ORIGINAL ARTICLE

Improvements of Knowledge and Perception Towards HIV/AIDs Among Secondary School Students after Two Hours Talk

S Jahanfar, PhD*, A W Lim, M A Loh**, A G Yeoh**, A Charles*****

*Obstetrics and Gynecology, Royal College of Medicine, Perak, University of Kuala Lumpur, **Medical students, Royal College of Medicine, Perak, ***Bachelor of Nursing, Federation of Family Planning Association, Malaysia

SUMMARY

Malaysia is confronted with an increasing incidence of HIV and AIDS among adolescents and young adults. The effectiveness of various programs offered to school going teenagers is unknown. The objective of this study is to measure the effectiveness of two hours talk on sex education offered by a non governmental organization (NGO) in improving youngsters' knowledge and perception towards HIV and AIDS. A cross sectional study was conducted among the adolescent students from a secondary school in Ipoh, Perak, a province of Malaysia. A total of 182 students participated in the study. A standard questionnaire consisting of demographic data, knowledge and perception towards HIV/ADIS were distributed before (pre-test) and after the intervention (post-test). Performance of participants was compared to establish the effectiveness of the intervention. Our findings suggests that there was a significant increase in participants' knowledge and perception after the intervention (p=0.000). Knowledge improvement was found in both genders however, improvement in perception was higher among female students. Interestingly, 80% of participants disagree that sexual education will encourage sex among youngsters. NGOs are playing a supplementary role in providing sex education programs in schools. This program although of short duration but it is effective in enhancing adolescence awareness about HIV/AIDS.

KEY WORDS:
Sexual education, Knowledge, Perception, HIV, AIDS

INTRODUCTION

Concerns about risk of infection with human immunodeficiency virus (HIV) has renewed interest in the sexual behavior of adolescents in developing countries, where they represent a large proportion of the population and are at high risk. Since HIV vaccine is not widely available and its efficiency is under investigation, primary prevention including sex education is the key factor for eliminating HIV epidemic among adolescence.

In Malaysia, the trend of HIV and AIDS has risen dramatically since 1986. As of December 2004, nearly 65,000 Malaysians had been diagnosed with HIV or AIDS, with an average of 19 new cases reported every day. The Malaysian government is really concerned about the increased level of HIV infections in Malaysia, particularly among the age group of 15-19 [1].

It is estimated that more than half of all new HIV infections occur before the age of 25 and most are acquired through unprotected sexual intercourse. According to the experts on AIDS, many of these new infections occur because young people don't have the knowledge or skills to protect themselves [2]. To address this important health issue, the American Psychological Association (APA) is recommending that comprehensive and empirically supported sex education and HIV prevention programs become widely available to teach youth how to abstain from risky sexual behaviors and learn how they can protect themselves against HIV and other sexually transmitted diseases [3].

The evidence shows that comprehensive sexuality education programme for youth that encourage abstinence, promote appropriate condom use, and teach sexual communication skills reduce HIV-risk behavior and also delay the onset of sexual intercourse [4]. It is argued that initiating these programme when children are at a young age and developing the appropriate message before they leave school will address the building blocks for healthy living. Schools can offer an organized and efficient way to reach out large number of young target population at an age when they are highly receptive of adult influence[5]. However, not all governments are willing to address the issue that early on in life and in a formal educational format in schools. Policy makers in Islamic countries in particular are concerned that sex education might increase the culture of "out of marriage sex" and encourage youngsters to be involved in unsafe behavior. Sex education is therefore is not offered in formal curriculum as a part of biology class but the responsibility is taken by nongovernmental organizations introducing short interval programs as a part of extra curriculum activities. It is therefore, not compulsory for students to take part in these classes and there is no monitoring process to evaluate the effectiveness of these activities. The situation is not unique to Malaysia. Role of nongovernmental organizations in the prevention and care of HIV disease through sex education interventions has been documented and appreciated in various parts of the world [6]. A study on sex education program was conducted in Belize, Central America by local NGOs to evaluate the effectiveness of a responsible sexuality

This article was accepted: 18 August 2008
Corresponding Author: Shayesteh Jahanfar, Postdoc Epidemiology and Public Health, PhD, Obstetrics and Gynaecology, Royal College of Medicine, 3 Greentown Street, 30450 Ipoh, Perak, Malaysia

education program in changing knowledge and attitude associated with sex among 13 to 19 year olds high school students. Findings proved that greater changes in knowledge were observed in the intervention group than in the control group [7]. Other studies on Irish and British school-going teenagers (15-18 years) attending second level schools proved that sexual health programs may increase knowledge leading to better risk taking behavior [8-11].

