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THE LEVEL OF KNOWLEDGE OF SECONDARY SCHOOL STUDENTS IN PENANG ABOUT HIV/AIDS: PRE AND POST INTERVENTION

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ABSTRACT

HIV and AIDS is no stranger to the world population where more than 70 million people have been infected with HIV (World Health Organization, 2016). HIV/AIDS education for young people plays an important role in ending the AIDS epidemic globally. It is reported that Malaysians are still lacking of knowledge about HIV/AIDS, especially the cause of HIV and AIDS. The Ministry of Health Malaysia (2017) has reported that nearly 85% of HIV infections in 2016 are due to sexual activity. For the year 2016, there were 103 cases of new HIV/AIDS infections involving the age of 13 years - 19 years (Ministry of Health Malaysia, 2017) were reported. This quantitative study involved 600 students aged 15 years old, 16 years old and 17 years old in Penang. Study respondents have participated in three sessions of data collection phases, involving pre-test phase, intervention phase and post-test phase. Data collected was analyzed using SPSS 22.0 software. The study findings have indicated that the hypothesis test for knowledge has shown some changes in the level of knowledge of the respondents after receiving information on HIV/AIDS ($t = -46.561$, sig. <0.05 and post knowledge's mean was 13.813 is higher than pre knowledge's mean, 8.715). The study findings concluded that there is a strong need to have an informative and interacting Module on HIV/AIDS to be used in secondary schools in Malaysia as a form of intervention. This is to ensure that adolescents able to acquire basic and sufficient knowledge about HIV/AIDS.

Contribution/ Originality: This study documents serves as an assessment of the need for the Malaysian government to consider and design more programs, motivations and scientific materials on HIV/AIDS. Malaysia should emphasize the dissemination of information on HIV/AIDS knowledge, sex education, and risk behaviors to adolescents as they are the future assets of the nation.

1. INTRODUCTION

1.1. HIV/AIDS Education

The first case of HIV in Malaysia was detected in 1986. As of December 2009, after more than 20 years of the HIV epidemic in Malaysia, the country has recorded 87,710 people with HIV. Since the first case in 1986, Malaysia

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has now been classified by the World Health Organization (WHO) as having an increasing HIV epidemic, initially driven largely by drug injection partnerships, but is now experiencing one-third of new sexually transmitted infections (UNGASS, 2010). Statistics from the National Anti Drugs Agency, Ministry of Home Affairs on drug information 2013, reported that drug users increased from the previous year, of which 20,887 people compared to just 15,101 in 2012. The State of Penang still maintains the highest number of drug statistics in Malaysia.

Education is an effective measure to prevent the spread of HIV/AIDS. Basic education on HIV/AIDS is important as it can make a person, especially children and teens with the ability to make the right and healthy choices about their way of life for long-term effects. According to The World Bank (2002) school-based prevention programs are one of the effective approaches to providing HIV/AIDS education to children and adolescents. Health programs on HIV/AIDS knowledge should start beginning of primary education to educate students on the consequences before engaging in any form of sexual activity.

Therefore, The World Bank in partnership with the United Nations Educational, Scientific and Cultural Organization, World Bank, United Nations Children's Fund and others have developed a framework, known as "Focusing Resources on Effective School Health (FRESH)", aims to focus on healthy school resources effectively. This is to ensure that there is an approach for a more healthy school environment, where HIV/AIDS education is one of the elements in the framework. In addition, Boler *et al.* (2003) argues that HIV/AIDS education needs to be widely applied to the community and various creative ways and innovations should be made in order to have a positive impact on school. They also think that by using textbooks is not a good approach to HIV/AIDS knowledge. HIV/AIDS education at schools is a low-cost precautionary measure and easy to achieve. This is because the school system brings together students, teachers, parents, and communities together, and HIV/AIDS prevention through education is achieved.

