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Perspectives and preferences on delivery of preconception care in primary care among people of reproductive age and primary care professionals – A mixed methods systematic review

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Abstract

Background

Primary care is central to delivering support for planning and preparing for pregnancy. To explore key considerations around how preconception care could be delivered in primary care, this systematic review aimed to synthesise the literature on perspectives and preferences of primary care professionals and people of reproductive age regarding preconception care content and delivery.

Methods

Five databases (MEDLINE, EMBASE, CINAHL, Web of Science, PsycInfo) and two preprint servers (MedRxiv, BioRxiv) were searched (February 2025). Studies were eligible if they included people of reproductive age and/or primary care professionals, reported perspectives and preferences on content and delivery of preconception care in a primary care setting using quantitative, qualitative or mixed-methods research. Two reviewers independently conducted data extraction and quality assessment. Quality was assessed using the Mixed Methods Appraisal Tool and Joanna Briggs Institute JBI tool. Data analysis used the JBI convergent integrated approach with thematic synthesis. Public contributors were involved in protocol development and interpretation of findings. The review is registered with PROSPERO (CRD420251000878).

Results

The review included 51 studies, conducted in Europe (n = 20), Australia (n = 14), New Zealand (n = 1), USA (n = 12), Africa (n = 3) and Asia (n = 1). The thematic synthesis identified descriptive themes, including: roles and responsibilities around delivering preconception care in primary care, approaches to targeting preconception care in primary care; timing and context of preconception care; support with delivery of preconception care; and systemic needs for successful integration of preconception care. The analytical theme suggested that engagement with preconception care in primary care settings depends on communication, awareness, and empowerment. The acceptability also depended on how conversations were initiated and facilitated, with discussions perceived as more appropriate when individuals had prior awareness of preconception health and its relevance.

Conclusions

The findings suggest that people of reproductive age and primary care professionals are receptive to introducing preconception care in primary care. Successful implementation requires trusted primary care professionals, sensitive and non-judgemental communication, increased awareness among people of reproductive age, and system-level training, resources and clear clinical pathways. Findings provide an evidence-informed foundation for co-developing and evaluating a context-sensitive approach to integrating preconception care into primary care.

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Background

The optimisation of health and health behaviours before conception, including body composition, lifestyle behaviours, chronic disease management, nutrition, immunisation and environmental exposures, is recognised as a critical opportunity to improve outcomes for people of reproductive age and any children they may have (1). Research has highlighted that interventions that identify and modify biomedical, behavioural and social risks of people of reproductive age prior to conception, referred to as 'preconception care', offer a valuable opportunity for earlier intervention. This has the potential to reduce risks during pregnancy, such as pre-eclampsia and birth defects, and positively influence long-term health outcomes across generations (2).

International preconception care guidance recommends that primary care professionals play a key role in supporting patients with pregnancy planning and preparation, but implementation remains inconsistent and the evidence underpinning existing guidance is limited (3). Primary care is well placed to identify and address risk factors associated with preconception health because it provides ongoing contact with people of reproductive age (4) and opportunities to discuss pregnancy intentions during routine consultations, such as contraception reviews, cervical screening appointments and medication reviews (5). Moreover, interventions delivered in primary care settings have demonstrated efficacy in enhancing preconception health-related knowledge and modifying certain risk behaviours (6). However, preferences regarding how these conversations should be delivered vary, and communication preferences and cultural factors may influence their acceptability (7–10).

Despite recommendations to integrate preconception care into routine primary care (3), it remains a low priority in many countries and is not consistently embedded in practice (11). This suggests that while the potential for preconception care in primary care is widely recognised, the key concepts of its integration, such as how and when it is delivered, and whose responsibility it is to initiate it, remain unclear. Previous systematic reviews have identified barriers including limited time, knowledge, resources, financial incentives, and patient awareness (5, 12). These reviews have not explored enablers of preconception care provision or how preconception care can be delivered in ways that are acceptable to both primary care professionals and people of reproductive age. Consequently, important questions remain regarding who could deliver preconception care, who should receive it, when it should be offered, and how it can be integrated into routine primary care in ways that are accessible, feasible, and acceptable to both primary care professionals and people of reproductive age.

This mixed-methods systematic review therefore aimed to synthesise the current literature on the perspectives and preferences of people of reproductive age and primary care professionals regarding the conduct and delivery of preconception care in primary care settings.

Methods

A mixed-methods systematic review was conducted using a convergent integrated design in line with the Joanna Briggs Institute (JBI) approach (13). The protocol for this review was prospectively registered

with PROSPERO (CRD420251000878). Results were reported using PRISMA 2020 checklist (14).

Selection criteria

The inclusion and exclusion criteria were informed by the PICo (population, phenomena of interest and context), presented in Table 1. Studies were included if they explored perspectives and preferences on the content and delivery of preconception care from people of reproductive age and/or primary care professionals, using quantitative, qualitative, or mixed methods designs. Studies were excluded if they did not disclose the health professional's role or lacked clarity on whether they worked in a primary care setting or as part of a primary care team. Studies that only reported on perspectives and preferences of pharmacists or professionals working in a community pharmacy were excluded as a review on this topic is being conducted separately and is ongoing (15).

