

# Education Against HIV/AIDS

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## 1. Introduction

The sexually transmitted diseases (STDs) represent one of the major health problems worldwide today. The characteristics of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) demarcate the pandemic from the other communicable diseases, including the STDs. These include the rate of the virus spread, reaching epidemic proportions in some parts of the world, the magnitude of its infection and the inordinately long incubation period before symptoms development. These are in addition to the lack of curative therapy and lack of a preventive vaccine. Apart from its health and social implications, it has a huge burden on the affected patient, family and society. Thus, a global increasing attention is being paid to the prevention and control of HIV/AIDS. Furthermore, it is alarming for a global more coordinated education strategies against HIV/AIDS.

## 2. Adolescence risk for HIV/AIDS

Adolescents are at high risk of STDs, including HIV/AIDS. Evidence shows that age between 15 and 24 years is the highly vulnerable one for the infection. About one third of HIV infection cases occur in this age group and most of them are women (CDC, 2008). The adolescents and youth are among the high risk groups, because of their propensity in indulging in risky sexual activities and drug abuse. Negative attitudes regarding prevention misconceptions of HIV/AIDS reflect a false perception of the disease among these vulnerable groups. Strong well organized actions to increase awareness and improve behaviors are imperative. This calls for a wide comprehensive information, education and communication strategies targeting the youngsters as early as possible.

## 3. Education against HIV/AIDS

Since STDs, particularly HIV/AIDS, represent such a major health problem, more resources need to be devoted. There are several complementary ways in which STDs, including HIV/AIDS, can be controlled. Education of the public is an important control measure. The epidemic will not subside until most people around the world know how HIV is transmitted, understand how to prevent the spread of the infection and practice healthy safe behaviors (United Nations, 2002). The level of knowledge on STDs, including HIV/AIDS, and the attitudes of people are vital in preventing and eradicating the virus and disease (Binswanger, 2000). Hence, accurate and timely information, education and communication represent the best opportunity for changing life-styles and acting towards combating

HIV/AIDS. These should cover a wide range of sexual and social attitudes and behaviors. Therefore, the best way to avoid HIV/AIDS is to change those attitudes and behaviors, including avoidance of unsafe sexual practices.

### 3.1 Health education

Health education can be regarded as the communication of knowledge and the provision of experiences to help individuals to develop attitudes and skills which will assist their adopting behaviors to improve and maintain health for themselves and their fellows. The preventive model of health education adopts behaviors which will prevent infections and/or diseases, such as HIV/AIDS, at all levels. However, the self-empowerment model seeks to facilitate choice, not merely by providing understanding, value clarification and practice in decision making, but by attempting to empower the individual. Empowerment is about increasing people's power to change or improve their health. It includes motivation which is the inner force that drives the individual to a certain action. The process of self-empowering people involves modifying the way people feel about themselves, through improving their self-awareness and self-esteem. It involves supporting and encouraging them to think critically about their own concerns and gain the skills and confidence to build up their own values and beliefs system and to make a responsible action upon them (Tannahill, 1990; Downie et al., 1996).

### 3.2 Levels, approaches and categories of health education

Primary level health education is the type of education that is utilized for the prevention and control of HIV/AIDS. Different from the secondary and tertiary levels, it is directed at healthy people and aims to help individuals or groups learn how to keep healthy and how to prevent the onset of infection, disease and disability. Health education for primary prevention encourages people to develop behavior conducive to good health, such as that prevents contracting HIV infection. Primary prevention should aim at educating individuals, groups and communities about the advantages of prevention, including behaviors of discriminate and safe sex. It has to be accepted, however, that there is no agreement on the principles of normal sexual behavior.

Primary prevention is the level at which health education is able to encompass its role and function, not only to influence individual behavior change but also to influence group and community action. These include environmental, economic and organizational alterations to protect and promote health. HIV/AIDS prevention and control represent an appropriate example. Several approaches may be utilized separately or in combination. The persuasion or directive approach is the deliberate attempt to influence the individual to do a certain action or to follow a certain practice. The informed decision-making approach is about giving people information, problem-solving and decision-making skills to make decisions, but leaving the actual choice to the individual.

Furthermore, health education can be conducted on the basis of three categories. *Disease-oriented health education* is still utilized by several health education programs despite the improvements in the field. It has a negative focus, merely aiming at the prevention of specific diseases, with an emphasis on progress towards target rates of morbidity and mortality. Major preventable diseases, such as AIDS, are dealt with by specific preventive programs aimed at reducing relevant 'risk factors'. This orientation of health education works on single topics in isolation from one another, with an incomplete view of health.

However, it should be mentioned that most of the current health education programs are *Risk factor-oriented*. It aims at eliminating particular risk factors in order to prevent associated diseases. Its main advantage is the recognition that a single risk factor can be linked to more than one disease category. The connection between unsafe sex and the STDs represents an example. But the model's view of health is inadequate; educational interaction is limited; and experts dominate. On the other hand, the relatively new *Health-oriented health education* has a dual focus. Its aim is to enhance positive health as well as to prevent ill-health. The physical, mental, and social components of health are recognized. Thus, the positive focus enhances the educational validity by developing comprehensive programs of health education in key people and key settings. Multidisciplinary and intersectorial collaboration is facilitated. Obviously, the health-oriented approach should be the preferred model for planning health education programs, including those to prevent and control HIV/AIDS.

### 3.3 Health promotion

Health education used to be seen as concerned mainly with personal health actions. It was perceived as a series of messages about healthy practices and the avoidance of risk behaviour. Though these kinds of health messages remain important today and should not be neglected, it is equally important to direct education towards collective action. Empowering people to take responsibility for collective health is a challenge that has to be met. Health promotion, on the other hand, is a broader term which covers all aspects of those activities that seek to improve the health status of individuals and communities. It starts out by considering the whole population in the context of their everyday lives, not selected individuals or groups. Its goal is to enhance collective health.

