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REVIEW ARTICLE

Facilitators and barriers to condom use in Middle East and North Africa: a systematic review

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Abstract

Background The Middle East and North Africa (MENA) region continues to have the lowest prevalence of HIV (human immunodeficiency virus) in the world, less than 0.1%, yet new transmissions are increasing. Consistent condom use can reduce the probability of transmission by 90–95%, and its use remains as the staple prevention method; however, this isn't the case for the MENA region, where condom use, knowledge of proper use, and accessibility are limited.

Aims To conduct a systematic review on condom use, its use across different population groups, and its barriers and facilitators in countries that fall under the UNAIDS regional classification of MENA.

Methods This systematic review was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. The search included electronic databases: PubMed/MEDLINE, Academic Search Ultimate, COCHRANE, APA PsycINFO, ScienceDirect, CINAHL Complete, Scopus. There was no date restriction.

Results Of the 471 records retrieved, 45 articles were appraised and included in the analysis. The reported barriers and facilitators are sub-divided into personal, social, and structural factors. Condom accessibility, partner objection, and their perceived ineffectiveness were key barriers, whereas availability, cost, and lack of awareness were rarely mentioned. Concerns of personal health and future financial security, as well as positive peer influence and delayed sexual experience, were identified as motivators.

Conclusion Condom promotion in the region needs to incorporate gender-based power in relationships and the influence of religion, as well as the legal and structural factors. More investment and research are needed for women-initiated contraceptive and digital healthcare initiatives.

Keywords MENA · HIV · Condoms · Prevention

Introduction

Sexually transmitted infections (STIs) are one of the heaviest burdens on public health systems in low and high-income countries. The MENA (Middle East and North Africa) region continues to have a low prevalence of HIV, less than 0.1% yet, the number of new transmissions has increased by 33% from 2010 to 2021. It unfortunately also has the lowest HIV treatment coverage in the world (50% of PLHIV in 2021) and the lowest proportion of PLHIV who are virally suppressed (44% in 2021) (UNAIDS 2022).

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Research has shown that correct and consistent condom use is an effective form of STI prevention, reducing the probability of transmission by 90–95% (Pinkerton and Abramson 1997). Increasing condom use remains as a key public health prevention method, since condoms have no major medical side-effects, are relatively easy to obtain and carry, and are cost-effective (Evans et al. 2020).

However, gaps and inequities in condom access, knowledge, and use are still prevalent in MENA. In Libya, for example, 40% (of 227) of men who have sex with men (MSM) (Valadez et al. 2013) have had unprotected sex with both men and women, and only 20%–54% of people who inject drugs in the region have ever used condoms (Mumtaz et al. 2014).

This present study is, to our knowledge, the first systematic review to capture and examine the condom-use landscape in MENA, presenting an overview of condom use

across all groups, the reasons for condom use/non-use, as well as the barriers that interfere and facilitators that encourage condom use.

The current systematic review on the MENA region has two overarching aims:

a) review the state of evidence for condom use, and;
b) analyse individual, interpersonal and structural-level barriers/facilitators to condom use.

Search strategy

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. The search was limited to the 19 countries included in the UNAIDS classification of MENA: Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates (UAE), and Yemen. At the start of this review, Iran was still included in MENA before its transfer to the Asia and the Pacific Region as reported in the UNAIDS Global report 2022 (UNAIDS 2022). As a result, it was decided to remove the studies from Iran during the study assessment stage.

The following electronic databases were searched: PubMed/MEDLINE, Academic Search Ultimate, COCHRANE, APA PsycINFO, ScienceDirect, CINAHL Complete, and Scopus.

The search strategy included terms specific to condom use, access and barriers, using free-text terms and medical subject headings (MeSH) terms that included 'condom', 'barriers', 'Middle-East', 'North Africa' and each of the countries. Reference lists of the reviewed articles were handsearched. Studies were limited to English language and there were no date restrictions.

The number of records retrieved was 471, and 215 titles and abstracts were screened. To be included in this review, papers needed to meet the following criteria: (1) be research studies, (2) have abstracts which mentioned condom use, (3) be studies that sampled men and women regardless of their sexual orientation and marital status, and (4) relate to MENA countries. A total of 203 papers were examined in full-text for eligibility, and 90 articles were appraised. As a result of Iran's exclusion, 45 papers were excluded, and 45 papers were included in the review.

All articles retrieved from initial searches were imported into Endnote and duplicates removed. AH screened titles and abstracts against the eligibility criteria for inclusion. PR and EvT independently screened a random selection of 20% of all abstracts for consistency. Any disagreements were resolved with a discussion within the team.

The process was recorded on a Microsoft Excel spreadsheet, and the risk of bias/quality of the studies was assessed individually. Quality was assessed using the appropriate checklist from CASP and the Mixed Methods Appraisal Tool (MMAT) for mixed-methods studies. No study was found to have a high risk of bias, although religious and cultural restrictions resulted in certain groups and questions, i.e., single women and anal sex, being omitted.

Data extraction and analysis

A standardised data extraction form was developed in Excel. AH extracted data from the final 45 included articles, which was checked by PR and EvT. The quantitative and qualitative findings were analysed separately. Thematic analysis was used for the qualitative data (Fig. 1).

Findings

A summary of the findings for each sample group for the different study types is presented in Tables 1, 2, and 3 (placed in Appendix below due to its size, which would interrupt the main narrative). A synthesis of all barriers and facilitators is presented in a conceptual model (Fig. 2). The 45 studies included: 37 quantitative, six qualitative, and two mixed-methods studies; 14 were from Lebanon, seven Egypt, seven Sudan, six Jordan, four Saudi Arabia, two Morocco, two Yemen, one each from Iraq, Somalia, and UAE.

One study on drug-users, five on female sex workers (FSWs), nine on MSMs, eight on men, six on women, eight on general population, five on youths, two on prisoners, two on refugees, one on male sex workers, and one on PLHIV.

Quantitative results

Thirty-seven quantitative studies: 1996 to 2021, 11 Lebanon (Adib et al. 2002; Barbour and Salameh 2009; Kahhaleh et al. 2009; Mahfoud et al. 2010; Wagner et al. 2014; Salameh et al. 2016; Tohme et al. 2016; Heimer et al. 2017; Assi et al. 2019; Storholm et al. 2021; Zaki et al. 2021), seven Egypt (Kabbash et al. 2007; El-Sayyed et al. 2008; Nada and Suliman 2010; Soliman et al. 2010; Wahdan et al. 2013; Saleh et al. 2014; Farghaly et al. 2020), five Sudan (Ibnouf et al. 2007; Abdelrahim 2010; Zeidan et al. 2011; Mohamed and Mahfouz 2013; Mohamed 2014), four Saudi Arabia (Fageeh 2014; Wafa et al. 2014; Alhusain et al. 2018; Aladham et al. 2020), four Jordan (Alkaiyat et al. 2014; Al Rifai et al. 2015; Al-Maharma et al. 2019; Alyahya et al. 2019), two in Morocco (Laraqui et al. 2017; Bozicevic et al. 2018), and one each in Iraq (Ismael and Sabir Zangana 2012), Yemen (Mirzazadeh et al. 2014),

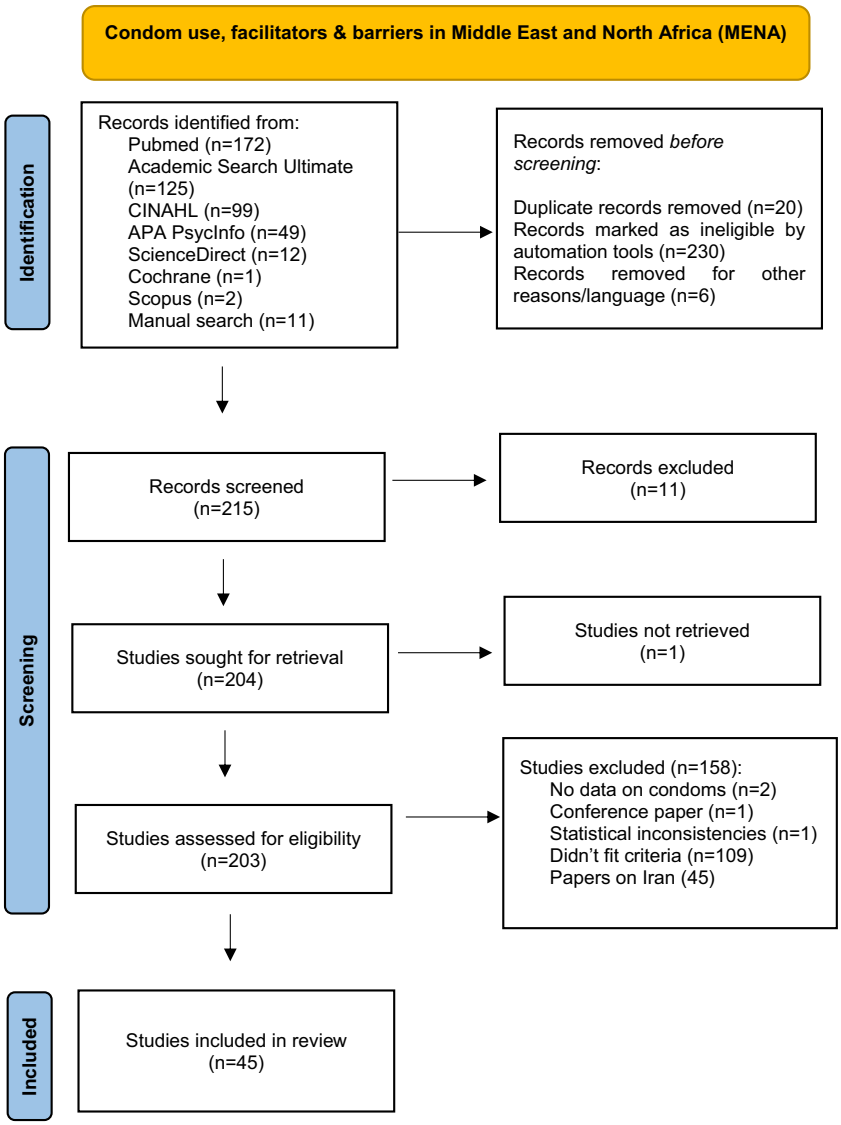

Fig. 1 PRISMA flow chart

Somalia (Kriitmaa et al. 2010) and UAE (Ghazal-Aswad et al. 2002).

Qualitative and mixed-methods results

Six qualitative studies: 2002 to 2020, two each in Lebanon (Wagner et al. 2012; Aunon et al. 2015), Sudan (Elshiekh et al. 2020; Elshiekh et al. 2021) and Jordan (Petro-Nustas and Al-Qutob 2002; Khalaf et al. 2008). Two mixed-method studies from 2004 and 2006 from Lebanon and Yemen (Kulczycki 2004; Busulwa et al. 2006).

