How have interventions targeting pregnant women from refugee, migrant and culturally and linguistically diverse backgrounds living in high-income countries been developed or tailored to meet community needs? A systematic scoping review of stillbirth-related literature

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How have interventions targeting pregnant women from refugee, migrant and culturally and linguistically diverse backgrounds living in high-income countries been developed or tailored to meet community needs? A systematic scoping review of stillbirth-related literature

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Abstract

Background People from migrant, refugee and culturally and linguistically diverse backgrounds experience significant disparities in pregnancy outcomes compared to the general population, including a higher risk of stillbirth. This study aimed to identify stillbirth-related programs or interventions for pregnant women from culturally and linguistically diverse backgrounds and explore how these interventions have been developed and/or tailored for culturally and linguistically diverse women.

Methods We searched MEDLINE, CINAHL, Embase, and Scopus for articles published from inception to 12 Jan 2023. We included studies that report on the development and/or evaluation of a program or intervention to reduce the risk of stillbirth which has been specifically developed or tailored for pregnant women from culturally and linguistically diverse backgrounds living in high-income countries. Two independent reviewers conducted screening of the articles, data extraction, and quality appraisal. We first summarized the descriptive information of eligible studies using text and tables and then thematically grouped interventions based on approaches to meet community needs and synthesized data qualitatively.

Results We identified 1999 studies from the database search. After removing duplicates and screening for eligibility, 9 studies met our inclusion criteria and were included in the review. Studies were conducted in Australia, the UK, US and Denmark between 1986 and 2021, with multi-ethnic populations ($n=6$) or specific cultural and language groups ($n=3$) (e.g. Pakistani and Indian women; African American and Hispanic population groups). Approaches to tailoring included the use of interpreters and translated materials, linking women to existing community resources and networks and community outreach delivered to women outside of hospital settings. Training of staff in cultural

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competence and multi-component, multiagency interventions addressing the wider social determinants of health and system-based approaches to facilitate access to language services were also identified.

Conclusion While there are currently few targeted interventions for pregnant women from migrant, refugee and culturally and linguistically diverse backgrounds, approaches to cultural tailoring identified in this review can be used as a starting point for effectiveness testing and wider application. Ongoing work is needed to continue to address significant disparities in pregnancy outcomes for minoritised community groups.

Protocol registration The protocol for this review was registered in PROSPERO (CRD42021289321).

Keywords Pregnancy, Stillbirth, Culturally competent care, Refugee, Migrant, Systematic review, Minority Health

Introduction

In high-income countries, people from migrant, refugee and culturally and linguistically diverse backgrounds continue to experience barriers to accessing health services and poorer health outcomes compared to the general population [1, 2]. Estimates of life expectancy and healthy life expectancy at birth, for example, are lower for most ethnic minority groups in countries such as Australia, the United Kingdom (UK), and the United States (US). There are also significant disparities in pregnancy outcomes [3, 4]. In 2016, for example, one-third of the women giving birth in Australia were born overseas [3]. For these women, the risk of stillbirth is 13% higher than for women born in Australia [5]. Similar ethnic disparities have been seen in other high-income setting such as Europe, North America, and New Zealand, with twice the rate of stillbirth in minority ethnic groups or migrant women compared to the women from white ethnicity [6–9].

The World Health Organization recommends 'culturally appropriate' maternal health services in order to improve pregnancy outcomes [10, 11]. Culturally-safe programs that take into account the beliefs, preferences, and values of people are essential to improve the quality of care for pregnant women [11]. They can also address existing barriers including low health literacy and barriers to accessing antenatal care services that have been identified as key contributing factors to the higher rates of stillbirth among overseas-born women [3, 12]. More broadly, research demonstrates the importance of addressing cultural differences in order to optimize intervention effectiveness [13].

