Improving rural and remote health workforce retention amid global workforce shortages: A scoping review of evaluated workforce interventions

Abstract

Purpose: The aim of this study was to conduct a scoping review of a global body of scholarly and industry (grey) literature for evidence of implemented and evaluated interventions to identify best practice workforce retention strategies for organisations providing health services in rural and remote areas.

Method: A scoping review was conducted of the scholarly and grey literature by two independent researchers. This comprised a search of four scholarly databases, and a Google and website search for grey literature. Quality checks were conducted, and a total of 15 documents were included in the literature review. Using the World Health Organisation's categories of workforce intervention (regulatory, education, financial incentives, personal and professional support), the documents were analysed to identify effective workforce interventions.

Findings: The literature review found evidence of regulatory impacts as well as organisation-level evaluated workforce interventions for education-to-employment pathways (education), remuneration programs (financial incentives) and working and living conditions (personal and professional support) but seldom provided insight into how successful interventions were implemented or evaluated at the organisational level. Further, there was an absence of scholarship contributing to the development of empirical evidence to inform organisations about designing, implementing, and evaluating workforce strategies to improve health workforce retention in rural and remote communities.

Originality: Few studies have focused on evidence-based organisation-level interventions to improve rural and remote workforce sustainability. This article offers insights to shape future intervention implementation and evaluation research for rural and remote health workforce sustainability.

Keywords: retention, workforce sustainability, workforce shortages, intervention, health workforce, evaluation.

Introduction

Workforce shortages in the service industry are concerning for citizens who depend on public services to meet their health, education and social needs. Ageing workforces, increased mobility of workers, artificial intelligence, automation, the COVID-19 pandemic, and flexible working arrangements have all contributed to contemporary workforce challenges (Bellotti *et al*., 2022; Farr-Wharton *et al*., 2023). So too, have changing public service structures, particularly a drive to achieve cost savings for taxpayer funded services (Brunetto *et al*., 2012). One industry sector that traditionally faces significant workforce shortages is health (Dolea *et al*., 2010; Joyce *et al*., 2006; WHO, 2023). Despite concerted efforts to increase the number of health workers globally, according to the World Health Organisation (WHO) (2023) there is still a projected shortage of 10 million health workers by 2030. This review uses the WHO (2023, p.23) description of 'health workers' which includes doctors, nurses, allied health workers and Indigenous health workers, unless otherwise stated. The health industry has experienced workforce shortages for decades (Hilliard and Boulton, 2012; Joyce *et al*., 2006). However, specific attention on human resources (HR) for health workforce challenges has only come to the fore more recently (Onnis and Pryce, 2016). HR for health focuses on the role of human resource management (HRM) in contributing to health service systems and patient outcomes (Bartram and Dowling, 2013).

While the health industry in general faces workforce shortages, rural and remote health experiences higher than average levels of workforce shortages through high turnover, poor retention and challenges in attracting suitable health professionals (Dolea *et al*., 2010). Efforts to increase the supply of health workers, and initiatives to address the maldistribution of health workers are part of the solution for increasing the size of health workforces globally; however, there is a need to also curb unwanted loss of trained health workers once they enter the workforce. Rural and remote health workforce retention is one area of challenge where HR scholarship has much to contribute. Employment relationships are central to health workforce retention and service delivery; and the impacts of workforce shortages are frequently reported (Dolea *et al*., 2010; Russell *et al*., 2017; WHO, 2023).

This paper is organised into four sections. First, the background section explores what is known about rural and remote workforce retention. Second, the scoping literature review methods are presented including a summary of the documents selected for inclusion in the scoping review. Third, the results section presents a synthesis of the key findings about the effectiveness of the organisation-level interventions described in the literature, ending with a focus on what can be learned from the interventions that have been evaluated. Finally, the findings are discussed and the contribution of HRM scholarship to future research in this area posited.

Background

For organisations providing health services, a workforce comprised of competent health professionals at levels sufficient to meet service needs is critical. Workforce shortages reduce access to health services and may impact the quality of the healthcare received (Buykx *et al*., 2010; Verma *et al*., 2016). In addition, unwanted turnover results in "significant direct and indirect costs to the organisation, including loss of expertise and recruitment expenses" (Buykx *et al*., 2010, pp.102-103). These workforce issues add cost pressures where the costs of delivering health services is already high (Russell *et al*., 2017).