Themes

Personal

In a region shaped by a patriarchal society whereby males dominate in decision-making (Petro-Nustas and Al-Qutob 2002; Khalaf et al. 2008), reduced male personal pleasure and societal masculine beliefs were barriers to condom use:

> *"It is not the wife's right to force any authority — in decision making — over her husband, this is not*

Table 1 Summary quantitative studies

Drug users (Soliman et al. 2010)	Overall, condom use was low regardless of partner type; however, drug users mostly used condoms when engaging in sex with FSW or paying clients. Partner barrier, history of early sexual intercourse, and drug use were reasons for non-use. No information reported for reasons of use.
Female sex workers (Abdelrahim 2010; Kriitmaa et al. 2010; Mahfoud et al. 2010; Zeidan et al. 2011; Farghaly et al. 2020)	Using non-barrier contraceptive methods as main reason for not using condoms. Refusal of paying partners was main reason for non-use; when condoms were used, a significant number reported it was suggested by client. FSW who started sex work young (< 18) and used substances were more likely use condoms inconsistently and have condomless sexual contacts.
General population (El-Sayyed et al. 2008; Kahhaleh et al. 2009; Mohamed and Mahfouz 2013; Saleh et al. 2014; Aladham et al. 2020)	Very low condom use; when used, primarily as contraceptive method and even then pill was preferred.Being married to more than one wife; extramarital sexual relations were motives for use. Perceived lack of condom efficiency and safety as well as reduced pleasure were the explanations for non-use.
Men (Adib et al. 2002; Ghazal-Aswad et al. 2002; Kabbash et al. 2007; Ismael and Sabir Zangana 2012; Mohamed 2014; Al Rifai et al. 2015; Laraqui et al. 2017)	Higher condom use in younger men and within extramarital sex (including sex workers). Condom use often suggested by man. Condom use low in married men who felt it unnecessary. Not liking condoms/reducing pleasure and confidence in partners linked to inconsistent use. Inconsistent condom use was associated with lack of knowledge of proper condom use and not partner rejection.
Women (Ibnouf et al. 2007; Alhusain et al. 2018; Bozicevic et al. 2018; Alyahya et al. 2019; Zaki et al. 2021)	Most women considered condoms as contraceptive. Reports of condomless anal sex, but incomplete data. Most women didn't consider themselves at risk of STI/HIV as they trusted partners.
Youth (Barbour and Salameh 2009; Nada and Suliman 2010; Salameh et al. 2016)	Condom use is largest in youths, although inconsistent. For women trusting partner was common reason for not using, whereas lack of accessibility was key for men. Realising danger of risky behaviours & liberal attitudes to sex associated with regular use. Men had significantly higher condom use than women.
People living with HIV (Wahdan et al. 2013)	Condom use was low in this group, although condom used more with regular than with casual partners. Frequently used for contraception and prevention.
Prisoners (Fageeh 2014; Wafa et al. 2014)	Very low use of condoms in prisoners (in and outside prison), most using condoms for contraception.
Men who have sex with men (Mahfoud et al. 2010; Alkaiyat et al. 2014; Mirzazadeh et al. 2014; Wagner et al. 2014; Tohme et al. 2016; Heimer et al. 2017; Assi et al. 2019; Storholm et al. 2021)	Consistent condom use in MSM is low and even less when engaging in group sex and with women. More unprotected insertive anal sex than receptive. Serostatus partner does not influence condom use. Availability wasn't main reason for non-use, but reduced pleasure, stigma/embarrassment were.
Refugees (Tohme et al. 2016; Al-Maharma et al. 2019)	Condom use was low and partner refusal main reason for non-use. Legal and language barriers listed.

allowed by any social norm or endorsed by any law in any society in the world" (Petro-Nustas and Al-Qutob 2002)

The most stated reasons given for not using condoms by men were 'I don't like condoms' and 'reduced sexual pleasure' (Adib et al. 2002; Petro-Nustas and Al-Qutob 2002; Kulczycki 2004; Busulwa et al. 2006; Kabbash et al. 2007; Ismael and Sabir Zangana 2012; Alkaiyat et al. 2014; Mirzazadeh et al. 2014; Mohamed 2014; Aunon et al. 2015; Laraqui et al. 2017). Some men voiced feelings of embarrassment and contempt toward the idea of using or even buying a contraceptive method (Petro-Nustas and Al-Qutob 2002; Kabbash et al. 2007; Alkaiyat et al. 2014; Mirzazadeh et al. 2014; Mohamed 2014).

This resistance is undoubtedly a result of condom efficacy (Kulczycki 2004; Busulwa et al. 2006; Alkaiyat et al. 2014; Mohamed 2014; Al Rifai et al. 2015; Elshiekh et al. 2020), harmful effects (Ghazal-Aswad et al. 2002; Kabbash et al. 2007; Elshiekh et al. 2020), lack of knowledge of proper use (Busulwa et al. 2006; Kabbash et al. 2007; Assi et al. 2019; Elshiekh et al. 2020; Zaki et al. 2021), and fear that suggesting to use a condom may lead the female partner to suspect that they may have been unfaithful (Petro-Nustas and Al-Qutob 2002; Kulczycki 2004) or are having sex with men

Table 2 Summary qualitative and mixed-methods studies

Men (Petro-Nustas and Al-Qutob 2002)	Use of condoms was not pleasurable and used only in sexual relations outside marriage.
Women (Khalaf et al. 2008)	Partner's pleasure and refusal were reasons for not using a condom, followed by misconceptions and lack of support from healthcare professionals.
Youth (Elshiekh et al. 2020; Elshiekh et al. 2021)	For most young people, preventing pregnancy was main reason for condom use. Perceived reduction of sexual pleasure, misconceptions of condoms, accessibility were reasons for non-use.
Men who have sex with men (Wagner et al. 2012)	Condoms were likely to be used with casual partners. Not using condom is a sign of trusting partner. Fear of HIV motivates condom use although it is associated with being 'gay'. When condoms are used with women, at the insistence of the woman to prevent pregnancy.
Male sex worker (Aunon et al. 2015)	Future health and financial stability were main motivators for condom use. Assess risk based on appearance and gender as well as reduced sexual pleasure were reasons for non-use.
Refugees (Aunon et al. 2015)	Fear of deportation/ job security forces them to accept condomless sex.
General population (Kulczycki 2004; Busulwa et al. 2006)	Low condom use, predominately for family planning. Concern for personal health and absence of physiological side-effects of condom main drivers for use. Misconception of condom efficacy and fragility noted in both studies. Condoms seen as ineffective contraceptives and equally in STI prevention. Men's desire to preserve their own pleasure/comfort, whether directly or indirectly.

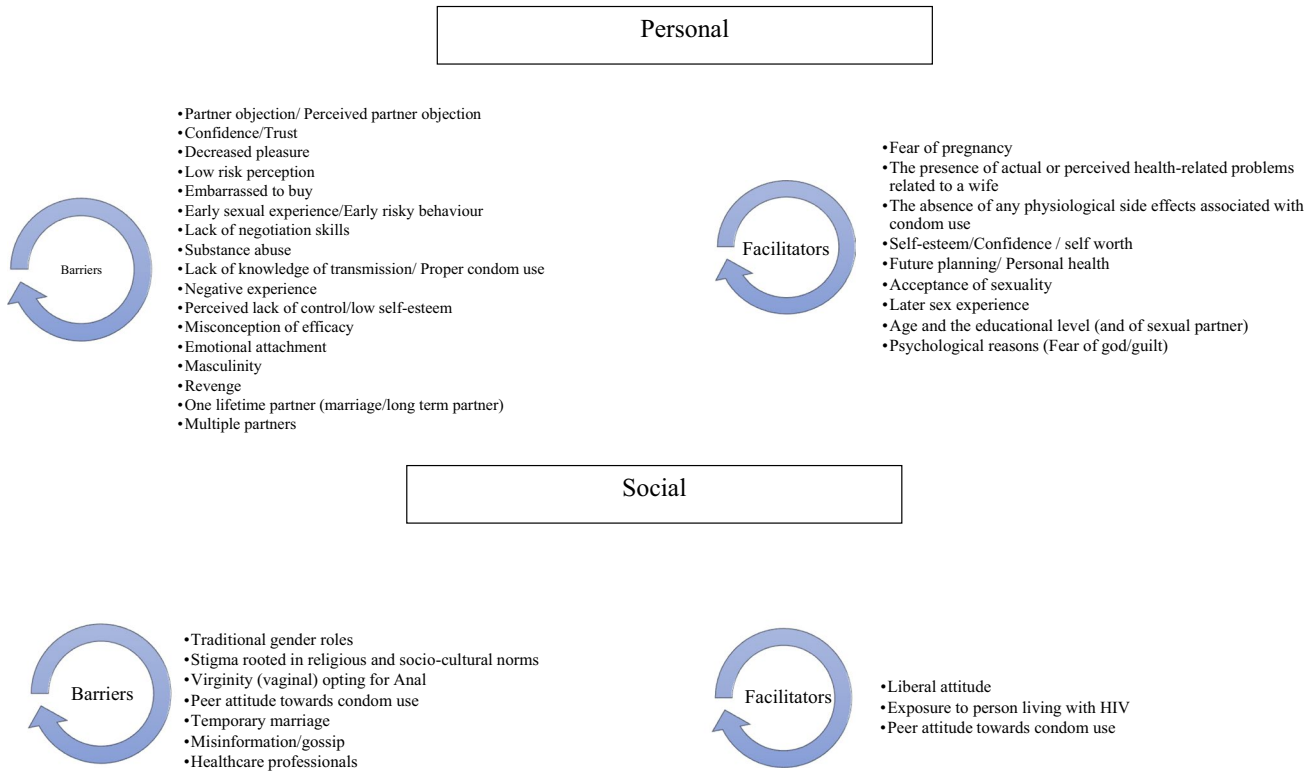

Fig. 2 Model of barriers and facilitators of condom use in MENA region

(Wagner et al. 2012; Wagner et al. 2014). Partner objection was the main reason given for non-condom use for women, demonstrating that women often dismiss their sexual and health needs in order to keep their partners sexually content and stay in the relationship (Kulczycki 2004; Khalaf et al. 2008; Abdelrahim 2010; Kriitmaa et al. 2010; Zeidan et al. 2011; Al-Maharma et al. 2019; Zaki et al. 2021).

Notions of fear, violence, abandonment, and stigmatisation (Kulczycki 2004; Busulwa et al. 2006; Elshiekh et al. 2020; Zaki et al. 2021) among women is emulated throughout the studies, whether it is requesting condom use or purchasing condoms. Fear was also found to be a conduit of condom use regardless of the gender; fear of transmission (Wagner et al. 2012; Wahdan et al. 2013; Elshiekh et al.

2020), and the social and legal repercussions of pregnancy outside of marriage (Wagner et al. 2012; Elshiekh et al. 2020).

One of the main obstacles to condom use by sex workers was the financial implication, losing the client, or being paid more for condomless sex (Zeidan et al. 2011; Aunon et al. 2015). When a condom was used by a FSW, it was often suggested by the client (Kriitmaa et al. 2010; Mahfoud et al. 2010). This supports the findings that men use condoms more when having extramarital sexual relations due to the misconception that the probability of acquiring HIV is greater (Petro-Nustas and Al-Qutob 2002; Kulczycki 2004).

It is apparent that the concept of self-esteem is significant in the increase of condom use, and transpires when an individual places importance on their health (Kulczycki 2004; Busulwa et al. 2006; Wagner et al. 2012; Aunon et al. 2015; Elshiekh et al. 2020) as well as their financial future. Early sexual debut plays a major role in inconsistent condom use (Kahhaleh et al. 2009; Abdelrahim 2010; Nada and Suliman 2010; Al Rifai et al. 2015), which could be due to the confidence to negotiate safe sex or the knowledge of STI preventative methods not having been acquired yet.

Six studies indicated the co-occurrence of low condom use with other high-risk behaviours such as substance use (Assi et al. 2019; Farghaly et al. 2020; Zaki et al. 2021) and alcohol use (Mohamed 2014; Al Rifai et al. 2015; Laraqui et al. 2017; Assi et al. 2019; Farghaly et al. 2020; Zaki et al. 2021).

Four found that the educational level of participants (Ismael and Sabir Zangana 2012; Alkaiyat et al. 2014; Mohamed 2014; Farghaly et al. 2020) as well as their sexual partners (Ismael and Sabir Zangana 2012) had a positive effect on condom use.

Low risk perception was present in all groups studied. Responses that included 'Condom was not necessary' (Kabbash et al. 2007; Kriitmaa et al. 2010; Mirzazadeh et al. 2014; Laraqui et al. 2017; Abdelrahim 2010) and 'I didn't think of it' (Abdelrahim 2010; Mirzazadeh et al. 2014; Laraqui et al. 2017) were supported by appearance-based judgements (Aunon et al. 2015) and claims of HIV being a 'gay thing' (Wagner et al. 2012).

