

**EXAMINING HIV PREVALENCE AND CULTURAL IMPLICATIONS OF HIV
AWARENESS IN THE KINGDOM OF SAUDI ARABIA**

by

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ABSTRACT

The hazards of HIV and its susceptibilities among adolescents and young adults are well documented globally, with the Kingdom of Saudi Arabia (KSA) being no exception. The KSA appears to have a low HIV prevalence, with an incidence of 1.5 cases among every 100,000 citizens per year and 12 among 100,000 workers from countries other than the KSA (which year are these data from?). Identifying more accurate data on the prevalence of HIV is essential for planning and addressing the epidemic in a more organized manner.

In terms of public health significance, determining the accurate number of people living with HIV (PLWH) will help in halting the spread of the infection and in maintaining low prevalence in the future. The low prevalence of HIV in the KSA general population could be attributed to the region's religious and cultural norms. However, stigma associated with HIV has hindered individuals at risk and those living with HIV from seeking screening, treatment and accepting help. Therefore, the reported prevalence rates of HIV in the KSA might be under documented.

Information regarding factors that lead to HIV underreporting was obtained from various sources. Data on HIV trends and prevalence were accessed from the KSA national reports, media reports, published articles and peer-reviewed journals. The results show that from 1984-2001, people diagnosed with HIV were more likely to be foreign workers (78.7%)

than Saudi citizens (21.3%). The cumulative number of Saudi citizens diagnosed with HIV from 1984-2017 was 7,615, including 427 new cases in 2017, with the majority of new HIV cases being among 20-29 years of age (29%) and 30-39 years of age (28%). The prevalence of HIV among Saudi citizens by the end of 2017 was 0.03%. The purpose of this paper is to discuss factors that may have led to the perception of low HIV prevalence in the KSA and to assess critical issues surrounding HIV awareness in the kingdom. This essay stresses the importance of educating people to accurately report the true mode of transmission and also the need for the KSA's Ministry of Health to reach out to the community to encourage organizing HIV awareness programs.

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LIST OF ACRONYMS

HIV	Human Immunodeficiency Virus
KSA	Kingdom of Saudi Arabia
MENA	Middle East and North Africa
UNAIDS	The Joint United Nations Programme on HIV and AIDS
PLWH	People Living With HIV
AIDS	Acquired Immune Deficiency Syndrome
WHO	World Health Organization
GDP	Gross domestic product
NGOs	Non-governmental organizations
MOH	Ministry of Health
PrEP	Pre-Exposure Prophylaxis

1.0 INTRODUCTION

The Middle East and North Africa, commonly known as the MENA is a group of countries comprised of high income, low income, and developing countries such as Egypt, Jordan and Saudi Arabia. In recent years, this region has been recognized for political and social uprisings, more commonly known as the Arab Spring (El Beih et al., 2012). This region is diverse and multi-cultural, expanding over two continents. Apart from its rich heritage and oil exploration, a recent well-defined characteristic for the MENA region was its growing population of young and middle-age adults (15-49 years old) which comprises nearly 10% of the world population.

Demographics and the statistics associated with the MENA region are of interest because they can have a significant effect on general health policy. In the sector of public health, the Joint United Nation Program on HIV has defined MENA as a group of 24 countries: Afghanistan, Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, South Sudan, Syria, Tunisia, United Arab Emirates (UAE) and Yemen. According to the World Health Organization (WHO), 14 countries from these 24 countries have provided data on reported HIV cases, which estimate that the prevalence of HIV in most MENA countries is below 1%. South Sudan, Djibouti, and Somalia have a higher prevalence of HIV than the remaining MENA countries (Abu-Raddad et al., 2013).

According to international reports, global HIV infection rates have declined by nearly 40% since the peak in 1997 (UNAIDS, 2016). However, regional trends are different. Between 2000 and 2014, new cases of HIV have increased by around 26% in the MENA region, which demonstrates the need for more HIV prevention and treatment resources (UNAIDS, 2016).

While comparing the rates in different continents, the rates have declined in sub-Saharan Africa and increased in Eastern Europe and Asia.

The stark increase in HIV cases is a challenging scenario for the governments in the MENA region. This increase could be attributed to increased reporting as a result of the increased awareness and data collection. It could also be due to the HIV treatment approach established by governments which focuses on providing free HIV treatment to people living with HIV (PLWH). There was also a 66% increase from 2005 to 2013 in new cases of Acquired Immune Deficiency Syndrome (AIDS), the most advanced stage of HIV infection in the MENA region. It becomes extremely difficult to categorize and document the extent of HIV disease because of the low rates (1%) in the MENA region. Moreover, due to the conservative society, finding and collecting data on HIV disease has been a significant challenge for public health professionals.

Data on HIV among the general population and populations at greater risk for HIV are unavailable in several countries in the MENA region, which hinders further research possibilities (Karamouzian et al., 2016). This low reporting could also be a result of the civil war that lasted for more than 10 years in the MENA region, which made it challenging to estimate population size and HIV rates in most countries in this region. From the available data, it was observed that Iran had the highest prevalence of HIV cases, accounting for approximately 30% of the total cases in the MENA region (Mortagy, 2013). The reasons and challenges behind the detection and treatment of HIV in the Kingdom of Saudi Arabia (KSA), a country within the MENA region, will be further discussed in this essay.

The Kingdom of Saudi Arabia, commonly known as the KSA is situated on the Arabian Peninsula, covering an area of 2.25 million square kilometers. The total population is estimated

to be 32.5 million, with at least 12 million foreign workers (GASTAT, 2018). To date, the KSA has maintained a low HIV prevalence, with an incidence of 1.5 new cases among every 100,000 citizens per year, and 12 in every 100,000 foreign workers (Country progress report, 2015).

Identifying accurate information on the prevalence of HIV should be a precursor to planning and implementing interventions to combat the epidemic. Precise documentation of HIV cases helps to improve the availability of comprehensive HIV prevention, management, care and support services, which in turn improves the quality of life, well-being and comfort of PLWH. As a result, PLWH have greater likelihood of becoming virally suppressed and reduced risk of transmitting HIV to their partners, which could lead to decreases in HIV prevalence in KSA over time.

Saudi Arabia's culture, background, and religious affiliation play a fundamental role in the society. Because of religious and cultural norms, HIV is considered to be a taboo subject in this society, which facilitates stigmatization of PLWH . As a result, suspected cases of HIV likely go reported, which may contribute to reportedly low prevalence of HIV in this region (Badahdah, 2010). In addition, persons who engage in high-risk behaviors may not seek HIV testing, prevention services, or treatment.