The WHO reports that increasing the number of health workers in rural and remote areas across the world is crucial for population health (Verma *et al*., 2016) with workforce shortages impacting individual health outcomes (Buykx *et al*., 2010; Russell *et al*., 2017). According to the WHO (2010) the further a person lives from a city, the poorer the individual's health outcomes (Ramsden *et al*., 2019). An Australian study by Ogden *et al*. (2020, p.228) found that not only do rural and remote areas have fewer general practitioner (GP) medical services per capita when compared with major cities, rural Australians had 'higher rates of health risk behaviours', further worsening the healthcare burden for rural and remote communities. Therefore, the impetus for organisations providing health services in rural and remote areas to attract and retain a more stable, competent workforce suited to the rural and remote work environment is evident. The path towards more sustainable rural and remote health workforces is, however, not as clear.

The reasons for workforce shortages in rural and remote areas are many and varied, including ageing populations (Verma *et al*., 2016), the unattractiveness of rural and remote areas to live and work (Dolea *et al*., 2010; Kumar and Clancy, 2021), limited career opportunities, and the undesirability of being isolated from family and friends (Onnis and Pryce, 2016). Globally governments have sought solutions to health workforce shortages implementing a range of policies aimed at attracting and improving the retention of doctors (Verma *et al*., 2016), nurses (Russell *et al*., 2017), allied health professionals (Roots and Li, 2013) and health workers (Liu *et al*., 2015) in rural and remote areas. To date, a range of strategies (e.g., visa conditions, loan repayment schemes, education programs) have been implemented with mixed levels of success (Buykx *et al*., 2010; Dolea *et al*., 2010).

Effectiveness of interventions

In their Cochrane systematic review of interventions for increasing the proportion of health professionals practising in rural and underserved areas, Grobler *et al*. (2015) screened 8945 records, reviewed the full text of 125 studies, and found only one study that met their criteria - a Taiwanese study from 1995 finding that a national insurance scheme was associated with improved geographic distribution of health workers. Similarly, Russell *et al*. (2017), Kumar and Clancy (2021), and Dolea *et al*. (2010) report that there is limited evidence for effective strategies to improve rural and remote health workforce retention.

According to Russell *et al*. (2017, p.6) the lack of evidence about the effectiveness of strategies is partly due to the challenges associated with conducting "comprehensive evaluations of complex Interventions" and partly due to limited understanding regarding the best ways to measure rural and remote health worker retention (Russell *et al*., 2017, p.6). Kumar and Clancy (2021) highlight the work of Liu *et al*. (2015) in emphasising the impact of context on workforce attraction and retention. Esu *et al*. (2021) also found that when considering the effectiveness of interventions, "variability might be explained by contextual factors" (p.i64). Both Kumar and Clancy (2021), and Liu *et al*. (2015) conclude that context must be considered in the planning, implementation, and evaluation of interventions if they are to be successful in rural and remote areas.

Evaluating interventions

The contemporary literature contains several reviews (Buykx *et al*., 2010; Goma *et al*., 2014; WHO, 2010; WHO, 2020), all of which acknowledge that while some interventions show promise as strategies to improve rural and remote workforce retention, there is a dearth of "comprehensive evaluations of specific retention strategies" (Dolea *et al*., 2010, p.379). Buykx *et al*., (2010, p.102) report that "While a wide range of retention strategies have been introduced in various settings to reduce unnecessary staff turnover and increase length of stay, few have been rigorously evaluated". In fact, several studies reported that there was currently scant evidence demonstrating the effectiveness of any specific retention strategy (Buykx *et al*., 2010; Dolea *et al*., 2010; Grobler *et al*., 2015; Roots and Li, 2013; Russell *et al*., 2021). Dolea *et al*. (2010, p.379) reported that many countries have implemented interventions to respond to workforce shortages but still "very little is known about the effectiveness of such interventions and their sustainability in the long run."