Based on the Report of the Commission on AIDS Inflation (2013) In Indonesia, adolescents still have low knowledge of HIV, which is under 20%. Edward and Kim (2006) stated that HIV/AIDS education in Indonesia cannot run with the issue of sexuality. Early HIV/AIDS education for teenagers and children is imperative, but in Indonesia it is a constraint as it relates to the issue of sexuality and difficult for the general public to accept. Providing HIV and AIDS prevention education to qualified generations, however is a priority for the process of educational reform globally, including in Indonesia (UNESCO, 2009).

In Malaysia, HIV/AIDS education has received attention from 1992, when the Malaysian Ministry of Education has announced to introduce the Family Health Education at secondary schools throughout Malaysia. AIDS education is one of the components included in Family Health Education (UNICEF, 2007). However, it is only a small component that is not so given as the primary. Datin Paduka Marina Mahathir who is a former member of the Malaysian AIDS Movement and community activists believes that comprehensive HIV/AIDS education needs to be introduced in schools to provide HIV/ AIDS knowledge to youth and control HIV/AIDS epidemic transmission (Astro, 2014).

1.2. Knowledge of HIV/AIDS among Adolescents

According to Notoatmodjo (2007) knowledge is the result of information and it occurs when a person has understood something about the subject. This means individual who has first known something that has been understood through a process of seeking, observing, reading and original thinking, which then becomes the knowledge to the individual. In the context of this study, it can be explained by stating that if a teenager who has knowledge of HIV/AIDS is a teenager who has understood from the adolescent observations through reading, seeing and hearing previous information, and afterwards rethinking how teenagers act and behave in order to avoid the danger of HIV/AIDS.

Adolescence is a great period of physical, emotional and social change. Adolescents face many challenges in finding new identities. They are often burdened with peer pressure experiencing unsaved sexual behavior and

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injecting injections both are easy to cause an outbreak of HIV. Prevention is a key element in AIDS control, mid-juvenile adolescence with knowledge related to HIV, whose risk factors and preventive measures are large. However, it is impossible to establish a memorable education program without knowing the available knowledge, attitudes and behavior of the target population. Some studies undertaken in selecting target populations in Malaysia have assessed HIV/AIDS knowledge and attitudes of specific groups such as adolescents in terms of knowledge, attitudes and beliefs related to HIV/AIDS among adolescents in Malaysia (Zulkifli and Wong, 2002).

Several studies have shown that knowledge about AIDS-related children increases with age (Brown *et al.*, 1990; McElreath and Roberts, 1992; Sigelman *et al.*, 1993). However, other studies have shown that the understanding of AIDS children varies. For example, Fassler and McQueen (1990) find that six to twelve years of age have some misunderstandings about how AIDS transmission. Brown *et al.* (1990) assume that the differences among age groups are due to the concrete understanding of children against AIDS knowledge is not deep.

As stated in the previous study by Boer and Emons (2004); Castle (2004) misconceptions that HIV is transmitted through family gene relationships has greatly influenced the attitude of children about HIV/AIDS. Therefore, children are thinking about how the spread of HIV and most of them have a misconception about the risk of HIV infection through family relationship. This misunderstanding has increased their sympathy for HIV infection and, as discussed above, leads them to believe that if parents are positive - HIV, children are also infected with HIV, which causes negative attitudes towards children who are children of people living with HIV/AIDS.

The impression of lack of knowledge and misunderstanding exists, these children should not only have to live with HIV /AIDS but their lives will be depressed and unprepared due to the perception and stigma of society towards them. This is seen as a criminal case against children as it indirectly denies the rights of the child to obtain a normal life as outlined in individual constitutional rights. In addition, there is a negative impact on the economy. This is because when the child's family is unable to work due to

HIV/AIDS-related health problems. Then, the family has lost the source of income which is at one stage, these children are forced to work to earn a living for their families for their survival. According to Wiener *et al.* (1996) children aged between 12 and 15 years and who begin to understand the reality of life tend to be bored with the routine of treatment they are forced to live and they will feel free to run life like other children.