Table 1
Systematic review PICo framework

Population	**People of reproductive age: any gender, aged 16–55 years, pre-menopausal (women), irrespective of pregnancy status and health condition.** **Primary care professionals: working in primary care or as part of a primary care team. This may include clinical primary care professionals such as GPs, practice nurses, health care assistants, dentists, opticians, midwives, allied health professionals (dieticians, physiotherapists, psychologists, mental health practitioners), and non-clinical primary care professionals such as practice managers, administrative staff.**
Phenomenon of Interest	Perspectives and preferences on the content and delivery of preconception care. Perspectives were defined as how people view or interpret the world based on experiences, beliefs and understandings. It can be referred to as a particular attitude towards or regarding something, a point of view. Preferences were defined as a greater liking for one alternative over another or others.
Context	Primary care setting Primary care is defined as a healthcare setting that is the patient's first contact with the healthcare system, which aligns with the WHO definition (11)

Search strategy

The search strategy was designed with support from a specialist librarian. Literature searches were conducted in February 2025, using the following databases: OVID (MEDLINE), OVID (EMBASE), PsycINFO (EBSCO), CINAHL Full- Text (EBSCO), and Web of Science (see Supplementary Table 1–6 for full search strategy). There were no restrictions on year published (i.e. databases were searched from inception) or language. Preprint databases (MedRix, BioXriv) were searched, and forward and backwards citation searches of eligible studies conducted to identify additional relevant studies.

Study screening and selection

Following the searches, all identified studies were uploaded to EndNote and then imported into Rayyan (screening software), where duplicates were removed. All titles and abstracts were independently screened by two reviewers (ID, JLT); a third reviewer (DS) was consulted when disagreements arose. Full-text screening was completed independently by two reviewers (ID, DS, and/or JLT) and disagreements resolved through group discussion.

Data extraction and convergence

Data were extracted from each study independently by two reviewers: ID extracted data for all included studies, and DS or SJ each extracted data from 50% of the studies. Data were extracted from each paper on the population, study methods, the phenomenon of interest, context, and outcomes relevant to the review questions, such as who should deliver and receive preconception care, and when, where, and how it should be initiated. This was pilot tested with five studies before proceeding with full data extraction.

The convergent integrated approach was used to first extract quantitative data from quantitative and mixed-methods studies and to transform these data into qualitative statements (13). Each statement was a textual description, including relevant numerical results, reflecting a narrative description of the data. Any disagreements over data extraction between the reviewers were resolved through group discussion (ID, DS, SJ). The quantitative textual statements were combined into a Word document and imported into NVivo v14 to facilitate data handling. The full-text papers of the qualitative studies were imported directly into NVivo.

Critical appraisal

The methodological quality of included studies was assessed using JBI-recommended critical appraisal tools for qualitative (16) and cross-sectional studies (17). The mixed-methods appraisal tool (MMAT) was used for mixed-methods research (18). The quality assessment was performed by two independent reviewers (ID and MH). Any disagreements on the quality ratings were resolved by discussion. The assessment process was not used to exclude papers, but rather as a guide to provide context for interpreting the findings.

Data synthesis

A qualitative thematic synthesis was conducted using three stages: line-by-line coding of the qualitative data, development of descriptive themes, and development of analytical themes. The first author carried out line-by-line coding and developed initial themes (19). Codes and themes were discussed and refined with the review team (ID, DS, KGr) and with four public contributors (SF, ND, ER, CM) to ensure consistency and increase rigour. Initial codes were grouped into themes and remained descriptively close to the original text. Once the descriptive themes were created, analytical themes were developed

through an interpretive lens to explore overarching “theory-driven” concepts. They were generated by considering the descriptive themes in relation to the review’s aim and identifying conceptual links across the descriptive themes to infer novel interpretations of the primary study findings. Descriptive themes provide transparency and grounding in the primary study’s evidence, and are presented alongside an analytical theme which demonstrates high-level interpretation of the evidence.

Patient and public involvement

The systematic review followed the ACTIVE framework (20) to involve public contributors in systematic reviews. A UK-wide public advisory group of people of reproductive age was established, with members recruited through local and national community, charitable and support groups to ensure diversity in age, gender, and health and pregnancy experiences. Selected members provided detailed input into draft versions of the study protocol (SF, ND), codes and themes (SF, ND, ER, CM) and this final results paper (SF, ND). More detailed contributions and reflections are reported in Supplementary Table 7 in line with the GRIPP 2 checklist (21).

Results

Characteristics of included studies

From 4913 records identified, 2156 duplicates were removed. After title and abstract screening (n = 2757) 354 full-text articles were evaluated for eligibility (Fig. 1); 51 studies were included and published between 1998 and 2025 (25.5% published more than 10 years ago). Thirty-six studies were qualitative, four were mixed methods, and eleven were quantitative studies. Supplementary Table 8 shows study characteristics. The review included 51 studies, Europe (n = 20), Australia (n = 14), New Zealand (n = 1), USA (n = 12), Africa (n = 3) and Asia (n = 1). Twenty-five studies included people of reproductive age (total n = 4573), including women (n = 3606), men (n = 923) and people of other genders (n = 44). Twenty studies sampled primary care professionals (n = 1750), mostly doctors working in primary care (n = 1213), as well as nurses (n = 224), midwives (n = 98), nurse and midwifes (n = 12), health visitors (n = 6), sexual health providers (n = 4), community health workers (n = 114), primary care providers n = 73), physiotherapists (n = 4) and practice managers (n = 2) and six sampled both primary care professional and people of reproductive age.

Methodological quality of studies

Supplementary Tables (9–11) show quality assessment for qualitative, quantitative and mixed-method studies. Reporting of most of the quantitative studies aligned with the JBI tool, though many scored poorly on reporting potential confounding variables and the strategies used to control for them. Most qualitative studies also generally demonstrated good quality, although most were limited in terms of attention to reflexivity and reporting of researcher positioning. The mixed-methods studies were similarly

well-rated, with the majority providing appropriate justification for their design and effectively integrating qualitative and quantitative components.

