

Knowledge and attitudes of university students in Tunis, Tunisia towards HIV prevention strategies: A case study at Mediterranean School of Business

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Declaration

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ABSTRACT

The objective of this research was to assess the level of knowledge and attitudes of university students in Tunis. The research used the Mediterranean School of Business, a university situated in Tunis, as a case study. The research found that most of the respondents have a good level of knowledge of the main modes of HIV transmission and prevention, and they generally have a positive attitude towards HIV prevention strategies. The research also observed that although the respondents have a good level of knowledge, approximately 46% of the respondents do not believe that HIV and AIDS is an issue of concern in Tunisia, and about 40% of the respondents still have erroneous beliefs on HIV transmission and HIV prevention methods. The main recommendations of the study are that there should be a comprehensive approach to HIV education and awareness covering all age groups of the youth, as well as accessible Voluntary Counselling Testing Centres. There should also be an acceleration and proliferation of the on-going Harm Reduction Programmes.

OPSOMMING

Die doel van hierdie studie was die bepaling van die kennisvlakke ten opsigte van MIV/Vigs van studente aan die Mediterranean School of Business in Tunis, Tunisië.

Die navorsing het bevind dat die meeste studente 'n redelike goeie vlak van kennis oor die pandemie het en dat hulle ook 'n positiewe benadering teenoor voorkomingsprogramme openbaar.

Ondanks die relatiewe goeie kennisvlak van MIV/Vigs, is daar ook gevind dat 46% van studente nie van mening is dat MIV/Vigs 'n belangrike gesondheidskwessie in Tunisië is nie. Daar is ook gevind dat daar nog steeds 'n redelike persentasie studente is wat nie 'n goeie begrip van die pandemie het nie en ook nie op hoogte is van voorkomingsmaatreëls om die pandemie te bekamp nie.

Die studie stel voor dat 'n omvattende MIV/Vigsprogram ontwikkel word en dat dit grootskaals in Tunisië aangebied word. Daar word verder voorgestel dat bereikbare fasiliteite vir vrywillige voorligting en toetsing vir die hele bevolking in plek gestel word.

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CHAPTER 1: BACKGROUND AND CONTEXT

1.1 HIV Prevalence Patterns in Tunisia

HIV prevalence in Tunisia is estimated at 0.1% for people aged between 15 and 49 years (UNAIDS UNGASS Report 2010). According to UNAIDS (2010), approximately 2680 people in Tunisia are living with HIV and AIDS.

HIV prevalence patterns vary by geographical region, showing high concentration in the densely populated areas, and coastal areas, such as Tunis District, the centre and east of the country. There is a concentrated epidemic among populations exhibiting high risk behaviour, namely men who have sex with men (MSM), intravenous drug users (IDU) and sex workers (UNAIDS 2010). HIV prevalence in these populations is higher than in the rest of the population, and is estimated at 4.9% for MSM, 3.1% for IDU, and 0.4% for sex workers (UNAIDS). Due to the fact that homosexuality is illegal, men who have sex with men feel pressured to have heterosexual formal relationships, in an attempt to hide their sexuality. The general population is increasingly at risk of contracting HIV as is shown by the doubling of the number of people living with HIV and AIDS (PLWHA) between 2003 and 2005 (Roudi-Fahimi 2007), which reflects increasing rates of infection. According to an organisation involved in the response to the problem of sexually transmitted diseases, HIV and AIDS namely, the “Association Tunisienne de Lutte Contre les MST/SIDA” (ATL MST/SIDA), there is a combination of ignorance with respect to modes of HIV transmission and prevention, as well as stigma, and legislative challenges that inhibit a comprehensive response to HIV and AIDS in Tunisia. (ATL MST/SIDA 2009).

According to the UNAIDS country report (2010), the main mode of transmission of HIV in Tunisia has become heterosexual, which means the epidemic is now transforming from being concentrated among the high risk groups to being a generalized epidemic.

1.2 Research Problem

According to a World Bank publication on the Knowledge, Attitudes and beliefs of Young people on HIV/AIDS in the Middle East and North Africa region (MENA), where Tunisia is located, the high levels of unemployment are facilitating young people getting involved in risky behaviour in order for them to earn some income (Laith, Raddad, Akala, Semini, Ruedner,

Wilson, Tawil, 2010). HIV incidence is increasing among young, sexually active IDUs who exchange sex for money with MSM, and in turn exchange money for sex with female sex workers (Laith, Raddad, Akala, Semini, Ruedner, Wilson, Tawil, 2010). The same report noted that 93% of HIV infections are among single and young people in Tunisia. In a separate study carried out by Tebourski and Alaya (2005) in Tunis, the capital city of Tunisia, on high school adolescents' knowledge, misconceptions and attitudes towards HIV, it was noted that although there has been a slight improvement over time, there are still misconceptions on how HIV is transmitted and on methods of HIV prevention. In addition, stigma among the high-schoolers towards PLWHA is still prevalent.

Misconceptions on mechanisms of HIV transmission and preventive strategies expose young people to the risk of HIV infection, given that three quarters of sexually active youth interviewed in a survey across the country had their sexual debut between the ages of 15 and 19 (Roudi-Fahimi, El Feki, 2011).

These observations are echoed by the ATL MST/SIDA. In their report they noted the underestimation of personal risk of HIV infection is quite prevalent (ATL 2009). Furthermore, they observed that there is also a combination of lack of knowledge of prevention measures and negative attitudes toward the prevention methods especially from the general population, influenced by culture and also by the legislation (ATL 2009). The organisation further observed that condoms have been marketed more as a birth control method and have been mainly dispensed through pharmacies. In an attempt to control the proliferation of unregistered sex work, the police often arrest those people found with an unusually high quantity of condoms particularly in the areas of the cities where there is a high prevalence of sex work. The report further noted that there have been challenges in implementing the harm reduction programme which entails the syringe exchange with IDU because of legal implications.

In a study of youth sexuality and reproductive health in the MENA region, Roudi-Fahimi and El Feki (2011) noted that there are only a few studies that have, to a limited extent, tried to assess knowledge, attitudes, and behaviour of the youth with respect to sexual health, with a very small proportion of them focusing on HIV prevention. As far as the researcher is aware, there has not been a study carried out in Tunisia on the knowledge and attitude of university students towards **HIV prevention strategies.**

1.3 Research Question

What is the level of knowledge and what are the attitudes of University Students towards HIV prevention strategies?

1.4 Aim of the Study

The study sought to ascertain the level of knowledge and attitudes that university students have towards HIV prevention measures with a view to provide information that could contribute to HIV prevention strategies formulated and promoted by the Government and other interested organisations.

1.5 Objectives of the Study

The objectives of the study were the following:

- To establish the level of knowledge of University Students on how HIV transmission can be prevented
- To establish the attitudes of University Students towards the known HIV prevention strategies
- To make recommendations related to changes in the current state of university students' knowledge and attitudes that could be useful to Government and any other organisations involved in formulating HIV prevention strategies targeted at the youth.

CHAPTER 2: LITERATURE REVIEW

2.1 Existing Research on Knowledge and Attitudes of Young People on HIV/AIDS

2.1.1 General Observations

A joint UNICEF, UNAIDS, and WHO worldwide research on “Young people and HIV/AIDS” (2002) showed that more than 50% of young people aged between 15 and 24, from 40 countries, do not have adequate knowledge of how HIV is transmitted, and yet 50% of all HIV transmission occurs to young people aged between 15 and 24 years (UNICEF, UNAIDS, & WHO, 2006). Some still believe one can tell a PLWHA by just looking at them. This implies that they would not need to take preventive measures if the potential sexual partner looks HIV negative. Young people in their teens and 20’s go through rapid physical and psychosocial growth and they tend to be engaged in risky sexual behaviour, and without HIV prevention strategies deliberately targeting the youth, young people continue to be exposed to the risk of transmission (UNICEF, UNAIDS, & WHO).

Women, both young and old have the view that most prevention strategies have disproportionately focused on men. Research has shown that women feel that they have limited control over sexual practices, and that the success of most HIV prevention strategies is dependent on men’s behavioural change. Because of societal and cultural values on masculinity, there have been tendencies for men to have multiple concurrent sexual partners, and prevention strategies have tended to focus on discouraging men from doing that (Timmons & Sowell 1999). Although, there is now a female condom available on the market, the emphasis has generally been on promoting the use of the male condom, and male circumcision. The only prevention strategies that are specifically designed for women are the HIV vaccines that are still at trial stages (Amaro 1995, Timmons & Sowell 1999).