2. METHODOLOGY

2.1. Research Methodology

This quantitative research allows researchers to analyze the level of knowledge of school students in Penang on HIV/AIDS, the knowledge before and after the intervention of the use of the HIV/AIDS module. Quantitative research is a type of educational research where researchers decide what to look for, ask specific questions, diminish the scope of the question, collect data that can be quantitative from participants and analyze those numbers using statistics (Creswell, 2008). In addition, the study according to Chua (2011) quantitative has to do with numerical and precision. It is an experimental and statistical test conducted on numerical data obtained.

2.2. Population and Sample

In this study, samples are among the secondary school students categorized as middle-aged 15 year old, 16 year old and 17 year old in ten schools in Penang. The population of the study consists of two (2) schools for each district in Penang. The Penang state has five administrative districts, namely the North-East district (*daerah Timur Laut*) and South-West district (*daerah Barat Daya*) on Penang Island; and the Northern Seberang Perai district (*daerah Seberang Perai Utara*), Central Seberang Perai district (*daerah Seberang Perai Tengah)* and Southern Seberang Perai district (*daerah Seberang Perai Selatan*) in Seberang Perai. Please refer to Map 1.

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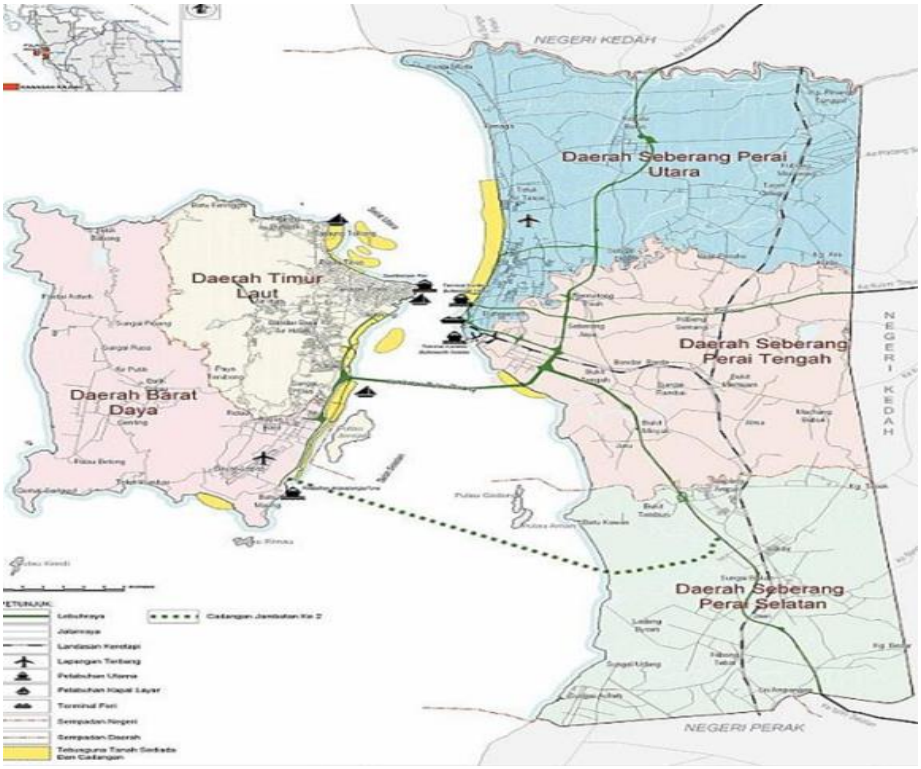

Map-1. The state of Penang — the study area

Source: Department of Town and Country Planning

School selection is based on the Penang State Department of Education in accordance with the focus of the study. The selection of all these schools is based on the level of school excellence from each district based on the initial discussion with the Penang Department of Education. The measurement of an excellence school is based on the band's system, which is the result of the composite score achieved by the school. The score of this Composite Score is the total score of the Malaysian Quality of Education (SKPM) with Average School Grade (GPS). School band 1 or band 2 can be defined as excellent and band 6 or band 7 which is unsatisfactory. For each district, two schools have been chosen which are an excellent school and non-perform schools.

