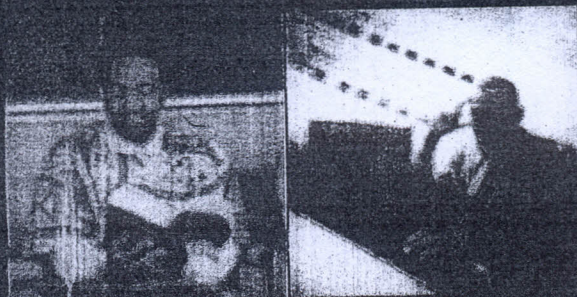


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**INFLUENCE OF PSYCHO-DEMOGRAPHIC FACTORS AND
EFFECTIVENESS OF PSYCHO-BEHAVIOURAL INTERVENTIONS ON
SEXUAL RISK BEHAVIOUR OF IN-SCHOOL ADOLESCENTS IN
IBADAN, NIGERIA**

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Abstract

Sexual risk behaviours (SRBs) among youths continue to reverse the initial gains in HIV/STD control in Nigeria. Very little is known about the interactive influence of psycho-demographic factors (self concept, HIV/AIDS knowledge, and gender) and psycho-behavioural interventions (psycho-education and assertiveness training) in reducing HIV SRBs among at-risk in-school adolescents.

The study investigated the influence of psycho-demographic factors and psycho-behavioural interventions on HIV SRB. The quasi-experimental study purposively recruited 120 participants who reported unsafe HIV SRB during a school-wide survey in Ibadan. They responded to an 85-item questionnaire, and were further exposed to a 6-week psycho-behavioural treatment. Following a 3x2x2x2 ANCOVA, MCA and descriptive statistics, results showed that treatments significantly influenced HIV SRB ($F(2,119) = 11.31, P < 0.005$). Psycho-education intervention participants recorded greater reductions in HIV SRB ($n, 40, \bar{X} = 29.57$), followed by the assertiveness training group ($n, 40, \bar{X} = 39.68$), and lastly the control group ($n, 40, \bar{X} = 43.90$). Female adolescents with high self-concept and good knowledge of HIV/AIDS who received psycho-education recorded the greatest reduction in HIV SRB ($n, 6, \bar{X} = 24.67, SD = 5.89$). Male adolescents in the control group with low self-concept but with good HIV/AIDS knowledge ($n, 6, \bar{X} = 53.50, SD = 16.23$) recorded the most unsafe post intervention HIV SRB score.

Good knowledge of HIV/AIDS alone does not yield safe HIV SRB, but additional exposure to psycho-education, with good self-concept development. Therefore, behavioural techniques should be

considered along with other interventions in STDs and HIV control among in-school adolescents.

Key words: Psychosocial factors, Behavioural techniques, HIV/AIDS, Sexual- risk behaviour, Adolescents.

Introduction

Efforts at curtailing the spread of HIV have slowed the spread of the virus, but have not stopped it in most regions of the world. Three decades after, the epidemic continues to present many daunting challenges. First, new infections are still being reported especially in sub-Saharan Africa (UNGASS, 2010). In Nigeria, by the end of 2009 an estimated 3.6 percent of the population, i.e. almost 3 million people are living with HIV and AIDS (UNGASS, 2010). Second, about 80-95 percent of HIV infections in Nigeria are a result of heterosexual transmission (UNGASS, 2010), and other sexual risk behaviours (SRBs). Third, half or more of all HIV infections occur before age 25, and is one of the leading causes of death in adolescents (APA, 2006). With these, SRBs among in-school adolescents may soon reverse the initial gains in HIV/STD control in Nigeria.

Emerging HIV/AIDS prevention literatures have paid little attention to determining the efficacy of psycho-behavioural interventions as a tool for curtailing HIV risk behaviours among people born after ten years of the epidemic. Additionally, very little is known about the interactive influence of psycho-demographic factors (self concept, HIV/AIDS knowledge, and gender), and psycho-behavioural interventions (psycho-education and assertiveness training) in reducing HIV SRB among at-risk in-school adolescents. The need for further psychological inquiry into these therefore becomes imperative.

