

NGAO FOLLOW UP SURVEY

COMMUNICATION AND INFORMATION ON HIV/AIDS, SOCIAL NORMS AND BEHAVIOUR OF PRIMARY SCHOOL PUPILS, TANZANIA

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Abstract

Tanzania like other Sub Saharan African countries is having high HIV prevalence. Adolescents are among the risk groups. So far studies focusing on long term survey of primary school pupils HIV/AIDS knowledge, social norms and behavioural factors are lacking in Sub Saharan Africa.

Objective

Aim was to explore the level of communication, access to information about AIDS, social norms, self efficacy and attitude towards becoming sexually active as well as knowledge and behaviour in relation to HIV/AIDS among primary school pupils in 2005 compared to 1992.

Methods

A repeated cross sectional quantitative survey was conducted among grade six and seven of 18 primary schools in Kilimanjaro and Arusha regions of Tanzania. Schools were randomly selected. The study was based on the theory of reasoned action. The same instrument and data collection procedures were used in 2005 as it was in 1992. Instrument used was a self administered questionnaire. Ethical clearance was obtained from the Ministry of Health in Tanzania. Pupils voluntarily signed an informed consent form before filling the questionnaire. Data analysis was done using statistical package for social sciences (SPSS) version 12. Chi-square test was used to compare groups, t-test, and one way ANOVA were used to compare means whenever appropriate. Bivariate analysis was done to determine association of variables in relation to AIDS knowledge and sexual behaviour.

Results

A total of 2026 pupils participated in 1992 and 2069 pupils participated in 2005.

Level of communication and information about AIDS had increased in 2005 compared to 1992. Teachers were reported by pupils to be the most frequent people to communicate with pupils about AIDS, and school was the commonest source of AIDS information. While health

workers were reported to be the least frequent people to communicate AIDS information to pupils. Girls reported parents to have communicated with them about AIDS more than did boys. There was a general increase in the general level of knowledge in 2005 (Mean 13.56) compared to 1992 Mean 12.03 (P.000). But there was decline in the level of knowledge on condom in 2005 as only 43% knew that condom can prevent HIV infection compared to 62% in 1992. Only 45% pupils in 2005 knew that a person can have HIV but shows no sign. Overall levels of social norms and self efficacy have increased in 2005 compared to 1992. A smaller proportion of pupils were sexually active in 2005 (18.8%) than that of 1992 (31.8%).

Conclusion and recommendations

Despite the overall increase in the level of knowledge among primary school pupils. They still lack knowledge on crucial HIV/AIDS related issues that put them at risk of acquiring HIV. Lack of knowledge on condom and that a person can have HIV and shows no sign can lead to unprotected sexual intercourse among the sexually active pupils with dangerous consequences.

Further research is needed to know why more than 20 years of HIV epidemic in Tanzania pupils still lack knowledge on life saving issues on HIV/AIDS namely condom and presence of asymptomatic carriers. AIDS education providers should focus on ways of prevention of infection including condom and address misconceptions among school pupils.

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ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
ANC	Antenatal care
ARV	Anti - retroviral therapy
CEDHA	Centre for Educational Development in Health Arusha
GDP	Gross domestic product
HIV	Human immunodeficiency virus
PMTCT	Prevention of mother to child transmission
N	Number
NACP	National AIDS control programme
NIMR	National Institute for Medical Research
95% CI	Ninety five percent confidence interval
NUFU	The Norwegian programme for Development, Research and Higher Education
P	Probability value
PLWHA	People living with HIV/AIDS
SD	Standard deviation
STI	Sexually transmitted infection
TACAIDS	Tanzania Commission for AIDS
TB	Tuberculosis
UNAIDS	Joint United Nations programme on HIV/AIDS
UNICEF	United Nations children education fund
USAID	United States Agency for International Development

1.0 INTRODUCTION

1 Background

Globally it is estimated that 40.3 million people are living with Human Immunodeficiency virus (HIV) (1). Out of them, 38 million are adults of whom 17.5 million are women. Apart from adults, 2.3 millions children under the age of 15 years are also living with HIV. It is estimated that 25 million people have died of Acquired Immunodeficiency syndrome (AIDS) since it was first recognized in 1981, making AIDS the most dreadful epidemic in human history (1). Yet reports show that the epidemic is still growing in Eastern Europe, Central Asia and East Asia and in some parts of sub-Saharan Africa. In 2005, close to 5 million people were infected with HIV globally (1). Sub-Saharan Africa has been the hardest hit accounting for two thirds of the world's HIV prevalence. Women in sub-Saharan Africa are the mostly affected group comprising 77% of women living with HIV globally. The impact on women is also seen in South and South East Asia (1).

In its 15th annual report 2004, UNAIDS identified youth and women to be among the most vulnerable groups, UNAIDS advised country members and all stake holders to target these groups in preventive and research activities (2). The report stated "*for youth Knowledge and information should be the first line of defence*" meaning knowledge and information should be of primary focus for youth. In addition, in its comprehensive HIV prevention plan, "AIDS education and awareness, behavioural change programs targeting young people and population at higher risk of exposure", ranks the top on the list of key elements (2). It is therefore good to target primary school adolescents for this is the transition stage to youth hood. It is in this line that we based our research survey.

1.1 Sub-Saharan Africa

Sub-Saharan Africa is a home to just over 10% of the world population but accounts for two thirds of the people living with HIV worldwide. It is estimated that 3.2 million people became newly infected by HIV in the year 2005 and 2.4 million people died of AIDS (1). In 2003 it was estimated that 75% of the 3 million deaths of AIDS globally occurred in Sub Saharan

Africa (2). It is also estimated that 4.6% of people between the age of 15 -24 were living with HIV in 2005.

Young people are not spared in sub-Saharan Africa. For example in south Africa prevalence of HIV among girls 15-19 years old was 23% (2). In Kenya, 90% of young people aged 15-19 years old in truck stops reported having sexual intercourse, and 50 % of the girls reported having had STIs, which means they engage in unprotected high risk sexual behaviour with a high chance of having HIV as well (3).

Risk factors for becoming infected by HIV identified among adolescent in sub-Saharan Africa are “multiple sexual partners, partner exchange rate, unprotected sex with casual partners, drug use, alcohol, cigarette smoking and school drop – outs (4). For example, in Cameroon 68% of adolescents who were still in school knew about HIV, and that a healthy looking man, can have HIV. Among those never having attended school only 12% knew this, (7% of boys and 17% of the girls) (4). Lack of knowledge is one of the underlying factors for acquiring HIV infections (1).

In much of sub-Saharan Africa, knowledge of HIV transmission is still low; women are less informed than men. On average, surveys have shown that young men between the age group of 15 – 24 years were 20% more likely to have correct knowledge than female of the same age, while in some countries like Kenya and Nigeria, about two thirds of women and girls in that age group have no comprehensive knowledge on HIV transmission(1). Rural populations are also less informed than people living in cities and towns on HIV/AIDS related issues(1).