A meta-analysis done by Oakley and colleagues reviewed 615 studies that were introducing sexual health education programs for school or college students [12]. Study suggested that from 11 suitable reports for further analysis, seven reported the intervention as partly effective and four studies as fully effective. In the study by Barth *et al* a sex education program delivered to high school students was aimed at increasing knowledge and student-parent communication [13]. The experimental curriculum increased students' knowledge and improved communication with parents on sexual health matters. DiClemente *et al* looked at the impact of a course of AIDS and other information on sexually transmitted diseases in middle and high school students [14]. Students exposed to the course had more correct answers to knowledge questions and were more accepting of classmates with HIV and AIDS.

Although sexual educational programs are conducted in Malaysian schools via NGOs such as Federation of Family Planning Association, no evaluation has been done to gauge the effectiveness and adequacy of these programs. This study aims at investigating the effectiveness of two hours lecture type sex education program on students' knowledge and perception towards HIV/AIDS.

MATERIALS AND METHODS

This was a cross-sectional study consisting of pre and post test evaluation conducted in 2006 at Sekolah Menengah Methodist, Ipoh, Perak in Malaysia. The inclusion criteria were students who attended lower form 4 and 6 with an average academic performance (based on total score of previous year exam). The exclusion criteria consisted of those who were unwilling to take part or did not attend the class on the day of intervention. All classes were approached consisting of 250 subjects. However, the data analysis was only possible for 182 (72.8%) subjects due incomplete questionnaires and loss of data. The program consisted of a two hours talk conducted by the Perak Family Health Association authorities, Ipoh branch. The following information was provided during the talk: the difference between friendship and relationship, level of closeness between male and female friends, physical relationship, gauging participants' knowledge on risk factors in sexual relationship, identifying the perception of participants on HIV/AIDs, transmission of sexual related diseases (STDs), prevention of pregnancies and STDs.

A standard set of questionnaire was distributed and filled by the participants. Questionnaire included three major sections. First part collected socio-demographic characteristics of the subjects (7 questions). The other two parts included questions on knowledge (33 items) with "true" or "false" answers and perception towards HIV/AIDS (18 items) using Linkers scale. A scoring system was adopted to classify the level of knowledge and perception using mean ± standard deviation. Level of knowledge were categorized into low (score below 22), medium (score of 22-30) and high (score of 31-33). Questions on knowledge were asking about transmission of HIV, high risk groups and prevention strategies. Level of perception was categorized to low (score below 11), medium (score of 11-15) and high (score above 15). Perception questions referred to origin of HIV, society role in prevention of HIV and personal perception on HIV. Students were also asked about the importance of sexual education and if they would engage in sexual activity if they were taught about condoms and safer sex.

Students were seated separate from each other when answering the questionnaire to ensure their privacy. No name was recorded but they were asked to write a similar code on pre and post-test so that the data could be linked. Questionnaire was collected by the peer facilitators rather than the adult instructors. Students were asked to respond honestly as information would be used for development of further educational materials for adolescents benefit. They were ensured of confidentiality of the information given as code numbers were used on the questionnaires rather than the students' name. Participants read a fact sheet about the study and signed an agreement to participate in the study. Ethical Committee approval was obtained from the Family Health Association, in Kuala Lumpur and Ethical Committee of Royal College of Medicine, Perak. Each participant filled up two questionnaires, one before the intervention and another one immediately after the intervention. There was no control group as all the students were invited to take part in the program. It was considered unethical to inhibit participants from attending the class.

