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Sexual and reproductive health knowledge, perceptions and experiences of women in Saudi Arabia: a qualitative study

Noura Alomair ^{a,b}, Samah Alageel ^b, Nathan Davies^a and Julia V. Bailey ^a

^aResearch Department of Primary Care and Population Health, University College London, London, UK;

^bCommunity Health Sciences Department, College of Applied Medical Sciences, King Saud University, Riyadh, Kingdom of Saudi Arabia

ABSTRACT

Background: There is no formal sexual and reproductive health (SRH) education currently offered in Saudi Arabia. Lack of knowledge and misconceptions are evident among Saudi women, which can lead to negative sexual and reproductive experiences. The aim of this study is to explore Saudi women's SRH knowledge, perceptions and experiences.

Methods: Qualitative semi-structured interviews with Saudi women were conducted. Interviews took place in a public hospital in Riyadh, Saudi Arabia. Interviews were conducted in Arabic, recorded and transcribed verbatim, to allow for thematic analysis of the data. The following themes were identified: *experience with menarche, deep-rooted negative views towards sex, difficulty discussing SRH topics, knowledge of sex and reproduction, generational gap, sources of SRH information and the role of the mother.*

Results: A total of 28 women, both married and unmarried, aged 20–50 years were interviewed. A profound lack of SRH knowledge was observed among Saudi women which contributed greatly to negative experiences both in childhood and adulthood. Lack of knowledge about menstruation often caused emotional distress for young girls, and menarche was associated with bad memories and negative emotions. Lack of knowledge about sexual intercourse and the deep-rooted negative views towards sex were linked with physical and psychological issues for women. Women rarely received information from their parents or teachers and preferred the internet for their SRH information.

Conclusion: There is a substantial unmet need for SRH education for women in Saudi Arabia. It is our recommendation that SRH education should be tailored to meet Saudi women's unique needs, while understanding specific socio-cultural barriers to SRH education and discussions. Research and policy efforts should be directed towards regulating and producing evidence-based health information on the internet, particularly Arabic language websites.

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Introduction

Sexual and reproductive wellbeing is influenced by many factors including socio-cultural norms, religious beliefs and gender expectations, all of which contribute to Muslim women's sexual and reproductive experiences (Alomair et al. 2020a). The majority of Islamic countries do not have formal sexual and reproductive health (SRH) education in schools, and many Muslim women have little to no access to SRH information (DeJong et al. 2005). Muslim women have poor knowledge about basic reproductive functions, contraception and sexually transmitted infections (STIs) (Alomair et al. 2020a, 2020b). Lack of SRH knowledge has been linked to negative sexual and reproductive experiences and poor health outcomes (Rahman 2018).

Sexual and reproductive topics are not easily discussed in most Islamic cultures and are regarded as taboo (Kingori et al. 2018). Women and young girls face difficulty discussing sexual and reproductive topics even among family members (Alomair et al. 2020a; Meldrum, Liamputtong, and Wollersheim 2016). Lack of knowledge and misinformation can adversely affect women's sexual and reproductive experiences (Golchin et al. 2012; Rahman 2018). For example, a qualitative study in Iran found that many girls reported feeling anxious and ashamed about changes happening during puberty and identified menarche as the most unpleasant event experienced in puberty (Golchin et al. 2012). Similarly, a survey study conducted among female college students in Saudi Arabia showed that the majority of students had negative attitudes towards puberty and said that they were unprepared for menarche (Alharbi et al. 2018).

Saudi Arabia is an Islamic country where the governance and constitution are based on '*Shariah*' (Islamic law) and is known for being the birthplace of Islam. In Saudi Arabia, there are no formal sexual health services or education. Sexual health is not taught in any formal setting, and the only mention of sexual intercourse is in the Islamic jurisprudence books in schools (Saudi Arabia MoE 2019). Sex is taught as a spousal right, if practised within marriage, but a sinful and forbidden act if done outside of marriage (Saudi Arabia MoE 2019; Horanieh, Macdowall, and Wellings 2020a). It is also taught that premarital and extramarital sexual relations are the primary cause of STIs, without the provision of any information on preventive measures except abstinence (Saudi Arabia MoE 2019; Horanieh, Macdowall, and Wellings 2020b).

A number of studies examining Saudi women's SRH knowledge and information revealed that Saudi women's knowledge is lacking SRH (Alquaiz, Almuneef, and Minhas 2012; Alharbi et al. 2018; El-Tholoth et al. 2018). Saudi women are also misinformed and have significant misconceptions about their SRH (Alquaiz, Almuneef, and Minhas 2012; Alharbi et al. 2018). Accessing accurate SRH information can also be challenging for Saudi women (Alquaiz, Kazi, and Al Muneef 2013; Al-Zahrani 2011). A study investigating Saudi adolescents' knowledge, attitudes and sources of sexual health information reported that the majority of the study sample exhibited poor STI knowledge. It was also reported that 61% of students faced negative reactions from their teachers when they enquired about sexual health matters (Alquaiz, Almuneef, and Minhas 2012). An ethnographic study examining women's perspectives of sexual health in Saudi Arabia reported that it was difficult for women to seek medical care for sexual health issues as a result of Saudi social norms and taboos around women's sexuality (Al-Zahrani 2011).