Being in a long-term partnership or a marriage promotes a sense of trust and confidence that the partner is monogamous and there is no risk of STI transmission, therefore it is concluded that condoms are not needed (Adib et al. 2002; Petro-Nustas and Al-Qutob 2002; Wagner et al. 2012; Alkaiyat et al. 2014; Mirzazadeh et al. 2014; Wagner et al. 2014; Laraqui et al. 2017; Assi et al. 2019; Zaki et al. 2021) and their use can be seen as a sign of distrust and 'anti-love' (Aunon et al. 2015; Elshiekh et al. 2020). If condoms are used, it would be for contraception (Busulwa et al. 2006; Ismael and Sabir Zangana 2012; Mohamed and Mahfouz 2013; Wafa et al. 2014; Alhusain et al. 2018), although they are not the preferred method (Kulczycki 2004; Abdelrahim 2010; Aladham et al. 2020).

Social

Women are culturally required to be sexually inexperienced or passive (Kulczycki 2004; Elshiekh et al. 2020) and to dismiss their own sexual pleasure and health (Petro-Nustas and Al-Qutob 2002).

Misconceptions (Busulwa et al. 2006; Kabbash et al. 2007; Khalaf et al. 2008; Ismael and Sabir Zangana 2012; Mohamed and Mahfouz 2013; Wagner et al. 2014; Al Rifai et al. 2015; Aunon et al. 2015; Laraqui et al. 2017; Elshiekh et al. 2020; Elshiekh et al. 2021), hearsay (Kulczycki 2004) and gossip are significant obstacles in condom promotion and acceptance.

Those who perceived their peers and network as having positive attitudes towards safe sex and condom use reported more condom use (Elshiekh et al. 2020; Elshiekh et al. 2021) than those who didn't.

Condom use is regularly associated with illicit (extramarital and premarital) sex (Petro-Nustas and Al-Qutob 2002; Kulczycki 2004; Busulwa et al. 2006; Elshiekh et al. 2021) which in turn, increases the socio-cultural stigma of purchasing and using condoms (Alkaiyat et al. 2014; Mirzazadeh et al. 2014; Mohamed 2014).

A study of university students in Lebanon found that condom use is higher in more liberal climates that allow open discussion (Salameh et al. 2016). This is particularly relevant to young people, as many are practising premarital sex without proper understanding of STI transmission and prevention (Kriitmaa et al. 2010; Elshiekh et al. 2021). Two studies highlighted that heterosexual sexually active people(Wagner et al. 2012; Elshiekh et al. 2020) are more concerned about pregnancy than HIV/STIs:

> *"In Beirut, most girls require the use of condoms because they are scared of getting pregnant, and they are scared of scandal."* (*Wagner et al.* 2012)

The stigmatisation of women's sexuality increases their vulnerability to STIs as it prevents them from being prepared by carrying condoms (Zaki et al. 2021) and/or relying on their partner to have one with them (Kriitmaa et al. 2010; Mahfoud et al. 2010; Elshiekh et al. 2021).

The opposition to condom promotion by healthcare providers stems from socio-religious beliefs that condom promotion encourages illegal sex (Busulwa et al. 2006; Elshiekh et al. 2020; Elshiekh et al. 2021) and that natural family planning methods are better (Khalaf et al. 2008).

The stigma associated with premarital sex is linked with the importance of the woman's virginity (Elshiekh et al. 2020), ensuring that the hymen remains intact and avoiding pregnancy. This fear of social disgrace encourages

non-vaginal sex which is mostly unprotected, as there is a misconception that HIV transmission is more likely through vaginal sexual contact than through anal or oral (Abdelrahim 2010; Wagner et al. 2014). The prevalence of heterosexual anal sex is undetermined; however, it does occur among young adults (Zaki et al. 2021).

There is a myriad of problems associated with another under-researched topic: unendorsed marriages. *Zawaj mut'ah* or informal marriages (Saleh et al. 2014) are controversial in the region, as they are not religiously sanctioned in most countries. These marriages allow men to marry a woman, often privately and verbally, sometimes for a predetermined period of time and a specific price, have sexual relations, and divorce without consequences. As they are socially invisible, it is perceived that women in particular lack any health protection.

Structural

The query into condom availability is unclear. In some studies, it relates to the ability to purchase condoms, in others it is implied as being to do with accessibility. Inaccessibility is defined as 'not available' (Adib et al. 2002; Abdelrahim 2010; Wahdan et al. 2013; Mirzazadeh et al. 2014; Laraqui et al. 2017; Assi et al. 2019) or 'obtaining/ purchasing condoms' in one study (Alkaiyat et al. 2014), and it was a suggestion of 'unplanned sexual encounter/heat of the moment' in other studies (Adib et al. 2002; Kriitmaa et al. 2010; Elshiekh et al. 2021).

Condoms are readily available in the region (Abdelrahim 2010; Ismael and Sabir Zangana 2012; Wahdan et al. 2013) as an accepted form of contraception and are usually purchased in pharmacies (Laraqui et al. 2017; Soliman et al. 2010). Nonetheless, there are barriers, as some countries require verification of marriage (Busulwa et al. 2006), there is a lack of privacy at point of sale (Kabbash et al. 2007; Mohamed and Mahfouz 2013), and sometimes the cost of condoms is an issue (Busulwa et al. 2006; Mohamed and Mahfouz 2013; Alkaiyat et al. 2014; Laraqui et al. 2017).

Refugees, MSM, drug users, and sex workers have limited access to health services (Kriitmaa et al. 2010; Mahfoud et al. 2010; Alkaiyat et al. 2014; Al-Maharma et al. 2019; Storholm et al. 2021), have language barriers (Mahfoud et al. 2010; Wafa et al. 2014), and are subjected to status or legal discrimination (Kriitmaa et al. 2010; Zeidan et al. 2011; Aunon et al. 2015; Tohme et al. 2016; Farghaly et al. 2020).

Financial needs and the lack of self-esteem (Farghaly et al. 2020) are also motivators for accepting condomless sex for more money (Zeidan et al. 2011; Aunon et al. 2015). Condom use has also been significantly associated with participants who are more financially stable and had a place to live (Ismael and Sabir Zangana 2012; Aunon et al. 2015) .

Sexual health education is limited in schools across the region ,and many of the sexually active participants only gain knowledge about condom use several years after practising sex. Some wouldn't have seen a condom before (Elshiekh et al. 2020; Elshiekh et al. 2021).

> *"The first time I heard about the condom was 3 years ago. I started practising sex many years before that, but I did not have enough knowledge about using condoms"*(Elshiekh et al. 2020).

Eight studies concluded that training on proper condom use was necessary (Busulwa et al. 2006; Kabbash et al. 2007; Ismael and Sabir Zangana 2012; Wahdan et al. 2013; Mohamed 2014; Assi et al. 2019), and that those who attend are more likely to know how to use condoms and use them consistently (Wahdan et al. 2013; Elshiekh et al. 2020).

The Internet has opened new avenues for people to access sexual health information, providing enough privacy and freedom to research (Saleh et al. 2014; Elshiekh et al. 2021) and discuss issues otherwise considered a taboo in the region. Not only is access to Internet associated with increased condom use but the relative anonymity makes it easier to initiate the discussion of HIV status and condom use (Wagner et al. 2012). This also means that people in the region have access to online pornography which influence sexual behaviours (Assi et al. 2019; Elshiekh et al. 2021; Zaki et al. 2021).

One study found a significant association between condom use and HIV testing (Zeidan et al. 2011). HIV testing can also be a reason to discontinue condom use; in this context, it is a milestone in the relationship and one that signifies commitment and trust.

> *"My boyfriend and I got tested together, because if it is serious and we want to have sex without a condom obviously we have to get tested."*(Wagner et al. 2012)

Discussion

This systematic review has accentuated often hidden personal, social, and structural barriers that affect STI/HIV transmissions as well as identified potential facilitators for effective interventions.

It is essential that the promotion of condoms reinforces positive messages that condoms promote personal health and future financial security rather than using fear as a motivator. To address the concept of masculine superiority, the interventions should appeal to the existing values. Men should be encouraged to consider consistent condom use is a healthy attribute of masculinity, namely taking care of their own and their partner's health and quality of life.

Women need to be empowered to consider their own health by providing them with a viable tool for HIV prevention that they can initiate and control. Female condoms enable women to take the initiative in protecting their own reproductive health as well as countering the barriers and misconceptions men have against using male condoms.

The influence of religion in the region (Ghazal-Aswad et al. 2002; Petro-Nustas and Al-Qutob 2002; Kulczycki 2004; Busulwa et al. 2006; Ibnouf et al. 2007; El-Sayyed et al. 2008; Khalaf et al. 2008; Barbour and Salameh 2009; Zeidan et al. 2011; Ismael and Sabir Zangana 2012; Wagner et al. 2012; Wahdan et al. 2013; Alkaiyat et al. 2014; Fageeh 2014; Mirzazadeh et al. 2014; Mohamed 2014; Wafa et al. 2014; Al Rifai et al. 2015; Aunon et al. 2015; Alhusain et al. 2018; Al-Maharma et al. 2019; Aladham et al. 2020; Elshiekh et al. 2020; Elshiekh et al. 2021; Zaki et al. 2021) is strong, and interventions should be developed within these frameworks. Leverage on religious teachings to promote the use of condoms as a means of safeguarding of one's health and that of others is necessary.

To counter the negative effects of misinformation, open discussions of sexual health and the socio-cultural stigma to purchasing and using condoms need to be addressed. This should begin with the healthcare professionals, as they are critical in raising awareness and confidence in condom use and its efficacy.

The Internet is a powerful platform whereby people can access explicit information on safe sex privately, avoiding any social or legal repercussions. Digital healthcare initiatives can decrease the burden on the health systems, and reduce the stigma/embarrassment associated with condom training as well as correcting any misconceptions.

A key limitation of this review is the exclusion of potential studies that are in French, as it is the main European language in several countries in MENA. As with any systematic review, some studies may have been missed due to the concise search terms or as a result of publication bias and thus excluded from this review. It does need to be acknowledged that as all the included studies are primary research papers, they carry their own risks of bias such as selection bias, due to the nature of the research and geographical locations.

Conclusion

This review found that condom use among different groups of population is generally low and is associated with the governing policies, structure, beliefs, practices, and norms of not only of the region but the community they belong to. Recognising both the barriers and facilitators may help health promotors across the MENA region to improve their targeted condom-use messages to the appropriate populations.

Table 3 Characteristics of included studies

Paper name	Country	Date	Study type	Study group	Group data
Knowledge, Attitudes And Practices Of Syrian Refugee Mothers Towards Sexually Transmitted Infections	Jordan	2019	Quantitative	Refugees	523 Syrian refugee mothers in Jordan
The assessment of seafarers' knowledge, attitudes and practices related to STI/HIV/AIDS in northern Morocco	Morocco	2017	Quantitative	Men	1447 male sailors older than 18 years with length of employment above one year
Attitudes towards and practice of Sexuality among University students in Lebanon	Lebanon	2016	Quantitative	Youth	Non-married individuals, 2750 (83.4%) answered the questions on sexuality: 1116 males (40.6%) and 1634 females (59.4%)
Chlamydia trachomatis infection among female inmates at Briman prison in Saudi Arabia	KSA	2014	Quantitative	Prisoners	205. 7.8% of the inmates were of Saudi Arabian nationality. The majority of them, i.e. 90.7%, were expatriates; 32.2% were Indonesian; 2.9%, Yamani; 42.9% Africans (Ethiopia, Somalia, Chad, Sudan, Nigeria, Eretria and Egypt) and 14.2% other nationalities.

