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The right care in the right place: a scoping review of digital health education and training for rural healthcare workers

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Abstract

Background Digital health offers unprecedented opportunities to enhance health service delivery across vast geographic regions. However, these benefits can only be realized with effective capabilities and clinical leadership of the rural healthcare workforce. Little is known about how rural healthcare workers acquire skills in digital health, how digital health education or training programs are evaluated and the barriers and enablers for high quality digital health education and training.

Objective To conduct a scoping review to identify and synthesize existing evidence on digital health education and training of the rural healthcare workforce.

Inclusion criteria Sources that reported digital health and education or training in the healthcare workforce in any healthcare setting outside metropolitan areas.

Methods We searched for published and unpublished studies written in English in the last decade to August 2023. The databases searched were PubMed, Embase, Scopus, CINAHL and Education Resources Information Centre. We also searched the grey literature (Google, Google Scholar), conducted citation searching and stakeholder engagement. The JBI Scoping Review methodology and PRISMA guidelines for scoping reviews were used.

Results Five articles met the eligibility criteria. Two case studies, one feasibility study, one micro-credential and one fellowship were described. The mode of delivery was commonly modular online learning. Only one article described an evaluation, and findings showed the train-the-trainer model was technically and pedagogically feasible and well received. A limited number of barriers and enablers for high quality education or training of the rural healthcare workforce were reported across macro (legal, regulatory, economic), meso (local health service and community) and micro (day-to-day practice) levels.

Conclusions Upskilling rural healthcare workers in digital health appears rare. Current best practice points to flexible, blended training programs that are suitably embedded with interdisciplinary and collaborative rural healthcare improvement initiatives. Future work to advance the field could define rural health informatician career pathways, address concurrent rural workforce issues, and conduct training implementation evaluations.

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Keywords Clinical informatics, Health informaticians, Digital health, Health personnel, Rural population, Rural health, Education, Teaching, Low-resource settings

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Introduction

Globally, healthcare workers (HCWs) face multiple pressures simultaneously: increasing demand for care, co-morbidities and condition complexity, budget pressures, and rapid digital disruption [1]. The digital disruption in healthcare promises an unprecedented circumstance to improve outcomes and strengthen health systems [2]. However, this opportunity depends on a capable healthcare workforce with adequate skills and knowledge in data and emerging technologies [3]. HCW capability in digital health and clinical informatics is increasingly acknowledged as an essential component to the delivery of high-quality patient care [4]. Universities do not yet routinely teach these curricula in clinical degrees, and the capability gap in the current workforce is often filled by brief, reactive, and on-the-job training [5]. Sustainability of healthcare includes developing a skilled healthcare workforce educated and competent in digital health [6].

The rural healthcare workforce is faced with the location-based issues of resource constraints, workforce shortages, high staff turnover rates, stress, burnout, and an ageing workforce [7]. The World Health Organization has acknowledged in a recent report (2021) the complex challenge of shortage of healthcare workers globally in rural areas [7]. This report has acknowledged that the workforce density is lower than national averages in most of these areas. In places where there isn't a national shortage, maldistribution of the workforce has been noted [7]. Digitally enabled models of care are well placed to enhance health service delivery across vast and distributed geographic regions. However, rural health service organizations require uplift to align with their metropolitan counterparts in workforce digital readiness [8]. Building digital health capability in rural settings is critical because higher digital health capability is associated with better outcomes, including the ability to maintain an accurate patient health record, track patient experience data, track the patient journey, and mitigate clinical risks [9]. Rurality is contributing to widening digital health inequities [10] with significant efforts required to adequately manage the rural digital divide [11, 12]. Building digital capabilities of healthcare providers in rural and remote settings through education, training and support is needed [13].

Existing evidence on the education and training the rural healthcare workforce is limited. Firstly, while health science faculties are progressively integrating digital health into the undergraduate curricula for the future workforce [14–16], it is unclear how the education of current HCW is approached [14]. Despite global exemplars such as fellowship training for physicians [17], certification for nurses [18], and advanced education for clinical and non-clinical professionals [19], limited evidence of successful workforce programs to build digital health skills exist [4]. None focus on the rural healthcare setting.