1.1 ECONOMICS IN THE KSA

Saudi society is comprised of various elements that together form the basis of a sustainable standard of living. Several factors contribute to the development of key indicators for any economy and society. One of the core sustainable goals for the government in past decades has been to build complete social and health care infrastructure, which has the potential to increase life expectancy. The life expectancy of Saudi people has increased rapidly from 52.7 years of age in 1970 to 75 years of age in 2015 (Al-Hanawi et al., 2018). This increase can be

attributed to certain reforms in medicine, hospitals, clinics, treatment availability and public policy within the kingdom. The Ministry of Health (MOH) has worked to increase the number of health centers around the country for the last 10 years, with approximately 150 clinics currently. Moreover, targeted educational campaigns have been launched, including efforts to decrease infant mortality. The system has improved exponentially due to the directed efforts of the government. In 1960, it was reported that there were around 292 deaths per 1,000 births in the country, but the number fell to a low of 13 deaths per 1,000 births in 2015 (Sajjad, 2018). Improvement in the health infrastructure and interventions focused on educating new parents have immensely contributed towards the development and growth of the kingdom's economy.

From the larger perspective, it can be concluded that the oil prices in the international market dictate the economy of the KSA. However, at the internal level, the kingdom has adopted various strategies to maintain its economy. The astonishing growth from 42B GDP in 1970 to 753B in 2014 was the primary reason for the stable economy. At present, the per capita income of the KSA hovers around 5,400 USDs. All this development could be owed to the vision and plan adopted and implemented by the Saudi government. The current plan of "Vision 2030" was adopted in 2016 and contains additional frameworks to continue improving the economy of the kingdom.

1.2 HEALTHCARE SYSTEM IN THE KSA

The healthcare system of the KSA has developed over time into a state-of-the-art system with an emphasis on quality, efficiency, and patient care along with technological advancements of the highest standards. Since the establishment of the first public health department in 1925 and inauguration of the Ministry of Health in 1950, the KSA has opened 426 hospitals with 79,281 beds (Almalki et al., 2011).

The structure of healthcare in the kingdom has been divided into three categories; primary, secondary and tertiary. All three frameworks are operated and maintained by the MOH to ensure the highest standard of healthcare in the field. In the last year alone, the government allocated a hefty budget of around 38.13M for healthcare and social services, which amounted to approximately 15% of total government expenditures (Al-Hanawi et al., 2018). This highlights the focus and emphasis of government on the health sector. As per the ranking of the WHO, the KSA's healthcare system was ranked 26th (out of 191 countries) globally, which is better than other healthcare systems in some developed countries such as Canada, Australia and the USA (Al-Hanawi et al., 2018; WHO, 2010). Within the same context, a 'Vision 2030' was adopted by the KSA in 2016, which was launched to serve as an economic model and roadmap for the kingdom. Vision 2030 enabled the government to positively address health challenges and to work towards effective solutions (Al-Hanawi et al., 2018).

Moreover, the KSA is recognized globally for its healthcare reforms. To ensure the accessibility and availability of primary healthcare to a Saudi Arabian citizen, the Ministry of Health (MOH) guarantees free healthcare to all Saudi nationals (Alijuaid et al., 2016). While the healthcare system in the KSA is administered by the MOH and Saudi Food and Drug Authority, the Council of Cooperative Health Insurance oversees the insurance sector (Al-Amoudi et al., 2017). The well-equipped healthcare facilities that include more than 2,000 primary healthcare centers and 426 hospitals are actively involved in offering primary health care services at all levels of primary, secondary and tertiary (Alkhamis, 2012; Colliers, 2018). The KSA government's effort to provide free healthcare has demonstrated an improved level of commitment and support for HIV management among Saudi citizens and foreign workers.

1.3 HIV IN THE KSA AND EPIDEMIOLOGY OF THE INFECTION

1.3.1 HIV IN THE KSA

Overall, KSA continues to maintain a low HIV incidence with less than 1.5 new cases per 100,000 population. The Saudi National AIDS program was established and developed under the Ministry of Health (MOH) in 1994. The program provides support and education to the general population and those who are living with the disease (The Country Progress Reports, 2015).

From the diagnosis of the first case (1984) to the latest case, all parameters have been monitored by the MOH which ensures proper treatment and care for the individuals.

Due to cultural and religious concerns of people living in the KSA, the exact estimation of HIV cases remains a challenge as many individuals do not report their risk behaviors or HIV status. It is important to note that HIV is identified through regular screening. Persons who avoid primary care for fear of an HIV diagnosis do not become visible in the system for treatment, resulting in poorer health outcomes for themselves and the potential to pass HIV onto others.

According to Madani et al., (2004) the first HIV case in the KSA was identified in 1984, and by the end of that year, 21,761 cases of HIV were documented. Of this group, 6,334 (29.1%) were Saudi citizens and 15,427 (70.9%) were foreigners. Between 1984-2017, nearly 7,600 new cases were documented, with 427 cases in 2017 alone. Although voluntary counseling and testing (VCT) for HIV are available in all regions within the KSA, the capacity to approximate the total number PLWH in the KSA remains an overwhelming task.

Currently, the available data on HIV and the cases are ascertained during routine pre-marital screening, blood donation, or acquiring a driver's license. These efforts to increase the accuracy of HIV prevalence have been emphasized by the MOH and other stakeholders (Mazroa et al., 2012).

1.3.2 MODE OF HIV TRANSMISSION AND RISK FACTORS

In a report by Madani et al. (2004), many of the reported cases of HIV had an unknown mode of transmission (3,453 or 57.1%) with the majority foreign workers (65%) followed by heterosexual transmission (1,839 or 30.4%) and bisexual transmission (24 or 0.4%). There have also been 70 (1.2%) cases of HIV reported wherein the mode of transmission was associated with men having sex with men (MSM).

Alrajhi et al., (2004) reported that heterosexual transmission (46%) is the major HIV-1 transmission mode followed by blood product transfusion (26%). Other reported modes of transmission included perinatal transmission (12%), MSM (5%), and among injection drug use (2%). However, it is important to note that the data on mode of transmission, especially among the heterosexuals, have not been consistent in any of the three journals mentioned above (Alrajhi et al., 2004, Madani et al., 2004 and Al-Mozaini et al., 2014).

Most bloodborne pathogens such as HBV, HCV and HIV share common risk factors such as intravenous drug use, sex work and high-risk sexual behaviors (e.g. condomless sex, multiple or anonymous sexual partners, etc.). These are significantly associated with an increase in HIV infection in the KSA (Sanaa et al., 2015). Among youth, the risk factors for HIV transmission are related to premarital sexual activity and the use of illegal drugs (Raheel et al., 2012). However, these data may showcase bias and stigma rooted in religious beliefs and socially acceptable activities.