The problem of SRB is global, and crippling in many societies. Despite the successes recorded in HIV prevention interventions in the USA over the years (National Youth Risk Behaviour Survey, 2009), a 2009 research revealed that 46% of high school students had ever had sexual intercourse, and 14% of the students had had four or more sex partners during their life (Tortolero, Markham, Peskin, Shegog, Addy, & Escobar-Chavez, 2010). In Burkina Faso, a study revealed that 11% of adolescent males sampled had sexual intercourse in last twelve months with more than two partners but did not use condoms (Georges & Nyovani, 2007). Esere, (2008) observed that despite increased sexual knowledge, adolescents in Nigeria are poor contraceptive users (Abogunrin, 2003). They are less likely than adults to consistently use condoms or other methods of protection that could reduce their chances of HIV/STD (Adegoke, 2003).

Adolescents are critical to HIV/AIDS spread in Nigeria. The first case of HIV involved a 13-year old girl, showing a significant teenager involvement. There are research evidences that well-designed and well-implemented HIV/STD prevention programs can decrease SRBs among students (Bankole, Biddlecom, Guiella, Singh, and Zulu, 2007), including: Delaying first sexual intercourse (Tortolero et al, 2010; Jemmott 2010), reducing the number of sex partners (Jemmott, 2010; Villarruel, 2006), increasing the number of times students have unprotected sex (Coyle, Kirby, Robin, Banspach, Baumler, & Glassman, 2006; Jemmott, Jemmott, Braverman, & Fong, 2005), and increasing condom use (Coyle, Kirby, Robin, Banspach, Baumler, & Glassman, 2006). Paradoxically, even though the field of HIV/AIDS research is growing, current efforts at developing the capacity of adolescents to perceive their vulnerability, develop positive attitudes, and adopt safe lifestyles is scant.

The foundation for curtailing HIV/SRB should include an investigation of the influence of psycho-demographic factors. This might have been the rationale for investigations conducted by Del-Rio, Saluja, Gvetadze, and Tzertvadze (2000) and later the National Youth Risk Behaviour Survey (YRBS) which revealed the association between HIV/AIDS knowledge and SRB (National YRBS, 2009). However, there are times when knowledge does not translate to behaviour. Uwakwe, Agofure, Ogundiran, and Okangba, (2000) in their study among undergraduates in Ibadan and Ago-Iwoye, in Nigeria found that even when 34.2 % of the respondents perceived themselves to be at risk for HIV, only 28.4 % adopted any HIV preventive methods.

Similarly, a UNAIDS (2000) survey of men and women in 18 countries around the world revealed that in all, men acknowledge a higher number of sexual partners than women. Similarly, cultural practices in some Nigerian communities encourage polygamy, sexual coercion, and male domination of sexual decision making. The role of self concept, the way in which a person views himself or herself also needs to be investigated in gaining a better understanding of HIV SRB in these contexts ych(VanDyk, 2001).

The American Psychological Association (APA) SRB-reduction effort promotes widespread implementation of comprehensive and empirically supported HIV prevention programs for adolescents, and as necessary these interventions should be tested against those programs with proven effectiveness (APA, 2006). This has been associated with long-term reductions in SRBs in different populations including adolescents (Gavin, Catalano, David-Ferdon, Gloppen, & Markham, 2010).

Many psycho-behavioural approaches in curtailing HIV/AIDS have been adopted in the past. Since society is

dynamic, human response to interventions would most unlikely be static or rigidly predictable across cultures and life-spans. Further, the relation between HIV/AIDS, human response, and behaviour varies across cultures and phases of the epidemic. Possibilities exist that the outcomes of psychological interventions reported a few decades ago would no longer subsist today. There is therefore the need to empirically determine the efficacy of contemporary interventions in the emerging socio-psychological dynamics of HIV/AIDS.