Secondly, in literature reporting digital health in rural settings, there is a notable scarcity on workforce training programs. Existing studies focus on efficacy of delivered healthcare [20, 21], workforce perceptions of digital health tool implementation [22, 23] or are limited to training of specific interventions (e.g., clinical telehealth [24]). This review sought to explore the literature where these two gaps coexist, the intersection of digital health education and training and the rural healthcare workforce, and synthesize the available evidence on digital health education and training for the rural healthcare workforce.

Review question

The research questions for this review were:

I. What are the existing practices and approaches to digital health education and training for rural HCWs?
II. How has digital health education and training been evaluated following implementation?
III. What are the barriers and enablers for high quality digital health education and training in the rural healthcare workforce?

Inclusion criteria

Participants

The review considered studies and reports on any members of the workforce in healthcare settings outside of metropolitan areas. The healthcare workforce refers to 'all individuals who deliver or assist in the delivery of health services or support the operation of health care facilities' [3]. All clinical (e.g., medical doctors, nurses, allied health professionals, pharmacists, Indigenous HCWs, pre-registration/qualification students undertaking placements in health care facilities) and non-clinical workers (e.g., administration, executive and management, clinical support, and volunteers) were considered regardless of professional body or government registration status. Patients, healthcare consumers, and the public were excluded.

Concept

The core concepts of digital health and training were combined in this review. Digital health and clinical informatics are often used interchangeably, and both were considered in this review. While digital health refers to the use of digital technologies for health [25], clinical informatics refers to more specialized practice of analyzing, designing, implementing and evaluating information and communication systems [26]. Specific digital health systems (e.g., IT infrastructure, telehealth, electronic medical records) were included. Training relates to the education or training initiatives (e.g., programs, curriculum, course) that build an individuals' digital health capability to confidently use technologies to respond to the needs of consumers now and into the future [1]. Both education and training activities were considered. Education often refers to theoretical learning (e.g., by an academic institution, qualification), and training often teaches practical skills (e.g., employer-provided professional development, 'just-in-time' training) [3, 24]. This review did not consider HCW education delivered at a distance through technologies (e.g., telesupervision for clinical skills training).

Context

This review considered studies and reports from rural healthcare settings defined as outside metropolitan cities, inclusive of regional, rural, remote, and very remote settings. When the term 'rural' is used in this review, it refers to all areas outside major metropolitan cities as described by authors of individual studies and reports. All healthcare facilities across primary, secondary, and tertiary care settings were included in any country.

Types of sources

All research studies, irrespective of the study design, were considered. Reviews, conference abstracts and non-research sources (e.g., policy documents, program or course curriculum) were considered. The grey literature was included to capture reactionary training developed by rural health services that were not published as peer-reviewed research studies.

Methods

This review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews [27] and reported as per the Preferred Reporting of Systematic Reviews and Meta-analyses for scoping reviews (PRISMA-ScR) [28] (Additional file 1). The review protocol was registered in Open Science Framework [https://doi.org/10.17605/OSF.IO/N2RMX].

A scoping review approach was chosen over a systematic review to address a general, formative review question on this topic that is emerging in the literature and where the literature is complex and heterogenous [29]. An initial preliminary search of the topic in the academic databases, Cochrane Library, Open Science Framework and Prospero registry resulted in a very small number of relevant articles. It was determined that a broader search strategy and inclusion of non-research sources was required, consistent with the scoping review methodology [29]. Scoping review format is also well suited to the vast, diverse healthcare education topic across different disciplines, interventions and outcomes realised [30]. Mapping and synthesis across sources in this scoping review aims to inform research agendas and identify implications for policy and practice [31].

Deviations from the protocol

There were no deviations to the protocol.

Search strategy

The three phase JBI search process was followed. An initial limited search of PubMed was performed to identify keywords on the topic, followed by an analysis of the text words and index terms contained in the title and abstract. A subsequent preliminary search in Prospero registry, Cochrane Library and Open Science Framework informed the development of a full search strategy in PubMed. The search strategy, including all identified keyworks and index terms, was adapted for each included database and information source after refining the strategy with an information specialist. The reference lists of all included sources of evidence were screened for additional studies.

