



International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

<http://gssrr.org/index.php?journal=JournalOfBasicAndApplied>



Implications of Up-Scaling HIV and AIDS Therapeutic Services on Young Peoples' Knowledge and Perception of HIV and AIDS in Morogoro Region Tanzania

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Abstract

This study investigated the implications of up-scaling HIV and AIDS therapeutic services on young peoples' knowledge and perception of HIV and AIDS in Morogoro, Tanzania. This study was guided by two research questions: How do youths in rural and urban areas get HIV and AIDS information? To what extent do youths living in rural areas and those living in urban areas differ in levels of knowledge and perception of HIV and AIDS? To answer these questions, 120 students sampled from secondary schools in rural areas and 171 students sampled from secondary schools in urban areas in morogoro region, Tanzania were interviewed. HIV and AIDS knowledge and perception were compared cross the two samples. It was found that in both areas (rural and urban) youths had high knowledge on HIV and AIDS and perceived HIV and AIDS as a serious illness but underestimated personal vulnerability to the infection. The difference in knowledge and perception of HIV and AIDS between youths in two samples did not differ statistically. However in urban areas boys were more likely to perceive AIDS as a less serious illness than girls. It was recommended that community education and counseling should be up-scaled along side ART.

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Keywords: Therapeutic services; HIV and AIDS; ART; Morogoro; Up-scaling, risk perception, community counseling, infection.

1. Introduction

One of the main millennium challenges is HIV and AIDS pandemic which has crammed the life of More than 25 million people, creating millions of orphans and vulnerable children on the earth[1,2,3]. More than a half of people living with HIV and AIDS are in Sub Saharan Africa [2]. In Tanzania, since the first incidence of HIV in 1983 in Kagera Region, the number of people living with HIV and AIDS has risen to 2.2 million with prevalence rate of 6% [3,1].

Four percent of young people (15-24 years old) in Tanzania are living with HIV and AIDS. Vulnerability of young people to HIV and AIDS has been widely documented. According to Mwale [4] adolescents' sexual risk behaviours are intertwined within their developmental stage. In order to satisfy the need to belong and be accepted, adolescents would wish to have sex with more than one partner. Studies show that in many societies boys believe that having more than one partner is a sign of strength and drinking alcohol or abusing drugs is a sign of status [5,6]. These beliefs put youths in danger of contracting sexually transmitted diseases and HIV infection.

In response to HIV pandemic, Tanzania has integrated HIV and AIDS in education curriculum from primary to higher learning and has established HIV and AIDS policy for coordinating prevention and care programmes . In that endeavor care and support centers have been established in many places of the country in which Antiretroviral Therapy (ART) is one of services provided [2]. ART services have been on the increase each year. For example in 2004, the number of people on ART was 2,000, in 2006 the number increased to 20,000 and by 2007 the figure had increased to 165,000 [1].

However studies on the relationship between up-scaling therapeutic services and community knowledge related to HIV and AIDS is unknown. This knowledge is important in order to inform intervention programmes that are on progress in many parts of the world including Tanzania. In this study researchers wished to find out whether youths in rural areas where access to HIV and AIDS therapeutic services is relatively low perceive HIV and AIDS differently from those studying in urban areas where the services are relatively high.

This study was informed by Health Belief Model (HBM) developed by Hochbaum, Rosenstock and Kegels and Social Learning Theory (SLT) developed by Bandura [10]. According to HBM health behavior is an outcome of perception of health threat and health behaviour. The belief that one is susceptible to health threat and that the threat is severe will make people refrain from unhealthy behaviours and vice versa. As indicated in *Figure 1*, HBM unravels the importance of fear of HIV infection as an important driver for changing risk behaviours.

SLT theory emphasizes that people learn by observing others [11]. SLT have been used to explain human behaviours elicited in different context. For example when offender is punished in public it is assumed that the public will unlearn undesirable behavior having learnt the outcome of the behavior. In one study adolescents

who knew someone who had died of HIV and AIDS were more likely to report behavioural change [12]. In Europe, studies show that the availability of HAART has made people less restraint to behaviour and therefore more likely to engage into risky sexual behaviours [7]. These show that death from AIDS create community fears which can be a sources of compliance to safer sex practices.