Assertiveness training helps people develop socially appropriate expression of feelings, attitudes, wishes, and rights (Alberti & Emmons 1976) without violating those of others. Assertiveness training has been used with good outcomes in various HIV/AIDS risk reduction programmes (e.g. Weinhardt, Carey, Carey, & Verdecias, 1998). Similarly, psycho-education is designed to inform and motivate individuals towards positive sexual health, and specifically as a tool aimed at changing adolescents' cognitive awareness on HIV sexual risk taking in order to embrace preventive behaviours. The relevance of psycho-education in improving health related behaviours has been established by Chou, Chin, and Rodriguez (2000), as well as Olley, Osinowo, and Brieger (2001). This study is intended to compare differences in the efficacy between the two interventions; and further investigate the association between the interventions and psycho-demographic factors in reducing HIV SRB among in-school adolescents.

Research Questions.

1. Will there be any significant difference in HIV/AIDS knowledge, HIV/AIDS SRB, and self concept of participants following psycho-behavioural interventions (psycho-education or assertiveness) among in-school adolescents?
2. Will a factorial combination of psycho-behavioural interventions and psycho-demographic factors significantly influence HIV/AIDS SRB?

Method

This quasi-experimental study utilised the pretest/post-test control group design. Psychoeducation and assertiveness training were the treatments i.e. psycho-behavioural interventions. Participants in the control group received no interventions. In order to observe the interactive effect of treatments and psycho-demographic factors, a 3 x 2 x 2 x 2 factorial matrix was obtained. The dependent variable was HIV SRB.

The study took place at a public High School in Ibadan, Nigeria. This location was chosen because of convenience and accessibility to participants. Participants were purposively

selected from a survey of SRB among adolescents (N=1,208) in public secondary schools in Ibadan North Local Government area following an inclusion-exclusion criteria which included:

- i. Actively participated, completed and submitted the survey questionnaire; indicating desire to participate in a follow-up quasi-experimental study if invited.
- ii. Found to have scored above the mean \bar{X} of 44.68 in SRB assessment, meaning unsafe HIV SRB
- iii. Signed the second stage participants' (consent) form after reading through with further explanations provided as required in order to meet research ethics standards
- iv. Got approval of parent or guardian for participation and
- v. Not a final year student because the 6-week training and follow up may affect preparation for final examinations holding at the same time.

A total of 120 willing participants with high/unsafe HIV SRB scores were purposively selected. The pretest mean of the quasi experimental group on HIV SRB was N=120, \bar{X} =52.49, SD = 11.76, whereas the group mean in the survey study was N = 1208 \bar{X} = 44.68 and SD = 14.91. Selection process considered gender, self concept, and level of HIV/AIDS knowledge to have a form of balancing. From these, participants were randomly selected into the psycho education, assertiveness training and control groups by balloting with 40 students in each of the 3 groups.

The participants consisted of 60 (50%) males and 60 (50%) females. Seventy-eight i.e. 65% of these were in SS 2 while the remaining 42 i.e. 35% were in SS 1 class. Ninety-two i.e. 76.7% of these were Christians while 23.3% were Moslems. Eighty-three i.e. 69.2% were Yorubas, 13 i.e. 10.8% were Igbos, 12 i.e. 10% were Edos and the remaining 12 i.e. 10% were of other Nigerian tribes. Their age ranged between 13 and 21 years with the mean age of \bar{X} = 17.08.

Research instrument was made up of an 85-item questionnaire. Section A with 7 items was designed to obtain information on participants' socio-demographic characteristics. Section B was designed to measure participants' HIV/AIDS knowledge. It contained 23 items with Yes or No responses. The scoring of this section was designed such that every correct response of "Yes" and correct response of "No" were scored 1 and 0 respectively. The norms established for the instrument included N=1208, \bar{X} =18.62 and S.D=3.48. The higher the score on this instrument, the higher the knowledge of HIV/AIDS. It yielded a Cronbach alpha of 0.65. The split half reliability were 0.56 and 0.56 for the two parts respectively.

