

# Invisible Influencers: Men's Perspectives on Preconception Health and Pregnancy Preparation in Scotland: A Mixed- Methods Study

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## Research Article

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# Abstract

## Background

Paternal health and behaviours prior to conception influence male fertility, pregnancy outcomes, and offspring health. Despite evidence of men's influence on reproductive outcomes and their willingness to engage, no dedicated policy framework exists in Scotland to support their preconception health. This study examined men's knowledge, behaviours, and perceived roles in preconception health in Scotland, with the aim of generating evidence to inform policy reform and the development of inclusive, male-centred services.

## Methods

A mixed-methods study was conducted, integrating qualitative data from male focus groups (n = 26) with quantitative data from a national online survey of men (n = 67). Survey measures assessed preconception behaviours, knowledge, and attitudes, while focus groups explored men's experiences, perceptions of fertility and pregnancy preparation, and engagement with health services. Quantitative data were analysed descriptively, and qualitative data were analysed using reflexive thematic analysis.

## Results

Men were engaged in preconception health but in varied and often reactive ways. Prior to conception, 59.7% reported regular physical activity and 41.8% reported a healthy diet, while 28.4% reported at least one unplanned pregnancy. Knowledge of preconception health was imbalanced, with greater awareness of pregnancy prevention than preparation and limited understanding of male fertility, key nutrients, and modifiable risk factors affecting reproductive outcomes. Behavioural changes, including reductions in alcohol consumption, frequently occurred only after pregnancy confirmation. Qualitative findings revealed that preconception health was commonly framed as a woman's responsibility, with men positioning their role primarily in providing emotional, practical, and financial support. Despite this, most participants expressed willingness to adopt healthier behaviours and reported being comfortable discussing pregnancy intentions with healthcare professionals.

## Conclusions

Men appear willing to engage in preconception health, yet current policy and service structures provide limited support for their involvement. Addressing this requires revision of Scottish preconception frameworks to include explicit provisions for men, integration of paternal health into routine primary care, and investment in male-targeted public health messaging. Treating men's preconception health as a public health priority, rather than an afterthought, presents a significant and currently missed opportunity to improve reproductive outcomes across the population.

Clinical trial number: not applicable

## Background

Paternal health and behaviours prior to conception influence fertility, pregnancy outcomes, and offspring health through biological, behavioural, and social pathways (1–4). Understanding men's engagement in preconception health is therefore important given the growing recognition of male reproductive health as a determinant of fertility, pregnancy outcomes, and offspring wellbeing. Modifiable risk factors, including smoking, alcohol consumption, poor diet, and obesity, have been associated with impaired sperm quality, reduced fertility, and adverse pregnancy outcomes (2, 5, 6). Beyond biological influences, men also contribute to preconception health through emotional, practical, and financial support to their partners (4, 7, 8). Despite this, preconception health has historically focused almost exclusively on women, and men remain an under-recognised population within reproductive health (1, 9–11). This has contributed to an imbalance in reproductive health knowledge, where awareness of pregnancy prevention often exceeds understanding of how to optimise health before conception.

International evidence highlights the importance of male preconception health. Declines in sperm quality have been reported globally (5), and advanced paternal age has been associated with adverse outcomes including miscarriage, congenital anomalies, and neurodevelopmental conditions (12, 13). Lifestyle and environmental exposures, including alcohol use, smoking, obesity, and occupational hazards, further contribute to reduced fertility and adverse outcomes (2, 6). Although absolute risks remain low, these findings underscore the biological relevance of men's health in the preconception period. Awareness of these risks among men is often limited, with studies consistently reporting gaps in knowledge of nutrition, fertility, and preconception health behaviours (14, 15), alongside a tendency to attribute fertility challenges primarily to women, despite male factors contributing to approximately half of infertility cases (16). These patterns reflect broader societal and healthcare norms in which reproduction is framed as a woman's responsibility (8, 17).

Men are also insufficiently engaged within healthcare systems and policy. Evidence from the UK and internationally suggests that men are rarely engaged in preconception or maternity services and often feel excluded from pregnancy-related care (8, 17). Public health messaging has focused predominantly on pregnancy prevention rather than preparation, reinforcing this imbalance in which individuals are better informed about avoiding pregnancy than optimising health prior to conception (11, 18). While recent initiatives, such as the UK Preconception Care Toolkit (19), have begun to adopt a more inclusive perspective, men remain largely absent from routine preconception care.