There are several interventions to improve outcomes during pregnancy; a Cochrane review of interventions to reduce the risk of stillbirth in pregnant women identified 43 systematic reviews assessing 61 different interventions [14]. However, if any of these interventions were targeted specifically at culturally and linguistically diverse women was unclear. A more targeted scoping review to identify maternity interventions for Black, Asian and Minority Ethnic women in the UK highlighted the lack of interventions, identifying only five studies [4]. However, this review was specific to the UK and limited by descriptive reports of individual studies rather than a thematic evidence synthesis. Another systematic review which examined evidence on the effects of interventions to provide culturally-appropriate maternity care for ethno-linguistic or religious groups on use of skilled care before, during, and after birth found large improvement in women using skilled maternity care. Of the 15 studies, 10 employing models of culturally-appropriate service delivery, practice, or providers had a positive impact on care-seeking outcomes, particularly those targeting prenatal care [11].

Building on previous reviews, the aims of this review were to explore how interventions to reduce the risk of stillbirth in high-income countries have been developed and/or tailored for culturally and linguistically diverse women.

Methods

We registered the study protocol with PROSPERO (CRD42021289321) and reported the study in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist [15].

Eligibility criteria

Eligible studies reported on the development and/or evaluation of a program or intervention specifically developed or tailored for pregnant women from migrant, refugee or culturally and linguistically diverse backgrounds living in high-income countries and with a stated aim to reduce the risk of stillbirth. See Table 1 for definitions. For this review, we included all studies for which the authors describe participants as being from migrant, refugee, or culturally and linguistically diverse backgrounds and/or had at least 50% of program participants identifying as being from migrant, refugees, or from culturally and linguistically diverse backgrounds. We included all primary research study types that met the above eligibility criteria, but excluded other systematic reviews, simple literature reviews, study protocols and

Table 1 Definitions of key terms

Culturally and linguistically diverse: Groups and individuals who differ according to religion, language, and ethnicity [16].
Refugee: People who have crossed an international border to escape war, conflict, or violence to find safety in a different country [17].
Migrant: People who have moved away from their usual country of residence temporarily or permanently for various reasons [18].

conference abstracts as well as studies that were not published in English.

Information sources and search strategy

We searched MEDLINE, CINAHL, Embase, and Scopus for articles published from inception to 12 January 2023. Search terms were developed in consultation with an Information Specialist at the University of Sydney, and included terms related to pregnancy, culture, health education and stillbirth (see Appendix 1 for a full list). We then converted the search terms from MEDLINE to other databases using the Polyglot Search Translator [19].

Study selection process

Two reviewers independently screened all titles and abstracts using Covidence (an online screening and data extraction tool) before retrieving full texts. Full texts were again screened for eligibility by two independent reviewers (SS, GJ). Any disagreements were resolved through discussion with a third reviewer (DMM).

Data collection process and data items

Two reviewers extracted data (SS, GJ) from included studies independently using a modified version of the 'Cochrane data collection form for intervention reviews for RCTs and non-RCTs' [20]. We extracted basic information about each study including study characteristics, type of study, population description, setting, method of recruitment, total number of participants, outcomes, results and key conclusions of study authors. We also specifically extracted data related to the duration and details of the program or intervention described in each study, including how programs were developed or tailored for culturally and linguistically diverse groups.

Quality appraisal and synthesis of results

We assessed the quality of the included studies using standardized critical appraisal instruments from the Joanna Briggs Institute (JBI; https://joannabriggs.org/ebp/critical_appraisal_tools). Any disagreements between reviewers were resolved through discussion with a third reviewer. We classified scores > 70% as high quality, scores between 50 and 70% as medium quality and scores < 50% as low quality. We included all studies regardless of the quality of included studies and summarized the descriptive information of eligible studies using text and tables. We thematically grouped interventions based on approaches to meet community needs, and synthesized data qualitatively.

Patient and public involvement

A researcher with personal lived experience (GJ) provided feedback on the protocol, assisted in screening, data extraction, assessing risk of bias, and provided critical review and feedback on the manuscript.

Results

Study selection

1999 studies were identified from the database search. After removing 717 duplicates, 1282 titles and abstracts were screened for eligibility. Of these, 1177 studies were excluded. 105 full texts were reviewed of which 96 were excluded. Nine studies met our inclusion criteria and were included in this systematic review (Fig. 1).