Sample size for this study is using Krecjie and Morgan formula, 1970. The total population of 10 schools involved in this study was 6,250 students. Based on this formula, based on the 99% confidence level the sample size required in this study is 600 people. The sample selection based on the population of the study was sufficient compared to the overall population (Gall *et al*., 2005).

2.3. Research Design

The research design used by researchers in this study is action research. Action research is based on a situation that is diagnosing a stage - the diagnostic stage in which problems are studied and form hypotheses, and therapeutic levels to test hypotheses. In this study, the initial stage of the study was that the level of knowledge of school children between 15, 16 and 17 years old at Penang schools was tested, and then the appropriate module was used to test their effectiveness in strengthening the knowledge of HIV/AIDS.

In addition, secondary data is also used by researchers. According to Marican (2006) primary data means the original data collected to answer question questions through observation and interviews conducted on respondents. Meanwhile, secondary data is obtained through the data collected by other researchers and its use is adapted to the question of the study to be studied (Marican, 2006). In this study, researchers use secondary data from various sources such as ministries, speeches, academic books, research abstracts, articles, journals, statistical reports and governmental and non-governmental statistics reports. All forms of data are used to suit the context and objectives of this study.

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2.4. Research Instrument

The research instrument for this research is survey questionnaire that was modified version of the University of New York, Buffalo School of Nursing Research by Held. Permission was obtained to use the questionnaire and be translated into Bahasa Malaysia.

AIDS Study Questionnaire by Dr. Sharon Held is a complete questionnaire and meets the themes in this study of knowledge, perception and public behavior on HIV/AIDS issues. The first part of the questionnaire emphasizes on respondents' backgrounds which include respondents' sex, age, race or Malay, Chinese, Indian or others. The second part, statements 1 through 19 in the questionnaire were intended to measure the level of general knowledge of HIV/AIDS among students, the correct choice (1), false (2), and uncertain (3) would also be included.

This study includes pre-test and post-test. This instrument was administered to measure the level of knowledge and awareness of middle-aged adolescent towards HIV/AIDS. The respondents were then be given intervention based on the module develop to educate the students with the necessary knowledge about HIV and AIDS. The post-test was then conducted using the same set of questionnaires to test the effectiveness of the module, in order to measure if there are any changes in the respondents' knowledge about HIV/AIDS.

2.5. Pilot Test

A pilot study was conducted by researchers. Sekaran (2005) states that the value of reliability less than 0.60 is considered low and unacceptable. Based on this explanation, the researchers used the Cronbach Alpha value to determine the reliability of the questionnaire and found that the value for this study was 0.744. This is to ensure that the translated questionnaire is understandable, does not create confusion for respondents as well as any deficiencies can be improved for actual studies. Respondents selected for this pilot study were adolescents aged between 15 - 17 years old. Twenty-five respondents were involved in this pilot study comprised ten Malays, nine Chinese and six Indians and they were also secondary school students in Sungai Petani, Kedah. These respondents were excluded in the actual research.

2.6. Collecting Data Procedures

Firstly, the researchers have obtained permission from the Ministry of Education, from the Research and Policy Planning Division to conduct studies at the school. Upon obtaining permission from the Ministry of Education Malaysia, the researcher then contacted the Penang State Education Department to obtain permission to conduct studies at Penang schools.

The researchers gathered the respondents involved and provide a briefing on this study to respondents. This is the first step in which respondents are required to answer a questionnaire using existing knowledge of HIV/AIDS. Respondents are not required to record their names for confidentiality purposes, instead they were given codes to be written and matched for pre-test and post-test. The average time taken by respondents to answer this pre-test questionnaire is 30 minutes.

After a break for 10 minutes, respondents were presented with HIV/AIDS education using the developed module by the researcher. Respondents were exposed with the correct information about HIV/AIDS. The time taken for this second session is for 45-60 minutes. After completing this second session, respondents were given a 10-minute break. Finally, the third session takes place where respondents are reassigned to the same questionnaire as the first session to test the effectiveness of the modules used. This is to obtain information relating to the level of knowledge of the students.