Buykx and colleagues (2010, p.103) found that "retention strategies and programs are not well evaluated," noting one possible exception: coercive incentives containing an obligation for health workers to work in rural or remote areas for a specified period as a condition of receiving the incentive benefit. Yet, despite some evidence that coercive incentives are linked to improved retention, there is little evidence as to whether this extends into a longer-term gain beyond the obligation period. Hence, there are still a lot of unknowns in terms of the effectiveness of interventions to improve workforce retention in rural and remote areas.

Responding to the absence of empirical evidence, many researchers are calling for interventions to be comprehensively evaluated to provide evidence of effectiveness to inform policy choices that impact rural and remote populations (Buykx *et al*., 2010; Dolea *et al*., 2010). The absence of evidence for effective context-relevant retention interventions for rural and remote areas highlights the need for this to be a priority, with Lee and Nichols, (2014, p.642) contending that future research must include "valid, reliable and rigorous analysis regarding formulating and implementing these strategies." The current literature reveals a noticeable gap in terms of a solid evidence-base of intervention effectiveness. Given that much of the rural and remote health workforce literature is focused on educational systems and pathways to rural employment, coercive interventions (e.g., bonded scholarships),

government financial support programs and financial incentives, it is important that future research focuses on evaluating these types of interventions. A second less apparent gap in the literature is the absence of organisation-level interventions aimed at informing the providers of health services in rural and remote areas about effective retention strategies that can be implemented at the organisational level. Particularly, as Dolea *et al*. (2010, p.382) observed, there is a need for evidence about the effectiveness of adopting "professional and personal support measures" because these are the factors that "consistently top the surveys analysing choices and preferences for work in these [rural and remote] areas".

Aim

The aim of this study was to conduct a scoping review of a global body of scholarly and industry (grey) literature for evidence of evaluated organisation-level interventions to identify promising workforce retention strategies for organisations providing health services in rural and remote areas. The study complements existing research about improving rural and remote health workforce retention; however, in using HRM concepts and management theories to investigate workforce sustainability at an organisational level, the findings from this study inform HR practitioners (employees designated as HR personnel) and health service managers about best practice approaches for improving rural and remote health workforce retention.

Method

A scoping review, guided by Arksey and O'Malley's (2005) five-stage methodological framework, was conducted of the scholarly and grey (industry) literature reporting on interventions that had been implemented and evaluated to improve the retention of health workers in rural and remote areas. For this study, an intervention is an action taken with the intention of improving retention. This scoping review took a broad approach seeking to find evidence of evaluated organisation-level interventions to identify promising workforce retention strategies for rural and remote health services (Stage 1). To identify relevant studies (Stage 2), a search of four databases (Table 1) was conducted from May to July 2023 to identify scholarly literature. A Google and website search was conducted between May and September 2023 to identify grey literature for inclusion in this study. The presentation of the findings was guided by Short's (2009) recommendations.

Table 1 approximately here

Search terms

The following search terms were used for both the scholarly and grey literature searches: *workforce* OR *employee* OR *nurse* OR *doctor* OR '*health worker*' OR *physician* OR '*allied health*' AND *rural* OR *remote* AND *intervention* OR *program* OR *training* OR *education* OR *initiative* OR *strategy* AND *retention*. Both authors agreed on the search terms, the first author conducted the scholarly literature review, and the second author conducted the grey literature review. Both authors contributed to the data extraction and analysis, conducted the quality checks, and agreed on the literature included in the scoping review.

Inclusion criteria

Consistent with Arksey and O'Malley's (2005) scoping review framework, inclusion criteria (Stage 3) were adopted to eliminate studies that did not contribute to our research aim. The inclusion criteria included: a) published between January 1993 and June 2023, b) published in English, c) published in a peer-reviewed journal (*scholarly literature only*), d) rural and remote health workforce focused, and e) the intervention was implemented and evaluated. The 30-year range for the literature aimed to increase the opportunity to identify evaluated interventions given the scarcity of such studies and acknowledged that the only study identified in the Cochrane review conducted by Grobler *et al*. (2015) was published in 1995.

Scholarly literature

Using the search terms, the four databases identified a total of 1878 articles for review (Table 1). These 1878 articles were screened by title and abstract, and 41 duplicates as well as 1648 articles that did not meet the inclusion criteria were excluded leaving 189 articles for full paper review. Using the same inclusion criteria, a further 179 articles, including 22 literature reviews, were excluded during the full paper review leaving ten original research articles containing evaluated workforce retention interventions to be included in this study.