Study characteristics

Of the nine studies included in the review, five were randomised controlled trials (RCTs) [21–25], two were mixed method studies [26, 27], one was an interrupted time series study [28] and one was a descriptive study [29]. The studies included in this review were conducted in Australia [24, 26, 28], the UK [22, 23], US [21, 25, 29] and Denmark [27] between 1986 and 2021 (Table 2).

Across the six studies which reported the mean age of participants, this ranged from 20 to 30 years. In eight of the nine studies, participants were recruited from hospital/clinic settings [21–24, 26–29], while one study recruited from a community setting [25]. Studies were often not specific to one cultural or language group but were conducted broadly with culturally and linguistically diverse/multiethnic populations or with migrants and refugee women. This included studies conducted in Australia [24, 26, 28], the UK [23], Denmark [27] and the US [25]. Other studies in the UK were conducted with Pakistani and Indian women [22], while additional studies in US were conducted specifically with African American and Hispanic population groups [21, 29]. Population groups were often described as being "low income" or "disadvantaged" as well as in terms of culture/language [23, 25].

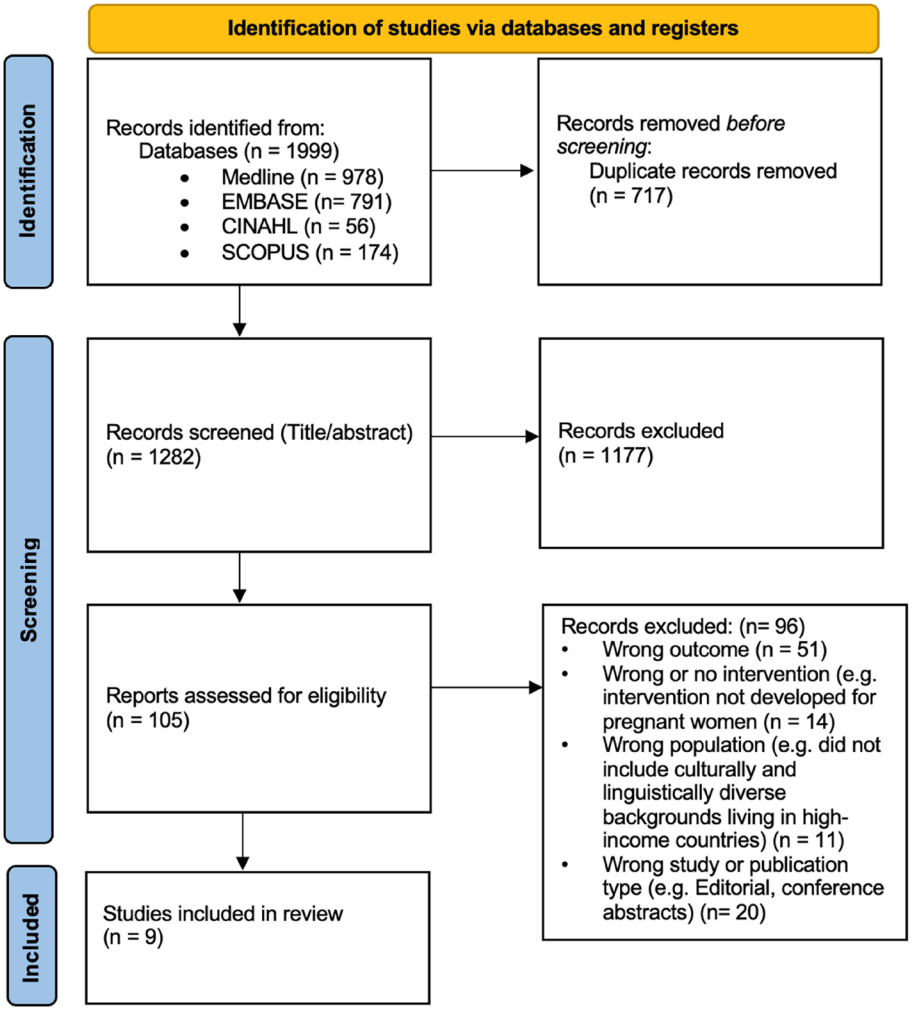

Fig. 1 PRISMA diagram showing flow of studies into the review

Quality appraisal

Quality appraisal of each study is shown in Tables 1–4 in Appendix 2. We evaluated five of the nine studies using Joanna Briggs Critical Appraisal checklist for randomised controlled trials [21–25]. Overall, none of the five RCTs fulfilled all the Joanna Briggs Institute criteria. Two RCTs met 11 and 12 of the 13 criteria. Two studies met 8 criteria, and one study met only two criteria.

One study used Joanna Briggs Institute checklist for Quasi-experimental studies [28], two using Mixed Method Appraisal Tool (MMAT) [26, 27], and one using MMAT quantitative descriptive tool [29], and were rated as high quality overall.

Interventions

Intensive and integrated approaches

Studies often reported on intensive and integrated intervention approaches which sought to provide better access to services and information closer to home, often on an individualised basis. A majority of interventions addressed multiple risk factors for stillbirth and the (interconnections between) the social determinants of health.

Multi-component, individualised interventions Most articles reported on interventions which were individualized to each participant, including individual counseling and case-management. Kenyon et al. [23], for example, tested the effectiveness of lay support for improving pregnancy outcomes in disadvantaged families. The intervention involved training pregnancy outreach workers to deliver individual case management for nulliparous women. This included training related to encouraging women to attend their antenatal appointments, making healthy lifestyle changes such as smoking cessation, providing social and emotional support, and

Table 2 Summary details of included studies

Author, Year	Aims	Country and study location	Study population	Sample size	Study type	Interventions and elements of cultural tailoring	Study outcomes	Quality appraisal rating