2.7. Data Analysis

This study applies quantitative data analysis. For the data obtained from the questionnaire, it was analyzed using Statistical Packages for Social Science (SPSS) Version 22.0 with descriptive and inferential statistical

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techniques. In this analysis, the paired-samples t-test, the Analysis of Variance (ANOVA) test, spearman correlation and regression were applied.

2.8. Findings

From the frequency distribution of this study, for pre-test, the number of respondents' scores was between 3 (lowest score) to 14 (highest score). While for the post-test, the overall scores are between 7 (lowest score) to 17 (highest score). Based on Table 1, there is an increase in terms of marking for knowledge before and after interventions. For item 1, 76% responded correctly during pre-test, and increased to 98.7% for post-test. For item 2, the score for pre-test is 60.8% for those who has answered correctly and this has increased to 99.3% for post-test. Item 3, recorded 75.7% of respondents answered correctly during pre-test while this value increased to 91.8% for post-test.

Subsequently, item 4, for pre-test of 11.3% alone has been answered correctly and this has increased to 63.8% for post-test. Item 5, up to 76% of respondents answered correctly during pre-test, and increased to 98.7% during post-test. Subsequently, item 6, for pre-test of 81.3% has been answered correctly and this increased to 97.2% for post-test. For item 7, 86.2% responded correctly during pre-test while it increased to 93.5% during post-test. Subsequently, for item 8, the result for pre-test of 45.5% has answered correctly and this increased to 66.8% for post-test.

Table-1. Percentage score for pre-test and post-test

Item no.	Item	Pre-test (%)	Post-test (%)
1	AIDS is a disease that attacks the human immune system	76.0	98.7
2	No cure for AIDS.	60.8	99.3
3	High risk individuals with HIV infection include drug addicts, those who practice unprotected sex and sex workers.	75.7	91.8
4	HIV-positive antibody tests mean that the person has AIDS.	11.3	63.8
5	HIV is found in high concentrations in saliva, tears and urine.	17.5	65.0
6	AIDS is a fatal disease.	81.3	97.2
7	People can get HIV through needle sharing with drug users who have AIDS.	86.2	93.5
8	All homosexuals have HIV.	45.5	66.8
9	Risk of HIV infection increases because of the number of sexual partners increases by.	62.0	96.0
10	Individuals can infect others with HIV without painless themselves.	43.0	49.3
11	HIV can be transmitted through blood.	79.0	90.5
12	HIV can be transmitted by contact with people with this disease.	43.2	81.3
13	Use of condoms in sex can reduce HIV transmission.	4.7	7.5
14	The need for isolation is required for HIV/AIDS patients at hospitals.	12.3	18.8
15	Individuals hospitalized for treatment of HIV or AIDS should use proper blood and body fluids.	55.8	85.0
16	Pregnant women who are taking precautionary measures remain at risk of contracting HIV/AIDS.	57.0	80.0
17	There is strong evidence that the HIV virus cannot be transmitted to the unborn baby.	27.8	67.8
18	Eye protection should be worn if the risk for blood or body fluid is worn on the eyes of others.	13.7	67.2
19	It is important to use protective gloves such as gloves, mouthpieces and face to interact with people living with HIV/AIDS.	19.3	61.7

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Furthermore, item 9, for pre-test of 62.0% has been answered correctly and this increased to 96.0% for post-test. For item 10, 43.0% responded correctly during pre-test while it increased to 49.3% for post-test. Item 11, for pre-test of 79.0% has been answered correctly and this increased to 90.5% for post-test. Item 12, of which 43.2% were correctly answered during pre-test while it increased to 81.3% for post-test. Item 13, for pre-test 4.7% alone was answered correctly and this increased to 7.5% after intervention was given.

Furthermore, item 14, for pre-test of 12.2%, have been answered correctly and this increased to 18.8% for post-test. For item 15, 55.8% responded correctly during pre-test while it increased to 85.0% for post-test. Item 16, for pre-test of 57.0% has been answered correctly and this increased to 80.0% for post-test. Item 17, 27.8% responded correctly during pre-test while it increased to 67.8% for post-test. Item 18, for pre-test only 13.7% was answered correctly and this increased to 67.2% after intervention was given. Item 19, a pre-test of 19.3% responded correctly and 61.7% correctly answered for post-test. Overall, respondents' marking before and after the intervention is increased.