Section C measured participants' HIV SRB. It contained 25 self-report items with 5 graded responses in a Likert form of Strongly agree (which was scored 5), to Strongly disagree (which was scored 1). There were no right or wrong answers. Five of the items were open-ended. The norms obtained were; $N=1208$, $\bar{X}=44.68$, and $S.D.=14.91$. A high score indicated high HIV S.R.B. and vice-versa. Also, a Cronbach alpha of 0.87, and split half reliability of 0.82 and 0.73 for the two halves were obtained.

Section D had 30 items. It is part of a 285-item Adolescent Personality Data inventory (A P D I) developed by Akinboye, (1982) for assessing self-concept. A high score indicates high/good self concept. Akinboye, (1982) reported a 0.75 coefficient alpha, while the test-retest reliability coefficient was 0.86. The scale was revalidated for this study. 12 items yielded weak correlation and were eventually dropped from the final analysis. However, the Cronbach alpha was 0.71, with a split half reliability of 0.58 for both parts 1 and 2. The norm obtained was $N=1208$, $\bar{X}=99.85$ and $S.D.=13.97$.

Data Collection : There were two focus group discussions and a pilot study. Items obtained from the pre-data collection procedures, literature and similar earlier studies were used in developing the intervention packages. The modules and the themes were subjected to a critical review of three experts during which some of the contents were modified to ensure its face and content validity.

The 6-week psycho-education intervention was arranged into 6 sessions with major themes as follows: Introduction, HIV/AIDS education; HIV sexual risk avoidance behaviour; Introduction to Cognitive Restructuring of Thoughts and Behaviour; Application of cognitive restructuring to psycho-education in sexual-risk reduction; and lastly, Summary, Conclusion and Termination. Similarly, The 6-week assertiveness training was arranged into 6 sessions with major themes as follows: Introduction to treatment, The concept of Assertiveness and related background; The Complements of Assertive Behaviour (Part One); Complements of Assertive Behaviour (Part Two); The practice of Assertive Behaviour; followed by and Summary, Conclusion and termination of therapy (Galassi & Galassi, 1978).

Before the main study, permission was obtained from the University of Ibadan, and the Oyo State Ministry of Education, Ibadan, Nigeria to conduct the study. These were presented to the Principals of the students' schools and the study setting. Assent was obtained from the participants and consent from their parents or guardians.

Participants were randomly divided into 3 groups of 40 each. There was a pre-test data collection before the

interventions, followed by a separate 2-hourly weekly introduction of psycho-behavioural interventions of psycho-education for group one, assertiveness training for group two, while the control had no treatment at all. After 6-consecutive weeks of interventions, there was a post test evaluation for the 3 separate groups, followed by a debriefing of the 120 participants.

The data obtained from this study was analysed with the use of analysis of covariance (ANCOVA). Additionally, means, standard deviation, percentages, and t-test for independent groups were computed. Furthermore, in order to find out the significant difference between means, multiple comparisons of the means (MCA) were carried out using Scheffe.

Results

Table:1 Summary Table of mean score of treatment groups on HIV/AIDS Knowledge, HIV/AIDS SRB, and self concept before and after the quasi experiment.

Treatment Groups		Score on Knowledge		Score on HIV-SRB		Score on Self Concept	
		Pretest	Post test	Pretest	Post test	Pretest	Post test
Psycho	Mean	18.82	19.45	50.95	29.57	109.15	107.28
	N	40	40	40	40	40	40
	Std.Dev.	2.47	2.10	16.94	8.67	12.09	8.43
Assertive	Mean	18.33	19.20	66.58	39.68	106.63	107.60
	N	40	40	40	40	40	40
	Std.Dev.	3.07	1.95	10.00	10.34	10.91	11.51
Control	Mean	18.22	18.95	63.45	43.90	107.73	107.00
	N	40	40	40	40	40	40
	Std.Dev.	3.44	1.84	8.33	14.75	9.47	3.11
Total	Mean	18.47	19.20	60.33	37.72	107.83	107.29
	N	120	120	120	120	120	120
	Std.Dev.	2.99	1.96	11.76	11.25	10.83	7.68

