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The impact of teachings on sexuality in Islam on HPV vaccine acceptability in the Middle East and North Africa region

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ABSTRACT

The human papilloma virus (HPV) vaccine is the recommended prevention strategy for viruses-related cancers, but its acceptability remains controversial, primarily because of the relationship between sexual activity and HPV infection. Countries in the Middle East and North Africa are conservative vis-à-vis sexual behaviors, where Islam shapes people's practices including sexual health, and imposes that sex be carried out within lawful context. Many sexually transmitted infections can be prevented if the rules of Islam are unflinchingly applied by Muslims in that region. However, this is not guaranteed and a noticeable shift in the sexual behavior of the youth has been detected, including a drastic increase in unofficial sexual practices, which in the long-term increase HPV incidence and its related diseases. This study examines the available epidemiological data as well as the teachings in Islam's sacred texts and scholars' perspectives to describe the tensions that exist in Muslim cultures around sexuality. Understanding their influence and the function of these tensions can help illuminate the factors that contribute to barriers to accepting the vaccine.

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1. Introduction

Human papilloma viruses (HPVs) are a group of viruses in the Papillomaviridae family. HPVs include more than 150 types [1], which are classified into categories based on their oncogenicity.

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On a global scale, HPV is one of the most frequent sexually transmitted infections (STIs) [2] for which the HPV vaccine remains the recommended prevention strategy. However, its introduction and acceptability remain controversial, primarily because of the relationship between sexual activity and HPV infection [3,4].

Countries in the Middle East and North Africa (MENA) are conservative regarding sexual behaviors compared with countries in the West, because they have more traditional religious and social norms [5]. Islam shapes people's practices and habits, including sexual and reproductive health, and imposes that sex be carried out within the context of marriage [6]. Nonetheless, some studies show that cases of STIs in the MENA region are higher than reported [7]. These factors align to create barriers for accessing the HPV vaccine for those in the MENA region who might benefit from vaccination.

This study examines the available epidemiological data as well as the teachings in the sacred texts of Islam, the Quran and the Hadith, that influence these cultural contexts and surveys perspectives from scholars in the field of religious studies to describe the tensions that exist in Muslim cultures around sexuality. Understanding the influence of these texts and the function of these tensions can help illuminate the factors that contribute to barriers for accepting the HPV vaccine.

2. Methods

This study is a systematic review of the literature. Data on HPV epidemiology were collected through keyword searches using Science Direct and PubMed as search engines and a subject matter research librarian aided in mining the relevant literature in the field of religious studies. Literature in Arabic, French, and English was collated and examined. This included studies and articles published in peer-reviewed scientific and religious studies journals; reports published by organizations including the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), and United Nations International Children's Emergency Fund (UNICEF); interpretations of verses from the Islamic Holy book the Quran and the Hadith (reported sayings of the Prophet Muhammad); books written by anthropologists and theologians; and the constitutions of the 20 countries in the MENA region, as the latter is defined by UNICEF.

3. Overview and the global burden of the human papilloma viruses

HPVs are categorized based on their oncogenicity (ability to engender tumors) into two types: oncogenic, that is, those that cause cancer (also called high risk) and non-oncogenic (also called low risk) [1,2]. The cervical cell abnormalities, whether low grade or high grade (precursors to cancer and cancers), are caused by high-risk HPV types [1]. A minimum of 13 types of HPV are oncogenic [8]. In addition, all cases of cervical cancer in women are attributed to HPVs, 70% of which are primarily caused by types 18 and 16 worldwide [8]. The WHO claims that over 85% of cervical cancer deaths occur in developing countries, and that on a global scale, HPV stands as one of the most frequently occurring STIs [5]. A meta-analysis of studies conducted on women revealed that the prevalence of HPV is 11.7% (Fig. 1) [9].

