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The Changes of Level of Knowledge, Perception, and Behaviour of Secondary School Students on HIV/AIDS in Penang: Pre and Post Intervention

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Abstract

The objective of this study is to analyze the level of knowledge, perceptions, and behavior of school adolescents on HIV/AIDS before and after the application of the HIV AIDS intervention module. This study involved 600 students aged 15, 16, and 17 years old in Penang, through three sessions involving pre-test, intervention, and post-test. The results showed that there were positive changes in the level of knowledge, perceptions, and behaviors of the respondents after the intervention process was carried out using the modules. The hypothesis test for knowledge has shown that there is a change 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). In terms of behavior, there was also a change in the negative behavior of the respondents after information sharing interventions on HIV/AIDS (t = -8.716 and sig. <0.05, and post behavioral's mean was 4.067, higher than the pre behavioral mean). The hypothesis test for perception aspects also shows that there is a change in the respondents' negative perceptions after receiving the module intervention on HIV/AIDS (t = -15.146 and sig. <0.05 and post perception's mean was 3.343, higher than the pre perception's mean, 3.141). This study has suggested that the early intervention on HIV/AIDS knowledge be conducted in secondary schools in Malaysia as a form of intervention to ensure that the adolescents have sufficient knowledge about HIV/AIDS.

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1 Introduction

Many studies have shown that knowledge and attitudes towards HIV/AIDS among members of society consisting of students, social workers, teachers, medical staff, counselors, etc. are still low and negative. Lack of accurate knowledge about HIV/AIDS is one of the factors why HIV infection and deaths due to AIDS persist. AIDS infection does not take into account the boundaries of age, gender, race, geographical location as well as other demographic characteristics. Anyone can be infected with HIV if they have been involved in high-risk behaviors. When a person is infected with HIV, they are also exposed to stigma and discrimination, especially from those who do not understand or know about the virus. The term "HIV/AIDS" often has a negative or frightening interpretation. Those who are already infected are considered to be unable to carry out normal daily activities, have serious symptoms, and are on the verge of death.

According to Richter et al. (2004), many school children have been infected with HIV/AIDS. Typically, areas that are likely to be affected are due to declining services, weak social institutions, and even high levels of stress. Other factors that contribute to school students being infected with HIV/AIDS are among those who have lost a parent or a surrogate parent; those living in homes where one or more persons are ill, dead or deceased; children whose caregivers are too ill to continue caring for them; and children living with very old and frail caregivers (Richter et al., 2004).

The problem of HIV/AIDS is seen as one of the global problems because the virus has spread around the world. The first case of AIDS was identified in 1981, beginning among homosexuals in the United States. HIV/AIDS cases then continued to increase and began to spread to other countries and no longer just involve homosexuals. In just two years AIDS cases worldwide continued to rise to reach 2,000 cases and the number continued to increase to 360,000 cases a decade later (Richter et al., 2004). The latest statistics in June 2017, showed that 36.7 million people were living with HIV/AIDS and 2.1 million were children (UNAIDS, 2017).

In Malaysia, HIV/AIDS is still not openly discussed and disclosed to the public. Society as a whole still cannot accept and discuss this issue. Many people still think that issues related to HIV/AIDS are a problem among injecting drug users and among sex workers (Strode & Barrett Grant, 2001). As a result, the Malaysian community is not very open to discussing this issue and feels that the issue of HIV/AIDS is sensitive. This situation has contributed to various forms of misunderstanding that lead to the existence of stigma and discrimination in society against those living with HIV/AIDS.

HIV/AIDS education plays an important role in global efforts to reduce the AIDS epidemic. Most Malaysians still lack or do not have sufficient and accurate knowledge about HIV and AIDS and the causes of how it can spread. In addition, the community is also seen to lack the knowledge, expertise, and techniques needed to deal with and manage people living with HIV/AIDS (PLHIV). Even though HIV infection is preventable, every year hundreds of thousands of people are infected with the virus (Levy et al., 2011).

HIV/AIDS infection does not take into account age, gender, race, geographical location, and other demographic characteristics. Anyone can be infected with HIV if they have been involved in high-risk behaviors. When a person is infected with this virus, they are also exposed to stigma and discrimination, especially from those who do not understand or know about this virus (Varas-Diaz et al., 2005). The term "HIV/AIDS" often has a negative or frightening interpretation. Those who are already infected are often considered to be unable to carry out normal daily activities, have serious symptoms, and are on the verge of death.

The fight against HIV/AIDS around the world has focused on adolescents because they are a high-risk group. When referring to HIV/AIDS data, young people around the world are considered a high-risk group.

Worldwide each year, more than half of the total number of people infected with HIV are among youth. About 6,000 youths between the ages of 15 and 24 are infected with HIV every day (Haliza & Mohd Syukur, 2002).

The symptoms of free sex among students in the current era are very alarming and increasingly prevalent. This is because they get pornographic materials easily as well as inaccurate sex knowledge on the internet. High curiosity and desire to try as well as lack of sufficient knowledge make these teenagers more vulnerable to free sex and unsafe sexual behavior. This can put them at risk of being infected with HIV/AIDS indirectly (Yusof & Sugiman, 2011).