Health promotion had probably developed from health education. The latter is seen as a very important element in health promotion. It is one route to the improvement of people's health, encompassing all those activities which aim to provide health via learning of one kind or another. Therefore, health promotion can be regarded as health education 'plus'. Health promotion includes health education and other proactive aspects of health. Health promotion can be the umbrella term for three elements; health education, disease prevention and health protection. The three of them are essential elements in combating HIV/AIDS. The term health promotion is not synonymous with the term public health. Health promotion, however, constitutes a dynamic and interactive process based on person-empowerment, whereas public health focuses on the crucial issue of health-engendering social structures. Health promotion can be considered as the new public health. It is defined by the World Health Organization (WHO, 1984) as the process of enabling people to increase control over and to improve their health. The concept of HIV/AIDS control and prevention represents a component of this enhanced collective health and health promotion. To demonstrate the shift from individual to collective and societal action to improve health, Ewles and Simnett (1996) described five approaches to health promotion. These are:

1. Medical; to prevent or ameliorate ill-health, in order to achieve freedom from medically defined disease.
2. Behaviour change; to adopt healthy life-styles and change attitudes and behaviour.
3. Educational; to impart knowledge and act on well-informed decisions.
4. Client centred; to enable people to make their own decisions and choices according to their own value systems.

5. Societal change; to help people take control over their own lives and make choice easier to change the environment.

### 3.4 Communication

Provision of information is the principle of health education. Thus, it is vital for the prevention and control of HIV/AIDS within the communities and worldwide. In this respect, its aim is to protect and promote the health of the healthy individuals. In addition, communication aims at assisting HIV infected patients to recognise symptoms of the diseases and, by identifying the early onset of illness, to enable them to seek measures to control the problem. Furthermore, communication is to provide AIDS patients with self-care education, in order to learn about their illnesses, treatments and available health services.

Communication is conducted using a number of components. These are the receiver or the audience, the source or the provider, the message and the media or channels. A message or a medium that is effective with one audience may not succeed with another. The same applies to the source or the provider of the message. Empathy is used to describe the process by which the message provider learns to understand how others feel and think. The message will only be effective if the provided advice is valid, relevant, appropriate and understandable. Furthermore, efficiency relies on the appeal, which is the way providers organize the content of the message to persuade or convince individuals. Communication uses a variety of communication media. They can be classified according to two main groups; interpersonal (face-to-face) and impersonal (mass media). Interpersonal media include, but not limited to, school classes, university lectures, public small group discussions and doctor-patient counseling. Mass media include broadcast media, such as radio, television or social communication electronic networks; as well as print materials, such as books, booklets, magazines, newspapers, press releases, posters, leaflets or reports. McGuire's analysis of effective communication and persuasion methods (McGuire, 1969) suggests that messages that are more closely suited to the values and attitudes of those to whom they are directed will be more effective than other types of messages.

## 4. Means of individuals and community action

Although the many factors affecting health are beyond the reach of the individual, some individual choices or life-styles, such as the unsafe sexual practice, can influence health and well-being. Such choices can be influenced by action to empower the most vulnerable. The distinction between individual and collective empowerment is more theoretical than real. In particular, understanding a problem and acquiring the personal ability to deal with it are the basis of collective action for social change. In a social support network, each individual keeps his or her identity while receiving material support, services, information and new social contacts. These may also exist within a scope called social marketing. That is to describe the application of principles and methods of marketing to the achievement of socially desirable goals, such as health promotion or disease prevention, including HIV/AIDS control. Social marketing can be defined as the design and implementation of programs aimed at increasing the voluntary acceptance of social ideas or practices.

The framework for countrywide plans of action for health promotion (WHO & IUHPE, 2000) pointed out that community action is a concept that is both exciting and complex. In fact, the term community can mean different things in different contexts. The traditional notion of community is a well-defined geographical area with formal institutions such as

school, church, mosque and town hall, where families live whose values are rooted in a shared history. This has begun to change in places where geographical barriers have been overcome by communications and transport. People no longer live where they work and their support networks do not coincide with any geographical boundaries. These considerations must be taken into account when the activities of groups, communities or social support networks in a given area are analysed and evaluated.

Empowerment gives a sense of personal control and the ability to bring about change in the social and health conditions through collective mobilisation. Participation in the decision-making process is desirable, not only from the ethical point of view but also in order to guarantee effectiveness.

Furthermore, various mechanisms or strategies for individuals and community action exist. Each of them is different, but all of them are complementary. The five complementary mechanisms for action proposed by the Ottawa Charter (1986), in addition to the above, include creating supportive environments, building healthy public policy and reorientation of health services.

## 5. Education towards behavior change

Education about STDs, including HIV/AIDS, should cover a wide range of attitudes and behaviors. Some believe that usually the mere presence of knowledge is sufficient to motivate healthy behaviors. Hence, motivation can lead to health-influencing behavior. This is known as *the knowledge-action model* of behavior change. However, in some cases, knowledge may be sufficient to elicit changes in behavior, but in other cases, it may not. Therefore, behavior may not change as a result of providing facts. The transfer of knowledge into action is dependent on a wide range of internal and external factors, including values, attitudes and beliefs. The communication of information can create, affect or change people's attitudes. Attitude is defined by Ribeaux and Poppleton (1978) as a learned predisposition to think, feel and act in a particular way, towards a given object or class of objects. Often, values and attitudes change precedes behavioral change. Attitudes can be transferred or reflected to behaviors or feelings. In many cases, people's attitudes are taken to determine their behaviors. Therefore, proper understanding of knowledge-attitude-behavior change models and theories provides guidelines for information, communication and education planning towards community health promotion and HIV/AIDS prevention and control.

