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'I wouldn't trust it …' Digital transformation of young people's sexual health services: a systems-informed qualitative enquiry

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ABSTRACT

Introduction Digital sexual health technologies for young people, such as websites, texting services and apps, could address some of the sexual health inequalities that many experience, since they have the potential to overcome concerns associated with traditional clinic based services such as embarrassment, privacy and accessibility. However, they are currently under-utilised internationally.

Methods Using complexity theory and systems thinking as a theoretical framework, this qualitative descriptive study sought to explore the acceptability of digital sexual health technologies for 16–18 year olds. Data generation with 10 sexual health nurses with experience of digital service delivery took the form of minimally structured online one-to-one interviews lasting between 20 and 50 min. Focus groups of up to eight young people or individual interviews were used to explore 32 16–18 year olds' perspectives. Interviews lasted between 18 and 48 min. Both datasets were analysed using Braun and Clarke's reflexive thematic analysis.

Results Three themes emerged from each dataset. Nurses' themes were: (1) digital sexual health services can be more comfortable for young people, (2) digital sexual health services can be complimentary to clinic visits but do not replace them and (3) challenges exist in providing sexual health services to young people through digital technologies. The young people's themes were: (1) sexual health is a 'difficult issue', (2) young people have specific expectations yet a desire for choice and (3) digital health interventions are not a panacea.

Conclusions While digital sexual health interventions hold great potential, they need to be integral to the wider systems in which both young people and sexual health promotion services operate, otherwise there is a risk that their impact will be compromised. Collaborative approaches that connect causal factors and policy objectives and involve full engagement with all stakeholders are more likely to be efficacious.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Despite being competent in using digital technologies, young people continue to underutilise sexual health care, in both 'face-to-face' and virtual formats.

WHAT THIS STUDY ADDS

⇒ This study highlights the disparity between young people's preferences for instant and continuous access to a trusted source and the current service provision which is rooted in historical working practices. Young people and healthcare professionals agree that sexual health services should not stand alone and require careful integration with multiple agencies.

HOW THIS STUDY MAY AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The future of digital access to healthcare is embedded in policy; however, further research into the most effective way of achieving this is needed, specifically, how current working practices are potentially minimising the use and impact of novel technologies.

INTRODUCTION

Good sexual health is more than the absence of sexually transmitted infection (STI) and unintended pregnancy; it requires a respectful approach to sexual relationships, free from exploitation and violence, that may lead to satisfying, pleasurable and safe sexual experiences.[1] The attainment and maintenance of positive sexual health is, therefore, contingent on a complex interplay of physical, psychological and social factors.[1] For young people, under 25 years, their continuing biological, social, psychological and emotional maturity may mean that positive sexual health is aspirational rather than their lived reality, with some engaging in 'high risk' sexual activity,[2] such as unprotected vaginal, anal or oral sex or sex while under the influence of drugs or alcohol.[3] Consequently, those under 25 years experience a disproportionate rate of new STIs and HIV infections

internationally, along with the associated multifaceted physical and psychological sequelae,[2 4] and for those who experience pregnancy during adolescence,[4 5] it is recognised that, for some, this may be associated with compromised social outcomes.[6]

Young people's sexual health is, therefore, considered a priority health issue internationally.[7] Investment in youth sexual health not only promotes young people's physical and mental health status and their overall well-being but it also translates to wider society through its positive impact on education, gender equality, political stability and economic development.[8] Reflecting this, the 2030 Agenda for Sustainable Development[9] makes specific reference to universal access to sexual and reproductive healthcare services including contraception, information and education (Target 3.7). Likewise, UNESCO has called for comprehensive sexuality education to be mandatory.[7] However, the implementation of this guidance is problematic with young people voicing dissatisfaction with the quality of available relationships and sex education (RSE) in the UK[10 11] and tensions surrounding the content of RSE reported across Europe[12] and parts of the USA.[13]

Complimentary systems that support the sexual health of young people are, therefore, required. Specific clinics for young people and in-person outreach services aim to improve accessibility, but practitioners report that provision and uptake is variable globally. In keeping with international health policy that considers digital health innovation to be the cornerstone of healthcare modernisation,[14–17] with the expectation that digital interventions will transform healthcare in the years ahead,[18] recent reviews[19 20] suggest that coproduced digital technologies could be used to provide bespoke sexual health services for young people internationally. Research has identified that digital interventions in the context of sexual health, such as texting services, websites and online forums, can be attractive to young people because they address many of the concerns associated with traditional clinic based services such as confidentiality, embarrassment, privacy and accessibility.[21 22] However, a recent review[23] identified that although digital health technologies hold great promise, they are currently under-utilised. This study, therefore, sought to explore the acceptability of digital sexual health technologies for 16–18 year olds by fulfilling the following objectives:

1. To explore 16–18 year olds' perceptions of digital sexual health technologies.
2. To investigate sexual health nurses' experiences of using digital sexual health technologies with young people.