Exposing young people to the basics of HIV/AIDS education allows them to protect themselves from being infected (Gańczak et al., 2007; Wells, 1994). Child-young people are also at risk of being exposed to HIV through sexual contact and infection from drug use. Acquiring true and accurate knowledge and skills can enable young people to avoid or reduce behaviors at risk for infection (Paul et al., 2008). Although there are young people who have not yet engaged in risky behaviors, HIV/AIDS education is also very important for ensuring these groups are always prepared for situations that could put them at risk later on.

According to Okwun et al. (2012), most programs targeted at adolescents are essentially ad-hoc although studies are showing that HIV education programs in schools are effective in reducing risky behaviors (Kyrychenko et al., 2006; Ma et al., 2014). Demand for HIV/AIDS talks in schools in Malaysia from non-governmental organizations such as the AIDS Action and Research Group (AARG) is also increasing. On average, ten schools a year around Penang ask AARG to give talks on HIV/AIDS to students (AARG, 2017).

The goal of HIV/AIDS education implemented in schools is to ensure that adolescents are aware of the risks involved and to ensure that the younger generation is free from the threat of the disease. According to Budi & Abral (2012), adolescents are the target group and also a group that has the potential for attitude and behavior change on the issue of HIV and AIDS. A study on HIV/AIDS conducted by the United Nations (2010) found that young people will delay engaging in sexual activity if they get early exposure to the risks they will face. This is because adolescents' knowledge of sexually transmitted diseases and the HIV/AIDS virus is still vague and confused between facts or myths (Budi & Abral 2012).

A study conducted by Okwun et al. (2012), also emphasized the impact of counseling approaches on HIV/AIDS in schools in Malaysia. They also stated that early intervention services on HIV/AIDS among school students can have a positive impact on young people in Malaysia. The results of their study have suggested that there is an urgent need for psychologists, counselors, medical practitioners, and social workers to impart knowledge on HIV/AIDS to children and adolescents as well as the construction of appropriate modules to impart knowledge on HIV/AIDS prevention (Ulrich et al., 2007). According to Zulkifli & Wong (2002), there are still gaps and misconceptions about HIV/AIDS that need to be addressed among adolescents. The need to create a medium to convey information to school adolescents is also important as it can bridge the gap of misunderstanding about HIV/AIDS.

In Malaysia, there are many previous studies on HIV/AIDS issues based on targeted population samplings such as medical workers, drug users, and adolescents (Wong et al., 2008; Ng & Kamal, 2006; Fauziah et al., 2003). However, the studies conducted are more of a basic research study that revolves around knowing the level of knowledge, acceptance, behavior, and perception of respondents towards HIV/AIDS. In contrast to studies conducted by researchers that include the formation of appropriate tools as an intervention method to convey effective information about HIV/AIDS to the target group while studying the level of knowledge, behavior, and perceptions of 15 years old, 16 years old, and 17 years old adolescents on the island. Penang.

The issues of stigma and discrimination are also emphasized in this study. This is because by having insufficient knowledge about HIV/AIDS due to misconceptions, society likes to punish with stigma and even discrimination. Stigma about HIV/AIDS usually results in boycotting or preventing people believed to have it to adopt a marginalized lifestyle is always marginalized and humiliated. Due to ignorance and fear, stigma can affect children's access to education, health care, and other basic rights (Sembiring et al., 2022).

The objective of this study is to analyze the level of knowledge, perceptions, and behavior of school adolescents on HIV/AIDS before and after the application of the HIV AIDS intervention module in secondary schools in Malaysia.

2 Materials and Methods

In this study, the sample is secondary school students who are categorized as middle adolescents aged 15, 16, and 17 years old in ten schools in Penang. The study population consists of two (2) schools for each district in Penang, namely the North East, Southwest, North Seberang Perai, Central Seberang Perai, and South Seberang Perai districts. In total, 10 schools were selected in all. The selection of schools is based on the Penang State Education Department following the focus of the study. The selection of all these schools is based on the level of excellence of the schools from each district. The results of the initial discussion with the Chief Assistant Director of Quality Assurance Sector of the Penang Education Department, Tuan Mohd Fuad bin Mohd Khir, the measurement tool for the definition of excellence of a school is based on the band system, which is the result of the composite score achieved by the school. The point value of this Composite Score is the sum of the Malaysian Education Quality Standard Score (SKPM) with the Grade Point Average (GPS).