Descriptive themes

The review identified five descriptive themes, outlined below, with supporting quotes presented in Table 2, what studies contributed to what theme (Supplementary Table 12) and thematic map presented in Fig. 2a and Fig. 2b.

Table 2
Supporting quotes

Theme and subthemes	Quotes from people of reproductive age	Quotes from primary care professionals
Roles and responsibilities around delivering preconception care in primary care		
A range of primary care professionals currently deliver or could deliver preconception care	“I found [the appointment with the nurse]… quite helpful, because there is enough time to talk about things, and it’s not rushed.” (43)	“I think GPs are sort of the gatekeepers of people's first point of call, whether they have the time or the knowledge around that.” (Nurse) (27).
Professional Qualities essential for delivering preconception care	“My partner became abusive during. that time, like early in the pregnancy, and I’m not really wanting to tell them because then I know that they’re gonna give me the whole run down about, like, “You don’t stay in abusive [relationship]. So. I kind of avoided a little bit with some of my doctors.” (147) “They [nurses] give us trouble, because they'll tell you that, “you're still small, what do you know about that, why do you want to know about something so grown.” (10)	“Respondents reported experiencing tension around the line between offering ‘concrete…medical information [to] let people make their decisions’ and acting with ‘pressure’ or allowing one’s own ‘opinions’ to influence patient decision-making around pregnancy intention, reproductive life planning and contraceptive selection.” (Doctor) (49)
Responsibility to initiate in primary care consultations	“I feel like I’m more to myself unless I’m asked. sometimes you have to keep things to yourself.” (147)	"Primary care is not right at the bottom of that pyramid; it’s patient self-management." (138) (GP)
Approaches to targeting preconception care in primary care		
Preconception care as universally delivered	I think everyone - I think all parents considering to have children would benefit from it. I think whether or not you considered to have children or not, the kind of information is important and should be in our education system. Because you don’t have to plan to have children, it happens.” (23)	“The health of the couple preparing to conceive, or the single woman, or the donor” (Nauropath) (27) ‘I actually think rather than talking about preconception care, you talk about the ... care of the potentially pregnant rather than preconception, because preconception care suggests it is an active decision to actually conceive, and therefore you’ll miss a lot of people because people won’t be ready for preconception care advice.’ GP (70) “Similar to the opportunity preconception care provides for women, it would be better if it was also offered to men. They should similarly

Theme and subthemes	Quotes from people of reproductive age	Quotes from primary care professionals
		take responsibility for the health of the baby" Midwife(57) Nurses rated the importance of providing PC to lower-risk women, namely smokers (P < 0.03), Afro-Caribbeans (P < 0.05), and healthy Caucasians P < 0.001) significantly more highly than doctors (45)
Preconception care as a targeted approach		"I think women [high risk] should plan a pregnancy, just like other events in life, because if they're on high-risk medications, it is not a good idea. Or if they have risk factors for pregnancy, [those risk factors] should be eliminated before. … I strongly believe that women should understand that it should be a planned process." (GP) (52) 'We should be really telling all women of, you know, of a certain age, that they do need to plan their pregnancies really if they're diabetic." (GP) (70)
Timing and context of preconception care primary care		
Timing of preconception care in primary care consultations	"Pre-pregnancy care should be started in pre-marriage counseling classes, because we don't know anything about this stuff, we should participate in pre-pregnancy planning before marriage". (57) "Well, anyway before you are pregnant… I think maybe a month ahead, but yeah, you cannot really determine that." (55) Similarly, individuals aged 18–19, 20–24, 25–29, 30–34, 35 – 39 were more likely to want to be asked at every visit (48.4 – 58.2%) than those 40–44 (42.7%) or 45–49 (30.1%, p < 0.01) Older respondents were also more likely to report never wanting to be asked (25.3% of those 45–49, for example, compared to only 1.1% of those aged 18–19, p < 0.01) (33)	"We do our best to persuade them to stop trying while we complete three to four months of preconception healthcare." Nauropath (26)
Service Context	"…nobody ever says to me [during smear tests]: 'And are	GPs felt that it could 'definitely' (GP2) be incorporated into routine lifestyle

Theme and subthemes	Quotes from people of reproductive age	Quotes from primary care professionals
	you trying for a baby?'… that would be an ideal time". (35)) "…potentially that [cervical screening] is a good opportunity - you've got young women coming in - just to say 'are you thinking about getting pregnant any time soon? Are you comfortable with preconception health...?" (35) "You could do when you're going for contraception, that's good actually, that would be a good way." (7) 'Print a few flyers and stick them on the wall, when patients watch just waiting for the GP or just filling out their patient form then they probably can see it." (6) "GP surgeries need more posters, having something there that brings people's awareness to it, even if it's subliminally, it might later trigger something." (68)	checks: 'if it was kind of a sort of do ya smoke? Do ya drink? Planning a baby? I think that would be a really good thing. I don't know why it hasn't been done, really' (GP3). (GP) (46) "The reason you do the pap [cervical screening] is because they are sexually active. At the same time you can do preconception together with them. We can offer this to anybody" (Practice nurse) (44) "if they've come in for a sore throat, I'm not going to start asking them about their attitudes to pregnancy." GP (46)
Support with delivery of preconception care of preconception care in primary care		
Role of signposting	"I think it's brilliant… He's [GP] sent me the information [by text/ email] and I've got it there in front of me within minutes. Instead of me having to go up to the surgery..." (35). "I think they should start by making a small pamphlet or flyers and give people in the community." (64)	"And I'll talk about those basic lifestyle things, and I usually will send her, at the end of the appointment,…my sperm health handout that talks about those lifestyle factors…so that at least I've got that. So that at least I've got that information on paper for him to read and hopefully, he doesn't have to front up and talk to me but he can read it and make some changes." (Naturopath) (27) "Second thing is ... an easy way of communicating that to primary care staff, so they've got ... access to that information ... to pass to patients." (GP) (70)
Consent to receive preconception care	"people should therefore be given "the choice." (35) "are you happy to receive emails on this topic?", a "click to find out more", or "opt-in" option, and	