Evidence suggests that men are willing to engage in preconception health when informed. Studies report willingness to adopt lifestyle changes, such as reducing alcohol consumption, stopping smoking, or taking supplements, particularly when benefits for the partner and child are understood (7, 9, 20). Men also emphasise the importance of providing practical and emotional support, including attending appointments, preparing financially, and sharing information (4, 21, 22). However, this willingness is not matched by existing services or support structures, resulting in missed opportunities for early

engagement. Conceptual models, such as the eight-pathway model of paternal influence (23), further demonstrate that men affect reproductive and child health through biological, behavioural, and social pathways. This aligns with recent transdisciplinary evidence highlighting how paternal influences operate across these pathways (18).

In Scotland, maternal and child health are policy priorities, yet men remain largely absent from preconception initiatives (24). The Scottish Women's Health Plan outlines ambitions for improving pre-pregnancy health but does not include specific provisions for men (24). In addition, Scotland does not routinely publish demographic data on fathers, limiting the ability to design targeted interventions (25, 26). More broadly, the absence of comprehensive monitoring frameworks for preconception health has been identified as a key barrier to advancing policy and practice internationally (18). While evidence on women's preconception health exists (15), there is limited Scotland-specific data on men's perspectives, behaviours, and needs. This represents a significant policy gap: current Scottish health policy does not systematically address men's preconception health, and there is no dedicated framework to support engagement, particularly across socioeconomically deprived communities (27).

Recent evidence highlights men as under-recognised in preconception care, despite their influence on reproductive outcomes and willingness to engage (1). This gap is not simply one of research evidence but of policy; there is currently no dedicated framework in Scotland, or more broadly speaking the UK, that systematically addresses men's preconception health, leaving an engaged population with limited access to appropriate guidance and services.

This study addresses this gap by providing mixed-methods evidence on men's preconception health in Scotland. It aims to explore how men prepare for pregnancy, influence their partners' preparation, and can be better supported, with the goal of informing policy reform and the development of inclusive, male-centred preconception services.

## Methods

This study used a mixed-methods, sequential exploratory design, drawing on qualitative data from male-only focus groups to inform a national online questionnaire, alongside quantitative data from male respondents obtained from the online survey. The survey questionnaire and focus group moderator guide were developed by the research team specifically for this study, informed by the study objectives and a review of the relevant literature. Copies of both instruments are provided as supplementary materials (Supplementary File 1: Survey Questionnaire; Supplementary File 2: Focus Group Moderator Guide).

The focus groups were conducted first to explore men's perspectives and experiences of preconception health, and findings informed the development of the questionnaire, which provided descriptive evidence on men's health behaviours and pregnancy preparation. The mixed-methods design enabled both quantitative description of behaviours and in-depth qualitative exploration of men's experiences.

Twenty-six men participated in focus groups conducted between August and November 2023. Participants were aged 18–45 years and represented all Scottish Index of Multiple Deprivation (SIMD) quintiles (27). SIMD 2020 v2 was used as an area-level proxy for socioeconomic deprivation; its limitations, including potential misclassification and reduced sensitivity in rural areas, were considered, with individual-level data used where available. Twelve participants (46.2%) were parents and fourteen (53.8%) were not.

Men aged 18–45 years living in the Tayside region in Scotland were recruited to participate in focus groups. Groups were stratified by parental status to encourage open discussion and capture diverse experiences. Separate groups were conducted for those with and without children. Men who had received preconception care due to pre-existing health conditions were excluded. Recruitment was facilitated through community gatekeepers who supported participant identification and engagement.

Focus groups were audio-recorded, transcribed verbatim, and anonymised. Participants received an information sheet and provided written consent prior to participation. A short background questionnaire captured demographic characteristics, and participants received a £10 voucher and debrief information following the session.

Questionnaire data were collected between July and October 2024 as part of a larger national survey on pregnancy planning and preparation. Eligibility for the male-specific section was restricted to men who had supported a partner through a pregnancy in Scotland within the previous five years (2019–2024). The questionnaire was informed by focus group findings and comprised 87 items across five domains. Targeted recruitment was undertaken to increase responses from men and under-represented Health Boards, supported by Fathers Network Scotland and Dads Rock, who promoted the survey through their networks. Of 1,036 respondents, 67 (6.5%) completed the male-specific section and were included in the analysis. Participant characteristics are presented in Table 1.