AIDS contributes to loss and absenteeism of teachers in schools. In countries such as Kenya, Uganda, Swaziland, Zambia and Zimbabwe, the epidemic is expected to significantly contribute to future loss of primary school teachers (2). This reduces the pupil to teacher ratio and therefore the quality of education will fall.

1.3 HIV/AIDS in Tanzania

The first three cases of AIDS were reported in 1983 in Kagera region in the north west of Tanzania. Since then, the HIV/AIDS epidemic has spread all over the country. In the early stages of epidemic urban populations and communities along the high ways were the most affected. Now the epidemic has spread even to the rural communities (5;6). Almost every sector and most families' have been affected by the impact of HIV/AIDS

It is estimated that about 1.6 million people are infected with HIV in Tanzania. In recent years there has been a decrease in the prevalence rate of HIV/AIDS. Prevalence rates at the end of 2003 was 8.8% (6;7), and for 2005 report was 7%. In Moshi, Kilimanjaro region in 2000 the prevalence rate was 16.6% among antenatal clinic attendees (8). It is estimated that 140,000 children between the ages of 0-14 are infected by HIV/AIDS. Death due to HIV/AIDS(2003) was estimated to be 160,000 (7). About 50% of hospital beds are occupied by HIV/AIDS related illnesses(8). Life expectancy has been estimated to fall from 50 (2001) to 47 years (2003) due to HIV/AIDS (8). Tanzania's cumulative figures from 1987-2000 show an increase of infection rate among adolescents and young adults. For example, in the age group 10-14 years old, prevalence rate was 0.4%, in the age group 15-19 years it was 2.5%, and for the age group 20-24 it was 10% (7). Another study in rural Tanzania found HIV prevalence in the age group 15 -19 to be 5% (9).

The HIV/AIDS epidemic has a devastating impact on both families/communities and national economy. It debilitates and depletes economically active population, drains resources from the government and families to take care of the sick, who usually stay long with sickness (10;11). AIDS withdraw labour force off work when a family member is sick and needs someone to take care of him/her. These outcomes have negative effect on social, and economical well being of a family, community and the government in general (10;11).

AIDS has become the major underlying factor for hospital admissions and deaths in Tanzania. It has made diseases such as tuberculosis (TB) which was well controlled in 1980's to resume the high prevalence levels (12). In one study conducted in Mbeya region it was found that, of 195 newly diagnosed TB cases, 52% were HIV positive, and another study conducted in Bukoba in 1992, 57.4 % of TB patient were HIV positive (6). All these effects increase the burden of disease in the society. They erode the capacity of the state, private sector and civil society to implement programs against AIDS. Ways to control the disease are needed. Schools become potential entry point for the provision of AIDS information and educational interventions designed to prevent HIV. If such strategies are implemented continuously to primary school pupils, in a long run majority of youth will have knowledge on AIDS in Tanzanian communities. Long term and sustained interventions have shown to be effective to reduce the infection rate and therefore prevalence of HIV/AIDS (1;13).

1.4 Statement of the problem

In Africa the first sexual exposure and sometimes marriage often occurs around the age of puberty (14). Adolescents are at high risk of early unsafe sex (15). Awareness of the vulnerability of adolescents concerning the consequences of unsafe sexual behaviour is important for planning intervention. To set objectives for planning, knowledge of risk factors is needed to identify which risk factors should be addressed.

Due to the high prevalence of HIV in Tanzania, children are growing up in a risky environment. If they engage in a risky sexual behavior, they become at risk of acquiring HIV/AIDS infection. Primary school interventions may enable the delivery of sexual and reproductive health messages before sexual debut and may delay age of sexual debut.

Primary schools provide a good setting for the study of adolescents and youth, as the majority of them in Tanzania, attend primary schools (16). However to our knowledge no study has been conducted to investigate changes of HIV/AIDS related information, communication, knowledge and behaviour of primary school students in sub-Saharan Africa over a longer time period. There is a need to investigate what changes have taken place as a result of the HIV/AIDS epidemic over the past decade.

It is estimated that every year more than 300,000 between the ages of 13 and 17 years old pupils leave primary school education in Tanzania. Low and irregular income because of poverty encourages them to move to urban areas to search for employment. Due to their low level of education they usually do not get jobs or get low paid jobs, which makes them look for something to supplement their income. It has been observed that increasing economical hardships may force girls in particular to engage in promiscuous behaviour in order to make a living (17). The circumstances of sexual experiences are influenced by cultural and gender differences in the ability to negotiate relationship, where girls may not have the ability to decide whether or not to use condom. In addition to social disruption and peer pressure, they often opt to engage in unsafe sexual practices which in turn predispose them to HIV infection. The fear of AIDS may be of less concern for them than the crucial immediate need for basic things such as food and clothing. Attempts that have been made to introduce sexual education

in schools have been found to be inadequately preparing those leaving schools to confront these challenges and other related sexual issues (6).

In Tanzania, HIV transmission occurs predominantly through heterosexual transmission. HIV prevalence is, therefore, dependent on people's sexual behaviours. Sexual behaviours are largely dependent on their knowledge, beliefs, attitudes, risk perception on HIV, social relationships and on their intention whether or not to be sexually active(18).

Sexual behaviour remains the primary target for AIDS prevention, since as of today there is neither a vaccine nor cure. Sexual behaviour is very complex and is dependent on individual desires, environmental and economic processes (4;11;19). This makes prevention of HIV more difficult and requires deep understanding of these processes.

several studies in Tanzania show that many youths engage in sexual behaviours that put them at risk of sexually transmitted infections (STIs) including HIV (20;21). A detailed sexual survey undertaken from the sample population of 1117 individuals from Kilimanjaro region found that, sexual activity begins either when adolescents are still at school, or soon after they leave school (21). The same study found out 50% of women and 46% of men had sexual intercourse at 15 years of age or earlier. This is the age where many adolescents are still at primary school. The same study done in Kilimanjaro identified HIV prevalence of 7.5% among youth of 15 - 24 years of age.

Despite the fact that adolescents engage in sexual activity, knowledge of HIV prevention is low and they may not perceive themselves to be at risk of acquiring HIV. For example in Arusha it was found that in a sample of sexually active secondary school students, only 26.8 had ever used condom, furthermore only 21.5% used condom in their most recent sexual act (22).

Although knowledge of HIV by itself is not sufficient to bring a change toward a safe behaviour among adolescents, it often constitutes one element in behavioural change process (23). In addition data on types and levels of knowledge and other social demographic factors associated with that knowledge, as well as risky behaviour in primary school children's population, are needed to design intervention and provide indicators for evaluation of its effectiveness. Due to the fact that interventions should be based on empirical evidence to render them more effective and to allow evaluation of that effectiveness, research is needed on these elements interventions aim to modify.

The results of this research will identify areas that may need to be addressed during the planning of HIV intervention, policies and curriculum development for schools by relevant ministries of health and education for school health promotion activities in Tanzania.

1.5 Review of literature

1.5.1 HIV/AIDS Epidemic determinants

The HIV epidemic depends on various interacting factors; “these include social environment, behaviour and biomedical factors”(19;24). Social environmental factors includes; wealth and income distribution, culture, religion and the political situation, Other determinants include mobility, urbanization, women’s right, mass media, quality and access to health care services such as ARVs, and blood transfusions.