Band 1 or band 2 school can be defined as excellent and so on until band 6 or band 7 i.e. unsatisfactory. For each district, two schools were selected, namely an excellent school and a less excellent school. In addition, the selected school's involved mixed-gender schools to better see the input from male students as well as female students on this issue

Figure 1. Five districts in Penang, Malaysia

Next, cluster and staged sampling were used to determine the distribution of the sample according to the five districts involved, namely Seberang Perai Selatan, Seberang Perai Tengah, Seberang Perai Utara, Barat Daya, and Timur Laut. Referring to Figure 3.1, a total of ten schools were involved in this study, then the researcher has divided the total sample of 600 people into ten schools. Thus, each school was represented by 60 respondents. For the selection of respondents for the age group, systematic random sampling was used. Systematic random sampling is a randomly selected sample. This sampling can be done by selecting respondents based on certain intervals or multiples. The researcher conducting a study determines the sample skip distance. This systematic random sampling of selected elements is from the population at uniform intervals (Gall et al., 2005).

Selection of respondents based on the list of names according to form. For the first time, the researchers identified an interval (k) for the sampling size. It can be identified using the formula k = N/n. N is the population size and n is the sampling size. The researcher randomly selects each student multiple (k) for example, 5 (student no, 5, student no.10, and so on) from the list to be the respondent until the desired number is sufficient. The same was done for level four and five respondents.

Penang was chosen as the study location to take into account the time required to conduct this study and also the costs involved. This study, focused on lower secondary students aged 15 years, 16 years, and 17 years. This group was chosen because they are more likely for teenagers to be a very risky group. They are still searching for an identity and are still weak in having their own identity and are easily influenced.

According to Erik Erikson's theory, it is stated that the fifth stage is the phase of identity vs low ego that occurs in children who have grown into adolescence. They start and always look for self-identity either in personality. At this stage too, they are confused about their next self-identity easily followed and influenced especially by their social environment.

The research instrument for this research is to use a questionnaire. By using questionnaires, it can collect data formally and systematically. Researchers need to ensure that each questionnaire conducted meets the objectives and questions of the study and has the validity of the measurement tool. Overall, this questionnaire is the facts about HIV/AIDS that have been processed into questions. It is not very deep and too detailed because it is more to the knowledge base about HIV/AIDS.

The questionnaire used was a modified version of the University of New York, Buffalo School of Nursing AIDS Survey by Held (1993). The instrument was updated and its validity checked together with Held and medical experts in 2005. The use of this existing questionnaire is because several previous studies on HIV/AIDS have used the same questionnaire. Among the studies that use it are "The Effects of an AIDS Education Program on the Knowledge and Attitudes of a Physical Therapy Class" by Held (1993): "Perception of HIV/AIDS among Students at the University of Joensuu" by Ebot (2009) and many again. Researchers have obtained permission to use the same questionnaire and translated it into Bahasa Malaysia.

"AIDS Study Questionnaire" by Dr. Sharon Held is a complete questionnaire and meets the themes in this study that is about the knowledge, perception, and behavior of the public on the issue of HIV/AIDS. However, taking into account the issue of sensitivity of the local community and the age of the respondents, questions related to sexuality were not included in the questionnaire of this study according to the guidelines from the authorities for permission to conduct this study in schools.

The first part of the questionnaire on the background of the respondents as usual has questions such as the gender of the respondents, age, and race whether Malay, Chinese, Indian, or other. Respondents were also asked to record the name of their school. This section is only to know the demographics of the respondents accurately.

3 Results and Discussions

3.1 Results

The objective of this study is to analyze the level of knowledge, perception, and behavior of school students on the issue of HIV/AIDS before and after the application of the intervention module. For this objective, after the researchers performed the intervention using the modules that had been constructed, a similar set of survey questions that had been distributed at the beginning of the session before the intervention was conducted were distributed. Respondents were required to answer the survey questions based on the information and knowledge they had gained during the intervention process.

Table 1
Respondents' profile

Profile		No. of pax	Percentage (%)
Age	15 years old	200	33.3
	16 years old	200	33.3
	17 years old	200	33.3
Gender	Male	291	48.5
	Female	309	51.5
Race	Malay	453	75.5
	Chinese	88	14.7
	Indian	57	9.5
	Others	2	3

Knowledge Aspects

In this aspect, respondents answered 19 questions on topics such as the meaning of HIV/AIDS, how the HIV/AIDS virus is spread, the risks involved, and so on. This section uses true or false or uncertain as to the answer format. Researchers used the scoring sheets provided in the survey form used.

The calculation of the respondents 'scores, was calculated manually by the researcher. Correct or incorrect answers indicate whether the subject has a high or low score in the knowledge of HIV/AIDS. The answer to "not sure" is counted as a wrong answer. Based on the total score, for the respondent whose total score is low, it shows that he has low knowledge of HIV/AIDS compared to the respondent who got a high score for this section.

From the frequency distribution of this study, for the pre-test it was found that the total score of the respondents was between 3 (lowest score) to 14 (highest score). While for the post-test, the overall score is between 7 (lowest score) to 17 (highest score). Below is the percentage of respondents answering the questions correctly for the pre-test and post-test for ten schools.