The references of 22 literature reviews identified in the scoping review were checked to identify articles containing interventions to be considered for inclusion in this study (Arksey

and O'Malley, 2005). Another 18 articles were reviewed, but no additional scholarly articles met the criteria to be added to this scoping review.

Grey literature

The search strategy for the grey literature involved conducting a Google search using the same search terms from the scholarly literature search. First the search string was entered into a Google search '*workforce* OR *employee* OR *nurse* OR *doctor* OR '*health worker*' OR *physician* OR '*allied health*' AND *rural* OR *remote* AND *intervention* OR *program* OR *training* OR *education* OR *initiative* OR *strategy* AND *retention*.' This resulted in 161 matches. The website searches included: Department of Health and Ageing, World Health Organisation, Australian Institute of Health and Welfare, Queensland Health, Rural Doctors Network, National Rural Health Alliance, CRANAplus, Rural Workforce Agency Victoria, Rural Health West, New South Wales (NSW) Health, South Australia (SA) Health, Western Australia (WA) Centre for Rural Health, Services for Australian Rural and Remote Allied Health (SARRAH), Health Workforce Queensland, Parliament of Australia, Three Rivers Rural Health, Rural LAP (locum assistance), Ninti One, Northern Territory Government, National Allied Health Conference, European Union, Northern Territory Primary Healthcare Network (PHN), WA Country Health Service, AHP Workforce, Rural Workforce Agencies (RWA) Network, KBC Australia, CSIRO Publishing, and PwC Australia. Some Google matches connected to specific documents, and some led to websites. Where the link was to a website, co-author (TH) reviewed the website to identify publications that met the inclusion criteria. Given that the Google algorithm is unknown and personalised to the search history of the user, the Google search was repeated by the co-author (LO) but no additional documents were identified. The references were checked but no additional documents that met the inclusion criteria were identified (Arksey and O'Malley, 2005). A total of sixteen documents were selected for full review, from which five containing evaluated interventions were included in this study.

The authors' desire to find evaluated interventions was a driver of the extensive, comprehensive approach to searching the scholarly and grey literature on this under researched topic. The authors conducted searches and analysis separately and met regularly to discuss and compare findings (Arksey and O'Malley, 2005). Both authors found data saturation independently when they did not identify any new evaluated interventions in

reviewing references lists in both the scholarly and grey literature. Moreover, the identification of the same interventions through both the scholarly and grey literature searches and reference checking, further suggested that data saturation had been reached through the selected documents (Stage 3).

Quality checks

Quality assessments were conducted using a modified version of the Critical Appraisal Skills Program (CASP) (CASP, 2022; Njau *et al*., 2019). The modifications addressed the challenges of assessing peer-reviewed qualitative and quantitative scholarly literature and grey literature within one study. The first two questions of the CASP were used to screen the documents: (1) Was there a clear statement of the aims of the research? (2) Is the methodology appropriate? The answer was yes to these two questions for all studies included in this scoping review. Then, each study was scored using modified versions of questions three to ten (Yes = 1; No = 2). Two questions (Q4 'Was the recruitment strategy appropriate to the aims of the research?' and Q6 'Has the relationship between researcher and participants been adequately considered?') were omitted because they could not be fairly assessed across all the studies due to some studies not recruiting participants (e.g., documentary analysis, routinely collected data, administrative data). The quality assessment was not used to exclude studies but rather to assess the methods reported, and the extent to which the research design provided confidence in the reported findings. The included literature scored seven or more on the quality assessment.

Data analysis

The analysis of the selected scholarly and grey literature was conducted using the structured content analysis method (Mackieson *et al.*, 2019) to stratify the interventions using the categories from the WHO (2010) report on rural and remote workforce retention interventions. According to WHO (2010) rural and remote workforce interventions fall into four categories: 1) regulatory, 2) education, 3) financial incentives, and 4) personal and professional support. These four categories have been used by several studies to categorise the range of interventions described as being effective (Behera *et al*., 2017; Buykx *et al*., 2010; Liu *et al*., 2015; Noya *et al*., 2021). For this study, the four categories informed our analysis of the interventions. Using pre-determined definitions (see Table 2), the interventions identified

in this scoping review were synthesised to create a summary (Stage 4) of the evaluated interventions for rural and remote health workforces. Finally, the review, identifies promising practices (Stage 5) for rural and remote health workforce sustainability to inform future organisation-level interventions (Arksey and O'Malley, 2005).