The review included only studies and reports in English (due to translation resourcing limitations) in the last 10 years (due to the relative novelty of the digital transformation of healthcare). The search was conducted in August 2023. The databases searched included PubMed, Scopus, Cumulative Index for Nursing and Allied Health Literature (CINAHL), Embase, and Education Resources Information Center (ERIC). Scopus was chosen over Web of Science as it provides 20% more coverage and the relative recency of articles indexed (publish date after 1995 [32]) was not a concern for our research question. The search for unpublished studies and grey literature included Google and Google Scholar, using a modified search strategy as required. In addition, national and international stakeholders ($n=29$) from Asia, the Pacific Islands, Australia, USA and the UK known to have subject matter expertise on the topic were contacted via direct email. Stakeholders were asked to share any relevant work underway or otherwise undiscoverable using our scoping review methods. The full search strategy for each information source is provided in Additional file 2.

Study selection

Following the search, identified articles were collated and uploaded into Covidence review software (Veritas Health Innovation Ltd; Melbourne, Australia) and duplicates removed. Two reviewers (among LW, JK and LG) then independently screened the title and abstract of each citation and selected studies that met the inclusion criteria. The full text articles were retrieved and uploaded into Covidence. These studies and reports were assessed independently by two reviewers (listed previously) for full assessment against the inclusion criteria. Any disagreements that arose between the reviewers at each stage of the selection process were resolved through discussion or with an additional reviewer (among LG and PM). Three meetings occurred to discuss any voting conflicts that occurred during title and abstract screening and full-text screening. Articles that did not satisfy the criteria were excluded with reasons for exclusion recorded. Search results and study selection process is presented in accordance to the PRISMA-ScR flow diagram (Fig. 1) [28]. Quality appraisal of selected studies was not conducted, consistent with scoping reviews methods [33].

Data extraction

Extracted data included the specific details about the participants, concept, context, study methods and key findings relevant to each review question. Data was extracted by one reviewer (JK) and checked by a second reviewer (LW). Data were extracted using the data extraction tool developed and piloted by the team (Additional file 3).

Data synthesis and presentation

The characteristics of the included studies were analyzed and organized in tabular format, accompanied by a narrative summary. Results of each research question was presented under separate headings. The data analysis for research question three (barriers and enablers of high-quality digital health education and training) was enhanced. We adopted the socio-institutional framework described by Smith et al [34] and used in education research [35] to classify macro, meso, micro level enablers and barriers to help improve the generalizability of the synthesized insights and identify stakeholders that are able to influence change. Gaps and limitations of the current literature were discovered from the evidence with recommendations for policy, practice and future research provided.

Results

Study inclusion

Database searching yielded 1005 articles and stakeholder engagement yielded two articles. After removing duplicates, 660 articles were screened for title and abstract, after which 29 articles underwent full text review. Of the 29 articles, 24 articles were excluded: the setting was metropolitan or otherwise inadequately described as non-metropolitan ($n=6$); the intervention was not a training or education initiative for digital health or clinical informatics ($n=16$), or the population was not rural healthcare workers ($n=2$). In total, following full-text screening, five articles were included in the final review (Fig. 1).

Characteristics of included studies

Of the five included articles, three were academic publications including two case studies [36, 37] and one feasibility study [38] (Table 1). The two articles identified through stakeholder engagement presented course summaries [39, 40] where one described a micro-credential [40] and the other described a fellowship [39]. Most articles ($n=3$) were published recently between 2021 and 2023 [38–40]. Healthcare workforce settings were distributed across the continents of the United States of America [36], Asia [37], Africa [38] and Australia [39, 40], with no articles reporting a setting in the European continent. Further study characteristics are available in Table 1.

Review findings

What are the existing approaches to digital health education and training for rural HCWs?

Training and education programs were needed due to identified gaps in knowledge, skills and expertise to support healthcare delivery in rural contexts with digital health [36–38], [40]. One article reported the target learners as village doctors, who may have "limited training and inadequate medical knowledge, yet they are generally the mainstay of health services" [37]. The mode of teaching in the included studies were four modular online learning courses [36–38], [40] and one fellowship [39]. Of the four modular online learning courses, one was supplemented by a facilitator-led train-the-trainer model [38], informed by an academic framework [41], with cohort-based discussion via a social media platform. The second was a certification in the form of a self-paced micro-credential completed individually [40]. Of the four modular online learning courses, the number of modules ranged from three to eight and covered a variety of digital health topics including innovation, commercialization, bioinformatics, technology use, data and information, professionalism, implementation and evaluation. One had a particular focus on information and communication technology tool use [37] while another focused on remote consulting [38]. The mode of delivery of the fellowship was not reported in the article.