Table 2
Percentage of knowledge aspects marks for pre and post tests

Item No.	Item	Pre Test (%)	Post Test (%)
1	AIDS is a disease that attacks the human immune system	76.0	98.7
2	There is no cure for AIDS	60.8	99.3
3	Individuals at high risk for HIV infection include drug addicts, those who practice unprotected sex, and sex workers	75.7	91.8
4	HIV positive antibody test means 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 deadly disease	81.3	97.2
7	People can get HIV by sharing needles with drug users who have AIDS	86.2	93.5
8	All homosexuals have HIV	45.5	66.8
9	The risk of contracting HIV increases as the number of sexual partners a person increases	62.0	96.0
10	Individuals can infect others with HIV without hurting themselves.	43.0	49.3
11	HIV can be transmitted through blood	79.0	90.5
12	HIV can be transmitted through contact with people who have the disease	43.2	81.3
13	The use of condoms during sexual intercourse can reduce HIV transmission	4.7	7.5
14	The need for isolation is required for HIV/AIDS patients in hospitals	12.3	18.8
15	Individuals hospitalized for HIV or AIDS treatment should use blood and proper body fluids.	55.8	85.0
16	Pregnant women who take regular precautions are at risk for infection HIV/AIDS	57.0	80.0
17	There is strong evidence that the HIV	27.8	67.8

	cannot be transmitted to an unborn baby		
18	Eye protection should be worn in case of risk for blood or body fluid splashes to the eyes of others	13.7	67.2
19	It is important to wear protection such as gloves, and mouth and face masks to interact with living people with HIV/AIDS.	19.3	61.7

Based on the table above there is an increase in aspects of knowledge before and after the intervention was carried out. For item 1, a total of 76% had answered correctly during the pre-test while increasing to 98.7% for the post-test. Next, item 2, for the pre-test a total of 60.8% had answered correctly and this increased to 99.3% for the post-test. Item 3, recorded a total of 75.7% had answered correctly during the pre-test while this value increased to 91.8% for the post-test.

Next, item 4, for the pre-test only 11.3% had answered correctly and this increased to 63.8% for the post-test. Item 5, a total of 76% answered correctly during the pre-test while increasing to 98.7% during the post-test. Next, item 6, for the pre-test a total of 81.3% had answered correctly and this increased to 97.2% for the post-test. Item 7, a total of 86.2% had answered correctly during the pre-test while it increased to 93.5% during the post-test. Next, item 8, for the pre-test a total of 45.5% had answered correctly and this increased to 66.8% for the post-test.

Next, item 9, for the pre-test a total of 62.0% had answered correctly and this increased to 96.0% for the post-test. For item 10, a total of 43.0% had answered correctly during the pre-test while it increased to 49.3% for the post-test. Item 11, for the pre-test a total of 79.0% answered correctly and this increased to 90.5% for the post-test. Item 12, a total of 43.2% answered correctly during the pre-test while it increased to 81.3% for the post-test. Item 13, for the pre-test only 4.7% had answered correctly and this increased to 7.5% after the intervention was given.

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

Behavior aspects

Table 3 shows the percentage of respondents' responses to each item in the behavioral level for the pre-test. There are 9 items in the respondent behavior section. One of the items is the statement “we are free to shake hands with those who have been infected with HIV/AIDS”, the percentage of answers for this item is various and also almost the same for the percentage of strongly agree and strongly disagree. This is one of the negative behaviors that humans will always do because they are afraid of being infected with HIV/AIDS.

Table 3
Percentage of respondents' response to items in the behavioral level for the pre-test

Item no.	Item	Percentage (%)				
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	Not having sex with a partner who does not want to have safe sex can reduce the risk of contracting HIV/AIDS	27.8	55.2	13.8	1.8	1.3

2	Avoiding sex with people who have multiple sex partners even if they agree to use condoms reduces the risk of contracting HIV.	49.0	21.8	14.5	5.2	9.5
3	Prolonging the period of getting to know someone before engaging in sex reduces the risk of HIV.	30.0	49.5	12.7	2.5	5.0
4	Knowing a person's sexual history can reduce the risk of HIV.	29.3	28.8	33.3	3.5	5.0
5	The use of condoms can reduce the risk of contracting HIV/AIDS	24.0	31.3	27.8	11.3	5.5
6	We are free to shake hands with those who have been infected with HIV/AIDS	19.3	23.0	25.3	12.8	19.5
7	We must give moral support to those infected with HIV/AIDS	61.0	30.5	5.7	0.3	2.5
8	We should keep personal items clean such as not sharing toothbrushes and razors with others	61.5	29.3	4.2	2.3	2.7
9	We are free to make friends with those who have HIV/AIDS	16.0	31.3	22.2	12.2	18.3

Table 4
Percentage of respondents' response to items in the behavioral level for the post-test