1.4 FOREIGN WORKERS IN THE KSA

The KSA has a strong ideological influence towards the Muslim religion and one of the world's holiest places of Islam is located in the country. Millions of Muslims around the globe make a yearly pilgrimage to these holy places. After the rise of the Arabic world due to the discovery of oil in the 20th century, the economy of the KSA changed.

Multinational companies and oil industries set up their offices and infrastructure in the KSA to support the extraction and export of oil in the KSA. Due to the absence of skilled and technical labor workforce, the country began recruiting foreign workers who were interested in filling the workforce void. Asian countries, specifically Pakistan, Afghanistan, Bangladesh, and India were the leaders in sending working-class laborers to the KSA.

Currently, the KSA has the largest economy in the Arabic peninsula. The labor force in the Kingdom can be traced back to the 1930s. With the oil boom in the 1970s, the labor industry of the Kingdom grew exponentially, which stood at 12 million in 2018. As per the recent data collected in 2017, the number of workers from each country varies, with 1.5M Pakistanis, 4.1M Indians, 2.9M Egyptians, 0.8 M Yemeni, and around 1M Bangladeshi. Other nationalities include persons from the Philippines, Indonesia, Malaysia, and African countries (Saudi Arabia and political, economic & social development report, 2017).

The “Kafala system” was adopted by the country to manage and supervise workers from other countries, which requires that persons from a foreign country have a sponsor that is responsible for their well-being and their required paperwork (Shah, 2013). Regarding healthcare, all workers are required to have regular checkups and detailed examinations in medical centers once every two years as part of visa renewal. At these exams, all workers are tested for HIV as well. Of the total number of reported HIV cases in the Kingdom in 2014, 29% were Saudi Citizens, while the rest were foreigners, either living in the Kingdom or working as laborers (NAP, 2015).

1.5 ISSUES RELATED TO HIV REPORTING IN THE KSA

1.5.1 HIV AWARENESS IN THE KINGDOM

Low HIV prevalence in the KSA can be attributed to lack of awareness among the people. The population's knowledge about HIV and their attitudes toward PLWH have a significant role in controlling the disease (Zaini & Anjum, 2016). Currently, the majority of efforts to prevent HIV in the KSA are programs focused on HIV education and awareness.

Awareness surrounding STI transmission, including HIV, is critical to its prevention and management in the greater society. Yet knowledge and understanding surrounding HIV vary across the nation. Alwafi et al., (2018) conducted a survey among 3,841 participants during a public HIV awareness campaign in Jeddah, KSA. In the general population, the mean knowledge score toward HIV was low, with an average score of 5.2 out of 9 possible points. In this study, only those who knew of someone living with HIV and those with university degrees had a higher score of knowledge toward HIV. The trend is not different in other population segments.

Another study (Fageeh 2014) noted that among 204 incarcerated women, the majority of them (170; 83.0%) were unaware of STIs with more than half (117; 57.4%) of them not undergoing screening for the STIs before marriage. In this study, only a small percent (59; 28.9%) of women had the screening for HIV and other STIs. Furthermore, these women in the KSA had little knowledge of STI prevention. Less than a third of them (20%) understood the role of a condom in HIV prevention. The women who did use condoms as well as those with higher levels of education were more likely to have sufficient knowledge on HIV prevention measures (Fageeh, 2014). These findings are similar to those in Memish et al., (2015) who reported that the majority of illegal foreign residents in the KSA had poor knowledge of HIV transmission. This lack of knowledge related to HIV transmission may result in risky behaviors that then lead

to increases in the spread of STIs. Within this group, most were single (54.9%) rather than married (40.4%) (Memish et al., 2015).

Youth are the most at risk for HIV in the KSA (Gökengin et al., 2016). A recent study focusing on knowledge of STIs among youth in the KSA showed a low level of awareness regarding the modes of transmission and protection methods for STIs (El-tholoth et al., 2018). This study demonstrated that although a majority of youth (94%) knew that HIV is an STI and 93.1% agreed that unprotected sexual intercourse transmits STIs, only 55% considered using condoms. This lack of awareness on self-protection from STIs could be linked to their method of obtaining information about HIV. The majority (71.7%) received HIV information from material posted on the internet (El-tholoth et al., 2018). This study suggests a need for HIV awareness programs within the KSA targeting youth to help them obtain reliable information on types of STIs, methods to prevent acquisition, and available treatment.

The healthcare workforce in the KSA is in a pivotal position to assist in preventing the continued spread of HIV. In the KSA, data have shown different levels of knowledge on the transmission and management of HIV among healthcare professionals. A study among primary health care physicians in the KSA revealed that many physicians had gaps in HIV knowledge, especially on the mode of transmission and in identifying individuals with the highest risk for HIV. This has been supported by another study that identifies years in medical practice, their status/specialty, and location of practice as predictors of HIV knowledge (Memish et al., 2015). Such characteristics influence the screening, prevention, and treatment practices of medical practitioners towards PLWH in the KSA. Furthermore, a study by Kumar et al. (2018), reported that less than half (47.6%) of dental students were confident about their ability to safely treat people with HIV. This trend is similar among other medical students in the KSA. However, the

percentage is still lower when compared to other countries that have robust systems to tackle the HIV epidemic (Kumar et al., 2018).

1.5.2 STIGMA TOWARDS PEOPLE LIVING WITH HIV

A study by Badahdah (2010) on stigmatization of PLWH in the KSA indicated that individuals that understand little about HIV are more likely to stigmatize PLWH than those with increased awareness. The same study also revealed that stigma among students towards HIV was independent of the degree of religiosity and fear surrounding it. However, the best predictor of HIV stigma among the male students was identified to be shame related to HIV (Badahdah, 2010). Therefore, it was recommended that there is a need for awareness campaigns to be carried out among students to enable them not only to increase their knowledge but to be more accepting of high-risk behaviors among their patients. This would also assist in decreasing stigma and improving their ability to help people affected by HIV. Furthermore, Badahdah (2010) suggested that the findings in this study assist in developing HIV prevention programs and addressing associated stigma.

Another study by Memish et al. (2015) interviewed people about their attitude towards PLWH and reported that the majority (85%) had a negative attitude. In addition, few people with prior knowledge about the virus expressed a positive attitude towards PLWH.

It should also be noted that PLWH also have a negative outlook of themselves in the KSA. Another study (Omer et al., 2014) on PLWH in the KSA revealed that they experienced negative self-image, feelings of shame, and lower self-esteem. They did not have information regarding how and to whom they could disclose their status to protect themselves against stigmatization. Their religious fear and vulnerability stopped them from disclosing their status to the health care providers who they feared would consider their condition a punishment from

God. The authors also pointed out that due to stigma, PLWH were isolated and experienced a lack of psychosocial and emotional support from society (Omer et al., 2014).