Table 3 (continued)

Paper name	Country	Date	Study type	Study group	Group data
Condom use among males (15-49 years) in lower Egypt: knowledge, attitudes and patterns of use	Egypt	2007	Quantitative	Men	Random selection 2304 males 15-49 in lower Egypt. These comprised 590 industrial workers (25.6%), 382 drivers (16.6%), 627 government employees (27.2%) and 705 students (30.6%).
Correlates of condom use among males in North Sudan	Sudan (Khartoum)	2014	Quantitative	Men	804
Condom use among illegal multi-partners females in the Sudan	Sudan (Khartoum & Kasala)	2011	Quantitative	FSW	102 women who were seeking care in sexually transmitted infections (STIs) at dermatology & STIs public clinics in Khartoum and Kassala.
Do modern family planning methods impact women's quality of life? Jordanian women's perspective	Jordan	2019	Quantitative	Women	548 women aged between 18 and 49
Differences in knowledge about contraception among Saudi males and females at tertiary hospitals in Riyadh	KSA	2020	Quantitative	General population	married Saudi males and females ($n=385$)aged (20 to 65) years old
Factors Associated with HIV/AIDS in Sudan	Sudan	2013	Quantitative	General population	870
Gearing up for PrEP in the Middle East and North Africa: An Initial Look at Willingness to Take PrEP among Young Men Who Have Sex with Men in Beirut, Lebanon	Lebanon	2021	Quantitative	MSM	218 Male-identified, age 18 to 29 years
HBV, HCV and HIV among female sex workers; is it a health problem?	Egypt	2020	Quantitative	FSW	52
Heterosexual awareness and practices among Lebanese male conscripts	Lebanon	2002	Quantitative	Men	730 young male adults
HIV prevalence and characteristics of sex work among female sex workers in Hargeisa, Somaliland, Somalia	Somalia	2010	Quantitative	FSW	237 FSWs (41.6%) the majority originated from neighbouring areas, with Ethiopia the most common place of origin (57.2%).
HIV Prevalence and Demographic Determinants of Unprotected Anal Sex and HIV Testing Among Men Who Have Sex with Men in Beirut, Lebanon	Lebanon	2014	Quantitative	MSM	213
HIV prevalence and related risk behaviors in men who have sex with men, Yemen 2011	Yemen	2014	Quantitative	MSM	261 adult MSM
HIV prevalence and related risk behaviours in female seasonal farm workers in Souss Massa Draa, Morocco: results from a cross-sectional survey using cluster-based sampling	Morocco	2018	Quantitative	Women	520 SMD has a higher burden of HIV compared with other parts of Morocco and is characterised by a substantial aggregation of FSFW.
HIV prevalence and risk behaviors of female sex workers in Khartoum, north Sudan	Sudan	2010	Quantitative	FSW	321
HIV prevalence and risk behaviors of male injection drug users in Cairo, Egypt	Egypt	2010	Quantitative	Drug users	413
HIV Risk, Prevalence, and Access to Care Among Men Who Have Sex with Men in Lebanon	Lebanon	2017	Quantitative	MSM	292
HIV/AIDS among female sex workers, injecting drug users and men who have sex with men in Lebanon: results of the first biobehavioral surveys	Lebanon	2010	Quantitative	FSW/MSM/Drug users	135 FSWs, 81 IDUs and 101 MSM. IDUs were of Lebanese nationality (95%) as compared with 73% of MSM and only 26% of FSWs.
Knowledge and practice of university students in Lebanon regarding contraception	Lebanon	2009	Quantitative	Youth	1410 surveys Males ($n=505$) Females ($n=905$)

Table 3 (continued)

Paper name	Country	Date	Study type	Study group	Group data
Knowledge, attitude and practices of Egyptian industrial and tourist workers towards HIV/AIDS	Egypt	2008	Quantitative	General population	1256 Egyptian industrial and tourism workers aged 16–40 years. females 36.2% of industrial workers as compared to 4.4% among tourism workers
Knowledge, attitudes, beliefs and practices in Lebanon concerning HIV/AIDS, 1996-2004	Lebanon	2009	Quantitative	General population	3200 aged 15–49 years. Male 1876 female 1324
Patterns and knowledge of contraceptive methods use among women living in Jeddah, Saudi Arabia	KSA	2018	Quantitative	Women	979
Prevalence and determinants of condom utilization among people living with HIV/AIDS in Egypt	Egypt	2013	Quantitative	People living with HIV	338
Prevalence of HIV and other sexually transmitted infections and their association with sexual practices and substance use among 2238 MSM in Lebanon	Lebanon	2019	Quantitative	MSM	2238
Prevalence of STIs, sexual practices and substance use among 2083 sexually active unmarried women in Lebanon	Lebanon	2021	Quantitative	Women	2083 unmarried women
Psycho-social Correlates of Condom Use and HIV Testing among MSM Refugees in Beirut, Lebanon	Lebanon	2016	Quantitative	Refugees/MSM	150 participants (50 participants from each of the following nationalities: Palestinian, Iraqi and Syrians)
Reproductive health and HIV awareness among newly married Egyptian couples without formal education	Egypt	2014	Quantitative	General population	150 randomly recruited, newly married couples without formal education
Sexual behavior and knowledge of human immunodeficiency virus/aids and sexually transmitted infections among women inmates of Briman Prison, Jeddah, Saudi Arabia	KSA	2014	Quantitative	Prisoners	204 women aged 16-60 years (mean, 33.3 years)
A study on the knowledge and practice of contraception among men in the United Arab Emirates	UAE	2002	Quantitative	Men	348 men
Unsafe sexual behaviour in domestic and foreign migrant male workers in multinational workplaces in Jordan: occupational-based and behavioural assessment survey	Jordan	2015	Quantitative	Men	230 domestic and 480 foreign male workers (184 Bangladeshis, 143 Indians and 153 Sri Lankans), 223 (97%) and 396 (82.5%)
Utilization of family planning services by married Sudanese women of reproductive age	Sudan	2007	Quantitative	Women	601
Violence, abuse, alcohol and drug use, and sexual behaviors in street children of Greater Cairo and Alexandria, Egypt	Egypt	2010	Quantitative	Youth	857 street children
Knowledge, attitudes and practice of condom use among males aged (15-49) years in Erbil Governorate	Iraq	2012	Quantitative	Men	600 males aged 15-49 years
Condom use and HIV testing among men who have sex with men in Jordan	Jordan	2014	Quantitative	MSM	97
Perceptions of the condom as a method of HIV prevention in Yemen	Yemen	2006	(MM)Qual: consisted of 49 key informant interviews and 45 focus group discussions (FGDs). Quant: 2534 respondants	General population	General population; rural and urban areas and included married and single individuals, students and out-of-school youth. Groups recognised as vulnerable or high-risk groups were included in the study. These were returnee families, truck drivers, fishermen, women engaged in commercial sex (CSWs) and men who have sex with men (MSM).

Table 3 (continued)

Paper name	Country	Date	Study type	Study group	Group data
The sociocultural context of condom use within marriage in rural Lebanon	Lebanon	2004	(MM)Household survey of currently married women of reproductive age, focus-group discussions, and in-depth interviews with service providers.	General population	Survey married women aged 15–49 ($n=589$). A total of 25 focus-group discussions (14 with women and 11 with men)
Assessing sexual practices and beliefs among university students in Khartoum, Sudan; a qualitative study	Sudan	2020	semi-structured interviews	Youth	30 university students included 16 male and 14 female students. All were Muslims and their age ranged from 18 to 24 years (M=19). 11 respondents (6 males and 5 females) reported being currently sexually active.
An Exploratory Study of HIV Risk Behaviors and Testing among Male Sex Workers in Beirut, Lebanon	Lebanon	2015	semistructured guide, containing open-ended questions and followup probes, to conduct in-depth interviews	MSW	16 men age 19-31 years Hamman vs Escort. majority of the hammam sex workers came from Syria
Exploring Determinants of Condom Use among University Students in Sudan	Sudan	2020	semi structured in-depth interviews	Youth	30 male and female university student in Sudan. 11 reported being currently sexually active (six males and five females
Jordanian men's attitudes and views of Birth-spacing and contraceptive use (A qualitative approach)	Jordan	2002	Focus groups	Men	6 focus groups, The total number of participants was 37
Jordanian Women's Experiences With the Use of Traditional Family Planning	Jordan	2008	Focus groups	Women	6 FGs 18-45 years. N=51
A Qualitative Exploration of Sexual Risk and HIV Testing Behaviors among Men Who Have Sex with Men in Beirut, Lebanon	Lebanon	2012	Interviews	MSM	($n=16$) were aged 18–25 years, ($n=15$) above age 25. Mean age of the participants was 28.4 years, and all identified as either gay (77%) or bisexual (23%).

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Knowledge, Attitudes And Practices Of Syrian Refugee Mothers Towards Sexually Transmitted Infections	64.2% knew that a condom should be used during the treatment of STIs. Two-thirds of mothers' partners (66.6%) refused to use a condom during sexual intercourse.	Spousal Refusal	Used during the treatment of STIs	Instructed by their *religious and cultural beliefs* Spousal acceptance of using a condom during sexual intercourse was found to be significantly associated with *mothers' knowledge and attitude on STIs, years of marriage*, and the length of being a refugee in Jordan.	*Lack of knowledge* about the appropriate and available sexual and reproductive health services.
The assessment of seafarers' knowledge, attitudes and practices related to STI/HIV/AIDS in northern Morocco	Condom use at the last sexual intercourse was reported only by 28% of respondents In 71.9% of the cases condom use was proposed by the sailors in 12% by the sexual partner and in 16.1% was decided by mutual agreement. The prevalence of sexual high-risk behaviour was significant: 32% had at least two sexual partners and 26.3% have had sex with sex workers, 60% of them were not protected; 42.8% have never used the condom and only 15.1% used it systematically. 32.5 % were married and felt that the use of condom was not necessary.	44% never used condoms. The less frequent use of condom for married men could be explained by a lack of habit. Reasons for no-use of condoms during the last sexual intercourse ($n=959$) Condom was not available 90 (9.4%) Condom was too expensive 11 (1.1%) Condom was refused by the partner 9 (0.9%) I don't like condom 365 (38%) Condom was not necessary 312 (32.5%) I didn't think about it 172 (17.9%)		*Availabilty:* 98.3% of sailors mentioned pharmacies, 13.1% health centres and 3.9% non-governmental organisations. *Knowledge*: Concerning the prevention ways, 80% of our sailors had mentioned the use of condoms and marital fidelity	*Misconceptions*: still persist-47.3% thought STI could be prevented by urinating post unprotected sexual intercourse. *Substance abuse*: The sailors who had sexual intercourse under the influence of alcohol or drugs are less protected.30.3% had often had sex while under the influence of alcohol or drugs

