

Exploring the Preferences of Female Teenagers when Seeking Sexual Health Information using Websites and Apps

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ABSTRACT

Mobile technology has become an increasingly popular source for female teenagers to seek sexual health information. However, it is not known what design features teenagers want in sexual health apps. Therefore, this research aimed to explore whether internet-based sexual health resources via websites and mobiles apps are meeting teenagers' sexual health needs and to explore for the first time teenagers' perceptions of the design features of sexual health mobile apps. Twenty-three female participants aged 13-16 years ($M = 14.3$, $SD = 0.91$) viewed either six existing sexual health websites or three existing sexual health mobile apps chosen to be representative of the range and variety currently available. Participants then took part in focus groups evaluating each of the websites and mobile apps. The findings indicate that teenagers currently use their phones to access sexual health information due to ease of access and privacy. However, teenagers were not aware of sexual health apps. Participants believed that apps should have similar design features to websites but apps should contain an interactive element paired with accurate sexual health information. At present, female teenagers are not using sexual health mobile apps, yet they believe they are more convenient and private compared to websites. Professionals' designing mobile apps should consider how best to market this resource appropriately to teenagers whilst ensuring that they contain both interactive features and accurate information.

CCS CONCEPTS

• **Applied computing** → **Life and Medical Sciences**; *Consumer Health*; Health informatics

KEYWORDS

Mobile application; sexual health; teenagers

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DH '17, July 02-05, 2017, London, United Kingdom

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ACM ISBN 978-1-4503-5249-9/17/07...\$15.00

<http://dx.doi.org/10.1145/3079452.3079497>

1 INTRODUCTION

The internet plays an important role in teenagers' everyday lives and 92% of teenagers' report using the internet daily [1]. It is well documented that the internet is a common source for teenagers seeking sexual health information [2]. Although teenagers view health care providers as the most reliable sources of sexual health information, discussing sex with health care providers, parents or even friends can be considered embarrassing in a society that considers discussing sex a taboo [3]. As female teenagers receive less instruction about birth control, consent and sexually transmitted infections (STI) in traditional, formal settings such as at school [4], the internet becomes an increasingly important and appealing anonymous and private resource for sexual health information.

In recent years, there has been an increase in the development of internet-based sexual health resources. Many of these are designed to act as interventions, improving teenager's knowledge of sexual health [5]. Evaluations of current sexual health sites reveal issues around the quality of the information they provide. The information provided on more technically complex websites is often inaccurate [6] and outdated [7].

From a user perspective, the literature also suggests a preference for sexual health websites that present clear information, free from technical or complex language. Websites should cover a wide range of sexual health topics including; sexual pleasure, relationships, contraception, pregnancy and STIs. They should include videos that teenagers can relate to [8] and resources should be accessible, trustworthy, private and safe [9].

Accessing sensitive information in a private manner is a key concern for teenagers and as such researchers are increasingly using mobile technology as a way of delivering sexual health information to this group. Previous studies have investigated text messaging as a way of sending sexual health information [10] although as mobile app based communication becomes increasingly important to this age group [1] the development of mobile apps to target sexual health education has received some attention [11].

Mobile apps are different from text messaging and allow for more interaction, they can constantly be accessed and updated [12]. However, we do not know whether teenagers use mobile apps to access sexual health information or what they consider to be

important in terms of the design and content of sexual health mobile apps.

Therefore, this study aimed to build upon existing research concerning sexual health websites by exploring the preferences of female teenagers with respect to accessing sexual health information via websites and mobile apps. Specifically, we were interested in investigating the similarities and differences, from the perspective of female teenagers with respect to searching for sexual health information via these two formats. We chose to focus on female teenagers in part because of their increased use of mobile apps [1] and because research has identified that they are more likely to feel pressure to engage in earlier intercourse [13].

2 METHOD

2.1 Sample participants

Twenty-three female participants aged 13-16 years ($M = 14.3$, $SD = 0.91$) took part in the study. Participants were recruited from five schools in the North East of England. The delivery, content and amount of formal sexual health education received differed between schools.

2.2 Study Materials

Participants were shown six existing sexual health websites or three existing sexual health apps (see Table 1 for details). To choose the websites the researchers used common sexual health search terms e.g. "girl's sexual health" and examined the search results from the first three pages returned by the search engine Google. The websites were checked in terms of their relevance to female teenagers, accuracy of information and whether they were interactive or information based. The websites were categorised as: charity websites, US websites, independent websites, websites by teens for teens, UK health provider websites and discussion

forums. One website from each category was then chosen for the study. Participants viewed the websites on a desktop computer.