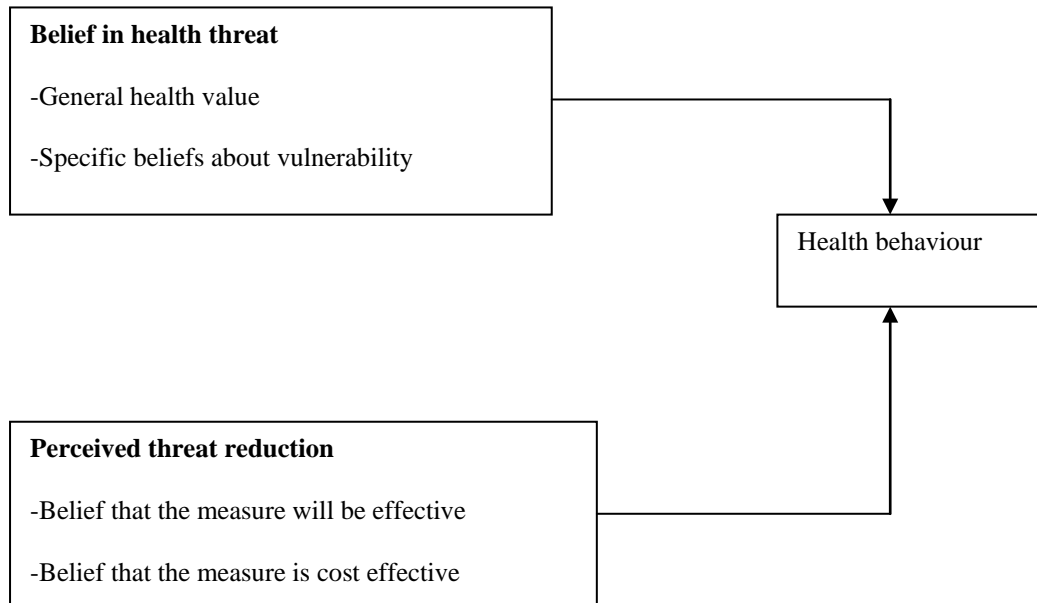


Figure 1: Health Beliefs Model.

Source: Taylor [10].

2. Material and Methods

The study was conducted in Morogoro region and involved two districts of Morogoro rural and Morogoro Municipality. Morogoro region was selected due to its higher HIV prevalence rate among young people. According to Tanzania national HIV and Malaria Indicator Survey (THIMS) [3], Morogoro Region is among the five regions with highest HIV infection among the young people. Studies indicate that prevalence of HIV among youths in Morogoro Region stands at 6.9 percent which places the region at fifth ranking countrywise after Rukwa (19 percent), Kagera (15.7 percent), Arusha (13.8 percent) and Mbeya (10 percent) [5]. The use of ART is significantly higher.

2.1 Study Population

Sample was selected from secondary school youths studying in community secondary. According to Morogoro region profile report [14] Morogoro municipality has 24 community secondary schools with 19,200 students. Morogoro Rural on the other hand has 17 community secondary schools with 13,600 students. The Total number of students in community secondary schools in the two districts was expected to be $19,200 + 13,600 = 32,800$.

2.2 Determination of Sample Size

Since it was not convenient to precisely fix the number of students due to some unreported drop outs, Cochran [15] formulae was used to estimate the sample size. This formula does not need researchers to know the exact size of study population in order to determine the sample size.

$$n_0 = \frac{Z^2 pq}{e^2} \quad (1)$$

Where

n_0 =sample size

Z= the abscissa of the normal curve that cuts off an area at the tail

e=desired level of precision

p=estimated proportion of attribute that is present in the population

q=1-p

In this study, Z selected at 95% confidence interval was 1.96

Desired level of precision (e) selected was 0.05

Estimated proportion of the attributes (P) estimated was 75%=0.75

1-p was 1-0.75=0.25

Hence the sample size was

$$\frac{(1.96)^2 (0.75) (0.25)}{(0.05)^2}$$

$n_0=288$

To reduce the effect of possible low response rate, the sample was rounded to 300. All registered community secondary schools constituted a sampling frame. There were twenty fours (24) community secondary schools in Morogoro Municipality and seventeen (17) community schools in Morogoro Rural. School were randomly selected using a table of random numbers. Six schools were selected from Morogoro Municipality and Four schools from Morogoro Rural District. The total number of schools was ten. Urban schools were over

represented in the sample because Morogoro Municipality had many community secondary schools than Morogoro rural. However, the number of participants from rural area was sufficient for making meaningful comparison.