Theme and subthemes	Quotes from people of reproductive age	Quotes from primary care professionals
	asking patients “is it okay if I send you this stuff?” (35)	
Introductory question in a consultation setting	“I feel like regardless of what you say, there’s no wrong answer. The doctor’s willing to answer questions regardless, like he’s ready” (42)	“Indeed, using the OKQ® was generally found to be easy and did not arouse practitioner discomfort.I actually found it pretty straightforward. I haven’t come across any major barriers or complications or awkward impact or anything like that”. (GP) (61)
Systemic needs for successful integration of preconception care in primary care		
Time and competing priorities		“The problem that we as primary care doctors face is that there’s just not enough time to get all of that information in a quick visit. You’ve got a limited amount of time, and you’ve got to talk about 10 other things, and I guess that conversation doesn’t always come up routinely.” (GP) (52) “I’m sorry. I just don’t have fifteen minutes to sit down and deal with this and try and bill an insurance company who will reject the payment because they do not cover that. And this is a problem. When you have things like this...you are touching on a nerve here, a big nerve. Yes, in the best of all possible worlds, it should be done. It could be done, and we’d be happy to do it, but it’s not being done. It’s not because we’re not...because we’re not good physicians.” (GP) (54) “Once you address the pieces of care or chronic or critical need that’s gonna kill a patient first, then you address the other things… It depends on risk stratification for a particular patient and then how one patient’s risk stratification…affects the next patient … You can’t see 18 patients a day and address every issue” (Primary care professional) (49) “It’s such an intense subject that most doctors don’t want—I mean, they’re on a limited schedule so when that person comes in, the last thing they are going

Theme and subthemes	Quotes from people of reproductive age	Quotes from primary care professionals
		to do is get into an intense discussion about conception and preconception and birth control and the ins and outs because they just don't have the time." (GP) (54)
System-level resource needs		"I would like further information about this and how to prevent pregnancy complications for GPs." (GP) (67) "I really should access a good guideline re preconception care which is the most common chance for intervention I have in the current system". (GP) (63) "Do we need to also help educate our GPs on our value as midwives and to improve our value within the primary health care setting?" (Midwife) (26) "I wish I had more incentives from my employers to discuss this kind of topic with patients." (Nurse)(3) "Perhaps if it was QOF [Quality Outcome Framework] target, that would make a difference, because everything else that's evidenced-based is on there, but preconception care isn't for Type 2 diabetes, and our education updates." GP (68)

Theme 1: Roles and responsibilities around delivering preconception care in primary care

This theme explored the primary care professionals considered suitable to deliver preconception care, as well as the qualities and responsibilities that shape their roles in delivering preconception care.

A range of primary care professionals currently deliver or could deliver preconception care

Most studies explored the most appropriate primary care professional to help initiate conversations to help people of reproductive age plan and prepare for pregnancy (22–25).

Many studies, including those among primary care professionals and people of reproductive age, identified the GP as the central and most trusted provider of preconception care (23, 26–37). People of reproductive age reported high levels of comfort discussing pregnancy planning with GPs, and valued their ability to provide and facilitate sensitive conversations (35, 37). They were also considered "*the real*

medical practitioners" who "*give you the facts that you can trust*" (35). Primary care professionals supported this; one study reported that 85.3% of primary care professionals believed GPs should be the main providers of preconception care (31). However, both groups recognised that GPs tend to review acute issues and do not always discuss preventive care (38, 39). This was reflected by other studies that showed how people of reproductive age feel like they are "*wasting a GP appointment*" (35, 40).

Nurses were consistently recognised by both primary care professionals and people of reproductive age as another appropriate and acceptable provider of preconception care (24, 25, 33, 35, 38, 39, 41–45). They were viewed as more accessible than GPs and able to facilitate more in-depth discussions around health before pregnancy (35, 39, 43, 44), with people of reproductive age valuing their practical skillset and relatability (35, 42). However, within those studies some participants reported nurses may lack the confidence, skills and training to implement it (35, 44).

Other primary care professionals that were highlighted include health care assistants (46), naturopaths (26), midwives (26, 28, 30), reception staff (25) and community health workers (47).

Professional qualities essential for delivering preconception care

This subtheme focused on the professional qualities that shape patient comfort and disclosure, emphasising non-judgmental attitudes, rapport-building and empathic conversations. People of reproductive age said they wanted their primary care professional to be empathic, understanding, and to listen to their concerns (28, 37, 42). Primary care professionals supported this view and highlighted the need for specific communication skills, as the sensitivity of the topic could hinder disclosure of pregnancy intentions (30, 47, 48).

People of reproductive age also valued experience, whether medical experience (25, 45) or lived experience (10, 37), although primary care professionals also highlighted the tension and fine line regarding how much personal opinion should be incorporated into consultations (49).