Behavioural factors include; number of sexual partners, rate of partner exchange, concurrent partners sexual practices, condom use, illicit drug use and alcohol use. Biomedical factors include; virus subtypes, stage of infection, presence of others STIs gender and male circumcision.

1.5.2. Gender and HIV/AIDS

Many studies in Africa and Tanzania suggest that women, girls and youth are the most vulnerable and are mostly affected(10;11;24;25). Women become infected in early ages. UNAIDS estimated that in southern and East Africa women and girls constitute 60% of all those affected by the virus(11). In Tanzania, the ratio of infection men to women is 8 to 13 respectively (24;25). Other studies in Africa shows that young women aged 15-24 years have a rate of HIV infection that is 5-6 times higher than that of males (10).

There are several factors that have been noted to be associated with vulnerability of girls and women to HIV/AIDS infection. In many societies, culturally gender norms related to sexuality often put men in dominant roles and women in subordinate or passive roles. These inequalities limit girls and women ability to control whether, when and how to engage in sexual relations. Fear of violence limits women’s and girls’ ability to negotiate condom use. Studies have shown that they are often accused of being unfaithful for suggesting condom use (10). The impact of these culture and stigma may lead to a lack of assertiveness for girls on

sexual issues. For instance a study conducted in Cameroon found that young women were more shy when purchasing condoms than males (26). Within many societies in Africa, women and girls are assigned the primary role of care taking. In the context of HIV/AIDS, girls are sometimes removed from school and given a role of taking care of people living with HIV/AIDS (PLWHA), which with inadequate knowledge on how to protect themselves increases their risk of HIV infection.

In some culture women do not have the right to inherit properties or land. This may make them to have no economical resources to depend upon (10). For girls having this knowledge, some opt to migrate and go to look for job opportunities away from their homes. Lack of education that may enable them to have formal employment and economic ability to be independent, puts them to a risk of exchanging sex for material or money with casual sex partners (transactional sex), or work as commercial sex workers hence risk for HIV.

1.5.3 Mobility and HIV/AIDS

Mobile populations have also been identified as vulnerable (4;9;11;24). These are people whose occupation forces them to migrate. Or due to lack of employment, they leave their communities to seek economic opportunities. The group is composed of commercial sex workers, truck drivers, petty traders and migrant workers. In some situations the family left behind may have to engage in sex work to support themselves. Young boys and girls are liable to fall in this group of people after they leave school. They may end up in an environment which increases their vulnerability to HIV, such as in mining area. If they engage in unprotected sex, their chances to become infected by HIV will increase substantially.

1.5.4, Risk factors and vulnerability of school children to HIV/AIDS infection;

Various studies in Tanzania show that a substantial number of school children are sexually active (9;13;20;22;27). At the same time the knowledge of routes of transmission of HIV and condom as a preventive measure is low as was noted in comprehensive study which included randomly selected primary schools from all regions and all districts of Tanzania assumed to be representative of all primary school children in the country (20). The study also shown that there were incidences of high risk sexual behaviours such as anal intercourse among the pupils (20).

The majority behavioural studies conducted in primary schools in Tanzania suggest that primary school children are at high risk of HIV infection, Sexual activities vary from setting to setting. One study in Kagera region found HIV sero-prevalence of 3.2% among primary school children(14), while in Mwanza region it was repeatedly ranging between 0.2%-0.6% (28). When sero-prevalence was tested among the 15-24 years of age group it increased to 4.1%, showing an increase with age as they become more and more sexually active. Sexual activity ranging from 21% in southern Tanzania (13), to 80% of primary school boys in Mwanza (28).

Although many have heard of HIV/AIDS, many do not know how to protect themselves, despite the risk behaviour among them (4;15;27). They do not believe they are at risk (27;28), and those who know something about HIV AIDS often do not protect themselves (4;27;29), this may be due to lack the necessary skills or due to misconception. The result is increased risk of HIV infection or unwanted pregnancies for girls. Evidence from the Ngao intervention study in Tanzania indicated that giving reproductive health education and practical skills on HIV/AIDS prevention in schools health program are effective in the increase of the level of knowledge, increase in restrictive subjective norms and in reduction in intention towards sexual intercourse (30;31).

With the exception of two studies (28;32;33), none of the rest of studies in Tanzania investigated misconception, attitudes and other risk factors such a cigarette smoking and alcohol drinking as risk factors for HIV transmission among school pupils. It has been shown that in Tanzania chances of acquiring HIV among youth is four times higher in those smoking or drinking alcohol than those who do not (34). These are among the risk behaviours we are trying to explore.

1.5.5 Efforts to combat HIV/AIDS in Tanzania

The government realised the impact of HIV/AIDS on its economy and social well being of its people, and formulated various strategies to attempt to control the epidemic. Among them was the introduction of the National AIDS Control Program (NACP) in 1985. The NACP had various phases of implementation of preventive activities, before the Tanzania Commission for AIDS (TACAIDS) was established in 2000 (6). Activities focused on some determinants of epidemic including creating of awareness among some high risk population groups, improvement of clinical services to prevent hospital transmission like by injections and unsafe

blood transfusion. Promotion of voluntary counselling and testing and the provision of home - based care services (6;35).

1.5.6 School - based prevention

To address the threat of HIV/AIDS among school children, the Ministry of Education and Culture has introduced family life education in primary schools in Tanzania (15;36). The goal is to teach school children reproductive health and HIV/AIDS related topics. However studies have shown that the program does not fully address issues related to HIV prevention as emphasis is put more on abstention of sexual intercourse rather than providing options for those who are already sexually active to use condom for protection during sexual act. This may contribute to lack of necessary information and knowledge among school children on how to protect themselves against HIV/AIDS (37). Previous studies revealed that educational authorities were reluctant to allow for the provision of condom education in primary schools(31). Recent studies have also indicated that teachers were less likely to communicate with pupils about condom(36). Elsewhere in sub-Saharan Africa teaching of the condom in schools has been regarded as immoral and some teachers also would not teach condom due to their own belief (38).

While it is good to focus on abstinence as a method of HIV prevention; it is also wise to consider the needs of those who are sexually active. If they are not provided with necessary education and skills to protect themselves, they will still be at risk of contracting HIV / AIDS if they indulge in risky sexual activities. It has been shown that it is easy for those who have not initiated sex to remain faithful than for those who are already sexually active to stop engaging in sex (38)

1.5.7 Knowledge and behaviour among school children

In a study conducted in Mwanza Tanzania among primary and secondary school students the proportion of primary school girls attending primary school who were sexually active was found to be high up to 68% (15). Other studies show that 24% of boys and 15% of girls have their sexual debut before their 19th birth day (39). A previous study conducted in Arusha shows that consistent condom use of adolescents who are sexually active is low (22). High rate of sexual activity among primary school pupil as seen above with low rate of consistent condom use is of major concern.

