

Perspectives

Do health service waiting areas contribute to the health literacy of consumers? A scoping review

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Abstract

Health service waiting areas commonly provide health information, resources and supports for consumers; however, the effect on health literacy and related outcomes remains unclear. This scoping review of the literature aimed to explore the use of waiting areas as a place to contribute to the health literacy and related outcomes of consumers attending health appointments. Articles were included if they focussed on health literacy or health literacy responsiveness (concept) in outpatient or primary care health service waiting areas (context) for adult consumers (population) and were published after 2010. Ten bibliographic databases, one full-text archive, dissertation repositories and web sources were searched. The search yielded 5095 records. After duplicate removal, 3942 title/abstract records were screened and 360 full-text records assessed. Data were charted into a standardized data extraction tool. A total of 116 unique articles (published empirical and grey literature) were included. Most articles were set in primary and community care (49%) waiting areas. A diverse range of health topics and resource types were available, but results demonstrated they were not always used by consumers. Outcomes measured in intervention studies were health knowledge, intentions and other psychological factors, self-reported and observed behaviours, clinical outcomes and health service utilization. Intervention studies overall demonstrated positive trends in health literacy-related outcomes, although the benefit declined after 3–6 months. Research on using waiting areas for health literacy purposes is increasing globally. Future research investigating the needs of consumers to inform optimal intervention design is needed.

Lay summary

Health service waiting areas are commonly used to provide health resources (such as health information, resources and supports) for consumers. Health resources which are appropriate and accessible for consumers can improve health literacy by increasing health knowledge, supporting good decision-making or changing behaviours which may result in better health. Although it is common to offer health resources in health service waiting areas, the evidence supporting this practice is unclear. This scoping review of the literature focussed on the use of health service waiting areas as a place to contribute to the health literacy of adult consumers attending outpatient or primary care health appointments. A total of 116 unique articles were included which addressed this issue. Majority of articles were set in primary and community care waiting areas (49%). A range of health topics and resource types were available but these were not always used by consumers. Overall, interventions in waiting areas targeting health literacy-related outcomes resulted in positive outcomes, although the benefit declined after 3–6 months. Research on using waiting areas for health-literacy purposes is increasing worldwide. Future research is needed to identify how to optimize the effectiveness of interventions in waiting areas to benefit consumers.

Keywords: health information, health literacy, health service, waiting area

INTRODUCTION

Repurposing health service waiting areas from places to wait to 'vectors of health education' is not a novel idea (Ward and Hawthorne, 1994). Many health service waiting areas including hospitals, general practice and community clinics routinely offer health information, resources or supports (referred to collectively as 'health resources' from here on) for consumers (Moerenhout *et al.*, 2013). However, the evidence underpinning this practice of distributing or offering health resources in health service waiting areas is unclear. Further, how the waiting area environment could be optimized to support the uptake and effectiveness of health resources is not known.

Waiting areas that are responsive to the health literacy needs of consumers have potential to contribute to health literacy and related outcomes such as knowledge, activation and health behaviours. Two facets of health literacy could be targeted in health service waiting areas: (i) the health literacy of individual consumers using waiting areas and (ii) the health literacy environment of the waiting area. At an individual level, health literacy is defined as the personal characteristics and social resources required for individuals to access, understand and use health information, as well as to make and enact health decisions (Dodson *et al.*, 2017). As this definition indicates, health literacy influences people's ability to make decisions and take actions which impacts on their health outcomes (Nutbeam *et al.*, 2017). An individual's health literacy is affected by how responsive the surrounding environment is to their needs, known as health literacy responsiveness. Health literacy responsiveness refers to the extent to which environments optimize access to and engagement with health information, supports and services (World Health Organization, 2022). In the context of health service waiting areas, factors such as the physical layout of the room, presentation of health resources, policies or processes governing the use of the waiting area and the social culture within the area could all affect an individual's health literacy in this setting.

The way in which a health service uses its waiting area to contribute or respond to health literacy could vary considerably. Health resources could be designed and used for diverse purposes such as patient education or health promotion in support of prevention, disease management, treatment or service utilization (Walsh *et al.*, 2019). Broadly speaking, quality health resources which meet the health literacy needs of consumers have been shown to benefit outcomes such as service use, health costs, patient experience, health behaviours and outcomes (Patient Information Forum, 2013). A study by Tu *et al.* (Tu *et al.*, 2006) provides an example of quality health resources which positively impacted health behaviours in patients attending medical

clinics. They created a culturally adapted motivational video and printed educational pamphlets encouraging Chinese American patients to complete colorectal cancer self-screening (Tu *et al.*, 2006). Participants were provided with these educational materials along with a self-screening kit before or after their medical appointment. The intervention (video, pamphlet and self-screening kit) was found to increase the incidence of colorectal cancer self-screening (Tu *et al.*, 2006). In this example, the intervention was designed to respond to patients' health literacy needs by: providing information in different formats, communicating information in a culturally appropriate manner and providing the necessary tool (screening kit) for patients to enact the target health behaviour. In theory, developing quality health resources and distributing these in waiting areas could result in similar benefits.

In practice, the optimal design, type and distribution of health resources in waiting areas to benefit health literacy and related outcomes is unclear (Berkhout *et al.*, 2018b). Therefore, this scoping review of the literature was indicated to map and describe the available literature on this topic (Peters *et al.*, 2020). Prior to conducting the review, a preliminary search of four international registries confirmed there were no current or registered systematic or scoping reviews on the topic.

OBJECTIVES

The objective of this scoping review was to explore the use of waiting areas as a place to assess, promote, develop or respond to the health literacy of adult consumers attending outpatient or primary care health appointments. This review was also interested in mapping the types of interventions targeting health literacy and related outcomes in waiting areas, and the effects of such interventions.

Review questions

The research questions for this scoping review were:

1. What is known about the use of waiting areas in relation to health literacy at outpatient or primary care health services?
2. What types of interventions exist to target health literacy and related outcomes in waiting areas?
3. What are the outcomes arising from health literacy interventions in waiting areas?

METHODS

This scoping review was conducted in accordance with the Joanna Briggs Institute [JBI] methodology for scoping reviews and the Preferred Reporting Items for

Systematic Reviews and Meta-analyses extension for scoping reviews [PRISMA-ScR] (Tricco *et al.*, 2018; Peters *et al.*, 2020). The term ‘waiting areas’ refers to waiting rooms or spaces or zones designated for patients waiting to attend outpatient or primary care health appointments.

Review protocol

An *a priori* protocol (McDonald *et al.*, 2021b) can be accessed via an online open source tool: <https://osf.io/m9ty4/>.

Eligibility criteria

Articles were included if they focussed on health literacy or health literacy responsiveness or related outcomes (concept) in outpatient or primary care health service waiting areas (context) for adult consumers (population) (for details see [Supplementary File 1](#)). Published and grey literature sources were considered, including empirical studies, dissertations, opinion articles, conference papers and web sources. Only articles published in English were considered as no funding was available to translate research published in other languages. A publication year limit from 2010 onwards was imposed after initial searches revealed many studies published prior to this date did not reflect contemporary healthcare environments, especially with regard to digital health and technology.