2.1.2 Knowledge and Attitudes in MENA

2.1.2.1 Cultural Context

Culture plays a significant role in influencing the type and level of knowledge as well as the attitudes towards HIV and HIV prevention strategies. In the surveys on youth knowledge, attitudes and behaviour, Roudi-Fahimi and El Feki (2011) observed that issues of sexuality were downplayed in the MENA region, owing to cultural sensitivities. In a study on Harm Reduction in Muslim countries in the Mediterranean region, Hasnain (2005) observed that religion defines culture. In Islam, sexual intercourse outside marriage, adultery, homosexuality and the use of intoxicants is prohibited. Sexuality, which is considered a private matter, is a taboo subject, never to be discussed (Hasnain (2005), Tebourski (2004), Tunisia (2012)). Policy makers typically respond to the threat of the HIV epidemic by re-emphasising these ideal values of total abstinence and fidelity within the context of a marriage. The reality of the use of intoxicants is sometimes ignored (Hasnain). According to the International Women's Health Coalition (2011), generally, in the MENA region information on sexual and reproductive health is often withheld from the youth because of the concern that it might encourage illicit sex. In the context of a typical Tunisian home, leisure activities of girls and freedom are controlled by the family, and it is emphasised, particularly to girls that they should never engage in any pre-marital sex. While pre-marital sex is totally unacceptable, particularly for girls, anecdotal evidence shows that boys are not condemned if they engage in it (Tunisia, 2012).

On a positive note, the report by International Women's Coalition further notes that Tunisia and other North African countries have now incorporated reproductive and health education in their curriculum for high school and university students, but unfortunately not for younger students. This means that if students under the age of 15 engage in any sexual behaviour, they are ignorant of the possible risks.

2.1.2.2 Studies on Knowledge and Attitudes of Students in Tunisia

A few surveys on knowledge and attitudes of young people on HIV/AIDS and broader issues of sexuality have been carried out in Tunisia. One survey looked at 1,200 young people countrywide, who were not enrolled in any schools, while the other one looks specifically at high school students. They are briefly summarized below.

The study by Abdallah of 1,200 young people was carried out across Tunisia in 2009 (Fahimi, and El Feki, 2011), and its target were youth aged 15 to 24. The study noted that there is “deficit in knowledge and access to services” and young people generally rely on their peers for information on sexuality, and reproductive health. The study further noted that young people engage in sexual activity before marriage regardless of how much information they have on the risks of contracting sexually transmitted infections. 70% of the respondents noted that their friends were sexually active, and the age of first sex ranged from 15 to 19. The study further observes that it is difficult to assess what, if any preventive measures are taken by young people to protect themselves against infection, since they would not be willing to discuss that given the strong social disapproval of sexual relations outside the context of marriage.

The study that specifically dealt with HIV/AIDS was carried out by Tebourski and Najem (2005) on the knowledge, misconception and attitudes of high school student to HIV/AIDS, comparing the situation in 1997 against what obtained in 2002. The age group of the adolescents interviewed was from the age of 16 to 20, and they were students from 160 schools. For control purposes, the two surveys were carried out in the same schools. The research used questionnaires that were filled in anonymously students. The findings show that students who participated in the 2002 study were better able to name various sexually transmitted diseases, and a slightly higher percentage of the respondents in 2002 were more accepting of PLWHA, compared to 1997. In addition, the use of condoms as a preventive measure was marginally more acknowledged in 2002. Although there were these improvements, there were still a lot of misconceptions on how HIV is transmitted, and on the utility of using condoms for prevention. Stigma towards PLWHA was still quite prevalent.

2.2 Operationalizing the Knowledge and Attitudes Constructs

2.2.1 The Definition and Measurement of Knowledge

Launiala (2009) defines knowledge as scientific facts or universal truths. Knowledge is not physically observable for measurement because it is abstract (Fisher, and Foreit, 2002). It is therefore necessary to find an observable tool that can be used as an indicator of the level of knowledge (Fisher, and Foreit, 2002). Such a tool could be a set of questions, which if answered correctly, would indicate that the respondent is knowledgeable. The researcher would specify what level of accuracy is required to conclude that a respondent is knowledgeable. According to

Fisher and Foreit (2002), a researcher could specify categories delineating the different levels of knowledge such as high, medium, low, according to how many responses are answered correctly. UNICEF makes distinction between accurate and inaccurate knowledge of HIV and AIDS issues based on whether the respondents are able to identify two main modes of HIV transmission, two main HIV prevention methods, and two main misconceptions (UNICEF 2010). This approach is adopted by many researchers such as Ochako, Ulwodi, Njagi, Kimetu, Onyango (2011) in their research on the Trends and Determinants of Comprehensive HIV and Knowledge in Kenya.

In this research the level of knowledge of the respondents is assessed on the basis of their ability to select the right responses from given possible responses on the modes of HIV transmission, and on the strategies of preventing HIV transmission. The respondents are also being assessed on their ability to correctly identify common myths in HIV transmission and prevention. The responses will be categorized as follows:

- i) comprehensive knowledge. In this category, the respondent will have made all the possible correct responses
- ii) correct but inadequate knowledge. In this category, the respondents will have made correct responses but will not have exhausted all the possible correct responses
- iii) inaccurate knowledge. In this category, the respondent will have made some erroneous responses.

The percentages of respondents falling in each of the above categories are reported.

In order for a respondent to be viewed as knowledgeable about HIV prevention, they should have as background knowledge, a general understanding of the routes of HIV transmission, as well as non-transmittable routes, i.e. the types of contact that facilitate, and do not facilitate the transmission of HIV (Uddin, Isaramalai, and Thassari 2010). The main modes of transmission are unprotected sexual intercourse, the sharing of unsterilized invasive equipment such as syringes, needles, and razor blades, and mother to child transmission at birth and through breast milk (UNAIDS 2011). The respondents should also show that they understand that there are non-transmittable routes such as casual contact such as sharing utensils, bathrooms, shaking

hands (National AIDS Trust UK 2012). The respondents should also know that insect bites do not transmit HIV.

As noted above, there are many ways by which HIV can be transmitted, but with specific reference to sexual transmission, HIV can be prevented by “ABC”. Knowledgeable respondents should therefore be able to demonstrate their knowledge of HIV prevention by being able to identify the “ABC” of prevention, which is defined as follows; according to AVERT, an international HIV/AIDS charity, UNAIDS (2004):

- A Abstinance meaning not engaging in sex, and/or delaying the age of first sex
- B Being faithful to one partner or reducing the number of sexual partners
- C Correct and consistent use of condoms.

AVERT also notes that PEPFAR defines ABC as follows:

- A Abstinance for youth, delaying the age of first sex, and abstinance until marriage
- B Being Tested for HIV, being faithful in a monogamous marriage or relationship
- C Correct and consistent use of condoms for those who practise high risk behaviour.

For purposes of the research, the respondents should be able to identify the main elements captured by the definitions above.

While this is necessary, it is not sufficient to conclude that the respondents are adequately knowledgeable about HIV prevention since there are other practices that are not covered by ABC, that are known to facilitate HIV transmission, such as mother to child transmission and intravenous drug use. In the context of Tunisia, where IDU is prevalent, HIV prevention strategies should also include a way of mitigating the risk of HIV transmission through IDU.

2.2.2 Definition and Measurement of Attitude

Attitudes are the beliefs, feelings, and opinions disclosed with respect to a certain subject, in this case HIV and HIV infection, HIV prevention strategies and interaction with PLWHA (Uddin, Isaramalai, and Thassari 2010). Summers (2008) defines attitude as a predisposition to respond

to an object. He further notes that attitudes embody beliefs, emotional feelings and readiness to respond.

McLeod (2009) notes that the most commonly practiced way of measuring attitude is through self-reporting. i.e. carrying out a survey in which the respondents are asked to voice their opinion on a subject or question.

There are many challenges in measuring the real attitudes of respondents in a research survey. Launiala (2009) observes that when people are asked about their attitudes to certain issues, they tend to give answers that they believe are correct or acceptable from the point of view of the researcher. She also notes that the environment in which people find themselves in, at the time they are participating in the research, also plays a role in influencing the response, and they might not necessarily give their honest opinions about the questions being asked. Furthermore, she observes that certain cultures promote conformity to given social norms, and this manifests itself in the responses selected. At times, there may also be linguistic challenges in translation, where the original meaning or intention of the question may be lost. In spite of these challenges, self-reporting seems to be the most pragmatic approach in ascertaining attitudes. The researcher therefore needs to bear this in mind and also view the responses in the context of the cultural environment obtaining.

In their study on Attitudes and Practices on HIV preventions among students of higher education institutions in Ethiopia, Negatu and Kedir (2011) used a combination a questionnaire and focus groups for data collection. The questionnaire had likert type scales with four points to categorise the attitude, namely strongly agree, agree, disagree and strongly disagree. The responses that agreed with the propositions for HIV prevention were viewed as positive attitudes, while the responses that disagreed were viewed as negative attitudes. Uddin, Isaramalai, Thassari (2010) in their study on knowledge and attitudes of adolescents in Bangladesh also used the same approach. In order to facilitate analysis, they assigned numerical values zero, one two and three to the scales strongly disagree, disagree, agree, and strongly agree. They then added the scores, and a high score reflected a positive attitude and a low score a negative attitude.