The level of knowledge among adolescents and youth on HIV/AIDS is low and it is highly associated with risky sexual behaviour. The UNAIDS 2004 report shows that only 26% female and 29% males in the age group 15-24 could identify two prevention methods and reject common misconceptions in Tanzania (39). Behavioural indicators, indicates that 15% of female and 24% of males between the ages of 15-19 had sexual intercourse before the age of 15 years. 40% female and 87% male in 1999 reported high risky sex. Of those who had high risky sex only 21% female and 31% male used condoms the last time they had sex. However recent reports show that the pattern of HIV prevalence among youth is beginning to stabilize and is thought to be attributed by a change towards safe sexual behaviour (1). For this change to persist, the preventive efforts targeting adolescents and youth needs to be sustained.

However there is a limited number of primary school based studies and programmes in Africa and in Tanzania as well. The programmes focusing on primary school could help to reach many adolescents at once (17;29). In Tanzania approximately 80% of adolescents attend primary school (15). Only 10% of those who finish go on for secondary education (40). Little information has been documented on primary schools pupils' risk behaviour, since the Ngao survey on knowledge, behaviour, attitudes and practices in Arusha and Kilimanjaro regions in Tanzania in 1992.

1.5.8 Correct and incorrect knowledge

A previous study in Tanzania (33), found that the majority of students (around 80%) know that AIDS can be transmitted by sexual intercourse, injection with unsterilized syringes and that, a mother can pass a virus to the baby. But yet around 50% thought that AIDS could be cured. They also thought that there is vaccine against AIDS.

The above observation shows that there is wider gap of knowledge that can create a false sense of security or hope of being cured after acquiring infection. The consequences may include ignoring safer sexual behaviour for the hope of getting treatment. It has been noted that this co-occurrence of correct and incorrect knowledge is associated with low perceived risk (41). In the 1992 Ngao survey some pupils felt they would rather acquire HIV than not to have sexual intercourse with an attractive stranger. This could be due to the false hope of getting treatment once they acquire HIV. A similar study conducted elsewhere (42), showed co-occurrence of correct and incorrect knowledge on transmission and prevention of HIV/AIDS. To what extent this problem exists now among primary school children in

Northern Tanzania, is one of the questions to be answered by this study. With the exception of the Ngao study, knowledge of primary school pupils has not been addressed sufficiently in other studies. For example one study done in mainland Tanzania examined knowledge just only by asking primary school pupils to distinguish sexually transmitted diseases including HIV/AIDS from a list of a number of infections (20). The list was comprised of gonorrhoea, syphilis, dysentery, cholera and malaria. Interpreting results of their observation as good those who identified all three ST Is. Yet still 38% had no knowledge. This study also involved secondary school and teachers college students. If they could not pick a disease out of a list, it will be difficult too for them to know preventive methods.

Checking knowledge by identifying HIV or STI's from a list of other diseases is not sufficient in assessing knowledge levels. Adolescents need to have enough knowledge on methods by which HIV is transmitted, and on how they can protect themselves. Removing misconceptions and negative attitudes that put them in danger, by providing them with education, is an important way of empowering them with knowledge, hence protecting them against HIV infection. One study in Kilimanjaro and Arusha revealed serious misconception among primary school children (41). They felt they would be regarded as being more mature if they had sexual intercourse. There is no way of addressing this problem unless current evidence basing on the specific gap of knowledge and attitude is known.

1.5.9 Sources of Information

There has been an explosion since 1992 in different types of communication media in Tanzania. These include newspapers, an increase in a number of radio stations and television covering a wide range of area, almost the whole country. There has been some evidence that peer and mass media are the major sources of AIDS and reproductive health information (17;33). Furthermore there have been massive HIV/AIDS campaigns from government sources and non - governmental organizations.

Other surveys in Tanzania, suggested that the most common sources of AIDS information were mass media (radio and Television) (17;36). Commonly in Tanzania mass media often present condom use and abstinence as methods of HIV prevention, sometimes as a commercial broadcast, without detailed information about sexuality. Abstinence by itself has proved to be practically difficult for those who are already sexually active (29). The second most common source of information was from peer, which most likely may be wrong information.

1.5.10 Mass media and information for the fight against AIDS

For the sake of its power to influence the public and the fact that it is one of the most common sources of AIDS information (17;33;36), it is worth to have a little more understanding on the role of mass media in the provision of information about HIV and how it influences on individual behaviour and social norms. Despite of the overwhelming evidence of mass media effectiveness in raising awareness, increasing knowledge, changing attitude and behaviour, there is still a doubt on their positive influence on these factors. Unless they are used in a proper and systematic way for the purpose of influencing change of attitude and behaviour, their effectiveness is very minimal or even confusing. The effectiveness of media can be compromised due to mixed messages which sometimes are contradictory even though not meant to be so. For example in United States it was found out that deceit, murder and extra marital sex were the commonest themes in some entertainment programs whose primary audience are youngsters and women (43). Worse enough, there were no verbal or physical warning implied to provide information on pregnancy or AIDS prevention such as use of condom in those programs. In this way media can misinform or mislead the public, especially adolescents on social norms and behavioural changes in relation to HIV infection.

Research has shown that even though AIDS has received large media coverage in some countries, the coverage has been short, erratic, distorted and bizarre. For instance in Uganda the slogan “zero grazing” which was used in Ugandan campaign against AIDS meaning stay with one partner was found not to be understood as to what it implied by the target audience (43).

Despite increasing wide media coverage in Tanzania, there is still a lack of well planned programs, especially in most television channels, that are culturally accepted and which suits local needs at the same time targeting HIV/AIDS prevention. As most entertainment programs originate from or similar to those of western countries such as the United States. Content and messages are more similar to those discussed above aimed to cater people’s fantasies rather than to educate. But western knowledge and culture are very different from that of Tanzania.

Positive or negative effects of media depend on their use, it has been observed that if properly used for health education media can change and maintain social norms and render new behaviour likely to be acted upon (43-45). In the United States, mass entertainment material were used to reduce traffic accidents related to alcohol, in Uganda “ film not easy” was found to be effective that those who watched it were twice as much likely to use condom than those

who did not (43). In Kenya mass media was effective for improving self efficacy, promoting condom use and changing of behaviour (46). It is true and inescapable fact that Mass media against AIDS if properly used can influence people to take action they might otherwise not(43-45). Unfortunately a study of the credibility of AIDS related information provided to pupils, conducted among primary school pupils' population in Tanzania, found that mass media ranked the lowest compared to other sources (36).

Uganda has been recognized worldwide for its effective campaign against AIDS. However, despite of the controversies involving information and knowledge which critics says having information does not imply having knowledge. The argument on the problems with media above may prove to be true, for it depends on what and how information is provided and its accuracy. Ugandan experience shows that if relevant and accurate information is given in timely manner, it is a key tool for decision making for an individual. They recommended that HIV information should be specifically packaged for the desired impact on behaviour of specific target groups entailing information “push” process to deliver consistent messages for mass consumption (45).