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Attitudes towards and practice of Sexuality among University students in Lebanon	Among those who had ever had sex, 36.3% had always used condoms 36.5% had used them irregularly 27.2% had never used them. For males, these figures were 41.3%, 38.7% and 20.1%, respectively; for females, they were 26.6%, 34.9% and 38.4%.		Realising that risky behaviours are dangerous (ORa = 1.02; $p = 0.002$) and a liberal attitude towards sex (ORa = 1.06; $p = 0.002$) were associated with regular condom use.	*Liberal attitudes* towards sex was correlated with regular condom use, which could indicate that this high-risk group is being reached by health-related promotional activity.	
Chlamydia trachomatis infection among female inmates at Briman prison in Saudi Arabia	4.9% used condoms for protection from STIs 15.1% used condoms to prevent pregnancy		STI and contraceptives		
Condom use among males (15-49 years) in lower Egypt: knowledge, attitudes and patterns of use	23.9% had ever used condoms with the highest percentage reported by industrial workers (33.9%) and the lowest by students (10.4%). Among single males 11.6% reported using condoms while 32.9% of married males had used condoms	Total non users 1752 Perceived lack of need 1326 (75.5%) Decreased sexual pleasure 32 (18.3%) Not comfortable 176 (10%) Not effective 121 (6.9%) Difficult to use 78 (4.4%) Religious reason 66 (1.5%)	Total users 552 23.9% Prevention of STD 193 35% Birth Control 310 56.2% Both 31 5.6% During menses 18 3.3%	*Knowledge*: Condoms are an effective method of contraception 1395 (60.5%) Condoms are effective for preventing STDs 1383 (60%) Majority were aware of HIV (90.8%) *Availability:* 1603 (69.6%) reported availability of condoms in their neighbourhood	*Low risk perception*: 11.2% felt at risk of STI's and 10.3% of HIV *Lack of knowledge of proper use*: I have enough knowledge about proper condom use 583 (25.3%) *Misconception*: Condoms have some harmful effects 31.9 72% *Perceived partner rejection*: Use of condom could be rejected by partner 504 (71.5%)
Correlates of condom use among males in North Sudan	A condom was never used by 46.3% used sometimes by 16.5% rarely by 25% usually by 12.2%. In terms of consistent use, 12.2% were consistent condom users 41.5% were sporadic condom users 46.3% were nonusers.	Reduce sexual pleasure 212 (26.4) Embarrased to buy 804 (100%). Have any problems with condom use Yes 354 (81.9) No 78 (18.1) Problems Condom breakage Yes 321 (74.3) No 111 (25.7) Condom slipped Yes 313 (72.4) No 119 (27.6) Condom does not fit (tight, big) Yes 308 (71.3) No 94 (29.7)		*Exposure to person living with HIV:* Knowing someone who is living with HIV or had died of AIDS was strong predictor: a ~3.5 fold increase in condom was noted when compared with not knowing someone who is infected with or had died of AIDS. Those who have *knowledge* about AIDS transmission are more likely by about more than 400% to use condoms *Long-term relationship:* Those who have sex with a steady partner were four times more likely to use condoms compared with those who have sex with casual partners. Those who have higher *education* are more likely to use condom (odds ratio = 3.93) when compared with intermediate-level education.	*Availability*: difficulty securing condoms (90.5%) Condoms are only available in some pharmacies, non-government organisations and family planning clinics. Condom source Friends, siblings or peers 311 (72.0) *Knowledge of proper condom use*Yes 75 (17.4) No 357 (82.6) *Negative experience*: Those who have problems (condom use) are less likely by ~60% to use condoms.
Condom use among illegal multi-partners females in the Sudan	97 (95.1%) reported no use of condoms with their clients 5 (4.9%) reported irregular use of condom 61 (60%) participants did not have condoms during sexual intercourse	20 (19.61%) reported resistance of the partners 15% knew the benefit of using condoms, but they are not using it because their partners pay more if it is not used 5% were indifferent to use it.		*HIV testing:* There was significant association between condom use and HIV test (P =0.0034) that indicates, using condom is 97 times more in those who did HIV testing compared to those who did not use condom and did not have HIV testing before the study.	*Financial dependency Illegal status*
Do modern family planning methods impact women's quality of life? Jordanian women's perspective	14.23% reported that their husbands used condoms		Family planning		

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Differences in knowledge about contraception among Saudi males and females at tertiary hospitals in Riyadh	Ever use Female: Male-Condom 40 20% Female-condom 8 4% Male Male-Condom 91 48% Female-condom 5 3% Total Male-Condom 131 34% Female-condom 13 3%	Oral contraceptives were viewed as the safest method by 47% ($n=182$) of participants. Almost half of the participants stated that oral contraceptive pill was the preferred method 49% ($n=187$). The female dependent method oral pills were significantly more reported by the females than men 77% vs 62% among ever users. Additionally, oral pills were also the most preferred method of contraception among females vs males with 54% vs 43%	Contraception	Condoms preferred by men	
Factors Associated with HIV/AIDS in Sudan	3.5%* used condom in the last sexual intercourse. 96.5% had reported their first sexual experience between 20 and 30 years *Only men responded to using condoms		Contraception: The use of condom has been viewed as a method of contraception more than a method to prevent sexually transmitted diseases and HIV/AIDS.		*Availability*: Condoms are only available in some pharmacies and are very *costly*, and even in those pharmacies are kept under the counter and only dispensed to those who ask for them. *Misinformation*: more than 75% believe that mosquitoes transmit the HIV virus; those people may see the use of condom as futile. The majority (98%) in our sample resist using the condom. This resistance is due to the lack of sufficient public health education
Gearing up for PrEP in the Middle East and North Africa: An Initial Look at Willingness to Take PrEP among Young Men Who Have Sex with Men in Beirut, Lebanon	86.2% Recent condomless anal sex w/HIV/unknown status partners Condom self-efficacy 1.48%				
HBV, HCV and HIV among female sex workers; is it a health problem?	65.4% had never used condoms. Consistent condom use was reported in 3.8% The participants mainly offered vaginal intercourse. Condom use No 34 (65.4%) Yes frequently 2 (3.8%) Yes sometimes 16 (30.8%)				*Substance abuse:* 25% reported sex under the influence of drug/alcohol. *Social stigma, illegality, violence, economic needs, low self-esteem, poor health concerns, and low educational and awareness* levels are factors found to be associated with low condom use and compromise the ability to negotiate for safer sex. These factors are even enforced when compounding with drug abuse
Heterosexual awareness and practices among Lebanese male conscripts	40% has previous sexual experience of which 51% consistent condom use 31% inconsistent 18% never used condoms. Insertive rectal sex 42 17.6%	Reasons for inconsistent use (n=143): Confidence in partner 123 86% Condom not available 58 40/6% Unplanned sexual encounter 45 31.6% Condom reduces pleasure 24 16.8% Partner refused condom 10 7%			

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
HIV prevalence and characteristics of sex work among female sex workers in Hargeisa, Somaliland, Somalia	n=219 Condom used at last transactional sex No 76.0 Yes 24.0 Condom used at last non-transactional sex No 31.5 Yes 1.8 Frequency of condom use with clients in past monthEvery time 4.3 Almost every time 0.2 Sometimes 18.1 Never 75.6 Do not know 1.7	Reason condom not used at last transactional sex (n= 156) We did not have one with us 0.6Do not know where to buy one 29.5 Client objected 39.3 I do not like them 6.8 Did not think it was necessary 16.3 Did not think of it 0.8 Other 2.6 Do not know 10.5	Of the 24.0% who did use a condom at last sexual intercourse with a client, 80.5% indicated it was suggested by the client. 0.4% had been given condoms through a clinic or outreach in the past 12 months.	The majority indicated condoms were used upon the *suggestion of the client*. This shows that some clients are aware of risks associated with unprotected sex and accept condoms as measures of protection	*Availability*: almost one-third of FSWs reported the reason for not using a condom with a client was due to not knowing where to obtain condoms, indicating the need for expanding accessibility. *Language barrier*: mobility amongst sex workers in Somaliland is high, with the majority originating from neighbouring countries, which could have implications for interventions in terms of language, culture, and acceptability.
HIV Prevalence and Demographic Determinants of Unprotected Anal Sex and HIV Testing Among Men Who Have Sex with Men in Beirut, Lebanon	Sexual behavior in the past 3 months Has had anal sex with a man 193 (91 %) Has had receptive anal sex with a man 118 (55 %) Has had any unprotected receptive anal sex with a man 90 (42 %) Has had any unprotected receptive anal sex with male partners of unknown HIV status 28 (13%) Has had insertive anal sex with a man 140 (66 %) Has had any unprotected insertive anal sex with a man 87 (41 %) Has had any unprotected insertive anal sex with male partners whose HIV status was positive or unknown 28 (13 %) Has had any unprotected anal sex with a man 136 (64 %) Has had any unprotected anal sex with a male partner whose HIV status was positive or unknown 49 (23 %) Last anal sex with a man: if receptive (N=97), condom not used 69 (71 %) Last anal sex with a man: if insertive (N=117), condom used 62 (53 %) Has had sex with a woman 32 (15 %) Had unprotected intercourse with a woman (among the 32 who had sex with a woman) 17 (53 %)				*Trust*: In the model predicting unprotected anal sex with partners of positive or unknown HIV status, only relationship status was a significant correlate; men in a committed relationship were 85% less likely to engage in unprotected anal sex with unknown status partners compared to the rest of the sample (OR [95% CI]=0.15 [0.06, 0.38]) *Stigma*: Interestingly, only half of the men(15%)had recent sex with both men and women, reported always using condoms during vaginal sex. Not using condoms may still be normative, resulting in men being fearful that suggesting the use of a condom may lead the female partner to suspect that the man may also have sex with men

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
HIV prevalence and related risk behaviors in men who have sex with men, Yemen 2011	Condoms were used in the last anal sex contact in only 20.0 % of participants. 63.3 % of participants had oral sex in the last 6 months, only 4.8 % said they used a condom in the last oral sex with a male partner. 63.9 % for those with commercial partners to 76.4 % for those with casual partners had never used condoms with any partner. Consistent condom use ranged from 6.0 % with female partners to 10.1 % with casual partners. Consistent condom use—about 10 % regardless of partner type. Used condom at last anal sex 20% 88% of participants reported that they had anal sex as the insertive partner with a man, and 78.1 % reported anal sex as the receptive partner. On average, men were aged 14.9 years in their first sexual act, either insertive or receptive, with a male partner.	Reasons for not using a condom (reported as percentage and 95 % confidence interval): Commercial partners ($n=191$) Casual partners ($n=85$) Regular partners ($n=172$) Female partners ($n=65$) Not available Commercial partners 11.8 (8.8–15.7) Casual partners 5.4 (0.5–41.3) Regular partners 5.1 (1.1–20.2) Female partners 3.6 (1.8–7.1) Too expensive Commercial partners 2.8 (0.2–27.4) Casual partners 1.4 (0.0–68.0) Regular partner 0.7 (0.0–54.2) Female partners 0.0 Shy Commercial partners 2.1 (0.0–49.9) Casual partners 2.7 (0.6–11.5) Regular partner 3.6 (0.1–66.3) Female partners 5.4 (1.2–20.3) Partner objected Commercial partners 11.1 (7.6–16.0) Casual partners 12.2 (2.8–40.4) Regular partner 8.8 (4.0–18.1) Female partners 30.4 (14.4–53.0) Do not like them Commercial partners 30.6 (13.2–56.0) Casual partners 35.1 (24.8–47.1) Regular partner 30.7 (10.8–61.6) Female partners 1.8 (0.0–46.3) Did not think it was necessary Commercial partners 2.8 (0.1–57.9) Casual partners 1.4 (0.0–68.0) Regular partner 2.9 (0.3–22.3) Female partners 32.1 (11.9–62.4) Did not think of it Commercial partners 38.2 (11.9–73.8) Casual partners 43.2 (10.0–83.9) Regular partner 32.8 (13.8–60.0) Female partners 17.9 (12.1–25.6) Have confidence in partner Commercial partners 11.1 (6.1–19.3) Casual partners 8.1 (3.9–16.1) Regular partner 30.7 (7.8–69.7) Female partners 0.0 Had an HIV test with partner Commercial partners 1.4 (0.4–5.3) Casual partners 0.0 Regular partner 0.7 (0.0–25.4) Female partners 0.0			*Lack of knowledge:* Less than one-third of the study's MSM had comprehensive knowledge of HIV prevention and rejected common *misconceptions* Stigma and structural factors, such as poverty and *unemployment*, that may affect risk and prevention.
HIV prevalence and related risk behaviours in female seasonal farm workers in Souss Massa Draa, Morocco: results from a cross-sectional survey using cluster-based sampling	Condom use at most recent commercial vaginal sex in the past 12 months was reported by 61.2% (67.4%, unadjusted).	The most frequently mentioned reason for not using a condom was *trust* in client and non-*availability* of condoms.			Availability