Item no.	Item	Percentage (%)				
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	Not having sex with a partner who does not want to have safe sex can reduce the risk of contracting HIV/AIDS	42.7	24.5	2.8	18.2	11.8
2	Avoiding sex with people who have multiple sex partners even if they agree to use condoms reduces the risk of contracting HIV.	30.0	31.0	17.8	21.2	0
3	Prolonging the period of getting to know someone before engaging in sex reduces the risk of HIV.	32.0	37.8	0.7	23.3	6.2
4	Knowing a person's sexual history can reduce the risk of HIV.	45.7	54.3	0	0	0
5	The use of condoms can reduce the risk of contracting HIV/AIDS	35.2	54.3	10.7	0	0
6	We are free to shake hands with those who have been infected with HIV/AIDS	14.8	71.7	12.8	0.5	0.2
7	We must give moral support to those infected with HIV/AIDS	30.5	69.2	0.2	0	0.2
8	We should keep personal items clean such as not sharing toothbrushes and razors with others	36.7	56.7	7.3	0	0
9	We are free to make friends with those who have HIV/AIDS	37.7	53.0	8.0	1.3	0

Perception aspect

Next, the study also looked at the level of respondents 'perceptions whether negative or positive. For the level of perception, the percentage of respondents' responses to the items can be seen in table 5. As in the table, for the item "I would choose not to care for people living with HIV/AIDS because they have no hope of living" recorded a total of 33.5% agreed with the statement while 54.3% were unsure. While the post-test showed an increase in perception to positive where the total percentage who do not agree with the above statement is 72%.

Table 5
Percentage of respondents' response to items in the perception level for the pre-test

Item no.	Item	Percentage (%)				
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	I fear getting infected if I am dealing with HIV-positive people.	1.2	6.8	36.5	42.3	13.2
2	I have the right to refuse to deal with people living with HIV/AIDS	26.0	37.7	17.7	13.7	5.0
3	I would refuse to take care of someone living with HIV/ AIDS.	5.5	10.3	46.7	26.7	10.8
4	For the care of people living with HIV/AIDS, it should be done voluntarily	14.7	32.2	36.7	7.7	8.8
5	People living with HIV/AIDS should be isolated and cared for by those who are trained only	24.3	37.0	28.8	7.5	2.3
6	My main concern about dealing with someone living with HIV/AIDS is "Will I get HIV and die of AIDS?"	5.0	9.2	21.8	47.8	16.2
7	I am worried about putting my family and friends at risk if I deal with people living with HIV/AIDS	7.0	9.3	21.2	39.2	23.3
8	Connecting with people living with HIV/AIDS can affect my relationships with others	4.0	16.3	33.5	39.5	6.7
9	I would choose not to take care of people living with HIV/AIDS because they have no hope of living.	13.7	19.8	54.3	10.3	1.8
10	I am not comfortable caring for someone who is waiting for his death.	1.7	6.0	35.0	34.8	22.5
11	I will not waste time and energy caring for people living with HIV/AIDS who will die at any moment.	15.8	37.7	38.8	6.3	1.3
12	I feel like I don't have enough information or training to effectively protect myself when dealing with people living with HIV/AIDS	16.3	60.0	15.8	5.2	2.7
13	Free sterile needles should not be given to injecting drug users to reduce HIV infection	22.0	38.7	29.7	4.5	5.2
14	I feel more sympathetic to people who acquire HIV from blood transfusions than from the injecting drug user	13.0	63.0	13.3	7.2	3.5

15	I feel more sympathetic to people who acquire HIV from blood transfusions than from sexual intercourse.	10.8	51.0	22.8	14.3	1.0
16	I would feel uncomfortable dealing with children with HIV/ AIDS	12.3	38.5	37.8	7.8	3.5
17	I would feel uncomfortable dealing with injecting drug users living with HIV/AIDS	4.7	11.5	32.2	32.8	18.8

Table 6
Percentage of respondents' response to items in the perception level for the post-test

Item no.	Item	Percentage (%)				
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	I fear getting infected if I am dealing with HIV-positive people.	0.8	55.8	11.2	30.2	2.0
2	I have the right to refuse to deal with people living with HIV/AIDS	30.2	61.0	8.3	30.2	0
3	I would refuse to take care of someone living with HIV/ AIDS.	1.8	5.5	8.3	50.5	21.5
4	For the care of people living with HIV/AIDS, it should be done voluntarily	28.2	66.7	4.8	0.3	0
5	People living with HIV/AIDS should be isolated and cared for by those who are trained only	0.7	53.5	25.5	17.5	2.8
6	My main concern about dealing with someone living with HIV/AIDS is “Will I get HIV and die of AIDS?”	0	12.2	11.5	60.5	15.8
7	I am worried about putting my family and friends at risk if I deal with people living with HIV/AIDS	0	23.8	37.2	33.3	5.7
8	Connecting with people living with HIV/AIDS can affect my relationships with others	0.3	50.8	14.3	28.2	6.3
9	I would choose not to take care of people living with HIV/AIDS because they have no hope of living.	7.0	7.3	33.7	51.7	0.3
10	I am not comfortable caring for someone who is waiting for his death.	3.8	5.2	12.5	69.7	8.8
11	I will not waste time and energy caring for people living with HIV/AIDS who will die at any moment.	25.7	56.3	17.2	0.5	0.3
12	I feel like I don’t have enough information or training to effectively protect myself when dealing with people living with HIV/AIDS	7.7	66.2	18.8	7.2	0.2
13	Free sterile needles should not be given to injecting drug users to reduce HIV infection	9.5	11.7	27.5	36.3	15.0
14	I feel more sympathetic to people who acquire HIV from blood transfusions	34.5	50.2	14.8	0.2	0

	than from the injecting drug user					
15	I feel more sympathetic to people who acquire HIV from blood transfusions than from sexual intercourse.	40.0	48.2	7.0	4.8	0
16	I would feel uncomfortable dealing with children with HIV/ AIDS	7.2	67.2	11.5	6.8	7.3
17	I would feel uncomfortable dealing with injecting drug users living with HIV/AIDS	8.5	45.2	17.0	21.8	7.5

