-week diet and exercise plan can lead to weight loss and decreased visceral adiposity, and more favourable IVF outcomes in obese women. Recommendation 2: Proposes a personalized weight loss programme based on diet and exercise before an IVF cycle for all overweight and obese women.	✓	✓		
Langarizadeh et al. (2022) Iran Nutritionist Fertility specialist	To design and evaluate nutrition education application for infertile women.	Quantitative research in two phases Phase 1 – 15 (10 nutritionists, 5 fertility specialists) Phase 2 – 220 women with fertility problems Literature review to base educational content which is then reviewed by health professionals. Prototype distributed to patients followed by survey to assess usability.	Nutritional education with fertility problems were determined via literature review and nutritionist/fertility specialist review and recommendations.	Outcome: Nutritional education of infertile women can improve awareness and treatment outcomes. Recommendation 3: Mobile-based nutrition education applications can be used by institutions and organizations providing health care services to enhance patient information, and aid in improving lifestyle.	✓	✓		✓

(continued)

Table 2. Continued.

Author (Year) Country Profession	Aim	Study design Participants Method	Key findings	Outcome and recommendations	CIHC domains addressed					
					Role	Team	Conflict	Leadership	Communication	Patient
Nadjarzadeh et al. (2023) Iran Nutritionist Fertility specialist	To determine the necessity of self-care training contents by performing a needs analysis among men with fertility problems to design a mobile-phone application	Quantitative study 30 health professionals (18 nutritionists and 12 fertility specialists) Survey of health professionals to assess developed questionnaire to determine suitability of contents.	Educational questions relating to clinical information, additional complementary treatments, physical activities, personal activities, and male reproductive structure were deemed necessary.	Outcome: Individuals with fertility problems need appropriate educational training, especially men.	✓	✓	✓	✓	✓	✓
Langarizadeh et al. (2023) Iran Nutritionist Fertility Specialist	To prepare the required educational content for designing a mobile phone-based nutrition educational application for women with fertility problems.	Quantitative study 15 health professionals with fertility experience (12 nutritionists, 3 fertility specialists) Literature review to inform educational, reviewed by health professionals to assess validity.	Nutrition education needs were specified under six domains: definitions, disease and treatment instructions, diet and nutrition, eating habit, personal activities and habit, and menstruation. 26 of 28 items were deemed as required for the development of the mobile application.	Outcome: Followed by obtaining required and valid material, nutrition education application can improve patients' knowledge and facilitate treatment process.	✓		✓			
Mental health professional										
Yano and Ohashi (2010) Japan Counsellor	To document actual and expected roles of health professionals needed to provide successful fertility treatment.	Quantitative study 128 fertility clinic staff 46 women with fertility problems Survey of patients and staff to determine the actual (staff) and desired (patients and staff) role of staff and teamwork approach in fertility treatment.	Counselling regarding emotional and social problems was mainly performed by a team approach including fertility counsellors. Counselling on economic problems was performed by a team including medical clerks.	Recommendation 4: Effective interprofessional team approach should be established at each step during fertility treatment to provide good services for the patient and good treatment outcomes.	✓	✓	✓	✓	✓	✓
Bell (2012) Australia Psychologist Social Worker	To explore the nature of psychosocial support needs and service provision in the context of assisted reproduction.	Qualitative study 28 females who had used assisted reproductive services and live in non-metropolitan areas. In-depth interviews of patients about experience and support needs relating to ART experience.	Participants identified the need for a range of accessible, ongoing support mechanisms and some challenges in rural service provision. Confusion existed as to the role/purpose of counselling and if it was compulsory. Some identified role was to provide safe emotional and practical support.	Outcome: Provision of procedural, single-session, or crisis driven counselling appears inadequate in meeting the requirements of most patients. Recommendation 5: Clinics need to offer reliable, integrated, professional, and purposeful psychosocial support for patients (including partners) at all stages of service use.	✓	✓	✓	✓	✓	✓

(continued)

Table 2. Continued.