1.5.11 Challenges to information and knowledge management

Lack of adequate resources (human, financial and material) to initiate and sustain effort to deliver information to curb HIV/AIDS has been blamed for many failures. However it has been noted that the existence of many actors at various levels of various kinds and at different settings (health, public, religion, NGOs and many others) poses a challenge of processing and packaging the same information differently (45). There is also fragmentation of information from different actors that creates potential duplication of efforts and wastage of scarce resources. These challenges causes mismatch between information and knowledge. Therefore the multiplicity of many actors demands consistent and relevant focus of information work to common national goals. Another challenge is absence of researched information about various categories of information users “in this case primary school pupil and adolescent at large”, needs. Their specific HIV/AIDS information needs and desired delivery mechanism need to be understood(45)

1.5.12 Condom use

As mentioned above even with the presence of risky sexual behaviour and higher rates of sexual activity among adolescents and youth, there is low rate of condom use. Most of these

studies show that many youths are at risk of acquiring sexually transmitted infections or unwanted pregnancies for girls, because they indulge in sexual behaviour that put them at risk. They also show that there is less knowledge on condom use as a protective method. One study in Tanzania showed that only 22% mentioned condom use as a protective method (47). Another study showed that only 26.8% of sexually active secondary school students have ever used condom, and only 21 % used condom in their most recent sexual act (22). There is also evidence of high rates of partner exchange among adolescents (13). It is important to determine the reason why there is no consistent condom use. Otherwise school children will continue to be at high risk. HIV/AIDS epidemic will continue to rise, and waging war against HIV/AIDS will end up in vain.

In a study among secondary school students (27), it was observed that many of them had negative attitudes towards condom use. For example, 66% said it reduces sensation of romantic sex, and 51% said condoms are not safe and that their sexual partners hate condom. If this is the situation among secondary school students, the situation may be worse to their younger counterparts in primary schools.

There was an extensive review of articles on studies conducted in sub-Saharan Africa done by Sylvia Kaaya and her colleagues (29). They focused on articles related to sexual behaviour of school students published between 1987- 1999 with the aim to document what is known and identify the gaps in understanding of adolescent sexuality with respect to knowledge attitude, behaviour and practice (KABP) on HIV/AIDS. There were 47 articles which satisfied the inclusion criteria. Of the 47 articles, 21 studies were conducted in southern and central Africa, 19 in East Africa (Tanzania, Kenya, Uganda, Ethiopia and Djibouti). Of the 19 studies from east Africa, 11 were conducted in Tanzania. Out of 47 articles, only 7 were on primary school, indicating that only a few studies in a peer reviewed literature focused primary schools.

Their important findings from the review revealed that a substantial proportion of school adolescents were sexually active, with a mean age of sexual debut being as low as 12 years. Findings further indicated that a large proportion of sexually active school adolescents reported unprotected sexual intercourse. There was no enough information on factors influencing condom use. There were very few articles on primary schools, making primary school to become underrepresented. One study found that primary school girls though younger were more sexually active than secondary school girls (15). Methodologically they

found few studies which had urban - rural stratification and cited the 1992 Ngao study as the only study which considered this stratification in the result and discussion. They concluded by suggesting that a turning age from childhood to adolescence is an important transition point to be focused on by interventions which aim to delay sexual activity.

There were few other articles published after 1999 relevant to this topic focusing on knowledge, attitude, and intention to be sexually active or risk reduction, sexual behaviour and condom use in relation to HIV/AIDS and reproductive health. However, a recent review of published articles in Africa, similar to that done by Kaaya but focused more on school based intervention studies covering a period of 1990 to 2002 focusing on risk reduction programmes on “knowledge, intention, attitude, condom awareness and use and sexual behaviour” was conducted by Gallant and Tyndale (38). The findings of this review reveal that there are few program and studies focusing on the school considering the magnitude of the AIDS epidemic in sub - Saharan Africa. Most of the studies they reviewed were the same as those reviewed by Kaaya and colleagues, however an additional observation was made that intervention programmes focusing primary school pupils were more successful than those covering older secondary schools. They also observed that intervention conducted prior to sexual debut were most effective in reducing the rate of infections than those conducted to those who were already sexually active.

They also noted set back that arose in some instances, for example teachers were reluctant to teach about HIV prevention for the fear of the community reaction to teaching pupils about some topics such as condom use, which some community members considered were morally unjust topics. Other teachers experienced personal conflicts with the teaching of condom because of their personal belief. These observations may leave children without proper knowledge and skills to protect themselves. How widespread is this in Tanzania necessitates further research.

They suggested (Gallant and Tyndale) primary school to be the single location where large majority of young people can be reached at once and that intervention programs focusing primary schools may protect the general population from further HIV infection. The idea supported by Kaaya when she gave an example of Tanzania that only 10% of those leaving primary schools goes to secondary schools (29). Hence studies should target this population

For this reason primary school in Tanzania should be the focus for intervention, therefore more information is needed on areas to focus on during intervention. Consideration of urban

rural differences in analysis and interpretation of results become inevitably important if proper interventions are to be conducted to serve pupils from both rural and urban communities.

In 1992, and 2005 the Ngao survey, was conducted in the same 18 randomly selected primary schools in Kilimanjaro and Arusha regions of Tanzania (33). Schools were stratified according to location as urban, semi urban and rural settings in each region. The aim was to explore sources of AIDS information, communication about AIDS, pupils' perceived AIDS severity, perceived susceptibility, sexual behaviour, and levels of AIDS knowledge. Associations between AIDS knowledge and above mentioned items were also investigated, for six and seventh grade pupils from these schools. Gender, urban, semi urban and rural differences were also investigated.

Among the major findings from 1992 Ngao survey were that mass media was the most common source of AIDS information while school was the arena from which they heard the least about AIDS. Teachers ranked the lowest among people they communicated about AIDS with. Boys communicated more about AIDS and were more exposed to AIDS information than girls. Knowledge levels were low. Pupils attending urban schools had more knowledge on HIV than rural schools. Those who communicated the most and who were mostly exposed to AIDS information were more knowledgeable than the others. The majority perceived AIDS to be serious disease but did not perceive themselves to be at risk of AIDS.

Out of Ngao study numerous articles were published (30-32;41).

The current study was a follow up survey of the Ngao survey that was conducted in 1992. Taking into consideration the impact of HIV/AIDS epidemic in sub-Saharan Africa where deaths and sufferings caused by HIV/AIDS have spread almost in every society. People have witnessed deaths related to HIV/AIDS, of relatives, friends and neighbours. Some have or are undergoing agonizing pain and sufferings due to AIDS. Could this have influenced a change of sexual behaviour of school adolescents after decades of AIDS epidemic? There is a need to investigate what changes have taken place as a result of the HIV/AIDS epidemic over the past decade.

2.0 OBJECTIVE

The objective of this study was to explore to what extent primary school pupils currently are being reached by HIV/AIDS-related information, the levels of communication, information knowledge, and social norms, perceived risk, perceived severity and behaviour among school children in grade six and seven in year 2005 compared to 1992.

2.1. Specific objectives of the study were to investigate:

Communication and information

- To explore 2005 levels and sources of communication and information;
- To explore gender, urban, semi urban and rural differences in the levels of communication for 2005 pupils;
- To compare 1992 and 2005 pupils' levels, gender, urban, semi urban and rural differences in HIV/AIDS related communication and information.