Hypothesis testing

Table 7
Paired T-Test analysis

		Mean	Standard Division	df	t	Sig. (2-tailed)
Knowledge	Knowledge (Pre) – Knowledge (Post)	-5.098	2.682	600	-46.461	0.000**
Behaviour	Behaviour (Pre) – Behaviour (Post)	-0.238	0.668	600	-8.716	0.000**
Perception	Perception (Pre) – Perception (Post)	-0.201	0.325	600	-15.146	0.000**

Knowledge aspects

The following are hypotheses about the aspects of knowledge that have been established in this study:

- Null hypothesis (Ho) - There is no change in the level of knowledge of respondents after receiving information related to HIV/AIDS
- Alternative hypothesis (Hi) - There is a change in the level of knowledge of respondents after receiving information related to HIV/AIDS.

Referring to table 7, it was found that t = 46.561 and sig <0.05, then the mean difference between these two types of tests i.e. pre and post-test for knowledge level are significant. Furthermore, for the mean of post-knowledge (13.813) is higher than the mean of pre-knowledge (8.715), then it can be concluded that the post-knowledge score is higher than pre. Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted because there was a change in the level of knowledge of the respondents after being given the intervention module on HIV/AIDS.

Behavior aspects

The following are hypotheses about the behavioral aspects that have been established in this study:

- Null hypothesis (Ho) - No change in the level of the negative behavior of the respondents after receiving the module intervention on HIV/AIDS
- Alternative hypothesis (H_1) - There is a change in the negative behavior of the respondents after receiving the module intervention on HIV/AIDS

Based on table 7, the total mean of post - behaviour of 4.067 is higher than the total mean of pre - behaviour of 3.829. There is an increase in the value of the total mean which proves that the level of the negative behavior of the respondents changed and increased positively. In addition, referring to table 4.10, it is found that t = -8.716 and sig <0.05, then the mean difference between these two types of tests, namely pre and post-tests for behavioral aspects is significant. Therefore, the null hypothesis was rejected because there was a change in the negative behavior of the respondents after receiving the module intervention on HIV/AIDS.

Perception aspects

The following are hypotheses about the aspects of perception that have been established in this study:

- Null hypothesis (Ho) - There is no change in the level of a negative perception of respondents after receiving information related to HIV/AIDS
- Alternative hypothesis (Hı) - There is a change in the level of a negative perception of respondents after receiving information related to HIV/AIDS.

Based on table 7, it is found that t = 15.146 and sig <0.05, hence the difference in the mean between these two types of tests i.e. pre and post-tests for perception aspects is significant. Furthermore, supported by the finding that the total mean of post-perception of 3.343 is higher than the total mean of pre -perception of 3.141. There is an increase in the value of the total mean which proves that the level of a negative perception of the respondent changes and increases positively. Therefore, the null hypothesis was rejected because there was a change in respondents 'negative perceptions after receiving the module intervention on HIV/AIDS.

3.2 Discussion

Knowledge Aspects

Firstly, for the knowledge aspect, the overall score for the knowledge aspect about HIV/AIDS is higher compared to the pre-test and post-test. As for the knowledge aspect one of the items available is a statement about AIDS as a disease that attacks the human immune system, a total of 76% answered correctly during the pre-test while increasing to 98.7% for the post-test. A study conducted by Ebot (2009), also found the results of a similar study that there was an increase in the percentage of respondents who answered correctly.

The results of this study are also in line with the study conducted by Vijayageetha et al. (2016), entitled „Knowledge and attitude on HIV/AIDS among adolescent school children in urban Mysuru, Karnataka, India: A cross-sectional study". In this study, it was found that the percentage of respondents' understanding was low before being given exposure to HIV/AIDS. In addition, Menna et al. (2015) in their study on the effects of peer education interventions on HIV/AIDS-related sexual behaviour among high school students in Addis Ababa, Ethiopia also found a comprehensive level of knowledge about HIV/AIDS among youth is still low (36%) for men and (28%) for women. Even though they have knowledge of AIDS prevention they still neglect and engage in risky activities.

As stated by Notoatmodjo (2007), knowledge is the result of information and it will happen when the individual has understood something then knowledge has been obtained. This means that, when the HIV/AIDS module intervention was used in this study, information on HIV/AIDS was communicated to the target group, thus their understanding of HIV/AIDS was increased. This is evidenced by the difference in percentage scores before and after the intervention increased through questionnaire testing. Furthermore, the results of this study also showed that before the intervention was carried out, there were 56.8% of respondents answered yes, HIV can be transmitted through contact with people with the disease.