Responsibility to initiate in primary care consultations

This subtheme explores perceptions of responsibility for initiating preconception discussions, including the ambiguity surrounding whether initiation responsibility primarily lies with patients or professionals.

Many studies suggested that people of reproductive age voiced that primary care professionals should initiate conversations about planning and preparing for pregnancy, particularly as patients were often unsure how to raise the topic (9, 31, 33, 43, 50, 51). Primary care professionals taking the lead was viewed as increasing trust, facilitating disclosure of pregnancy intentions (50), and reaching people who may not otherwise seek preconception advice (50, 51). However, some studies reported that people of reproductive age felt that conversations should only be initiated with consent or framed more broadly around general health, recognising that pregnancy may not be relevant or desired for everyone (23, 35, 42).

Conversely, some primary care professionals and people of reproductive age viewed initiating pregnancy intention conversations as the patient's responsibility (38, 39, 41, 44, 51–55), suggesting that this supports autonomy, improves person-centred care, and is more feasible within time-limited consultations (51). In one study, those (people of reproductive age) with more self-agency were more likely to initiate in consultation room (50). Primary care professionals also described uncertainty about when and how to introduce these discussions appropriately in a consultation setting so left the responsibility to the patient (51–53).

Theme 2: Approaches to targeting preconception care in primary care

This theme examines who should receive preconception care in a primary care setting, including whether it should be delivered to everyone or targeted to specific groups, given systemic constraints, such as time and funding.

Preconception care as universally delivered

Some studies supported a universal approach, suggesting preconception care should be provided to anyone who may have children (30), and in different contextual situations such as those married, those in same-sex marriages, and single individuals (27). Both primary care professionals and people of reproductive age recognised that many pregnancies are unplanned and emphasised the importance of including men and individuals not actively planning pregnancy to raise awareness and encourage future engagement with optimising preconception health (26, 27, 47, 49). Primary care professionals noted that including men may reduce the societal pressure on women (26). One quantitative study found that nurses identified a broader target population, including all women, whereas most doctors focused primarily on higher-risk groups, such as individuals with pre-existing medical conditions (45).

Preconception care as a targeted approach

Many studies highlighted the need to target preconception care to include individuals from at-risk populations, such as those with low socioeconomic status (22, 24, 32, 34), specific ethnic groups (30), adolescents (26, 42, 48) and people with pre-existing medical conditions or taking medications associated with pregnancy risk (27, 39, 44, 45, 52). While primary care professionals tended to prioritise people living with chronic conditions, such as diabetes, epilepsy and hypertension, one questionnaire survey reported that people of reproductive age perceived a question about pregnancy intention to be more inappropriate when they were living with overweight compared to those with a 'normal' body weight (56). Another target group reported by one study was GPs suggesting target provision of those planning a pregnancy (39). In another study, the authors suggested that health care professionals spoke about preconception health behaviours in the context of a planned pregnancy, and people of reproductive age did not think it was of relevance to them unless they were having trouble conceiving (44).

Theme 3: Timing and context of preconception care in primary care

This theme explores the delivery mechanisms of preconception care, including when it should be initiated and the context in which it should be delivered in a primary care setting.

Timing of preconception care in primary care consultations

Preferences regarding the timing of preconception care varied. People of reproductive age generally supported discussing pregnancy intentions during routine care, although preferred frequency differed by age and gender (9, 25, 33, 34, 55). For example, one quantitative study reported that younger individuals (aged 19–39) were more likely to prefer being asked at every visit than older individuals (aged 40–44) (33). Primary care professionals suggested discussions should ideally occur several months before pregnancy (26). Cultural context also influenced preferred timing, with studies from some settings highlighting premarital preparation as a crucial stage for delivering preconception interventions, reflecting social norms around marriage and family planning (57). Overall, findings suggest that the timing and framing of preconception care should be tailored to cultural and socioeconomic factors to ensure relevance and acceptability.

Service context

Context (i.e. appointments) in which preconception conversations could be initiated strongly influenced acceptability among people of reproductive age. Patients preferred discussions during appointments that felt relevant to reproductive health such as cervical screening, contraception reviews, or postnatal check-ups (7, 9, 24, 25, 31, 35, 55, 58, 59). Primary care professionals echoed this, suggesting that discussions can be embedded into existing protocols and may be a practical way to implement preconception care (44, 46). One study mentioned reproductive consultations can add context to a patient's situation, such as being sexually active (44). Primary care professionals also recognised that it is inappropriate in certain situations and were hesitant to ask, such as in cases of acute medical concerns (30, 46, 49, 60). This perspective was shared by people of reproductive age (45, 50). Quantitative evidence suggests some cultural differences, with one survey carried out in the UK found that Asian women were less receptive to receiving preconception information in contraception consultations (45).

Theme 4: Support with delivery of preconception care in primary care

This theme highlights how preconception care can be integrated into a primary care setting and what is needed to support its successful delivery.

Introductory question in a consultation setting

Both people of reproductive age and primary care professionals supported a simple introductory question, such as the One Key Question (“Would you like to become pregnant in the next year?”) or ““Can I help you with any reproductive health services today, such as birth control or planning for a healthy

pregnancy? " (25, 31, 42, 61, 62) to start a conversation about pregnancy intentions in a non-intrusive way and facilitate integration into routine appointments (42, 46, 47, 61, 62). However, one study noted that the One Key Question is not inclusive of men (47), and other studies suggested that people of reproductive age may prefer questions that include options, such as whether they are considering contraception or are pregnancy planning, as it allows autonomy and less pressure on pregnancy planning (33, 42).