Genital contact is the principal route of transmission of HPV infections, most frequently occurring through sexual intercourse [1]. Sexual transmission seems to be related to number of sex partners, the early age of sexual intercourse, and previous diagnosis with STIs [10].

There is no treatment for HPV infection itself, but rather for its clinical symptoms [3]. As for cervical precancerous lesions, the WHO-recommended approach is "screen-and-treat," with visual inspection using acetic acid or "Papanicolaou test" (Pap test) for screening and loop electrosurgical excision procedure or cryotherapy for treatments [11]. As for cancer, biopsy is the most efficient way to diagnose. The treatment depends on many factors, such as the stage of the cancerous lesion, age, and concern about protecting fertility [2].

Recommended preventive measures include using condoms appropriately and regularly, having a reciprocally monogamous relationship, and reducing the number of sexual partners; however, abstinence remains the method with greatest efficacy for prevention. The HPV vaccine is the recommended prevention strategy. Several countries are introducing the vaccine mainly to prevent infection with HPV types 16 and 18. They aim to decrease the incidence of cervical cancer, and thus, mortality. The primary target is teenagers aged 11 or 12 years [3]. The WHO recommends the vaccine for males and females through the ages of 21 and 26, respectively, and a "catch-up vaccine" for adults with risk factors if they are unvaccinated [12].

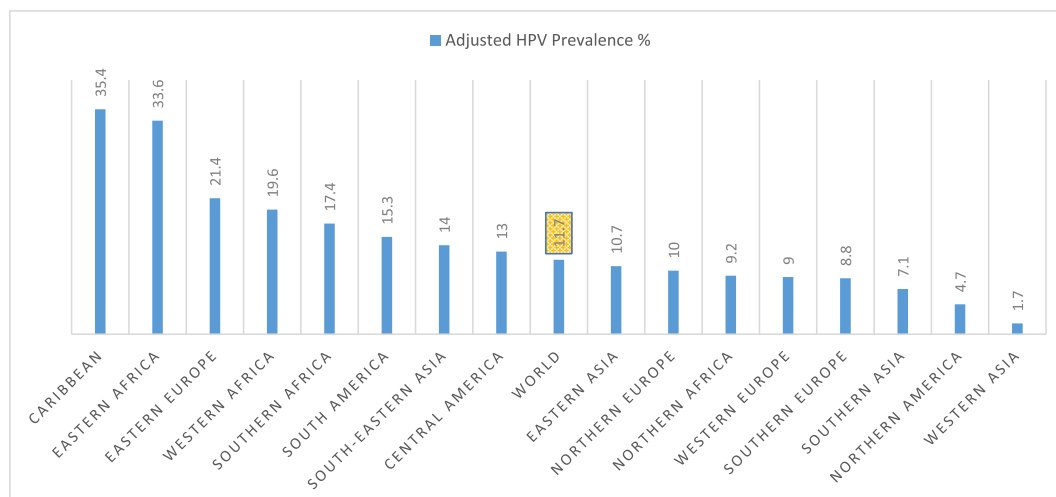


Fig. 1. Human papilloma virus (HPV) prevalence among women with normal cytology: meta-analysis based on results from 1,016,719 women. Note. Modified from "Global burden of human papillomavirus and related diseases," by D. Forman, C. De Martel, C.J. Lacey, I. Soerjomataram, J. Lortet-Tieulent, L. Bruni, et al., 2012, *Vaccine* 30, p. 12–23.

The introduction and the acceptability of the vaccine remain controversial, although clinical trials and surveillance data demonstrate that the vaccine is harmless and effective [8]. Among the main reasons for the controversy are uncertainty about its adverse and long-term effects, its impact on fertility [13], and the belief that HPV infection concerns those who are sexually active [3,4].