The results of this study are also in line with a study conducted by Wong et al. (2008), entitled "Knowledge of HIV/AIDS among adolescents in Malaysia" which showed that the majority of respondents have the correct knowledge such as the spread of HIV/AIDS virus through needle injections and unsafe sex. However, there are still teenagers who still think that mosquito bites, sharing food, and using swimming pools can spread HIV/AIDS. This proves that the misunderstanding about how HIV/AIDS is spread is so great, especially among individuals who always think that mosquito bites and sharing food will cause the spread of HIV/AIDS. Lack of proper exposure and knowledge about HIV/AIDS makes people unable to understand HIV/AIDS in basic

terms. This can lead to a high risk for the HIV/AIDS virus to spread more widely because the individual does not know more precisely the risky behaviors that can cause the individual to be exposed to the HIV/AIDS virus.

As stated in Carol's (1991) study, people are at high risk of contracting the HIV/AIDS virus because they are not sensitive to their risky behaviors but are warier of trivial things such as not wanting to be friends with people with HIV and phobias. against mosquito bites feared carriers of HIV. This was also reported in a study by Vijayageetha et al. (2016), which found that the findings of their study the percentage of respondents have answered AIDS/HIV can be transmitted through mosquitoes. Most respondents to the study on HIV/AIDS would think that mosquitoes are the transmitting agents of this virus.

In terms of knowledge as well, the results showed that for the item "there is no cure for AIDS" there was an increase in the percentage of respondents who answered correctly. Before the intervention was carried out, only 60.8% agreed with the statement. Confusion still exists due to a lack of accurate information. However, for the post-test, 99.3% of the respondents agreed with the statement. The results of this study are in line with a study conducted by Peltzer & Promtussananon (2003), who found that the level of knowledge of respondents on HIV/AIDS cure treatment increased after exposure to HIV/AIDS workshops were conducted to them.

Behavioral Aspects

Second, the behavioral aspects in this study also showed an improvement in terms of respondents' understanding of this study compared to before the intervention of this module was conducted. One of the items in the behavioral aspect states that “We are free to shake hands with those who have been infected with HIV/AIDS ”results of the study found that before the intervention was carried out the percentage of respondents who answered unsurely was 25.3%, disagree by 12.8% and strongly disagree by 19.5%.

This percentage is high and this indicates that most of the respondents do not have the correct knowledge and this makes them think that this behavior is unsafe for them. However, after the intervention was conducted, with the information provided based on the use of the module, it was found that the results of this study turned out to be uncertain by 12.8%, while disagree and disagree with 0.5%and 0.2%respectively. This proves that the HIV/AIDS modules tested have shown a positive effect on the target group.

The results of this study are in line with a study conducted by Ebot (2009), which showed that their level of knowledge on the issue of HIV/AIDS greatly affects their actions, behaviors, and perceptions. Their concern over the issue of HIV/AIDS makes it a threat and a bulwark for them to live with people living with HIV/AIDS. In addition, Nubed & Akoachere (2016), also found that the percentage of behavioral items for the respondents of their study, namely high school students in Fako, Cameroon improved after being given knowledge about the risk of HIV/AIDS. This can be attributed to positive behavior change after an individual gains knowledge about something as expressed in the health belief model (Mahat et al., 2016; Li et al., 2008).

In addition, Soltani & Tavafian (2016), conducted a study using a health belief model to improve HIV/AIDS knowledge among adolescent girls in Iran and found a relationship that positive in an individual’s knowledge, beliefs, behaviors, and perceptions of something. As such, the researchers believe that the intervention using the built-in HIV/AIDS module is good to keep the target group away from risky activities (Aldhaleei & Bhagavathula, 2020; Sohn & Park, 2012).

In the context of the country, usually, society will act and think about one thing based on what is already known. Lack of knowledge about an issue makes an individual unable to think well. For example, in Malaysia the long-standing awareness of the dangers of the AEDES mosquito epidemic is always present, this is to ensure that the community can be vigilant and not do things that can encourage the breeding of dengue outbreaks (Sorlie et al., 2010; Haines et al., 2007). The local community is more interested and will act properly with awareness campaigns and briefings on an issue. Merican et al. (2004), stated that in Malaysia, health promotion and personal care have long been emphasized and taken seriously as part of the national health agenda. A national vision such as developing a healthy nation of individuals, families, and society through a fair, affordable, efficient, high-tech health system and emphasizing quality, innovation, and health promotion towards an improved quality of life in the community. This clearly shows that health promotion activities are given priority by the Ministry of Health Malaysia. In addition, there are various strategies in the country on health awareness that focus on health education. For example, one of the strategies in the 11th

Malaysia Plan is to promote health awareness and healthy lifestyle activities. This is because the government is confident with the knowledge imparted to the society it can shape a healthy environment.