In this research, attitude is classified as positive, neutral and negative depending on the whether the respondents disclose that they agree, disagree or are not sure of the stated HIV prevention strategies, namely:

- Education and awareness
- Voluntary Counselling and Testing (VCT)
- the ABC,
- harm reduction methods in working with high risk populations, namely providing condoms to sex workers and prisoners, and providing clean syringes to IDU, and
- Continued support for HIV research for an HIV vaccine.

CHAPTER 3: METHODOLOGY

3.1 Research Paradigm

The research is quantitative and information was gathered by use of an anonymous questionnaire that was a combination of multiple choice and likert scale type questions. In order to measure complex constructs like attitude, there was need to use multiple items, such as summated rating scales or likert type scales. A summated rating scale is able to capture a range of possible responses, as opposed to simple yes or no response, particularly for a construct such as attitude that has many possible dimensions (Christensen 2011).

3.2 Population Characteristics and Sampling

A pilot study using a draft questionnaire was prepared and tested on 10 university students, all aged over 18 years who study at various universities in Tunis and in city 50 km out of Tunis. The pilot study was carried out two weeks before the main study, and it was found that some of the questions had been phrased in an ambiguous manner. Although the intended meaning was retained, these questions were then reformulated before the main study commenced.

The target group for the research was students from Mediterranean School of Business situated in Tunis, the capital city. The University is a private university with a current enrolment of 157 undergraduate students, 50 first year masters students and 36 second year master's degree students. In terms of gender representation, there is balance in the numbers of male and female students. A significant proportion of the student population come from middle income families, and there are also some foreign students, although the latter form a small proportion.

The survey was cross-sectional, in that the target population included both the undergraduate, as well as the post graduates students, and there was no deliberate effort to distinguish between foreign and local students in the process of random sampling. The researcher approached both the male and female students to participate in the research.

Following ethical clearance by the Ethics Committee of the Stellenbosch University, the survey at Mediterranean School of Business was carried out over two days from 16th to 17th October, 2012. The University provided the researcher a work area where the students usually spend time during breaks and after lessons. The school administration then introduced the researcher to the

students, and was invited to explain the purpose of the study. The researcher explained to the students that those who were willing to participate could do so by completing an anonymous questionnaire. The students were also told that those who were willing to participate would be requested to first sign a consent form, which explained their rights as participants. Although English is the medium of teaching at the Mediterranean School of Business, the questionnaires and the consent forms were available in English and French to cater for those students who are more comfortable to communicate in French.

The researcher initially attempted to invite every third student to participate in the study, with the intention to make a random sample, but some expressed concern that they were not comfortable enough to sign the consent form, as some felt their names would appear in some documents. After the contents and intentions of the consent forms were explained in detail by the researcher, as well as the confidentiality of their participation and the anonymity of the questionnaire were reassured, others then offered to participate, while others were still reluctant. This reaction is not surprising in the cultural context whereby discussing HIV would be bordering on discussing the taboo subject of sex.

Having observed that the random sampling method in which the researcher approached every third student was not attracting many participants, the researcher then decided to approach any students who came into the students lounge during class breaks, bearing in mind that there was need to ensure adequate representation of both male and female respondents, and also foreign students. Some students involved in other HIV awareness programmes elsewhere, came and requested if they could participate in the study. A total of 46 students participated during the two days and they all expressed interest in knowing the outcome of the study.

Although it would be beneficial to have another similar study in the same institution or to follow the cohort after a lapse of time to see if the results would have changed, it will not be possible within the context of this academic research.

3.3 Research tools

The questions in the questionnaire covered the following themes:

- Some biographical information such as age, sex, nationality

- How HIV is transmitted
- How transmission can be prevented
- Whether the respondent personally feels that they are at risk of contracting HIV
- If they know someone who has HIV
- How a person is diagnosed
- Attitudes to Abstinence, being Faithful to one partner, and the use of condoms (ABC)
- Their opinion on Harm reduction especially among IDUs,
- If they feel condoms should be handed out in prisons or given to sex workers.

In determining the questions, the researcher had to pay attention for a delicate balance between being sensitive to culture and the need to get adequate information.

The responses were then coded and analysed using excel and SPSS. In order to determine the main characteristics of the data, various descriptive statistics such as frequencies of certain responses, the mean, the mode, standard deviations, and simple correlations are discussed below. The correlations that are of particular interest are those showing the relationship between

- i) Demographic characteristics such as gender and age and the level of knowledge, and the attitudes
- ii) Nationality and level of knowledge, and the attitude
- iii) The correlation between level of knowledge and attitude

3.4 Research Hypotheses

For each of the above, the research hypotheses are as follows:

- 1) There are differences between male and female respondents with respect to the level of knowledge and attitudes attributable to the socialisation and influence of culture.
- 2) There are differences in the level of knowledge and the attitudes between Tunisian and foreign students, particularly those whose countries of origin are outside MENA since in other countries there is more open discussion about HIV transmission and prevention.

- 3) There are differences in the levels of knowledge and attitudes among the different age groups.
- 4) There should be a positive and significant relationship between knowledge of HIV prevention and attitude towards HIV prevention.

CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS

4.1 Demographic Profile of the Respondents

24 women and 22 men participated in the survey, representing 52% and 48% respectively. In terms of nationality, 38 students are Tunisians, three students have a dual Tunisian and other nationality, and five students are foreigners. Figure 4.1 shows the age and sex profile of the participants:

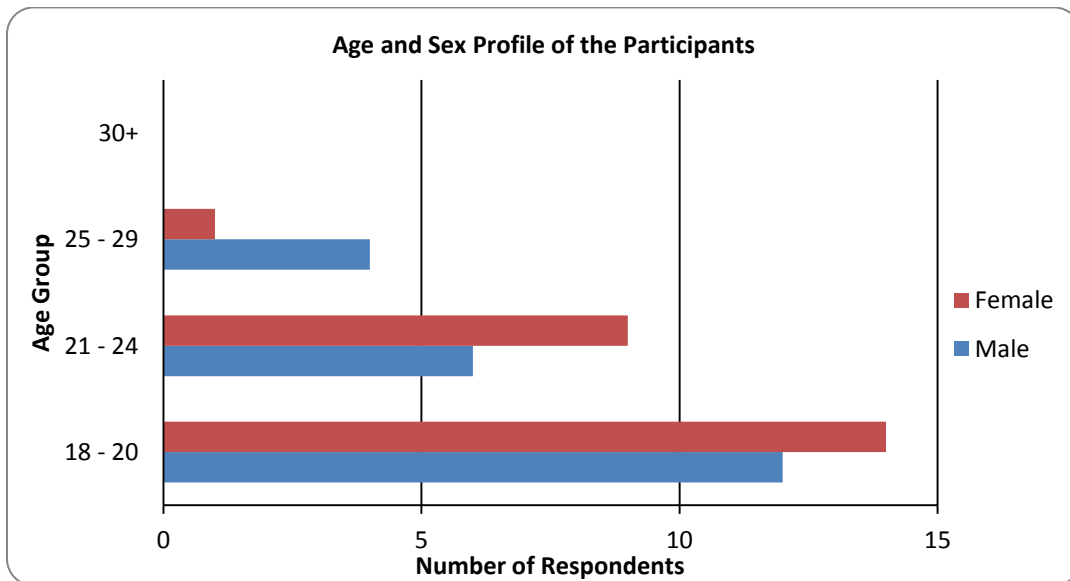


Figure 4.1 Age and Sex Profile of the Participants

The majority of the respondents, 56% are in the 18-20 age group, which is categorized as late adolescence.

4.2 Assessment of the Level of Knowledge of HIV Prevention Strategies

Most quantitative research includes an estimation of the Cronbach alpha coefficient in their reports. The Cronbach alpha coefficient is a measure of the internal consistency in the measurement of a construct (Tavakol and Dennick, 2011). Its purpose is to ensure that the test items used to measure a construct in the research are consistently measuring the same thing (Christensen). The coefficient alpha should be 0.7 or higher to reflect internal consistency. A lower alpha coefficient could be attributable to differences in the scale of measurement on the test items, or the use of few test items. In this research the SPSS Cronbach alpha coefficient

reported below is close to 0.70, meaning that the items used to measure knowledge were consistently measuring the same construct.

Table 4.1 Reliability

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.654	.667	9

The survey showed that all the students know that there are people living with HIV in Tunisia. The ensuing discussion shows, however, that there is disparity among the different students in the levels of knowledge on the modes of HIV transmission, and HIV prevention strategies. While this is a study on HIV prevention, there is need to assess the level of knowledge on the modes of transmission as these determine what is subsequently identified as possible prevention strategies.