Statistical analysis was done using SPSS version 14. A *p value* of less than 0.05 was considered significant. Paired t-test was used to compare pre and post test level of knowledge and perception. Chi square test was used to compare qualitative data.

RESULTS

Selected demographic variables are presented in Table I. There were 59.90% female (n=109) and 40.10% male (n=73) among the participants. Their ages ranged from 15 to 19 years, with a mean of 17.65 (SD=0.73). Majority of participants were Chinese (57.1%) followed by 28.0% Indian, 12.6% Malay and 2.2% others.

There was a significant increase in students' mean score of knowledge after attending the intervention. The total HIV/AIDS knowledge score (pre-test) ranged from 10 to 32 (the maximum score of knowledge was 33), with a mean of 25.96 (SD=3.59). As for post-test, the total HIV/AIDS knowledge score ranged from 12 to 32, with a mean of 27.46 (SD=2.99). There was a significant difference between pre-test and post-test score of knowledge (p=0.000). Moreover, the total score of pre and post test of knowledge were positively correlated, r = 0.623 (p=0.000).

Table II shows a comparison of pre and post test for the level of knowledge and perception categorized into low, moderate and high level, respectively (n=182). As it is shown in the table, there was a significant increase in total score (mean) of perception after the intervention ($p<0.05$). Total score of pre and post test of perception were positively correlated, r = 0.743 (p=0.000). Out of 182 participants, 172 (94.7%) thought that it was important for young people to be taught about sexual education. Majority of participants thought that sex education won't encourage them to have sex (n=129, 70.9%).

Table III shows an increased score of knowledge in every age group. There was an increase in the level of knowledge of both genders after attending the sex education program (from 25.40 to 27.70 for males and from 24.80 to 27.30 for females). Females had a lower mean score of knowledge compared to male for both pre and post test (24.8 vs. 25.4 and 27.3 vs. 27.7 respectively). However, female reached the higher mean score of perception when compared with male subjects for both pre-test (13.1 vs. 12.5) and post test (13.2 vs. 12.3).

The two hours lecture was reported to be the main source of HIV/AIDS information (33%), followed by printed material (28%) and TV (14%). Teachers and friends' contribution towards sexual education were 9% and the parents role was even lower (3%). Students in science stream (Physics and Biology) had the overall higher pre and post knowledge and perception score as compared to the art stream students.

Table I: Participants' demographic characteristics (n=182)

Characteristic	N	%
Sex		
Female	109	59.9
Male	73	40.1
Age-group		
15	3	1.6
16	18	9.9
17	20	11.0
18	140	76.9
19	1	0.5
Race		
Chinese	104	57.1
Indian	51	28.0
Malay	23	12.6
Others	4	2.2
Religion		
Buddhist	85	46.7
Hindu	34	18.7
Christian	32	17.6
Muslim	25	13.7
Others	6	3.3
Class		
Biology	78	42.8
Art	49	26.9
Physic	35	19.3
Form 4	20	11.0
Occupation		
Yes	15	8.3
No	165	91.7

Table II: Comparing pre and post level of knowledge and pre-post level of perception (n=182)

Category	Pre (%)	Post (%)
Knowledge*		
High (score 31-33)	26 (14.4)	18 (9.9)
Moderate (score 22-30)	128 (70.7)	138 (76.2)
Low (score below 22)	27 (14.9)	25 (13.8)
Perception*		
High (score above 15)	37 (20.3)	6 (3.3)
Moderate (score 11-15)	125 (68.7)	155 (85.2)
Low (score below 11)	20 (11.0)	21 (11.5)

*P <0.05

Table III: Comparing the total score (mean) of pre and post knowledge and perception according to sociodemographic characteristics (n=182)