Stigma among healthcare professionals is varied. For instance, in a study among medical students in the KSA, only 93 (34.8%) were aware that PLWH had health rights (Al-Amoudi et al., 2017). This trend also extends to paramedical students, offices and in-home healthcare providers, where it was revealed that they had a negative attitude towards discussing HIV topics with others (Al-Mazrou et al., 2005). A similar study on the behavior of doctors revealed poor attitude among them towards PLWH (Memish et al., 2015). This study also identified other stigmatizing behaviors such as avoiding contact, questioning their reproductive rights, blaming and judging (Memish et al., 2015).

Stigma towards PLWH has been made worse because of the lack of sufficient knowledge and awareness among the general population and medical community. According to research, the Saudis depend on the internet (El-tholoth et al., 2018), use of Facebook and other social media (Asiri et al., 2016), and very few get their information from formal education. (El-tholoth et al., 2018). Since the information provided is inconsistent and not endorsed or reviewed by the KSA health care system, it has led to conflicting knowledge and beliefs about HIV emphasizing the need for awareness programs.

1.6 SEX EDUCATION IN THE KSA

In the KSA, more than half of the population is younger than 30 years (58.5%) and approximately 19.4 % of Saudis are aged 20-29 years old (GASTAT, 2019). In the KSA, adolescents and young adults know little about sex. Compared to the USA and Europe, there is no sex education in KSA's education system. Many educators in the Kingdom believe that sex education is an essential part of the social development, but the conservative nature of society

has restricted its inclusion in the school syllabus (Hawari, 2010). In terms of religion, schools in the KSA teach students about Islamic marriages and its rules. Most of the topics are related to marriage within a conservative society. Sex education is not a priority for teachers or the educational system.

Moreover, most of the labor working class are not associated with the core education system of the government. Most of the foreign labor force prefer the local schools be run by their own country embassy and thus be disconnected from the education system of the KSA.

2.0 METHODS

Information on factors leading to low reporting of HIV cases, data on HIV trends and prevalence in the KSA was accessed from WHO publications, UN publications, MOH publications, news reports, published manuscripts and other peer-reviewed publications. For this literature review, PubMed, Google Scholar, and Google Web databases were used to identify articles related to the low prevalence of HIV in the KSA and the reasons associated with it. The research included an Arabic search to identify articles that met the criteria. However, no additional articles were found.

2.1 THE AIM OF THIS REVIEW

This review aims to investigate:

- a) The reasons behind low HIV prevalence in the KSA.
- b) Cultural contributions to low prevalence of HIV in the KSA.
- c) Contribution of foreign workers towards the prevalence of HIV in the KSA.

The online search was carried out in five different ways:

- a) The first search included the terms HIV, the Middle East, North Africa and key populations.
- b) The next search included the terms HIV, Saudi Arabia, prevalence and trends.
- c) The third search included the terms HIV in Saudi Arabia, awareness, stigma, shame, knowledge, attitudes and perceptions.
- d) The fourth section included the terms HIV, foreign workers, risk factors and modes of transmission.

e) The last search included the terms HIV in Saudi Arabia, screening and premarital program.

Titles and abstracts were screened first to exclude any studies and/or articles that were irrelevant to the purpose of this review. This was followed by reviewing abstracts manually, mainly to discard studies that did not meet the research criteria (**Fig.1**).

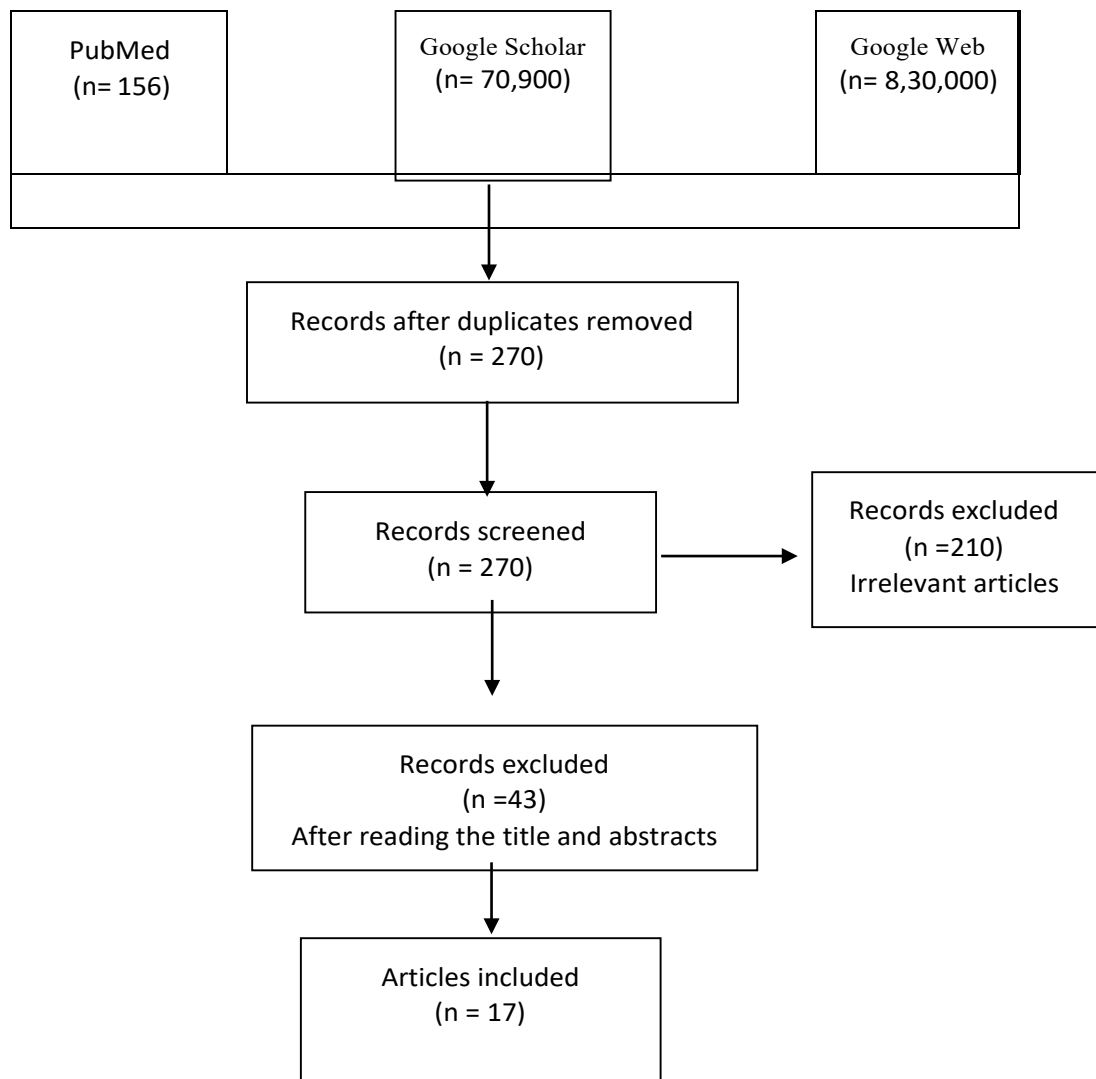


Figure 1 Articles Flow Chart

3.0 RESULTS

The results in this section have heavily relied on the MOH Publications. The collected data summarize the prevalence and trends of HIV over time among Saudi Arabian citizens and non-citizens (foreign workers), the demographics, and mode of transmission.