Author (Year) Country Profession	Aim	Study design Participants Method	Key findings	Outcome and recommendations	CIHC domains addressed					
					Role	Team	Conflict	Leadership	Communication	Patient
Di Trani et al. (2021) Italy Psychologist	To explore the representation and the cultural symbolism of the functions and role of psychologists working in Italian ART clinics.	Qualitative study 12 psychologists 2 focus groups of psychologists working in private and public ART clinics regarding functions, roles, and responsibilities	Psychologists were accessed mainly through medical referral or patient request, not through screening or as a part of the fertility treatment process. Psychologists mediate between patients and staff and improve the interactions they may have during treatment. Patients' active involvement in medical decisions may be aided by psychologists.	Outcome: Supporting the implementation of effective psychological interventions in different contexts and integrated with medical care, is a process that impacts patients, staff, and general health policies. Recommendation 6: Patients should have active involvement in medical decision and psychologists can play an important role in mediating between personal needs and medical requests.	✓	✓	✓	✓	✓	✓
Puspitaningrum et al. (2022) Indonesia Counsellor Health care worker	To explore the role of health workers and counsellors in the support system at a hospital for women with primary infertility.	Qualitative study 7 health staff (5 health workers, 2 counsellors) Semi-structured interviews of health workers and counsellors of roles and requirements of patients.	Counselling for women with primary infertility focused on providing information on clinical care (according to the diagnosis) and psychological support.	Outcome: Identification that the teamwork between health workers and counsellors needs to be improved to support the success of clinical and psychological treatment of women. Recommendation 7: Integrated mental health care is needed for women with primary infertility.	✓	✓	✓	✓		
Spoletini et al. (2022) Italy Psychologist	To explore the characteristics of psychological counselling services in Italian ART clinics.	Quantitative study 133 fertility clinics ART clinics surveyed with multiple-choice and open-ended questions regarding characteristics of psychological services.	Guidelines suggest incorporating counselling into routine practice, however the percentage of patients using the service was very low (10-20%) and half were patient requests or physician referrals. Referral included psychological distress, adherence to prescriptions and treatment, drop-out prevention, promotion of ART outcome, facilitating physician patient relationship, facilitating teamwork, improving couples' mood and stress.	Outcome: Psychological services in Italian ART clinics are not fully operational and integrated. Recommendation 8: Further investigations required to establish common protocols for psychological interventions in ART clinics.	✓	✓	✓	✓		✓

(continued)

Table 2. Continued.

Author (Year) Country Profession	Aim	Study design Participants Method	Key findings	Outcome and recommendations	CIHC domains addressed					
					Role	Team	Conflict	Leadership	Communication	Patient
Petra et al. (2024) Germany Social worker Psychologist Medical Professional	To report the evaluation of infertility counselling in Germany.	Mixed methods study 69 fertility counsellors (509 surveys), 182 patients Survey of fertility counsellors and patients regarding counselling settings, client population, reasons for seeking counselling, and satisfaction with counselling quality and setting.	Counselling settings were mostly in private practice and least in fertility clinics/teaching hospitals. Professionals – 51% social workers, 18% psychologists, 13% medical professionals. Clients – 55% individuals, 45% couples. Main purpose of counselling was to manage emotional burden of experiencing fertility problems. Others included information regarding family building options, disclosure in third party conception and support in decision making. Identified that not all people experiencing fertility problems seek ART.	Recommendation 9: There needs to be increased research into fertility concepts and development of counselling concepts, better integration of counselling into medical treatment, and increased funding.	✓	✓	✓	✓	✓	✓
Physical therapist / Physiotherapist Rice et al. (2015) USA Physical Therapist	To examine the rates of successful treatment of infertile women using a protocol of manual physical therapy to address underlying disease leading to infertility.	Retrospective audit 1392 females with fertility problems Retrospective chart review of patients treated for infertility between 2002 and 2011.	Manual physical therapy was found to show effectiveness as a conservative treatment for women diagnosed as infertile due to mechanical causes, independent of specific etiology. Pregnancy rate for patients who underwent IVF following treatment was 56.16%. Low evidence presented, with inaccessibility to live birth rate.	Recommendation 10: Manual physical therapy may be a conservative treatment option for some forms of infertility.	✓	✓	✓	✓	✓	✓