Social scientists have evolved a number of models to explain the process of change influenced by personal and interpersonal communications within an individual. Stage models view behavior change as a series of actions or events. *The health-belief model* can be the best to explain the modification towards an AIDS-related protective behaviour. Rosenstock (1974) suggested that preventive health behavior can be understood as a function of perceived self-susceptibility of acquiring the disease, perceived severity of the disease, perceived benefits to be realized by engaging in particular preventive behaviors. Health-related action, then, is hypothesized to depend upon the simultaneous occurrence of three classes of action:

- the extent of sufficient motivation (or health concern) to make health issues relevant;
- the belief that one is susceptible (vulnerable) to a serious health problem (i.e., the perceived threat); and
- the belief that doing something would reduce the perceived threat at a subjective acceptable cost.

*The transtheoretical model or the stages of change theory* is among the simple models that can be applied in the field of HIV/AIDS prevention and control (Prochaska & Di Clemente, 1983). According to this model, people appear to pass through a series of distinguishable stages before they adopt a new practice. These stages are: *Pre-contemplation*, not recognizing the problem or the need to change; *Contemplation*, seriously thinking about the problem and the possibility of change; *Preparation*, making a commitment to change and taking steps to prepare for that change; *Action*, successful modification of behavior for a period of one day to six months; and *Maintenance*, continuation of change from six months to an indefinite period. Research has shown that relapse and recycling through the stages of behavior change happens often as individuals try to stop or change particular behaviors.

*The knowledge-attitude-behavior change (or AIETA) model* (Park & Park, 1997) is a simple and similar model to the one described above to explain the process of change. The stages of change in this model are: *Awareness*: At this stage the individual comes to recognize the new idea or practice. He/she has only some very general information about it and knows little about its usefulness, limitations and applicability to him/her. *Interest*: This is the stage when the individual seeks more detailed information. He/she is willing to listen or read or learn more about it. *Evaluation*: During this stage, the individual weighs the pros and cons of the practice and evaluates its usefulness to him/her or his/her family. Such an evaluation is mental exercise and results in a decision to try the practice or reject it. *Trial*: This is the stage when the decision is put into practice. He/she would need additional information and help at this stage so as to overcome the problems in implementing the idea. *Adoption*: At this stage, the individual decides that the new practice is good and adopts it.

## 6. Response to adolescence needs

Adolescence is a period of dynamic change during which the differences between males and females become more apparent, especially with regard to sexual characteristics and reproductive capacity. In all societies, some form of courtship takes place during which adolescents may begin to form lasting relationships, which commonly lead to marriage and family formation. During the different phases of adolescence, adolescents have different needs. For instance, early on, they need to understand the nature of changes that are taking place in themselves, as well as the new demands and expectations that are placed upon them. In addition, they may be aware of anything which may be a cause of concern. As they move through later adolescence, as well as having new kinds of relationships with adolescents and adults of both gender, they need to have responsible and satisfying relationships with others. Ultimately, in adulthood, they benefit from their capacity to form lasting relationship and have good parenting skills.

In order to meet the natural needs of adolescents, a response is required which is promotive or preventive in nature. In early adolescence, this will include appropriate education and health screening. In middle adolescence, it may include guidance, support and empowerment. In late adolescence or adulthood, it includes preparation for marriage and parenthood. Those people in a position to help the young are likely to be those who are close to them and whom they trust. Such people must be adequately prepared, whether formally or informally. The important figures include the parents, other family members, teachers, social workers, youth leaders, health professionals, role players and other popular figures. Those who determine policy in the key sectors such as health, education, culture, religious or ethnic affairs, youth and social welfare will be needed to facilitate appropriate

training for adolescent health and development, including protection from HIV/AIDS (WHO, 1993).

## **7. Effectiveness of school education against HIV/AIDS**

Health literacy is explained by competence in critical thinking and problem solving, responsible and productive, self-directed learning, and effective communication. School health education is to teach students the information and skills they need to be literate and maintain and improve their health, prevent disease and reduce their health-related risk behaviors, including those related to HIV/AIDS. School planned comprehensive curricula, covering health education and promotion, including HIV infection prevention, now represent a prerequisite. Students should comprehend concepts related to HIV/AIDS prevention and health protection and promotion. Schools and universities are settings that most children and many young people, respectively, attend. This provides an opportunity for knowledge and skills provision and accordingly for changing behaviors and modeling healthy practices. Therefore, schools and universities are a crucial setting for health promotion and HIV/AIDS control.

Schools and universities represent an effective and efficient means to reach a large proportion of young people and, in turn, their families and communities (Kore et al., 2004; Naidu & Aparna, 2008). Several researchers proved that students' HIV/AIDS education interventions improve knowledge (Svenson et al., 1997; UNAIDS, 2008; Ahmed et al., 2009). This in turn increases personal concern about the risk and possible disease contraction, and thus leads to disease prevention behavior. Educated students succeeded in developing skills for negotiating prevention and risk reduction, and resisting peer pressure to engage in risk-related behaviors (Becker & Maiman, 1975; Hingson et al., 1990; Svenson & Varnhagen, 1990; Svenson et al., 1997). Nevertheless, other researchers reported that school or university education courses do not necessarily affect students' behaviors (Baldwin et al., 1990; DiClemente, 1992).

The International Union for Health Promotion and Education (IUHPE, 1999) demonstrated that schools are cost-effective sites for health promotion interventions. The effectiveness and sustainability of school health is governed by how closely health promotion interventions are linked to the primary business of schools in developing the educational skills and knowledge base of young people. Schools can create an educated population who are the better able to make use of any health education they receive in later life from sources such as newspapers, magazines, books and booklets or leaflets. Provision of education concerning sexual health and of HIV/AIDS education is best started at school. The United Nations Program on HIV/AIDS (UNAIDS, 1999) showed that responsible and safe behavior can be learned. Reaching the adolescents as early as possible is arguably the highest HIV/AIDS prevention priority. This includes protection from other sexually transmitted diseases.