Kenyon, 2016 [23]	To seek evidence of effectiveness of lay support to improve maternal and child outcomes in disadvantaged families	UK; 3 maternity trusts in West Midlands in UK	Disadvantaged multi-ethnic population	1324	Randomised controlled trial	Lay support for improving pregnancy outcomes Translation and interpreting: The study reported that interpreters were available to help women complete study questionnaires if needed	Perinatal mortality (Secondary outcome)	High
Lumley, 2006 [24]	To recruit women into a randomised trial of pre-pregnancy intervention in a community setting where mothers were at higher risk of a poor outcome	Australia; Newly established pre-pregnancy service in inner urban Melbourne	Women at high risk of poor outcomes (Migrants, Refugees, public housing and low income families)	786	Randomised controlled trial	Pre-pregnancy health Information and Counselling Translation and interpreting: Study midwives providing individualized counseling were accompanied in their home visits by interpreters when needed	Perinatal deaths (Secondary outcome)	High
McEnery, 1986 [22]	To assess the effects of a special antenatal education program in subsequent outcomes and infant health	UK; Clinic near doctor's surgery	Women born in Pakistan or India and living in the UK	69	Randomised controlled trial	Special antenatal education program for Pakistani and Indian women living in UK Translation and interpreting: Interpreters relayed educational 'lectures' in Urdu Tailoring for health literacy and culture: the design of intervention took into account religious ethnic customs of Pakistani and Indian women Cultural concordance and competence: included Asian general practitioners in the delivery of educational interventions	Perinatal mortality and infant health (Does not explicitly say whether primary or secondary)	Low
O'Connor, 2007 [25]	To examine the efficacy of brief intervention as a technique to help pregnant women achieve abstinence from alcohol. A second aim was to assess newborn outcomes as a function of the brief intervention	US; Community—Public Health Foundation Enterprises Management Solutions Special Supplemental Nutrition Program for Women, Infants, and Children (PHFE-WIC) Centers	Low-income minority women, Black, Hispanic	345	Randomised controlled trial	Brief intervention, an extension of individualised nutrition counselling and education Translation and interpreting: All outcome measures were developed in two languages (English and Spanish) at a fourth grade reading level and help was available to those women who needed help with reading the measures	Newborn outcome: gestation, birth weight, birth length, and viability: fetal mortality (Secondary outcomes)	Medium
Rasmussen, 2021 [27]	To address ethnic and social disparity in stillbirth and infant health by improving management of pregnancy complications	Denmark; Maternity wards in hospital	Immigrants	1304	Mixed-methods (cross-sectional survey data and qualitative data)	Training sessions for midwives and health education for women Translation and interpreting: Leaflet and app were developed in six main languages (Danish, English, Arabic, Somali, Turkish, Urdu) representing the ethnic minority groups in Denmark Tailoring for health literacy and culture; and cultural concordance and competence: developed interventions based on principles of cultural competence, cultural health capital, and health literacy	A reduction in severe maternal pregnancy complications and improvements in indicators of perinatal health at birth (Secondary outcome)	High