How has digital health education and training been evaluated following implementation?

Four [36, 37, 39, 40] of the five included articles did not report an evaluation. One article in rural Tanzania described the evaluation of the train-the-trainer digital health training program using a mixed-method design [38]: (1) questionnaire informed by Kirkpatrick's model

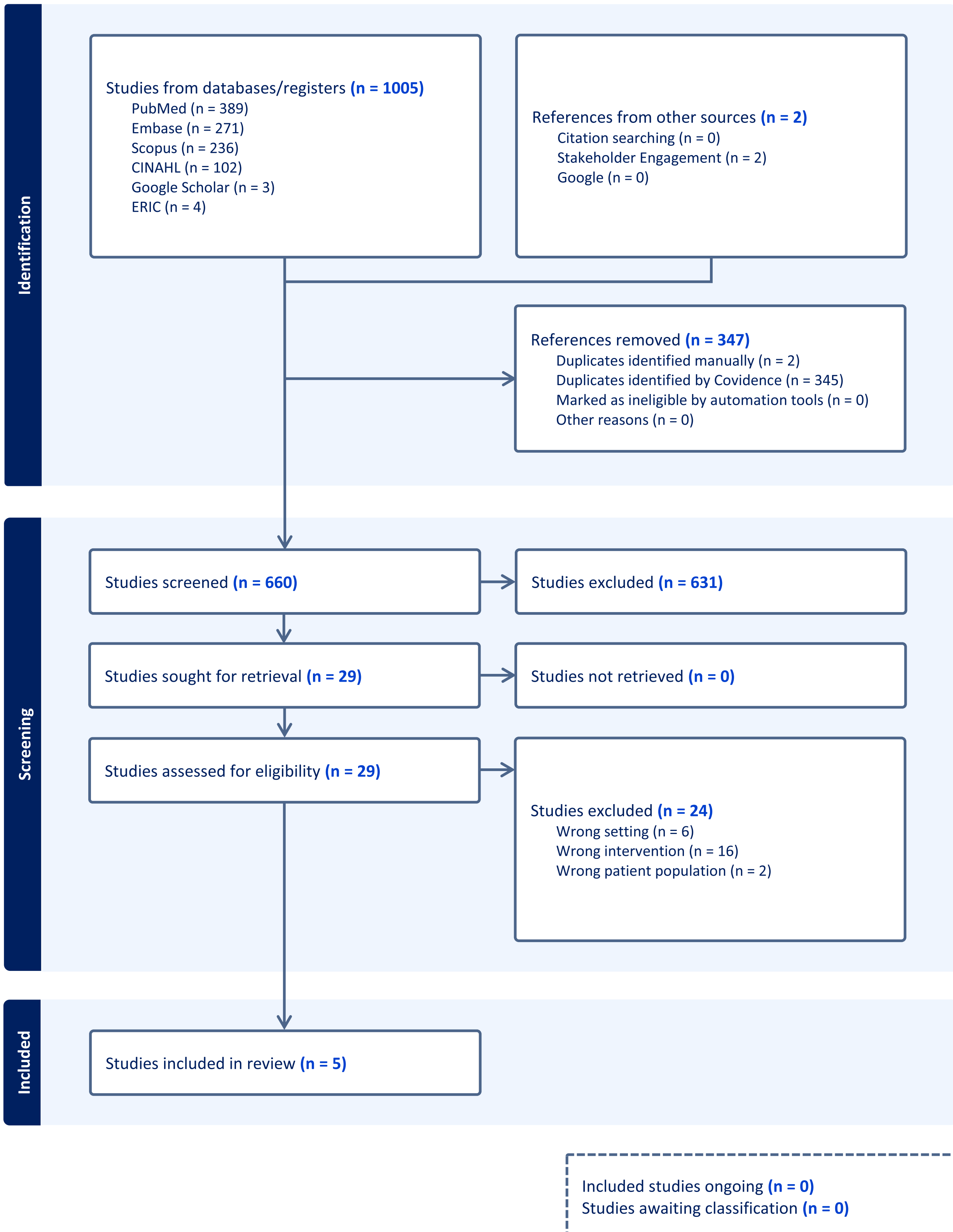

Fig. 1 Search results and source selection and inclusion process

Table 1 Characteristics of included studies

Author	Geographical region	Identified gap	Type of training program	Detail of training program	Article type	Evaluation of training program
Walden et al. 2020 [36]	Arkansas, USA	Researchers and clinicians lacked the expertise to successfully implement digital technologies in rural and medically underserved areas	Three online learning modules providing didactic content	Module 1: Commercialization as a Catalyst for Innovations in Digital health Module 2: Clinical Validation and Testing in Digital Health Module 3: Regulatory Considerations in Digital Health	Case study	Not available
Mridha and Islam 2017 [37]	Bangladesh rural villages	Limited training and inadequate medical knowledge for village doctors	Training program and eHealth content in local language containing five courses	Course 1: Origin of physiological signals of diagnostic importance Course 2: Detecting, storing and transferring bio signals using ICT tools Course 3: Recording and management of information and health data Course 4: Understanding the function, use, management, and maintenance of different diagnostic devices Course 5: Networking the patient data with the relevant experts from any place	Case study	Not available / unclear

Table 1 (continued)

Author	Geographical region	Identified gap	Type of training program	Detail of training program	Article type	Evaluation of training program
Downie 2022 [38]	Tanzania's rural Ulanga District	The REmote Consulting in primary Health care (REaCH) program was developed to support HCW in their health care delivery during the COVID-19 pandemic	Modular online training program using a train-the-trainer approach training HCW (tier 1) to cascade the training to others (tier 2) in their locality	Tier 1 trainees were predominantly senior medical figures who cascaded training to Tier 2 trainees who were health practitioners enrolled by Tier 1 trainees in local language Eight module course delivered via Moodle, an open-source learning app using WhatsApp for facilitated discussion and PDF downloads when digital access is limited Topics on remote consulting include: importance; platforms for use; role change and patient care; risks and benefits; expected patient outcomes including COVID-19 spread; new issues that are different from face-to-face-care; planning care delivery; evaluating health care practice; change management	Feasibility study	Questionnaire, qualitative interviews and document analyses