While several studies have shown poor SRH knowledge among Saudi women (Alquaiz, Almuneef, and Minhas 2012; El-Tholoth et al. 2018; Al Sheeha 2010), the reasons behind the lack of knowledge are still unknown. Most of the research done on SRH topics in Saudi Arabia is quantitative, which can be insufficient when exploring a sensitive and complex topic such as SRH (Al Sheeha 2010; Alharbi et al. 2018; Alquaiz, Almuneef, and Minhas 2012; Alquaiz, Kazi, and Al Muneef 2013). Qualitative research methods are appropriate for exploring attitudes and perceptions and gaining an in-depth understanding of Saudi women's sexual and reproductive experiences (Patton 1990; Braun and Clarke 2006). The majority of research conducted on SRH topics among Muslim populations, particularly in the Middle East and North Africa region, focuses on exploring the views of married women. Further research is needed to understand Saudi women's sexual and reproductive experiences, including unmarried women, and explore the reasons behind their poor knowledge. Therefore, this study aimed to explore Saudi women's sexual and reproductive knowledge, perceptions and experiences.

Methods

The study was approved by UCL ethics committee (Reference no. 10157/001)

Study design

This study employed qualitative research methods using semi-structured interviews. SRH was defined based on the World Health organisations' working definitions of sexual health and reproductive health (World Health Organization 2017).

Setting, sampling and recruitment

The interviews took place in a public hospital in Riyadh, the capital city of Saudi Arabia between January and June 2019. Purposive sampling was used to identify Saudi women aged 18-50, aiming to interview participants from different age groups, marital status, educational level and employment. Potential participants were approached in the waiting areas of the hospital's outpatient clinics and invited to take part in the study. The hospital was chosen because it provides primary, secondary and tertiary healthcare services that are not available in other regions in Saudi Arabia, offering access to a highly diverse study population. Interviews were conducted face-to-face, in a private room in the hospital and written consent was obtained before the start of each interview. Interviews were conducted by the lead author (NA), a Saudi female researcher and health educator with training in qualitative research. Interviews ranged between 30 and 60 min and were audio-recorded with participant permission. We continued to recruit potential participants until there were no further emerging themes and thematic saturation was reached.

Interview topic guide

Topic guide for the interviews was drawn from a systematic review of the literature on women's SRH knowledge, perceptions and experiences and based on the framework in

Alomair et al. (2020a). The framework recognises that there are multiple levels of factors which influence health behaviours falling into the following in domains: Personal, Family and Community, Religious and Cultural, and Health Policy and Health Services domains. Topic guide questions included women's SRH knowledge, barriers to SRH knowledge and information, women's sources of SRH information, women's sexual and reproductive experiences, factors affecting women's sexual and reproductive experiences, and their SRH needs. A demographic questionnaire was handed to each participant for descriptive data.

Data analysis

The audio-recorded interviews were transcribed verbatim, to allow for thematic analysis of the data (Braun and Clarke 2006). Thematic analysis allows for the exploration of the data in great detail with room for complexity and richness and could be used within many different theoretical frameworks (Braun and Clarke 2006). All interviews were conducted in Arabic and a sample was translated to English for non-Arabic speaking researchers to contribute to the analysis. Before coding interviews, audio recordings were revisited to take notes on participants' tone of voice and verbal cues to be used with the notes taken during interviews on participants' body language and interview contexts. Data familiarisation was conducted in parallel to the data collection process by listening to audio-recordings and reading transcripts. Each transcript was read carefully, where initial impressions and possible themes were created. Interviews were coded using ATLAS.ti software. An inductive approach was applied, where themes and codes were not pre-selected in a deductive way; rather, were generated from the data using coding and refinement of themes. The lead author (NA) coded each transcript, generating a set of codes based on close reading of all transcripts. A random sample of interviews were coded by another member of the research team (SA). Codes from each transcript were revised, line-by-line, then compared, discussed, and amendments were made, where appropriate, until agreement was reached. Categories were derived from grouping codes together to produce an analytical framework and the preliminary themes were produced. All members of the research team checked all codes and contributed to categorisations and groupings of codes. The analytical framework was refined in an iterative way during the analysis via discussions with researchers experienced in qualitative research (JB & ND).

Results

A total of 28 women, both married and unmarried, aged 20–50 years participated in the study. The majority of women were college educated and employed, five were unemployed, and five were college students (Table 1). Seven main themes were devised from the data including *experience with menarche, deep-rooted negative views towards sex, difficulty discussing SRH topics, knowledge of sex and reproduction, generational gap, sources of information and the role of the mother*.

Experience with menarche

The majority of women in the sample had a negative experience with their first menstrual cycle. For example, some did not know what menstruation was, which caused emotional

Table 1. Key characteristics of study participants.