Table 2 (continued)

Author, Year	Aims	Country and study location	Study population	Sample size	Study type	Interventions and elements of cultural tailoring	Study outcomes	Quality appraisal rating
Reguero, 1994 [29]	To bring prenatal care to the underserved neighbourhoods of New Haven, and to identify the substance-abusing pregnant woman and deliver a continuum of services including prenatal care, counseling, acupuncture, referral to a drug treatment program, and social services	US; A mobile van clinic in unserved neighbourhood of New Haven	Black, Hispanic, Other	5234	Descriptive study	Mobile van clinic that travelled to impoverished neighbourhood to provide prenatal care This study did not provide any specific information on development/tailoring of their intervention for culturally and linguistically diverse groups	Infant and perinatal mortality outcomes (Although not explicitly mentioned)	Low
Sina, 2018 [26]	To describe the development of an integrated, pre-pregnancy management strategy to improve pregnancy outcomes among women of reproductive age with diabetes in a multi-ethnic district	Australia; South West Sydney Hospital	Culturally and linguistically diverse (CALD) background	147	Mixed-methods (narrative literature review, chart review, interviews, focus groups)	Pre-pregnancy management strategy which supported community connections through a peer support network and web chat in social media which enabled the sharing of experiences and services available Translation and interpreting: Web-based education programs including pre-pregnancy management information and links to already existing YouTube channels in different languages (e.g. Arabic and Vietnamese) were provided Cultural concordance and competence: workshops for healthcare professionals that focused on interpersonal methods for communicating with patients including culturally and linguistically diverse women	Pregnancy outcomes (malformations and stillbirth)	High
Subramanian, 2012 [21]	To address the impacts on pregnancy and neonatal outcomes of an integrated education and counseling intervention to reduce Behavioural and Pyschosocial Risks (BPSR), as well as the contributions of other psychosocial and biomedical risks	US; 6 Prenatal clinics in Washington, DC	African American women	1025	Randomised controlled trial	Integrated education and counselling intervention to reduce behavioural and psychological risk on pregnancy and neonatal outcomes Cultural concordance and competence: Pregnancy advisors had experience in counselling minority populations and had received training from research team members with expertise in cultural competence	Pregnancy outcomes: miscarriage, live birth, perinatal death (Secondary outcome)	Medium
Yelland, 2020 [28]	To report refugee women's access to hospital-based antenatal care over the period of health system reforms	Australia; Publicly funded metropolitan maternity hospitals and community based early childhood health services	Migrants, Refugees	42,142	Interrupted time series design	Health system reform to improve refugee women's access hospital based antenatal care Translation and interpreting: Cultural tailoring included enhancing the engagement of professional interpreters by improving interpreter service access in birthing suites, as well as improving access to language services during induction of labor	Stillbirth (Secondary outcome list in study protocol)	High

managing housing and mental health issues. Lumley et al. [24] developed pre-pregnancy health interventions for women at high risk of poor health outcomes (including migrants and refugees) who were attending local maternal and child health centers in inner-urban Melbourne, Australia. All women received a home visit by a study midwife to identify existing health, social or lifestyle problems and discuss their next pregnancy.