3.1 THE PREVALENCE AND TRENDS OF HIV (DATA FROM MOH PUBLICATIONS)

The total number of HIV cases in the KSA between 1984-2008 was estimated to be 3,538, with 505 new diagnoses reported in 2008 alone (Allothman et al., 2010). This demonstrates that new HIV cases have continued to increase in recent years even though there have been efforts to increase awareness and routine testing (Fig.2). This increase has been attributed to improved reporting as compared to 1990s (Allothman et al., 2010).

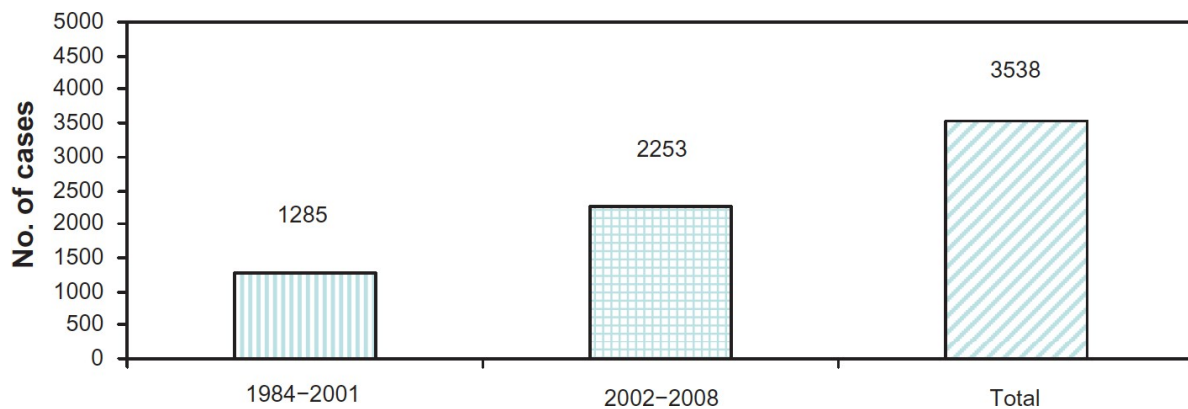


Figure 2 Comparison of HIV cases from 1984–2001 and 2002–2008 intervals

(Source: Allothman et al., 2010)

In KSA, heterosexual contact (55%) is most frequently reported as the mode of HIV-1 transmission (Al-Mozaini et al., 2014). Even though the infection rate has increased over time (Allothman et al., 2010), the HIV mortality rate has decreased in the KSA (Al-Mozaini et al., 2014). Allothman et al. (2010) reported that the mortality rate in 1992 was 9% per year and

decreased to <1% as of 2010. This decline in the mortality rate can be attributed to an increase in access to antiretroviral therapy. As of December 2017, about 5,651 (90%) adults and children received antiretroviral treatment and 91% of them on ARV treatment have achieved viral load suppression (NAP, 2017).

3.2 HIV INFECTION AMONG SAUDIS vs. FOREIGN WORKERS IN THE KSA (Country Progress Reports)

The Country Progress Report of 2015 shows that from 2000 through 2014, reported cases of HIV were higher among foreign workers than Saudi citizens. However, the 10-year trend is shifting with a decrease in new infections among foreign workers and an increase in the number of cases among Saudi citizens. In 2013, there were more cases of reported HIV as compared to previous years in both categories with 1,235 foreign workers and 542 Saudis being a part of new cases that year (Fig.3).

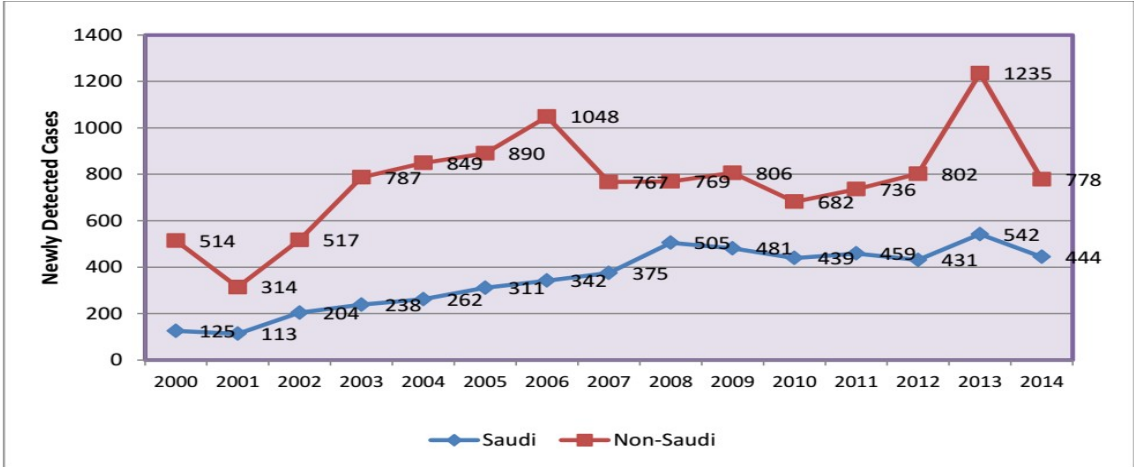


Figure 3: HIV cases among Citizens and non-Citizens 2000- 2014

(Source: Country Progress Report 2015 KSA)

3.2.1 HIV BY GENDER IN BOTH SAUDI VS FOREIGN WORKERS IN THE KSA

Considering the demographics by gender, the male to female ratio of HIV infection was 4:1 in both the Saudi citizens and foreign workers (364 males vs. 80 females in 2014). This trend has remained constant for more than a decade. The ratio of males to females among non-Saudis is lower than that of Saudis and remained constant over time (Fig 4).