Information sources

The search strategy was developed and adapted for each information source by an experienced health sciences librarian (C.V.) in collaboration with the lead author (C.M.). The first phase involved searching 10 bibliographic databases (via selected platforms) and one full-text archive in July 2021: MEDLINE (Ovid), EMBASE (Ovid), PsycINFO (Ovid), CINAHL Plus (EBSCO), Global Health (CABI), Cochrane Database of Systematic Reviews (Wiley), CENTRAL (Wiley), ERIC, Rehab Data, PEDro via Neuroscience Research Australia and PMC (NLM). No language or date limitations were imposed at this stage.

In the second phase, targeted searches for dissertations and web sources were conducted. Targeted searches were conducted in ProQuest dissertation and EBSCOhost Open Dissertations in September 2021. Web sources were searched in Google Scholar in October 2021. Then, authors were contacted to request additional information to determine eligibility ($n = 30$) with a response rate of 33%. Additional information was unable to be requested for 12 articles as current correspondence details for the authors could

not be found. Finally, reference lists of included articles were scanned.

Search

The electronic search strategies are available in [Supplementary File 2](#).

Selection of sources of evidence

Following the search, all identified citations were uploaded into Covidence data management software (Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia available at www.covidence.org). Titles and abstracts of records from phase one searches were screened against the eligibility criteria by two independent reviewers (C.M., C.V., D.G. or A.D.). Titles and abstracts of records from phase two searches were screened by one reviewer (C.M.). Potentially relevant sources were retrieved in full. All full-text records were assessed by two independent reviewers (C.M., C.V., D.G., A.D., D.T., L.Ra. or E.H.). Disagreements were resolved through discussion and consensus, or by an independent third reviewer when required. Full-text sources which did not meet the inclusion criteria were excluded and reasons recorded.

Data charting and items

Data were charted into a modified version of the JBI data extraction tool adapted for this review (McDonald *et al.*, 2021b). Data from included articles were extracted by two independent reviewers (C.M., L.Ra., E.H. or J.A.). A third independent reviewer checked the final primary data table (S.A., D.G. or C.V.).

Synthesis of results

Data were synthesized narratively and with presentation of descriptive summaries. Data were also presented graphically or in tabular form. To report the review findings, included articles were grouped into non-intervention studies and intervention studies. Non-intervention studies were summarized according to: availability of health resources, health topics, use of health resources, consumer perspectives, health professional perspectives and commentary/opinion articles. Intervention studies were summarized by: intervention type, findings, outcomes, evaluation approaches and intervention development processes. Due to the high volume of included articles, each data point was recorded and cross-checked in an excel spreadsheet to ensure accuracy. Critical appraisal is generally not recommended in scoping

reviews (Peters *et al.*, 2020); it was not pertinent to this review question and, therefore, was not undertaken. However, some issues with the quality of research and reporting were noted during data charting including failure to report the methods used to evaluate an intervention.

RESULTS

Study inclusion

After screening 3942 title/abstract records and 360 full-text records, a total of 122 records from 116 unique articles were included (Figure 1; also see Supplementary File 3 for reference list of included articles).

Characteristics of included articles

Of the 116 unique articles, most ($n = 107$) were empirical studies. A range of study designs were represented including quasi-experimental ($n = 40$), observational ($n = 23$), experimental ($n = 14$), other ($n = 12$), qualitative ($n = 11$), mixed methods ($n = 5$) and reviews of literature ($n = 2$). Included articles originated predominantly from North America (47%) followed by Europe (21%) and Oceania (18%). The rate of publications per year on this topic has been increasing with one third of the included articles published from 2019 onwards. Two-thirds of articles were focussed on

metropolitan or urban geographical locations; six articles included both metropolitan and regional locations, and two articles were set in regional or rural areas only. Most studies were conducted in primary and community health settings (49%). Studies were also conducted in hospital outpatient services (25%), did not clearly specify the type of clinic or health service (10%), hospital emergency departments (9%) and across multiple settings (i.e. primary care and hospitals) (6%). See Supplementary File 4 for table and graph summaries of article characteristics and for additional detail see Supplementary File 5.

REVIEW FINDINGS

The findings are reported in three sections aligned with the research questions of this review.

Use of health service waiting areas in relation to health literacy

Availability of health resources in waiting areas

Nine articles assessed and/or described the availability of health resources in waiting areas (Gignon *et al.*, 2012; Anon, 2014b; Keyworth *et al.*, 2015; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016; Rodger *et al.*, 2017; Maskell *et al.*, 2018; McDonald *et al.*, 2020;

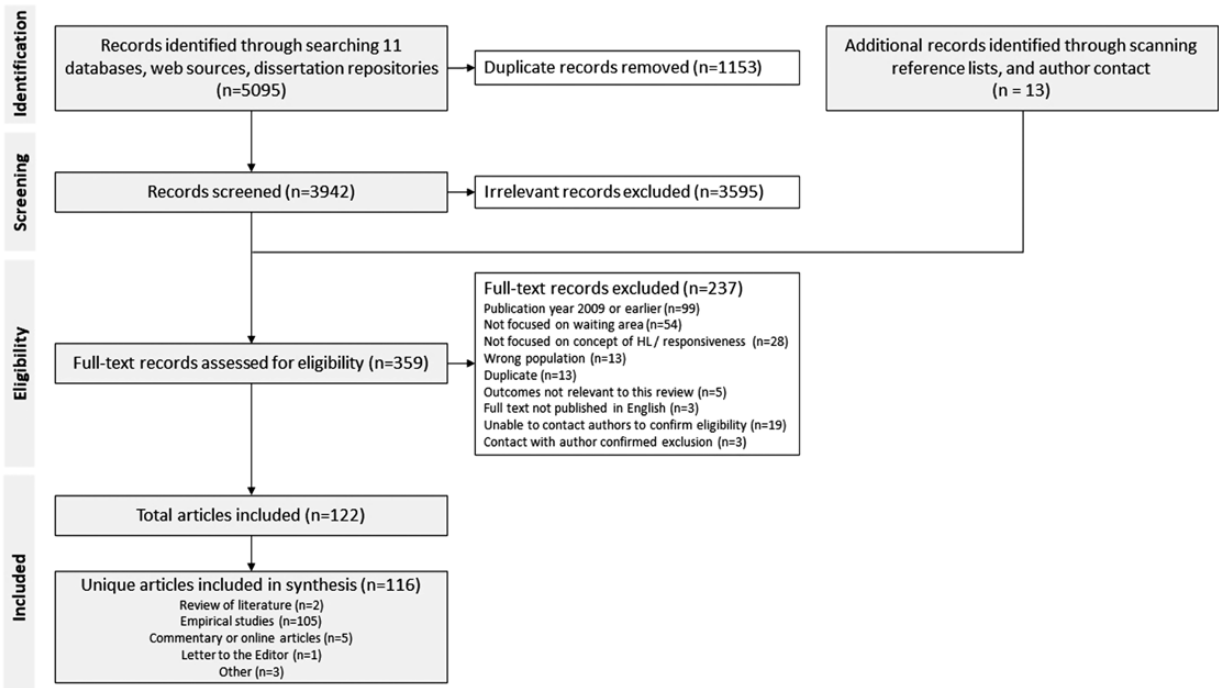


Fig. 1: PRISMA flow diagram.