Nurses were the professional population of interest for this study since, increasingly, sexual health services are delivered through nurse-led clinics in England and Wales.[24 25] Additionally, the research was funded through a 'Nurse-led Digital Health' funding stream (Burdett Trust for Nursing) which supported investigation into digital technologies used in nurse-led clinical services. Following consultation with the British Association of Sexual Health and HIV, 16–18 year olds were recruited specifically since they are a particularly vulnerable group and considered 'hard to reach.' In addition, they experience disproportionately higher rates of STI and unintended pregnancy.[5] Throughout this study, sexual health services for young people were conceptualised in their broadest sense, including those providing advice and information about sexuality, gender, relationships, pregnancy, testing and treatments for infection, as well as free access to condoms, and routine and emergency contraception. Digital sexual health interventions were defined as any intervention that used digital technology to enhance the sexual health of the target age group, these included but were not limited to websites, video games, chat forums, texting (SMS) services and apps.

METHODS

Theoretical framework

Sexual health inequalities among young people are notoriously difficult to define as they are multicausal, socially complex and often defy a single best solution as well as being beyond the capacity of any single health system or organisation to understand and solve. They are, therefore, commonly referred to as a 'wicked' problem or issue.[26] Complexity theory and systems thinking, therefore, underpinned this study, with the focus on understanding the rapidly changing nature of interventions and systems[27] which, in turn, give rise to dynamic and emergent behaviours.[28–30] A system in this context was considered a set of elements functioning in an interrelated way to address a particular need.[31]

Design

A qualitative descriptive design was employed for this study since this approach best recognises subjectivity and presents findings that reflect participants' perspectives directly.[32–34] The study was situated within the constructivist paradigm[35]; ontologically, the research team's stance was that reality would be constructed through interactions and within the research participants' unique experiences, since the reality of sexual health needs do not exist in and of themselves and are 'waiting to be discovered'.[36] Epistemologically, the knowledge gained was viewed as subjective, valuable and co-constructed with primacy given to the participants' experiences.

Patient and public involvement

Young people were integral to the design of this study. The research question evolved from coproduction seminars facilitated by the lead author, data generation methods were designed with a group of young people who advise on research (ALPHA) and sixth formers. In addition, young people fed back on practice interviews which led to further refinement of the methods employed.

Research procedure

This study focused on the perspectives of two cohorts: sexual health nurses and young people with or without

personal experience of sexual health services. Sampling was purposive. The inclusion criterion for the nurses was that they had experience of digital sexual health services with young people in England and/or Wales. For the young people, inclusion criteria were that they were between 16 and 18 years and attended a school, pupil referral unit or third sector setting in England or Wales. Participants were recruited between May and October 2022. Nurse recruitment was facilitated by clinical leads who advertised the study within National Health Service (NHS) sexual health services employing digital sexual health services for young people. Recruitment of young people was achieved via pastoral care professionals, or equivalent.

Data generation with nurses took the form of minimally structured (see online supplemental file 1) online one-to-one interviews throughout July to October 2022. Interview questions reflected the themes identified in an associated systematic literature review[20] and were conducted by an experienced qualitative researcher (CD). Interviews lasted between 20 and 50 min. They were recorded and transcribed using Microsoft Teams with manual refinement.

Data generation with young people was conducted by a researcher (CB) who is experienced in sensitive interviewing and working with young people. Focus groups or interviews were used depending on the preference of the young people, in their usual setting. An indicative interview schedule (see online supplemental file 1) was designed in consultation with a group of young people (ALPHA), using 'blocks', each addressing a different theme that arose in the associated systematic review.[20] This is an established practice in sensitive research contexts.[37] However, the schedule served only as a guide to privilege the young people's accounts. Prior to the recorded interviews, practice interactions were conducted and the schedule was revised accordingly. The focus groups and interviews lasted between 18 and 48 min. They were recorded using a digital voice recorder and transcribed verbatim.