In each of the sampled schools Form two and form three were purposely selected. The selection was done on the bases of age. Students in Form Two and Form Three are likely to have age ranging between 14 and 18 if they started primary education at the age of 5 or 9 as it is currently the case in Tanzania. This age range is within the adolescent period which was the interest of the study.

In each of the sampled class 30 participants were randomly selected making a total of 300 participants. In order to ensure equal chance for each student from selected classes to get involved in the study, pieces of paper were prepared depending on the number of students registered in the sampled classes. 30 pieces of papers, 15 for each class, had been ticked (✓) the rest had been crossed (X). There were different boxes of the pierces of papers for Form two and Form Three. Upon entering the selected room or areas for filling in questionnaires, a student picked one piece of paper from one of the boxes depending on whether the student was a Form two or Form three. Those who picked the paper with a tick (✓)) participate in the study. The numbers of participant are indicated in Table 1.

Table 1. Number of Study Participants Selected

<i>District</i>	<i>Number of Schools</i>	<i>Participants</i>		
		<i>Form Two</i>	<i>Form Three</i>	<i>Total</i>
Morogoro (M)	6	90	90	180
Morogoro (R)	4	60	60	120
Total	10	150	150	300

Source: Field data collected in April 2011.

Data were collected using a questionnaire with closed and open ended questions. The study opted to use a questionnaire as it allows collection of large amount of information within a short period. Most of the items in the questionnaire were adopted from previous surveys where they had been pre tested and found to have satisfactory reliability and validity [3,16,17]. Data were analyzed using SPSS version 15 showing means, percentages and. Chi-square test of relationships

3. Results

3.1 Social Demographic Characteristics of the Study Participants

Two hundreds and ninety one (291) participants were involved in this study. Nine (9) students who had been selected as part of the sample did not fill in their questionnaires and hence were considered drop outs. As indicated in Table 2, there were more girls (54 percent) in the sample than boys (46 percent). In respect to age, the age group of 12-16 years dominated the sample with 63.3 percent of the sample falling in that age group. Participants studying in urban areas were slightly over represented as 58.8 percent of the participants were studying in urban areas compared with 41.2 percent who were studying in rural areas. The proportions of Christians and Muslims were almost equal so was the proportion of form two and form three.

The sample drawn from urban areas had many girls in terms of proportion (57.3 percents) compared to the sample drawn from rural areas (48.3 percent). The two samples also differed in terms of religious affiliation. The sample drawn from rural areas had bigger proportion of Muslims (57.5 percent) than the sample from urban area (43.3 percent). Agewise, the sample from urban areas had younger participants compared to the participants from rural areas as bigger proportion of participants from urban areas fell under the age group 12-16 (68.4 percent) compared to those in that age group in the sample drawn from rural areas (55 percent). The distribution of the participants by demographic characteristics over place of residence is indicated in Table. 3

Table 2. Social Demographic Characteristics of Respondents

<i>Variable</i>	<i>N</i>	<i>%</i>
<i>Age</i>		
12-16	184	63.2
17-20	107	36.8
<i>Sex</i>		
Male	135	46
Female	156	54
<i>Religious affiliation</i>		
Christians	147	50.2
Muslims	144	49.8
<i>Residence</i>		
Rural	120	41.2
Urban	171	58.8
<i>Level of education</i>		
Form two	137	47.1
Form three	154	52.9

Source: Field Data, April 2011.

Table 3. Difference in Social Demographic Characteristics between Rural and Urban Areas

Variable	<u>Residence</u>			
	<u>Rural</u>		<u>Urban</u>	
	<i>f</i>	%	<i>f</i>	%
Sex				
Male	62	51.7	73	42.7
Female	58	48.3	98	57.3
Age				
12-16	67	55.8	117	68.4
17-20	54	44.2	54	31.6
Religion				
Christian	51	42.5	95	55.6
Muslims	69	57.5	75	43.3
Education				
Form two	62	51.7	75	43.9
Form three	58	48.3	96	56.1

Source: Field Data, April, 2011.