James Cook University and Northern Australian Regional Digital Health Collaborative (JCU and NARDHC) 2023 [40]	Northern Australia	Trains practitioners to use digital health to augment and support healthcare delivery in rural and remote areas	Micro-credential consisting of an online, flexible course of three units of give modules each. Assessment items include two open-book quizzes and workbook activities	Unit 1: Digital health opportunities for rural, regional and remote Australia Unit 2: The digital workplace Unit 3: Digital health implementation and evaluation in rural, regional and remote locations	Course summary	Not available (Quality assurance includes ongoing course review, student experience, and engagement evaluation)

Table 1 (continued)

Author	Geographical region	Identified gap	Type of training program	Detail of training program	Article type	Evaluation of training program
Australian College of Rural and Remote Medicine (ACRRM) 2021 [39]	Rural Australia	Digital health is one of 37 learning areas of rural and remote medicine for fellowship	Digital Health Fellowship Curriculum	The digital health learning area identifies the knowledge, skills and attributes of the core generalist in relation to digital health Learning areas map to competencies across eight domains of rural and remote practice	Curriculum summary	Not available

of evaluation to capture knowledge gained and perceived behavior change on a Likert scale, (2) qualitative interviews to explore training experiences and views of remote consulting, and (3) document analysis from texts, emails and training reports [38]. Of the tier 1 trainees (senior medical figure trainers who were trained to educate their peers) that completed the questionnaire ($n = 10$, 83%), nine (90%) recommended the training program and reported receiving relevant skills and applying learning to daily work, demonstrating satisfaction, learning and perceived behavior change [38]. Overall, the feasibility study confirmed that remotely delivered training supported by cascade training was technically and pedagogically feasible and well received in rural Tanzania [38].

What are the barriers and enablers for high quality digital health education and training of the rural healthcare workforce?