4.2.1 Source of Information on HIV and AIDS

Figure 4.2 shows how the students acquired their knowledge on HIV and AIDS:

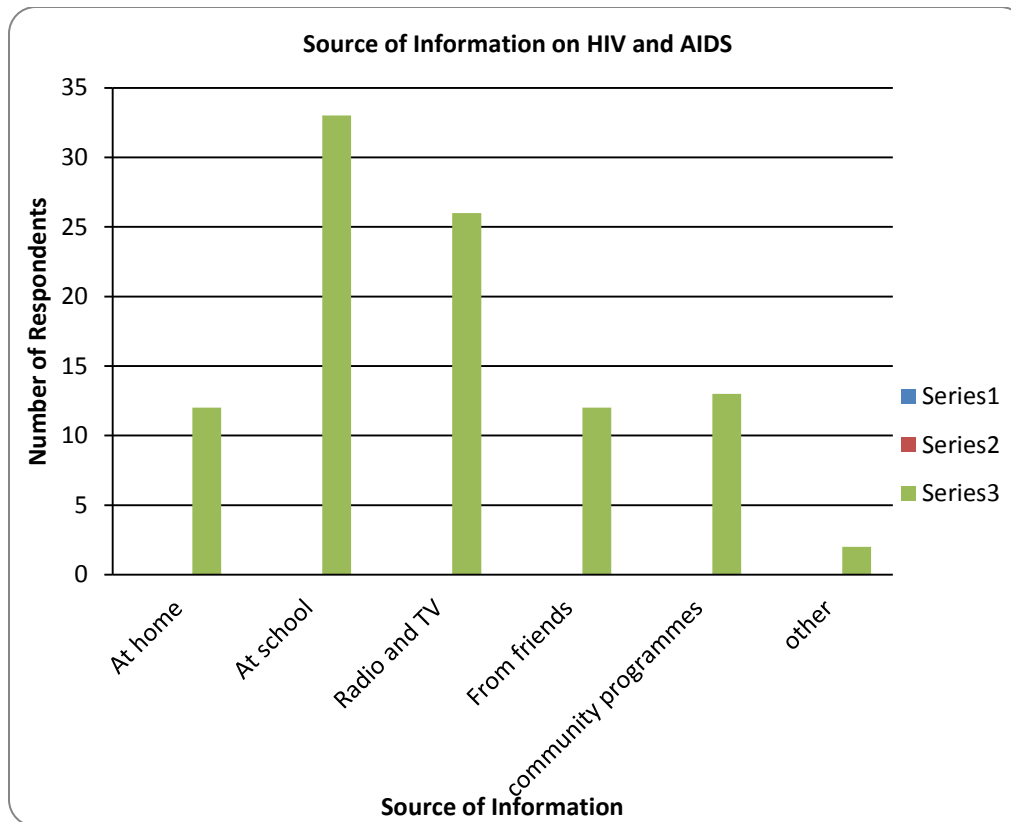


Figure 4.2 Source of Information on HIV and AIDS.....

Very few respondents got the information on HIV and AIDS at home. It was interesting to observe that of the 12 respondents who learnt about HIV and AIDS at home, nine of whom are female. One possible explanation of this is that it is acknowledged that women are more vulnerable to HIV infection because of their lower social status in most cultural settings, and therefore families (mothers) make attempts to empower them with knowledge, so that they can take whatever measures they can to reduce the risk of HIV infection, particularly by encouraging abstinence. A similar study in Tunisia carried out in 2002 for the 16 to 20 age group, noted that only 6% of the students had some HIV/AIDS education at home (Tebourski and Najem 2004). The same study also noted that the majority of the respondents learnt about HIV from the media, namely television, radio, newspapers and magazines. Only 14% of the respondents learnt about HIV and AIDS at school. This shows that over time, there has been a shift in the trends with schools taking a more proactive role in educating the youth on HIV and AIDS as it is reflected in the graph above. A study on Knowledge and Attitudes among Iranian Students showed that television and radio were the main source of information on HIV and AIDS, followed by the

printed press, in the form of newspaper and magazines (Tavoosi, Zaferani, Enzevael, Tajik, and Ahmadinezhad, 2004). Other sources of information which were mentioned in this Iranian study were family, friends and books. Only 6% of the respondents got information from schools and teachers. A similar study carried out in China on Knowledge, Attitudes and Behaviour of Students noted that the printed press were the main sources on information, followed by Radio and TV and schools respectively (Tan, Pan, Zhou, Wang, and Xie 2007).

4.2.2 Knowledge of HIV Transmission and Prevention

All the respondents correctly identified unprotected sex as a mode of HIV transmission. Approximately 80% of the respondents also identified the sharing of intravenous needles as a mode of HIV transmission. This is impressive since this is one of the main drivers of HIV transmission in Tunisia. 40% of the students erroneously identified mosquito bites, sharing bathrooms and sharing food utensils as modes of HIV transmission. This is quite a significant proportion, which contributes to the stigmatization of PLWHA as people would avoid physical contact and interaction with them. This observation is comparable to the earlier study in Tunisia by Tebourski which noted that a significant proportion of the respondents believed that HIV could be transmitted by casual contact and mosquito bites, and to the Iranian study referred to above in which 46% of the students believed that HIV could be transmitted by casual contact, and 33% thought that HIV could be spread through mosquito bites (Tavoosi, Zaferani, Enzevaei, Tajik, Ahmadinezhad). The study referred to above on Chinese students noted that 30% of the respondents had erroneous knowledge of HIV transmission (Tan, Pan, Zhou, Wang and Xie).

In terms of preventing sexually transmitted HIV, only one respondent identified the package of three methods, namely abstinence, being faithful to one partner and the consistent use of condoms (ABC). The rest of the respondents identified one or two of the prevention methods. The method of preventing HIV transmission that was identified by 98% of the respondents was the use of condoms. Only 30% of the respondents selected “being faithful to one partner” as an HIV prevention method. A mere 20% of the students selected abstinence as a method of preventing HIV transmission. A total of five students, representing 11% made erroneously picked showering after sex and getting married as an HIV prevention method. It is understandable that getting married and remaining faithful to one partner can sometimes be considered as synonymous, and yet marriage is not a guarantee for faithfulness. It is also

possible that the attitude towards the possible responses on HIV prevention methods could have influenced the respondents’ choice of answers. If the students believe that abstinence is not possible, they are unlikely to select it as an HIV prevention method.

The following are frequency tables summarizing the level of knowledge and classification in each category:

Table 4.2: Knowledge of Transmission Frequency Table

		knowledge of transmission			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	inaccurate	20	37.7	42.6	42.6
	accurate	3	5.7	6.4	48.9
	accurate adequate	24	45.3	51.1	100.0
	Total	47	88.7	100.0	
Missing	System	6	11.3		
Total		53	100.0		

Table 4.3: Knowledge of Prevention Frequency Table

		knowledge of prevention			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	inaccurate	4	7.5	8.7	8.7
	accurate	41	77.4	89.1	97.8
	accurate and adequate	1	1.9	2.2	100.0
	Total	46	86.8	100.0	
Missing	System	7	13.2		
Total		53	100.0		

Certain aspects of these findings are consistent with the study of Chinese Students, in which it was observed that only 20% of the respondents identified the “ABC” as an HIV prevention package. In the same study, the majority of the respondents, (94%) overwhelmingly chose the use of condoms as an HIV prevention method, which is consistent with the research findings. A study on the knowledge and attitudes of school students in Tanzania showed conflicting results (Kamala and Aboudi, 2006). In their study only 48% of the respondents identified the use of

condoms as a prevention strategy, and a higher proportion of the respondents 69% identified abstinence and faithfulness as strategies for preventing HIV transmission.

4.2.3 Analysis of Knowledge by Sex, Age and Nationality

4.2.3.1 Analysis of the Level of Knowledge by Sex

The following table shows a comparison of the total knowledge score between male and female respondents.

Table 4.4: Male and Female Respondents Total Knowledge Scores.

		Statistics	
		Female total knowledge score	male total knowledge score
N	Valid	25	22
	Missing	0	3
Mean		27.24	26.55
Median		28.00	26.00
Mode		27 ^a	24 ^a
Variance		9.190	10.926

a. Multiple modes exist. The smallest value is shown

The following two tables show the frequency distributions of the knowledge scores for female and male respondents, respectively.