Whitehead *et al.*, 2020). A variety of assessments were conducted on available items, such as: numerical counts of available resources (Anon, 2014b; Keyworth *et al.*, 2015; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016; Maskell *et al.*, 2018; McDonald *et al.*, 2020; Whitehead *et al.*, 2020), readability of information (Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016), categorization of the content or health topics (Gignon *et al.*, 2012; Anon, 2014b; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016; Maskell *et al.*, 2018; McDonald *et al.*, 2020; Whitehead *et al.*, 2020), accessibility (Maskell *et al.*, 2018) and reliability or quality of information (Anon, 2014b; Keyworth *et al.*, 2015). To count or describe what was available in waiting areas, researchers used methods such as direct observation (Keyworth *et al.*, 2015; Rodger *et al.*, 2017; McDonald *et al.*, 2020), audit (Gignon *et al.*, 2012; Anon, 2014b; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016; Maskell *et al.*, 2018; Whitehead *et al.*, 2020) and/or content analysis (Keyworth *et al.*, 2015; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016). The range of available resources identified in a single waiting area varied considerably from none (Keyworth *et al.*, 2015) to 72 items (Maskell *et al.*, 2018). Available resource types were posters (Gignon *et al.*, 2012; Keyworth *et al.*, 2015; Rodger *et al.*, 2017; Maskell *et al.*, 2018; McDonald *et al.*, 2020; Whitehead *et al.*, 2020), brochures (Gignon *et al.*, 2012; Anon, 2014b; Rodger *et al.*, 2017; McDonald *et al.*, 2020; Whitehead *et al.*, 2020), flyers/handouts (Keyworth *et al.*, 2015; Maskell *et al.*, 2018; McDonald *et al.*, 2020), booklets (Whitehead *et al.*, 2020) and signs (McDonald *et al.*, 2020). The majority of articles reported on primary care settings (mostly general practice clinics, $n = 5$) (Gignon *et al.*, 2012; Anon, 2014b; Protheroe *et al.*, 2015; El-Haddad *et al.*, 2016; Maskell *et al.*, 2018), while the remainder were hospital outpatient services ($n = 2$) (Rodger *et al.*, 2017; McDonald *et al.*, 2020) and mixed settings ($n = 2$) (Keyworth *et al.*, 2015; Whitehead *et al.*, 2020).

Use of available health resources

There was limited information regarding the use of available health resources. One study reported they were not used by consumers in hospital antenatal clinics based on direct observation of the waiting area (Rodger *et al.*, 2017) and another reported they were only rarely used in hospital outpatient rehabilitation settings based on direct and video-recorded observations of the waiting area (McDonald *et al.*, 2020). However, one study in a rural general practice clinic found based on direct observation that consumers did browse available health resources, took leaflets and watched the health 'infotainment' television programme on display (Penry Williams *et al.*, 2019).

Consumer perceptions and opinions about using waiting areas for health literacy-related purposes

Nine articles investigated broad research questions about the use of waiting areas for health literacy-related purposes (Cossey *et al.*, 2014; Seibert *et al.*, 2014; Varma *et al.*, 2016; Rodger *et al.*, 2017; Maskell *et al.*, 2018; Ellis *et al.*, 2019; Penry Williams *et al.*, 2019; McDonald *et al.*, 2021a, 2022). Data on consumer perceptions and opinions were collected via questionnaires or surveys (Seibert *et al.*, 2014; Varma *et al.*, 2016; Maskell *et al.*, 2018; Ellis *et al.*, 2019; Penry Williams *et al.*, 2019) or via structured or semi-structured interviews (Cossey *et al.*, 2014; Rodger *et al.*, 2017; McDonald *et al.*, 2021a, 2022). Consumers perceived waiting areas as an acceptable setting for receiving health information (Varma *et al.*, 2016; Ellis *et al.*, 2019). When given the opportunity to suggest improvements for the waiting area, consumers consistently requested greater variety in resource types and modes of delivering health information (Seibert *et al.*, 2014; Varma *et al.*, 2016; McDonald *et al.*, 2021a, 2022).

Consumer perspectives differed regarding the usefulness and amount of available health resources (Cossey *et al.*, 2014; Seibert *et al.*, 2014; Rodger *et al.*, 2017; Maskell *et al.*, 2018). For example, in an emergency department waiting area, consumers wanted more information about how the department functioned and about serious health conditions (Seibert *et al.*, 2014). Whereas in a sexual health clinic setting, consumers wanted fewer items with a focus on quality and well organized displays (Cossey *et al.*, 2014). In general practice settings, consumers reported high agreement that they pay attention to health resources and find these useful; however, consumer perceptions were that displays were not well designed or attractive (Maskell *et al.*, 2018). Contrastingly, in a hospital antenatal clinic, consumers reported printed health information did not resonate with their information needs (Rodger *et al.*, 2017). Whether available information is perceived as meeting their needs may be a key factor underpinning consumer choices to use available health resources (Rodger *et al.*, 2017; McDonald *et al.*, 2021a, 2022). In terms of perceived impact of health resources on behaviours, in one study, consumers self-reported that they anticipated making an action or change in their behaviour based on available health information (Penry Williams *et al.*, 2019).

Health professional perceptions and opinions about using waiting areas for health literacy-related purposes

Via surveys or interviews, five articles investigated the perspectives or opinions of health professionals on

using waiting areas for health literacy-related purposes (Gignon *et al.*, 2012; Beckwith *et al.*, 2016; Bailey *et al.*, 2017; Collins *et al.*, 2017; Penry Williams *et al.*, 2019). Four of these articles concluded that health professionals perceived value in offering health resources for patient education purposes in waiting areas (Gignon *et al.*, 2012; Bailey *et al.*, 2017; Collins *et al.*, 2017; Penry Williams *et al.*, 2019). Health professionals thought that when health resources had been carefully designed and selected they would be useful to or used by consumers (Gignon *et al.*, 2012; Bailey *et al.*, 2017; Collins *et al.*, 2017; Penry Williams *et al.*, 2019). Health professionals were more likely to have positive attitudes towards education in waiting areas if they: (i) experienced higher rates of patient enquiry about available materials during appointments; and (ii) perceived benefits of educational materials (Collins *et al.*, 2017). In contrast, one article reporting a study in community health settings found that the majority of health professionals (71%) felt that waiting areas offered ‘little or no’ educational value (Beckwith *et al.*, 2016). In this community health study, most providers (78%) stated that they ‘never’ referred patients to available health resources in their waiting area and perceived patients as doing other activities (i.e. using own mobile phone) to pass the time while waiting (Beckwith *et al.*, 2016).

Three key benefits of providing patient education in waiting areas were perceived by health professionals. First, health professionals can review and select available items for quality control (Gignon *et al.*, 2012; Collins *et al.*, 2017). Secondly, educational materials could be useful and convenient resources for patients which supplement the health information they receive during their appointment (Gignon *et al.*, 2012; Beckwith *et al.*, 2016; Bailey *et al.*, 2017). Thirdly, available health resources provided prior to an appointment might positively affect health communication or decision-making during the appointment; for example, by encouraging screening, supporting patients to raise ‘delicate’ subjects and facilitating dialogue about treatment options (Gignon *et al.*, 2012).