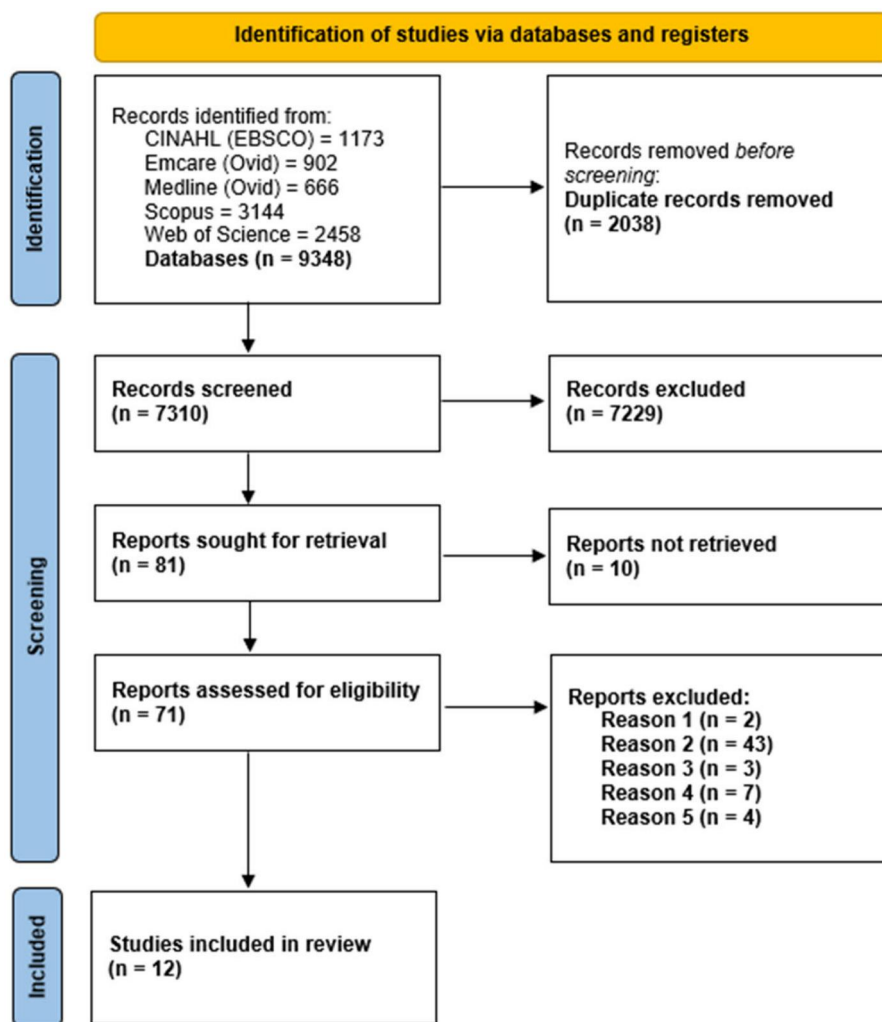


Figure 1. Flow Diagram for scoping review search strategy (Page et al., 2021).

counsellors) (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024; Puspitaningrum et al., 2022; Spoletini et al., 2022; Yano & Ohashi, 2010), and one study's focus was on the physical therapist role (Rice et al., 2015) (Table 2). 67% of the studies focused on female patients (Bell, 2012; Espinós et al., 2017; Langarizadeh et al., 2022; 2023; Langley, 2014; Puspitaningrum et al., 2022; Rice et al., 2015; Yano & Ohashi, 2010), 8% on male patients (Nadjarzadeh et al., 2023), and 25% on both genders (Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022). The methods used varied between quantitative, qualitative and mixed methods with the participants including patients in four studies (Bell, 2012; Espinós et al., 2017; Langley, 2014; Rice et al., 2015), health professionals in four studies (Di Trani et al., 2021; Langarizadeh et al., 2023; Nadjarzadeh et al., 2023; Puspitaningrum et al., 2022), both patients and fertility health professionals in two studies (Langarizadeh et al., 2022; Petra et al., 2024), fertility clinics in one study (Spoletini et al., 2022) and fertility clinics and patients in one study (Yano & Ohashi, 2010).