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
HIV prevalence and risk behaviors of female sex workers in Khartoum, north Sudan	45% used condom at their last sexual act with a client 35.9% reported consistent condom use with all clients in the last 30 days.	The three most common reasons cited for not using a condom at last commercial sex Did not think of it (34.3%) Partner refused (21.8%) Using of other contraceptive methods (18.8%). Don't like condoms (13.7%) Condom not available (11.4%) Not necessary (9.0%) Other reasons (8.9%)		*Availability*: 73.7% knew where they could obtain a condom.	*Low risk perception*: 42.9% considered themselves at low or no risk. *Lack of knowledge*: Comprehensive HIV/AIDS knowledge was demonstrated by 25.4% of FSW. *Early sexual experience*: More than one-fifth (21.6%) had their first sexual intercourse before the age of 15 years. Nearly 1/3 (31.0%) began selling sex as a child (under 18 years old).
HIV prevalence and risk behaviors of male injection drug users in Cairo, Egypt	Of those having sex in the last year, 9.4% reported to have sex with a man 88.7% had sex with a regular female partner 28.6% with a nonregular female partner 13.2% with an FSW Condom use was low with all partner types. Of those with a regular female partner 11.8% used a condom in the last year Irregular partners 12.8% ever used a condom FSW partners, 34.1% ever used a condom.			Almost all respondents (98.9%) knew that they could obtain a condom from a pharmacy	
HIV Risk, Prevalence, and Access to Care Among Men Who Have Sex with Men in Lebanon	No condom use for those reporting ‡1 partner Female partners 20/36 55.6% Male partners 184/283 65.0% Condom availability during group sex 44/55 81% Engaged in group sex, last year61 21.6% Condom availability during group sex 44/55 81.8% Respondents' condom use during group sex, last encounter Never 30/61 49.2% Sometimes 20/61 32.8% All 10/61 16.4%			*Availability*: Out of 55 Group sex events, condoms were available on 45 (81.8%) occasions	*Group Sex*: Data on condom use, available for 55 of these events, revealed that condoms were available on 45 (81.8%) occasions, but on 18 occasions, not everyone used them. Reporting on respondent's own behaviors during group sex revealed that condom use was much less frequent. Nearly half ($n=30$, 49.2%) never used a condom. *Trust*: Condom use in this group of monogamous MSM was rare; only seven of those men who reported having sex at least 10 times in the past year with that single partner reported always using condoms.

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
HIV/AIDS among female sex workers, injecting drug users and men who have sex with men in Lebanon: results of the first biobehavioral surveys	91% FSWs used condoms every time they had sex with their regular male clients 98% had done so with their nonregular male clients. 92% and 98% stated that they used a condom the last time they had sex with their regular male clients and nonregular male client, respectively. In apparent discrepancy with these high percentages, 35% of FSWs stated that they had wanted to use a condom with their nonregular male client, but it had not been used 64% percent of the respondents stated they always use condoms with their noncommercial partner. However, in apparent contrast, only 48% stated that they had used condoms with their noncommercial partner the last time they had sex. IDU (total n=81) 32% used condoms every time they had sex in the last month with a regular noncommercial sex partner43% did so every time they had sex with a nonregular noncommercial sex partner. 43% used a condom the last time they had sex with a regular noncommercial sex partner 45% did so with a nonregular noncommercial sex partner. MSM (total N=101) 63% used a condom every time they had sex with a regular noncommercial partner 39% did so every time they had sex with nonregular noncommercial sex partners in the last month. 46% stated they had used a condom with a regular noncommercial sex partner. 67% had used a condom with a nonregular noncommercial sex partner. 36% of MSM had ever sold sex27% had a regular male client. 73% used a condom when having sex with clients in the last month. 70% did so the last time they had sex with a male client.		FSW who initiated condom use with regular male client in last month Respondent 0.68% Client 0.01% Both 0.30%	*Knowledge & awareness*: 85% MSM, 86% of IDUs and 88% of FSWs were aware that using condoms during vaginal sex reduces the risk of HIV transmission.	*Early risky behaviour*: more than a third of FSWs reported that their first intercourse was under the age of 16 years, a quarter of IDUs began injecting in the age group of 14–19 years and over a quarter of MSM had their first anal sex experience between the age of 9 and 15 years. *Inaccessibility* to (outreach) services: IDUs, MSM and foreign FSW *Lack of negotiation*: 35% of FSWs stated that they had wanted to use a condom with their nonregular male client, but it had not been used
Knowledge and practice of university students in Lebanon regarding contraception	Of those who had sexual relations (male 241 female 63), the condom for males (86.1%) and oral contraceptives for females (56.3%). 48% of males and 60% of females had ever had sexual relationships without using a contraceptive; the main declared reason was extravaginal intercourse.			About 80% thought that the use of condoms may prevent STDs.	*Misinformation*: Only 56.2% of the male respondents regularly verified the expiry date before using a condom and knew when to put it on, while less than 1/3 (60.2%) knew when to remove it

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Knowledge, attitude and practices of Egyptian industrial and tourist workers towards HIV/AIDS	Use of condoms was reported by 0.2% of industrial workers and 0.6% of tourism workers		Use of condoms as a way to avoid HIV/AIDS was reported by only 0.4% of workers.		
Knowledge, attitudes, beliefs and practices in Lebanon concerning HIV/AIDS, 1996-2004	2004 Total sample: Although 84.1% had heard about condoms, only 15.3% overall had used one Sample size No. % Used by the sexually active 2138 312 14.6 Used with regular partners 760 246 32.4 Used with non-regular partners 363 257 70.8 Used by those who self report STD symptoms 152 22 14.5 Know that condoms protect from HIV 3141 2743 87.3 The highest rates of condom use in this group were for students, 36.8% (14 out of 38) and university graduates, 33.7% (87 out of 258). Younger respondents (< 25 years) who were not married and were sexually active constituted the category that had the highest rate of condom use during their last sexual intercourse, 34.6% (45 of 130 who ever used a condom). Condom use by sexually active Total sample 2138 -312 14.6% Used by regular partners 760- 246 32.4% Used with non-regular partners 363- 257 70.8%. Within marriage or regular partnership, the use of condoms at the last intercourse was only 25.0% in 2004.				Sexual activity was experienced early in life: 36.0% first had sexual intercourse <20.
Patterns and knowledge of contraceptive methods use among women living in Jeddah, Saudi Arabia	Male condom used by 13.6% 0.6% used female condoms 38% didn't know about the female condom		Preventing pregnancy was the most frequent reason for using contraception (69.7%).		

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Prevalence and determinants of condom utilization among people living with HIV/AIDS in Egypt	Condom use during the last 6 months: Regular partner ($n=242$) Never 62 25.6 Rarely 27 11.2 Half the time 32 13.2 Most of the time 12 5.0 Always 109 45.0 Casual partner ($n=149$) Never 88 59.1 Rarely 15 10.1 Half the time 15 10.1 Most of the time 4 2.7 Always 27 18.1	n=289 Revenge 159/55.5% To get full pleasure 128/44.4% Ignorance 95/ 32.9% Psychological factors 59/ 20.5% Partner refusal 21/ 7.3% Unavailability of condom 21/ 7.3% In casual sexual relationship showed that 55.9% believed they decreased pleasure 43.2%prevented spontaneity, 46.2% interfered with the flow of sexual relationships Made a barrier to intimacy and love 38.2% 33.4% Resulted in loss of confidence with the partner 26.0% resulted in erection problems	n=318 Protection from infection 298/93.7% Fear of God 14/ 4.4% Guilt feelings 8/2.5% Psychological reasons 14/ 4.4%	*Availability of condoms*: All the study respondents except 21 (6.2%) agreed that condoms were available. *Training*: As many as 80.8% reported receiving formal training on condom use. *Intention*: 74.0% of the study population intended to use condoms during sexual relations with regular partners *Knowing benefits of using condoms:* Condom use would prevent transmission of the infection to their partner 83.4% would protect them from acquiring STIs 82.2% and from acquiring another HIV 79.0% Would *prevent guilt feelings* afterwards 66.0% and 55.9% that it *allowed them to continue having sexual relations* The tendency to use condoms was greater with a partner with an *unknown or a negative serostatus* than with a seropositive partner for whom the decision to use condoms was lowest.	
Prevalence of HIV and other sexually transmitted infections and their association with sexual practices and substance use among 2238 MSM in Lebanon	Inconsistent condom-use during anal sex were reported by 67% .The majority reported unprotected oral and anal sex exposures in the past three months (99% and 53% respectively). Inconsistant condom use with regular partner 239 11% inconsistant condom use with casual partner 1040 46% Inconsistant condom use with exclusive Partner 220 10% Always uses condoms 739 33% Oral sex Always used a condom 30 1% Unprotected received 93 4% Unprotected performed 120 5% Unprotected both 1995 89% Anal sex Always used a condom 1049 47% Unprotected insertive 350 16% Unprotected receptive 410 18% Unprotected both 429 19%	Trusts Partner 537 36% Heat of the moment 288 19% Was under the influence of a substance 280 19% Cannot negotiate condoms with partner 52 3% Does not like using condoms 81 5% Condom was not available 66 4% Has misinformation about condom-use 185 12%			*Lack of knowledge*: Sexual health education is not implemented in the majority of schools and universities in Lebanon, and there is little access to accurate and comprehensive information about sexual health *Substance abuse*: 19% of the sample stated that they did not use a condom during their last sexual intercourse because they were under the influence of a substance; among those alcohol being that substance in 71%.

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Prevalence of STIs, sexual practices and substance use among 2083 sexually active unmarried women in Lebanon	Inconsistent condom-use during vaginal sex in the past three months was reported by 81% Condom-use with partner(s) in last 3 months: Always Uses Condoms 389 19% Inconsistant condom-use with exclusive partner 373 18% Inconsistant condom-use with regular partner 319 15% Inconsistant condom-use with one-time partner 1002 48% Vaginal sex exposure Did not have condomless vaginal sex 425 20% Had condomless vaginal sex 1658 80% Anal sex exposure Did not have condomless anal sex 580 (75%) Had condomless anal sex 192 (25%) - Missing value 1311	trusting their partner(s) (44%) being in the heat of the moment (15%) being under the influence of a substance (11%) Cannot negotiate condoms with partner (6%)Partner loses erection (2%) Makes them uncomfortable (12%) Has misinformation about condom-use (9%). Among those who reported not using a condom due to being under the influence of a substance, those substances were: 82% alcohol, 8% combination of recreational drugs, 5% combination of alcohol and recreational drug, and 5% of a single drug including cannabis, heroin, or cocaine.		*Fewer sexual partners*: Those who reported having 0–1 partner in the past three months were at lesser odds of having inconsistent condom-use with one-time partners compared to those who reported having 6 or more partners.	*Stigmatisation of sex and sexuality*, which subsequently hinders their ability to maintain their sexual health and well-being. *Substance abuse*: Recreational drug-use was also relatively prevalent (33%) *lack of financial independence* (unemployment) may have attributed to lower self-efficacy that could hinder condom-use discussion with partners
Psycho-social Correlates of Condom Use and HIV Testing among MSM Refugees in Beirut, Lebanon	Has had any unprotected receptive anal sex with a man 59 (76.6 %) Has had any unprotected receptive anal sex with male partners of unknown HIV status 35 (59.3 %) Has had any unprotected insertive anal sex with a man 88 (84.6 %) Has had any unprotected insertive anal sex with male partners whose HIV status was positive or unknown 63 (42 %) Has had any unprotected anal sex with a man 126 (84.6 %)Has had any unprotected anal sex with a male partner whose HIV status was positive or unknown 85 (56.7 %)				Psychosocial factors on levels of health care utilisation (58.1 % were still not comfortable with *health care providers*) *Sexual identity development* (only 67% identified themselves as homosexual) Processes and patterns of social *(Refugee status-related) discrimination*
Reproductive health and HIV awareness among newly married Egyptian couples without formal education	36 (24%) men 24 (16%) women reported that they had ever used condoms.		90% of those participants who had used condoms did so during the treatment of genital infections. 10% of participants that had used a condom did so as a temporary contraceptive method. Some of the male participants were *married to more than one wife* and four male participants had *extramarital sexual relations* for which they used condoms.		