3.2 Respondents Sexual Characteristics

Respondents are described in terms of whether they had started to practice sexual intercourse or not. Those who had started are further described in terms of the age at which they started sexual intercourse, the number of sexual partners they had and the experience of condom use. Out of 291 participants 82 (27.8 percent) reported to have had sexual intercourse. The majority (69.1 percent) of this group started sexual intercourse before they were 17 years old. In respect to number of sexual partners, 61 (75.3 percent) had one partner and 20 (24.7 percent) had more than one partner. With regard to condom use, 64 (79.1 percent) reported to be using condom and 17(20.1) reported not to be using condom. These findings are summarized in Table 4.

3.3 Access to HIV information and counseling services

As expected out of 291 respondents, 126 had attended at least one training programme on HIV and AIDS in their lifetime. Out of this number 80 were from urban based schools while only 46 were from rural based schools. The cross tabulation by place showed that this difference was significant at $p < 0.05$. This finding indicates that based on the location some students were likely to have more HIV and AIDS information

In term of access to counseling services including schools based counseling, 186 out of 291 students who respondents to this item indicated that they had received at least one counseling services in their life time. Out of this number 105 were from urban schools while 81 were from rural schools. The difference was significant at

p<0.05 showing that youths from urban schools were better placed to receive counseling services than their rural counterparts

Sources of HIV and AIDS information were explored. Youths named the following as most important sources of HIV information in their areas: Radio, TV, newspaper, counselor, friend and parent. Interestingly, radio was the most important source in urban areas (166), followed by TV (34), then Counselor (30), News paper (22), friend (22) and lastly parent (18). In rural areas the sources of information were radio (189), TV (20), counselor (25), Newspaper (15) friend (17) and parent (25). As expected TV was the most important source of HIV and AIDS information in urban areas than in rural areas. The difference was significant at p<0.05 showing that youths have different sources of information.

Table 4. Respondents’ Sexual Characteristics

<i>Variable</i>	<i>f</i>	<i>%</i>
Ever practiced sexual intercourse		
Yes	81	27.8
No	209	71.8
Age at first sex		
<15	18	22.2
16-17	38	46.9
>17	25	30.9
Number of sexual partners		
1	61	75.3
>1	20	24.7
Condom use		
Yes	64	79.1
No	17	20.9
Paid sex		
Yes	15	18.5
No	66	81.5

Source: Field Data, April 2011.

3.4 Knowledge Related to HIV and AIDS

In this study, HIV and AIDS knowledge was measured in respect to awareness of HIV transmission methods, Awareness of prevention methods and the ability to reject misconception about HIV transmission and prevention methods. To that effect, participants were requested to report whether they had heard of HIV and the illness called AIDS. They were also asked whether they knew how HIV is transmitted and how one can protect oneself against the infection.

The Findings indicate that 285 (97.9 percent) had heard of HIV and AIDS. Out of those who had heard of HIV and AIDS, 167 (98.3 percent) were studying in rural areas and 118 (97.7 percent) were studying in urban areas.

Concerning awareness of HIV transmission methods, most participants were aware of the documented HIV transmission methods. The named HIV transmission methods and their frequencies in bracket include sexual intercourse (252), from mother to child during pregnancy, delivery and breast feeding (37), sharing of sharp objects (233) and blood transfusion (89). However, sexual intercourse and sharing of sharp objects with infected persons were named more frequently. Though PMTCT is considered the second major route for HIV transmission [1], the method had the least frequency. This might imply that PMTCT is unknown to the majority of young people compared with other routes. Transmission through sharing of sharp objects was mentioned by many participants possibly because this method go hand in hand with intravenous drug use in which many of young people particularly adolescents take part [18].

Concerning awareness of prevention methods, most participants were aware of documented HIV prevention methods. Named prevention methods and their frequencies in brackets include abstinence(157), faithfulness to one partner who is not infected (35) and condom use (84). Abstinence was mentioned more frequently than the other methods. The higher frequency of abstinence may indicate the influence of religious teaching on young people's thinking about HIV and AIDS. All religions emphasize abstinence as the proper way to protect oneself from HIV infection. However, the frequency of abstinence as method for HIV prevention does not match with young peoples' sexual behaviors as majority of them still involve themselves in risk behaviours including having unprotected sex with prostitutes [3].