Reported enablers and barriers are presented using the macro, meso, micro framework [34] (Table 2).

Discussion

This scoping review reflects the scarcity of reported digital health education and training programs in existence for rural HCWs globally. This review responds to the World Health Organization (WHO) recommendation to design and enable access to continuing education and professional development programs that meet the needs of rural HCWs [7], and the Sustainable Development Goal for inclusive and equitable quality education [42].

Concurrent challenges of people (workforce), setting (rural) and content (digital health) are reported in included articles alongside enablers and barriers to education and training programs. Included studies reported a shortage of doctors and specialists [36], lack of technical knowledge [36] (people); higher cost of delivering rural healthcare, high burden of illness [40], medically underserved population due to rural hospital closures [36] (setting); and limited use of digital health tools due to coordination challenges among non-government organisations [37] (content). These additional macro, meso and micro level factors are described by authors firstly as influencing the need for digital health programs in rural settings, and secondly, as contributing to the challenges of implementing effective programs. The rural health workforce challenges in digital health education and training reflect the broader workforce development issues experienced globally [7]. While this review sought to identify workforce development programs, the WHO model indicates the need for attractiveness, recruitment and retention to enable workforce performance (i.e., appropriate and competent multidisciplinary teams providing care) and health system performance (i.e., improving universal health coverage) [7].

In low-resource settings such as rural areas, education and training may not be prioritized among other competing workload demands. As the value of digital health transformations are realized for strengthening healthcare systems [25, 43], the value of digital health education or training programs may become realized. This value was evidenced in the implementation of the teleconsulting training intervention in rural Tanzania [38] in rapid response to supporting care delivery during the COVID-19 pandemic period. With evaluations of programs largely absent from an already small number of programs globally, it will be important for future research to focus on implementation evaluation studies. As Table 2 presents only limited enablers and barriers, more evidence is needed to build on the findings from this scoping review to inform strategies for policy and practice.

The interdisciplinarity of digital health presents challenges and opportunities for nurturing digital health expertise across the rural healthcare workforce. Included articles largely described the target learners of education and training programs as clinicians, practitioners and healthcare workforce. Walden et al. further indicated that users of online content may extend beyond rural health clinicians to healthcare administrators, researchers and providers relevant to address the regulatory factors of clinical validation and implementation [36]. Therefore, for their program of work, the University of Arkansas for Medical Sciences identified and fostered collaboration with an interprofessional team of clinicians, researchers, informaticists, a bioethicist, lawyers, technology investment experts, and educators [36]. No articles in the review described education or training health informaticians or similar digital health leadership role types, yet building defined career pathways for health informaticians is recommended [4]. Existing pedagogy shows that the learning principles of interprofessional practice is grounded in understanding one's own practice as well as the practice of other health professionals and remains aligned to the educational needs of specific professions [44] (i.e., medicine, nursing, pharmacy). Defining new career pathways for interdisciplinary leaders in digital health within a specific clinical context, like the 'rural health informatician', will be important to identify or define the (hidden) specialized workforce.

Local, informal organizational initiatives for digital health learning were discovered alongside formal education or training programs in included studies. Programs were often reported in articles alongside concurrent digital health implementation or healthcare improvement programs, sometimes referred to as 'outreach' [36] activities. These informal initiatives included special interest

Table 2 Barriers and enablers for high quality digital health education and training of the rural healthcare workforce

	Barriers	Enablers
Macro (legal, regulatory, economic)	- Unreliability of resources such as electricity, internet, finances, government recognition or compensation, technical devices [37, 38]	- Educate, train, and support remote HCW on location [37] - Curriculum structure that can include a combination of multi-specialty learning areas (e.g., digital health) [39]
Meso (local health service and community)	- Lack of clear path to develop digital health technologies [36] - Release of staff time for training [38]	- Training implemented alongside concurrent digital health initiatives [36, 37] - Delivery of training in the local language [38]
Micro (day to day practice)	- Unawareness of educational opportunities [36] - Staff computer literacy or technical competence [37, 38] - Busy staff with difficulty scheduling training around their work [38] - Technological access (smartphone capacity limits, unstable network access) [38]	- Strong interest in development of mHealth technologies and training platforms [36] - Dedicated ICT officers to assist with technology as needed [38] - Providing off-line resources [38] - Flexibility of online training [38] - Ability to use training in their daily work immediately and train peers easily [38]