Data analysis

Both sets of data were analysed using Braun and Clarke's[38] reflexive thematic analysis. An inductive approach to data analysis was applied, using both semantic and latent coding.[39] Primary data analysis was conducted by MKM, with each stage verified by other members of the team (CB, CD).

Ethical considerations

Cardiff University's School of Healthcare Sciences Research Ethics Committee granted approval for this study in June 2022 (SREC reference: REC877). The study was also registered with the relevant United Kingdom NHS Trusts' Research and Development Departments. Parental consent was provided using an opt-out basis in keeping with studies of this type.[40–42] Where literacy was a challenge for young people, information sheets and consent forms were explained verbally, and the individual's youth worker verified their ability to provide consent. To avoid emotional harm or discomfort, photo elicitation techniques were also used to encourage the young people to discuss attitudes to digital sexual health provision in general, rather than more personal sexual health concerns. Safeguarding policies were adhered to throughout.

In order to promote the trustworthiness of the data, at each stage of the research process reflexivity was employed to encourage critical reflection on the effect of the researchers on the research process, particularly in relation to how the team influenced the interpretive process and development of findings.[43] The research team was culturally diverse, with differing professional interests which, we believe, led to considerations of diversity, equity and inclusion throughout each stage of the study.

RESULTS

Nurses' perceptions

In total, 10 sexual health nurses, spanning three English NHS Trusts in coastal, rural and urban locations, were interviewed. The nurses described themselves as women and ranged from early career nurses to nurses with 35 years post-qualification experience. They held various posts, including band 5 nurses, a clinical outreach team leader, a senior sexual health practitioner and advanced nurse practitioners. All had experience of a text based digital sexual health service which allows young people to directly text sexual health nurses for advice. The following three themes were identified from these data, all names are pseudonyms.

Digital sexual health services can be more comfortable for young people

The nurses identified that young people may be more inclined to seek sexual health information through a digital service because it is less embarrassing for them:

> if I had someone in front of me, I don't think they would say for instance, I think I masturbate too much … (Alice, lines 192–195)

> … I think they feel they can say anything … because we can't see them. (Charlie, lines 184–185)

Nurses also reported that young people seek a wider range of sexual health information online than in face-to-face consultations:

> we've had questions around transgender, and we've had symptomatic sort of questions, you know, this is happening. What can I do? (Daniela, lines 267–268)

> … erectile dysfunction has come up a couple of times now… (Emma, line 152)

> … penis size and performance, and those kinds of questions would very much be asked because it's anonymous… Or do I masturbate too much? … Why is my girlfriend not looking

like a porn star when I'm having sex with her? (Alice, lines 148–156)

Digital sexual health services can be complimentary to clinic visits but do not replace them

There was a consensus among the nurses that digital health technology can be used as an adjunct to clinic visits. Nurses outlined how face-to-face assessment was often necessary but digital history taking enabled them to build trust to facilitate in-person attendance:

> People will tell us about the discharge that they've been having, at which point you know … you have to get them into clinic. (Emma, lines 152–159)

However, in certain instances, face-to-face consultations were perceived as the only appropriate course of action:

> Anybody that is under 16, we wouldn't consult with over the phone . We would bring them in for a face-to-face appointment because we like to do a Fraser competence and to check that all is well, and even for some young people above 16, if they've got any learning disability, any sort of vulnerabilities, mental health issues … you like to bring them into clinic so you can see them. (Gino, lines 85–89)

Challenges exist in providing sexual health services to young people through digital technologies

Nurses reported a number of challenges that inhibited and/or presented difficulties in digital sexual health service delivery for young people. These included a lack of training on how to use the digital health technology effectively, staff being anxious about providing sexual health information online and technical issues. They emphasised the different skills required when communicating with young people through text:

> It's hard to gauge because you can't see a person and their emotions … (Hazel, line 94)

> … there's no information in terms of whether you're talking to somebody who is … younger … male or female … (Jaycee, lines 68–72)

Some nurses also expressed concern about the challenges involved in dealing with safeguarding issues in the context of digital service delivery:

> … we don't ask any of the safeguarding questions that we would normally [ask] when somebody under 18 is in front of us. (Charlie, lines 146–147)