Qualitative data were analysed using Braun and Clarke's six-phase thematic analysis (28). Coding was conducted by EJB and MHG to ensure consistency; discrepancies were resolved through discussion, and final themes were agreed collaboratively. An inductive approach was used throughout. Quotes are presented verbatim with minor edits for clarity, including removal of filler words, while preserving original meaning. Quantitative data were analysed using SPSS Version 29. Descriptive statistics summarised participant characteristics and responses, and crosstabulations explored relationships between demographic factors and behaviours. Given the exploratory and mixed-methods nature of the study, the sample size was sufficient to identify key patterns and generate in-depth insights.

## Ethical approval

was obtained from the Abertay University School of Applied Sciences Research Ethics Committee (EMS7232; EMS8717). Procedures were conducted in accordance with the Declaration of Helsinki. All participants provided informed consent prior to participation. No participants were under the age of 16 years; therefore, parental or guardian consent was not required.

Table 1  
Participant characteristics for questionnaire and focus group participants

| Characteristic             | Focus Groups (n = 26) | Questionnaire (n = 67) |
|----------------------------|-----------------------|------------------------|
| Number of participants     | 26                    | 67                     |
| Mean age (years)           | 27.7 ± 8.9            | 36.0 ± 4.8             |
| Age 18–24                  | 13 (50.0%)            | —                      |
| Age 25–34                  | 8 (30.8%)             | 24 (35.8%)             |
| Age 35–44                  | 4 (15.4%)             | 40 (59.8%)             |
| Age 45–54                  | 1 (3.8%)              | 3 (4.4%)               |
| White ethnicity            | 26 (100%)             | 60 (89.6%)             |
| Other ethnicity            | —                     | 7 (10.4%)              |
| Already a parent           | 12 (46.2%)            | 62 (92.5%)             |
| Not a parent               | 14 (53.8%)            | 5 (7.5%)               |
| 1 biological child         | 2 (7.7%)              | 37 (55.0%)             |
| 2 biological children      | 6 (23.1%)             | 21 (31.0%)             |
| 3 biological children      | 2 (7.7%)              | 4 (6.0%)               |
| Experienced pregnancy loss | —                     | 13 (19.4%)             |
| SIMD 1 (most deprived)     | 6 (23.1%)             | 6 (9.0%)               |
| SIMD 2                     | 4 (15.4%)             | 8 (12.0%)              |
| SIMD 3                     | 4 (15.4%)             | 12 (19.0%)             |
| SIMD 4                     | 7 (26.9%)             | 17 (25.0%)             |
| SIMD 5 (least deprived)    | 5 (19.2%)             | 22 (33.0%)             |
| Postcode missing           | —                     | 2 (3.0%)               |

## Results

Findings from the survey and focus groups are presented thematically, aligned with the study research questions. Qualitative quotations are drawn from focus groups (identified by participant ID), while percentages and frequencies are derived from the questionnaire data.

The survey sample consisted predominantly of older men (mean age 36.0 years), most of whom were already fathers (92.5%). In contrast, focus group participants were younger (mean age 27.7 years), with over half not yet fathers (53.8%).

## Men's engagement in preconception health

### Understanding and framing of pregnancy

Men described pregnancy intention along a continuum from fully planned to “just happened”, with the phrase “falling pregnant” widely understood as meaning unplanned but not necessarily unwanted:

*“It's quite a Scottish phrase... means it just happened” (T2M1).*

Survey findings reflected this variation, with 38.8% reporting that all pregnancies were planned and 28.4% reporting at least one unplanned pregnancy.

Participants described informal or passive approaches to planning. Some reported pregnancies occurring despite prior discussion but without active preparation:

*“Two of mine were kind of a surprise... but we had talked about kids before.” (T2M6).*

Others described stopping contraception without further preparation.