IPads were used to view the sexual health mobile apps therefore the researchers searched for sexual health apps on the Apple app store, using the same search terms as the websites. Apps were examined in terms of their suitability for female teenagers, accuracy of information and whether they were interactive or information based. Apps that targeted a specific issue (for example, periods or HIV) were excluded, in order to concentrate on apps that provided more holistic coverage of sexual health issues. The suitable apps were categorised into school based sexual education apps, interactive game apps and information provider apps. One app from each category was chosen.

2.3 Study procedure

Ethical approval was gained from Northumbria University's Faculty of Health and life Science Ethics Committee prior to the focus groups taking place. Parental consent was sought before the study day, on the study day participants gave their informed consent to take part. There were six focus groups, 3-4 participants took part in each focus group, either viewing the websites or mobile apps.

(1) First discussion

Participants took part in a focus group held in a quiet room at their school. Participants discussed their previous experiences of sexual health education and searching for sexual health information.

(2) Viewing and interacting with websites and apps

Participants viewed either the six sexual health websites or the three sexual health mobile apps. Participants were asked to write notes about each of the websites and apps to use as prompts in the final discussion. Participants were instructed to concentrate on what they liked and disliked about the website/app and whether the information provided on the website/app was useful.

Table 1. Overview of websites and mobile apps

	<i>Provider</i>	<i>Category</i>
Websites		
www.brook.org.uk	Brook – UK charity providing sexual health services for young people under 25.	Charity website
www.girlshealth.gov	Office of women's health as part of U.S. department of health and human services	US website
www.youngloverguide.cm	Independent website providing sex education for teens.	Independent website
www.sexetc.org	Written by teens for teens but published by answer, a national organization.	By teens for teens
www.nhs.uk/Livewell	NHS – National health service in the UK	UK health provider
www.healthtalk.org	Healthtalk.org provides free, reliable information about health issues, by sharing people's real-life experiences.	Discussion forum
Mobile apps		
Condom Craze	Free app that promotes a social media dialogue on safe sex	Interactive game
My teen mind	Gaia Technologies - research work carried out by a UK school. Covering all areas of sexual health.	School based sexual education app
Girl empowered	Developed by Medical Services Pacific (MSP), a charity that provides free holistic healthcare to women and youth in need.	Information provider

Participants then took part in another group discussion, using their written prompts, in which their thoughts on each of the websites and mobile apps were discussed.

(3) Return to favourite app/website and final discussion

Participants then had 15-minutes to return to their favourite app or website from the six websites or three mobile apps available. Participants also wrote notes on why they visited that particular website or mobile app. Participants then took part in a final group discussion to discuss their 'favourite' app or website. The entire session took approximately 1 hour. These sessions were audio recorded and transcribed verbatim.

2.4 Data Analysis

The transcripts were analysed for emerging themes based on the markers used by the participants to assess their preferences and selection patterns. A coding scheme was developed and a first pass through the transcripts revealed a number of themes relating to the first impressions of the websites and mobile apps and participants' reasons for liking and disliking the websites and mobile apps.

3 RESULTS AND DISCUSSION

In trying to understand the context in which websites and mobile apps may or may not be used for sexual health information we sought to clarify participants' current practice with regard to seeking sexual health information. We begin by presenting these findings before going on to discuss the key factors in terms of shaping preferences for web based and mobile app based sexual health information.

3.1 Drivers for seeking sexual health information online

Teenagers knew where local sexual health centres were located, but did not feel comfortable visiting them. Although they thought information at the health centre would be reliable they were too embarrassed to access this resource. In contrast, teenagers reported that they regularly search the internet for sexual health information and that searching online was their preferred way of obtaining information in this context. However, participants were wary of the information they find on sexual health websites, and they knew that speaking to a healthcare provider would be more reliable.

All participants preferred to access sexual health information on their phones. The ease of access and the privacy afforded by mobile phones were particularly important factors. Mobile phones, as personal devices, were individual to them unlike computers which were shared with other family members. Participants did not want their parents to see their internet history or question why they were using the sexual health websites. Despite the prolific use of mobile phones for accessing sexual health information, not a single participant had previously heard of a sexual health app.

3.2 Design of website and apps

There was a clear consensus that participants preferred bold, colourful websites and apps but also ones that looked professional, rather than ones which were childish in nature. It was important that websites included images of people that our participants could relate to; in a sense people like them. Participants did not like websites that contained images of people who appeared younger than themselves. Indeed, this was a barrier to use and this would stop teenagers using the website.