Table 2 approximately here

Results

The scoping literature review identified ten scholarly articles and five grey literature documents containing evaluated interventions to improve rural and remote workforce retention. An analysis of the evaluated scholarly interventions (Table 3) and the grey literature (Table 4) found that most studies (11 out of the 15 studies) used self-reported data (e.g., surveys, interviews) (see Table 3 and Table 4). Of the six studies that used existing data, the majority (5 out of 6) used administrative data or routinely reported data (e.g. applicant numbers) (Department of Health and Ageing, 2009; Gillespie *et al*., 2022; Goma *et al*., 2014; Pena *et al*., 2010; Swarmi and Scott, 2021), and one study used Human Resource Information System (HRIS) data (Keahey, 2008). Most studies (11 out of 15) evaluated data collected via surveys (see Table 3 and Table 4). Five studies evaluated data collected through interviews (Department of Health, 2017; Department of Health and Ageing, 2009; Ernst and Young, 2013; Goma *et al.*, 2014; Leonardia *et al*., 2012), two through documentary analysis (Department of Health and Ageing, 2009; Gillespie *et al*., 2022), and one through focus groups (Goma *et al.*, 2014), observation (Van Dormael *et al*., 2008), stakeholder consultation (KPMG, 2020) and stakeholder submissions (Ernst and Young, 2013). There were only two studies that provided nuanced descriptions about the intervention outcomes: 1) a study using longitudinal data to provide a more accurate account of GP numbers in rural and remote locations (Swami and Scott, 2021), and 2) a study using two case studies to provide a comprehensive description of the role of community in rural and remote health workforce recruitment and retention interventions (Gillespie *et al*., 2022).

The evaluation criteria used to evaluate the interventions (see Tables 3 and 4) shows the diversity of criteria used. These included HR criteria often used to examine workforce sustainability (e.g., intention to leave, turnover, intention to stay), criteria that influence

individual employment choices (e.g., job satisfaction, rural practice aspirations), personal characteristics (e.g., rural background, attitude) and as well as other criteria. The range of criteria limits our ability to assess and compare interventions for effectiveness in improving retention.

Tables 3 and 4 approximately here

The five grey literature documents included four interventions categorised as financial incentives, with most (3 out of the 4) reported as effective in the short-term (Department of Health and Ageing, 2009; Ernst and Young, 2013, Reid, 2004) while the effectiveness of the other was unknown (Department of Health, 2017). The fifth intervention (KPMG, 2020) was categorised as education; however, there was limited evidence of the intervention's effectiveness. The grey literature did not contain any interventions categorised as regulatory, or professional and personal support. Four of the five grey literature documents were reviews of government funded programs - one was educational (KPMG, 2020) and three evaluated incentive programs (Department of Health, 2017; Department of Health and Ageing, 2009; Ernst and Young, 2013).

Overall, most studies (13 out of 15) reported short-term impacts (see Table 3 and Table 4), with only one suggesting intervention effectiveness in the medium-term (Gillespie et al., 2022) and one reporting that effectiveness was unknown (Department of Health, 2017). Hence, there was an absence of evidence for long-term effectiveness of implemented interventions. The grey literature contained more in-depth analyses of interventions with substantial financial support. Despite this, the analysis revealed that directly attributing improvements in workforce retention to one specific intervention is difficult in the complexity of the rural and remote health context which is consistent with the WHO (2010) recommendations and the findings of Pena *et al*. (2010), both of whom recommend bundling interventions.

Many studies (10 out of 15) included doctors (see Table 3 and Table 4), four included nurses (Carson *et al*., 2015; Daniels *et al.*, 2007; Keahey, 2008; Reid, 2004) and three included allied health workers (Carson *et al*., 2015; Daniels *et al.*, 2007; Reid, 2004). Only one study included

the Indigenous Health Worker workforce but that was a review of government programs (KPMG, 2020). Therefore, none of the selected documents contained interventions aimed at improving Indigenous Health Worker retention as a discrete workforce in rural and remote areas.