Marital status	N
Married	16
Single	9
Divorced	3
Age	N
20–25	7
26–30	3
31–35	8
36–40	7
41–50	3
Number of children	N
None	14
1–2	2
3–5	12
+6	1
Education	N
College education	26
Diploma	2
Employment	N
Employed	18
Unemployed	5
Student	5

distress when bleeding occurred. Women voiced feelings of shame, fear and uncertainty attached with menarche. They said that they did not know who to ask regarding the changes happening in their bodies, and often felt frightened and confused. Some women hid the fact that they had their period from their family, thinking that they did something wrong and were scared that they would be punished for it.

When I was in fourth grade, I read a very scary book. That book was so scary, it's funny now ... I got my period when I was in fourth grade. And this book was about STIs, and I read that one of the signs of STIs is vaginal bleeding. And I was so frightened, I thought I had an STI. I hid this from my family for a while, until they discovered it and they told me that you are grown now, and you have become a woman, and I started crying, I was so scared, I thought I had an STI. (P16, Single, 36 years old)

Before puberty, I wish someone talked to me about what was going to happen to my body, if your period comes what you should do, and that it's all normal. I truly felt lost. (P1, Married, 34 years old)

Deep-rooted negative views towards sex

Saudi women are raised in a culture where close proximity to men is a sin and brought up to believe a man that is not related by blood or your husband should not touch you. Sex is commonly viewed as negative and impure. It is also believed that virginity is sacred, and you should protect your virginity at all costs. This makes it difficult for some women to accept the idea of sex even within marriage, which often led to married women feeling unprepared for their first sexual experience, and this could lead to emotional distress and long-term psychological problems.

My best friend got married, she was from a very strict family, very, very, religious. They don't even have a TV in their house. When she got married, she was traumatized. When her husband tried to have sex with her, she told him I'm going to tell my dad what you did!

She started crying and went into shock. She had to go to therapy for nine months after. And then she got divorced. To this day, fourteen years later, she says jokingly 'you are all dirty and filthy, I kept my purity and you gave yours away' and she is still convinced that she did the right thing. (P14, Married, 38 years old)

When I was 11 years old, I was staying over at my aunt's house, and I saw a situation between her and her husband. Until I was almost 16 years old, I felt disgusted and revolted by them. It was to the extent that if I went to their home, I wouldn't eat any of the food if she prepared it. I felt nauseated every time I saw her. And it wasn't even that big of a situation [not sex]. But it was so much bigger in my head, and I didn't understand what they were doing. These things could really affect you. Maybe if I had an idea [of what sex is], I wouldn't be repulsed by them. But I had no idea, I felt they were doing something wrong and forbidden. I had a very weird reaction, to the point that it emotionally scarred me. And my mother always told me if you see anything wrong come and tell me, and the first time I saw my mother after this incident, I started hysterically crying and told her everything. (P14, Married, 38 years old)

Parents' relationships played a significant role in women's views about sex, marital relationship and interactions between husband and wife. Social norms dictate that couples should keep their relationship and expressions of love private. Therefore, their children grow up not knowing what a relationship between a husband and wife looks like. This discretion has led to children linking intimacy with immoral and wrong behaviour, and something that you should be ashamed of. When one participant was asked why she had such negative views towards sex, she said:

I think it's our society, the relationship between the mother and father in front of their kids. We don't even know if the father loves the mother, we only see distance between them, cold treatment and strict interactions. And of course, we don't know how things [sex] happen, we don't know how we came into this world. We were never curious; this [sex] is considered wrong bad behaviour. But this is not wrong, this is basic and normal, but we grew up with this being wrong. We shouldn't ask, we shouldn't know. I got married young but not that young, I was 20, and I literally did not know what marriage [sex] is. Even though I am not from an older generation, I didn't know. (P11, Divorced, 30 years old).

Difficulty discussing sexual and reproductive health topics

When unmarried women were asked questions about SRH topics like contraception and sexual intercourse in the research interviews, some wanted to make it clear that they were not knowledgeable about these topics. Married women usually mentioned their marital status as a reason for their extra knowledge.

NA: *Do you feel you have sufficient sexual and reproductive knowledge?*

P13: *I'm sure there are many things I am not aware of, but I feel mostly I have good knowledge*
...

NA: *Do you feel you want to learn more?*

P13: *About this subject [SRH]? Yeah, maybe when I'm getting married, yeah probably then I would be interested to know more. But not now. (P13, Single, 23 years old)*

Yes of course I know about contraception due to the fact that I am married. (P18, Married, 36 years old)

There was an ambiguity and indirectness in participants' language when talking about sex-related topics. Participants used phrases like '*that thing*' or '*these things*' to describe sexual intercourse, female and male genitalia and other sex-related terms.