Table 4.5 Knowledge Frequency table for Female Respondents

Female total knowledge score

	Frequency	Percent	Valid Percent	Cumulative Percent
20	2	8.0	8.0	8.0
24	2	8.0	8.0	16.0
25	2	8.0	8.0	24.0
26	2	8.0	8.0	32.0
Valid 27	4	16.0	16.0	48.0
28	4	16.0	16.0	64.0
29	2	8.0	8.0	72.0
30	4	16.0	16.0	88.0
31	3	12.0	12.0	100.0
Total	25	100.0	100.0	

Table 4.6 Knowledge Frequency Table for Male Participants

male total knowledge score

	Frequency	Percent	Valid Percent	Cumulative Percent
20	1	4.0	4.5	4.5
22	2	8.0	9.1	13.6
24	3	12.0	13.6	27.3
25	3	12.0	13.6	40.9
26	3	12.0	13.6	54.5
Valid 27	2	8.0	9.1	63.6
28	1	4.0	4.5	68.2
29	2	8.0	9.1	77.3
30	2	8.0	9.1	86.4
31	1	4.0	4.5	90.9
32	2	8.0	9.1	100.0
Total	22	88.0	100.0	
Missing System	3	12.0		
Total	25	100.0		

The Tables above show that from the maximum possible score of knowledge is 36, and the mean score for female respondents is 27.24 and the mean score for male respondents is 26.55. An analysis of the frequency tables shows that the majority of the women had a total knowledge score of 27 and above, while the majority of the men's score was between 24 to 26.

From the above, it would appear that the female respondents are more knowledgeable than their male counterparts. However, a t test analysis comparing means between the two groups showed a statistically insignificant difference between the levels of knowledge in the two groups. ($t(10) = .678, p. > .05$) This is confirmed by the following chi-square test which tested whether there is a relationship between the sex and the level of knowledge of HIV prevention and showed that there is no relationship between the level of knowledge and gender.

Table 4.7 Chi-Square Test Results

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.529 ^a	10	.577
Likelihood Ratio	10.257	10	.418
Linear-by-Linear Association	.389	1	.533
N of Valid Cases	46		

Consequently, the research hypothesis which stated that there is a difference in the level of knowledge of male and female respondents is rejected.

This is consistent with the results from the study of Chinese students, in which the differences in the level of knowledge by gender were generally not significant (Tan, Pan, Zhou, Wang, and Xie). Similarly, there were no significant differences in the levels of knowledge in terms of sex in the study of Tanzanian Students (Kamala and Aboudi). However the observation is inconsistent with findings from the study on Iranian students referred to above in which the female respondents had a slightly higher level of knowledge than their male counterparts (Tavoosi, Zaferani, Enzevaei, Tajik, Ahmadinezhad).

4.2.3.2 Analysis of the Level of Knowledge by Nationality

Table 4.8 below shows the descriptive statistics for the level of knowledge for Tunisians compared with foreign students.

Table 4.8 Knowledge Scores of Tunisian and Foreign Students....

		Statistics	
		knowledge of foreign students	Knowledge of Tunisian students
N	Valid	8	38
	Missing	0	0
Mean		27.00	26.84
Median		28.50	27.00
Mode		20 ^a	25 ^a

a. Multiple modes exist. The smallest value is shown

From the frequency tables above it appears that the foreign students have a slightly higher level of knowledge than the Tunisian students. The Kruskal – Wallis H Test was applied to compare the knowledge scores of the Tunisian students and those of foreigners, as well as those with dual citizenship. This test was used because it is designed to compare different groups and that it does not assume that the data is normally distributed, which is the case with the data when it is split among the different smaller groups (Laerd Statistics 2012). From the chi square ($\chi^2(46) = 0,054, p > .05$) it can be concluded that the differences in the level of knowledge across the nationalities are statistically insignificant.

Table 4.9 Kruskal – Wallis Test Results for Differences in Nationality

		Ranks	
		N	Mean Rank
knowledge	foreigner	5	24.80
	tunisian	38	23.36
	tunisian and other	3	23.17
	Total	46	

	knowledge
Chi-Square	.054
df	2
Asymp. Sig.	.974

a. Kruskal Wallis Test

b. Grouping Variable:
nationality

Consequently, the research hypothesis that there are differences in the level of knowledge of students attributable to nationality, is rejected.

4.2.3.3 Analysis of the Level of Knowledge by Age group

The following graph shows the mean scores of knowledge by age group:

Figure 4.3

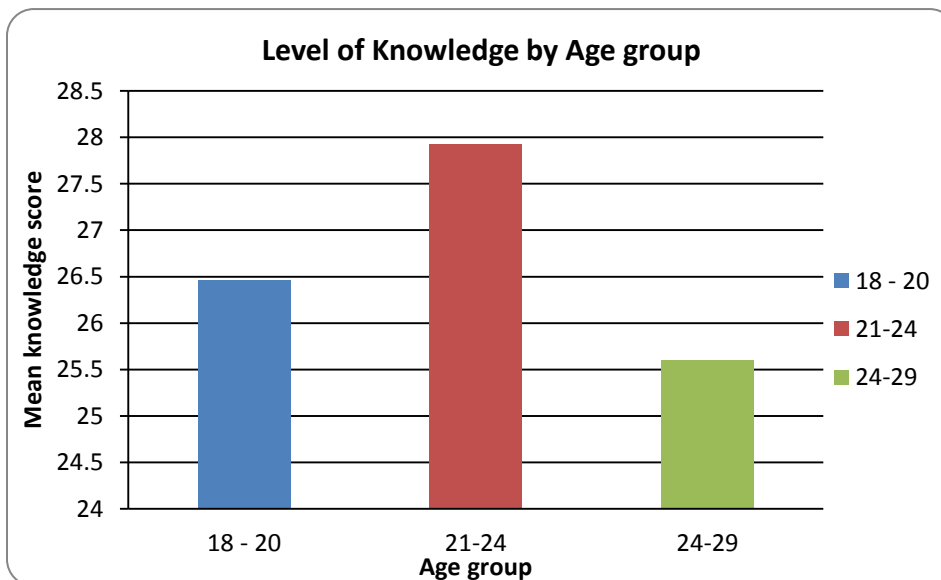


Figure 4.3 Level of Knowledge by Age Group

From the above the 21-24 age group has the highest knowledge mean score of 27.93, and the 18-20 age group has a mean score of 26.46, while the 24 – 29 has a score of 25.6. The Kruskal – Wallis H Test was applied to determine if the differences in the mean knowledge scores were

statistically significant and attributable to the age of the respondents. The results of the analysis are shown below:

Table 4.10 The Kruskal – Wallis H Test Results for Differences in Age Group

Ranks			
	age group	N	Mean Rank
knowledge	18-20	26	21.21
	21-24	15	28.90
	25-29	5	19.20
	Total	46	

Test Statistics ^{a,b}	
	knowledge
Chi-Square	3.734
df	2
Asymp. Sig.	.155

a. Kruskal Wallis Test

b. Grouping Variable: age
group

The Kruskal – Wallis test results were. ($\chi^2(2)=3.734$, $p > .05$) showing that there were no statistically significant differences in the levels of knowledge of the respondents across the various age groups. A further analysis was carried out to estimate the effect size using the formula:

$$\frac{\text{Chi-square}}{n-1}$$

The result of this analysis shows that only 8% of the variation in the levels of knowledge is attributable to variation in age, confirming the observation from the Kruskal –Wallis test.

4.3 Attitudes Towards HIV Prevention Strategies

The highest possible score measuring attitude is 59, which represents a very positive attitude, and the lowest possible score representing a negative attitude towards HIV prevention strategies is 15. The mean score for the female respondents is 47, and the score for the male respondents is 48.5 and this shows that both the male and female respondents generally have a positive attitude towards HIV prevention

This is consistent with the results of the study in Ethiopia in which the majority of the respondents expressed a positive attitude towards HIV prevention methods in general (Regassa and Kedir). A Bangladeshi study on Adolescents knowledge and attitudes on HIV prevention, however noted that the respondents showed a neutral attitude towards HIV prevention methods (Uddin, Isaramalai, and Thassari 2010).

The following is a discussion on the respondents' attitudes towards various components of an HIV prevention strategy that includes education and awareness, promotion of VCT, promotion of abstinence, faithfulness and the use of condoms, harm reduction strategies for high risk marginalized populations.

4.3.1 Education and Awareness

In response to the question as to whether the students believe that the extent of HIV prevalence is a matter of concern in Tunisia, a total of 46% respondents do not think that it is, 43% of the respondents were concerned, and 11% of the students did not respond to the question. This shows that the level of awareness of the real threat of HIV and AIDS in Tunisia is low. In a comparable study in Iran, 93% of the respondents felt that HIV is becoming a threat to the general population (Tavoosi, Zaferani, Enzevaei, Tajik, and Ahmadinezhad). This is an interesting observation considering that HIV prevalence in Iran and in Tunisia is comparable at 0.2% and 0.1% respectively (UNICEF 2009).