groups, in-person conferences, networking events, working groups [36] and seminars [37]. Current evidence from this scoping review suggests that the efficacy and sustainability of education or training programs are reliant on integrated approaches, like the train-the-trainer [38] or academic organization approach [36], that foster translational research for rural healthcare improvement. As illustrated by Walden et al., success in digital health is likely to require a foundational environment where technologies can be discussed, developed and deployed [36]. Success in rural digital health skills acquisition likely requires a similar, longitudinal and collaborative approach beyond the confines of an online course completed individually. Previous research shows us that blended learning, which merges face-to-face with online learning, translates to better knowledge outcomes [44]. Blended learning can also overcome the barrier of rural HCWs travelling large distances to attend face-to-face training that comes at a great cost to themselves and the work unit. A key recommendation to improve the digital health training program described by Downie et al. was more face-to-face time with trainers, from the perspective of both trainee and facilitator [38]. This, however, can only be realized with targeted planning and budgeting of such offerings by involved rural healthcare organizations.

The opportunities to advance digital health education and training for rural HCWs are presented across the macro, meso and micro levels in the socio-institutional framework, with suggested relevant stakeholders suited to actioning the recommendations (Table 3). While the context for this is likely to vary across the globe, these recommendations and stakeholders are expected to provide a starting point to initiate a dialogue that can influence change. These recommendations are not meant to be prescriptive or rigid, but rather meant to flag actionable solutions that can be contextualized for any given setting.

Table 3 Recommendations for policy, practice and research

Recommendations	Potential stakeholders
Macro level	
Address concurrent rural healthcare workforce challenges	Policy makers, healthcare organizations, funding bodies
Address concurrent digital infrastructure and digital literacy barriers in rural settings	Policy makers, healthcare organizations, funding bodies
Meso level	
Evaluate rural education and training programs to demonstrate value	Researchers, healthcare organizations
Develop interdisciplinary digital health pedagogy	Training and education institutions
Define new pathways for interdisciplinary digital health leaders	Professional peak bodies, policy makers, education and training institutions
Micro level	
Foster translational research and education environment for digital health capacity building	Healthcare organizations, education and training institutions, researchers
Blend online learning with face-to-face collaborative learning	Education and training institutions

Strengths and limitations

It is possible that there is a greater number of published educational and training programs than those reported in this review (i.e., publication bias). To mitigate this, we used a scoping review methodology and stakeholder engagement activity to identify unpublished or emerging programs that answer the review question but may not be discoverable in the academic databases. The review is limited to articles available in the English language. The small number of programs, heterogeneity of programs and limited evaluation of programs significantly limit generalizability of findings. Due to data availability, the barriers and enablers findings summary contain an over-representation from a small number of studies limiting conclusions that can be drawn.

Conclusion

Digital health offers the best opportunity for innovative sustainable change to address critical issues in health and care in rural settings. Workforce education and training initiatives in rural healthcare settings are scarce, largely delivered via online training, and are rarely evaluated. Current best practice points to flexible, blended (online and face-to-face) training programs that are suitably embedded with interdisciplinary, collaborative rural healthcare improvement initiatives. More research will expand the evidence base to deliver high-quality digital health education to strengthen rural healthcare delivery. Future work to advance the field could define rural health informatician career pathways, address concurrent rural workforce issues, and conduct implementation evaluations.

Abbreviations

CINAHL	Cumulative Index for Nursing and Allied Health Literature
ERIC	Education Resources Information Centre
HCW	Healthcare worker
JBI	Joanna Briggs Institute
PRISMA-ScR	Preferred Reporting of Systematic Reviews and Meta-analyses for scoping reviews
WHO	World Health Organization

Supplementary Information

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Additional File 1. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.

Additional File 2. Full search strategy for each information source.

Additional File 3. Data extraction instrument template.

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Authors' contributions

LW, PM and CS designed the study. LW, PM, JK and LG acquired data; analyzed and interpreted results and drafted the manuscript and all subsequent drafts. CS read and contributed to manuscript drafts. All authors read and approved the final manuscript draft.

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Availability of data and materials

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Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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