➤ **Knowledge**

- To explore the levels of knowledge, gender, urban semi urban and rural differences in levels of knowledge for 2005 pupils;
- To compare 1992 and 2005 pupils' levels of knowledge, gender urban and rural differences in the levels of knowledge.

➤ **Social norms, attitudes (intention) towards becoming sexually active, self - efficacy, perceived AIDS risk and perceived severity**

- To determine 2005 pupils levels of social norms;
- To compare 1992 and 2005 pupils' levels of social norms, attitudes to be sexually active, self efficacy, perceived HIV/AIDS risk and perceived AIDS severity;
- To explore association between social norms, attitude to be sexually active, self efficacy, perceived HIV/AIDS risk in relation to knowledge and sexual behaviour.

➤ **Behaviour**

- To investigate pupils HIV/AIDS risk related behaviours such as “sexual behaviour, condom use alcohol use and smoking habit” for 2005pupils;

- To compare the level of reported risk related behaviours in 1992 compared to 2005.

3.0 METHODS

3.1 Study settings

3.1.1 Geography

Tanzania is located in East Africa, bordering Uganda and Kenya in north end north- astern respectively. On north western border lays Rwanda and Burundi. To the west part lies Democratic Republic of Congo (formally Zaire) while in southern borders, are found Mozambique, Malawi and Zambia. Finally the Indian Ocean lies to the Eastern part of Tanzania.

3. 1.2 Country Profile of importance to AIDS epidemic

According to a national census conducted in 2002(48), Tanzania has a population of 34,569,232 people with a population growth rate of 2.92%, and a population density of 39 persons per square kilometre. Life expectancy has dropped from 50 years in 1990 to 47 in 2002/2004 (48-50). The primary school enrolment rate is currently 90.5% (50)

Tanzania is one of the poorest countries in the world, with a per capital income of 330 United States dollar (USD) in 2005, a GDP of 6.4% and inflation rate was estimated to be 5% in 2004. the percentage of the population with improved access to water has increased from 32 in 1990 to 58% in 2003, reaching 73% in urban areas(50). In 2002, 35% of Tanzanians were estimated to be living under basic need poverty (50).

Tanzania was estimated to have an economically active population of 15.5million in 2001 above the age of 15years, with unemployment rate of 5%. However the rate varies with social demographic characteristics in some settings. For example in Dar-es-salaam 35% of women were unemployed compared to 19% men. In urban areas 28% of age group 15- 24years are unemployed (25).

Tanzanian agriculture is dominated by small scale predominantly rain dependent subsistence farming. The major limitation is a lack of appropriate and affordable technology (machines and tools). The most commonly used tool for cultivation is a hand hoe (25). This limits the

area which can be cultivated and affects the amounts of crops produced. Another emerging challenge is the growing loss of labour force in this sector, because of the increasing number of people dying of AIDS. The outcome is food shortage which again damages the lives of people living with HIV who needs more calories than others. Despite all these limitations agriculture represent 47.5% of the GDP (25).

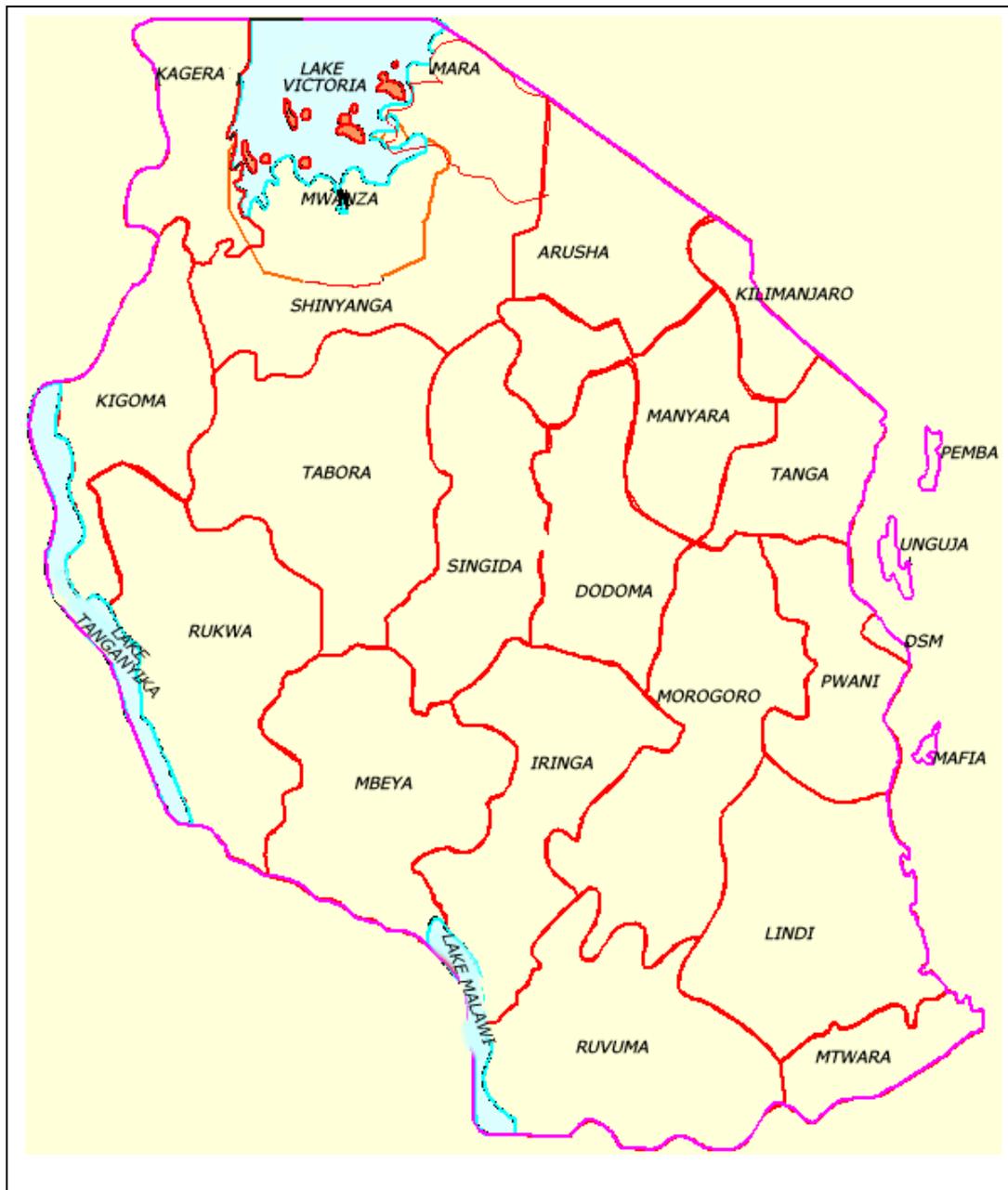
The major agricultural products are food crops (mainly cereals), commercial crops including, “coffee, cotton, tea, cloves and cashew nuts. Animal husbandry is also widely practiced.