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Sexual behavior and knowledge of human immunodeficiency virus/aids and sexually transmitted infections among women inmates of Briman Prison, Jeddah, Saudi Arabia	20% used condoms		10 respondents (4.9%) reported they used condoms to protect themselves from STIs 31 (15.2%) reported they have used it for contraceptive purposes. Only 3 out of the 31 women who used condoms for contraceptive purposes have used it for protection from STIs as well.		*Lack of STI knowledge*: 170 (83 · 0%) of the respondents were not aware of STIs
A study on the knowledge and practice of contraception among men in the United Arab Emirates	Used condoms, 30 (31.9%)	Of 54 users of condoms and coitus interruptus 16 (29.6%) reported to have experienced adverse effects that included testicular pain in six (37.5%), decreased libido in six (37.5%) and diminished orgasm in four (25%)		knowledge of availability	94 respondents (27.0%) had practised any form of male contraceptive methods in the previous year of the survey. Reasons for disagreement with the male contraceptive method 57.3% *religion* 20% *cultural*
Unsafe sexual behaviour in domestic and foreign migrant male workers in multinational workplaces in Jordan: occupational-based and behavioural assessment survey	Out of the 63 domestic workers who reported non-regular sexual partner(s) in the past 12 months:88.9% had never used condoms. This percentage is significantly higher than that (67.4%) among the 141 foreign workers who also reported non-regular partner(s) during the same period . Condom usage (domestic=154; foreigner=298) Never Domestic 124 80.5% Foreign 177 59.4 % Sometimes Domestic 19 12.3% Foreign 90 30.2% Every time Domestic 11 7.1% Foreign 31 10.4% Used with only regular partner (domestic=91; foreigner=157) NeverDomestic 68 74.7 Foreign 82 52.2 SometimesDomestic 12 13.2 Foreign 44 28.0 Every time Domestic 11 12.1 Foreign 31 19.7 Used with only non-regular partner(s) (domestic=54; foreigner=108) NeverDomestic 48 88.9 Foreign 80 74.1 Sometimes Domestic 6 11.1 Foreign 28 25.9 Every time Domestic – Foreign – Used with regular and non-regular partner(s) (domestic=9; foreigner=33) Never Domestic 8 88.9 Foreign 15 45.5 Sometimes Domestic 1 11.1 Foreign 18 54.5 Every time Domestic -Foreign -				first sex at the age of ≤24 years were more likely to practise unsafe sex. The noticed low condom usage among domestic workers can be attributed to their inadequate knowledge about the *importance of condoms in preventing STIs.* *Lack of knowledge/Misinformation*: Those who had never heard of condoms or reported that 'condoms cannot protect against STIs' were more likely to practise unsafe sex. *Being single*: compared to workers who were married and living with their spouses at the time of the survey, unmarried domestic and foreign workers were at 380% and 650% greater risk of practising unsafe sex, respectively. Alcohol: Domestic workers who were current or ex-alcohol drinkers demonstrated higher odds of practising unsafe sex. Migrant: This study further revealed that the high rate of unsafe sex among migrant workers

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Utilization of family planning services by married Sudanese women of reproductive age	Levels of male & female condom use was very low and only reported by Urban women (24 4.4%)				This might partly be explained by the fact that these methods are perceived as being in conflict with *traditional culture, patriachal norms, native notions of maleness and religious doctrine.*
Violence, abuse, alcohol and drug use, and sexual behaviors in street children of Greater Cairo and Alexandria, Egypt	52% reported never using a condom 20% reporting having used them consistently. Street girls were more likely to engage in unprotected sex (73%) as compared with street boys (48%). Condom use with male–male sex was very low, with 90% of boys in Greater Cairo and 70% in Alexandria reporting never using condoms. Condom use with someone of the opposite sex (cairo & alex, boys and girls) 15-17 years Always use condom 60 (20%) Sometimes use condom 74 (25%) Never use condom 154 (52%) Condom use with someone of the same sex (boys only) Always use condom 12 (12) Sometimes use condom 10 (10) Never use condom 80 (77)				*Early sexual experience:* The mean age of first intercourse with other males was 13 years.

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Knowledge, attitudes and practice of condom use among males aged (15-49) years in Erbil Governorate	Condom use among 600 Condom practicing Condom user 72 12% Non-condom user 528 88%	Refuse condom use 235 44.5% (single, having no sexual relationship or having monogamous relationship) Desire for conception 94 17.8% Use of other methods by wife 90 17% Use of coitus interrupts 72 13.6% Rejection by partner 13 2.5% Decrease sexual pleasure 13 2.5% Religious reason 11 2.1%	Family planning 66 91.7% Prevention STIs 2 2.8 % Both 4 5.6% Total 72 100%	*Availability*: Although condoms were reported by the majority of respondents 85.5% to be easily available, only 12% had ever used them. *Education*: (12%) condom users, the lowest percentage of condom use were among illiterate, while the highest percentage of condom were among respondents with diploma, university and high education ($x2 = 26.440$, $p<0.001$). There was statistical significant association between *condom user and educational state of their wives* ($x2 = 26.424$, $p<0.001$). *Perceived risk of HIV and sexually transmitted infections:* The highest level of use was among respondents who perceive a reduced risk of HIV and STIs (68.6%, 63.2%) transmission by condom use *Socio-economical:* There was higher level of condom use 20.7% among higher socioeconomic status	*Lack of knowledge*: Only 25.8% of the respondents reported to have enough knowledge about proper condom use. 71.7% required more information *Misconception*: 30.2% thought that condom use may have some harmful effects *Availability*: There was significant association between higher condom uses and being residence of urban areas
Condom use and HIV testing among men who have sex with men in Jordan	Condom use Always 10% Sometimes 67% Never 23%	Reduced pleasure 58% Ineffectiveness of condoms 37% Not need condoms because they know their partners, or because they did not practice anal intercourse 41%. Stigma 21% (ashamed to ask for or buy condoms) Among those who reported stigma as an obstacle, 90% were single and younger than 25 years. 4% reported cost as an obstacle to obtain condoms. Other reasons included religion and partner refusal; each of these was mentioned by less than 5%.	84% mentioned condoms as a means of HIV prevention.	At $p<0.05$ level higher condom use is associated with: *having better education ; acknowledging MSM as a high-risk group, seeking advice from a medical doctor and considering having sex with sex workers as a risk factor* *Availability*: 85% reported having easy access to condoms. *Knowledge*: 84% per cent spontaneously mentioned condoms as a means of HIV prevention	*Access-related stigma* was an obstacle to condom use that was exclusively reported by young and unmarried MSM.

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Perceptions of the condom as a method of HIV prevention in Yemen	Qual: 2% of the total survey sample had used a condom for any reason in the preceding 12 months. This rate rose to 6% of those who had ever been married, and among users of modern family planning methods 9% had used a condom in the previous 12 months. Quant: Used male condoms for family planning/birth spacing in previous 12 months Male 13.4% Female 9.6% Used male condoms for any other reason during 12 previous months (married only = 1586) Male 6% Female 6.3%	Reduced sexual pleasure: "People who pay for sex don't normally use the condom. They say 'we pay money to enjoy ourselves, with the condom there is no enjoyment'." Female sex worker key informant. Client objection: "Many people don't like to use the condom. I find myself forced to do it [sex] without a condom." Female sex worker key informant. Trust: "No one is using the condom with me because I know my clients very well we trust each other." Female sex worker key informant. Misconception of efficacy: "There is no benefit from this condom, because it is not even [fully] safe for family planning. How could it be safe for prevention of AIDS?" Urban married man FGD participant. "If the condom is not safe for family planning how can we use it to protect ourselves from AIDS?" Rural married woman FGD participant.	Contraception: Condom use for family planning, health care providers reported a noticeable increase in uptake of condoms for family planning. *Health*: "There are a lot of married and educated youth using the condom because they care about their health. It is a good idea to use condoms, and there will be no problem [with the policy] except it doesn't give you enjoyment during sex." Returnee family male FGD participant.	*Availability*: Greater degree of anonymity for the buyer and longer opening hours of the pharmacies	*Lack of knowledge:* General population 51.3% had heard of the male condom, 36.3%within the marginalised group. Condom could prevent STIs was known by less than 23% of all respondents in any category. Knowledge of the correct steps of its proper use was very limited *Availability and accessibility*: barriers of cost reported for the poor, as well as the requirement of marital status verification before issue of condoms at some government health facilities. *Misconception*: Belief that repeated use of condoms would lead to genital irritation, infection and even cancer in women. *Stigma rooted in religious and socio-cultural norms*: Large number of population, including health care providers, preserving the morals and the traditional sexual norms was of greater importance than preventing the spread of HIV. Perception that making extramarital sex safer was tantamount to legitimising it, leading to a conscious decision by some *health care providers to withhold information* on the STI-protective benefits of condoms from their clients "If 'illegal' sex is forbidden in our religious guidelines, how can we encourage condom use? Do you want us to tell people who want to have 'illegal' sex to use the condom in order to prevent AIDS? This is unbelievable." Health sector policy-maker FGD participant. *Inadequate skills*, stigma and *lacked the necessary tools* (such as dildos) to demonstrate correct condom use.

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
The sociocultural context of condom use within marriage in rural Lebanon	41 women were currently using condoms, yielding a prevalence rate of 7 percent.	Misconception of efficacy: fragile and ineffective as contraceptives. "I believe it's effective at 70 percent. There will be a 30 percent risk left." (Male focus-group participants, aged 28–47) Sexual pleasure: Several men's remarks underscored their desire to preserve their own pleasure and comfort "It does spoil the mood, because when you are in a situation [sexually aroused], and you go to put the condom on, you move into another state. Your nerves get cooler."(Male focus-group participants, aged 27–37) Condoms diminished woman's sexual fulfillment: "It disturbs the woman especially. We don't like it."(Female focus-group participants, aged 26–32) Condom's adverse effects: perceived harmful consequences related to women. "I think the condom is not healthy with regard to women's health." Not natural: "Normally, using condoms is not easy for a man because it is not natural, and this is why he did not use them for long." "It is very disgusting. I never used it. (Female focus-group participants, aged 29–40)" Trust in husband: belief that their marital relationships are monogamous and implicitly trust that if their husbands were ever to be unfaithful, they would protect their wives "Condoms are used mainly by the husbands when they travel abroad. However, these husbands don't use condoms during intercourse with their wives. (Woman, aged 42, with six children) Dryness in women: "In my case, I did not like sexual intercourse when using the condom because it produces vaginal pain and dryness." (Female focus-group participant, aged 29)	Contraceptive: condom as a second-choice method when other modern contraceptives are ruled out for health related reasons The presence of actual or perceived health-related problems related to a wife: "Because of my health situation, I cannot use any other method, so I asked my husband to use a condom. He was cooperative because we did not have a choice." The absence of any physiological side effects associated with condom use The perception that the condom can be used to let the body "rest" between episodes of pill or IUD use Some men's preference for it. "I definitely prefer the condom because the condom concerns me personally. I can control it, without imposing anything on my wife." (Man, aged 29, with two children) "No, it does not bother him. He actually finds it better than withdrawal, and this is why he uses condoms." (Woman, aged 35, with three children)	Condoms are preferred primarily for their lack of physiological side effects. *Awareness*: 85 % of the women surveyed said they had heard of condoms.	Viewed as a second-choice method *Adverse experiences fused with and compounded by hearsay and secondhand knowledge.* "We know an old man, 60–70 years old, who had a child because the condom ripped." (Man, aged 29) *Expectation of masculinity*: " ....The man always does what is most comfortable to him; it's up to the woman. They're afraid, and it's something related to their manhood. (Female focus-group participants, aged 23–33) Most men would rather not use a condom than risk having their masculinity questioned or stir up conflict with their wives and because their wives are considered to be responsible for contraception. *Traditional gender roles*: Women are reluctant to threaten traditional gender roles in the sexual and reproductive arena, where husbands control decision-making. Women's assumptions, gender inequalities and ideologies, and poor spousal communication all combine to aggravate couples' reluctance to use condoms. *Stigma*: condoms are viewed primarily as contraceptives rather than prophylactics, they are frequently perceived by people of both sexes as an *extramarital contraceptive method stemming from its occasional association with illicit sex* "As for me, I don't commit adultery, and I can use other medical methods." (Male focus-group participant, aged 28) "[My husband] relates condoms to prostitution, so they should not be used with one's wife. If people are married, there is no point in using them." (Female focus-group participant, aged 29)