We are shy about this thing, that term [sex], the female and male reproductive organs. We have shyness that reached wrong and unhealthy levels, it shouldn't be this way, this is basic information. (P11, Divorced, 30 years old)

Knowledge of sex and reproduction

Women lacked SRH knowledge in varying degrees, particularly regarding puberty, menstruation, sexual intercourse, STIs, pregnancy and childbirth. Lack of knowledge about SRH had a negative impact on women's mental and emotional wellbeing. For example, many women described having negative experiences and unpleasant memories of their first menstrual cycle, first sexual intercourse, and other SRH related issues. Misconceptions about pregnancy and childbirth were evident among women particularly before marriage. Some women did not know that men produce semen, which could lead to pregnancy, while others thought that kissing can lead to pregnancy. Some had misconceptions about the mechanisms of childbirth, while others did not know that pregnant women can have sexual intercourse.

I remember when I was 12 years old, we were so naive, we didn't know. Back when Mexican television series were popular, I remember my aunt telling us: 'I know how she got pregnant.' The actress was pregnant, so we know she had a boyfriend, but how? How did she get pregnant? She told us in secret, we were almost in secondary school, she told us that he kissed her and that's how she got pregnant. So we were terrified, we were scared of kissing our dad; we didn't want to kiss our brothers. She told us we shouldn't even kiss each other so not to get pregnant. And by kissing, I mean a peck on the cheek. (P18, Married, 36 years old)

When one participant was asked when she learned about sexual relations and pregnancy, she said:

I am going to tell you something, but don't laugh at me. When did I know? I mean when did I have an idea about how a woman gives birth and from where the baby comes out, I had inaccurate information before then, I found out in high school [17-years-old] and was truly shocked. I thought the baby came from somewhere else. And my sister thought the baby came out of the belly button. We were really ignorant. Imagine being in high school and not knowing those things. It was a shock at the same time. (P16, Single, 36 years old)

The general avoidance of SRH discussions in the Saudi culture, combined with the lack of SRH education, was associated with limited knowledge of women's own bodies. Some women lacked knowledge about basic (male and female) human anatomy, which led to serious emotional and physical problems.

One time, and I will never forget this, our married friend told us some shockingly wrong information about female reproductive organs. It was completely inaccurate, but we believed her. Because we didn't know any better. (P10, Married, 35 years old)

Another participant who got married at 18 years old said, with sadness and regret, after trying for several years to get pregnant, she did not realize that her husband did not have testes, and so could not produce sperm.

There is basic and essential information that we don't know. To the extent that I was married, and the problem was visible to the naked eye, I mean you could look at it and know that there is a problem. But I was a child, I don't know. But I didn't know that there should be something there [testes]. After a while, I started realizing that something is not right. But who do I ask and what do I say? Even him. I couldn't talk to him about it. I wasted many years of my life, no I don't want to say wasted, I mean I'm content God's destiny. But I lived four years of my life with this person and I didn't know what the problem was, was it me? Should I ask? I tried so many times to get pregnant and it didn't work. I took injections and pills until the doctor said: 'your husband has to come here. We tried everything with you, there is nothing wrong with you.' I used to get sick a lot because of the medication I was using ... I told the doctor he said there is nothing wrong with him. And she said: 'there is no such thing as he said, he needs to come' And after insisting and fighting he agreed to go, and we discovered he had zero sperms. And sadly, he said that he got checked before and he knew. He took advantage of my childlike innocence. (P11, Divorced, 30 years old)

Many women did not know what sexual intercourse was at the time they got married. When women talked about their lack of knowledge about sex before marriage, they often mentioned that they got married at a young age. This lack of knowledge was associated with feeling confused about what is supposed to happen during sexual intercourse and what is expected in a sexual relationship.

When I got married, I was 21, so I was supposed to already know what marriage [sex] is. I didn't know if this was [sex] normal or not, was the duration normal, everything with us [Saudi women] is by surprise. Everything is a surprise. You are like 'Oh, is that how it happens? Is this duration normal? Is this complete sexual intercourse? Am I supposed to feel something?' We don't even know what it's supposed to feel like. What is the feeling? (P11, Divorced, 30 years old)

When I got married, and I am not even exaggerating, I didn't know about that thing [sex] until after marriage. The way it happens, and what happens I didn't know anything at all until after I got married. (P18, Married, 36 years old)

Generational gap

Women reflected on their SRH knowledge when they were younger, comparing it with today's youth. It was generally suggested that youth are more knowledgeable about sexual and reproductive matters. The availability of the internet and technology, and the use of social media was often cited as the main reason for these differences in knowledge across generations. Women referred to the ease of accessing information as a facilitator to acquiring knowledge, which was not available before. These changes in accessing information were also believed to improve the community's acceptance of SRH discussions.

NA: *Do you feel like our culture encourages these kinds of discussions?*

P28: *Before, in the past, I would say no. But now with the new generation, they read a lot on the internet on their phones. You know my daughter is so into following YouTubers and she's always on her phone. But social media is dangerous at the same time. That's why we need to provide extra classes in schools.* (P28, Married, 49 years old)

Generational differences were also observed in relation to school education. It was believed that teachers nowadays are more comfortable discussing SRH related topics

in schools. This change was believed to be the result of the recent societal changes towards a more tolerant and open-minded society.