While the analysis of the evaluated interventions did not provide the level of insight anticipated into how interventions are implemented and evidence of effectiveness that could inform organisation-level interventions, it did offer insight into the more commonly used interventions, and category of intervention. Table 5 shows the range of implemented interventions to improve health workforce retention identified in the scoping literature review using the WHO (2010) categories: regulatory, education, financial incentives, and personal and professional supports. Given the focus of the scoping review was to identify organisation-level interventions, the literature containing regulatory interventions (e.g., visa programs) that are not implemented at the organisational level would have been screened out of the review, unless part of a composite or bundled workforce intervention; hence, the low number of regulatory interventions contained in this review is expected. In contrast, the low number of personal and professional support interventions that had been implemented and evaluated was not expected, particularly as these are typical of interventions implemented at the organisational level.

Table 5 approximately here

Promising workforce retention interventions

The analysis reveals that education interventions implemented by organisations that support professional development were found to be effective when bundled with incentives and community support (Gillespie *et al*., 2022). Similarly, personal and professional support through a personalised orientation program was found to be an effective retention intervention (Keahey, 2008). By far, the most frequently reported interventions were financial incentives, with remuneration emerging as the most frequently reported organisational intervention being implemented and evaluated (see Table 5). However, as Table 3 and 4 show, the effectiveness of financial incentives was at times mixed (Gillespie *et al*., 2022) or not known (Department of Health, 2017). In terms of personal and professional support,

interventions that compensated for the impact of remoteness and isolation from family and friends (i.e., housing, living and working conditions) were believed to be effective organisation-level interventions; however, one study (Leonardia *et al.*, 2012) suggested that for these interventions the focus should be on mitigating factors that impede retention as well as improving it.

The findings highlight that despite the abundance of literature about rural and remote workforce retention challenges, there are few evaluated interventions, and therefore limited evidence, for effective organisation-level interventions to improve rural and remote health workforce retention.

Discussion

The current literature largely describes high-level interventions focused on increasing the number of doctors, nurses and allied health professionals trained (education) to increase workforce supply, education-to-employment pathways such as rural pipelines (education) and remuneration (financial incentives) to encourage health professions to practice in rural and remote locations (Buykx *et al*., 2010; Carson *et al*., 2015; Gillespie *et al*., 2022). However, there is a dearth of literature to inform health service organisations about what they can do to improve workforce retention at the organisational level. With that in mind, this study sought to examine evidence from organisation-level evaluated interventions to inform HR practitioners and health service managers about effective interventions that could improve workforce retention in their organisations. The scoping literature review found that in terms of intervention type there were some evaluated education and financial incentive interventions, but few evaluated interventions focusing on non-monetary strategies for improving retention (i.e., personal and professional support) despite research suggesting that workforce retention can be improved through interventions that increase employee satisfaction, belonging and person-organisation fit in rural and remote communities (Campbell *et al*., 2012; Maertz and Griffeth, 2004; Onnis, 2016). Therefore, the key insights from the scoping review for HR practitioners and health service managers are that: (a) contextualised implementation must be considered; (b) HRIS data is not widely used to evaluate the effectiveness of workforce interventions in rural and remote health service organisations, (c) inconsistent measures impact comparability of intervention effectiveness,

and (d) a multi-faceted response is needed for complex issues. Further, the absence of HRM theories, frameworks, or models to consider organisation-level strategies for workforce retention in rural and remote areas in the current literature is striking, particularly given the central phenomenon under investigation is the 'workforce'.