Six key reservations were noted by health professionals about providing health resources in waiting areas: (i) maintaining patient privacy (Beckwith *et al.*, 2016; Bailey *et al.*, 2017; Penry Williams *et al.*, 2019), (ii) avoiding anxiety or distress (Penry Williams *et al.*, 2019), (iii) need for sustained infrastructure and management to maintain displays (Beckwith *et al.*, 2016), (iv) need for information to be available in multiple languages (Beckwith *et al.*, 2016), (v) additional time requirements for explaining materials to patients (Penry Williams *et al.*, 2019) and (vi) potential delays to appointment start times if patients were engaged with health resources when called (Bailey *et al.*, 2017). Additionally, some health professionals were reported

to be uncertain about the efficacy of waiting area interventions, suggesting that such interventions may not change health behaviours (Bailey *et al.*, 2017).

Arguments for using waiting areas as a vector for consumer education

Five commentary and opinion articles advocated for using waiting areas for patient education (Sherwin *et al.*, 2013; Anon, 2014a, 2015; Solana, 2018; Quadri and Debes, 2020). Four of these articles referenced an exemplar study or cited relevant literature to support their position (Sherwin *et al.*, 2013; Anon, 2014a, 2015; Quadri and Debes, 2020). One article did not reference any specific study or cite peer-reviewed literature to support their argument that a broadcasting system in a dental waiting area helped patients to learn about treatment options (Solana, 2018). One article proposed a number of potential interventions for waiting areas which could contribute to health literacy-related outcomes such as: providing a question prompt sheet or coaching tool to prepare for the imminent appointment, patient education material on relevant health topics or decision aids about treatment and screening options (Sherwin *et al.*, 2013). Arguments proposed for using waiting time for education included that such approaches could be low cost (Anon, 2014a), popular with patients (Anon, 2014a), show improvements in health literacy (Anon, 2014a), scalable (Quadri and Debes, 2020), improve efficiency of patient–doctor consultations (Sherwin *et al.*, 2013), improve patient satisfaction (Sherwin *et al.*, 2013), easy to implement and maintain (Solana, 2018) and encourage patient inquiries about treatment options during consults (Solana, 2018).

Types of interventions that target health literacy and related outcomes in waiting areas

Health literacy interventions in waiting areas—type and mode of delivery

Many different types and modes of delivering interventions have been trialled in waiting areas. The most frequent type was audio-visual health information delivered via a television monitor or tablet ($n = 19$) (Eubelen *et al.*, 2011; Merck *et al.*, 2012; Tingey *et al.*, 2013, 2014; Snead *et al.*, 2014; Hellmers *et al.*, 2016; Shah *et al.*, 2016; Pereira *et al.*, 2017; Alnasser *et al.*, 2018; Berkhout *et al.*, 2018b; Dineley *et al.*, 2018; McIntyre *et al.*, 2018, 2020a,b, 2021; Neumann *et al.*, 2018; Ha *et al.*, 2019; Lavaerts, 2019; McNab and Skapetis, 2019; Vangu *et al.*, 2019; Aydin *et al.*, 2021; Highland *et al.*, 2021; Perera *et al.*, 2021). The second type was interactive platforms (i.e. web-based educational modules) delivered via touchscreen computer

kiosks or tablets ($n = 15$) (Pendleton *et al.*, 2010; Price *et al.*, 2010; Khan *et al.*, 2011; Leijon *et al.*, 2011; Yacoub and Mehta, 2011; Braam *et al.*, 2012; Arora *et al.*, 2013; Schwarz *et al.*, 2013; Bailey *et al.*, 2016; Pineda-del Aguila *et al.*, 2018; Dempsey *et al.*, 2019; Grant *et al.*, 2019; Bertholet *et al.*, 2020; Hendricks *et al.*, 2020; Callegari *et al.*, 2021). Written health information delivered via posters, brochures or handouts ($n = 10$) (Houry *et al.*, 2010, 2011; Pydah and Howard, 2010; Giannitsioti *et al.*, 2016; Natt *et al.*, 2017; Berkhout *et al.*, 2018a; Ginat and Christoforidis, 2018; Dowling *et al.*, 2019; Ismail *et al.*, 2019; Krebs *et al.*, 2019; Kripalani *et al.*, 2019) and a combination of types have also been trialled in different settings (i.e. audio-visual information plus written resources; $n = 9$) (Chan *et al.*, 2010, 2015; Kharsany *et al.*, 2010; Pawar *et al.*, 2016; Shepherd *et al.*, 2016; Kamimura *et al.*, 2017; Asthana *et al.*, 2018; Naem *et al.*, 2019; Patino *et al.*, 2019). No studies were identified where all components of the health literacy environment were comprehensively targeted to improve the health literacy responsiveness of the waiting area.

Verbal delivery of health information was least commonly studied ($n = 5$) (Kuhrik *et al.*, 2010; Reid *et al.*, 2013; Hughes *et al.*, 2015; Cardoso *et al.*, 2019; Chaves *et al.*, 2020). Verbal information was delivered either by health professionals (Kuhrik *et al.*, 2010; Reid *et al.*, 2013; Hughes *et al.*, 2015) or students (Cardoso *et al.*, 2019; Chaves *et al.*, 2020) to individuals (Reid *et al.*, 2013) or in groups (Kuhrik *et al.*, 2010; Cardoso *et al.*, 2019). Three articles reported that health resources were available in more than one language (Price *et al.*, 2010; Kamimura *et al.*, 2017; Vangu *et al.*, 2019).

Health topics and content of interventions

Interventions reported in included articles covered five broad categories: (i) health promotion and prevention, (ii) health screening, (iii) health condition or treatment, (iv) health services and (v) other. Health promotion and prevention topics included sexual health, vaccination, healthy lifestyle, oral health and smoking cessation (Pendleton *et al.*, 2010; Eubelen *et al.*, 2011; Leijon *et al.*, 2011; Braam *et al.*, 2012; Schwarz *et al.*, 2013; Snead *et al.*, 2014; Bailey *et al.*, 2016; Pawar *et al.*, 2016; Shah *et al.*, 2016; Kamimura *et al.*, 2017; Pereira *et al.*, 2017; Alnasser *et al.*, 2018; Berkhout *et al.*, 2018a; Dineley *et al.*, 2018; Cardoso *et al.*, 2019; Dempsey *et al.*, 2019; McNab and Skapetis, 2019; Bertholet *et al.*, 2020; Callegari *et al.*, 2021). Health screening topics covered were cancer screening, intimate partner violence and genetic testing (Houry *et al.*, 2010, 2011; Arora *et al.*, 2013; Kripalani *et al.*, 2019). Health conditions or treatments addressed included diabetes, stroke, cardiovascular disease, sexually transmitted infections, cancer and antibiotic use (Chan *et al.*,

et al., 2010, 2015; Kharsany *et al.*, 2010; Kuhrik *et al.*, 2010; Price *et al.*, 2010; Khan *et al.*, 2011; Yacoub and Mehta, 2011; Reid *et al.*, 2013; Hughes *et al.*, 2015; Giannitsioti *et al.*, 2016; Hellmers *et al.*, 2016; Asthana *et al.*, 2018; McIntyre *et al.*, 2018, 2020a,b, 2021; Neumann *et al.*, 2018; Pineda-del Aguila *et al.*, 2018; Ha *et al.*, 2019; Ismail *et al.*, 2019; Naem *et al.*, 2019; Patino *et al.*, 2019; Hendricks *et al.*, 2020; Aydin *et al.*, 2021; Highland *et al.*, 2021; Perera *et al.*, 2021). Health services topics included medical imaging and educational programmes (Merck *et al.*, 2012; Tingey *et al.*, 2013, 2014; Ginat and Christoforidis, 2018; Dowling *et al.*, 2019; Krebs *et al.*, 2019; Lavaerts, 2019; Vangu *et al.*, 2019). Other topics were health communication, organ donation and medical chaperones (Pydah and Howard, 2010; Shepherd *et al.*, 2016; Natt *et al.*, 2017; Grant *et al.*, 2019). Although rare, two studies offered health information on topics from more than one category (Tannenbaum *et al.*, 2015; Chaves *et al.*, 2020).