On awareness and knowledge of ART, 282(98.6%) out of 291 participants had heard of ART, 80 (28%) knew the institution/organization providing ART, 61.2% were aware of at least one person on ART and 58% knew of at least one person whose health improved after registering on ART.

Generally, young people had high level of awareness about HIV and AIDS. However, misconceptions still hold as it is indicated in Table 5. In this study, a significant number of youths (29.6 percent) believed that there is a cure for HIV and AIDS, about 20 percent believed that they could physically recognize a person living with HIV and AIDS and 34 percent rejected the statement that a physically health person can be HIV positive. These misconceptions are likely to translate themselves into risk sexual behaviors. This finding may imply that more efforts are needed to dispel these misconceptions.

Despite the prevalence of the misconceptions, knowledge of HIV and AIDS is contrary to sexual characteristics of many participants reported in Table 4 where it shows that significant number of youths get involved in higher risky sex including practicing unprotected sex with casual partners. The inconsistency between knowledge of HIV and AIDS may indicate that knowledge has not helped young people to protect themselves against HIV infections.

3.5 Perception of Risk of HIV

The previous part of this study has indicated that young people have high knowledge of both HIV transmission and prevention. In this part, the researchers assess the levels of HIV risk perception among young people and discusses it in the context of knowledge and risk behaviors.

Table 5. Misconception about HIV and AIDS

<i>Misconception</i>	<i>Yes</i>		<i>No</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Health looking person can be HIV positive	191	65.6	100	34.4
Cure for HIV is officially available	86	29.6	205	70
PLHA can physically be recognized	57	19.6	234	80.4
Mosquitoes can transmit HIV	20	6.9	267	91.8
HIV may be Transmitted through witchcraft	23	7.2	298	92

Source: Field Data Collected in April, 2011

3.6 Index of Risk Perception

Risk perception was measured using two items which have been found to capture its two main constructs namely the perceived vulnerability and perceive severity of HIV infection [10][17]. Perceived vulnerability was measured by an item which required participants to indicate how likely they were to catch HIV. Each Respondent had to answer ‘likely’ if he/she thought her/his chance for catching HIV was high or ‘unlikely’ if he/she thought her/his chance was low. Likely was coded ‘1’, meaning high vulnerability to HIV infection and unlikely was coded ‘0’, meaning low vulnerability to HIV.

Perceived severity, on the other hand was measured using an item which required evaluation of how serious AIDS was as an illness. The respondents had to indicate whether AIDS was ‘a serious illness or ‘not a serious illness’. Serious illness was coded ‘1’, meaning a high severity, and not a serious illness was coded ‘0’, meaning low severity.

Table 6 shows that out of 291 participants, 219(74.1) reported that they were not likely to catch HIV infection. This shows that students did not perceive the personal risk of contracting HIV infection. Table 7 further indicates that out of 219, who reported that they were not likely to catch HIV infection 92 (42%) were from rural areas and the remaining 127 (58) were from urban areas. Further analysis indicates that of those students who lived in rural areas and who reported that they were not at personal risk of contracting HIV infection, 45 (48.5%) were boys while 47(51.5%) were girls. The difference in personal risk perception between the boys and girls was not statistically significant. On the other hand, of those who lived in urban areas who reported that they were not at personal risk of contracting HIV infection, 63 (48.3%) were boys and the remaining 64(51.7%) were girls.

In terms of severity, Table 8 shows that out of the 291 who responded to this items, 93 reported that AIDS was not a serious illness. Out of this number 21 (22.6%) were from rural areas and 72 (77.4%) were from urban areas. The difference was statistically significant at $p < 0.05$. Of those from rural areas who reported that AIDS was not a serious illness, 10 (46%) were boys while 11(56%) were girls. and of those from urban areas who reported that AIDS was not a serious illness, 25(34.4%) were boys and 47(65.6%) were girls. The difference between the boys and girls was significant at $p < 0.05$.