Role of signposting to preconception care

Both primary care professionals and people of reproductive age viewed actively signposting to credible resources as an important extension of the consultation (27, 31, 35, 36, 54, 63). Some of the resources suggested included written information (e.g. leaflets, fact sheets) to provide after an appointment (10, 27, 36, 51, 54, 64, 65). Digital signposting was also acceptable as it directs people of reproductive age to resources electronically, such as emails, SMS reminders, websites, and apps (35). Online materials may be able to reach a wider audience (10, 66–68), be considered more confidential than written information (66), and feel less pressured compared to being asked in person (9). Both primary care professionals and people of reproductive age emphasised that resources should be evidence-based, accessible, positively framed and tailored to individual needs (23, 27, 35, 42, 54, 57, 66).

Consent to receive preconception care

Studies highlighted that obtaining 'informal' consent or asking whether they are happy to engage is important before initiating the conversation (35, 42). Some of the suggested ways include asking patient if "*it's okay to send you this stuff*" and *"are you okay to receive these emails"* and having an 'opt-in or opt-out' approach, meaning they could choose to engage in the conversation (25, 35). In some cases, there was a preference from people of reproductive age to have an anonymous consultation (66) or an invitation first (38, 55). This was due to the perceived sensitivity and intrusiveness of the topic (9, 25, 35), and the societal expectations that could be enforced on women (9). One study among people of reproductive age suggested that an outline of preconception care may increase the likelihood and relevance compared to an 'out-of-the-blue' question in an appointment (25).

Theme 5: Systemic needs for successful integration of preconception care in primary care

Time pressures and competing priorities

Primary care professionals suggested that limited time in appointments caused competing priorities in health issues that need to be addressed (30, 46, 49, 52–54, 63). Some of the reasons why it was considered a lower priority was that discussing preconception health may instigate an intense conversations in an already pressed appointment (54), and a lack of awareness of the topic or advice on how to inform patients (52). Similarly, people of reproductive age also preferred to have more time to talk about pregnancy intentions and feeling rushed may impact consultation quality and the likelihood of feeling comfortable (57).

System-level resource needs

Primary care professionals highlighted the need for system-level support, including clear pathways (30), incentives or reimbursements (30, 54, 68, 69), electronic prompts (49, 54, 70), clinical guidelines (44, 68, 70) and greater coordination of preconception amongst other allied health professionals such as midwives and nauropaths (26). Both professionals and people of reproductive age also identified education and training as priorities, suggesting that improving primary care professionals' knowledge and confidence could enhance the quality and acceptability of preconception care (26, 31, 32, 35, 37, 47, 49, 53, 67, 71).

Analytical theme

Analytical Theme 1: Engagement in primary care settings depends on communication, awareness and empowerment

This central theme explores how engagement relies on interpersonal communications skills and how awareness, salience and empowerment may be an underlying factor that determines whether and why people of reproductive age engage in conversations about planning and preparing for pregnancy (42, 50, 57, 71) (Fig. 3).

Opening up/facilitating communication with primary care

Across the studies, preconception care discussions were experienced as deeply personal, and the way they were introduced and framed impacted the conversation (42, 71). When communication was seen as judgmental, such as assumptions based on age or environmental situations (9, 50, 51, 71), people of reproductive age interpreted that as a threat to their autonomy, which reduced openness and willingness to disclose intentions (9, 10, 42, 50, 51, 64, 66, 68). It also led to perceived stigmatism and awkwardness surrounding conversations which may undermine the sense of empowerment, discourage disclosure and engagement in preconception care discussions (10, 68). Lack of judgement is therefore essential to opening up and facilitating conversations. At the same time, primary care professionals may anticipate negative reactions, leading to hesitancy in discussing this topic (30). This dynamic may create discomfort, limiting discussion on both sides and leaving primary care professionals uncertain about how to proceed with the conversations and people of reproductive age unclear how to answer.

Findings across the studies suggest that strategies such as introductory questions and signposting may reduce perceived intrusiveness, increase familiarity with the topic and allow individual to engage on their own terms (7). For example, introductory questions such as “Are you thinking about having a baby in the next year?” can initiate conversations in a non-intrusive way and encourage reflection on pregnancy intentions, with the way they are framed (e.g. providing options) influencing how people of reproductive age perceive the primary care professional and their willingness to engage (42). At the same time, signposting extends support beyond the consultation, allowing people of reproductive age to access and

engage with information on their own accord (7). This means that, regardless of pregnancy intention, they may be able to access these when they are ready, while supporting patient autonomy and self-directed care (41). Their values aid and support autonomy and normalise conversations about pregnancy planning. Thus, communication may act as a mechanism that can be an enabler to engagement in preconception care conversations (10, 44, 71).

Awareness and empowerment to discussing preconception in primary care

This sub-theme emphasises the importance of prior awareness and subsequent empowerment of preconception care in shaping how pregnancy-related conversations and their appropriateness are perceived within primary care. Most people of reproductive age in one study suggested that making people aware of preconception care is the first step (66). Similarly, GPs identified limited motivation to present to a GP before pregnancy as a barrier to delivering preconception care, suggesting this may come from a lack of awareness (63).