Subramanian et al. [21] developed an integrated education and counselling intervention to reduce behavioural and psychological risk on pregnancy and neonatal outcomes among low-income African American women. The risks addressed included cigarette smoking, exposure to environmental tobacco smoke, depression and intimate partner violence. Women received individualized counseling sessions which addressed the specific risks that they reported, with sessions provided at each routine antenatal care visit. The 'pregnancy advisors' and women developed a "plan for homework to reinforce the intervention in the women's real-life circumstances".

O'Connor et al. [25] developed a brief intervention which involved nutritionists providing Black, Hispanic and White pregnant women who reported drinking alcohol with 10 to 15-min individualized counseling sessions using a scripted manual as an extension of nutrition education that these women were already receiving. A standardized intervention workbook included education and feedback, goal setting, contracting and cognitive behavioural procedures. Rasmussen and colleagues' [27] intervention similarly included individualized dialogue meetings facilitated by the local project midwife using a written manual as a guide for sharing experiences and reflecting on integrating and implementing the learnings from the training into practice.

Home or community based care Several interventions addressed physical barriers to access through home visits [23, 24] or community-based pregnancy care [3]. Reguero and colleagues [29], for example, described 'Project MotherCare', a mobile van clinic that traveled to impoverished neighborhoods in New Haven, USA with a high proportion of Black and Hispanic groups. Implemented as the hospital's response to high infant and perinatal death rates in the area due to the inaccessibility to healthcare facilities, the clinic van consisted of examination rooms with healthcare teams who provided a range of healthcare services including the first and return prenatal visit care. The mobile van clinic also included a special supplemental food program for women and infants and access to a children's nutritionist.

Referrals and community connections Three studies reported facilitating referrals and community connections as an element of their interventions. Lumley et al.'s [24] home visits by study midwives included linking women to relevant resources and networks in the community such as language-specific community groups. Midwives also supported referral to additional services if needed and organized participants' immunization. McEnery and colleagues [22] provided participants with information on how to access culturally acceptable health services while Sina et al. [26] supported community connections through a peer support network and web chat in social media which enabled the sharing of experiences and services available.

Interventions were also promoted by local community organisations, leaders and interpreters (see, for example [22]).

Tailoring communication

Translation and interpreting Six interventions included translated materials and/or interpreter services. In the study by Lumley et al. [24], for example, study midwives providing individualized counseling were accompanied in their home visits by interpreters from Melbourne's central health interpreter service. McEnery and colleagues' [22] antenatal education program for pregnant Pakistani and Indian women living in UK similarly involved interpreters who relayed educational 'lectures' in Urdu, while Rasmussen and colleagues' [27] leaflet and app were developed in six main languages (Danish, English, Arabic, Somali, Turkish, Urdu) that represented the ethnic minority groups in Denmark. Sina et al. [26] provided web-based education programs including pre-pregnancy management information and links to already existing YouTube channels in different languages (e.g. Arabic and Vietnamese).

Yelland et al. [3] evaluated health system reform to improve refugee women's access to hospital-based antenatal care. The Bridging the Gap intervention used a whole-of-system approach to improve care for women using multiple improvement strategies implemented in health services. This included enhancing the engagement of professional interpreters by improving interpreter service access in birthing suites, as well as improving access to language services during induction of labor.

Two studies reported specifically on language support related to data collection; Kenyon et al. [23] reported that interpreters were available to help women complete study questionnaires, while O'Connor et al. [25] noted

that all outcome measures were developed in two languages (English and Spanish) at a fourth grade reading level and help was available to those women who needed help with reading the measures.