> It's really hard because you've only got that phone number. If someone did immediate harm, we can give that phone number to the police. But if someone's talking about something that's historic, they need help and support, and you could really do with seeing them. But they don't want to engage. It's like where's the safety net? So, it's making a safety net clear. (Gino, lines 155–159)

They also expressed frustration with their particular digital system since it lacked immediacy:

> I just find it so lagging as in, the patient will message in, they'll get an auto response from our system, we may or may not be online at that time so we'll respond when we can. And the patient then responds, and they get another automated message. And it's a very broken conversation. (Emma, lines 69–72)

> … they'll message at 12:00 o'clock at night. Saturday nights for the morning after pill and things like that. And we're not going to access that until Monday morning. (Fiona, lines 173–176)

Young peoples' perceptions

In total, 32 16–18 year olds participated in either one of the three focus groups or individual interviews. They were all in full-time education in England and Wales; seven attended a pupil referral unit and the others attended school sixth forms. The participants varied in relation to their ethnicity, gender presentation, socioeconomic background, literacy levels, educational attainment and whether they resided in rural, semirural or urban settings. Three themes were identified from the young people's data: (1) sexual health is a 'difficult issue', (2) young people have specific expectations yet a desire for choice and (3) digital health interventions are not a panacea. The first theme will be presented elsewhere (under review), with priority being given to the latter two themes here since they speak directly to the aim of this paper. However, it is important to be cognisant of the challenges faced by many young people in the UK in discussing sexual health with peers and adults[11] when interpreting the following themes.

Specific expectations yet a desire for choice

Immediacy of response was described as a crucial factor in encouraging uptake of digital sexual health interventions among young people. They described having any form of sexual health concern as a crisis, requiring a swift response at any time of day or night:

> It needs to be accessible all day, 24/7. Like you're going to get people calling at 2am. If it's eight until five you're at school. (FGD1: female, lines 884–888)

They felt that disengagement would be likely if digital services lacked this immediacy:

> … I would be more inclined to delete it, because I think you would get more embarrassed and you'd just be like, I will just go somewhere else, because they don't want to answer. (FGD2: female, lines 954–958)

> …it needs to be quicker than other services. (FGD3: male, lines 553–558)

The credibility of online sexual health advisors was also described as pivotal:

> It should give confirmation of who am I speaking to? What are their qualifications? (FGD1: female, lines 639–640)

There was a consensus that young people would prefer to communicate with medically trained advisors or advisors with recognisable qualifications:

… you'd want someone who's medically trained. (FGD1: female, lines 960–962)

… some kind of qualification that is recognised by medical bodies … (FGD1: female, lines 977–980)

The gender of advisors was not an issue for some, but others expressed that they would feel more comfortable communicating with someone of the same gender:

if it's for contraception, pregnancy or infection, I feel like I'd be more comfortable with the same gender … (FGD2: female, lines 354–357)

In relation to age, some expressed that they would prefer to talk with younger advisors, while others placed an emphasis on the advisor's interpersonal skills:

[younger advisors] would comfort us and reassure us in a way, without it being awkward in like the generation difference. (FGD3: female, lines 1122–1123)

I suppose it depends on the person who's actually doing it as well, because you could have an older person that's in tune with what's going on today and is easy to talk to, but you could have an older person that just isn't. (FGD2: male, lines 336–339)

The participants had different views on their preferred interface, but there was a consensus that any interface needed to be credible. They felt that applications that mimicked the style of popular social media platforms would be inappropriate, and the general opinion was that a simple, discrete website that provided accurate information and guidance with an optional chat function would be preferable:

It should just be simple and user friendly, and not over the top or anything. (FGD2: male, lines 617–619)

Not too many functions, like, you can just open the app and basically what you need is there. (FGD3: female, lines 1281–1282)

Each focus group referred to the NHS website (https://www.nhs.uk/conditions/sexually-transmitted-infections-stis/), stating that their preference would be for this to be extended to provide more detailed information about sexual health, an optional chat function and an ordering facility for contraceptives and testing kits:

… through the NHS website it's so much easier to be discreet. (FGD1: female, lines 1137–1140)

You could just add it as a subdomain on the NHS website, so for all intents and purposes it looks like the NHS website, but it's a different page. (FGD2: male, lines 643–645)

The participants' preference for the 'chat function' was for it to be optional and bidirectional:

Maybe like an online chat, where you can ask someone live, like questions if you need. Because you might need like a more specific response. (FGD3: female, lines 438–440)

… So, there is like someone replying. (FGD3: female, line 485)

Although being able to obtain testing kits and contraception through postal delivery systems was perceived positively, there was significant concern around the privacy of delivery systems with participants saying that deliveries to their home address would be inappropriate as they would not want their parents to find out that they were sexually active. Alternative locations for deliveries were suggested:

… maybe the pharmacy or the doctor's surgery, instead of your house, where your parents are going to pick it up. (FGD1: female, lines 228–231)

Like, the lockers outside the shops … you like, scan your phone on them or something. (FGD3: male, lines 726–728)

Digital health interventions are not a panacea

The young people who participated in this study expressed significant reservations regarding digital sexual health interventions, largely arising from a lack of trust and discomfort with discussing sexual health issues:

People might be scared that it's not anonymous. (FGD1: female, line 624)

I wouldn't trust it … (I3: male, line 47)

No way I'd talk to anyone 'bout this stuff on line that's weird … could be anyone … they could know you. (I2: Female, lines 428–429)

The problem with the video stuff is that you're there, you're so much more self-conscious if you're on camera talking about something [intimate]. (FGD1: female, lines 941–943)

As an alternative they wanted a range of options, both digital and face to face:

Yes, I think in order for it to be widely used you need as many options as you possibly can. Some will be more popular, but I think every single one will get used at some point. (FGD2: male, lines 912–914)

Me and my mates don't have phones or computers … this'd be no good for us. (I1: male, lines 104–107)

In the same way that they wanted a choice of digital sexual health service interface, they also wanted a choice in being able to speak to a caring adult in person or online. The participants expressed a desire to be able to talk to their parents, teachers, pastoral staff, the school nurse and friends about sexuality and how digital sexual health interventions could not replace this need. They acknowledged advantages of having access to face-to-face clinics as well as digital sexual health interventions:

[During a face-to-face consultation] you get the empathy … because they can see how you're feeling. (FGD2: female, lines 406–408)

[with digital health interventions), you can actually keep it more discreet and private. (FGD3: male, line 647)

I think it's important to have both digital and face-to-face clinic visits, particularly in rural areas, because there's no

way you're going to get a face to face in every rural area. (FGD1: female, lines 804–806)

DISCUSSION

For young people, sexual health services are inter-related, complex systems of health protection and promotion that permeate beyond the boundaries of direct service delivery,[44] potentially involving families, social groups, school health, youth services, third sector organisations and digitally mediated services in addition to traditional clinical provision. However, there is currently a paucity of systems-informed research in the field.[44] Internationally, health systems are shifting towards digitally mediated care to meet the health needs of populations.[17] In some countries, sexual health services have been at the forefront of such changes but the available literature suggests that digital services appeal more to those with higher educational qualifications and those from more affluent areas.[45] Yet, it is recognised that those who experience the greatest burden of compromised sexual health are more likely to experience health inequalities and, importantly, are more likely to have low levels of health and digital literacy.[17] In the current study, young people from affluent backgrounds and with higher educational attainment demonstrated both greater sexual health literacy and digital acumen than their socially and educationally disadvantaged counterparts.

In considering determinants of health, Rice and Sara[46] argue that digital technologies significantly impact health and health inequities. Although, digital transformation has permeated into virtually every aspect of daily life,[47] arguably even more so in the context of young peoples' lives,[20] digital literacy and access to digital technology cannot be assumed.[20] Indeed, in the UK, the National Health Service has recently highlighted the risk of digital exclusion among those who have limited access, skills and awareness of digital services.[48] Thus, to consider digital provision as a standalone intervention would risk excluding a proportion of the population and indeed, as the young people in this study articulated, digital solutions alone would be insufficient in addressing their needs. Instead, inter-related systems to better support them in their pursuit of sexual health and well-being are required. These findings align with those of the Sex Education Forum[11] who recently surveyed 1002 16–17 year olds in England and identified that the systems that young people come into contact with on a daily basis, such as the education system and their parents, often let them down in the context of supporting their sexual health. Likewise, Renold *et al*[10] identified that young people assert that school-based relationships and sexuality education is patchy and often poor, but they would still rather learn in school because, for many, talking to parents is not an option and access to other forms of education can be limited.