## **8. Appropriate students HIV/AIDS education**

Students empowerment, including teaching of appropriate skills, combined with proper provision of HIV preventive knowledge and acquiring healthy attitudes, can motivate practicing healthy behaviors even when students are outside of the school or university setting (Svenson et al., 1997). Several health issues, such as HIV/AIDS control, can be integrated within and into the different subjects, including biology, sociology, environment,

physical education, economics, mathematics and languages or linguistics. In addition to classroom lessons and activities, practical in-school and in-community activities and programs have to be organized. Examples include the school club, the school theatre, the school fraternity, the scouts activities and the local community cultural and entertainment programs. In addition to these, schools and universities influence students, through the values they teach, including respect, gender equality and human rights. Education settings can also create an environment that is safe from abuse and fosters understanding, caring and no-discrimination. These are well applied within the concept of 'health-promoting schools'. Furthermore, the student-to-student, child-to-child and peer-led projects or programs encourage the adolescents to undertake community projects. Older and trained peers can be selected as health guides and are then involved in teaching other pupils. The involvement of adolescents themselves in developing messages and approaches is a critical element. The UNAIDS (1999) has demonstrated that these projects and programs have greater credibility and acceptance.

Internations and intercommunities differences, including cultural and religious perspectives, need to be taken in consideration when deciding on the timing for the introduction of components of reproductive health and HIV/AIDS education in schools and universities. A number of other factors will also need to be considered when defining the minimum set of interventions that can be implemented, including the reality and diversity of educational settings, capacity of education system, levels of enrollment and retention and the continuum of the system. The strategies to increase the knowledge of children and youth to prevent and control HIV/AIDS will be highlighted at the "Discussion" section of this chapter.

An important base for designing proper prevention programs is to assess people's knowledge and attitudes towards HIV/AIDS. University students, especially in medical faculties, represent a primary resource. A number of studies have been conducted in several countries to assess medical students' knowledge and attitudes about HIV/AIDS. However, to the authors' knowledge, this is the first study to include Libyan university students at the final year of the faculties of medical sciences.

## **9. Study to assess HIV/AIDS awareness among medical sciences university students**

Research should play an important part in the prevention and control of HIV/AIDS. Information on the size of the problem, infectivity, aetiology and behavioral determinants have to be gathered first. Evidence based planning, as well as, appropriate assessment and monitoring of the conducted programs and activities are crucial for fruitful actions.

### **9.1 Aim**

The aim of this study was to assess the knowledge and attitudes of final year medical sciences university students on HIV and AIDS at the University of Zawia, Zawia, Libya.

### **9.2 Objectives**

The study was designed to assess the current knowledge of final year undergraduate university students regarding various aspects of HIV and AIDS. These include general knowledge about the virus and the disease, and routes of transmission of the virus. It was

also to assess attitudes towards prevention and treatment. It was to identify differences in knowledge and attitudes by gender and by different medical sciences faculties; medicine, pharmacy, dentistry and medical technology. The study was also designed to identify areas of misconceptions, gaps in knowledge and discussion, as well as, conclusions and recommendations on the basis of outcomes.

### 9.3 Methods

Study ethical approval was obtained from the local Scientific Committee, at the Faculty of Pharmacy, University of Zawia, Zawia, Libya, on March 2010. A WHO approved, pre-tested and previously utilized standard closed-end questionnaire was used. The questionnaire included 39 statements, divided to three parts. These are general knowledge about HIV/AIDS, knowledge on the routes of transmission and attitudes towards prevention and treatment. The questionnaire was piloted for feedback and validation. Simple random sampling method was applied to recruit 400 final year (BSc) university students, 100 from each faculty. These are faculties of medicine, pharmacy, dentistry and medical technology. The targeted participants were requested to tick their gender and to tick one of the given choices in front of each statement; 'Yes', 'No' or 'I don't know'. Then, only the response of the correct answer was considered. The answer 'I don't know' was considered as a wrong answer. The questionnaire was self administered by the participants colleagues, within their regular university classes, during May 2010. Study objectives and method were explained to each. Verbal consent was obtained accordingly. Validity and reliability of attitude measuring questions were found satisfactory. Questionnaires were answered anonymously and confidentiality was assured. Fifteen minutes were given to each participant to complete the questionnaires.

### 9.4 Statistical analysis

All data were statistically described and analyzed with the statistical package for social sciences (SPSS) for windows, version 13.0. Data obtained were evaluated by frequency and percentage of responses of correct answers, and *t*-test was used to find the difference at *p* value < 0.05.

### 9.5 Results

The 100 handed over questionnaires in each faculty were completed and returned. Total returned questionnaires were 400. Males represented 16.75% of all study participants; 23% at the faculty of medicine, 12% at the faculty of pharmacy, 16% at the faculty of dentistry and 16% at the faculty of medical technology. Percentage of responses of correct answers in all faculties participants was 74.21%. Percentages of responses of correct answers were 72.1%, 69.2%, 75.8% and 74.6% in the faculties of medicine, pharmacy, dentistry and medical technology respectively. Comparison of responses to groups of statements according to faculties is given in Table 1. Percentages of responses of correct answers of students of the four faculties to all given statements are shown in Table 2. Responses comparison (in terms of Mean  $\pm$ SD & range in parenthesis), among the four studied faculties, is presented in Table 3.