The three quasi-experimental groups were similar in pre-test measurements on HIV/AIDS knowledge with the control group recording the lowest value (n 40, \bar{X} = 18.22, S.D. 3.44). The assertiveness group had a score of n= 40, \bar{X} = 18.33, while the psycho education group had n 40, \bar{X} = 18.82. However, during the post test period, there were differences in the HIV/AIDS knowledge level of the three intervention groups; the psycho-education group recorded the highest value with n= 40, \bar{X} = 19.45; followed by the assertiveness training group with n= 40, \bar{X} = 19.20; and lastly the control group with n= 40, \bar{X} = 18.95:

There were differences in the pre -test scores of the three intervention groups on HIV SRB. The assertiveness training group had the highest value (n 40, \bar{X} = 18.22, S.D. 3.44), followed by the

control group ($n=40$, $\bar{X}=63.45$), and lastly the psycho-education group ($n=40$, $\bar{X}=50.95$). Differences were observed in the HIV/SRB ratings of the participants following interventions with the psycho-education group recording the lowest HIV/SRB ($n=40$, $\bar{X}=29.57$), followed by the assertiveness training group ($n=40$, $\bar{X}=39.68$), and lastly the control group ($n=40$, $\bar{X}=43.90$).

Before the intervention the three groups were similar on self concept. The psycho-education group recorded ($n=40$, $\bar{X}=109.15$), followed by the control group ($n=40$, $\bar{X}=107.73$) and lastly the assertiveness training group ($n=40$, $\bar{X}=106.63$). The post intervention scores of the participants on self concept was minimal with the assertiveness training group recording the highest ($n=40$, $\bar{X}=107.60$), followed by psycho-education group ($n=40$, $\bar{X}=107.28$), and lastly the control group ($n=40$, $\bar{X}=107.00$).

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Table 2: Summary of 3x2x2x2 factorial matrix showing combinations, group mean score on post test HIV SRB, number of individuals involved, and ranking; beginning with the lowest (safest) HIV SRB group.

		Male	Male	Female	Female	
		Good Knowledge	Poor knowledge	Good Knowledge	Poor Knowledge	
Psycho Education=S	Low SC = L	SLMG N= 3 \bar{X} =29.33 =4 th	SLMP N= 3 \bar{X} =35.33 =9 th	SLFG N= 4 \bar{X} =31.00 =7 th	SLFP = 5 \bar{X} = 27.20 =3 rd	15
	High SC = H	SHMG = 8 \bar{X} =30.37=5 th	SHMP N= 6 \bar{X} =35.53 =9 th	SHFG N= 6 \bar{X} =24.67 =1 st	SHFP N= 5 \bar{X} = 25.20 =2 nd	25
Assertiveness Training = A	Low SC = L	ALMG N= 7 \bar{X} =46.57 =21 st	ALMP = 3 \bar{X} = 42.33 =18 th	ALFG N= 6 \bar{X} =39.33=15 th	ALFP N= 4 \bar{X} = 44.75=20 th	20
	High SC = H	AHMG N= 4 \bar{X} =41.00 =17 th	AHMP N=6 \bar{X} =34.17 =8 th	AHFG N= 5 \bar{X} =30.80 =6 th	AHFP N= 5 \bar{X} 39.20 =14 th	20
Control = C	Low SC = L	CLMG N= 6 \bar{X} =53.50 =24 th	CLMP N= 5 \bar{X} = 48.40 =23 rd	CLFG N= 5 \bar{X} =48.20=22 nd	CLFP N= 6 \bar{X} =38.83 =13 th	22
	High SC = H	CHMG N= 4 \bar{X} =43.50 =19 th	CHMP N= 5 \bar{X} =39.80 =16 th	CHFG = 6 \bar{X} =38.67 =12 th	CHFP N= 3 \bar{X} =38.00 =11 th	18
Total		32	28	32	28	120

Key S = Psycho education A= Assertiveness C = Control M = Male L=Low self concept P=Poor HIV/AIDS Knowledge G = Good HIV/AIDS Knowledge F= Female H=High self concept