Intervention development and adaptation

Typically, health resources used in waiting area interventions were developed by health professionals with minimal (if any) input by consumers. However, there were a few examples of health tool development with considerable stakeholder engagement or participation (Myint-U *et al.*, 2010; Gilliam *et al.*, 2013; Burrows *et al.*, 2016; Ruvalcaba *et al.*, 2019; Neumann *et al.*, 2020). Two examples of stakeholder engagement during health tool development were reported in Gilliam *et al.* (Gilliam *et al.*, 2013) and Myint-U *et al.* (Myint-U *et al.*, 2010). To develop a contraceptive counselling tablet application for women attending family planning clinics, Gilliam *et al.* (Gilliam *et al.*, 2013) used human centred design principles. They conducted in-depth interviews with end-users, and drew on extant literature to develop a prototype which was then tested with end-users and further refined (Gilliam *et al.*, 2013). Myint-U *et al.* used a theoretical framework to inform the educational video content for a sexual health clinic waiting area (Myint-U *et al.*, 2010). They then collaborated with an external film company to create an engaging product, engaged clinic stakeholders in a multistep participatory process to inform intervention development, and pilot tested the final intervention (Myint-U *et al.*, 2010).

Outcomes arising from health literacy interventions in waiting areas

Outcomes of interest in waiting area interventions

Outcomes of interest varied considerably in the included articles, depending on the study aims, intervention and

context. Two key distinctions were noted. Outcomes either focussed on the use or experience of the intervention itself, or on the effects of the intervention. Studies investigating the perceptions or experiences of an intervention mostly focussed on consumers (Pendleton *et al.*, 2010; Yacoub and Mehta, 2011; Reid *et al.*, 2013; Schwarz *et al.*, 2013; Hughes *et al.*, 2015; Giannitsioti *et al.*, 2016; Pawar *et al.*, 2016; Shepherd *et al.*, 2016; Natt *et al.*, 2017; Ginat and Christoforidis, 2018; McIntyre *et al.*, 2018; Ismail *et al.*, 2019; Krebs *et al.*, 2019; Kripalani *et al.*, 2019; Patino *et al.*, 2019; Vangu *et al.*, 2019; Bertholet *et al.*, 2020; Callegari *et al.*, 2021; Highland *et al.*, 2021) although two articles investigated both consumer and health professionals' perspectives (Pawar *et al.*, 2016; Dineley *et al.*, 2018).

One study was identified which focussed on health literacy as an outcome of interest (Khan *et al.*, 2011). All other articles measured health literacy-related outcomes: health knowledge (Chan *et al.*, 2010, 2015; Price *et al.*, 2010; Pydah and Howard, 2010; Khan *et al.*, 2011; Yacoub and Mehta, 2011; Braam *et al.*, 2012; Merck *et al.*, 2012; Schwarz *et al.*, 2013; Tannenbaum *et al.*, 2015; Giannitsioti *et al.*, 2016; Hellmers *et al.*, 2016; Shah *et al.*, 2016; Shepherd *et al.*, 2016; Asthana *et al.*, 2018; Dineley *et al.*, 2018; Ginat and Christoforidis, 2018; Ha *et al.*, 2019; Kripalani *et al.*, 2019; Lavaerts, 2019; McNab and Skapetis, 2019; Patino *et al.*, 2019; Hendricks *et al.*, 2020; Perera *et al.*, 2021); intentions (Arora *et al.*, 2013; Bailey *et al.*, 2016; Alnasser *et al.*, 2018; Dempsey *et al.*, 2019); other psychological factors such as beliefs, attitudes or self-efficacy (Price *et al.*, 2010; Khan *et al.*, 2011; Snead *et al.*, 2014; Bailey *et al.*, 2016; Kamimura *et al.*, 2017; Dowling *et al.*, 2019; Ismail *et al.*, 2019; McIntyre *et al.*, 2020a,b, 2021; Perera *et al.*, 2021); self-reported health behaviours (Pydah and Howard, 2010; Khan *et al.*, 2011; Leijon *et al.*, 2011; Schwarz *et al.*, 2013; Snead *et al.*, 2014; Bailey *et al.*, 2016; Pawar *et al.*, 2016; Shepherd *et al.*, 2016; Kamimura *et al.*, 2017; Alnasser *et al.*, 2018; Grant *et al.*, 2019; McNab and Skapetis, 2019; McIntyre *et al.*, 2020a,b, 2021); observed health behaviours (Neumann *et al.*, 2018; Aydin *et al.*, 2021); clinical outcomes (Kharsany *et al.*, 2010; Eubelen *et al.*, 2011; Khan *et al.*, 2011; Bailey *et al.*, 2016; Berkhout *et al.*, 2018a; Dineley *et al.*, 2018; Neumann *et al.*, 2018; Pineda-del Aguila *et al.*, 2018; Naeem *et al.*, 2019; Perera *et al.*, 2021); and health service utilization (Houry *et al.*, 2010, 2011; Tingey *et al.*, 2013, 2014; Patino *et al.*, 2019).

Evaluation methods

Interventions were evaluated using: clinical outcome measures (Kharsany *et al.*, 2010; Khan *et al.*, 2011; Neumann *et al.*, 2018; Pineda-del Aguila *et al.*, 2018; Naeem *et al.*, 2019); survey, questionnaire or