More than half of the respondents (54%) are not satisfied with the information available to youth on HIV prevention. Approximately 26% are not sure whether the information available to the youth is sufficient, and the rest (20%) are satisfied. Almost all of the respondents (90%) believe that young children even below the age of 15 should be educated on HIV and AIDS awareness and should be taught about the relevant prevention strategies. The majority of the respondents (80%), selected a comprehensive approach to the education of such young children, including education at home by the parents, as well as at school, through the media, and the community. Some of the other respondents, 10%, just felt that education of the young children should be left to the media and schools and the other 10% did not feel that HIV and AIDS issues should not be discussed with such young children. In a study for high school students in Tanzania on

knowledge and attitudes towards HIV prevention strategies, a significant proportion of the students also felt that more information should be available to the youth and that parents should play a significant role in educating their children on HIV prevention (Kamala and Aboudi).

4.3.2 Voluntary Counselling and Testing

When asked whether or not the respondents personally feel they are at risk of HIV infection, 83% of the respondents said they are not, 15% feel and acknowledge that they are at risk, and one did not respond to the question. Only 9% of the respondents have undergone voluntary HIV counselling and testing (VCT). It is interesting to note that while almost half of the respondents think that HIV prevalence in Tunisia is a matter of concern, most of the respondents do not feel that they are personally at risk of HIV infection, and very few have even gone for VCT. This attitude of perceived low personal risk of HIV infection is also reported in a study on HIV/AIDS knowledge and awareness among High school students in Jordan (Olimat, and Al Louzi 2010). The study on the Chinese university students noted that most the students did not even know where the VCT centres were, and furthermore they showed a reluctance to visit the centres.

4.3.3 Abstinence and Faithfulness to One Partner

Since it is difficult to ascertain someone's sexual behaviour by asking direct question on sexual practices in the Tunisian cultural setting, one way to do so would be to ask hypothetical questions in which the respondent does not feel that their private life is under scrutiny, but whose response will give an indication of their inclinations or value system with respect to the sexual behaviour. When asked if single people could totally abstain from sex, 28% respondents were undecided, 35% felt it was not possible and 37% believe it is possible. The respondents were also asked if it was possible for a married person to be faithful to his/her partner for a lifetime. Of the 46 respondents, 24% were convinced that it is possible, an equal proportion (24%) were somewhat convinced, 28% respondents were not sure and 9% did not believe that it is possible. The observed sceptical attitude towards abstinence is contrary to that observed in the Tanzanian and Ethiopian studies in which the majority of the respondents showed a positive attitude and a belief that it is an effective HIV prevention strategy (Kamala and Aboudi, and Regassa and Kedir).

4.3.4 The Use of Condoms

From the above analysis, it is evident that the respondents acknowledge that there is some risky sexual behaviour both among single and married people. Consequently, this would mean promoting the distribution and use of condoms. A significant proportion of the respondents, a total of 46% respondents strongly felt that condoms should be made more available to university students, 28% of the respondents agree that they should have easy access to them, and 15% are not sure. Only 9% of the respondents were opposed to the idea of making condoms available to the youth. This generally positive attitude towards the use of condoms for HIV prevention is consistent with the findings in the study of Chinese university students referred to above (Tan, Pan, Zho Wand and Xie). The respondents in the studies in Tanzania and Ethiopia however showed a very negative attitude towards the use of condoms as an HIV prevention tool (Kamala & Aboudi, and Regassa & Kedir).

4.3.5 Harm Reduction Strategies

Given that the HIV epidemic in Tunisia is mainly concentrated in three high risk population groups namely; intravenous drug users, men who have sex with men, and sex workers, HIV prevention strategies also have to have direct focus on these groups. The respondents were asked to give their opinions on various harm reduction strategies that could be implemented to reduce HIV infections among the three high risk groups. The respondents were asked for their opinions on i) providing clean syringes to intravenous drug users, ii) condoms for prisoners and iii) sex workers. The results are shown in Figure 4.4 below:

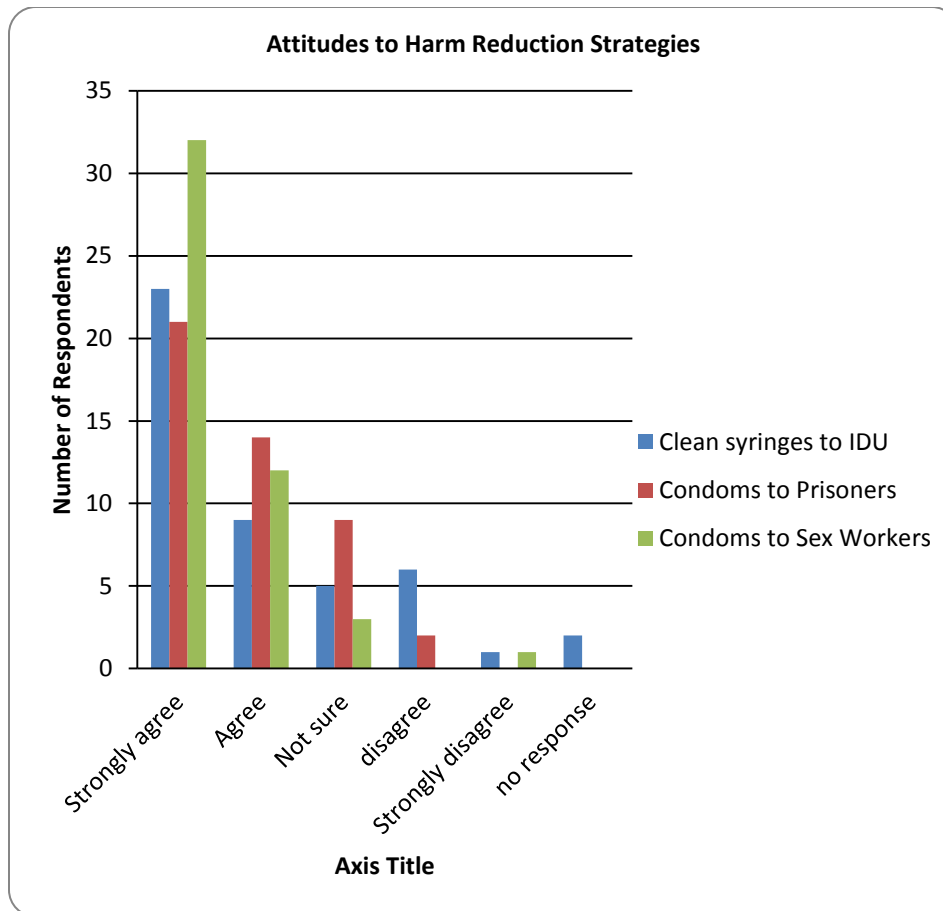


Figure 4.4 Attitudes to Harm Reduction Strategies....

As is shown above, approximately 80% of the respondents support harm reduction strategies, and about 12% are not sure about whether these groups should be included in HIV prevention strategies. The least controversial harm reduction programme appears to be the provision of condoms to sex workers because sex work is legal in Tunisia, and the Government is already providing health services to those who are registered. The challenge is in reaching the sex workers who are not registered. Of the total respondents, 50% strongly agree that users of intravenous drugs should be given clean syringes, approximately 15% disagree and slightly more than 4% did not respond to the question.

4.3.6 Promotion of HIV Vaccine

The respondents were asked whether they thought that HIV vaccine trials should be continued as long as they comply with ethical requirements. In response, eight students agree strongly in support of vaccine trials, 28 simply agreed, and nine students were not sure. None of the

respondents showed a negative attitude towards the promotion of a vaccine trial. The positive attitude towards the promotion of research in search of an HIV vaccine could be partially influenced by Islam, given that Tunisia is an Islamic state. There is a belief in Islam that even though HIV and AIDS could be a test from God, in His mercy He has also made treatment available through science. Religious leaders therefore encourage scientific research aimed at improving medical care as it is viewed as a method of alleviating suffering (Yunus 2008). Consequently research leading to the discovery of a vaccine is viewed positively. The interesting observation is that although none of the students opposed the idea of vaccine trials, only 20 respondents, which constitute less than half of the total number of respondents, said they would be willing to participate in one.

4.3.7 Analysis of Attitude Towards HIV Prevention Strategies by Sex, Age, and Nationality

The following is an analysis of the attitudes of the respondents by sex, age and nationality.