P1: I did not have any idea what menstruation is. That's why I think education is needed. I think it is essential especially to girls whose parents did not teach them anything. But nowadays there is some openness with discussing these topics. I remember my cousin told me that her teacher explained some things related to SRH.

NA: They explain these topics at schools?

P1: Nowadays yes, before they did not teach us anything. They would skip the whole chapter. But nowadays thank God it's much better. (P1, Married, 34 years old)

The overall perception is that the younger generation is more knowledgeable and aware with regards to SRH information. Women often said that younger generation girls are likely to have more information than they currently have as adult women.

P20: Trust me, the new generation knows everything. Unlike us, we were wronged and what we endured as children was unjust. This new generation already knows everything.

NA: How do they know everything?

P20: From the internet. Everything all of it they already know. They probably know things you don't even know. (P20, Divorced, 40 years old)

Some participants seemed to view this extra knowledge in a negative light. Concerns over losing sense of modesty and shyness Muslim women are proud to have were shared by some women.

When I got married, my mom had already passed away, and you know how things were before, people were shy, and they felt uncomfortable talking about these topics even between sisters. Unlike nowadays there's too much openness, excessive boldness, and electronic devices, I mean a 15-year-old girl today knows everything... I swear this new generation knows everything. Like I haven't met any young girl that was ignorant or didn't know everything. (P2, Married, 37 years old)

Sources of sexual and reproductive health information

Women were asked about their sources of SRH information, particularly relating to marital relationship and sexual health. Most women's responses were '*because I read*', '*from the internet*', '*life taught me*' or '*from my own experience*'. Women said they were comfortable accessing information through the internet, and favoured reading information over discussions. Some preferred reading evidence-based information over hearing it from someone.

When you have a smartphone, you have access to a sea of information. You can browse and have access to a limitless amount of information. (P2, Married, 38 years old)

I usually use trusted websites, like WHO, as a source of information. But people, I don't feel like I can take information from people. I prefer reading evidence-based information. Even if I hear something from someone, I don't depend on what they've said, I usually go and read after. (P27, Single, 22 years old)

Some women mentioned learning about sex from friends or peers. Family, more specifically mothers, and teachers at schools did not play a significant role in sexual health education.

NA: *Where did you learn about SRH topics?*

P3: *From the internet.*

NA: *Not schools?*

P3: *In schools they gave us a brief summary about personal hygiene during periods.*

NA: *Did your mom talk to you before marriage?*

P3: *I mean she gave me a brief. Just a brief, not real talk, just brief. And I had to do the rest through the internet.* (P3, Married, 33 years old)

The internet was usually the preferred source for SRH information. The ease of access and anonymous nature makes women more comfortable accessing information online. Women explained that due to the sensitivity surrounding SRH topics, they preferred reading information privately rather than discussing their issues out loud.

If a woman has a problem, specifically about women's reproductive health, we usually go to Google and YouTube for information. Read about symptoms and possible solutions. Because this area is very sensitive, it's not easy at all for a woman to go straight to the doctor to get checked. She will try every possible solution before seeking help from a doctor. Because as a conservative society, we don't usually like to shed light or talk about these issues. It's sensitive to our culture. (P21, Single, 34 years old)

Some women were concerned about the consequences of accessing inaccurate information for people who cannot assess information quality and reliability. Women also discussed the quality of information available in Arabic websites and highlighted the lack of trusted Arabic health information online.

I don't feel Arabic websites are very reliable. You mostly see information on blogs and you really don't know where they got this information from. But websites in English language are usually known and trusted. It is usually based on scientific research, so you can find reliable sources of information. (P25, Divorced, 32 years old)

In general, girls in Saudi have limited access to SRH information and are often shut down when they try to ask. As a result, women expressed a feeling of relief about the availability of the internet as a source of SRH information for the new generation, particularly for young women.

I think having access to the internet makes young girls exposed to things they usually won't know about. You know, her mother won't teach her about these things, her older sister didn't talk to her, they believe it is immodest to discuss this. So, she can turn to a third party for information. She could be aware; she could understand everything. (P1, Married, 34 years old)

The role of the mother

Almost all women in the sample said that their mothers did not teach them about puberty and menstruation, unless they asked, which rarely happened. Young girls felt that they

could not ask their family about anything SRH related, and said that when they tried, they were often shut down, and told that it is '*immodest*' or '*shameful*' to discuss such matters.

NA: *What would your parents say if you asked them how women give birth?*

P15: *I think they will say that's Eib [immodest].*

NA: *Really?*

P15: *Yeah, I don't think they would tell me anything.* (P15, Single, 27 years old)

Women at a young age sometimes felt unsafe and were fearful of negative reactions from their parents if they asked or talked about SRH. They voiced their desire of having a safe space to express concerns and discuss any questions they had without being told off or accused of lacking modesty.