knowledge test (Chan *et al.*, 2010, 2015; Houry *et al.*, 2010, 2011; Price *et al.*, 2010; Pydah and Howard, 2010; Khan *et al.*, 2011; Leijon *et al.*, 2011; Yacoub and Mehta, 2011; Braam *et al.*, 2012; Merck *et al.*, 2012; Arora *et al.*, 2013; Reid *et al.*, 2013; Schwarz *et al.*, 2013; Hughes *et al.*, 2015; Tannenbaum *et al.*, 2015; Bailey *et al.*, 2016; Giannitsioti *et al.*, 2016; Hellmers *et al.*, 2016; Pawar *et al.*, 2016; Shah *et al.*, 2016; Shepherd *et al.*, 2016; Kamimura *et al.*, 2017; Natt *et al.*, 2017; Alnasser *et al.*, 2018; Asthana *et al.*, 2018; Dineley *et al.*, 2018; Ginat and Christoforidis, 2018; McIntyre *et al.*, 2018, 2020a,b, 2021; Dempsey *et al.*, 2019; Dowling *et al.*, 2019; Grant *et al.*, 2019; Ha *et al.*, 2019; Ismail *et al.*, 2019; Krebs *et al.*, 2019; Kripalani *et al.*, 2019; Lavaerts, 2019; McNab and Skapetis, 2019; Patino *et al.*, 2019; Vangu *et al.*, 2019; Bertholet *et al.*, 2020; Hendricks *et al.*, 2020; Callegari *et al.*, 2021; Highland *et al.*, 2021; Perera *et al.*, 2021); observation (Patino *et al.*, 2019; Aydin *et al.*, 2021), audit of health records (Pendleton *et al.*, 2010; Eubelen *et al.*, 2011; Tingey *et al.*, 2013, 2014; Bailey *et al.*, 2016; Berkhout *et al.*, 2018a; Neumann *et al.*, 2018; Dempsey *et al.*, 2019; Bertholet *et al.*, 2020; Callegari *et al.*, 2021; Perera *et al.*, 2021), interviews (Shepherd *et al.*, 2016) and secondary analysis (Snead *et al.*, 2014). One study used a validated measure of health literacy: Rapid Estimate of Adult Literacy in Medicine—Short Form (REALM-SF) (Khan *et al.*, 2011). Multiple evaluation approaches were used for some interventions (Khan *et al.*, 2011; Bailey *et al.*, 2016; Pawar *et al.*, 2016; Shepherd *et al.*, 2016; Dineley *et al.*, 2018; Neumann *et al.*, 2018; Dempsey *et al.*, 2019; Patino *et al.*, 2019; Bertholet *et al.*, 2020; Callegari *et al.*, 2021; Perera *et al.*, 2021). Four articles did not report the measures they used which suggests that the reported findings may be anecdotal rather than formal research findings (Kuhrik *et al.*, 2010; Pereira *et al.*, 2017; Cardoso *et al.*, 2019; Chaves *et al.*, 2020).

Overview of intervention findings

Two reviews of the literature were identified from the search which reported on effectiveness of interventions in waiting areas (Cass *et al.*, 2016; Berkhout *et al.*, 2018b). An integrative review by Cass *et al.* (Cass *et al.*, 2016) investigated the effectiveness of interventions for promoting healthy lifestyle behaviours across mixed settings (i.e. hospital or primary care). Both quantitative and qualitative findings were given equal significance (Cass *et al.*, 2016). Most of the 33 included studies showed waiting area interventions had a positive influence on knowledge, intentions, healthcare use and behaviours with approximately one quarter rated as good quality (Cass *et al.*, 2016). A systematic review by Berkhout *et al.* (Berkhout *et al.*, 2018b) included

14 peer-reviewed articles exploring the impact of audio-visual aids (i.e. videos or slideshows) in general practice waiting areas. Six of the included studies demonstrated statistically significant improvements in consumer health knowledge or behaviours; however, studies could not be combined for meta-analysis due to heterogeneity and were assessed as low quality (Berkhout *et al.* 2018b).

Within this current scoping review, 59 articles reported on the effects of interventions. Most found positive trends and/or statistically significant improvements in at least one outcome relevant to this review (Table 1). Eight randomized controlled trials (RCTs) reported statistically significant improvements in a primary outcome as a result of their intervention (Chan *et al.*, 2010; Houry *et al.*, 2010, 2011; Khan *et al.*, 2011; Schwarz *et al.*, 2013; Grant *et al.*, 2019; Ha *et al.*, 2019; McIntyre *et al.*, 2020a,b, 2021; Perera *et al.*, 2021). The interventions in these RCTs which significantly improved health knowledge, health behaviours and clinical outcomes were: tailored educational videos about stroke (Chan *et al.*, 2010); an interactive tool on a tablet educating consumers about health communication during medical consults (Grant *et al.*, 2019); an educational tablet application about chronic hepatitis B in five languages (Ha *et al.*, 2019); targeted educational handouts on intimate partner violence based on computer screening (Houry *et al.*, 2010, 2011); computer multimedia programme on diabetes in 19 languages (Khan *et al.*, 2011); education videos on a tablet about cardiovascular risk modification (McIntyre *et al.*, 2020a,b, 2021); a slideshow presentation about futility of antibiotics for upper respiratory tract infections (Perera *et al.*, 2021); and an interactive computer module about contraception (Schwarz *et al.*, 2013). All of these eight RCTs involved digital-based interventions.

Two experimental studies powered to detect differences reported that there were no significant changes in clinical outcomes resulting from their respective interventions: pamphlets and posters promoting vaccination against influenza (Berkhout *et al.*, 2018a); and an interactive web-based intervention educating about human papillomavirus vaccine to prevent human papillomavirus infection and related cancers (Dempsey *et al.*, 2019). No studies reported harm or adverse events resulting from waiting area interventions.

Of the experimental studies, benefits achieved immediately after intervention exposure had typically declined at follow-up (i.e. 1-, 3- or 6-month timepoints) (Chan *et al.*, 2010; Schwarz *et al.*, 2013; Grant *et al.*, 2019; Ha *et al.*, 2019; McIntyre *et al.*, 2020a,b, 2021), with two exceptions where benefits were retained at 3 months (Houry *et al.*, 2011; Asthana *et al.*, 2018). One observational study found that consumers recalled

viewing the educational video in waiting areas at the 3-month follow-up and concluded that the video was a memorable communication tool (Besera *et al.*, 2016).

DISCUSSION

This comprehensive scoping review of the literature has identified that there is a rapidly growing evidence-base investigating the use of health service waiting areas for contributing to health literacy and related outcomes. Articles set in primary care, community health and hospital outpatient waiting areas were identified confirming that this is common across different healthcare settings. An increase in publications over the past 2–3 years from many countries, indicates that globally healthcare providers are considering and evaluating ways to use their health service waiting areas to benefit consumers.

A key finding of this review was that diverse interventions targeting health literacy-related outcomes such as health knowledge, behaviours, clinical outcomes and health service utilization are being trialled in outpatient and primary care waiting areas. Interestingly, only one study was identified that used a common or validated health literacy-specific measure: REALM-SF (Khan *et al.*, 2011). The REALM-SF has limitations with its psychometric properties and assesses a narrow range of skills (i.e. reading ability) which may not be reflective of contemporary conceptualizations of health literacy (Jordan *et al.*, 2011). No studies were identified which used contemporary multi-dimensional measures of health literacy (such as the Health Literacy Questionnaire). Also of note, no articles were identified which targeted waiting areas within a broader health literacy responsiveness intervention. This indicates several considerations for future health literacy-related research in waiting areas, including: using health literacy-specific measures to directly measure health literacy; selecting appropriate and contemporary health literacy measures; and developing comprehensive interventions which target all components of the health literacy environment.