4. HPV in the MENA region context

4.1. Defining the MENA region

The geographical area of interest is the MENA region, which, according to UNICEF, includes 20 countries [14]. In the first phase of the review, there were two inclusion criteria: the official language and religion as articulated in each country's constitution. The focus is on those countries in which Arabic is solely the official language (thereby excluding Iran and Djibouti), and in which Islam is the official state religion (thereby excluding Lebanon, Sudan, and Syria) [15–17]. Language and religion are crucial in establishing cultural linkages and similarities among the remaining 15 countries, namely, Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Libya, Morocco, Oman, Qatar, Saudi Arabia, Palestine, Tunisia, The United Arab Emirates (UAE), and Yemen.

The commonality of a language is a key factor in understanding and conveying the truth about a culture [18], and Arabic is the language in which the holy Quran is written. Similarly, religion is an ancient human institution that has an undeniable impact on individuals and societies [19]. The establishment of Islam as the official religion of a nation in its constitution acknowledges the significant role played by religion and demonstrates both its cultural and political importance for the countries of focus in this study [20]. It has been asserted that, in many parts of the world, Islam has been a force for homogenizing and harmonizing societies on cultural and moral levels, and establishing standardized central beliefs and values [20,21].

4.2. Burden of HPV in the MENA region

Several investigations have identified particular geographic areas linked to HPV-induced cancers and the prevalence of the infection itself. Nonetheless, the countries in the MENA region were neither highly represented nor covered by many of those studies, leading to a shortage in data vis-à-vis the burden of HPV and related cancers in this region [22]. Assessment of HPV prevalence is difficult because screening is uncommon and there are insufficient regular national cancer registries [5]. For example, in Bahrain, Libya, Oman, Palestine, and Qatar, no studies were conducted to detect the presence of high-risk HPVs in human cervical cancers. By contrast, very limited studies explore its prevalence in Algeria, Egypt, Jordan, Kuwait, Morocco, Tunisia, and the UAE (Table 1) [7,22].

The prevalence of HPV in preinvasive cervical lesions ranges from 50% to 100% in North Africa (Algeria, Egypt, Libya, Morocco, and Tunisia), from 32% to 66% in the Middle East (Jordan and

Palestine), and from 37% to 67% in the UAE; for the case of benign genital warts, the prevalence was 84.4% to 87.5% for Tunisia [7].

The prevalence of HPV in the MENA countries presents a public health issue, even though studies have shown that it is low and that cancers induced by HPV present low rates in the general population of these countries [7]. However, this issue might escalate and become a public health threat if not tackled promptly. It has been noted that the majority of women in the region do not have access to the preventive services such as the Pap test, which allows for the early detection of cell abnormalities, or to preventive vaccines against the high-risk HPV types [22]. Adopting HPV vaccinations would be a feasible intervention because most countries in the region have already established efficacious vaccination delivery programs [7].

4.3. HPV in the cultural context

Countries in the MENA region are conservative regarding sexual behaviors compared with the West, because they have more traditional religious and social norms [5]. Indeed, Islam shapes people's practices and habits, including sexual and reproductive health and imposes that sex be carried out within the context of marriage [6]. Cases of STIs in the region are thought to be higher than reported, leading to a false belief that STIs are rare there [7].

This region has the second youngest population in the world, with 90 million people aged 15–24 [6]. Despite reports that the age of sexual debut is highly correlated with the incidence of HPV globally, there are insufficient data about sexual debut in the region because the topic is perceived as a taboo; however, the sexual debut age is estimated to be between 19 and 23 [7,23]. Compared with precedent evaluation, the percentage of youth who are engaged in premarital sexual activities is increasing [6]. It has also been reported that the age of marriage is delayed for both sexes and the number of people getting married at a young age is declining [6]. All those factors offer evidence that standard sociosexual behaviors are drastically changing in the MENA region, particularly among the younger generation, which may, in the long term, increase STDs' transmission and incidence, particularly of HPV and related diseases [6,7].