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Assessing sexual practices and beliefs among university students in Khartoum, Sudan; a qualitative study		Girls were not much concerned about that and did not mind having sex without a condom. "only one of the girls with whom I had sex asked me to use a condom and I had one at that time. The rest of the girls were not much concerned about that and did not mind having sex without a condom" (21-year-old male, sexually active).	Requested and available "only one of the girls with whom I had sex asked me to use a condom and I had one at that time" (participants declared practising sex without condoms)		*Lack of knowledge:* Most of the sexually active males have never seen a condom before and the majority lacked knowledge on how to use condoms. *Misconception*: The sexually active male participants had misconceptions about condom use and its protective role against HIV.
An Exploratory Study of HIV Risk Behaviors and Testing among Male Sex Workers in Beirut, Lebanon		Appearance: assessed the risk profile of a client based on their appearance and social class, making the assumption. not use condoms with female clients because "they are clean and can't be carrying any infection." Male pleasure: reduces sexual pleasure/difficulty maintaining an erection. "What I know is that most of them don't use the condoms at all, and that they don't feel the pleasure using it, regardless if they sleep with men or women." Having unprotected sex with a romantic partner seemed to be a sign of love and commitment, and a way to differentiate having sex for work versus pleasure. "If I am in a relationship with someone, I will never use a condom. My partner will have to accept it; otherwise, he can find someone else."	Future health and financial stability were motivators for condom use. "I don't want to gain money over my health because eventually I will lose the money." Protectection of his girlfriend's health.	Supportive environments, "I always use the condom ever since I left working at the hammam. Back then, I never used the condom because it wasn't available, and I didn't have an idea about protection."	Misconception: one respondent from the hammam reported "never" using condoms based on the assumption that the insertive partner is not at risk of contracting sexually transmitted infections or HIV. "I understand from friends and from health information brochures that it carries a risk to have sex without a condom, but I know that only the passive person (bottom) is at risk, [so] I am not." Financial gain/client preference was primary driver in condom negotiation with clients, not using condoms "especially if they pay extra money." *Fear of deportation/Job security*: "My main goal in the hammam is to keep my clients happy so the owner will keep me at work. Once a client insulted me, saying, 'Do it well, you animal, otherwise I will tell the owner you're not doing a good job.' I felt threatened and kept quiet about [using condoms]. I don't want any troubles." Limited access to condoms was a barrier to use, saying that he does not use condoms "because the clients don't bring them." Fatalists view: "Even if I am HIV positive, I prefer not to know. When my time to die comes I will die. I don't force people to sleep with me."

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Exploring Determinants of Condom Use among University Students in Sudan		Heat of the moment: "One day I met a girl whom I know well that she practises sex with many people and might be infected. She was so lovely, and I was so excited that I had sex with her without a condom." (23-year-old male, sexually active). Sexual pleasure/misconception/masculinity: "I used to hear that condoms negatively affect sexual pleasure and decrease the size of the penis. My friends also told me that using condoms for a long time could affect masculinity and weaken ejaculation. They can also cause ulcers in the penis." (24-year-old male, sexually active). "Some of my sexual partners feel that condoms minimise sexual pleasure. Therefore, I feel discomfort with it."(19-year-old female, sexually active). Trust: "Sometimes, I feel that it is more trusting to practise sex with my partner naturally and without a barrier." (21-yearold male, sexually active).	Contraception: For most of the female students and a few male students, the most crucial advantage was preventing unwanted pregnancy. "I always remember pregnancy and its social and legal consequences. It is better for me to spend money to buy condoms to avoid pregnancy." (21-year-old male, sexually active).	*HIV programmes*/Having previous exposure to people living with HIV: "The first time I saw an HIV patient was in a health education activity. He looked very ill, and I was scared when I saw him. Since that time, I have become more careful and never practised sex without a condom." (24-year-old male, sexually active). Those who attended HIV programs stated that they were more likely to use condoms consistently and seemed to know how to use condoms correctly. "I have attended training about HIV held by an organisation in which we were told that condom use prevents HIV. I became more convinced when I started using condoms consistently (21-year-old male, sexually active)." Availability & accessibility: "The main thing that encourages me to use condoms is that it is always easy for me to get condoms from the pharmacy where my close friend is working." (19-yearold male, sexually active). HIV counsellers and Healthcare workers: "One day, I talked to a counsellor who asked me about my sexual behavior. When I told him that I intend to practice sex, he advised me not to do that before marriage. He also advised me to use condoms if I practice sex so as to avoid many risks such as AIDS." (21-year-old male, sexually active). *Peers and sexual partners*: "My friends and I are very close to each other. We share our secrets. Most of them use condoms consistently and keep condoms in their pockets so they may have a chance to practise sex at any time. They encourage me to use condoms, but nobody else talks to me about that."(21-year-old male, sexually active).	*Too late*: .The majority of the sexually active participants gained detailed knowledge about condom use several years after they had started practising sex. "The first time I heard about the condom was three years ago. I started practising sex many years before that, but I did not have enough knowledge about using condoms." (24-year-old male, sexually active). *Misconception*: "Condoms protect only men against sexual diseases."(21-year-old female, sexually active). Gender enquality, the gendered power relations preventing female students from negotiating condom use with their partners: "It is the norm. If I ask for the condom, my partners will refuse just because they are men." (23-year-old female, sexually active). Social, political and religious barriers: "I cannot talk with my dad or mom about sex because they are not as close to me as my friends." (18-year-old male, sexually active). "Our imam says that calling the youth to use condoms will spoil them and destroy the community and nothing will be gained from that." (24-year-old male, abstainer). Peers and sexual partners: "My friends always tell me that sex is more pleasurable without condoms. They call it natural love. Most of my sexual partners also discourage me from using condoms as they believe that it reduces pleasure." (19-year-old male, sexually active). "One day, I arranged with a girl to have sex. I prepared everything and kept a condom in my pocket. When I came to put it on, she refused. I tried my best to persuade her but failed. She was so sexy that I could not resist my desires." (23-year-old male, sexually active).

Table 3 (continued)

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
Jordanian men's attitudes and views of Birth-spacing and contraceptive use (A qualitative approach)		The use of condoms was perceived as not pleasurable Used only while having sexual relations outside the marriage: "I do not feel right to use a condom when I am with my wife. It will not make me feel normal or happy. I know that some men use it when they cheat on their wives (sex outside marriage). The best thing is abstinence , really not to have sex at all, the husband and wife should sleep in separate rooms at unsafe times." Male centered: " We hear that the pills cause cancer for the woman, and the IUD might get stuck in the woman's body and harm her badly. I, personally, will never use any male contraceptive s unless it is extremely necessary, and it is only then, I may use the withdrawals."			Traditional gender roles :" It is not the wife's right to force any authority—in decision making—over her husband, this is not allowed by any social norm nor endorsed by any law in any society in the world." The concept of "Manhood" had also emerged from this study. Some men reflected *shameful feelings* in stating that they themselves use or even buy a contraceptive methods *Misconceptions*: "All contraceptive s are harmful, the best is the natural one 'Breast-Feeding' or the rhythm."
Jordanian Women's Experiences With the Use of Traditional Family Planning		Partner preference: "The husband prefers his wife to use a method which doesn't affect him and also the best method that makes their relationship stronger and better." Partner objection: "I may get pregnant, but I'm consoling myself. I breastfeed day and night. All people get sleep at night except me still feeding my child. I get tired, but what to do? My husband is not allowing me to use any modern method." (33-year-old mother of three used breastfeeding to control fertility)			*Healthcare professionals*: Women are encouraged by providers to use breastfeeding but not educated on other methods. "I told the doctor, when I visited the health center, that I am afraid to get pregnant. The doctor advised me to use breastfeeding. I asked about condoms, but I was advised that condoms were not necessary because while I was breastfeeding pregnancy wouldn't happen." (32-year-old with two children including a 3-month-old infant) *Lack of trust in medical professionals*: "I [got information] from other women—not from nurses as they are not doing their job." (42-year-old mother of 10 who had never used MFP methods) "I hate to go to the health centers. They are so bad and I do not want to ask them any questions. They encourage us to use breastfeeding. Most of the time they treat us like animals." *Misconceptions*: Many women expressed concerns about the use of condoms, citing the "fact" that many of them had holes in them and thus were not a reliable method or that condoms were unacceptable to their husbands.

Paper name	Condom use data	Condom non-use reasons	Condom use reason	Facilitators	Barriers
A Qualitative Exploration of Sexual Risk and HIV Testing Behaviors among Men Who Have Sex with Men in Beirut, Lebanon	Consistent condom use 16 (51.6%) 50% reported not using condoms consistently and 1/4 had not been HIV-tested. Anal sex: 15 reported inconsistent condom use, while 11 reported always using condoms. 5 were in committed relationships and stated that they always use condoms but not with their primary partner. Over half of the sample ($n=17$) reported that they did not use condoms during sex with partners with whom they were either in a relationship or who were regular sex partners. 9/13 participants who were both uncomfortable with their sexual orientation and had not disclosed to either parent reported inconsistent condom use compared to just 6 of the other 18 men in the sample.	Trust: not using condoms: "My boyfriend and I got tested together, because if it is serious and we want to have sex without a condom obviously we have to get tested." "The people I sleep with, I would know who they are, what they are like. I wouldn't sleep with someone I hadn't seen before."	Condoms were more likely to be used with casual partners, partners believed to be HIV positive and with partners met online where men found it easier to candidly discuss HIV risk. *Fear*: motivated many to get HIV tested and use condoms, but such affect also led some to avoid HIV testing in fear of disease and social stigma if found to be infected. "Lots of gays have HIV so Iam not taking the risk to end my life just for sex." Condoms used with women, sometimes at the insistence of the woman, because of a desire to prevent pregnancy. "In Beirut, most girls require the use of condoms because they are scared of getting pregnant, and they are scared of scandal."	*Comfortable with sexual orientation* and who had disclosed their sexuality to family and parents, more likely to use condoms consistently. *Online dating*: The relative anonymity of the internet made it easier for some men to initiate the discussion of HIV status and condom use: "Since most of my meetings are through the internet, [discussing HIV/STIstatus] happens before meeting while we are chatting [online]. When you are meeting someone in a club, usually you don't have a lot of time to discuss such issues."	*Misconceptions*: HIV is thought to be more of a "*gay thing*", even though he is aware that women also contract HIV. "If [my partner] was a woman, I might not even ask her [about her HIV status], it wouldn't even come up. I usually have this predisposition of thinking that it is just the gays [that have HIV], but of course it is not." "We never open the subject, but once I met a man with buttons [spots] all over his body. When I see something I don't like I use a condom right away. It is not easy to open the subject and in any case they will not tell the truth."

Appendix

Authors' contributions All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by Abier Hamidi. Dr Pramod Regmi and Prof. Dr Edwin van Teijlingen independently screened a random selection of 20% of all abstracts for consistency.

The first draft of the manuscript was written by Abier Hamidi, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Availability of data and material These are available as they are published papers.

Declarations

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