Table 2 Shows that female adolescents with high self concept and good knowledge of HIV/AIDS who received psycho education had the highest score ($\bar{X}=24.67$) on HIV SRB meaning after treatment, this group had the lowest (safest) post intervention HIV/AIDS SRB, followed by females with poor HIV/AIDS knowledge with high self concept who received psycho education ($\bar{X}= 25.20$). The third in the ranking of lower HIV SRB were females with low self concept with poor HIV/AIDS knowledge who received psycho education ($\bar{X}= 27.20$).The group with the highest i.e. worst HIV/AIDS assessment were male adolescents in the control group with low self concept, but with good HIV/AIDS knowledge ($\bar{X}= 53.50$), followed by males with low self concept and poor knowledge of HIV/AIDS who received no intervention ($\bar{X}=48.40$). The third in the ranking of adolescents with risky HIV/AIDS SRB were females with low self concept, good HIV/AIDS knowledge, who received no intervention ($\bar{X}= 48.20$). The details of the ranking of all the factorial groups in relation to the interaction effect of the treatments and psychosocial factors on the HIV SRB of adolescents in this quasi experimental study is presented in Table 2

Table 3 Summary of 3x2x2x2 factorial matrix analysis of covariance (ANCOVA) with post test HIV SRB as dependent variable, showing main and joint effect(s) of independent variables on HIV/AIDS SRB

Source	Sum of squares	D.F	Mean Square	F	Sig.
Pre-test HIV SRB (Covariate)	1427.75	1	1427.75	10.68	< .05
Self Concept (A)	748.15	1	748.15	5.60	< 0 .05
HIV Knowledge (B)	36.15	1	36.15	.27	N.S
Gender (C)	763.67	1	763.67	5.17	< 0.05
Treatments (D)	3024.21	2	1512.11	11.31	< 0.05
A x B	43.46	1	43.46	.33	N.S
A x C	4.68	1	4.68	.04	N.S
A x D	202.22	2	101.11	.76	N.S
B x C	21.01	1	21.01	.16	N.S
B x D	237.68	2	118.93	.89	N.S
C x D	70.26	2	35.13	.26	N.S
A x B x C	65.89	1	65.89	.49	N.S
A x B x D	34.34	2	17.17	.13	N.S
A x C x D	86.92	2	43.45	.33	N.S
B x C x D	438.07	2	219.03	1.64	N.S
A x B x C x D	2.91	2	1.45	0.01	N.S
Residual	12700.77	95	133.69		
T total	19920.37	119	167. 40		

Key:

< 0.05= Significant

N.S = Insignificant

From Table 3, it could be seen that the hypothesis which states that there will be a significant effect of treatments on HIV SRB among treatment subjects was supported $F(2,119) = 11.31, P < 0.005$. This means that the treatments (psycho education, assertiveness training and control) had a significant effect on adolescent HIV SRB as seen in this study. Gender, and self concept were also found to be significant with the exception of HIV/AIDS knowledge.

Table 4: Summary of multiple classification analysis (M.C.A) of mean score of treatments, gender, HIV/AIDS knowledge, and self concept

Grand Mean = 37.72

Variable + Category	N	Unadjusted Deviation	Beta	Adjusted for Independents	Beta
Gender					
1. Male	60	2.40		2.53	
2. Female	60	-2.40		-2.53	
			.19		.20
HIV Knowledge					
1. Good	64	.58		.51	
2. Poor	56	-.66		-.59	
			.05		.04
Self Concept					
1. Low	57	3.67		2.83	
2. High	63	-3.32		-2.56	
			.27		.21
Treatments					
Psychoeducation	40	-8.14		-7.22	
Assertiveness	40	1.96		1.56	
Control	40	6.18		5.66	
			.47		.42

Multiple R squared .30 Multiple R .55

Table 4 above reveals that low self concept had an adjusted mean of $\bar{X}=40.83$ while high self concept had $\bar{X}=35.16$, self concept also yielded a beta value of 4.41 meaning that it accounted for 4.41 % of the combined influence of treatments and psychosocial factors on HIV SRB. Good HIV/AIDS knowledge yielded an adjusted mean of $\bar{X}= 38.32$ while poor knowledge had $\bar{X}=37.13$. Knowledge also collectively yielded 0.002% of the combined impact of treatments and psychosocial factors on HIV SRB. Males had an adjusted mean of \bar{X}