Mental and physical health are affected by religion, which plays a protective role in hindering the occurrence of diseases [24]. Similarly, the perception and understanding of diseases and the acceptance or refusal of certain treatment techniques or preventive measures is significantly impacted by religion [25]. In the case of HPV preventive measures, it has been asserted that conservative cultural and religious views may constitute barriers to their acceptance. For instance, qualitative studies have shown that among parents' principal concerns are discussing sexual activity with their children, and the perception that a consent to vaccinate is a tacit encouragement to become sexually active [26]. Studies conducted in Britain have shown that acceptance of the vaccine was less likely among adolescents who are practicing Muslims. Ethnic differences in HPV vaccine acceptability were gauged in a British study, which revealed that sex-related concerns such as premarital sexual activity were the

Table 1
Human papilloma virus (HPV) and invasive cervical cancer in the Middle East and North Africa.

Countries	Age range	Sample size	HPV types detected (%)
Algeria	30–88	198	HPV (97.7); HPV-16 (62.3), HPV-18 (15.6)
Egypt	38–65	30	HPV-16 (73.3)
Morocco	21–73	186	HPV (94.6); HPV-16 (71.6), HPV-18 (8.5)
Jordan	37–80	48	HPV (85); HPV-16 (68.3), HPV-18 (24.4), HPV-39 (9.8), HPV-56 (9.8), HPV-52(7.3), HPV-45 (7.3), HPV-33 (4.9), HPV-31 (2.4), HPV-35 (2.4).
The United Arab Emirates (UAE)	Not available	370	HPV high risk (87)

Note: Modified from "Burden of human papillomavirus-related cervical disease in the extended Middle East and North Africa – a comprehensive literature review," by M. Seoud, 2012, *J Low Genit Tract Dis* 16, p. 106–120.

Table 2
Selected Quranic verses with related citation [31,32].

Topic	Quranic citation	Verses
Unlawful relationship (Zina)	Surah 24, Verse 2	"The woman who commits zina and the man who commits zina, lash each of them one hundred lashes. Do not let pity deter you in a matter ordered by God, if you believe in God and the Last Day."
	Surah 25, Verses 68–70	"Those who do not invoke, with Allah, any other god, nor slay such life as Allah has made sacred, except for just cause, nor commit fornication; - and any that does this (not only) meets punishment; (But) the Penalty on the Day of Judgment will be doubled to him, and he will dwell therein in ignominy; Unless he repents, believes, and works righteous deeds, for Allah will change the evil of such persons into good, and Allah is Oft-Forgiving, Most Merciful,"
	Surah 17, Verse 32	"Nor come near to adultery: for it is a shameful (deed) and an evil, opening the road (to other evils)."
	Surah 70, Verse 31	"But those who trespass beyond this are transgressors"
	Surah 70, Verses 29–30	"And those who guard their chastity; Except with their wives and the (captives) whom their right hands possess, - for (then) they are not to be blamed"
Lawful relationship and chastity	Surah 33, Verse 35	"Muslim men and Muslim women, believing men and believing women, devoutly obedient men and devoutly obedient women, truthful men and truthful women, patient men and patient women, humble men and humble women, charitable men and charitable women, men who fast and women who fast, men who protect their chastity and the women who protect their chastity, and men who remember God frequently and women who remember God frequently, God has prepared for them forgiveness and a great reward."
	Surah 24, Verse 33	"Let those who find not the wherewithal for marriage keep themselves chaste, until Allah gives them means out of His grace. And if any of your slaves ask for a deed in writing (to enable them to earn their freedom for a certain sum), give them such a deed if you know any good in them; yes, give them something yourselves out of the means which Allah has given to you. But do not force your maids to prostitution when they desire chastity, in order that you may make a gain in the goods of this life. But if anyone compels them, yet, after such compulsion, is Allah Oft-Forgiving, Most Merciful (to them)."

reason given by 20% of Muslim Pakistani mothers compared with 2% of the white British ones for declining vaccination [13,27].

5. Islam and sexual behavior

5.1. Islam and sexual behavior in the Holy Quran

What is the Holy Quran?