## 10. Discussion

Several studies and surveys, in different parts around the globe, have attempted to assess knowledge and attitudes related to HIV/AIDS among university students. To the authors'

knowledge, this study was the first one in Libya to assess those of final year medical sciences students. Self administration of the questionnaire led to 100% response rate. Gender participation was representative of the faculties composition. The study revealed several interesting findings. All study participants (100%), in the four studied faculties, had heard of AIDS. Most (94%) believed that they are aware about the causative agent of AIDS and almost all (98%) indicated that they are aware how HIV is transmitted. However, they demonstrated lower level of deeper knowledge on routes of virus transmission. Moreover, only 58.8% of the participants indicated that they have enough knowledge about AIDS. Percentages of responses of correct answers of students of the different faculties have varied greatly, from 8% to 99%. Mean percentage of responses of correct answers in all faculties participants is 74%. For instance, within responses to statements related to general knowledge, only 13% of the study participants indicated that HIV infected person becomes a source of infection after some period of time from getting the infection. Moreover, only about a third believed that primary symptoms of AIDS do not necessarily occur immediately after infection with HIV. On the other hand, 96% knew that it is possible that any ordinary person can get HIV infection from someone who is infected, while more than 17% did not think that someone who looks healthy but is HIV infected may infect others.

Similar university students assessment studies that were conducted in several countries around the world showed similar results. These studies demonstrated lack of good knowledge on various aspects of HIV/AIDS and revealed the presence of apparent unease or lack of positive attitudes (Al-Owaish et al., 1999; Ahmed et al., 2009; Albrektsson et al., 2009). Kore and others (2004) found that knowledge and awareness about HIV/AIDS among university students is grossly inadequate. On the other hand, some studies found that most students have a relatively good knowledge, with positive attitudes, but with some misconceptions and risky behaviors (Svenson et al., 1997; Tan et al., 2007). Another study showed satisfactory findings, despite some disappointing facts on basic knowledge (Al-Jabri & Al-Jabri, 2003). Only 6% of the students, of Al-Jabri study, either thought that AIDS is not caused by HIV or they did not know. Most of the respondents to that study showed a moderate knowledge regarding the routes of HIV transmission. The earlier United Nations General Assembly Special Session (UNGASS) Libya Progress Report 2010 (UNAIDS, 2010) showed that 87% of Libyan students, aged 15-25 years, stated that they knew what HIV and AIDS are. Furthermore, Greenlee and Ridley (1993) found that only 61% of university students knew that HIV infected individuals do not necessarily look sick.

In this current study, there was an uneven knowledge in the subcategories of routes of transmission of the virus. As high as 69% of the targeted students believed that mosquitoes are vectors of HIV and more than half of the students thought that it is risky to share swimming pools or toilets with infected people respectively. This might be due to the controversy of some of these modes of transmission and the lack of solid scientific evidence around some of them. Furthermore, almost all study participants pointed out that HIV is sexually transmitted, while only 92% agreed that homosexuality can lead to virus transmission. Almost all (98%) assumed that sharing drugs needles with an infected person represents a source of infection. On the other hand, 96% and about 90% knew that the virus can be transmitted by sharing razor blades or toothbrushes with an infected person respectively. Receiving blood from an infected person was seen by 97% as a possible source of infection. However, some of the studied students lacked knowledge regarding the relationship between sharing clothes, plates or cups with infected people and increased HIV transmission, at which about a quarter of them thought that the virus can be transmitted through these ways of sharing.

Group of statements	Faculty of Medicine	Faculty of Pharmacy	Faculty of Dentistry	Faculty of Medical Technology
1. General knowledge	68.8 $\pm$ 31.5 (11-100)	66.1 $\pm$ 32.1 (12-100)	69.2 $\pm$ 29.5 (15-100)	70.7 $\pm$ 28.4 (8-100)
2. Routes of transmission	83.2 $\pm$ 16.9 (40-100)	77.9 $\pm$ 23.0 (25-100)	81.5 $\pm$ 21.5 (32-100)	83.1 $\pm$ 20.2 (29-100)
3. Prevention and treatment	63.6 $\pm$ 22.4 (40-88)	52.3 $\pm$ 23.1 (31-92)	53.1 $\pm$ 20.4 (37-89)	57.0 $\pm$ 20.3 (35-86)

Data presented as Mean  $\pm$ SD, range in parenthesis.

No statistical difference was found between groups.

Table 1. Comparison of responses to groups of statements according to faculties.

Statements	All	Faculty of Medicine	Faculty of Pharmacy	Faculty of Dentistry	Faculty of Medical Technology
<i>1. General knowledge</i>					
I am aware about AIDS	100.0	100.0	100.0	100.0	100.0
I have enough knowledge about AIDS	58.8	52.0	55.0	60.0	68.0
I know the name of the causative agent for AIDS	94.3	97.0	93.0	91.0	96.0
Primary symptoms of AIDS occur immediately after infection with HIV	30.0	11.0	12.0	22.0	75.0
An HIV infected person can have no symptoms	86.0	86.0	81.0	92.0	85.0
HIV infected persons are expected to die because of the virus infection itself	37.8	38.0	29.0	39.0	31.0
AIDS patients are expected to die because of the disease itself	41.3	37.0	23.0	37.0	36.0
AIDS patients are expected to die because of the disease complications	85.8	88.0	87.0	89.0	79.0
The HIV infected woman is able to become pregnant	89.8	94.0	88.0	86.0	91.0
Someone who looks healthy but is HIV infected may infect others	82.3	84.0	77.0	84.0	84.0
I am aware how HIV is transmitted	98.0	99.0	98.0	99.0	96.0
I know the vulnerable groups of people to HIV	88.0	92.0	90.0	85.0	85.0
It is possible that any ordinary person can get HIV infection	74.8	68.0	76.0	80.0	75.0
It is possible that any ordinary person can get HIV infection from someone who is infected	95.5	99.0	96.0	94.0	93.0
HIV infected person becomes a source of infection immediately after getting the infection	36.3	41.0	39.0	35.0	30.0