I want kids nowadays to feel safe talking about SRH. They should have a safe space and feel that it's okay to ask someone. Because, you know, young people here are often too scared of their parents, you can't talk to them. It's scary, isn't it? (P20, Divorced, 40 years old)

Some women attributed their mother's avoidance of the topic to feelings of shyness and shame regarding anything SRH related, especially in the older generation. The majority of women expressed feelings of sadness about their lack of sexual and reproductive knowledge in childhood, particularly regarding puberty.

No, I mean no, my mother didn't ... she never said anything, I don't know if it's shyness, you know, older generation women, they feel shy. They don't tell you what you should do when you get your period ... They don't raise you to be prepared, that once you get your period you know what to do. (P1, Married, 34 years old)

Others, however, expressed feelings of resentment towards their mother due to lack of open discussion about puberty and sex before marriage. One participant was asked if her mother ever talked to her before marriage, she said:

I got married and my mother did not say a word to me, not a single word. I hope God forgives her ... I had some knowledge but not enough, I waited for my mom to tell me something ... I swear not a single word. (P7, Married, 44 years old)

As a result of negative experiences women had from their lack of SRH knowledge, most women expressed a strong desire for their daughters to be educated in order to have a better experience. They emphasized that they want them to learn so they '*do not go through what they went through*'. However, they were mostly shy and uncomfortable talking about these topics. While some were not confident with the amount of information they have, they expressed that education is best to come from a trained professional.

They don't mentally prepare you for what is going to happen to your body. I mean when I got my period, I did not know what it was. I mean zero knowledge. And that's why I feel obligated to teach any young girl what to do, what to expect. When I notice some changes in her body, I will open the conversation with her because I don't want her to go through what I went through. (P1, Married, 34 years old)

I used to avoid this topic with my daughters. Until my daughter one day asked me: 'mom, where do babies come from?' She said that she asked her teacher, and her teacher told her

if you can talk to your mom openly, go ask her. I remember being extremely, extremely, shy, I really didn't know what to tell her. It was like a shock to me. So, I started reading about it and reading about the best way to convey this information to your children and then I told her about marital relationships and how babies are made and now she has a good knowledge about it. (P14, Married, 38 years old)

Discussion

We found a profound lack of SRH knowledge among Saudi women which contributed greatly to negative experiences both in childhood and adulthood. Women mentioned feeling shame, fear and confusion about puberty, menstruation and sex. Lack of knowledge about sexual intercourse, in addition to negative views towards sex and sexuality that are deeply embedded in the culture had a negative impact on women's physical and emotional wellbeing.

Many women in our study recalled having unpleasant memories with menarche. Negative experiences and stigma associated with menstruation could be influenced by several factors including lack of knowledge, lack of parental support, young girls being inadequately prepared for puberty, social and religious expectations and perceived loss of childhood (Metusela et al. 2017; Al Omari, Abdel Razeq, and Fooladi 2016; Golchin et al. 2012; Hennegan et al. 2019). Menarche is widely considered as an event that moves girls into a 'different age bracket' involving sexual maturity and the beginnings of sexual curiosity (Crichton, Ibisomi, and Gyimah 2012). Upon menarche, girls are expected to behave in a socially appropriate manner as 'adults', dress modestly, stop acting childishly and have no interactions with men (Hennegan et al. 2019). In some instances, fathers would stop playing and interacting with their own daughters once they start menstruating, which contributes greatly to the stigma and shame associated with menstruation (Uskul 2004).

Recent evidence from low and middle-income countries showed that almost universally, women recalled feelings of intense distress, fear and confusion when they lacked awareness of menstruation upon menarche (Hennegan et al. 2019). In contrast, girls who had information about menstruation prior to menarche reported more positive experiences (Hennegan et al. 2019). Negative experiences with menstruation and sexual maturation are true for women from different religions globally, and socio-cultural taboos seem to be the most significant contributor to those negative experiences (Hennegan et al. 2019; Metusela et al. 2017; Al Omari, Abdel Razeq, and Fooladi 2016; Golchin et al. 2012; Sooki et al. 2016). Reflecting on their experiences with menarche, women in our study did not want their daughters to experience the menstrual taboos, shame and confusion that they had experienced.

In most cultures, mothers are the first source of SRH information for young girls (Golchin et al. 2012). Mothers have a very important role in transmitting information and moulding health behaviours (Golchin et al. 2012; Mosavi et al. 2014; Onyeonoro et al. 2011). Mothers' attitudes towards SRH education affects their daughters' access to information and education (Mohammadi et al. 2016; Shariati et al. 2014; Yari et al. 2015). Our findings revealed that Saudi mothers had a very limited role in educating and informing girls about SRH. Barriers to mother-daughter discussions include mothers' lack of knowledge, social taboos, embarrassment, and mothers' negative

attitudes towards SRH discussions (Al Omari, Abdel Razeq, and Fooladi 2016; Sooki et al. 2016; Shariati et al. 2014; Crichton, Ibisomi, and Gyimah 2012). Poor mother–daughter communication and relationships act as a barrier to girls’ access to accurate information (Sooki et al. 2016). Mothers may delay discussions about sexual maturation and sex fearing that their daughters are too young to know (Crichton, Ibisomi, and Gyimah 2012). It is also believed that sexual health discussions would make girls more curious or tempt them to engage in risky sexual behaviours (Crichton, Ibisomi, and Gyimah 2012; Golchin et al. 2012).