The Holy Quran is the primary book of Islam, the third Abrahamic religion [28]. Muslims consider it to be a sacred text and the ultimate message of God to the entire human race revealed in the year 610 CE over a period of 23 years to the Prophet Muhammad through the angel Gabriel [29,30]. The Quran is not primarily a book of rules, but instead it serves as guidance, stimulation to the minds and souls, and a proof of God's marvels. It is composed of 114 *surahs*, which are equivalent to chapters.

5.2. Sexuality in the Quran

The practice of sexual relations across cultures and societies occurs within a framework that is often subject to strict interpretations and regulations [29,31]. From a Quranic perspective, sex is regarded as a holy activity and a human need that should be satisfied in a lawful and appropriate manner with legitimate partners [31]. The concept of pair (*zawj*) is central to life and procreation [29] as the following Quranic text states: "Glory to Allah Who created in pairs all things that the earth produces as well as their own (human) kind and (other) things of which they have no knowledge" (Quran, Surah 36, Verse 36) [32]. Abstaining from all sort of sexual intercourse outside of the legitimate (*halal*) frame for both sexes reflects purity and high morals, whereas any unlawful (*haram*) practices (*zina*) are sins, which deserve punishment during life on earth and after death [31] (Table 2) [31,32]. In the Quran, around 27 verses are dedicated to the denunciation of the unlawful sexual relation [29].

5.3. Islam and sexual behavior in the Hadith

What is the Hadith?

The Hadith is a collection of sayings, actions, and permissions of the Prophet Muhammad as reported by reliable witnesses [33].

This collection is considered to set an example and illustrate the ideal behavior for all people [29].

5.4. Sexuality in the Hadith

Many sources of Hadith demonstrated that sexual desire is a natural need and the sole decent and encouraged way to satisfy it is through a lawful relationship such as marriage [31,34], whereas illegitimate sexual practices are considered a great sin that deserves punishment [31,34] (Table 3) [34–37].

5.5. Islam and sexual behavior in the literature

The scholar Rizvi, whose work emphasizes on interfaith and peace advocacy, has argued that being a Muslim requires the acceptance of the limitation of the individual's personal freedom because God has rights on us that should be respected and never transgressed. However, to handle sexual needs and impulses, he described what it is called "lawful temporary ways," which consisted of whether to temporarily abstain or temporarily get married. The latter is called *mut'a* (pleasure) [37]. He also described the varied ways in which tensions between religion and sexuality have been expressed by the social systems and the conflict and the difference between the fundamentals of the Islamic teaching on sexuality and the new concept of sexual freedom in Muslim societies [37]. In this context, the Tunisian human rights advocate and sociologist Bouhdiba describes that the perception of the role model symbolized by the Prophet Muhammad and his teachings from *Hadith* to *Sunna* has deteriorated through history, and even became considered as primeval. As time goes by, the number of Muslims who abandon that model is increasing [29].

The Egyptian feminist writer Nawal El Saadawi declared that freedom is a key factor for both sexes in all facets of life [38]. However, she argues that freedom at the economic and social levels did not grow and blossom simultaneously with the sexual level, which might have induced distortions within societies including the Arab society [38]. Lately, a noticeable shift has been observed in youths' sexual behavior, where the occurrence of unofficial sexual practices, whether extramarital or premarital, has dramatically increased [31]. For example, there is *zawaj al-misyar* (marriage in transit), characterized by restricted matrimonial rights (housing,

Table 3
Selected citations from the Hadith [34–37].