Tailoring for health literacy and culture Beyond translations, four studies explicitly reported tailoring communication in their interventions to address health literacy and/or culture. Rasmussen and colleagues [27], for example, reported developing their interventions based on the principles of cultural competence, cultural health capital, and health literacy. This included a leaflet and mobile phone application with information about symptoms of pregnancy complications, including illustrations and descriptions in simple lay language. Their app included more detailed information with an audio function. McEnery and colleagues [22] developed a special antenatal education program for pregnant Pakistani and Indian women living in UK which included 12 weekly lectures about pregnancy, fertility, childbirth and rearing a child. The lectures were delivered by a midwife, nutritionist or a health visitor in a health clinic, were supported by evidence and encouraged discussion. The design of the intervention was stated to take into account the religious ethnic customs of Pakistani and Indian women. In the study conducted by Lumley et al. [24] women were provided with a 'WAIT, STOP, and GO' reminder card (e.g. WAIT: wait for three months after using contraceptive pills; STOP: cigarettes, alcohol, and other over the counter drugs and medications; GO: regularly for antenatal checks).

Cultural concordance and competence Five studies reported on cultural concordance and/or cultural competence training for staff involved in the delivery of interventions. Rasmussen and colleagues [27], for example, provided training sessions for antenatal care midwives on intercultural communication and competence with the aim to strengthen communication between pregnant women and midwives about pregnancy-related complications. Subramanian et al. [21] similarly used pregnancy advisors who had experience in counselling minority populations and who had received training from research team members with expertise in cultural competence. Sina et al.'s [26] integrated pre-pregnancy management strategy included workshops for healthcare professionals that focused on interpersonal methods for communicating with patients including culturally and linguistically diverse women and other healthcare professionals. Finally, McEnery and colleagues [22] prioritized cultural concordance through the inclusion of Asian general practitioners in the delivery of their educational intervention, including in the education of mothers in parentcraft topics (skills and knowledge related to child rearing).

System reforms

Yelland et al. [3] evaluated health system reform to improve refugee women's access to hospital-based antenatal care. The Bridging the Gap intervention used a whole-of-system approach to improve care for women using multiple improvement strategies implemented in health services. The strategies included new ways to reform data systems for improving ascertainment of refugee women (including mother's country of birth, year of arrival in Australia, preferred language, and need for an interpreter in routinely collected hospital data). In terms of tailoring the intervention, they formed multidisciplinary, multiagency partnerships (including hospital, maternal and child health services, additional maternity hospital) who then frequently met in their regions to co-design initiatives for improving maternal and child health outcomes for refugee families by setting local priorities for change and coming up with a new idea and next steps.

Discussion

This study aimed to identify stillbirth-related programs or interventions for pregnant women from migrant, refugee and culturally and linguistically diverse backgrounds and explore how these interventions have been developed and/or tailored. We identified few interventions ($n=9$) in this space. Although there was often limited description of the process of development or cultural tailoring of interventions for these groups, our review did identify some common approaches. Intensive and integrated intervention approaches sought to provide better access to services and information closer to home outside of hospital settings, often on an individualised basis and with links to existing community resources and networks. A majority of interventions addressed multiple risk factors for stillbirth and the (interconnections between the) social determinants of health. In terms of communication, linguistic tailoring (e.g. through the use of interpreters and translated materials) was commonly used, with some additional efforts to tailor to the health literacy needs of participants and/or to address elements of culture, including through cultural concordance and/or training in cultural competence. Whole-of-system approaches to improve care for women using multiple improvement strategies implemented in health services were also identified, but were less common.

We identified only 9 studies reporting on the development and/or evalaution of an intervention for culturally and linguistically diverse, migrant or refugee pregnant women. This is in contrast to a overview of Cochrane systematic reviews on antenatal interventions for preventing stillbirth, fetal death, or perinatal death, which identified 43 systematic reviews of randomised controlled trials [14]. This highlights a large and important gap in the

volume of research conducted with general populations of pregnant women as compared to culturally and linguistically diverse and, or migrant and refugee groups. In line with this, a scoping review conducted in the UK of antenatal interventions for Black, Asian and Minority Ethnic pregnant women who were at high risk of poor birth outcomes also found very few interventions for Black, Asian and Minority Ethnic pregnant women, and a lack of detailed description on how the interventions were tailored to different cultural groups [4]. Together, these reviews highlight the need for focussed attention to the development and evalaution of interventions for culturally and linguistically diverse, migrant and refugee populations, as well as the need for greater dissemination and more transparent reporting, including details of how interventions and programs are adapted and developed to meet the diverse needs of communities. Advancing health equity is considered the quintuple aim for health care improvement [30]. To address this fifth aim, it is not only necessary to identify disparities but also design and implement evidence-based interventions to reduce them [30] such that universal service platforms are supplemented with efforts to engage populations especially at risk of stillbirth [31]. Sustained support and funding is needed to achieve this.