Mothers may want their daughters to learn about SRH but feel that they had inadequate information to give them, or find it embarrassing to discuss such matters with their daughters (Shariati et al. 2014; Bazarganipour et al. 2013). Some girls were too shy to tell their mothers that they had their period, they were also unable to ask their mothers any questions or seek support (Crichton, Ibisomi, and Gyimah 2012). Many girls do not ask their mothers sexual health questions fearing negative reactions or serious repercussions (Crichton, Ibisomi, and Gyimah 2012; Metusela et al. 2017; Shariati et al. 2014; Kingori et al. 2018). For example, in a study exploring barriers to sexual health information among young Somali adults, one participant stated, ‘*If I went to my mom with that information, I’m dead*’ (Kingori et al. 2018). Being raised in an environment where sexual maturity is viewed positively, giving girls a safe space to ask questions and seek information, and parents establishing a good relationship with their children was linked with girls being more confident to ask for information and seek support (Golchin et al. 2012; Mosavi et al. 2014; Onyeonoro et al. 2011).

Our results show that some women were unprepared for sexual intercourse upon marriage. Lack of information regarding sex, lack of open discussions and taboos around sex creates anxiety and negatively impacts women’s sexual experiences (Metusela et al. 2017; Abdolsalehi-Najafi and Beckman 2013). Women with limited premarital sexual knowledge described the experience of first sexual intercourse as scary, traumatic and painful (Metusela et al. 2017; Shariati et al. 2014). This could result in a woman feeling pressure and apprehension towards having sexual intercourse, affecting a woman’s perceptions of her sexual self, and impacting her future sexual experiences (Abdolsalehi-Najafi and Beckman 2013; Rahman 2018).

Sex outside of marriage in many Muslim cultures is viewed as ‘immoral’, ‘forbidden’, and is illegal in some countries (Mir-Hosseini 2011; Quraishi 2011). Discussions about sex for both married and unmarried women are considered improper, and even the thought of sex before marriage is believed to be ‘harming one’s religion’ (Metusela et al. 2017; Ussher et al. 2017; Wray, Ussher, and Perz 2014). Virginity has a high value in Muslim cultures, with premarital sex being the ‘ultimate corruption’. Virginal women are positioned as pure and preserving the family’s honour (Ussher et al. 2017; Hendrickx et al. 2002). These factors contribute to the difficulties women face changing their views towards sex upon marriage, leading to a number of physical and emotional issues such as anxiety, sex guilt and sexual dysfunction (Rahman 2018; Abdolsalehi-Najafi and Beckman 2013; Muammar et al. 2015).

We found that women preferred using the internet for most of their SRH information. According to a recent study conducted in Saudi Arabia, the main source of sexual health knowledge for many women (71.7%) is the internet (El-Tholoth et al. 2018). The internet is the preferred source for learning about sensitive or embarrassing subjects, particularly

topics that people are uncomfortable discussing openly (Gray et al. 2002; Eysenbach 2008; Mitchell et al. 2014). Young girls may prefer to seek information online rather than from their parents, making the Internet an important source of sexual health information for many young girls (Kingori et al. 2018). Lack of open communication with family members, and difficulty seeking medical care could lead women to favour seeking SRH information through the Internet (Shariati et al. 2014; Kingori et al. 2018).

The Internet can increase women's autonomy and improve access to essential health information (Eysenbach 2008; Househ, Alsughayar, and Al-Mutairi 2013; Kingori et al. 2018; Mitchell et al. 2014). However, participants in our sample expressed concerns over young girls' ability to evaluate the validity of health information available online. Concerns over the authenticity of health information available online have been well-documented, particularly for non-English websites (Aldabbagh, Alsharif, and Househ 2013; Househ, Alsughayar, and Al-Mutairi 2013; Kingori et al. 2018). This issue is especially important as many women and young people are unable to evaluate the accuracy of health information online (Abdolsalehi-Najafi and Beckman 2013; Eysenbach 2008; Kingori et al. 2018). This could explain why despite the recent shift in reported main sources of information from peers to the internet, sexual health knowledge among Saudis is still very low (Alquaiz, Almuneef, and Minhas 2012; Turki et al. 2013).

Strengths and limitations

To our knowledge, this is the first in-depth study of women's experiences and perceptions of SRH in Saudi Arabia. Previous research conducted on Muslim women's SRH focused exclusively on married women, partly because researchers may feel that it is inappropriate to ask unmarried women about sexual and reproductive matters (Alomair et al. 2020a, 2020b).