Topic	Citation
Unlawful relationship (Zina)	<p>“God has imposed certain moral obligations, do not abrogate them; He has forbidden certain things, do not indulge in them; He has laid down certain limits, do not transgress them; He is silent on certain matters, do not knowingly argue over them.” Hadith of Ad-Darqutni on the authority of Abu Tha-Labah</p> <p>“Be mindful of adultery [and fornication] as it possesses six traits. Three of these traits are noticeable in this world while the other three are felt in hereafter. As for the worldly three traits, they are as follows: it would remove brightness from the face of the practicing person. It would also cause a person to feel poverty. In addition, it would shorten the life span of a person.” [34]</p> <p>“There is no greater sin after the sin of associating partners with Allah (<i>subhanahu wa ta’ala</i>), than a man placing his semen in a womb [private part of a woman] that is unlawful for him to place.” [34]</p>
Lawful relationship and chastity	<p>“Wise is he who controls his desires and prepares for the life which starts after death. And cast down is he who lives for the love of this world and has false expectations from God.” Hadith of At-Tirmidhi on the authority of Shaddad Ibn Aus</p> <p>“No house has been built in Islam more beloved in the sight of Allah than through marriage.” [37]</p> <p>“O young people, those among you who are able must enter into marriage. For it helps to divert your attention from women. And it safeguard against lust. And those who cannot marry should observe fasts, for fasting too is a safeguard.” Hadith of Al-Bukhari and Muslim on the authority of Abdullah Ibn Masud</p> <p>“The conditions which are most worthy that you should fulfil are those with which you legalize sexual relations”. Hadith of Al-Bukhari on the authority of ‘Uqbah [35]</p>

financial, support, etc.), and which is endorsed by couple of muftis in Saudi Arabia [31]. In Egypt, it is common to witness the phenomenon of *zawaj’urfi* (customary marriage), which is a union that is not reported to the official authorities and where women have very limited rights [31]. Nonetheless, several Muslim societies are in denial and reluctant to face the reality of this phenomenon, which is attributable to the fact that people tend not to admit or disclose their sins and that it is culturally and religiously recommended not to reveal others’ sins [31].

Muslim societies are experiencing deep changes vis-à-vis gender relations as well as sexual life; the ancient model is no longer applied as it used to be on different paramount facets [31]. It is an era characterized by tension, perplexity, doubt, and confusion induced by veering sexual codes and norms and the questioning of the religious ethics [39]. This drastic behavioral change in Muslim societies, including those in the MENA region, might in the long-term increase HPV incidence and its related diseases [6,7].

6. Conclusion

The guidance and influence applied by Islamic rules and teachings on Muslims’ behaviors and decisions including health-related ones cannot be denied [6,23]. Indeed, many STIs can be prevented if the rules of Islam were unfailingly respected and applied by Muslims in MENA countries. However, this is not guaranteed because a noticeable shift has been detected in the youth’s sexual behavior in this region, with a drastic increase in unlawful sexual practices, and several Muslim societies denying and being reluctant to address this phenomenon [31]. In addition, the HPV prevalence in the region – even if it is low according to the limited data available – presents a public health issue.

Historically, Islamic teachings, whether the holy Qur’an or the Hadith, have deeply impacted Muslim scholars, including those in the medical field [40]. However, the contribution of Islamic teachings to behavioral change and health education has not been widely studied [40]. The limited knowledge of the influence of Islam on behavioral change and health education also limits knowledge of the influence of Islam on HPV vaccine uptake or acceptability. Consequently, this study provides the following recommendations:

- Exploring further the influence of Islam on behavioral change and health education by researchers in the MENA region;
- Acknowledging changes in sexual behavior among the youth within the Muslim communities in the MENA region;
- Improving youths’ understanding of Islamic sexual ethics and rules;

- Including sexual health education in the reproductive health policies developed by each government;
- Promoting the utilization of the sexual health services in health facilities;
- Implementing comprehensive national screening programs;
- Promoting and implementing HPV vaccine use in the universal vaccination coverage in the MENA countries that can afford it;
- Conducting comprehensive evaluations of HPV prevalence and knowledge, attitudes, and practices toward the vaccine to provide a clear description of the situation in the region.

Conflicts of interest

The author has no conflicts of interest to declare.

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