Allied health professionals' role in fertility care

AHPs identified as having roles in fertility care include dietitians, nutritionists (Espinós et al., 2017; Langarizadeh et al., 2022, 2023; Langley, 2014; Nadjarzadeh et al., 2023), psychologists, social workers, counsellors (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024; Puspitaningrum et al., 2022; Spoletini et al., 2022; Yano & Ohashi, 2010), as well as physical therapists (physiotherapists) (Rice et al., 2015). The position of AHPs in the interaction and treatment of people experiencing fertility problems was primarily as an adjunct to ART service providers. Overall, AHPs were identified having a role in both addressing and educating patients on modifiable lifestyle factors that could affect their chances of natural or assisted conception and/or supporting patients psychologically or emotionally throughout the fertility journey. The outlying allied health role was the one study of the role of physical therapists, whereby manual physical therapy was used to increase the chances of natural conception or ART success (Rice et al., 2015).

Dietitians

The role of dietitians or nutritionists in providing fertility care to people experiencing fertility problems was identified as being primarily based on the development of specific and appropriate diet plans for patients based on the individual patient characteristics that were detrimental to attaining pregnancy. One study focused on the development of screening tools to determine which patients may need the services of a dietitian (Langley, 2014), whereas three studies investigated patient education (Langarizadeh et al., 2022, 2023; Nadjarzadeh et al., 2023). Contributing factors for where patients may benefit from dietetic treatment included them being overweight, underweight, those with insufficient nutritional intake for a healthy pregnancy, or having another nutrition-related risk factor for infertility (Espinós et al., 2017; Langley, 2014).

Advice provided by dietitians to patients requiring their services included the provision of specific, individualized diets, supplement advice/prescription, exercise prescription, and other lifestyle modification that could negatively impact fertility. Effective outcomes for these services were illustrated in a study by Espinós et al. which found that the implementation of a structured diet and exercise programme prior to IVF led to weight loss and higher cumulative live birth rates (Espinós et al., 2017).

Some studies indicated that a dietitian was a part of a fertility care team, however it was not clear whether dietitians practiced in fertility clinics or separately. Langley considered that all patients should undergo nutrition screening and that a registered dietitian should be a uniquely qualified team member (Langley, 2014). Also considered, was the need for the dietitian to have expertise in fertility care. A study by Langarizadeh et al. considered sufficient expertise in fertility care as having five years of fertility care practice (Langarizadeh et al., 2023).

Mental health professionals

A consistent message identified was the importance of mental health support for persons diagnosed with infertility. From the studies reviewed, the AHPs who provided mental health care for persons experiencing fertility problems included psychologists, social workers, counsellors, and health staff. The role of mental health professionals could be broadly separated into two areas: support in coping with the diagnosis and implications of infertility; and support in dealing with the process and consequences of fertility treatment (Spoletini et al., 2022). It was identified that there are

many stages of the fertility treatment process, where it is important to provide these services for people, including at the point of diagnosis, commencement of treatment, during treatment, and following the cessation of treatment (Di Trani et al., 2021).

In terms of the diagnosis and implications of infertility, it was considered that mental health professionals' role addressing the psychosocial issues related to involuntary childlessness included coping with the emotional burden, exploration of family-building options (with and without medical assistance), improving quality and control of life, and increasing acceptance (Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022). In addressing the psychosocial issues related to assisted reproductive services, the roles of mental health professionals included aiding persons in coping with future parental issues, supporting high distress and treatment failures, development of coping strategies to deal with the consequences of fertility treatments, tempering of expectations, and acceptance of intensive treatments (Bell, 2012; Petra et al., 2024; Spoletini et al., 2022).

Reducing persons' stress was deemed important, and facilitating convenient access to mental health services could be beneficial in alleviating additional stress associated with seeking external assistance (Di Trani et al., 2021; Puspitaningrum et al., 2022). In the studies, it was noted that not all fertility clinics provided onsite psychological support. An Italian study by Spoletini et al. indicated that only 47% of the fertility clinics had a psychologist on staff (Spoletini et al., 2022). This same study illustrated that although the Guidelines on ART suggests that mental health care is an integral part of the treatment process, most clinics considered psychological care as an 'added asset' (Spoletini et al., 2022).