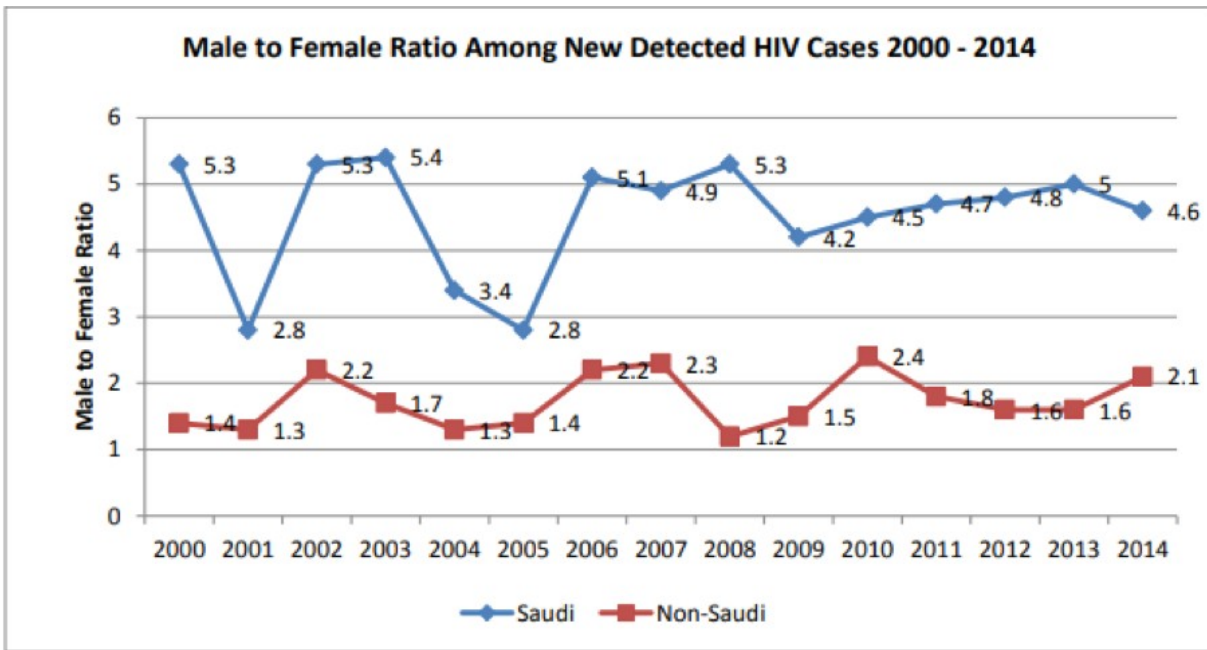


Figure 4 Saudis VS foreign workers, male to female ratio

(Source: Country Progress Report 2015 KSA).

The collected data also shows that more foreign workers were diagnosed with HIV (4,761 or 78.7%) as compared to Saudi citizens (1,285 or 21.3%). Of these, there were more males (4,330 or 71.6%) than females (1,716 or 28.4%). The age group that was affected the most was 30–39 years (2,487 or 41.1%), followed by youth ages 20–29 (2,025 or 33.5%). The least affected age group was < 5 years (91 or 1.5%).

3.2.2 THE GENERAL POPULATION VS AT HIGH-RISK POPULATION

Data for estimating the prevalence of HIV in the general population of the KSA comes from two sources: data from blood donors and the mandatory premarital HIV screening. **Table 1** shows the prevalence of HIV in the general population who are screened through mandatory premarital testing and prior to donating blood. It is expected that the prevalence can be higher if we include the high-risk population.

Table 1 HIV Prevalence among the general populations from blood donor and data from the mandatory premarital program

Group	Number Tested	Number Positive	Prevalence
Blood Donors (2014)	275,000	38	0.014
Premarital Test (2014)	333,360	98	0.029%

(Source: Country Progress Report 2015 KSA)

Populations at greater risk (e.g. those with a history of STIs, incarceration, and/or injection drug use) are required to be tested for HIV. **Table 2** shows different data sources in these populations with a high prevalence among STI patients (20 HIV cases or 1.67% in 1,200 patients) followed by the prisoners (16 HIV cases in 1,200 patients). However, the table includes only a few of the at-risk population groups and excludes MSM, perinatal transmission, etc.

Table 2 HIV Sero-prevalence among the sentinel surveillance groups in 2012

Group	Number Tested	Number Positive	Prevalence
STIs Patients	1200	20	1.67%
Prisoners	1200	16	1.16%
TB Patients	1200	26	2.16%
Pregnant Women	2400	3	0.1%

(Source: Country Progress Report 2015 KSA)

3.3 MODE OF HIV TRANSMISSION (MOH PUBLICATIONS)

An observational cohort study, Almozaini M et al. (2014), describes the clinical characteristics of 602 people living with HIV-1 at a tertiary hospital in the KSA over a 20-year

period (1989-2010). This study is considered the first observational study to describe the outcomes of HIV care among KSA nationals living with HIV. The major mode of transmission described in this study is heterosexual contact (54.7%) followed by blood transfusion (24%) (Table 3). However, the increase in new infections from 1986-1990 was attributed to blood transfusion. During this study, the number of individuals who received antiretroviral treatment increased over time. The study also showed that the mortality rate among the HIV-positive cohort was (1%) higher than the all-cause mortality rate (0.3%) in the country.

Table 3. Mode of HIV transmission in high-risk populations

Transmission	Number (Percentile)	
Hemophilia receiving blood products	60 (9.97%)	Female: 0 (0%) & Male: 60 (9.97%)
Blood Transfusion	86 (14.29%)	Female: 43 (7.14%) & Male: 43 (7.14%)
Heterosexual	329 (54.65%)	Female: 102 (16.94%) & Male: 227 (37.71%)
MSM	10 (1.66%)	
Bisexual	20 (3.32%)	Female: 0 (0%) & Male: 20 (3.32%)
Perinatal	59 (9.80%)	Female: 31 (5.15%) & Male: 28 (4.65%)
Intravenous Drug Use (IVDU)	17 (2.82%)	Female: 0 (0%) & Male: 17 (2.82%)
Organ Transplantation	7 (1.16%)	
Unknown	53 (10.1%)	Female: 5 (0.83%) & Male: 48 (7.97%)

(Source: Almozaini, M et al., 2014)

3.4 THE COUNTRY PROGRESS REPORT, 2017

The most recent Country Progress Report of 2017 has focused on the overall HIV prevalence and incidence among Saudi citizens only. There is a possibility that KSA government authorities have restricted foreign workers who are HIV-positive from entering the country (HIVTRAVEL, 2019). By the end of 2017, the report indicated that the cumulative number of HIV cases among the Saudi nationals since 1986 was 7,615, including 427 incident cases in 2017. The same report indicated that by the end of 2017 there were 6,256 Saudi citizens living with HIV. This represents a prevalence of 0.03% (6,256 divided by the Saudi citizens' population). **Table 4** shows the comparison of HIV prevalence in different regions. This was calculated from the 2018 UNAIDS estimates and the denominator used was the 2017 world population (7.53 B). The results showed that the MENA region has a low prevalence as compared to other regions (**Fig 5 and Table 4**).