Table 6. Levels of Risk Perception

<i>Risk perception</i>	<i>Yes</i>		<i>No</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Likely to catch HIV	72	25.1	219	74.1
AIDS is a serious illness	198	68	93	32

Source: Field Data, April 2011

Table 7. Variation of Perceived Vulnerability by Place of Residences and Gender

<i>Residence</i>	<i>vulnerability</i>	<i>Girls</i>	<i>Boy</i>	<i>Total</i>	<i>X</i>	<i>P-value</i>
Urban	Low	80	47	127	2.259	0.089
	High	23	21	44		
	<i>Total (U)</i>	<i>103</i>	<i>68</i>	<i>171</i>		
Rural	Low	47	45	92	0.618	0.274
	High	14	14	28		
	<i>Total (R)</i>	<i>61</i>	<i>59</i>	<i>120</i>		
Total (U&R)		163	127	291		

Key: U=Urban, R=Rural

Source: Field Data, 2011

Table 8. Variation of Perceived Severity by Place of Residences and Gender

<i>Residence</i>	<i>Severity</i>	<i>Girls</i>	<i>Boy</i>	<i>Total</i>	<i>X</i>	<i>P-value</i>
Urban	Low	47	25	72	4.101	0.03
	High	65	34	99		
	<i>Total (U)</i>	<i>112</i>	<i>59</i>	<i>171</i>		
Rural	Low	11	10	21	0.618	0.274
	High	43	46	99		
	<i>Total (R)</i>	<i>54</i>	<i>56</i>	<i>120</i>		
Total (U&R)		166	115	291		

Key: U=Urban; R=Rural

Source: Field Data, 2011

These findings are supported by a number of studies [19,16,17,20]. Cunningham and Thielemmer [7] found that Americans who participated in their survey were less concerned about becoming HIV positive because of new treatment for HIV. In another study, Kalichman [8,9] found that significant number of participants (19 percent) agreed that the need for safer sexual practice was reduced by the presence of protease inhibitor therapy. The study by Maswanya et al [16] which involved secondary school students in Dar es Salaam found that only 25.2 percent of students perceived a personal risk to HIV infection. Klepp et al [17] conducted study in Arusha, Northern Tanzania and found that only 24 percent of participants believed that they were at personal risk for HIV infection. Our study concur with other studies done on the same subject prior to up-scaling HIV and AIDS services. The results seem to indicate that HIV and AIDS interventions have been effective in disseminating some types of knowledge related to HIV infection but have failed to influence some specific misconception pertaining HIV and AIDS. These misconception may contribute to risk sex and stigma as pointed out in some other literature. For example in his study Kalungwizi [25] found that significant number of students who participated in telephone interview explained that they were experiencing stigma from fellow students in their schools. Literature further indicates that misconception about HIV and AIDS is the source of stigma in many communities[26]. Misconception threaten peace and welfare of people living with HIV and AIDS and places youths in danger of contracting new HIV infection .

4. Conclusion

This study aimed at assessing the implication of up-scaling ART services to young people's perception and of HVI and AIDS. This study has indicated that significant number of youths no longer fear AIDS illness. Local government agencies, Non Governmental Organization and the media dealing with HIV mitigations, should refrain from instilling fear as a motivation for behavioral change. Telling people that AIDS kills so as to motivate youths to change their risk behaviors may not bring desired impacts especially where youths have learned that people may live even if they acquire HIV provided that they use ART which is now available for free. The practitioners should insist on altruism.

Although many people have high knowledge of HIV and AIDS especially on transmission and prevention, the study found that a significant number of youths still hold some misconceptions. TACAIDS and NACP should make sure that the misconceptions are ironed out through mass education and outreach programs.