Characteristic	Knowledge		P value	Perception		P value
	Pre	Post		Pre	Post	
Age						
15	27.00	29.67	0.054	12.33	12.33	0.048
16	23.88	28.65	0.015	11.22	11.61	0.000
17	25.64	28.77	0.046	13.40	13.55	0.001
18	25.07	28.04	0.000	12.98	12.99	0.000
Gender						
Male	25.38	28.48	0.000	12.48	12.33	0.000
Female	24.82	28. 06	0.000	13.06	13.25	0.000
Race						
Malay	24.09	27.64	0.078	12.78	12.57	0.000
Chinese	25.30	28.55	0.000	13.20	13.38	0.000
Indian	24.88	27.92	0.000	12.12	12.12	0.000
Others	26.75	26.75	0.056	12.50	11.25	0.247
Class						
Form 4	25.10	28.20	0.000	11.20	11.60	0.000
Art	23.80	26.40	0.043	12.70	13.10	0.023
Biology	25.50	28.80	0.000	13.30	14.40	0.000
Physic	26.10	29.00	0.000	12.80	13.30	0.000

DISCUSSION

The HIV epidemic in Malaysia is currently in a "concentrated epidemic" stage with a cluster of intravenous drug users, sex workers and adolescents being at higher risk [11, 15-16]. Zulkifi reports that level of knowledge for adolescence attending school were 90% more than those who did not [17]. However, the depth of knowledge is questionable as not much knowledge is provided in school regarding sexual intercourse or HIV/AIDS transmission. Narimah *et al* report has shown serious gaps and misconceptions about HIV/AIDS [18]. Reid study suggests that subjects were aware that needles are the source of infection but did not know that sharing other injecting equipment can also transfer the virus [19]. These gaps and misconceptions need to be rectified for groups at risks specifically for youth who are the building blocks of future for every nation, have ability to learn and the flexibility to change.

Teachers in biology classes provide some anatomical and physiological facts and figures which does not contain information about HIV/AIDS. Sex education is being conducted in some Malaysian schools in small scale through NGO's as it has not been formally introduced as a part of the curriculum. However, the effectiveness of these activities has never been tested. This study aims at evaluating these activities done by NGOs, as to assess the need for introducing sex education program into formal curriculum or continue on the current path of leaving our adolescence sex education to informal bodies.

Our findings showed an overall significant increase in total score of knowledge and perception of participants as a result of two hours lecture. This finding was consistent with that of Nicaragua [7] and many others. It may be taken for granted that any sex education program should be useful and lead to increase in knowledge and understanding of adolescence regarding reproductive health and HIV/AIDS. However, a thorough literature search suggests that some interventions can be unclear [20], useless [21] or even harmful [22]. Our hypothesis was to find out whether the current programs running in Malaysian secondary schools are adequately providing information to prevent HIV/AIDS. Although the study design did not allow for comparison with the control groups, a significant increase in the level of knowledge and perception towards HIV/AIDS was observed.

Although the effectiveness of such sex education programs have been proven time and time again, there are still interventions that were judged to be ineffective. Hamalainen and Keinanen-Kiukaanniemi conducted a controlled study of the effect of HIV and AIDS knowledge and attitudes of one 45 minute lesson on safer sex and sexually transmitted diseases, including HIV and AIDS, with 15 year old schoolchildren in Finland [21]. Thomas *et al* reported an evaluation of the McMaster "teen" program with 13 year olds and a four year follow up assessment based on questionnaires and psychological tests [23]. The program aimed at providing information about development, sexuality, and relationships; improving communication; and developing problem solving and decision making skills. Outcome data were collected over four years. Evaluation indicated no greater use of contraception or of abstinence among the students. The failure of the educational intervention to enhance students' knowledge about AIDS may reflect the insufficiency of a one-session lecture provided in isolation from a comprehensive AIDS curriculum. Although a controlled-study of preventive effect of peer education done in Turkey [24] using a single-session educational lectures on HIV/AIDS knowledge and attitude showed a significant change among university students. The effectiveness of two hours lecture in our study in a long run remains to be seen and needs further investigation.

The impact of two interventions was judged to be unclear [20, 25]. One intervention, reported on by Christopher and Roosa, was judged to be harmful [22]. These studies evaluated sex education program targeted at youths in South Carolina and Arizona respectively. The latter study had high rate of attrition as the intervention was introduced in multiple sessions.