Most commonly, waiting areas are being used to deliver education about health conditions or for health promotion purposes via audio-visual and interactive digital platforms. Most studies reported positive findings. Digital interventions or mixed interventions (i.e. more than one type of health tool) show promise for significantly improving health knowledge, behaviours and clinical outcomes. This aligns with a systematic review by Friedman *et al.* (Friedman *et al.*, 2011) which found that use of computer technology was an effective teaching strategy for patient education and that using multiple strategies may both be viable and enhance outcomes. However, in our review we found that

Table 1: Summary of intervention studies and quality improvement projects

Study	Health literacy intervention	Health topic	Methods used to evaluate intervention	Outcome
Alnasser et al. (2018)	Audio-visual health information via tablet	Breastfeeding	Survey—intention to breastfeed	+
Arora et al. (2013)	Health information via interactive platform in computer kiosk	Cancer screening	Survey—readiness to change and intention to change behaviour	+
Asthana et al. (2018)	Verbal and written health information provided by medical student volunteers	Heart failure	Quiz—to check understanding of condition and self-management strategies Healthcare utilization—ED revisits, hospital readmissions, hospital LOS	+ *
Aydin et al. (2021)	Audio-visual health information via television monitors	Respiratory inhaler technique	Observation—inhaler technique using reliable scale	+ *
Bailey et al. (2016)	Health information via interactive platform on tablet	Sexual health	Questionnaire—motivation, intention, beliefs, sexual practices, health-related quality of life, health service use Audit—STI diagnoses or suspected diagnoses recorded in clinical record	-
Berkhout et al. (2018b)	Written health information via posters and pamphlets	Influenza vaccination	Audit—vaccination status extracted from the health insurance fund records	-
Bertholet et al. (2020)	Health information via interactive platform on tablet Written health information via poster to encourage use of tablet and human prompt to use tablet	Substance use	Audit—electronic data recording screening and intervention use Questionnaire—acceptability of intervention	+
Braam et al. (2012)	Health information via interactive platform on tablet	Salt intake	Questionnaire—knowledge of salt and effect on health	+ *
Callegari et al. (2021)	Health information via interactive platform on tablet and summary print out	Reproduction and contraception	Survey—experiences of programme, knowledge and self-efficacy regarding reproductive health Audit—website analytic data	+ *
Cardoso et al. (2019)	Verbal health information provided by medical students Written health information via booklets	Sleep hygiene	<i>No formal evaluation described</i> —anecdotal observations	+ ?
Chan et al. (2010)	Audio-visual and written health information and verbal health information provided by educator	Stroke	Quiz—stroke-related knowledge	+ *
Chan et al. (2015)	Audio-visual, verbal, written and combination health information	Stroke	Quiz—stroke-related knowledge	+ *
Chaves et al. (2020)	Verbal health information provided by nursing students	Healthy lifestyle and hypertension self-management	<i>No formal evaluation described</i> —anecdotal observations	+ ?
Dempsey et al. (2019)	Health information via interactive platform on a tablet	Human papillomavirus vaccination	Survey—intention to receive vaccine Audit—vaccine uptake in clinical record	-
Dineley et al. (2018)	Audio-visual health information on a tablet	Contraception	Survey—patient knowledge of contraceptive options and choices Survey—patient and clinician acceptability of video	+ *
Dowling et al. (2019)	Written health information via infographic poster	Medical imaging	Survey—beliefs about CT scans and willingness to discuss scan with doctor	+

Table 1. Continued

Study	Health literacy intervention	Health topic	Methods used to evaluate intervention	Outcome
Eubelen <i>et al.</i> (2011)	Audio-visual health information via television with loudspeakers	Tetanus vaccination	Audit—vaccine prescriptions collected by five local pharmacists	+
Giannitsioti <i>et al.</i> (2016)	Written health information via leaflet	Antibiotic use	Survey—opinions about antibiotic use and quality of information provided	+
Ginat and Christoforidis (2018)	Written health information via leaflet	Medical imaging	Survey—assess patient understanding of MRI scan procedure and opinions about intervention	+
Grant <i>et al.</i> (2019)	Health information via interactive platform on tablet	Health communication	Survey—autonomy, self-reported involvement in care	+
Ha <i>et al.</i> (2019)	Audio-visual health information on tablet	Chronic hepatitis B	Survey—knowledge of chronic hepatitis	+
Hellmers <i>et al.</i> (2016)	Audio-visual health information via interactive platform on tablet	Parkinson's disease	Survey—knowledge of Parkinson's disease medication	+
Hendricks <i>et al.</i> (2020)	Health information via interactive platform	Human immunodeficiency virus	Survey—knowledge of HIV prevention, treatment and cure	+
Highland <i>et al.</i> (2021)	Audio-visual health information on tablet	Pain	Survey—rate information and educational approach	+
Houry <i>et al.</i> (2010, 2011)	Written health information and resources on handouts	Intimate partner violence, and substance dependence	Survey—self-reported engagement with community resources/health services	+
Hughes <i>et al.</i> (2015)	Verbal health information provided by radiographers using a computer-based tool	Radiotherapy	Survey—open text responses on information	+
Ismail <i>et al.</i> (2019)	Written health information on leaflet	Arthritis	Survey—willingness to taper drugs and feedback about leaflet	+
Kamimura <i>et al.</i> (2017)	Verbal health information and support in a group provided by students	Women's health and healthy lifestyle	Survey—health consciousness, health information seeking behaviour, health attitude and interest in attending a women's health class in the future	+
Khan <i>et al.</i> (2011)	Health information via interactive platform on computer	Diabetes	Clinical outcome measures Survey—health literacy, self-management, knowledge and self-efficacy	+
Kharsany <i>et al.</i> (2010)	Verbal and written health information in group provided by counsellors	Human immunodeficiency virus	Clinical outcome measures—HIV screening using rapid antibody assays	+
Krebs <i>et al.</i> (2019)	Written health information on poster	Health service processes	Survey—acceptability and usefulness of poster	+
Kripalani <i>et al.</i> (2019)	Written health information via handbook	Genetic testing	Survey—knowledge and opinions about intervention	+
Kuhrik <i>et al.</i> (2010)	Verbal health information provided by nursing staff	Cancer care	<i>No formal evaluation described</i> —anecdotal observations?	+
Lavaerts (2019)	Audio-visual health information via television monitors	Medical imaging	Survey—knowledge of role of radiologist	+
Leijon <i>et al.</i> (2011)	Health information via interactive platform on computer kiosk	Physical activity	Survey—physical activity scores	+
McIntyre <i>et al.</i> (2018)	Audio-visual health information on tablets	Hypertension	Survey—perceived video acceptability, utility and motivational behaviour change with different types of videos	+