Statements	All	Faculty of Medicine	Faculty of Pharmacy	Faculty of Dentistry	Faculty of Medical Technology
HIV infected person becomes a source of infection after some period of time from getting the infection	13.0	15.0	14.0	15.0	8.0
<i>2. Routes of transmission</i>					
The HIV virus can be transmitted by:					
Touching an HIV infected person	82.0	88.0	69.0	82.0	89.0
Sharing plates or cups with an infected person	73.5	74.0	64.0	86.0	70.0
Sharing clothes with an infected person	74.3	76.0	71.0	69.0	81.0
Sharing swimming pools with an infected person	53.8	68.0	49.0	45.0	53.0
Sharing toilets with an infected person	51.3	59.0	41.0	40.0	65.0
Receiving blood from an infected person	96.5	98.0	92.0	98.0	98.0
Sharing medications needles with an infected person	98.5	100.0	95.0	100.0	99.0
Sharing drugs needles with an infected person	98.0	99.0	96.0	100.0	97.0
Sharing razor blades with an infected person	95.8	95.0	97.0	93.0	98.0
Sharing toothbrushes with an infected person	90.3	87.0	90.0	93.0	91.0
Sharing cupping tools with an infected person	95.8	93.0	95.0	97.0	98.0
Sharing circumcision tools with an infected person	94.3	90.0	99.0	96.0	92.0
Being bitten by a mosquito	31.5	40.0	25.0	32.0	29.0
Mother to fetus	93.8	91.0	94.0	95.0	95.0
Mother to breastfed infant	64.8	65.0	61.0	69.0	64.0
Making sex with an infected person	99.5	98.0	100.0	100.0	100.0
Male making sex with an infected male (homosexuality)	91.5	94.0	87.0	91.0	94.0
<i>3. Prevention and treatment</i>					
HIV infected persons should be isolated to avoid virus transmission to others	34.3	46.0	33.0	37.0	35.0
AIDS patients should be isolated to avoid virus transmission to others	33.3	45.0	42.0	38.0	40.0
Ordinary people can avoid the risk of HIV infection by behavior change	88.8	88.0	92.0	89.0	86.0
Ordinary people can avoid the risk of HIV infection by using condoms during sexual intercourse	39.0	40.0	31.0	40.0	45.0
Ordinary people can avoid the risk of HIV infection by using the HIV vaccine	62.5	87.0	51.0	50.0	62.0
It is possible that HIV infected persons can be cured using relevant treatment	70.0	76.0	65.0	65.0	74.0

Table 2. Percentages of responses of correct answers of students of the four faculties to the given statements.

Faculties	Males	Females
<i>1. General knowledge</i>		
<b>Medicine</b>	70.6 $\pm$ 31.3 (13-100) n= 23	68.2 $\pm$ 31.9 (10-100) n= 77
<b>Pharmacy</b>	67.1 $\pm$ 31.5 (8-100) n= 12	66.2 $\pm$ 32.7 (13-100) n= 88
<b>Dentistry</b>	66.4 $\pm$ 36.4 (0-100) n= 16	67.6 $\pm$ 28.6 (13-100) n= 77
<b>Medical Technology</b>	64.9 $\pm$ 36.4 (0-100) n= 16	71.9 $\pm$ 27.1 (10-100) n= 84
<i>2. Routes of transmission</i>		
<b>Medicine</b>	85.2 $\pm$ 15.4 (48-100) n= 23	82.7 $\pm$ 18.1 (34-100) n= 77
<b>Pharmacy</b>	82.8 $\pm$ 18.7 (50-100) n= 12	77.4 $\pm$ 23.9 (22-100) n= 88
<b>Dentistry</b>	82.8 $\pm$ 17.9 (43-100) n= 23	81.5 $\pm$ 27.4 (16-100) n= 77
<b>Medical Technology</b>	73.6 $\pm$ 28.3 (19-100) n= 16	84.3 $\pm$ 19.1* (31-100) n= 84
<i>3. Prevention and treatment</i>		
<b>Medicine</b>	71.2 $\pm$ 9.6 (61-83) n= 23	61.7 $\pm$ 27.7 (31-94) n= 77
<b>Pharmacy</b>	55.5 $\pm$ 15.6 (33-75) n= 12	51.8 $\pm$ 24.6 (27-94) n= 88
<b>Dentistry</b>	55.1 $\pm$ 17.2 (35-83) n= 23	52.6 $\pm$ 21.7 (135-91) n= 77
<b>Medical Technology</b>	52.1 $\pm$ 19.7 (31-88) n= 16	57.8 $\pm$ 20.9 (36-86) n= 84

Data presented as Mean  $\pm$ SD, range in parenthesis.

\*P < 0.05, t =2.5.

Table 3. Gender distribution and comparison of responses to groups of statements.

The present data are consistent with those of other studies (Al-Jabri & Al-Jabri, 2003; Tan et al., 2007; UNAIDS, 2010). UNGASS Libya Progress Report (UNAIDS, 2010) showed that there is a high degree of misconception amongst secondary school Libyan students with regards to modes of transmission and prevention. Only 42% of those previously surveyed students, aged 15-25 years, agreed that HIV can be transmitted through use of public toilets, while 31% stated that HIV infection can be transmitted by getting near to an HIV-infected individual while sneezing or coughing and 30% stated that HIV can be transmitted by looking after an HIV-infected individual (UNAIDS, 2010). Tan and colleagues (2007) demonstrated that most university students were also aware that HIV can be transmitted by unsafe sex (99%), by sharing needles with infected drug users (98%), or by receiving blood from an infected person (97%). However, only 90% agreed that swimming pools do not transmit the virus, and only 40% understood that mosquito does not carry risk. University students that were studied by Al-Jabri and Al-Jabri (2003) showed that they very strongly agreed that sex (98%) and drug needles (99%) are modes of virus transmission. However, 19% thought a person may get HIV by a mosquito bite and 46% believed that blood donation leads to a risk of infection.