One of the major issues in sex educations is whether it could encourage the young minds to engage in sexual activities earlier than they were planned to. Our findings suggest that about 80% of participants disagreed that sexual education will encourage sex among youngsters. However, we did not follow up the participants to investigate their practice. Two British studies [4, 11] evaluated the effectiveness of sex education program by measuring their impact on sexual behaviors in a follow up study. It was concluded that such program did not hasten the onset of first intercourse as was feared by some groups but in fact delayed its onset. In contrast, a Nepal study showed that people believe that teaching them about safe sexual practices will promote sexual activity among adolescent [26]. The issue is a sensitive one and since the majority of our sample group was Chinese students, conclusion may not be expanded to other races.

Our study finding suggests that improvement in knowledge was similar for different genders. However, in terms of perception, female showed more improvement than male. A Canadian study proved that sex education program improved attitudes for females ($P < 0.05$) and fostered safer behavioral intent for both males and females. However unlike our study, a significant knowledge improvement after the program ($p<0.01$) was only observed among female participants [27]. Our result also indicated that overall males have more knowledge compared to females which was consistent with a previous study of Asian Indian and Nepalese adolescents [28, 17, 26].

Major sources of information received by the students were shown to be the provided lecture, printed materials and media respectively. Teachers and friends' contribution towards sexual education were narrow. This probably is due to the fact that Malaysians are more conservative compared to western countries. The Irish and British studies showed that 70% of teenagers had received sex education at school but this was not the 'main' source of information. In that study, the top 3 'main' sources of sexual information were friends, teachers and parents. This finding was contradicting the data from Nepalese study which stated school and media (TV and radio) as their main source of information [26].

Parents' role in teaching sexual behavior can be of immeasurable value yet most studies including ours verify that parents play almost negligible role in teaching sexual

matters to their adolescents. Aspy studied the role of parental communication and instructions concerning youth sexual behavior in a community-based sample of 1083 [13-17] years old teenagers [29]. He concluded that parents have the opportunity and ability to influence their children's sexual behavior decisions. In his study youth were much less likely to have initiated sexual intercourse if their parents taught them to say no, set clear rules, talked about what is right and wrong and about delaying sexual activity.

CONCLUSION

Knowledge and perception of the students regarding HIV improved after attending the sex educational program offered by NGO in secondary school. Current NGO activities in schools seem to be sufficient to improve adolescent knowledge and perception towards HIV. Long term effect of these programs need to be investigated through a well designed randomized controlled trials with multipoint follow ups.

AKNOWLEDGEMENT

This research was part of the medical elective program of medical students in Royal College of Medicine, Perak; University of Kuala Lumpur. Our extensive appreciation goes to ethical committee members for providing permission for this study. We would like to thank all the students who participated in the study.