P13: Well, it is because like it talks about sexual health and well-being but like it looks like, with the children there, it's like for children. (School 5; Brook)

It was also important that websites and apps were easy to use with a clear layout (see figure 1). Participants did not want to have to spend time searching for information and preferred websites that were simple to access. If a website contained a broken link or would not allow teenagers to access part of the website, then they would quickly close the website and not use it again. Therefore, it was important that the website was easy to use and worked well.

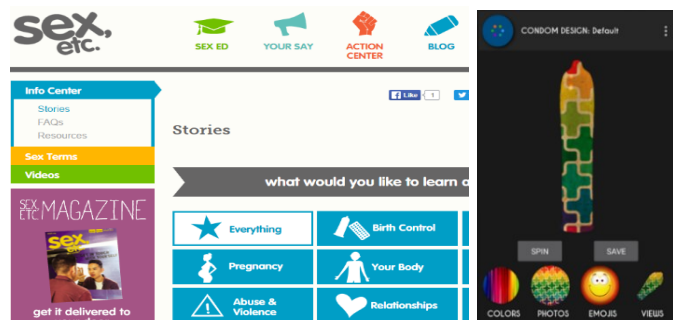


Figure 1. Sex etc. website information displayed in a clear layout and condom craze an interactive game app

A key difference between the participants' perceptions of the websites and the apps concerned the importance of appropriate names and icons. For apps, having a neutral name and icon was important – something that did not immediately point to the nature of its content. As the app name and icon would be displayed on the home screen of the phone, it was important that it was not embarrassing or too overt an indicator of sexual health content. Participants would not download an app that looked embarrassing as they did not want their parents or friends to see it.

P23: I'm not, my mam will be like, what's this doing on your phone

P22: No way would I have this on my phone. (School 5, condom craze)

3.3 Website and app content

In terms of website features, all participants enjoyed the videos. This was because participants commented videos make it easier and quicker to access information. It was important that the videos were short, contained relevant information, covered

different sexual health topics and included personal experiences from other teenagers. It was key that teenagers could relate to the videos and participants lost interest if the videos were outdated.

P11: Yeah the videos were good.

P14: I liked the personal experiences. (School 3, Health talk)

It was important that the websites contained some interactive features. Teenagers enjoyed quizzes and games as these added an element of humour that aided perspective and discussion around the topic. Participants quickly lost interest in information-only websites and preferred sites that contained some form of interaction or at the least a link to other services:

P4: It tells you like if you want to make appointments, and it like provides services instead of just like information. (School 1, Brook)

They preferred websites and apps that contained bullet pointed information, rather than those containing blocks of complex information. A key difference between the websites and apps related to the depth and breadth of information participants' perceived them to contain. Compared to the websites the information on the apps was too basic, and further information would be beneficial. In general participants preferred information that covered a wide range of sexual health topics including relationships and gender. They liked information that contained positive language, clear advice and guidance on common problems. Websites and apps that used negative language or concentrated on abstinence or STI prevention were ignored.

P15: Yeah. But like it also says about abstinence. I don't like that. (School 4, Sex etc.)

Teenagers had mixed perceptions of the interactive content of the apps. Some participants enjoyed a condom game (see figure 1) on the condom craze app, and believed that it appealed to teenagers. Participants found it lighthearted and generated easy discussion around the topic.

P11: It's really funny that you can like design a condom, name it and laugh about it with your friends (School 3, Condom craze).

However, others thought the game was childish and lacked trustworthy information. Participants believed the game would be better if it allowed them to access further, practical information about condoms and where to obtain them. Therefore, a key issue with the apps was that they were either purely information based or purely interactive, whereas the teenagers expressed a preference for a combination of information and interactive elements.

P10: But it needs extra information too. (School 3, condom craze)

3.4 Trusting and using websites and apps

Teenagers were wary about trusting sexual health websites and apps. Participants enjoyed the interactive quizzes that were on the apps, yet because they were game based they did not believe the information that was displayed with the quiz. Participants mentioned that they did not trust the information on any of websites they viewed with the exception of the NHS site. The NHS site was already familiar to them and although they had not

accessed the sexual health content on that site before, the reputation and familiarity of the site acted as key trust indicators. Teenagers were happier to use websites developed by a provider that they knew of and trusted.