*“Loosely planned... my wife stopped taking the pill and we just kind of let it happen.” (T6M5).*

A perceived knowledge gap was also evident:

*“It's probably more widely known how to get rid of a pregnancy than it is how to help progress a life along and have a child.” (T3M5).*

## Initiating pregnancy planning and information-seeking

Pregnancy-related discussions were often triggered by relationship milestones or unplanned events rather than proactive planning. Some participants described assumptions around contraception:

*"I was that surprised... she was on contraception and she fell pregnant."* (T2M6)

*"I was told that at the time she was [on contraception]."* (T3M3)

Survey findings showed that only 10.4% of men reported awareness of their partner preparing before conception. Information-seeking was common, with most reporting use of NHS websites (73.1%), alongside advice from friends or family (33%). Participants often prioritised trusted and experiential sources over impersonal information while expressing greater caution towards less regulated online sources:

*"They are only telling you things because they care about you... I'd ask people that care about me... the information you're getting is from the heart."* (T2M5).

## Lifestyle behaviours and timing of changes

Participants identified a range of lifestyle behaviours relevant to preconception health, including reducing alcohol, stopping smoking, improving diet, and increasing exercise:

*"I'm a smoker, so I'd give that up straight away."* (T2M4).

Survey data indicated that 59.7% exercised regularly, 41.8% reported a healthy diet, and 25.4% had attempted weight loss prior to pregnancy. A minority (16.4%) reported consuming more than 14 units of alcohol per week.

Timing of behaviour change varied. Some participants emphasised the importance of making changes before conception, while others described changes occurring only after pregnancy was confirmed. Nearly half (49.4%) reported reducing or stopping alcohol consumption following pregnancy confirmation.

Some participants described limited personal involvement in preparation, particularly prior to pregnancy:

*"Completely clueless... just feeling my way in the dark."* (T6M4).

## Knowledge of vitamins and nutrients

Awareness of key nutrients and supplements was generally low. Many participants reported limited understanding of folic acid:

*"I don't really know what folic acid is"* (T8M6).

Survey findings show knowledge of male-specific supplements was also limited, with fewer than 10% reporting use. However, participants expressed willingness to engage with supplementation if advised by a healthcare professional:

*"I didn't even know there were supplements for that for men"* (T6M2).

## Men's influence and support for partners

### Emotional and practical support

Men described both emotional and practical roles in supporting their partners. Emotional support included providing reassurance and creating a supportive environment:

*"Make her environment really comfortable"* (T2M1).

Practical support included reminders, financial preparation, and shared planning:

*"I've got a wee reminder on the phone..."* (T2M6).

*"I got a new job to prepare financially."* (T3M4).

Survey findings indicated that 49% of men with a planned pregnancy reported actively preparing alongside their partner, often focusing on practical rather than clinical aspects.

## Perceptions of male fertility and healthcare engagement

Participants demonstrated awareness of lifestyle and environmental factors that may affect fertility, although some perceived fertility issues as primarily a woman's concern:

*"Even if you were struggling to conceive, your first thought would always be about the woman's fertility."* (T6M4).

Survey data showed that a quarter (25.4%) of men would only consult a healthcare professional if a problem was suspected, and relatively few had previously done so. However, willingness to engage was evident, with 62.7% reporting comfort discussing pregnancy intentions with a general practitioner.

## Masculinity and silence around fertility

Discussions of fertility and reproductive health were often described as limited or stigmatised among men. Participants highlighted that such topics were rarely discussed openly within peer groups:

*"Boys dinnae talk about down there..." (T6M2).*

*"It's not something that features..." (T6M3).*

*"You've got one or two pals you'd talk to..." (T6M4).*

## Opportunities for improving men's involvement

### Experiences of pregnancy loss

Experiences of pregnancy loss were reported by 19.4% of survey respondents and had a significant emotional impact. Participants described lasting effects on their wellbeing and future attitudes toward pregnancy:

*"It's the worst thing I've experienced in life" (T3M3).*

## Learning across pregnancies and timing of information

Some survey participants described changes in behaviours across subsequent pregnancies, including dietary improvements and earlier preparation. Overall, 11.9% reported doing something differently in later pregnancies.

Participants expressed mixed views on when preconception information should be delivered. Some felt it should be provided closer to when individuals are considering parenthood, rather than earlier in life:

*"I didn't start thinking about this kind of stuff until I was like 30" (T6M6).*

## Summary

Participants were generally engaged but inconsistently prepared for pregnancy. While many described active roles in supporting their partners and expressed willingness to adopt healthier behaviours, awareness of their own preconception health needs was limited, and preconception care was often perceived as female focused.

A detailed mixed-methods synthesis, including illustrative quotations and corresponding quantitative indicators, is provided in Supplementary file 3: detailed results table. This table presents key themes with illustrative quotations alongside corresponding survey indicators, highlighting both the prevalence and contextual depth of men's engagement in preconception health.