A key strength of this study is the diversity of participants' characteristics. Interviewing women from different age groups and marital status allowed for comparisons to be made across different experiences, providing an opportunity to explore the narratives of unmarried women. Although this study focused on Saudi women's experiences, many of the findings are applicable to women in other Muslim communities around the world, as many Muslims share similar socio-cultural values and traditions (Hennegan et al. 2019; Ussher et al. 2012; Abdolsalehi-Najafi and Beckman 2013; Tackett et al. 2018). However, specific cultural beliefs held by Muslim women should not be used to create stereotypes. Instead, it should be used to understand how culture affects sexual and reproductive wellbeing.

Since the interviews were conducted in Arabic, culturally specific concepts and phrases were not easily translated to English. As a result, some of the meanings and interpretations might have been lost in the translation process. However, two authors who are bilingual and familiar with the Saudi culture coded the transcripts and translated the findings into English. The translated findings were then translated back to Arabic and checked against the transcripts to ensure accuracy of the translation.

The study took place in Riyadh, the capital city of Saudi Arabia. The views and experiences of the residents in a metropolitan city may be more liberal than those living in other areas in Saudi Arabia. The results also reflect the views of women who agreed to participate and are open to discuss their SRH views and experiences with others. Therefore, it is

possible that the views of women who are more conservative and less likely to be willing to discuss their SRH were not captured or underrepresented.

Face-to-face interviews have the potential to introduce social desirability bias. We attempted to reduce social desirability bias through careful wording of the questions, avoid leading questions, and avoid showing judgment and emotional reactions towards participants' responses. Guaranteeing the privacy of the participants and ensuring confidentiality throughout the interviews encourages participants to provide their honest, more private accounts. Rigour was enhanced by keeping a reflexive diary, offering a clear account of procedures used, providing evidence from the data for all interpretations made, comprehensive analysis of the whole data set, analysis of deviant cases and disconfirming data, comparing data between and within cases in the data set, and comparing findings with other studies (Green and Thorogood 2018).

Implications for policy and practice

SRH education and services play a fundamental role in improving women's health and wellbeing, providing them with the necessary tools to be informed about sexual health, and enabling more autonomy in decisions about fertility, sex and relationships (World Health Organization 2017). Strategies in framing SRH education as a premarital preparatory course have been implemented successfully in a number of Arab and Islamic countries (Wahba and Roudi-Fahimi 2012; Cok and Gray 2007; Yazdanpanah, Eslami, and Nakhaee 2014). Developing a premarital education program is essential to inform women in Saudi Arabia about their SRH, particularly sex and reproduction, and has the potential to improve SRH outcomes and experiences (de Castro et al. 2018).

It is crucial to develop and reform school curriculums to improve young girls' awareness about puberty, menstruation and reproductive changes. Raising young girls' awareness has the potential to help them cope with the physical, social, religious and emotional changes associated with puberty and menstruation.

Public health initiatives are needed to improve parents' SRH knowledge and raise their awareness about the importance of timely and proper SRH discussions with their children. A prominent absence of any duty for fathers to educate their children was observed both in our study and in the literature. It is worth exploring the possible contribution of fathers in supporting and educating their children throughout all stages of their development.

The internet has huge potential for the dissemination of convenient, private, accurate, and trustworthy health information. Since the internet is one of the preferred outlets for health information, particularly SRH information, policy and research efforts should be directed towards regulating and facilitating Arabic evidence-based health information on the internet. Most importantly, reducing disparities in access to SRH information by making it accessible in different languages online.

The contributions of healthcare providers to women's SRH knowledge were lacking in our study findings. It has been previously reported that healthcare providers in Saudi Arabia avoid sexual health discussions with women out of respect to the patients' socio-cultural norms (Al-Zahrani 2011). It is important for healthcare providers to play a more active role in approaching, initiating, and facilitating sexual health discussions during health consultations. Providing patients with written information such as

leaflets or posters is suggested to be a useful tool in enabling patients to initiate sexual health discussions during health consultations (Gott et al. 2004).

Conclusion

Our study shows that Saudi women's lack of SRH knowledge contributed to their poor reproductive and sexual experiences. There is a substantial unmet need for SRH information, education and healthcare services for Saudi women and girls. Lack of sexual health knowledge and negative views towards sexuality greatly influenced women's sexual experiences, negatively impacting their physical and psychological wellbeing. The findings assert the need for public health initiatives to be directed towards improving girls' and women's awareness about reproductive changes during puberty, sexual maturation, sex, reproduction and relationships. Mothers have a key role in transmitting SRH information and promoting health behaviours. Therefore, it is imperative to raise mothers' awareness about the importance of initiating SRH discussions and providing support for their daughters. Research and policy efforts should be directed towards regulating and producing evidence-based health information on the internet, particularly Arabic language websites.

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Ethical approval and consent to participate

The study was approved by UCL ethics committee (Reference no. 10157/001)

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Author's contributions

NA, SA, ND and JB conceptualised and designed the study. NA conducted the interviews, translated and analysed the data. NA wrote the first draft and all authors have contributed to the final draft.

ORCID

Noura Alomair  <http://orcid.org/0000-0001-7818-7854>

Samah Alageel  <http://orcid.org/0000-0002-6945-5308>

Julia V. Bailey  <http://orcid.org/0000-0002-5001-0122>

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