A key difference between apps and websites was the difficulty in determining who had developed the app or the organization behind it. Problems with identifying the source made it more difficult to trust the sexual health apps. Participants thought the apps that contained contact details were more trustworthy. In checking the credibility of the app participants suggested they would check the ratings and reviews on the app store. If an app had more positive ratings and reviews, then it would be deemed more trustworthy.

P11: It depends like what reviews and stuff they had (School 3, Girl empowered)

All participants agreed that in order to trust an unknown website it needed to be endorsed and promoted through a trusted source, for example, their school.

P6: If like the school had said it's safe to use (School 2)

Finally, participants were asked to reflect on whether they would consider using a sexual health mobile app in the future. Participants valued the convenience of using apps and thought alongside the improvements they would like to see to their design, content and branding, this would drive them to use this kind of app in the future

4 CONCLUSIONS

The findings of this study illustrate a number of similarities and differences between teenagers' perceptions of sexual health information delivered through web based and mobile app platforms. First, the study confirmed previous findings with respect to the design qualities of successful websites [8,9]. Whilst it is not surprising that teenagers also demand the same level quality in mobile apps there are new issues here for designers to consider. The privacy afforded by mobile devices is in danger of being undermined by poorly designed icons and inappropriate names for sexual health apps. A key finding, consistent across both platforms was that participants highlighted the importance of videos and images that they can identify with. According to social learning theory, modelling by significant others can be highly influential to teenagers in behaviour change [14]. Models that have shown to be effective in other health related domains are peers whose behaviour they see as being rewarded, and who are of the same age or slightly older [15]. Therefore, if other teenagers are employed as models on apps or websites they should be a similar age or older than the recipient in order to increase the likelihood of the teenager relating to and using the information on the website.

Secondly, teenagers felt that the sexual health information provided on apps, in contrast to websites, lacked breadth and depth. Whilst this narrower focus may be intentional on the part of the developer, the teenager target audience of these apps reported that they expect much richer information from sexual health apps. Trust cues are also less well understood in the app format. By contrast, teenagers understand that they can trust

known websites, for example, the NHS site when promoted by their school. However, there was no such guidance in regard to apps. Therefore, once they step outside of this comfort zone, of known providers their confidence in being able to distinguish between trustworthy and non trustworthy sources drops off rapidly. Related work looking at health apps more broadly suggests that people are willing to use other peoples' experiences of the app as a trust indicator and rely on the apps' ratings and reviews especially where 'paid for' apps are concerned [16]. Finally, despite the high level of mobile phone use in female teenagers, none of the participants in our sample had previously used a sexual health app. Our findings suggest that a redesign of content alongside careful design of icons and names will be important in terms of increasing uptake but that designers will also need to be creative in terms of thinking through their advertising and marketing campaigns. For this age group at least, trust transference is going to be important with content endorsed by familiar, well-known 'brands' and a campaign strategy that sees schools lending their support to the use of such apps. Based on the findings of this study we present some guidelines for the development of future sexual health websites and mobile apps (see Table 2).

Table 2. Overview of participant's description of an ideal website and mobile app

	Websites	Mobile apps
Design	Easy to use, simple clear layout, bold vibrant colours and age appropriate images.	Appropriate app icon/name, Easy to use, simple clear layout, bold vibrant colours and age appropriate images.
Content	Short videos featuring 'people like me', interactive quizzes and games, external links. Bullet pointed and age appropriate information that covers all sexual health topics.	Appropriate interactive game or quiz combined with accurate sexual health information that covers all topics. References to sources of information – link to known sources.
Trust	Professional design and advertised through a known source.	Professional design, advertised through a known source, positive reviews and ratings and contains external contact details.

There were some limitations with the current study. During the 'return to favourite app/website' participants were only asked to visit a website or app they had previously used in the study. It was beyond the scope of our investigation to consider sexual health websites or apps which teenagers would choose themselves. Allowing students to search freely was not possible within the constraints of a school based study but it would have been of

interest to investigate the types of websites and apps teenagers encounter when searching by themselves.

Teenagers currently use websites to seek sexual health information, yet, they prefer to use their phones to find this information. Teenagers would prefer to use a sexual health app for information because of the privacy and convenience that they associate with a mobile app. However, current mobile apps are not well advertised to teenagers and do not comprise sufficient interactive features and helpful information. If teenagers are going to continue to search for sexual health information online, then it is vital that the future development of sexual health websites and mobile apps consider incorporating quality information, exciting features and identifiable trust cues.

The authors have declared that no competing interests exist.

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