## Discussion

To our knowledge, this is the first mixed-methods study to examine men's preconception health knowledge, behaviours, and support needs within the Scottish context. This study provides novel mixed-methods evidence on men's preconception health in Scotland, offering insight into how men understand, experience, and enact their role in preconception health. The findings demonstrate that men are neither absent from nor indifferent to preconception health. Rather, their involvement is characterised by four interconnected patterns: engagement that is often reactive rather than proactive; the continued framing of preconception health as women's responsibility; men's broader contribution through practical, emotional, and relational roles; and a mismatch between men's willingness to engage and the limited support provided by current health systems. By integrating behavioural, experiential, and knowledge-based perspectives, this study extends existing literature and highlights important implications for male fertility, reproductive health, and public health policy.

## Reactive rather than proactive engagement

Men in this study demonstrated awareness of behaviours relevant to preconception health, including smoking cessation, dietary improvement, and reducing alcohol consumption. However, engagement was frequently reactive, with behaviour change often occurring only after pregnancy confirmation, partner-led preparation, or fertility concerns. Pregnancy planning was commonly described as informal or unstructured, with many men characterising conception as something that "just happened" rather than the result of deliberate preparation.

This pattern suggests that men's involvement is often triggered by key events rather than embedded within a proactive preconception framework. While willingness to engage was evident, the absence of clear entry points for men may delay behaviour change and reduce opportunities for early intervention. This has important implications for male fertility, as delayed modification of health behaviours may limit opportunities to optimise sperm quality and overall reproductive health prior to conception. These findings align with previous research indicating that men are less likely to engage with preventive reproductive health behaviours prior to pregnancy (11).

## Preconception health as women's business

A key finding of this study is the imbalance in knowledge between pregnancy prevention and preparation. While many men demonstrated awareness of contraception and the avoidance of risks during pregnancy, understanding of how to actively prepare for conception was limited. As one participant observed, *“it’s probably more widely known how to get rid of a pregnancy than it is how to help progress a life along and have a child”* (T3M5). This reflects broader gaps in public health messaging, where preventing pregnancy has historically been prioritised over promoting preconception health (18).

Preconception health was frequently framed as the responsibility of women, with participants often assuming that contraception, fertility awareness, and preconception health were primarily managed by their partner. Fertility challenges were also commonly perceived as female issues, despite evidence that male factors contribute to approximately half of infertility cases (16). These perceptions are rooted in longstanding societal and healthcare norms that position reproductive health within a female-centred model (8, 17). As one participant noted, *“Even if you were struggling to conceive, your first thought would always be about the woman’s fertility”* (T6M4). Men’s limited awareness of key concepts such as folic acid, iodine, and male-specific fertility factors further reinforces this framing.

This gendered framing has implications for both men and women. Women may experience increased responsibility for pregnancy planning and lifestyle preparation, while men may lack knowledge, support, and recognition during a significant life transition. This reinforces existing gender inequities and limits opportunities for men to engage proactively in preconception health.

## **Beyond biology: relational, practical, and emotional contributions**

Importantly, men’s contributions extended beyond biological and behavioural factors. Participants described playing an active role in supporting their partners through emotional reassurance, practical preparation, and financial planning, including attending appointments, supporting lifestyle changes, and preparing for parenthood. These findings reinforce previous research highlighting men’s active role in supporting partners during pregnancy preparation (4, 21, 22).

Conceptual models, such as the eight-pathway model of paternal influence (23), emphasise behavioural, relational, and socioeconomic mechanisms alongside biological factors. This broader perspective is reflected in the present findings, where experiences of pregnancy loss further highlighted men’s emotional involvement, with participants describing grief, anxiety, and long-term psychological impact. At the same time, positive accounts of fatherhood and early parenting engagement suggest that supporting men’s wellbeing may enhance both paternal involvement and wider family health outcomes (22, 29–31).

## **Mismatch between willingness and support**

A central finding of this study is the mismatch between men’s willingness to engage, and the limited opportunities provided by current health systems. Many participants expressed openness to making lifestyle changes, seeking information, and discussing pregnancy intentions with healthcare professionals. However, they also reported limited access to relevant information, exclusion from services, and a lack of targeted public health messaging. These findings suggest that current models of preconception care are not well aligned with men’s needs. Primary care represents a key opportunity for engagement, as routine consultations could incorporate discussions of reproductive intentions and preconception health for both partners (11).