The mining industry is one of the major contributing sectors to the national income, according to the Poverty Reduction Strategic Plan (PRSP) report 2003 (25), it accounted for 42.5% of exports and 2.7% of the GDP in 2002. Apart from its contribution to employment in the country, it attracted 40% of direct foreign investment. Major mineral resources are gold, tanzanite, bio-gas and diamonds. Mining areas attract many people especially youth and the middle - aged population. They go to these mining areas to look for job opportunities and for business purposes. Commonly young women and girls go to these places for petty trading, such as making and selling of food locally known as *Mama Nitilie* to miners. These interactions encourage sexual networking which may lead to increased risk of HIV infection hence high prevalence. Studies have shown that youth in mining areas are prone to unsafe sexual behaviours which put them at risk of HIV (51).

3.2.1 Social demographic features of local research areas

Kilimanjaro and Arusha are neighbouring regions but social demographic characteristic of these two regions is too diverse. While in Kilimanjaro lives Chaga and Pare who are famously known to be business oriented. In Arusha the Meru and Masai are mainly nomads, the Mbulu have mixed farming activities from cattle grazing to agricultural crops production, both food and cash crops. In Kilimanjaro, the majority of Chaga live on fertile land under the foot of Mount Kilimanjaro, the Highest Mountain in Africa, hence the name for the region. Most Pare lives on the mountain ranges of Mwanga and Same, those in the rural areas practices peasant farming. On the other hand in Arusha, Meru lives under the foot of Mount Meru the second highest mountain in Tanzania, while the Mbulu and Masai lives on the plains and plateaus of Arusha, areas suitable for cattle grazing as well as crop farming. Comparing urban life in these two regions, there is not much difference in terms of economical activities and development, and in fact there is much interaction of people from both sides.

Figure 1 A map of Tanzania and its regions (Kilimanjaro and Arusha included)



Economical activities range from nomadic life and subsistence peasant farming, in rural areas to major commercial farming activities by big farmers, petty business trading to major commercial farming and tourism industries in urban areas. In south eastern part of Arusha, a short distance from Kilimanjaro International Airport, lays a Tanzanite mining area, with active businesses and movement of people from all over Tanzania and other parts of east African countries. Business activities which attract people, makes in and out movements

within these two regions very common. Furthermore these two regions are each bordering Kenya on their northern parts, facilitating cross - border trading with neighbouring Kenya. These economic activities create a complicated network of social interactions, which poses a threat of HIV epidemic (2;6;52).

3.2.2 Distribution of schools under study

The demographic characteristics of the schools under study were similar in terms of infrastructure. The rural schools are situated in remote villages with poor communication facilities, such as roads, only passable periodically. No functioning telephone lines exist but some are able to access mobile telephone services. But most of the villages where these schools were situated had electricity. Conditions improve as you go to semi urban areas, where you find good roads and other communication facilities such as telephone lines and some with internet services. While in urban school conditions were different with good roads and easy access to various kinds of communication facilities.

In 15 out of 18 schools all pupils in grade six and seven were recruited and asked to participate in the study. All pupils who were recruited and asked to participate agreed to participate, and participated. But in three schools, one in Moshi (the capital of Kilimanjaro region), and two in Arusha, the number of pupils was higher than expected, especially in grade six, each having four streams. In these three schools, all four streams in grade six were coded, and two out of four streams were picked randomly. All pupils in randomly selected streams in grade six, and those of grade seven were then recruited and asked to participate.

3.3; Design

A repeated cross sectional quantitative survey was conducted in 18 primary schools in Arusha and Kilimanjaro regions in north eastern Tanzania in 1992 and again in 2005. They included schools from urban, semi-urban and rural settings. Originally the schools were selected by random sampling. Three schools from each setting (urban, semi urban and rural) (33). A total of 2060 pupils of grade six and seven from all 18 schools participated in 2005 study, while in 1992; there were 2026 pupils who participated from grade six and seven, from the same schools.

3.4, Theoretical framework of the study

The study was based on the theory of reasoned action. The theory of reasoned action developed by Fishbein and Ajzen in 1960s (44), is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them. People consider the implications of their actions in a given context at a given time before they decide to engage or not to engage in a given behaviour. It also assumes that most actions of social relevance are under volitional control. It regards a construct of behavioural intention as a determinant of health behaviour. The theory of reasoned action specifically focuses on the role of personal intention in determining whether behaviour will occur (44). Person's intention depends on two things: first, on attitude toward the behaviour (whether or not, he/she is in favour of the behaviour). Second, on subjective norm, social influence, what does an individual believes other people, like peers would like him to do or are also doing (44).

Another construct included is perceived benefits and constraints to changing behaviour. Perceived benefit or risk of behaviour may lead them to control their behaviour (self efficacy). What the children believe on the benefits of some behaviour, for example the use of condom, abstinence or delay in sexual debut as means of avoiding risk of acquiring HIV/AIDS. Weighing the benefit of behaviour will determine the outcome (44). Those who perceive the use of condom as a matter of life or death with regards to HIV are likely to make decision not to have sex without a condom. Again those who see abstinence as the only way to escape from AIDS tragedy may decide to avoid sexual contacts. So we examined pupils' ability to control their behaviour despite of pressure from peer and other people

We therefore also intended to investigate pupils' risk perception (perceived susceptibility - in this case pupil's perception on being at risk of acquiring HIV), and their perception of the seriousness of HIV/AIDS. What will be the consequences if he or she gets the disease? For an individual to change or to maintain safe behaviour understanding and accepting his /her susceptibility to a disease and knowing the severity of the disease like "AIDS is a killing disease that can't be cured" is very essential. It has been noted that increasing perception of risk is associated to increase in protective behaviour (53).

In the context of HIV/AIDS, epidemic determinants include social environment, behaviour and biomedical factors (19;24). Social environmental factors includes; wealth, income distribution, culture, religion and political situation. Others are mobility, urbanization and access to mass media; all these have influence on HIV/AIDS related knowledge, social norms and self efficacy which are again related to intention and behaviour. Behavioural factors include number of sexual partners, rate of partner exchange, concurrent partner's sexual practices, condom use, drug injection use and alcohol use. Quality and access to health care services such as blood transfusion and women's right are also some of the HIV infection determinants. These factors are closely related and are interacting with each other.

. On the other hand biomedical factors include; virus subtypes, stage of infection, presence of others STIs gender and male circumcision.

3.5 Procedures

3.5.1 Ethical clearance

Ethical clearance was obtained from both the Ministry of Health Department of Medical Research (NIMR) and also from the Ministry of Education and Culture. Ethical clearance was received from both ministries (see annex III and IV). Again the researcher visited each regional and district medical and educational officers to seek for a permission to conduct a research before starting fieldwork in the areas. Permission was also granted from these offices.

3.5.2 Data collection

The researcher visited each school two to three weeks before the day of the study. The aim was to inform teachers of the study, and to make plan for the dates most suitable for them for the study to be conducted. At the same time to allow enough time for the parents to discuss and decide if they will agree with the study and will allow their children to participate.