Table 1. Continued

Study	Health literacy intervention	Health topic	Methods used to evaluate intervention	Outcome
McIntyre <i>et al.</i> (2020a,b, 2021)	Audio-visual health information on tablets	Cardiovascular disease	Survey—self-reported behaviours, motivation to improve lifestyle, self-reported lifestyle changes	+
McNab and Skapetis (2019)	Audio-visual health information on DVD/television	Oral health	Survey—oral health knowledge and behaviour	+ *
Merck <i>et al.</i> (2012)	Audio-visual health information on tablet	Medical imaging	Survey—knowledge about CT imaging and preferences	+ *
Naeem <i>et al.</i> (2019)	Audio-visual health information on a television monitor Written health information on handout	Relaxation techniques for mental well-being	Self-reported clinical outcome measures— anxiety, depression, perceived well-being, self-reported disability	+ *
Natt <i>et al.</i> (2017)	Written health information on pamphlet	Organ donation	Survey—feedback on pamphlet, emotional response to information Audit—registration numbers from donor registry	+
Neumann <i>et al.</i> (2018)	Audio-visual health information on television monitor Written health information on posters	Human immunodeficiency virus	Clinical outcome measures—viral load suppression Audit—clinic attendance, medication prescription documented in record indicating treatment initiation	+
Patino <i>et al.</i> (2019)	Audio-visual health information on tablet Written health information on handout	Medication	Observation—time in clinic Survey—evaluate knowledge and experience of appointment	+ *
Pawar <i>et al.</i> (2016)	Written health information on bulletin board Audio-visual health information on television Verbal health information provided by nursing staff	Healthy lifestyle	Patient survey—self reported behaviour changes Provider survey—perceptions about initiative	+
Pendleton <i>et al.</i> (2010)	Health information via interactive platform on computer kiosk	Healthy lifestyle	Audit—data collected in kiosk	+
Pereira <i>et al.</i> (2017)	Audio-visual health information via electronic tool	Smoking cessation	<i>Not reported</i>	-
Perera <i>et al.</i> (2021)	Audio-visual health information on tablet (slide presentation)	Antibiotic use	Survey—expectations about antibiotic prescription for upper respiratory tract infections and self-reported receipt of antibiotics prescription Audit—check if prescription for antibiotics was dispensed via national database	+
Pineda-del Aguila <i>et al.</i> (2018)	Health information via interactive platform in computer kiosk	Diabetes	Clinical outcome measures—blood test	+ *
Price <i>et al.</i> (2010)	Health information via interactive platform on computer kiosk	Antibiotic use	Survey—assessed knowledge of acute respiratory infections, effectiveness of antibiotics and patients' desire for antibiotics	+
Pydah and Howard (2010)	Written health information on poster	Medical chaperones	Survey—knowledge of chaperones and frequency of accessing chaperones	+
Reid <i>et al.</i> (2013)	Verbal health information provided by diabetes nurse	Diabetes	Survey—feedback on education <i>Not reported how changes to medications were evaluated</i>	+

Table 1. Continued

Study	Health literacy intervention	Health topic	Methods used to evaluate intervention	Outcome
Schwarz <i>et al.</i> (2013)	Health information via interactive platform on computer kiosk	Sexual health	Survey—knowledge and use of contraception and feedback on intervention	+*
Shah <i>et al.</i> (2016)	Audio-visual health information on television monitor	Oral health	Survey—knowledge of oral health	+*
Shepherd <i>et al.</i> (2016)	Audio-visual health information on tablet Written health information on pamphlet and via website	Health communication	Survey—usefulness information for health decision-making Interviews—patient experience and acceptability	+
Snead <i>et al.</i> (2014)	Audio-visual health information on television monitor	Sexual health	Secondary analysis of self-reported health behaviours and psychosocial factors	+*
Tannenbaum <i>et al.</i> (2015)	Health information (<i>type and mode of delivery not reported</i>)	Diagnostics and medication use	Survey—knowledge of tests and treatments	+*
Tingey <i>et al.</i> (2013, 2014)	Audio-visual health information on television monitor	Rheumatology support	Audit—attendance at education day was tracked by billing codes	–
Vangu <i>et al.</i> (2019)	Audio-visual health information on television monitor	Medical imaging	Survey—feedback on video	+
Yacoub and Mehta (2011)	Health information via interactive platform	Multiple myeloma	Survey—knowledge after the programme and patients' acceptance of the e-notebook format	+

CT, computerized tomography; ED, emergency department; HIV, human immunodeficiency virus; LOS, length of stay; MRI, magnetic resonance imaging; STI, sexually transmitted infection.



Indicates overall positive outcomes/trends.



Indicates overall neutral outcomes/trends i.e. minimal change in primary outcomes.



Indicates overall negative outcomes/trends i.e. no benefit or change in primary outcomes.



Indicates statistical significance in at least one outcome relevant to this review. Please refer to [Supplementary File 5](#) for further details for each article.



Indicates that outcome measures or data analysis methods were not clearly reported which suggests that reported findings may be anecdotal observations not empirical findings.

benefits may be short lived based on a small number of studies which re-assessed outcomes at 3–6 months and in most cases reported that benefits had declined. This suggests that further research is needed to determine how to optimize the longevity of benefits from waiting area interventions.

The varied waiting area intervention types identified in this review may be explained by the diverse consumer populations and settings represented in the included articles. Waiting area interventions were typically tailored to the local context and anticipated needs of consumers. Most waiting area interventions can be classified as ‘complex interventions’, which are often highly dependent on context (Skivington *et al.*, 2021). It is recommended that complex interventions develop and test programme theory: a description of how the intervention is expected to lead to its effects and under what conditions (Skivington *et al.*, 2021). However,

most of the included intervention studies lacked this. Programme theory can benefit intervention development, implementation and evaluation by making the intervention and its mechanisms explicit, promoting shared understanding of the intervention amongst stakeholders, and considering how context may influence the intervention (Van den Broucke, 2012; Skivington *et al.*, 2021). Future intervention studies in waiting areas may benefit from developing and testing programme theory.

Increased consumer participation in future waiting area design and intervention development is necessary. A limited number of studies focussed on consumer perspectives, reported that available health resources were not fully satisfying consumer needs and could be improved. Problematically, relatively few articles reported consumer input during health tool development. This is a major oversight within existing

literature as consumer input is considered essential for producing quality health information ([Patient Information Forum, 2013](#)). Future research in this field must involve partnership with consumers (i.e. via codesign). Based on the findings of qualitative and observational studies in this review, partnering with consumers would be of benefit when: determining how waiting areas could be best used to benefit health literacy and related outcomes in a particular setting, designing the waiting area environment so that it is responsive to consumer needs and accessible, and also during the development of health resources for waiting areas.

Strengths and limitations

Strengths of this comprehensive scoping review include the systematic and broad search of the literature designed by a health sciences librarian, screening and data extraction by two independent reviewers, and a third reviewer checked primary data tables to enhance rigour. Additionally, studies were included across a range of settings. A limitation was that empirical studies were excluded if their intervention was not focussed on the waiting area. For example, excluded studies sometimes used the waiting area as one part of an intervention with multiple components [i.e. waiting area posters plus clinician training plus reminder letter ([Hussain et al., 2021](#))]. We acknowledge that such interventions, which incorporate the waiting area but are not solely focussed on the waiting area, could also be effective.

CONCLUSION

This scoping review found that health service waiting areas are being used in diverse ways to contribute to consumer health literacy-related outcomes. Many interventions show promise for benefitting consumer health outcomes; however, further research is needed to ascertain the most effective approaches in outpatient and primary care settings. Future studies would benefit from incorporating a theory-informed approach and increased consumer participation to inform intervention development.

Supplementary Material

Supplementary material is available at *Health Promotion International* online.

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Conflict of Interest

Three authors of this scoping review—Cassie E. McDonald, Louisa J. Remedios and Catherine L. Granger—were also authors on three included articles. Two independent reviewers (co-authors or acknowledged contributors) who were not involved in the included articles were responsible for the screening, data extraction and data checking of these articles. The other authors declare that there is no conflict of interest to disclose.

Ethical Approval

As this is a review, ethical approval was not required.

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