Perception aspects

Third, the aspect of perception was also seen to show positive changes after the intervention was carried out on the respondents. The results of the study for the item "I would refuse to care for someone living with HIV/ AIDS" after the intervention was carried out showed an increase with a percentage of 72% of respondents who disagreed with this statement. Referring to systems theory, is concerned with the structure of a complex system, with a particular emphasis on how a thing or part of it relates to each other and the whole system. In connection with this study, students who have proper knowledge of HIV/AIDS can have an impact on stigma as well as their perceptions of people living with HIV/AIDS.

Furthermore, for the aspect of perception as well, the results of the study showed a high percentage of respondents who agreed and strongly agreed with the statement "I will not waste time and energy to care for people living with HIV/AIDS who will die at any time". This indicates that there is a negative perception, stigma, and discrimination by the public towards people living with HIV/AIDS.

According to Richter et al. (2004), feelings of high stigma can have a profound effect on the lives of children living with HIV/AIDS because this stigma can cause them to lose their status in society and become isolated people in the community (LaVange et al., 2010). their own. The results of this study are supported by the results of a study conducted by Ebot (2009), his study also found that the percentage of respondents who do not want to take care of people living with HIV/AIDS is high, and their perception will also be infected if together with people living with HIV/AIDS.

In Malaysia, even though the AIDS epidemic has hit the country for thirty years, stigma and discrimination continue to be rampant against people living with HIV/AIDS. Populations living with HIV/AIDS are constantly criticized and marginalized by society, this is due to the lack of knowledge about HIV/AIDS among the local community (Fifa, 2016). Wallace et al. (2004), stated that they know that many factors can influence the way of thinking of a country's society that causes stigma on matters related to HIV/AIDS including lack of knowledge and understanding about the disease, misunderstanding of how it spreads, lack of access to treatment and also the way the media reports on the epidemic.

Referring to Ahwan (2012), stigma and discrimination on the issue of HIV/AIDS committed by the community in Bangil, Indonesia is influenced by three factors, namely lack of knowledge about HIV/AIDS in terms of medicine, religion, human rights, mode of transmission, prevention and so on. . Due to the vague knowledge makes people draw their conclusions on the issue of HIV/AIDS. Next, are the myths of society where myths are beliefs and convictions that are hereditary and developed in society but the truth of things that are not proven scientifically. This myth is often used as a reference for society to evaluate something, such as the HIV/AIDS epidemic. Third, is the view of religion, this means that religion has a very strong influence and can affect the way the views and perceptions of individuals. The people in Bangil, based on their religious knowledge that free sex is illegal and not good and it causes HIV/AIDS infection, then based on that they have a sense of stigma against people living with HIV/AIDS.

Through the results of pre-test and post-test studies, as expressed in Piaget's theory of development, when the current developmental age of an adolescent is a stage of formal operation. Middle adolescents already have an increase in logical thinking, the ability to use information conquest, and understand abstract things. At this point, adolescents can see a variety of effective and good solutions to problems and think more scientifically about the things that happen in their environment. Therefore providing a knowledge base on the truth about HIV/AIDS will help them more easily and accurately make decisions about what they should and should not do.

Furthermore, the results of this study can be seen in social learning theory which emphasizes the key role played by symbolic and self-regulatory processes in psychological functioning (Bandura, 1977). Bandura (1977), also states that people not only respond to external influences but they will select, change, and regulate the stimuli that occur. Preventing AIDS virus infection requires people to exert influence over their behavior and their social environment. To control the spread of HIV/AIDS it focuses mainly on informing the public about how HIV/AIDS is spread and how to protect against the infection. It emphasizes that awareness

and knowledge of health risks are essential conditions for self -transformation towards a healthier and safer life.

Adolescents today are exposed to a variety of social symptoms that cause them to easily fall into unhealthy activities either directly or indirectly in their living environment. Adolescents are sometimes aware of the consequences that will result from their actions, but they still do those things. This bridges the gap between knowledge and action because adolescents are notorious for the risk-taking phase. These adolescents 'actions may be controllable if social control, as well as knowledge and guidance, are acceptable to them.

4 Conclusion

In a conclusion, schools are a major focus for educating young people about HIV and AIDS, in this way it can curb the spread of HIV infection and reduce stigma and discrimination on the issue. Success in implementing this information dissemination depends on the delivery of information to school students and adolescents in time to strengthen positive health and change positive behaviors to prevent school students from doing risky things. Furthermore, secondary school students in Malaysia are those between the ages of 13 and 18 and have excellent resources to effectively deliver HIV/AIDS education, interactive delivery i.e. educational processes that occur over time, materials and methods, and the ability to involve parents in their children's learning.

In combating HIV infection, stigma, and discrimination, an important responsibility in schools is to teach high school students where they are in their teens how to avoid either being infected or spreading it to others and to serve as a catalyst to the development of HIV -based policies. the latest scientific knowledge on HIV and AIDS. In doing so, social workers have the opportunity to make improvements in the quality of health education provided to adolescents throughout Malaysia as well as the world as a step towards improving global health.

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