Contextual considerations

The relationship between context and intervention implementation is unclear, and so is how the context influences the impact of an implemented intervention to enact the desired change outcome (Dryden-Palmer *et al*., 2020; Rogers *et al*., 2021). In the organisational setting, "context represents the normal conditions of practice" in which the intervention is implemented (Rogers *et al*., 2021). Hence, for an intervention to be contextualised, it must be integrated into usual practice for the organisation in which it is being implemented. Given the challenges of recruiting and retaining rural and remote health professionals, it follows that intervention implementation would benefit from a contextualised approach to both implementation and evaluation at the organisational level. That is, if organisations are to implement interventions, the intervention must be compatible with the organisation's values and culture (e.g., a contextualised intervention for a non-profit faith-based health service provider is unlikely to be an annual $20,000 retention incentive like those offered by state health departments (Jurss-Lewis, May 2023), and more likely to be a non-monetary incentive aligned to the organisation's values). Further, in their study examining the implementation of interventions for change at a team-level in a health service, Rogers *et al.* (2021) highlight that not only should interventions be contextualised; interventions should also be integrated into the workplace if they are to be effective in the long-term. In other words, when implementing workforce interventions to improve retention, the integration of change should be carefully managed if it is to improve the intervention's long-term success. Rogers *et al*. (2021, p.803) further emphasise the importance of contextualising an intervention to the organisation's culture in saying that when implementing change, a 'one size fits all' approach has been associated with failure because "the priorities of staff and the unique characteristics of settings are overlooked." The absence of information about contextualised, integrated workforce interventions in the literature suggests an opportunity to investigate further into the impact of contextualisation on the effectiveness of implemented organisation-level interventions.

Human resource information systems (HRIS)

There are a range of stakeholders (e.g., governments, professional bodies, public advocates) with an interest in improving health workforce retention, some of whom are responsible for ensuring a stable healthcare system for all, and others advocating for their respective professions or subsets of the population. Acknowledging the competing interests, the continuity of using measures and concepts relevant to workforce, irrespective of industry or location, is a positive contribution that HRM scholars can offer to the health industry globally and the workforce sustainability literature. That is, in working together HRM scholars and health sector scholars can develop a common set of variables to evaluate workforce retention intervention effectiveness as well as the impact of improved workforce sustainability on improving access to health services. As Bartram and Dowling, (2013, p.3031) argue "the one constant across different national settings is the critical importance of human resources both in terms of their ability to impact patient outcomes and hospital costs". It is posited that this cross-national argument would extend to being cross-regional (e.g., city, rural and remote). As such, the HRIS is one source of data that informs health service management of the effectiveness of implemented workforce interventions on retention which has the potential to interface with patient/client management systems to measure the impact of the intervention(s).

Moreover, the types of workforce interventions available to health service organisations differ for a variety of reasons, with access to funding topping the list. In rural and remote health, where workforce shortages are a long-term challenge, incentives to attract and retain health professionals are implemented in a highly competitive environment. One where the playing field is rarely fair. That is, high-level regulatory and national policies advantage government health services who offer housing and financial incentives that are not comparable to what small non-profit organisations may be able to offer. For example, in Australia, the state health department offered "$20,000 to health care workers and up to $70,000 to doctors who move to Queensland from interstate and overseas" (Jurss-Lewis, May 2023). If these incentive programs continue for government health departments, it is critical such interventions be evaluated to ensure that they are effective in improving retention. A HRIS is a reliable source of data, it is not self-reported and is comparable over time, and across

locations. For non-government organisations competing for talent but unable to offer large financial incentives, alternative workforce interventions (e.g. non-monetary) may be implemented to attract and retain a competent skilled health workforce suited to their organisation. Ideally, publishing studies using similar variables, will not only improve our understanding of an intervention's effectiveness, it will complement the current literature which is largely self-reported. Therefore, HR practitioners and health service managers, particularly those working in resource poor, non-profit organisations may benefit from knowing how to implement HRM interventions conducive to improving retention through education, and personal and professional support (Peña *et al*., 2010; Schmidt *et al*., 2018) as well as financial incentives.

What is being measured?

This study set out to identify effective interventions that had been implemented and evaluated at the organisation-level and found not only that there were few examples of such interventions, but that differences in metrics further confused what was already a scant body of empirical evidence. This is consistent with Dolea *et al*.'s (2010, p.382) observation of variability in reported retention outcomes saying, "some studies consider[ed] retention rates as the number or the proportion of health workers remaining in the area, while others provided more comprehensive measures that accounted for both the number of workers and the duration of their stay in months or years." This literature review found the former to be the metric often used in studies where the location of the health professional at a given point in time post completing a program was considered to be an indication of the program's success (see Keahey, 2008 and MacVicar *et al*., 2016). In contrast, Russell *et al*. (2021) found that some studies used 'intention to stay' as the measure for retention. For health services to improve retention, it is essential the proposed interventions can transparently demonstrate the desired outcomes through comparable HR retention metrics.