4.3.7.1 Analysis of Attitudes Towards HIV Prevention by Sex

The mean score for attitude for women is 47.96, while that for men is 48.5. It would appear that from this men generally show a slightly more positive attitude towards HIV prevention strategies than women. The following two charts show the attitude score frequencies distributions for female and male respondents:

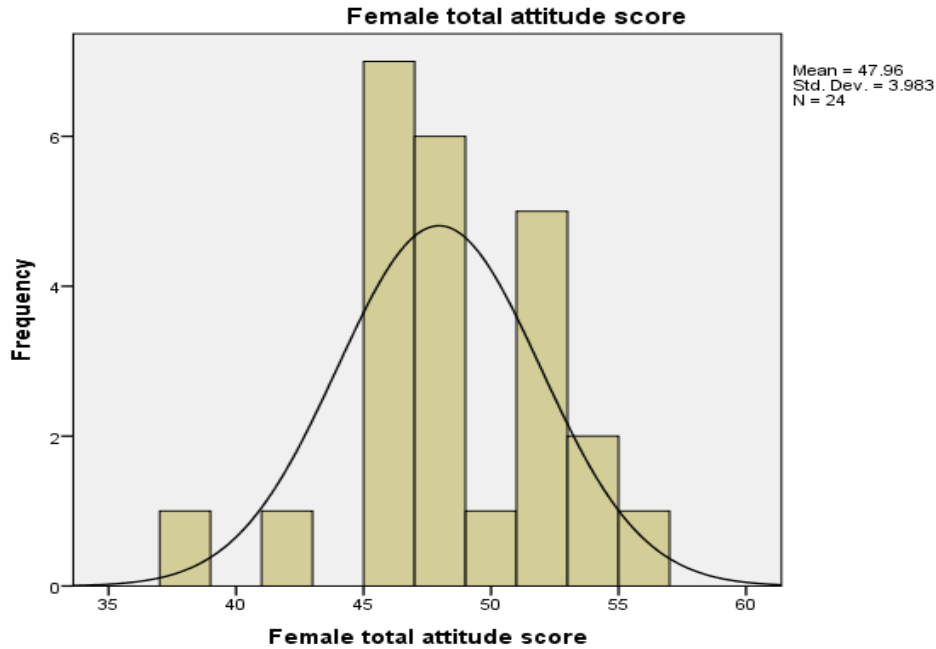


Figure 4.5 Frequency Distribution of Female Attitude Score....



Figure 4.6 Frequency Distribution of Male Attitude Score

An initial assessment shows that the male respondents have a more positive attitude to HIV prevention strategies as demonstrated by the higher scores. However, after carrying out Chi-

square tests the results showed that there was no statistically significant difference between the attitudes of male and female respondents ($\chi^2(22) = 140.067$, $p > .05$).

Table 4.11 .Chi-square Test Results for Differences in Attitudes by Sex

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	140.067 ^a	140	.483
Likelihood Ratio	77.276	140	1.000
Linear-by-Linear Association	1.415	1	.234
N of Valid Cases	22		

4.3.7.2 Analysis of Attitudes Towards HIV Prevention by Nationality

The following frequency table shows the frequencies for the Tunisian and foreign respondents:

Table 4.12 Frequency Table for Attitudes of Tunisian and Foreign Students

		Attitude of Tunisian students	attitude of foreign students
N	Valid	38	8
	Missing	1	0
Mean		48.42	49.63
Median		49.00	49.00
Mode		46 ^a	45 ^a

a. Multiple modes exist. The smallest value is shown

The mean score of attitude of foreign students is slightly higher than that of Tunisian students. This might be interpreted to mean this group of participants has a more positive attitude to HIV prevention strategies. The median scores are the same for both the Tunisian Students and the foreign students. The mode score for the foreign students is slightly lower than that of the Tunisian students. A Kruskal Wallis test on whether these groups have a significant difference in their attitudes towards HIV prevention strategies was performed and the results are presented below:

Table 4.13 Kruskal- Wallis Test Results for Attitudes by Nationality

Ranks			
	nationality	N	Mean Rank
attitude	foreigner	5	21.90
	tunisian	38	24.38
	tunisian and other	3	15.00
	Total	46	

Test Statistics ^{a,b}	
	attitude
Chi-Square	1.450
df	2
Asymp. Sig.	.484

a. Kruskal Wallis Test

b. Grouping Variable:
nationality

It can be concluded that the difference between the attitudes of foreign respondents and Tunisian respondents is statistically insignificant. ($\chi^2(46)=1.450, p>.05$)

4.3.7.3 Analysis of Attitude Towards HIV Prevention by Age Group

The following is an analysis of the attitude towards HIV prevention strategies among the various age groups:

Figure 4.7

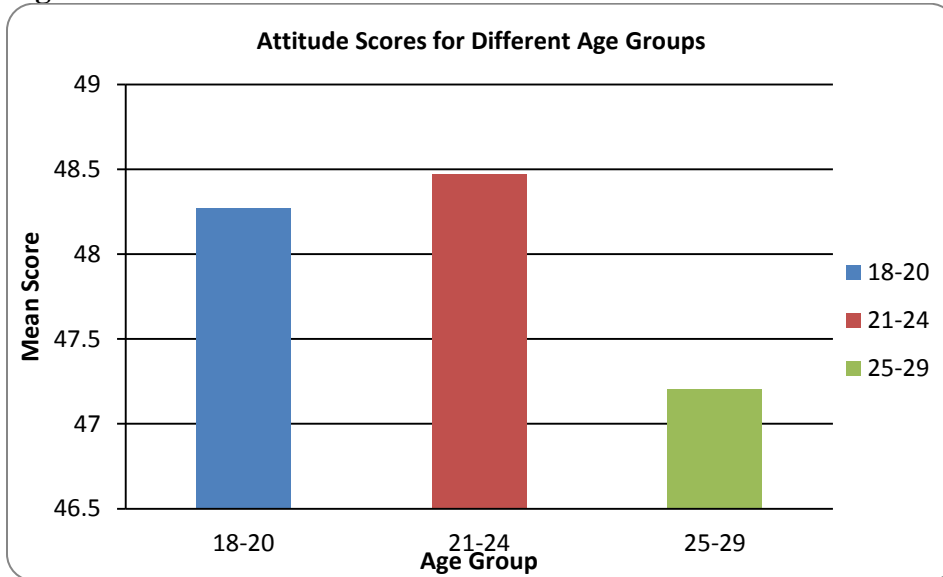


Figure 4.7 Attitude Scores for Different Age Groups...

The 21-24 age group has the highest attitude score, followed by the 18 20 age group, and the 25 – 29age group has the least mean attitude score. This could be interpreted to mean that the respondents aged between 21 and 24 have the most positive attitude towards HIV prevention strategies. The Kruskal Wallis test results shown below demonstrate that the differences in the attitude scores are statistically insignificant . ($\chi^2(46) = 1.244, p<.05$).

Table 4.14 Kruskal-Wallis Test of Significance for Different Age Groups...

Ranks			
	age group	N	Mean Rank
attitude	18-20	26	23.19
	21-24	15	25.80
	25-29	5	18.20
	Total	46	

Test Statistics^{a,b}

	attitude
Chi-Square	1.244
df	2
Asymp. Sig.	.537

a. Kruskal Wallis Test

b. Grouping Variable: age
group

4.4 Correlations Between Knowledge and Attitudes

The acquisition of knowledge on HIV prevention is only valuable to the extent to which it influences attitudes and subsequently behaviour. It is therefore useful to explore the relationship between knowledge and attitude. The correlation coefficient is a measure of the relationship between variables, and it can assume a positive or a negative value (Christensen 2011). The following figures show the correlations between knowledge and attitude for female and male participants respectively:

Table 4.15 Correlations Between Knowledge and Attitudes

Correlations

		Female total knowledge score	Female total attitude score
Female total knowledge score	Pearson Correlation	1	.417*
	Sig. (2-tailed)		.043
	N	25	24
Female total attitude score	Pearson Correlation	.417*	1
	Sig. (2-tailed)	.043	
	N	24	24

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		male total knowledge score	Male total attitude score
male total knowledge score	Pearson Correlation	1	.442*
	Sig. (2-tailed)		.040
	N	22	22
Male total attitude score	Pearson Correlation	.442*	1
	Sig. (2-tailed)	.040	
	N	22	22

*. Correlation is significant at the 0.05 level (2-tailed).

The correlations between the levels of knowledge and attitude for both the male and female respondents are positive, showing that variables knowledge and attitude move in the same direction. The correlation coefficient for both female respondents ($r(22)=.417$, $p<.05$) and male respondents ($r(22) =.443$, $p<.05$) are statistically significant. It is important to highlight that the correlation coefficient does not imply causality, but that as one variable increases the other one also increases.

Consequently, the research hypothesis that there is a positive relationship between knowledge of HIV prevention strategies and attitude towards them is accepted. In the study of Iranian students discussed above it was also found that attitude had a significant correlation with knowledge (Tavoosi et al). In the study of Bangladeshi students, knowledge had a negative but significant correlation with attitude and according to the author, this might be attributable to inadequate information about HIV and AIDS (Uddin et al). The studies on Tanzanian students and Ethiopian students also analysed behaviour and they found a disconnect between knowledge and sexual practices (Regassa and Kedir, and Kamala and Aboudi). They noted that even if the respondents had fairly good levels of knowledge of HIV prevention strategies, they continued to engage in risky sexual practices. In the Ethiopian study, it was observed that some other factors such as the intake of alcohol, viewing of pornographic material and intake of some other stimulants influenced attitude to HIV prevention and sexual behaviour (Regassa and Kedir).