Evidence from a separate exploratory study with GPs in Scotland further underscores this gap: clinicians reported rarely engaging men in preconception discussions, with pregnancy intentions routinely explored with women only. GPs described uncertainty around their remit, time, and sensitivity in raising these issues with male patients, and noted that engagement with men tended to occur only when mandated by policy. This suggests that systemic and attitudinal barriers within primary care – not merely a lack of patient willingness – are driving the current gap (32). In addition, public health strategies, including targeted digital messaging and couple-based approaches, may provide accessible and scalable means of engaging men earlier in the preconception period. International examples of family-centred preconception care demonstrate that more inclusive approaches are both feasible and effective (33).

## **Strengths and limitations**

A key strength of this study is its mixed-methods design, combining quantitative survey data with in-depth qualitative insights. This approach provides both breadth and depth, enabling a more comprehensive understanding of men’s preconception health than either method alone. The inclusion of participants across a range of socioeconomic backgrounds further strengthens the relevance of the findings.

Several limitations should be considered. The survey sample (n = 67) is modest, and the focus group sample was ethnically homogeneous, which limits generalisability to more diverse Scottish communities. The low proportion of male respondents relative to the overall survey sample raises the possibility of self-selection bias, whereby participants may have had a greater interest in pregnancy and reproductive health than the wider male population. Consequently, the findings may overestimate men’s knowledge, engagement, and willingness to adopt preconception health behaviours. However, despite this potential bias, participants reported substantial gaps in knowledge and limited awareness of male preconception health, suggesting that these challenges may persist even among relatively engaged men. As with all voluntary self-report studies, recall bias and social desirability bias may also have influenced responses.

The challenges encountered in recruiting male participants, despite employing a strategy that yielded over 900 female responses, are themselves important findings. They reflect the structural and attitudinal barriers that make men difficult to engage in reproductive health research and point to the need for sustained, targeted recruitment strategies in future work. These constraints are inherent to conducting community-based research with a population that is systematically under engaged in health services and research. They do not diminish the value of the findings, which offer depth and breadth not achievable by either method alone, which identify priorities for larger-scale future research and policy development.

## **Conclusion**

Men are active, willing participants in preconception health who are being failed by current policy and service structures. This study provides mixed-methods evidence that men in Scotland engage with preconception health, but in ways shaped by knowledge deficits, gendered norms and the absence of any systematic provision designed for them. The consequences extend beyond individual health: delayed behaviour change, limited understanding of male fertility, and exclusion from preconception services represent modifiable barriers to improving reproductive outcomes at population level. Addressing this requires action at three levels: first, revision of the Scottish Women's Health Plan and associated preconception frameworks to include explicit provisions for men; second, integration of men into routine primary care conversations about reproductive health, moving beyond the current model in which preconception advice is directed solely at women; and third, investment in male-targeted public health messaging that addresses the documented gap in knowledge around paternal health behaviours and their impact on fertility and pregnancy outcomes. These changes may be important for improving men's engagement in preconception health and strengthening reproductive health outcomes. Scotland has an opportunity to lead the way in developing inclusive, evidence-based preconception policy that recognises the paternal contribution to family health outcomes. Seizing that opportunity will require treating men's preconception health not as an afterthought, but as a public health priority in its own right.

## Declarations

## Ethics approval and Consent to participate

Ethical approval was obtained from the Abertay University School of Applied Sciences Research Ethics Committee (EMS7232; EMS8717). Procedures were conducted in accordance with the Declaration of Helsinki. All participants provided informed consent prior to participation. No participants were under the age of 16 years; therefore, parental or guardian consent was not required.

## Clinical trial number

Not applicable.

## Consent for publication

Not applicable

## Competing Interests

The authors declare that they have no competing interests.

## Conflict of interest

The authors declare that they have no conflict interests.

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## Author Contribution

EJB designed the study, conducted data collection, analysed the data, contributed to interpretation of findings and drafted the manuscript. MHG analysed qualitative data and contributed to interpretation of findings. KLB and MAL provided input into study design, supervised the research and revised the manuscript. All authors read and approved the final manuscript.

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## Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to the inclusion of qualitative data that may compromise participant confidentiality but are available from the corresponding author on reasonable request and subject to relevant ethical and institutional approvals.

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