Some studies used turnover (e.g., Goma *et al*., 2014); however, when turnover is used as a general term without distinguishing the cause of the turnover it is difficult to determine whether it is regrettable turnover (i.e., where retaining the health professional is preferred) or the result of an employment mechanism (e.g., contract ended, lawful termination). Reporting turnover statistics with clearer differentiation "between voluntary turnover (quit

rates) versus involuntary turnover (dismissal rates)" will better inform HR practitioners and health service organisations, especially given that 'quits' and 'dismissals' have different antecedents and therefore, may have different impacts on organisational performance and productivity (Schmidt *et al*., 2018, p.272).

Finally, if the objective is to improve retention, then the focus must be on those who stay, and learning more about who they are, how long they stay, when they leave, and how much corporate knowledge they take with them (Waldman and Arora, 2004). To this end, the findings from this study suggest that an empirical evidence-base of effective retention interventions for rural and remote health workforces, must include information to ensure that what is being measured is well-defined and contextualised for the rural and remote work environment. In addition, future studies could improve the evidence-base if workforce baseline data is used to better support claims of effective retention interventions.

A multi-faceted approach

According to WHO (2010, p.35) improving workforce sustainability in rural and remote areas will require retention strategies that are complex interventions, thus, recommending the use of "an appropriate combination or bundle". While WHO's (2010, p.35) global policy recommendations say that improving the health status for rural and remote populations has "more determinants than just these [workforce] interventions", WHO proposes that observed improvements in retention are attributed to a "combination or bundle" of interventions. WHO's (2010) recommendations encompass the belief that context should influence decisions about intervention choice, implementation and evaluation, as well as the potential complementarities of interventions. As such, an empirical evidence-base of effective retention interventions for rural and remote workforce as mentioned previously would not only inform HR practitioners and health service managers about what, and how, to measure implemented studies; it would also provide a source of interventions from which health services can bundle. While WHO (2010, p.35) were referring to the range of strategies in their recommendations for bundling, the practice of bundling organisational level strategies is a known effective HRM strategy (Peña *et al*., 2010; Schmidt *et al*., 2018) and, therefore, a sensible way forward to improve rural and remote health workforce retention.

Limitations

We acknowledge as a limitation that the scoping literature review was not a systematic review and therefore not exhaustive or reproducible. Our aim was to identify the types of interventions that have been implemented and evaluated in rural and remote health services to provide evidence of effective interventions, as opposed to counting the frequency in which they are mentioned; hence, the authors believe that the scoping review methodology was suitable for this study. In addition, we acknowledge the difficulties in replicating a search using Google, which uses individualised algorithms, and manually searching websites for evidence of implemented interventions; however, the inclusion of the grey literature reports made an important contribution to the overall study without compromising the scientific rigour of the literature review.

Conclusion

The contemporary challenges of workforce sustainability are reflective of the era in which attitudes towards work and models of working are changing rapidly. The COVID-19 pandemic impacted *how*, *where* and *when* work is conducted resulting in unprecedented pressures for workforce flexibility; and highlighted the importance of exchange relationships for workforce continuity during challenging and turbulent times. For service industries such as healthcare, the impact is also marked by the loss of qualified health professionals, and changes to migration patterns (WHO, October 2021). For HR practitioners, it highlighted the role of HRM in being sensitive to personal and professional workers' needs in leading organisation-level change to meet future workforce needs.

This scoping review identified a scarcity of evidence to inform HR practitioners and health service managers about how to implement and evaluate promising interventions that have been shown to improve retention in rural and remote areas. A focus on the scarcity of evidence and absence of HRM scholarship creates opportunities for the development of empirical evidence to inform organisations about designing, implementing and evaluating contextualised workforce strategies to reduce the impact of workforce shortages. The range of workforce interventions to improve rural and remote health workforce retention

presented, together with a call for consistently using a range of standard measures to create an evidence-base of evaluated interventions offers an opportunity for evidence-based HR solutions to meet the challenges of workforce sustainability amid global rural and remote health workforce shortages.

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