As was reported in the dietitian studies, three studies mentioned the need for experience or education in fertility care to be able to provide effective care for persons. A study by Bell indicated that persons could have negative experiences from mental health providers when they are inexperienced in counselling people experiencing fertility problems (Bell, 2012). This was further supported by a study from Indonesia by Puspitaningrum that mentioned that an understanding of primary infertility is needed for counsellors to be able to offer support to persons (Puspitaningrum et al., 2022). There were differences in the timing and purpose of the services provided, as well as the number of appointments provided. Bell who conducted a study in Australia outlined that for most participants, mental health services that were procedural, single-session or crisis driven appeared to be inadequate,

even though that was provided by some facilities (Bell, 2012). The cost of sessions was sometimes inclusive of other fees for fertility treatment, and for others the person had to pay for the service separately. Petra et al. indicated in a German study that 67% of persons had to pay a full fee to see a counsellor (Petra et al., 2024) with similar results in the study from Spoletini et al. in Italy, with 70% of clinics not including the fee for psychological counselling in the ART treatment fee (Spoletini et al., 2022). Overall, it was considered that psychological care should be available to people experiencing fertility problems. Mental health support was important to help persons come to terms with infertility diagnosis, aid in decision making, provide therapeutic counselling and to develop coping strategies for dealing with intensive treatments, third-party conception, and treatment failure (Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022).

Physical therapists

Only one study investigated the role of physical therapists in treating people experiencing fertility problems, where their role was to use manual physical therapy to restore mobility and motility to structures in women that were affecting reproductive function (Rice et al., 2015). The protocol used in this study targets the deformation of adhesive collagen cross-links within adhesions, which are believed to contribute to infertility by causing mechanical blockages and influencing certain hormonal imbalances (Rice et al., 2015). This study highlighted an alternative approach to treating women experiencing fertility problems and, despite having limited evidence, suggested it could improve conception rates, both spontaneously and in combination with ART (Rice et al., 2015).

CIHC framework developed themes

Due to the interprofessional approach of allied health professional involvement in fertility care, the CIHC framework was considered appropriate for the development of themes in this review (CIHC, 2010). Table 3 illustrates the CIHC framework domains and developed themes.

Discussion

The overall aim of this review was to investigate the role of AHPs in the care and treatment of people experiencing fertility problems and their potential place amongst fertility treatment teams. This review

has revealed that dietitians (nutritionists) (Espinós et al., 2017; Langarizadeh et al., 2022; 2023; Langley, 2014; Nadjarzadeh et al., 2023), mental health professionals (psychologists, social workers, counsellors) (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024; Puspitaningrum et al., 2022; Spoletini et al., 2022; Yano & Ohashi, 2010), and physical therapists (Rice et al., 2015) do participate in the care of people with fertility problems. The role that these AHPs have in the care of persons is centred around the provision of lifestyle modification advice and psychological and psychosocial support. Lifestyle modification advice is generally considered to include changes to modifiable lifestyle factors such as nutritional intake, exercise, smoking status, and achievement or maintenance of a healthy weight (Santos, 2022; Teramoto et al., 2008).

Dietitians in general are considered an essential and valued member of primary care teams who specialize in providing medical nutrition therapy, person self-management support and lifestyle management (Herrington et al., 2020; Jortberg & Fleming, 2014). In addition to providing dietary advice for weight modification and specific medical conditions, dietitians advise on vitamin and mineral supplements for deficiencies or nutritional requirements (Border et al., 2019; Herrington et al., 2020). In this review, the dietitian's role in fertility care was aligned with literature indicating the general dietitian's role, in terms of weight modification, nutritional supplementation, and specific dietary advice including types of foods and timing of meals (Espinós et al., 2017; Langley, 2014). The design of a screening tool to identify people experiencing fertility problems who may benefit from dietetic advice was also identified as a dietitian's role (Langley, 2014). Aside from dietary advice, general lifestyle modification advice was also provided in some situations (Espinós et al., 2017; Langley, 2014).

The services provided to persons from mental health professionals, although variable in availability and type, did include support for infertility diagnosis and implications of fertility challenges; and support in dealing with the process and consequences of fertility treatment (Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022). Literature indicates that over the past few decades, the role of mental health professionals in fertility care has evolved from primarily serving as grief or crisis managers and informational/decisional counsellors to becoming active psychotherapists (Patel et al., 2018). In addressing the psychological and psychosocial issues related to assisted reproductive services, mental health professionals

Table 3. Canadian Interprofessional Health Collaborative Framework and developed themes (CIHC, 2010).