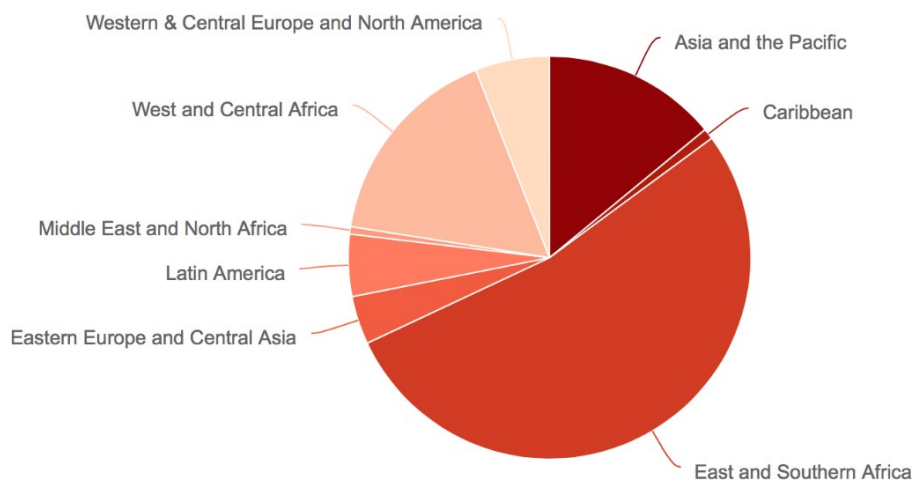


Figure 5. People living with HIV (all ages) - by region

(Source: UNAIDS 2018)

Table 4. The HIV prevalence by regions

Region	People living with HIV in 2018	Prevalence %
Asia and the Pacific	5.2M	0.07
Western & Central Europe and North America	2.2M	0.03
West and Central Africa	6.1M	0.08
Middle East and North Africa (MENA)	0.22M	0.003
Latin America	1.8M	0.023
Eastern Europe and Central Asia	1.4M	0.02
East and Southern Africa	19.6M	0.26
Caribbean	0.31M	0.004

4.0 DISCUSSION

This section presents a discussion on HIV prevalence, trends over time, risk factors, mode of transmission, stigma, awareness of HIV and government based interventions in the KSA.

4.1 PREVALENCE AND TRENDS OVER TIME OF HIV IN THE KSA

It has been observed that there is a high prevalence of HIV among non-Saudi citizens as compared to Saudi citizens. However, over the years, it has been reported that the number of HIV cases has continued to rise since 1984 because of better reporting methods and due to Saudi citizens' primary care screening before marriage (Gökengin et al., 2016). Additionally, the total number of reported HIV cases among non-Saudis has increased due to the implementation of compulsory HIV testing by the government. On the other hand, the underreporting of HIV among Saudis could be attributed to stigma in the society, religious reasons and the prohibition of homosexuality in the Kingdom (Badahdah, 2010). Thus, it can be concluded that people hesitate to be tested for HIV due to fear of alienation, being reprimanded, punished or due to same-sex behavior.

Therefore, low HIV prevalence in the KSA may not be because of low infection rates but rather due to other factors that hinder people from getting tested (Al-Mughales, 2016). These findings imply the need for concerted efforts to ensure that more citizens are encouraged to seek free HIV testing. Currently, the required premarital testing program and testing for issuing the driver license are the main contributors to increased reporting of HIV infection among Saudi citizens. These testing data confirm that the prevalence of HIV in the country is still low.

4.2 MODE OF TRANSMISSION

It has been observed that heterosexual contact, risky sexual behavior, and drug use have been identified as reasons for increases in HIV. The rate of transmission is higher in men than in women and also among single males. In the KSA, the majority of youth are not educated to protect themselves against STDs (El-tholoth et al., 2018). Other modes of transmission that have been noted in the KSA are blood transfusion, MSM and injection drug use. People who inject drugs and those incarcerated have significantly higher chances of being HIV-positive (Fageeh 2014).

Youth are the most at risk for HIV in the KSA. For instance, people of reproductive age (20-39 years) are the most affected and they are contributing towards increasing rates of HIV in the country. This shows the subsequent need for access to HIV treatment and prevention. Lack of knowledge on transmission, lack of a reliable source of information, and non-marital sexual contact contribute to this increase.

Cases of mother to child transmission are low (<5 years; 1.5%) which can be attributed to improved healthcare service delivery, early detection of HIV and the use of antiretroviral drugs. The “unknown” mode of HIV transmission has been a critical issue in the KSA. Madani et al. (2004) indicated that from 1984-2001, 65.5% of cases who reported unknown mode of transmission are non-Saudis. It can be assumed that those infected via “unknown” mode were unwilling to identify the mode of transmission due to stigmatized drug use, heterosexual or same-sex behaviors, and fear of social or legal consequences. This finding suggests that all persons at risk should be encouraged to report accurate transmission modes to support the collection of reliable, usable data for planning and resource allocation in health care settings.

The improved health care system and universal, free healthcare coverage for citizens is an advantage in addressing HIV. Cultural and religious factors also limit HIV transmission or the reporting of it due to the Islamic prohibition of non-marital sexual relationships. In other societies, poverty has been directly associated with increased cases of HIV infection as men and women may exchange sex for money and material goods to meet their basic needs (e.g. housing, water, food, clothing, etc.) (Pascoe et al., 2015).

In the KSA, however, poverty is addressed through a deeply-rooted religious arrangement of monetary assistance, identified as "Zakat" and charitable giving, recognized as "Sadaqa". Affluent individuals provide funding for the underprivileged in the society reducing the need to engage in premarital sex or exchange of sex for money.

These considerations are important for planning for the Ministry of Health in the KSA in their efforts to address the increasing number of new cases in this age category. These findings also highlight the effectiveness of the free health care system and healthcare providers.

4.3 STIGMA AND AWARENESS OF HIV

The stigma associated with HIV varies in the general population. PLWH hesitate to disclose their status because of fear of isolation, shame and negative attitudes from people around them. The students in universities that do not have an understanding of HIV have significantly higher chances for stigmatizing PLWH (Badahdah, 2010). The healthcare providers, both practicing and medical students, have a varied degree of understanding when it comes to transmission factors and caring for PLWH, which results in stigmatization.

The Saudi government has invested in the healthcare system to curb rising cases of HIV by setting up 2,000 well-being centers and 240 clinics throughout the country that are staffed with qualified health care providers and facilities for conducting HIV screening and counseling

services to PLWH and those at risk. The investment in VCT centers is an indication of the commitment of the KSA to attain 90-100% detection of all new cases and to the detection and clinical management of HIV among the population. The healthcare practitioners, as well as other stakeholders (NGOs, volunteers), can be instrumental in developing solutions, approaches, and interventions to reduce risk of infection, increase awareness, and thus curb the HIV epidemic.