The data in the current study suggested incongruence between young people's expectations of digital health interventions, policy aspirations and the realities of service provision described by the nurses in this study. Young people expressed a perceived need for a service that was available 24 hours a day, 7 days a week, with instant responses. They asserted that any system that involved a delayed response would be unacceptable to their age group. Likewise, policy[49 50] outlines an expectation that digital transformation will result in services that are more responsive to the needs of service users. However, the nurses in this study described a system that was dominated by the traditional clinic model with service delivery times adhering to office hours. Although the use of digital technology to facilitate access to healthcare services has risen in prominence and is now a policy priority internationally,[50] these findings suggest that local implementation is variable, nuanced and certainly not yet embedded.[51]

Although other studies[21 22] and the nurses in the current study identified that digital sexual health services may encourage young people to seek advice more readily as it may be more comfortable than face-to-face communication, this did not feature in the young people's data. Instead young people argued that digital service delivery is not a panacea in relation to accessible and effective sexual health services, highlighting the need both for face-to-face and digital sexual health service provision. An unexpected observation in collecting these data was the low level of literacy among some of the young people, with several unable to read and write. This was poignant in the current study, since low literacy levels are also closely associated with digital exclusion.[48] The young people's caution about access to digital resources should also be noted.

'Trust' of digital systems arose as a shared theme across both cohorts of participants, but with differing priorities and perceptions. Nurses expressed concerns regarding the transferability of face-to-face assessment techniques and care delivery to the digital space, suggesting a need for bespoke training. A recent scoping review[52] identified that such concerns are common, with clinicians describing difficulties in clinical decision-making during digital consultations due to the limited availability of information and the inability to perform a physical examination. There was a shared desire among both the nurses and the young people to know who was at the other end of the 'line' when using digital health interventions. Nurses wanted to know the gender and age of the service user so that they could shape their care delivery accordingly. Likewise, young people wanted to know the gender and age of their advisors. However, their desires were underpinned by a lack of trust in digital systems overall. They voiced significant concern about whether the people at the other end of a 'chat' or 'video call' could be trusted to treat them with respect and to keep their conversations confidential. These findings are consistent with our recent systematic review,[20] highlighting that the confidentiality and integrity of digital systems need to be prioritised and communicated to young people, since

their care trajectory is likely to be stymied at the outset if this is not addressed.

While this study offers a number of important insights, generalisations are limited by the small sample size employed and the nature of the sample, in that cultural, religious, socioeconomic and sexual diversity as factors that may influence perceptions and practices in sexual health promotion could not be explored. Throughout the research process, presuppositions and judgements were suspended through a process of reflexivity, the aim of which was to focus on what was present in the data rather than what was assumed to be present.[53] However, it is acknowledged that the research team significantly shaped the research process and co-constructed the findings of this study.

CONCLUSION

Maternal health, health of the newborn, adolescent health, economic development and gender equality are all underpinned by effective sexual and reproductive health services.[8] Young people's sexual health services can, therefore, make a positive contribution across micro, meso and macro levels[8] but they need to be accessible, affordable and acceptable. The findings of this study suggest that while digital sexual health interventions hold great potential in promoting young people's sexual health, as with other 'wicked issues', multisystem or mixed economy collaborative approaches that connect causal factors and policy objectives, while fully engaging all stakeholders, are more likely to be efficacious.[44] The results of this study suggest that for digital services to fulfil their potential and to become integral to an effective sexual health system for young people, young people's and staff concerns regarding trust need to be addressed, as do expectations and capabilities of service delivery models. However, as the participants in this study have outlined, digital healthcare alone will not fully address the sexual health requirements of young people, since it represents only one aspect of the complex dynamic system that supports them in this domain.

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Contributors CB was responsible for conceptualisation, data generation (young people), validation, formal analysis, investigation, writing of the original draft, supervision, project administration and funding acquisition. DK informed the conceptualisation of the study, contributed to the study design and conduct, reviewed and edited drafts and was instrumental in funding acquisition. CD was responsible for the nurses' data collection, oversaw the analysis and contributed to the write up of this paper. MKM was responsible for data analysis (under supervision) and documented the references for this paper. HY, ZC, JMS and EJ facilitated reflexive practice throughout the conduct and write up of the study, informed its design and conduct and reviewed and edited the final manuscript.

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Competing interests None declared.

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Patient consent for publication Not applicable.

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