In this present study, although about 90% thought that ordinary people can avoid the risk of HIV infection by behavior modification, a large proportion of the students had poor attitudes. Only 39% of them believed that condom use during sexual intercourse is essential for the prevention of HIV transmission. Furthermore, results revealed that there is a high level of stigma among the students towards HIV infected individuals. About two thirds agreed that isolation of HIV positive or AIDS patients is necessary to achieve protection. Negative attitudes regarding prevention misconceptions of HIV/AIDS reflect a false perception of the disease among these university students. On the other hand, the authors of this study see it is disappointing that about a third of the studied medical sciences university students thought that there is a vaccine to protect from the risk of HIV infection (37.5%) or that it is possible to cure an HIV infected person (30%).

These findings on university students attitudes towards HIV/AIDS are in line with those found by other researchers (Al-Jabri & Al-Jabri, 2003; Kore et al., 2004; Tan et al., 2007; Ahmed et al., 2009; Albrektsson et al., 2009; UNAIDS, 2010). For instance, an earlier study revealed that 61% of the Libyan students strongly agreed or agreed that HIV infected individuals are dangerous and believed that they should be banned from entering into the country (UNAIDS, 2010). Moreover, about one third of Omani students believed that HIV infected individuals should be separated from others, and nearly a quarter of them thought that AIDS patients should always kept at hospitals, not at home (Al-Jabri & Al-Jabri, 2003).

This is probably because the conservative school education was not able to cover certain sensitive issues around HIV/AIDS. Moreover, mass media education could not be thorough enough and was not able to cover such issues. In addition, the coverage of such content in public remains low. The UNAIDS Report (2010) demonstrated that there is a lot of cultural sensitivity associated with the issue. There is a probable difficulty, even in permissive Western societies, to discuss sensitive issues related to HIV prevention, such as the importance of use of condoms, with the adolescents in schools. Hence, some specialists in the field call for a more liberal ideology can be promoted. Teachers and social workers require greater skills in tackling such sensitive issue areas, and as such students are may not be receiving the information that they need.

In this study, in general, there were no statistically significant differences, neither by faculty nor by gender, regarding the groups of statements of HIV/AIDS general knowledge, routes of transmission, or prevention and treatment. A small significant difference was found between males and females of the faculty of medical technology in respect to the group of statements related to the routes of transmission. Ahmed and colleagues' similar university students study (2009) revealed similar findings. However, other studies demonstrated some significant gender differences; some favored males and others favored females. For example, one study showed that only 36% of males have comprehensive knowledge about HIV/AIDS, whereas only 20% of females do so (IIPS & ORC Macro, 2008). On the other hand, Kore and others' study (2004) pointed out that 53% males and 62.0% females knew that AIDS is an infective communicable disease. The aetiology of AIDS, being the HIV virus was known by 55% male and 69% female students. Moreover, 18% and 13% male and female university students respectively thought that HIV is a bacteria (Kore et al., 2004). Albrektsson and colleagues (2009) have also found that female students had better knowledge than male students.

Being medical sciences university final year students, responses of this study participants are assessed by the study authors as unsatisfactory. Many of them do not have a good level of understanding and attitudes towards HIV/AIDS. Similarly, much research from around the world has demonstrated gaps in health care students knowledge about HIV transmission and patients' treatment. Moreover, some medical sciences university students hold negative attitudes and risk perceptions that could become barriers in their eventual professional care of HIV/AIDS patients (Ahmed et al., 2009). It can be argued that medical schools disease orient their students, and at the best, they risk-factor orient their students. They concentrate on clinical sciences and conduct their training programs on the various branches of curative medical services, at university hospitals. Many of the medical schools around the globe prepare doctors not to care for the health of the people or to promote the individual's or the community's health. They engage them in a medical practice that is blind to any thing but disease and the technology for dealing with it. Therefore, students get less orientation towards health promotion, health protection and disease protection.

On the other hand, other researchers (Al-Jabri & Al-Jabri, 2003; Tan et al., 2007; Gopal et al., 2010) revealed that medical faculties' students acquired more accurate and complete information regarding HIV/AIDS, compared with students from other faculties including science. In fact, health professionals, in general, are at high occupational risk for contracting HIV, since they have a high exposure to HIV and AIDS patients. Therefore, health care students need to stay knowledgeable and aware of all relevant issues around HIV and AIDS and must receive an improved HIV/AIDS training. However, education against HIV/AIDS is not only required for medical and paramedical students, but also to a large extent, for all university level students, in addition to the basic education to those in the primary and secondary levels.

Findings of this study highlight the need for immediate general public education actions, within a wide comprehensive strategy. At which, if HIV/AIDS awareness is left unaddressed can permit the virus to spread considerably in the coming years. The most effective and efficient way to combat HIV/AIDS is through interventions for information, education and communication that target most at-risk populations and groups. Emphasis is

to be made on children and youth. Schools and universities represent the most critical setting.

Several studies stressed that there is an immense need to conduct awareness programs about HIV/AIDS at schools and universities (Svenson et al., 1997; IUHPE, 1999; Al-Jabri & Al-Jabri, 2003; Kore et al., 2004; Elfituri et al., 2006). These have to be extended beyond formal education to reach teachers and parents. A previous Libyan study demonstrated that the general public ranked education against HIV/AIDS as one of top three priority issues of the national health education programs (Elfituri et al., 2006). The general public and the health officials agreed that children and youth represent the vital groups to be targeted and that schools and universities are the appropriate settings. Moreover, many HIV/AIDS educational interventions in different parts of the world have shown promising outcomes (Becker & Maiman, 1975; Hingson et al., 1990; Svenson & Varnhagen, 1990; Svenson et al., 1997; UNAIDS, 2008; Ahmed et al., 2009).