=40.25 while had \bar{X} =35.19. Gender collectively yielded 4 % of the combined influence of treatments and psychosocial factors on HIV SRB. Psychoeducation yielded an adjusted mean of \bar{X} =30.50, assertiveness had \bar{X} =39.28, and control \bar{X} =43.38. Treatments collectively had a combined value of 22.09 % of the overall influence of treatments and psychosocial factors on HIV SRB.

Table 5: Summary of Scheffe post hoc analysis comparing treatments on HIV SRB in quasi experimental study

	\bar{X}	Control	Assertiveness	Psychoeducation
Control	43.90			
Assertiveness	39.68	*		
Psycho education	29.58	*		

Table 5 shows that there is significant difference in the means recorded in the interaction between psycho-education and control, as well as between assertiveness and control at 0.5 level of significance. No significant difference exists between assertiveness training and psycho-education.

Discussion

This study revealed a significant effect of the two psycho-behavioural interventions in reducing HIV SRB. This is in agreement with the findings of Tortolero, Markham, Péskin, Shegog, Addy, and Escobar-Chavez, (2010); Bankole, Biddlecom, Guiella, Singh, and Zulu, (2007), as well as Olley, Osinowo, and Brieger, (2001). The Psycho-education group had about 58% reduction in HIV SRB post-intervention, probably because the intervention addressed the core issues related to HIV SRB such as; HIV sexual risk avoidance behaviour, cognitive restructuring of thoughts, and behaviour and application of cognitive restructuring to psycho-education in sexual-risk reduction.

On the other hand, an individual's mere HIV/AIDS knowledge had no significant influence on HIV SRB contrary to the revelation in the National Youth Risk Behaviour Survey (2009). Confirming the findings of Uwakwe, Agofure, Ogundiran, and Okangba (2000), it is not only knowledge of a concept that matters but a more pragmatic and eclectic fusion of other critically related themes deliberately fashioned to change cognitions, attitude and behaviour (Esere, 2008). The incapacity of knowledge to change behaviour in certain critical contexts explains why a consultant psychiatrist would engage in chain smoking; that is also why a chemical pathologist would find pleasure in casual sex despite his level of education. Further, it could be seen from the 3 X 2 X 2 X 2

factorial matrix combinations involving psycho education that despite the presence of a negative factor such as low self concept and good HIV knowledge, factorial combination of psychodemographic factors with psycho-education still yielded the safest post intervention HIV SRB ranking: affirming that the intervention is ideal in curtailing HIV SRB, especially among in-school adolescents.

The theoretical foundation for the relevance of Assertiveness training was laid by Alberti and Emmons (1976). The intervention was found effective in reducing HIV SRB in agreement with findings published by Weinhardt, Carey, Carey, and Verdecias, (1998). The training helps people develop socially appropriate expression of feelings, attitudes, wishes, and rights without violating those of others. Considering that components such as; behaviour rehearsal, modeling, reinforcement, group discussions, homework assignments and training in non-verbal expression were integral; assertiveness training helped the adolescents to acquire the ability to affirm their decisions positively and to develop socially appropriate feelings, attitudes and opinions in social or sexual encounters, thus equipping them to reduce HIV SRB.

A further theoretical explanation for the positive feedback from the assertiveness training could be hinged on the Skill Deficit Model as well as the Anxiety Inhibition Model. The skills gained during the interventions according to the Skill Deficit Model suggests that if an individual fails to behave assertively, it is because the skills necessary for competent performance are absent from his or her behavioural repertoire. Also, the Anxiety Inhibition Model holds the view that anxiety assumes the causal role in non-assertive behaviors because the presence of anxiety inhibits the expression of assertive or more adaptive behaviours.