When people of reproductive age had prior awareness of preconception health as a topic and recognised its importance, discussions about pregnancy intentions were considered more acceptable, practical, and higher priority (25, 46, 66). People also reported being more willing to attend for a preconception health check, suggesting awareness enabled recognition of relevance, openness and empowerment to engagement (25). Conversely, without prior awareness, conversations can feel out of place or intrusive, reflecting a disconnect between patient expectations (i.e. contraception advice in a contraception review) and the issues professionals raised (i.e. planning and preparing for pregnancy) (9, 42). Prior awareness about the period before pregnancy also influenced how individuals engaged with questions about pregnancy intentions, by making future pregnancy feel more understood and appropriate to discuss, and changing how they reflect on pregnancy intentions (46). Some people of reproductive age felt they may waste the GPs' time if they had not prepared and sought information about the time before pregnancy before an appointment (66). This perspective was also echoed by primary care professionals, who suggested that conversations flowed more easily and enabled more personalised care when individuals had prior awareness of preconception care, and/or were actively considering pregnancy (46, 51, 62).

Primary care professionals also reflected on how their own awareness and level of empowerment influenced preconception consultation quality (46, 70). One GP suggested that they would be gearing themselves up for an awkward conversation about pregnancy planning (46). Increasing GPs awareness was suggested as a way to support opportunistic discussions, which would subsequently improve awareness among patients (70).

While introductory questions such as the One Key Question and signposting to resources help build awareness gradually (25), they also help normalise the topic and reduce stigma. Both people of reproductive age and professionals noted strategies as ways to improve awareness such as the use of waiting-room materials (e.g. posters), which may helped raise awareness of preconception care outside

a consultation setting (23, 25, 31, 38, 42, 46, 61, 68). This finding suggests that contextually appropriate settings alone are insufficient unless paired with broader efforts to raise awareness, promote understanding, and support effective communication. Together, these findings position awareness about preconception care as an enabler for perceived relevance, empowerment and engagement.

Discussion

This review synthesised findings from 51 studies exploring perspectives and preferences regarding preconception care among people of reproductive age and primary care professionals. Overall, both groups recognised the importance of addressing preconception health in primary care. The descriptive themes identified practical elements surrounding the acceptability of preconception care in primary care included preferred primary care professionals, professional qualities, contextual factors and support needs. The analytical theme moves beyond the descriptive themes as it offers explanations of how these approaches may reduce stigma of the topic and conversation, and increase autonomy, awareness and empower individuals to engage with preconception care on their own terms. Together, the descriptive and analytical themes provide complementary insights, with the descriptive themes identifying what matters to people of reproductive age and primary care professionals and the analytical themes offering a broader conceptual understanding of how and why these factors shape engagement with preconception care in primary care settings.

Findings suggest that preconception care should be integrated into existing primary care pathways rather than delivered as a standalone service. Consultations such as cervical screening, contraception reviews, postnatal checks and long-term condition reviews were consistently identified as appropriate opportunities to initiate discussions. When embedded within preventive pathways, conversations about pregnancy planning are thought to be more legitimised, more acceptable to patients and professionals, and more likely to be sustained as part of everyday practice. Integration within existing workflows may also reduce exacerbating time pressures by augmenting existing consultations rather than adding a clinical task. In the systematic review, although most studies focus on interventions opportunities within a consultation, some of the intervention opportunities outside of consultations included signposting to checklists, leaflets and websites, having posters in waiting rooms, which is similar to a recent study (72).

The finding suggest that GPs were generally viewed as the most trusted providers of preconception care due to their expertise and central role in primary care, although many reported competing priorities that limited their engagement. Nurses were also considered acceptable providers because of their accessibility and opportunities for relationship-building, suggesting that continuity of care and communication skills may be as important as professional role. A more recent discrete choice experiment in Australia indicated that 68.3% of people preferred a GP or specialised obstetrician/gynaecologist to deliver high-quality preconception care, with more uncertainty/ comfortability to nurses and midwives. The authors concluded that increasing public awareness of the roles, responsibilities, and skills of other healthcare professionals may be valuable in improving understanding of the range of expertise available for preconception care (72).

Effective communication emerged as a key factor influencing engagement. People of reproductive age emphasised the need for discussions to be sensitive, relevant and non-judgemental, while professionals highlighted barriers including limited time, competing priorities and uncertainty regarding responsibility. A consistent finding across studies was that people of reproductive age generally expected professionals to initiate discussions, whereas professionals often viewed initiation as the individual's responsibility. This mismatch may represent an important barrier that should be addressed to enable successful routine implementation of preconception care. Societal stigma has been identified in the wider preconception literature as a barrier in engaging in conversations about preconception health and pregnancy planning (73), particularly among certain black communities in the United States, where cultural and religious norms may influence such conversations (74), It has also been evidenced in the preconception weight literature with one systematic review finding that silence and withdrawals were frequently observed responses to discussing preconception with health care providers, highlighting the need to discuss weight in a positive and supportive manner (75).

Awareness of preconception care also influenced perceptions of its relevance and acceptability. Low awareness reduced perceived relevance and increased discomfort or uncertainty about discussing pregnancy intentions in primary care. Lack of clear understanding and information have also been found to be obstacles in conducting preconception health screening (73, 74), with implementation of preconception care needing to start with basic counselling of what preparing for pregnancy looks like (73). Recent quantitative evidence from Australia showed that 67% of people of reproductive age had never heard of preconception care, with only 2% hearing about it from a health-care professional (72). Such low awareness is important to consider, as a previous systematic review found that lack of knowledge and beliefs about the consequences of engaging in preconception health behaviours can hinder behaviours such as healthy diet and physical activity before pregnancy (76). Whilst it has been recognised that knowledge alone is not sufficient for behaviour change, it is important that people have sufficient knowledge of important health behaviours, and to be aware of the need to engage in them (77). Our review extends these findings by suggesting that awareness influences engagement and acceptability of with preconception health behaviours, and conversations about pregnancy planning and preparation. When individuals lack awareness of preconception care, they may be less likely to initiate or participate in discussions about preconception health, which may feel unexpected, intrusive or irrelevant.