CHAPTER 5: CONCLUSIONS

The study's findings are summarised as follows:

The students had a fairly high level of knowledge of HIV prevention methods, with the majority of them constituting about 98% being able to identify at least one of the methods of preventing sexual transmission of HIV, namely the use of condoms. However there was only one student who was able to correctly identify the Abstinence Be faithful and use of condoms (ABC) as an integrated HIV prevention strategy. There is however an alarming proportion (40%) who had erroneous knowledge of how HIV is transmitted. With respect to non-sexual transmission, an impressive 80% was able to identify the use of intravenous drugs as a potential mode of HIV transmission. This is significant in the Tunisian setting where IDU is currently the leading mode of transmission.

Generally the respondents had a positive attitude towards HIV prevention strategies, with the majority of them expressing the need for a comprehensive approach in education and awareness of HIV and AIDS, catering for all ages. There was also a generally positive attitude towards harm reduction strategies, and the promotion of research for an HIV vaccine. The majority of the participants believe that condoms should be made easily accessible to the youth. The respondents generally do not have confidence in abstinence and faithfulness as prevention strategies. The majority of the respondents do not feel they are personally at risk of infection, and they therefore do not see the need for VCT.

Contrary to research hypotheses, there was no statistically significant difference in knowledge and attitudes between male and female respondents, Tunisian and non- Tunisian respondents, or respondents of different age groups. There was, as per research hypothesis, a positive and statistically significant correlation between knowledge and attitudes.

The study met its objectives of ascertaining the levels of knowledge and the attitudes of the students of the Mediterranean School of Business on HIV Prevention Strategies. Although there were challenges in implementing the random sampling technique as initially planning, the participants recruited reflected the demographic profile of the student body of the University, in terms of age, gender and nationality. This excludes part-time post graduate students. It can

therefore be concluded that the results of the study are applicable to the general population of fulltime students. The study is limited however, in its application to the general population of university students in the city of Tunis, since the Mediterranean school of Business is a private university that tends to attract students from middle to high income families. It therefore may not reflect the level of knowledge or attitudes of university students people from less privileged backgrounds.

CHAPTER 6: RECOMMENDATIONS

Recommendations are proposed for consideration by two main entities, namely the Government and the Mediterranean School of Business.

It is commendable that the Government of Tunisia has facilitated education and awareness of HIV and AIDS through the school curriculum for High School unlike the other countries in the MENA region. However, there should be age-appropriate education and awareness campaigns for students younger than the age of 15, since there is evidence that most young people have their sexual debut at that age. There are some HIV organisations such as ATL MST/SIDA that are already working on awareness programmes targeting even younger children, but they are using a piece meal approach since they have to get approvals on a programme by programme basis. Government could partner with such organisations who already have the expertise to embark on nationwide programmes.

Condoms have been mainly sold in pharmacies and have been promoted as a family planning method (ATL MST/SIDA). It is recommended that they be promoted as an HIV prevention method, and they should be made more widely available including being sold in supermarkets or in areas that attract the youth like small corner shops or clubs.

VCT should be promoted and centres that carry out VCT, apart from hospitals, should be more visible to the members of the public. At the moment centres such as the ATL MST/SIDA are required to go through the bureaucratic process of getting Government approvals each time they want to launch a VCT campaign (ATL MST/SIDA). According to ATL MST/SIDA most organisation involved in HIV and AIDS aware treatment and care are struggling for public visibility. This is mainly because HIV has been only associated with high risk behaviour, but as the epidemic is becoming generalised, all members of society should know where they can get information and support.

The ideal situation would be to officially decriminalise homosexuality, but social change takes time and the Tunisian society may not be ready for that yet. It is therefore recommended that the security gents should deliberately not arrest MSM. Furthermore, they should allow the dissemination of condoms among sex workers, registered or otherwise, and in prisons. In

addition the Tunisian government can also support the harm reduction programme that facilitates the distribution of clean syringes among IDU.

The Mediterranean School of Business could also have an education and awareness programme targeted at addressing the needs of their students. The study showed that most of the students did not believe that HIV and AIDS is a matter of concern in Tunisia, and very few of them felt that they are personally at risk. The study also showed that a significant proportion of the students still have erroneous beliefs about HIV transmission and prevention. The University could formulate an HIV education and awareness programme as part of its social corporate investment programme. The aim of the programme would be to further enlighten the students on the modes of transmission and prevention and to dispel the myths. Furthermore the programme would also highlight the potential risk that each individual student faces, and would include a VCT campaign. The programme could include a peer education programme. The university can subcontract organisations that have the expertise in the field to conduct the education and awareness campaign for them, such as the ATL MST SIDA, and the Youth Peer Organisation in Tunis.

As a return to its social investment, the university would benefit by reducing the risk of illness among the students. Furthermore, the university will also have a positive image in the community here in Tunisia, and abroad given linkages with other international universities.

As per the recommendation of the majority of respondents, condoms could be made available at the University students through the education and awareness programme. This however, should only be done in consideration to the cultural or social norms of the greater constituency of the university.

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APPENDIX 1: QUESTIONNAIRE

QUESTIONNAIRE ON KNOWLEDGE AND ATTITUDES TO HIV PREVENTION STRATEGIES

This questionnaire aims to collect information on knowledge and attitudes of university students from the Mediterranean School of Business on HIV prevention strategies. The information will be used for academic purposes by Mrs. Bhebhe as part of her MPhil research. There is no coercion to anyone to fill in the questionnaire, and the respondent may choose to withdraw participation at any time. The responses will remain anonymous and the name of the respondent's name should not and will not appear anywhere on the questionnaire.

1) There is HIV in Tunisia. Yes No

2) The level of HIV prevalence in Tunisia is a cause of concern.

Yes No

3) A person can get infected with HIV from the following: (select the applicable)

Mosquito bites	<input type="checkbox"/>
Sharing intravenous needles	<input type="checkbox"/>
Sharing Bathroom	<input type="checkbox"/>
Unprotected Sexual Relations	<input type="checkbox"/>
Sharing clothing, food utensils	<input type="checkbox"/>

4) There is a vaccine that protects someone against HIV infection

Yes No

5) Being HIV positive is hereditary condition that can not be avoided.

Yes No

6) Lack of religion is the root cause of HIV and AIDS

Yes No

7) How can one avoid contracting HIV (Select the applicable responses)

Totally Abstaining from sex	<input type="checkbox"/>
Using condoms if abstinence is not possible	<input type="checkbox"/>
Showering immediately after sex	<input type="checkbox"/>
Remaining faithful to one partner	<input type="checkbox"/>
Getting married	<input type="checkbox"/>

8) You cannot get infected with HIV if you exercise and are well nourished.

I agree strongly	I agree	I am not sure	I disagree	I disagree strongly

9) How did you learn about HIV prevention (select the applicable responses)

At home	
At school	
From radio and tv	
From friends	
From community programmes	
Other (specify).....	

10) Have you ever gone for HIV Counseling and Testing voluntarily

Yes No

11) I am satisfied with the information that is available to the youth on HIV prevention.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

12) Children under the age of 15 should be told about HIV prevention.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

13) If you agree in question 12, then who should educate children aged 15 and below on HIV prevention? (tick the appropriate response/responses).

Parents	
Schools	
Community Programmes	
Media (radio and TV)	
Religious institutions	

14) Would you visit a doctor/dentist/surgeon who is known to be HIV positive?

Yes No

15) Do you know of anyone who is HIV positive?

Yes No

16) How can you know if someone is HIV positive (select the appropriate responses).

Red lips	
Rapid loss of weight	
Rough skin	
Hair loss	
Sickly appearance	
It is not always physically apparent	

17) HIV positive people should be allowed to look after children at a pre-school

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

18) Condoms should be distributed free of charge at Universities e.g. placed in the toilets.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

19) Do you think you are at risk of contracting HIV?

Yes

No

20) Would you eat food prepared by a person who is HIV positive?

Yes

No

21) Intravenous drug users should be given clean syringes.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

22) Prisoners be given condoms.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

23) Sex workers should be given condoms

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree

24) It is possible for an unmarried person to totally abstain from sex.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25) Do you think condoms are readily available to young people?

Yes. No

26) It is possible for a married person to remain faithful to one partner for a lifetime.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vaccine trials are experiments that are carried out to see if certain medicines are good enough to protect someone from contracting HIV when they are exposed to it.

27) HIV vaccine trials should be encouraged among general members of the community, with consent of the participants.

I agree strongly	I agree	I am not sure	I disagree	I strongly disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28) Would you be willing to participate in a vaccine trial?

Yes No

29) Some biographical information about you.

Please tick the appropriate response.

Sex Male Female

Age	18 - 20	21 - 24	24 - 29	30 +
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nationality: Tunisian Other