It was observed that the participants in the control group had a high score on post test HIV SRB assessment, which indicates that they continued to manifest a high tendency to engage in risky HIV SRB. This may be due to the fact that they were not exposed to any form of behavioural technique. Their failure to get exposed to any effective intervention might have encouraged their continuous disposition towards risky HIV SRB.

The finding that male adolescents scored higher on post intervention HIV SRB shows that males were more involved in HIV-related sexual risk taking, and also profited little from the intervention; confirming the assertion by Jackson (2002) and UNAIDS (2000), that the global AIDS epidemic is driven by men. Males are often more expressive and dis-inhibited compared to

females in expressing the urge, or initiating a sex move. Further, many parents are less insistent on strict moral discipline on their male adolescent children compared to the close monitoring and demand for compliance enforced on growing adolescent girl children. This is also why more males are offenders in rape charges and sexual assaults. Similarly, certain cultural practices such as polygamy and less sanction on males involved in extra-marital affairs especially in many Nigerian communities may fuel males' predisposition to HIV SRB-risk laden practices. However, commercial sex work, which has is one of the trades with the highest inherent HIV-infection risk is mostly practiced by adolescents and young female adults, even though males are still their clients.

Self concept influenced HIV SRB in this study. Self concept is an integral part of an individual's personality, hence could ultimately influence people's cognitive approach to any issue and therefore the character or behaviour. This was why Maslow, (1954) opined that all people should be equipped with a value for stable, firmly- based, usually high evaluation of themselves. In essence, this could determine what an individual would tolerate from, or do to others.

The hypothesis which sought to find out whether there will be a significant interactive influence of treatments and psychosocial factors on adolescent HIV sexual risk behaviour was not supported. This means that psychosocial factors and treatments do not jointly influence HIV SRB. It further implies that even though there could be a significant influence of behavioural techniques on adolescents' tendency to engage in risky HIV sexual behaviour on one hand as well as a significant effect of psychosocial factors on the other hand, the significant influence is peculiar to only their unique entities but not when any other factor is considered in association.

It could therefore be said that when exploring the factors that could significantly influence adolescents already involved in risky HIV SRB to reduce HIV SRB, it is unnecessary to consider behavioural techniques and psychosocial factors in association as it is unlikely that one will strengthen the other in influencing an adolescent to engage in HIV sexual risk behaviour as revealed in this study.

Conclusion and recommendations

In summary, psycho-education and assertiveness training were effective in reducing HIV SRB when compared with controls,

with psycho-education being more impactful. However, there was no statistically significant difference between psycho-education and assertiveness training. Lower mean differences were recorded in the level of HIV/AIDS knowledge after intervention with the psycho-education group gaining more HIV knowledge, followed by the assertiveness training group; and lastly the control group. There were minimal improvements in self concept following interventions with the assertiveness training group recording the best outcome, followed by psycho-education group, and lastly the control group.

Female adolescents with high self concept and good HIV/AIDS knowledge who received psycho education recorded the safest/best post intervention HIV SRB followed by females with poor HIV/AIDS knowledge with high self concept who received psycho education. Male adolescents in control group with low self concept but with good HIV/AIDS knowledge reported the most unsafe HIV SRB, followed by males with low self concept and poor knowledge of HIV/AIDS who received no intervention. Gender and self concept had significant influence on HIV SRB with the exception of HIV/AIDS knowledge.

In conclusion, good knowledge of HIV/AIDS alone does not yield safe HIV SRB, but additional exposure to psycho-education, with good self-concept development. Therefore, behavioural techniques should be considered along with other interventions in STDs and HIV control among in-school adolescents.

School health programs can help youth adopt lifelong attitudes and behaviors that support overall health and well-being—including behaviors that can reduce their risk for HIV and other sexually transmitted diseases (STDs). The use of self-reports of behaviour is problematic in that in most cases we have evidence of efficacy of behavioural interventions in changing self-reported behaviours, which may not be valid surrogates for incidence of infection (Aral and Peterman, 1998). We know more about the effectiveness of behavioural interventions than we did a few years ago, but we still have a lot to learn.

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