For the hypothesis in this study, the researchers conducted a paired test on the findings of the respondents' knowledge score prior to the intervention and respondents' knowledge score after the intervention. The hypothesis in this study is: Hypothesis null (H.) - There is no changes in respondents' knowledge level after receiving HIV/AIDS related information and alternative hypotheses (H_1) - There is a change in respondents' knowledge level after receiving HIV/AIDS-related information. It was found that, $t = -46.561$ and sig. <0.05, then the mean difference between the two types of tests, pre and post-test for knowledge level is significant. Furthermore, mean for the post-test knowledge (13.813) is higher than the pre-test knowledge mean (8.715), it can be concluded that post-marks are higher than pre-. Therefore, the null hypothesis was rejected and alternative hypotheses were accepted as there was a change in the level of knowledge of the respondents after being given an intervention module on HIV/AIDS.

3. DISCUSSION

Overall, knowledge about HIV/AIDS has increased compared to pre and post-test. In terms of knowledge, one of the items with regards to statement about AIDS is a type of disease that attacks the human immune system, a total of 76% have responded correctly during pre-test and further has increased to 98.7% for post-test. In a study carried out by Ebot (2009) it also found similar results, in which there is an increase in the percentage of respondents who answered correctly.

As stated by Notoatmodjo (2007) knowledge is the result of information and it will occur when the individual has understood something about it so knowledge has been found. This means that when the HIV/AIDS module intervention is used in this study, information on HIV/AIDS has been communicated to the target groups, with this, understanding of HIV/AIDS can be increased. Furthermore, the results of this study also show that before the intervention was conducted, there were 56.8% of respondents who answered yes, HIV could be infectious by contact with people with this disease. The results of this study are also in line with the study conducted by Wong *et al.* (2008) titled "Knowledge of HIV/AIDS among adolescents in Malaysia" shows that the majority of respondents of the study have the right knowledge such as the spread of HIV/AIDS through needle injection and through unprotected sex. However, there are still teenagers who still think mosquito bites, sharing touch food and using the swimming pool can spread HIV/AIDS.

The results of the study have shown that after receiving intervention using the HIV/AIDS module, the level of knowledge has much improved. The results of this study was in line with the studies conducted by Ebot (2009); Karl and Supa (2003) and Oladepo and Fayemi (2011) in their study they obtained a study result showing changes in the understanding, perceptions and postponement stages after respondents were given exposure on HIV/AIDS.

In addition, the study conducted by Riley and Greene (1993) shows that HIV/AIDS has a positive relationship with one's behavior, it will translate a positive attitude when one has knowledge of this issue. In addition, the

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findings of this study are also accompanied by other studies abroad such as studies by Nubed and Akoachere (2016); Oljira *et al.* (2013) and Thwe (2004) which find that there is a variable that can influence strong against behavior and attitude towards HIV/AIDS, which is the level of knowledge.

4. CONCLUSION

As a conclusion, this study has proven that there is a need for the delivery of knowledge about HIV/AIDS to the target group and also public. There is a positive impact on the level of knowledge of the target group also proving that the usage of a good HIV/AIDS module intervention has a good impact on the target group. Malaysia should emphasize the dissemination of information on HIV/AIDS knowledge, sex education, and risk behaviors and so on to adolescents as they are the future assets of the nation. Schools are the primary focus of educating young people on HIV and AIDS, in this way it can control the spread of HIV infection and reduce stigma and discrimination on this issue. The success of delivering this information depends on the delivery of information to school students and adolescents in time to strengthen positive health and change positive behavior in order to prevent school students from high risk behavior. This study serves as an assessment of the need for the Malaysian government to consider and design more programs, motivations and scientific materials about HIV/AIDS that can be created focusing on targeted groups of adolescents in Malaysia.

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