Experiences of stigma and alienation towards PLWH are barriers to increasing detection in the Kingdom (Badahdah, 2010). The ongoing efforts of volunteers as well as government healthcare practitioners to reduce HIV transmission requires maximum cooperation from all society members. There is also an ongoing need for nationwide HIV educational programming to educate all Saudi citizens and foreign workers and their families regarding HIV transmission, available treatment and prevention, and to reduce stigma and discrimination of PLWA.

4.4 GOVERNMENT BASED INTERVENTIONS IN THE KSA

Healthcare practitioners: There are more than 2,000 health centers and 240 clinics in the country that are free-of-charge, equipped to conduct screening and provide treatment for PLWH. Strict policies and procedures have been enacted to guarantee the security of blood and blood products. The KSA's National Blood Transfusion Facility emphasizes providing excellent administration of all given blood and blood products in all its facilities (Al-Mazrou et al., 2005).

Government Officials (Ministry of Health): The government is engaging with relevant stakeholders in upscaling screening, providing resources (ARVs) and controlling the further spread of HIV in the society. Measures targeted towards pregnant women, at-risk population and people living with HIV are ongoing. The government has also implemented a policy to integrate HIV services into healthcare facilities.

National AIDS Program Volunteer: Private and non-governmental organizations have increased their partnership with civil society and private segment allies to end HIV stigma and

discrimination. For instance, the organization, NAP has been partnering with broadcasters, religious-based groups, and other NGOs, CBOs in the KSA to support and increase HIV awareness.

Voluntary counseling and testing services (VCT) Coordinator: The government of Saudi has supported the VCT by extending services to all 20 sections of the nation. Majority of these VCT centers are aligned to hospitals where facilities for continuous testing are provided for free. The government has also introduced portable voluntary therapy and testing (MVCT) services in eight large capitals to scale-up VCT services. VCT services aim to reach out to people, especially in areas where both susceptible and most at risk populations (MARPS) are found. It serves Saudis, non-Saudis and illegal residents. The need to expand the awareness spectrum has seen VCT amenities being endorsed via mass media, websites and the internet to extend its reach in the Kingdom.

This review highlights the gaps with regards to data availability for statistical analysis, development of outreach efforts, effective linkage to testing and treatment, development of risk reduction efforts, and country planning. The review provides documentation of the need for clearly, more accurate data on HIV cases in the KSA and for the development of related policies, practices, and identification of additional resources to control HIV infection.

The presence of foreigners living and working in the KSA is needed for the economy. Additional resources are needed to increase the availability of health care for the foreign workforce providing them with access to HIV prevention and treatment. Throughout the KSA, education is needed to reduce stigma that prevents those at risk or already living with HIV from seeking services.

4.5 LIMITATIONS

This review has heavily relied on secondary data from a range of dates of publication which provide varying reports of incidence and prevalence. The lack of primary data from the various governmental sources was not available which limited the author's ability to carry out a meta-analysis to determine HIV prevalence in the KSA. Lack of published and non-published KSA government data made it difficult to assess the current situation and develop suggestions for intervention.

4.6 RECOMMENDATIONS

- I. **Public Health Practice:** Consideration should be given to recruiting clinicians and volunteers to developing public awareness campaigns to provide accurate information about HIV prevention, testing and treatment and the availability and importance of the use of the health clinics for these services. The MOH could then increase their efforts to fund and develop community-based educational outreach programs for HIV prevention. Prevention programs for key populations are especially important due to fears of accessing available sources (e.g. stigmatization and legal consequences). It is also recommended that the MOH and the Saudi Food and Drug Authority work together to improve access to pre-exposure prophylaxis (HIV PrEP).
- II. **Public health research:** Consideration should be given to conducting a rigorous research study to ascertain transmission modes for the 'unknown' causes of transmission, which noted more within the foreign workers. This situation should be tackled by the border security at the KSA, i.e., HIV testing should be conducted in the KSA at the customs department, instead of accepting reports submitted to the KSA embassy by their home country. Moreover, the MOH should develop a Modes of Transmission model (MOT) to

determine which risk behaviors are associated with transmission. Although self-reported is subject to bias, it is recommended that the MOH establish National surveys (Health and bio-behavioral Surveys) to be used for sensitive information such as sexual practices and drug use. Data from such surveys will help in providing suitable services for those most in need.

- III. Establishing forums or “think tanks” to create and implement innovative solutions for HIV-related issues in the KSA. These “think tanks” should include a diverse group of experts and advocates on HIV prevention and treatment, public health, health system leaders, and government officials. The charge of such a group would be a major step toward identifying interventions to increase HIV awareness programs, reduce stigma, and identify resources and services which will assist in providing the foundation for further action. Obtaining input from other countries regarding “lessons learned,” approaches, successes and challenges can assist the KSA in developing long-range planning.
- IV. Utilization of “de-identified” HIV surveillance data to protect confidentiality can be used to link resources to areas of greatest need. HIV surveillance data will provide a tool for the development and implementation of intervention programs and initiatives by MOH and NGOs. The KSA governmental leadership should encourage and fund researchers and experts to develop interventions, conduct outreach to communities and utilize the HIV surveillance data to guide research related to these initiatives. Epidemiological studies utilizing this data should be conducted and disseminated in academic journals.

4.7 IMPLICATIONS

There is limited literature on the issue of HIV in the KSA including prevalence, modes of transmission, and knowledge of HIV among the general population. This essay

could serve as a preliminary source to developing public health initiatives and interventions in KSA to reduce infection rates, prevent transmission, and address the challenge of stigma associated with HIV.

5.0 CONCLUSION

The KSA is making strides towards alleviating the HIV epidemic in the MENA, but more resources and structural changes are still needed. The investments in healthcare that the KSA has put in place has enabled faster detection and management of HIV. Unfortunately, the stigma associated with HIV not only undermines progress in reducing HIV among populations most at-risk, but also affects the availability of awareness programs meant to reduce HIV in the general population. The highest risk factors for HIV transmission in the KSA have changed from pre-marital sex and sex work to drug use and same-sex behavior. The healthcare system and public health leadership in the KSA should consider deliberate and coordinated interventions to prevent new infections, including creating educational awareness campaigns, ensuring access to free HIV testing and treatment, and reducing stigma associated with HIV. Religious leaders and community health workers can play a critical role in implementing interventions to reduce risk and transmission by conducting outreach to community members, providing accurate information, and linking persons at risk and those already living with HIV to prevention and treatment services.

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