CIHC domain and themes	Evidence from studies
Role clarification	
Dietitian therapy role Role that dietitians have in treating and interacting with people with fertility problems. Includes when they are involved in the treatment process and what services they provide.	Dietitians' role included: <ul style="list-style-type: none"> • The development of individualized diet plans with follow up assessments. • Nutritional education including nutrition importance, effects of obesity, eating habits, personal activities and habits, supplements and vitamins, physical activity, and food allergies. • Design of a nutrition screening form. • Need for experience with people with fertility problems. (Espinós et al., 2017; Langarizadeh et al., 2022, 2023; Langley, 2014; Nadjarzadeh et al., 2023)
Mental health therapy role Role that a mental health professional provides for people with fertility problems. Includes when they are involved in the process of treatment, who they treat, and what conditions are treated.	Psychological therapy role included: <ul style="list-style-type: none"> • Address psychosocial issues related to involuntary childlessness and ART service use. • Unique tailored service to individual persons to address situation-specific needs. • Mediator or interface between other health professionals and person. • Decision-making, support, and therapeutic counselling. Timeliness of services: <ul style="list-style-type: none"> • Should be available at the commencement of service use, during service use and after. • Should be preventative, not crisis driven. • Should be available on an ongoing basis. (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024; Puspitaningrum et al., 2022; Spoletini et al., 2022; Yano & Ohashi, 2010)
Mental health professional qualification The qualification that a mental health professional has and whether that influences their role.	Counselling is provided by: <ul style="list-style-type: none"> • Psychologists • Social workers • Counsellors • Medical professionals (unspecified) (Petra et al., 2024)
Physical therapist role Role that physical therapists have in treating and interacting with people experiencing fertility problems.	Physical therapist role was outlined as persons undergoing whole-body, person centred treatments that used a protocol of manual physical therapy, which focused on restoring mobility and motility to structures affecting reproductive function. (Rice et al., 2015)
Specialist in fertility Considerations that AHPs working with people with fertility problems should have experience in fertility care.	Health professionals should understand the causes of infertility, the treatment process, and the special needs of persons who have been diagnosed as infertile. (Bell, 2012; Langarizadeh et al., 2023; Langley, 2014; Nadjarzadeh et al., 2023; Puspitaningrum et al., 2022; Yano & Ohashi, 2010)
Allied health areas for improving chances of pregnancy. Services that can be provided by AHPs to increase the chances of spontaneous or ART pregnancy.	Lifestyle modification screening, education, and follow up could enhance persons' chances of pregnancy (spontaneous or with ART). Mixed evidence of decreased person stress increasing the chance of pregnancy. Low evidence of physical therapists using manual physical therapy to reverse female infertility. (Espinós et al., 2017; Langarizadeh et al., 2022; Langley, 2014; Nadjarzadeh et al., 2023; Rice et al., 2015)
Collaborative leadership	
Allied health roles overlapping	Advice such as diet, exercise, the use of supplements, compliance with treatment and medications, sleep, and stress and anxiety are found to be given by a variety of AHPs, not necessarily those who specialize in each area. (Di Trani et al., 2021; Puspitaningrum et al., 2022; Yano & Ohashi, 2010)
Fertility treatment as a lifestyle change Modifiable lifestyle factors that can influence the chances of conception.	Modification of specific lifestyle factors, with specific targets has been found to increase chances of conception (both spontaneous and with ART), dependent on the cause of infertility. Supporting the person through mental health care can improve compliance and resilience with treatment and increase the person's quality of life. (Langarizadeh et al., 2022; Langley, 2014; Nadjarzadeh et al., 2023)
Guidelines (National/International) Guidelines exist nationally and internationally for the treatment of people experiencing fertility problems.	Some guidelines are unclear as to the qualifications of health professionals required to provide services, particularly around lifestyle modification and mental health support. (Bell, 2012; Di Trani et al., 2021; Spoletini et al., 2022)

(continued)

Table 3. Continued.