Despite the small number primary research studies included in this review, through our thematic analysis we were able to identify broad intervention approaches employed across studies. This complements and builds on other reviews exploring tailoring for culturally and linguistically diverse communities in other clinicial contexts. In the context of chronic disease, for example, a systematic review of interventions developed for culturally and linguistically diverse communities found that the most common methods of tailoring interventions included the use of interpreters and language translation [32]. Although the use of professional interpreters can facilitate communication and address the needs of a culturally and linguistically diverse community to some extent, health inequities are only partly explained by disparities in maternity care and communication. Complex social determinants include, for example, poverty, experiences of discrimination, inadequate education, child care, employment and transportation, and poor living conditions [31]. In the context of stillbirth, the cumulative effect of stressful life events has also been identified to play a role [31]. As opposed to the systematic review in the chronic disease space, our review highlighted that interventions were often necessarily multi-component. Approaches included, for example, linking the women with existing networks and resources within the community, considering religious and ethnic customs of different cultural groups while designing the interventions, providing information about accessing culturally acceptable health services and navigating the health system, and developing the interventions which account for and address the social determinants of health. In their review of interventions to provide culturally-appropriate maternity care for ethno-linguistic or religious groups on use of skilled care before, during, and after birth [11] similarly found a multitude of strategies including selecting health care providers who shared cultural and/or linguistic background with service users; employing cultural brokers, mediators or interpreters; providing staff training to improve cultural awareness; incorporating local birthing practices into service provision; adapting the physical or social setting in which a service is provided; and using participatory approaches. Moving forward, additional whole-of-system approaches (such as those described by Yelland et al. [3]) and evalutions are necessary.

The strengths of this review include assessments of studies for inclusion and quality appraisal by two independent reviewers. We also did not have any limits on the cultural groups or high-income countries that we included. This allowed us to assess a broader picture of the interventions available for various cultural groups and geographical locations. However, we included only published studies and studies written in English, which may have introduced language and publication biases. Our focus on stillbirth outcomes in our search strategy was very specific which may explain the small number studies identified. A broader inclusion would likely have identified some other valuable interventions to improve outcomes including stillbirth, including interventions designed to increase access and early and sustained engagement in maternity care and those focused on improving nutrition or screening for fetal growth restriction and detection and management of other morbidities in pregnancy.

Conclusions

Disparities in stillbirth rates reflect a complex interplay of social and political determinants as well as systems of structural inequality, including racism and systematic inequities in opportunities and power [31]. There is a need to continue to invest in culturally responsive and safe intervention design and delivery in line with the Lancet Series on Ending Preventable Stillbirth's call for quality, accessible, culturally responsive, and appropriate care. While there is unlikely to be a single or simple solution, this review provide insights into the process of development and tailoring of multi-component interventions with and for culturally and linguistically diverse pregnant women which can be built on as we continue towards the goal of reducing inequitable disparities in stillbirth.

Supplementary Information

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Supplementary Material 1.

Supplementary Material 2.

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Authors' contributions
SS and DM conceived the idea and developed the protocol. SS searched the electronic databases to identify studies. SS, GJ screened title and abstracts, full-texts, assessed the quality of included studies, and extracted data. All authors were involved in the synthesis of data and manuscript preparation. All authors read and approved the final manuscript.

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Data availability
All data generated or analysed during this study has been included in the published article.

Declarations

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Not applicable.

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Competing interests
The authors declare no competing interests.

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