Similarly, our review suggests primary care professionals would welcome people of reproductive age having greater awareness of the topic, believing this would improve consultation quality and engagement. This aligns with a previous systematic review, in which health professionals from across primary care and secondary care felt the patient had a responsibility to engage and seek information about preconception care (5). Wider literature terms this ‘patient activation’, which proposes that patients should play a large role in determining their health and health outcomes, promoting them to be more active in their care (78). Improving awareness of preconception care through digital platforms, community-based initiatives, and healthcare settings, alongside clearer expectations and system-level support, may be necessary to increase engagement with preconception care in primary care (73, 79). This suggests that future research should explore how awareness of preconception care can be

effectively promoted outside of clinical encounters, including through community and digital approaches, to increase understanding and uptake among individuals of reproductive age.

Strengths and limitations of the review

To our knowledge, this is the first systematic review to synthesise perspectives from both people of reproductive age and primary care professionals regarding preconception care in primary care settings. This allows a comprehensive understanding of perspectives from those who receive care and those who deliver it, allowing the evidence to be compared and contrasted. The convergent integrated design enabled triangulation across qualitative and quantitative evidence, providing both breadth and depth of understanding. For example, quantitative evidence demonstrating low awareness of preconception care complemented qualitative accounts in which participants described feeling unsure, unprepared or unaware of preconception support (80). Rigorous methods were used including independent screening, adherence to the PICo framework, PRISMA reporting guidelines, and Thomas and Harden's step-by-step guide to carrying out thematic synthesis.

The Public and Patient Involvement (PPI) process strengthened the review by encouraging reflexivity, transparency, and accessibility. Reflecting on both the successes and challenges of this process has informed a more considered and proportionate approach to PPI. However, the grey literature was not searched, which may have increased the possibility of publication bias. Variation in definitions of primary care and professional roles across studies may have affected eligibility decisions and comparability. The absence of a globally standardised definition of primary care meant that original authors' definitions of primary care had to be accepted, and studies that did not explicitly describe their setting as primary care may have been excluded despite potentially containing relevant findings. Moreover, differences in roles of primary care professionals across healthcare systems may also reduce the transferability of findings (81).

In terms of limitations of the evidence reviewed, although preferences regarding preconception care delivery are increasingly explored, there remains limited evidence on how these preferences can be translated to successful implementation in routine primary care practice. Few studies have examined the implications of discussing preconception care within specific consultation contexts, such as cervical screening, contraception reviews or chronic disease management, despite these being consistently identified as preferred opportunities in this review. Additionally, there was an underrepresentation of primary care professionals other than GPs including nurses and healthcare assistants. Evidence also remains limited regarding how workload pressures, consultation structures and healthcare systems influence implementation in practice.

Most qualitative studies included in this review recruited participants from high-income settings, with limited representation of underserved groups (e.g. those from low socioeconomic status, with multimorbidity, ethnic minorities and men) who are less likely to engage with research. These groups may face greater barriers to accessing healthcare and their exclusion from research may limit the

transferability of the findings. Future research should prioritise groups that are typically underserved in research to ensure evidence reflects diverse experiences and barriers faced by those least likely to access preconception care.

In addition, existing research has shown that people often perceive preconception care as relevant to others but not for themselves (22). This review supports that observation, demonstrating that limited awareness can reduce perceived relevance and engagement, which may impact the quality of research findings. Future research should therefore move beyond asking individual questions and instead explore more practical ways to engage research participants, such as using real-world scenarios or consultation vignettes, as this may help individuals relate to the information and be more inclined to share their own experiences.

Implications for policy and practice

Preconception care should be delivered in ways that reflect its personal and sensitive nature, with conversations integrated into existing primary care pathways rather than offered as standalone services. Given concerns surrounding judgement, stigma and assumptions approaches that prioritise autonomy, choice and empowerment may help create a supportive environment for discussing pregnancy intentions. Primary care professionals need time and training to enable them to discuss pregnancy planning sensitively and without judgement. Training should also address uncertainty around responsibility for initiating conversations and provide practical guidance on identifying appropriate opportunities within routine care and providing this in ways that recognise time constraints and integrate with existing care pathways. In addition, primary care professionals may need assessable resources and pathways that enable them to signpost individuals to relevant information and support for more detailed information that may not be able to be done in the consultations. Increasing awareness among both people of reproductive age and professionals through public awareness initiatives, combined with waiting-room resources, digital information and opportunistic discussions, may help normalise preconception care and increase engagement. Finally, policies should account for the cultural, social and economic factors that influence comfort and expectations around discussing pregnancy intentions.

Conclusion

We found that preconception care is most acceptable when integrated into existing primary care consultations and delivered by trusted professionals using sensitive, non-judgemental communication. However, low awareness of both people of reproductive age and primary care professionals, uncertainty around responsibility and system-level constraints continue to challenge implementation. Addressing these barriers will require greater public and professional awareness, clearer implementation strategies, and integration within existing preventive care pathways. Further research is needed to identify practical approaches that develops, evaluates and implements interventions that are able to embed preconception care within routine primary care practice.

Declarations

Ethics approval and consent to participate: Not applicable.

Consent for publication: Not applicable.

Availability of data and materials: Data are provided within the manuscript or supplementary information files.

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