CIHC domain and themes	Evidence from studies
Guidelines (Fertility clinic) Fertility clinic specific guidelines that guide practice within that clinic (or group of clinics)	Fertility clinics may have their own policies as to provision of lifestyle advice and mental health support. It may be located within the clinic or at an external provider. The expense to persons may be included in the overall costs or may be an additional cost to the person. Referral to these services and whether they are offered or compulsory also varies. (Bell, 2012; Di Trani et al., 2021; Langarizadeh et al., 2022; Spoletini et al., 2022)
Team functioning	
Interprofessional collaboration Integration of different health professionals into an interdisciplinary environment and the impact on persons.	Integration of the different health professionals into an interdisciplinary environment could benefit persons. Psychology can tie in with lifestyle advice and compliance with treatment, expert lifestyle advice can enhance ART success. Enabling health professionals to fulfill their specialist services to persons could enhance person experience and results. (Espinós et al., 2017; Langley, 2014; Petra et al., 2024; Puspitaningrum et al., 2022; Yano & Ohashi, 2010)
Referral procedures The process of persons being referred to AHPs.	Referral procedures for allied health services varied, some were referred by different health professionals in a service, but the stage at which they were referred varied. Some persons had to self-refer, and some services were compulsory for all persons (no referral necessary). (Di Trani et al., 2021; Puspitaningrum et al., 2022; Spoletini et al., 2022; Yano & Ohashi, 2010)
Location of practice (allied health) Where AHPs provided their services to persons in relation to fertility clinics.	Some services were in the fertility clinics themselves, whereas others were located away from the fertility clinic, in a private practice. (Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022)
Dealing with interprofessional conflict	
Differences of opinions of the roles of health professionals in fertility care	The opinion of different health professionals regarding persons' needs to receive allied health services can vary and cause conflict. The type of health professionals that provide those services can also be a point of contention. (Puspitaningrum et al., 2022; Yano & Ohashi, 2010)
Interprofessional communication	
Communication amongst a fertility care treatment team	Variation exists as to how an interdisciplinary team operates, including communication about persons amongst staff members. (Di Trani et al., 2021)
Patient centred	
Patient autonomy	Persons' role in treatment decision making should be active. Persons' ability to access reliable information regarding fertility care is limited. (Di Trani et al., 2021; Nadjarzadeh et al., 2023; Yano & Ohashi, 2010)
Differences between genders Different psychological impacts on men and women.	Men can feel that their masculine identity is threatened and need to be a pillar of strength in relationships. (Di Trani et al., 2021; Spoletini et al., 2022)
Financial expense Variation between treatment clinics, particularly for allied health services.	Some clinics include allied health costs in overall treatment cost, for others it is a separate charge. (Bell, 2012; Petra et al., 2024)
Mental health treatment preferences and experiences	Personal needs and preferences are dependent on diagnosis type, treatment type, and individual characteristics. (Bell, 2012; Petra et al., 2024; Yano & Ohashi, 2010)

played key roles. These included helping people cope with potential future parental challenges, providing support during periods of high distress and treatment failures, developing coping strategies to manage the consequences of fertility treatments, moderating expectations, and facilitating acceptance of intensive treatments (Bell, 2012; Petra et al., 2024; Spoletini et al., 2022). The health professionals identified in this review that provided these services included psychologists, social workers, counsellors, and health care staff.

Unique to this review was a study conducted on a protocol of manual physical therapy to address underlying disease leading to infertility (Rice et al., 2015). Physical therapists were the AHPs focussed upon in this study, and it was the only study of physical

therapists in this review (Rice et al., 2015). Like the other AHPs in this review, manual physical therapy could either be used independently or in conjunction with assisted reproductive technologies (Rice et al., 2015).

In studies related to both dietitians and mental health professionals, it was reported that there is a need for not just qualifications in their health profession, but also experience and/or education in the unique needs of people experiencing fertility problems. It was considered that this was necessary in this niche health care area to be able to offer optimum advice, treatment, and support (Bell, 2012; Langarizadeh et al., 2023; Puspitaningrum et al., 2022; Yano & Ohashi, 2010). In this review, although

experience in infertility has been a requirement to participate in some studies or has been suggested as important, no formal requirements of this were mentioned for AHPs to work with infertility patients.