REFERENCES

1. UNAIDS country profile. HIV/AIDS-specific country profile. Available online at http://www.unaids.org/en/Regions_Countries/Countries/malaysia.asp. (Accessed 6th December 2006).
2. Kirby D. Sex and HIV/AIDS education in schools. Br Med J 1995; 311: 403-05.
3. Rotheram MJ. Based on the research, comprehensive sex education is more effective at stopping the spread of HIV infection, APA press release. 2005; Feb 23: 2 (col 1).
4. Wellings K, Wadsworth J, Johnson AM *et al*. Provision of sex education and early sexual experience: the relation examined. Br Med J 1995; 311: 417-20.
5. Mellanby AR, Phelps FR, Crichton NJ *et al*. School sex education: an experimental programme with education and medical staff. Br Med J 1995; 311: 414-7.
6. Solomon S, Ganesh AK. Role of nongovernmental organizations in the prevention and care of HIV disease in women and children. It makes a difference. Ann NY Acad Scien 2000; 918: 22-6.
7. Martiniuk AL, Steel O'Connor K, King WD. A cluster randomized trial of a sex education programme in Belize, Central America. Int J Epidemiol 2003; 32: 131-37.
8. Nicaragua PJ, Ferrie J, Rivera VR *et al* A controlled HIV/AIDS-related health education program in Managua, Nicaragua. AIDS 2002; 10: 537-44.
9. MacHale E, Mfphmi MB, Newell J. Sexual behavior and sex education in Irish school-going teenagers. Int J Sex Trans Dis Auto Immun Dis 1997; 8: 196-200.
10. Fogarty J. Knowledge about AIDS among leaving certificate students. Ir Med J 1990; 83: 19-21.
11. Hurley M. Health Education Bureau National survey on public knowledge about AIDS in Ireland. Healt Edu Res 1988; 3(1): 25-29.
12. Oakley A, Stephenson JM, Charleston S. Behavioral intervention trials for HIV/STD prevention in schools: are they feasible? Sex Trans Info 1998; 74: 405-8.
13. Barth RP, Fetro JV, Leland N, Volkan K. Preventing adolescent pregnancy with social and cognitive skills. J Adolesc Res 1992; 7: 208-32.
14. DiClemente RJ. Psychosocial determinants of condom use among adolescents: Adolescents and AIDS: A Generation in Jeopardy. Newbury Park, CA: Sage Publications, 1992: 132-46.
15. Sattler G. Harm reduction among injecting drug users. Malaysia. Mission Report, World Health Organization, Regional office for the Western Pacific, Manila, Philippines, 2004.
16. MOH document The HIV/AIDS prevention program in Malaysia. Ministry Health Malaysia. http://www.webjka.gov.my/AIDS/; 2004 (Accessed 6th December 2006).
17. Zulkifli SN. Knowledge, Attitudes and Beliefs Related to HIV/AIDS Among Adolescents. MMJ 2002; 57: 3-23.
18. Narimah A, Ang ES, Low SWY *et al*. Review of adolescent sexual and reproductive health in Malaysia. Kuala Lumpur. Ministry of Health, 2003.
19. Reid G, Kamarulzaman A, Sran SK. Rapid situation assessment of Malaysia 2004. Burnet Institute for harm reduction. Kuala Lumpur: University Malaya/Department of Medicine/Infectious disease unit publishers, 2005.
20. Thomas LL, Long SE, Whitten K *et al*. High school students' long term retention of sex education information. J school Health 1985; 55: 274.
21. Hamalainen S, Keinanen-Kiukaanniemi S. A controlled study of the effects of one lesson on the knowledge and attitudes of schoolchildren concerning HIV and AIDS. Heal Edu J 1992; 51: 135-9.
22. Christopher FS, Roosa MW. An evaluation of an adolescent pregnancy prevention program: is "Just say no" enough? Fam Relat 1991; 39: 68-72.
23. Thomas BH, Mitchell A, Devlin C *et al*. Small group sex education at school: the McMasters team program. In: Miller BC, Card JJ, Paikoff RL, Peterson JL, eds. Preventing adolescent pregnancy. Newbury Park, CA: Sage Publications 1992; 28-52.
24. Ergene TTT, Cok F, Tumer A *et al*. A controlled-study of preventive effects of peer education and single-session lectures on HIV/AIDS knowledge and attitudes among university students in Turkey. AIDS Educ Prev. 2005; 17 (3): 268-78.
25. Wanlass RL, Kilmann PR, Bella BS *et al*. Effects of sex education on sexual guilt, anxiety, and attitudes: a comparison of instruction formats. Arch Sex Behav 1983; 12: 487-502.
26. Mahat G, Ann M. HIV/AIDS knowledge, attitudes and beliefs among Nepalese adolescents. J Adv Nurs 2005; 53 (5): 583-90.
27. David ME. Gender equity and public policy discourses. In Griffith A. & Raynold C. (eds) Equality and globalization in education. Toronto, Canada: JAI, 2003.
28. Wolffers I. Culture, media and HIV/AIDS in Asia. Lancet 1997; 349: 52-54.
29. Aspy CB, Vesely K S. Parental communication and youth sexual behavior. J Adolesc 2007; 30 (3): 449-66.