Prevention efforts, around most nations, including Libya, have been geared to providing accurate knowledge on HIV/AIDS through the school based health education system. However, similar to several other populations, only about half of the Libyans considered school health education as an effective medium of health education to raise the public health knowledge and to influence healthy behaviors (Elfituri et al., 1999). Furthermore, only one third of Chinese university students have received their first information on HIV/AIDS from schools (Tan et al., 2007), while more than 75% of them received information at university (Albrektsson et al., 2009). Moreover, the school and university settings were not the main sources of information for the Indian students (Kore et al., 2004).

## 11. Summary, conclusions and recommendations

Several studies to assess knowledge and attitudes of university students towards HIV/AIDS were conducted in different countries around the world. This current study was the first one to assess knowledge and awareness of final year medical sciences students. Participants were final year students from the faculties of medicine, pharmacy, dentistry and medical technology.

The study revealed several interesting findings. Although every student participated in the study believed that he/she is aware about what HIV/AIDS mean, only 94% of the students thought that they know what agent that causes AIDS. Study results indicated that the majority of the students had a moderate level of HIV/AIDS knowledge and of its routes of transmission. 98% believed that they know how HIV is transmitted. Only 59% of the participants indicated that they have enough knowledge about AIDS. Percentages of responses of correct answers of students of the different faculties have varied greatly. Only 13% of the study participants indicated that HIV infected person becomes a source of infection after some period of time from getting the infection. Moreover, only about a third believed that primary symptoms of AIDS do not necessarily occur immediately after infection with HIV. On the other hand, 96% knew that it is possible that any ordinary person can get HIV infection from someone who is infected, while more than 17% did not think that someone who looks healthy but is HIV infected may infect others.

This study demonstrated that there was an uneven knowledge in the subcategories of routes of transmission of the virus. As high as 69% of the targeted students believed that

mosquitoes are vectors of HIV and more than half of the students thought that it is risky to share swimming pools or toilets with infected people. Furthermore, some of the studied students lacked knowledge about the relationship between sharing clothes, plates or cups with infected people and increased HIV transmission, at which about a quarter of them thought that the virus can be transmitted through these ways of sharing.

Although 89% thought that ordinary people can avoid the risk of HIV infection by behavior modification, a large proportion of the students had negative attitudes. Only 39% of them believed that condom use during sexual intercourse is essential for the prevention of HIV transmission. Furthermore, about two thirds agreed that isolation of HIV positive or AIDS patients is necessary to achieve protection. Negative attitudes regarding prevention misconceptions of HIV/AIDS reflect misconceptions about the virus and disease among these university students.

This study showed that participants' awareness and attitudes on HIV/AIDS are not satisfactory, especially for final year medical sciences university students. General public education, with a focus on the adolescents, should represent a fundamental role of the national, regional and international HIV/AIDS control programs. Schools and universities are strongly recommended to be the priority setting. Peer education programs are suggested to be utilized, as they demonstrated success worldwide. Moreover, it is important to build learning experiences into students' active participation programs at all levels. In this way, students will be able to understand more about the different factors that influence their health and how to be safe from all sexually transmitted diseases, including HIV/AIDS. Furthermore, university students have a vital role in the community prevention and control of HIV/AIDS, at which, social changes are commanded and transmitted from schools.

Educational interventions, in addition to providing HIV/AIDS prevention knowledge, have to emphasize on students' empowerment and motivation. It is important to use students-centered approaches that develop a critical awareness of the situation and empower the students to work together for their personal, family and community improved awareness and behavior change. Development of appropriate skills for behavior modification should be included. Ensuring the greatest success involves a multifaceted and coordinated effort.

At the education settings, group techniques offer an intermediate approach between the one-to-one interaction and the wider community or mass media communications. As the required HIV prevention behavioral modification is complex, experiential group learning can be performed. The didactic approach can then be utilized. It includes content knowledge, lecturing skills and the ability to answer questions clearly. The didactic approach generally is individualistic and can be directed at groups to bring about such individual and community behavior change.

Finally, individuals' knowledge, attitudes and behaviors change over time. Therefore, repeated surveys and evaluation studies of the effectiveness of educational interventions by monitoring changes in health knowledge, attitudes and behaviors are necessary. Then, health education, disease prevention and health promotion should be planned, implemented and continuously evaluated and updated to meet the changes and developments.

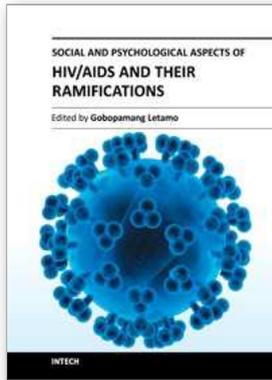
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## **Social and Psychological Aspects of HIV/AIDS and their Ramifications**

Edited by Prof. Gobopamang Letamo

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This book has assembled an array of chapters on the social and psychosocial aspects of HIV/AIDS and their impact on HIV/AIDS and related behaviours. The book addresses key areas of HIV and AIDS, including, but not in any way limited to, care-seeking behaviour, adherence, access, psychosocial needs and support services, discrimination and the impact the epidemic has on various sectors of the economy. The book has seventeen chapters; seven chapters deal with social aspects of HIV/AIDS, four with psychosocial aspects of HIV/AIDS, and the remaining six chapters with the impact of social and psychosocial factors on HIV/AIDS and related behaviours. The book is an essential reading for academics, students and other people interested in the field of HIV and AIDS.

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