Provision of lifestyle advice by AHPs in this review was given by dietitians and psychologists and was primarily focused on diet and exercise. Although experts on the safe and effective prescription of exercise for people with chronic diseases and other special populations, exercise physiologists were not identified in this review (Ehrman et al., 2023). Exercise was suggested in combination with other lifestyle factors as being positive for some people experiencing fertility problems, however exercise advice was provided by other health professionals (Espinós et al., 2017; Langley, 2014). Cross over of the roles of AHPs in this review is supported by literature from outside of fertility care, where overlap and misunderstanding of allied health roles has been identified (Rich et al., 2021). A study in Australia on weight management highlighted that while a range of AHPs can offer dietary and physical activity advice, few have evidenced-based training in providing this service (Snodgrass et al., 2016).

While providing guidance on lifestyle modification can potentially enhance both spontaneous and ART pregnancies, it is generally viewed as a supplementary approach rather than a primary treatment option (NICE, 2017). Especially for women over the age of 35 (The Fertility Society of Australia, 2021), time plays a crucial role in treatment success, prompting consideration of whether lifestyle adjustments should be pursued alone or alongside other fertility treatments. The decision hinges on a range of factors, including the specific infertility diagnosis (NICE, 2017). For some people, implementing lifestyle changes independently might be an option, particularly where the person does not wish to undergo invasive treatments (Petra et al., 2024). Although most peoples diagnosed with fertility problems seek some form of medical intervention, not all individuals do, with some having financial obstacles creating a barrier to them accessing treatment (Di Trani et al., 2021; Mackay et al., 2023).

Fertility treatment guidelines suggest the incorporation of lifestyle advice and psychosocial care into the treatment of people experiencing fertility problems, however from this review it appears that the application of guidelines is variable (Carson & Kallen, 2021; Dancet et al., 2010; Di Trani et al., 2021; Gameiro et al., 2015; NICE, 2017). In terms of lifestyle modification as a treatment for fertility, guidelines did not suggest the specific health profession types that should provide these services (Homan et al., 2007; NICE,

2017). Guidelines for psychosocial care of people experiencing fertility problems were also seen to be inconsistent with practice, and variable between the studies themselves. Studies from Australia, Italy, and Germany all showed a variation in the service provision and cost of these services to people including indication, frequency, and location (Bell, 2012; Petra et al., 2024; Spoletini et al., 2022). Ideally it was suggested by guidelines that mental health support should be incorporated into fertility care, with recommendations that psychological care should be offered before, during and after fertility treatment, and not as a once off consideration (Di Trani et al., 2021; Gameiro et al., 2015). This does not seem to always occur, with fertility clinics often having their own guidelines and psychosocial support processes (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024; Spoletini et al., 2022).

This scoping review has identified roles that AHPs have in the care of people experiencing fertility problems. Limitations to this review include that search results were limited to the English language, potentially leading to a loss of relevant studies. Additionally, there is variation of terminology used to describe AHPs, as individual professions and as a group. The definition of a fertility counsellor remains unclear due to international differences in required training and qualifications, mentioned briefly in two studies and detailed in one (Bell, 2012; Di Trani et al., 2021; Petra et al., 2024). Additionally, with only one study on physical therapists, drawing conclusions about the intervention of physical therapists and effectiveness was difficult.

Conclusion

The roles of AHPs in fertility care was found to be based around the provision of education and monitoring of lifestyle modifications to aid fertility, and the provision of psychological and psychosocial support to aid people in their fertility journey. The position of AHPs as part of a fertility care team varied dependent on location and the mechanisms of individual fertility clinics. AHPs were at times located within the team environment, and in others as an external service located away from a fertility clinic. Although guidelines are in place from a psychosocial treatment perspective, it appears that these are not always followed. Further research into the roles and integration of AHPs within fertility care teams could improve both clinical outcomes and psychosocial support, potentially leading to enhanced guidelines and better overall care for people on their fertility journey.

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Author contribution

CRedit: **Amanda Mackay**: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing; **Selina Taylor**: Conceptualization, Formal analysis, Investigation, Supervision, Writing – review & editing; **Emma Anderson**: Conceptualization, Supervision, Writing – review & editing; **Beverley Glass**: Conceptualization, Formal analysis, Investigation, Supervision, Writing – review & editing.

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Data availability statement

The data underlying this review will be shared on reasonable request made to the corresponding author.

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