Reference

- [1] NACP (2009). *National guideline for the management of HIV and AIDS*. Dar es salaam: Government of Tanzania.
- [2] WHO(2009). *Toward universal access: Scaling up priority HIV /AIDS intervention in the health sectors. Progress report 2009*. Geneva. WHO publication.
- [3] THMIS (2008). *Tanzania HIV/AIDS and malaria indicator survey 2007-8*. Dar es salaam: TACAID, ZAC, NBS, OCGS and macro international Inc.
- [4] Mwale, M. (2008). Adolescent risk perception cognition and self assessment in relation to HIV and AIDS pandemic: The case of some selected schools in Zomba, Malawi. *Psychology developing societies*. Vol. 20 NO.2. 229-240
- [5] UNAIDS (2010). *Report of the global HIV and AIDS epidemic*. Geneva: UNAIDS
- [6] Kohler, P. H., Behrman, J. R., &Watkin, S. C. (2007). Social networks and HIV/AIDS risk perception. *Demography*. Vol. 44. NO 1.
- [7] Cunningham, J. K.,& Thielemmer, M. A. (2001). *Sexual risk behaviours and HIV treatment optimism. HIV positive persons at Ryna white care act provider in orange county*. Santa Ana: Orange county health care agency.
- [8] Kalichman, S.C., Nachimson,D., Cherry, C., & William,E.(1998). AIDS treatment advances and behavioural prevention setbacks: preliminary assessment of reduced perceived threat of HIV and AIDS. *Health psychology*. Vol. 17. 546-550.
- [9] URT (2002). *Tanzania national policy on HIV/AIDS*. Dar es salaam: Prime minister's office
- [10] Taylor, S. E. (2003). *Health behaviours*. Boston: McGraw Hill
- [11] Passer, S. (2007). *Psychology: The science of the mind and behavior*. Boston: McGraw Hill
- [12] Palekar, R., Pettifor, A., Behet, F., & Macphail, P. (2007). Association between knowing someone who died of AIDS and behaviour change among south African youth: *AIDS and behaviour*. Vol. 12. No. 6. 903-912.
- [13] UNIGASS (2010). *Progress report for HIV prevention in Tanzania*. Dar es salaam. TACAIDS publication

- [14] Regional Commissioners Office Morogoro (2010). *Morogoro region social economic profile*. Unpublished reports
- [15] Cochran, W. G. (1968) *Sampling techniques*. New York: John Wiley & Sons
- [16] Maswanya, E. S., Moji, K., Horiguchi, I., Nagata, K., Aoyagi, K., Honda S & Takemoto, T. (1999). Knowledge, risk perception of AIDS and reported sexual behavior among students in secondary schools and colleges in Tanzania. *Health education research: Theory and Practice*. Vol.14 No.2. 185–196
- [17] Klepp, K. I., Mnyika, K.S. Kingori, N.O., Leshabari, M.T., & Kissila, P.E (2004). AIDS knowledge and risk perception in urban and rural communities in Arusha region, Tanzania. *East African Journal of public health*. Vol. 1 No.1
- [18] Santrock, J. W. (2006). *Life span development*. Boston: McGraw Hill.
- [19] Lugoe, C. (1994). prediction of Tanzania students HIV risk and potential behaviours. A PhD theses, university of Bergen, Norway
- [20] Ward, E.G., Disch, W.B., Levy, J.A., & Schensul, J.J., (2004). Perception of HIV and AIDS risk among urban Low income senior housing residences. *Journal of AIDS education and prevention*. Vol. 16. No. 6. 588-664
- [21] Prasad, K. & Somayajulu, U. K. (2008). *HIV and AIDS: A vulnerability of women in Africa and Asia*. New Delhi. The women publication
- [22] Akwara, P. A., Madise, N. J., & Hinde, A. (2003). Perception of risk of HIV and AIDS and sexual behaviours in Kenya. *Journal of biosocial sciences*. Vol 35. 385-411
- [23] Wandera, B. (2009). *Sexual behaviours of HIV-infected patients receiving antiretroviral therapy in Kampala Uganda: A retrospective cohort study*. Unpublished Master of Science dissertation
- [24] Gashawbeza, K. (2008). *Risk perception and condom use among married in addis Ababa: The case of Kolfe Karanyo subcity*. Unpublished MA thesis. University of Adis Ababa, Ethiopia.
- [25] Kalungwizi, V.J.(2013) implication of HIV and AIDS knowledge on attitude toward people living with HIV and AID in Morogogo. *International journal of applied psychology* Vol. 6.3.
- [26] Derlega, V.J., Yang, X., & Luo, H (2012) Misconceptions about HIV transmission, stigma and willingness to take sexual risks in southwestern China. *International journal of STD and AIDS*. Vol. 22. 192-197.