The head teachers who are also serving as the school committee secretaries were asked to inform parents and then organize school committee's meetings. Each school committee had to discuss about the study and if the committee agreed with the study, and the chairperson (community member), and the secretary to inform the parent's and give them consent forms to sign. This was the agreement made between researcher and both the Ministry of Education and Ethical committee at National Institute for Medical Research (NIMRI) for Ministry of

Health in Tanzania when seeking ethical clearance. Parents who allowed their children to participate signed the consent forms

By the date of the study all school committees had already met and had parent's consent forms signed, except in two schools in Arusha, "Kagongoni in Monduli district and Burka estate in Arumeru district". The former (Kagongoni) school committee had discussed the proposal as they were informed by the head teacher, but they wanted more explanation from the researcher, so on the day of the interview the chosen representatives headed by the chairman met with the researcher and after a brief discussion to their satisfaction they agreed and signed the consent form. In the discussion it was realized that the head teacher had lost the letter with information so failed to give full information. The latter, Burka Estate school committee was organized to be conducted on the day of research, so as to involve the researcher himself on discussion. This was done out of curiosity of some members of the school committee. This school committee was comprised with some religious leaders with strong faith, as members. The discussion went smoothly. The researcher had a chance to explain the objective of the study, and what is expected after the study findings. The committee members were informed that the research was approved by both Ministries of Health and Education and culture. They were also informed that the results of the study will be submitted to these two ministries and to the relevant regions to be used in planning for appropriate interventions and may help in improvement of school health promotion activities and primary school curriculum.

After discussion members were highly in favour of the research. They even went further to suggest that, the government should be advised to control some of the television programs which to their opinion were contributing to the bad behavior among youth and were against the culture and social norms of Tanzanians. They cited examples such as some condom promoting programs contents, which they said were only promoting sex, rather than educating. The meeting ended by them allowing the chairman and secretary signing the parent's consent form.

3.5.3 Informed consent

Participating students were informed that, their participation in the study was completely voluntary. They were advised that they should feel free to skip questions they thought were too private that they did not wish to answer. They were also allowed to leave the room any time they thought they can not continue filling the questionnaire. Consent forms were

provided to them, to sign if they were willing to participate. They were informed that those who were going to participate would be required to anonymously fill in the questionnaire and were not supposed to write their names on any page of the questionnaire. This was to ensure confidentiality of their answers. None of the teachers, parents or any body in their communities will be able to access the filled questionnaire.

3.5.4 Interview and Instrument

Self administered questionnaires, were then given to participants who confidentially filled them. During the time of filling of the questionnaire, teachers were not allowed to enter in these classrooms. The decision to prevent teachers not to enter these class rooms was to avoid any influence teachers might have on pupil's confidence. The average time used to fill in the questionnaires was 50 minutes for each class.

3.6.1 Structure of the questionnaire

The questionnaire has been structured to have short questions to allow clear understanding of the meaning of questions by respondents. This has been suggested by Jenkins and Dilman (1995)(54), that breaking questions into a shorter and clear way making it easy for respondent to understand. However this should be supplemented by answer choices, which are mutually exclusive (54;55). This has also been dealt with by asking questions reflecting to a shorter duration to minimise the effect in this study.

Guidelines on how to respond to each category of question were also provided as part of questions. It was the expectation of the researcher that this would allow easy understanding of the questions by respondents and increase reliability and validity of study findings.

Participants were instructed to ask for clarification of questions they thought they didn't understand. The questionnaire was well understood as was demonstrated by the pilot study (56), only a few asked for definitions of few words, and when clarification was given ,it was given to the whole class to ensure common understanding.

A semi - structured self-administered questionnaire adopted from the World Health Organization (WHO) survey instrument for adolescent was used (33;56). The same questionnaire with only minor changes (additional questions) was used in the 1992 Ngao

survey. Pupils were asked to provide social demographic information such as age, sex, school, grade level, and tribe. The questionnaire also covered areas of knowledge beliefs, attitude and behaviour with regard to HIV/AIDS and other reproductive health related issues (using likert scale of 1 for strongly disagree, to 5 for strongly agree). It also included questions designed to assess risk perception and perceived severity of HIV/AIDS. Questions regarding the frequency at which they communicate with people about AIDS within their social net work such as friends, parents, teachers and religious leaders were also included (answer options ranging from 1= never, to 4= more than four times were provided).

Exposure to AIDS information was assessed by asking students how often they heard or read about AIDS in the past month (with pre-coded answers ranging from 1=Never to 4= more than four times). Knowledge was assessed by asking students to show whether the information regarding HIV transmission routes is correct, incorrect or that they do not know, (Coded 0, 1 and 2 respectively). See appendix 11.for questionnaire.

3.6.2 Study questions

Important questions addressed

- Exposure to information on HIV/AIDS (questions 21a – 21f),
- Communication regarding HIV/AIDS (questions 22a – 22e),
such as who give them information (e.g. friends)?

How is the state of communication about AIDS between school children, parents, religious leaders and teachers?

- Knowledge on HIV/AIDS, (questions 23 – 40)
- Pupils perceived risk (questions 53, 56 and questions 58- 60),
- Perceived severity of AIDS (questions 52, 54, 55 and 57).
- Intention towards being sexually active (questions 61, 65- 70 and 73),
- Social norms (subjective norms) questions 62, 72, 76 and 83 – 85.
- Risk behaviours such as sexual behaviour and condom use and their drinking of alcohol, cigarette and marijuana smoking habit (questions 97 to 107)
- Self efficacy (questions 87- 93)
- Behaviour covered (questions 96- 103)

3.7 Reliability and Construct Validity of Instrument

Scale reliability and validity of the instrument was pilot tested in Tanzania in 1992 (56). Local health educators evaluated the appropriateness of selected items and translated the questionnaire from English to Swahili. The translated version was then subjected to peer review to assess content validity (33;56). On average participating students in 1992, answered 90.2% of the questions. Non-response pattern were not related to questions asked. AIDS related knowledge and attitudes toward engaging in sexual behaviour had acceptable reliability and construct validity. With regards to Cronbach's coefficient alpha, the scales used, had internal consistency of >0.70 . The instrument is therefore appropriate for use in Tanzania's setting. Further pre-testing of the instrument was therefore not done.

3.8 Data analysis

Data were analyzed in two steps. The first step involved analysis of the 2005 pupil's survey to explore the levels of communication, information and knowledge of the pupils. In addition pupil's behaviour was also explored. Further analysis was done on social norms self - efficacy, perceived severity and perceived risk of the disease for 2005. Chi - square test was used to investigate gender differences in each construct, one way analysis of variance (ANOVA) was used to examine urban, semi urban and rural setting differences. Univariate analysis was used to check for interaction effect of gender on setting differences.

Finally bivariate analysis was used to explore correlation between some of the variables as will be seen in the result section. To determine the strength of correlations, the following criteria using the size of Pearson correlation coefficient (r) was used: the correlation of " $r = 0$ ", indicates no correlation, $r = 0.10$ -to $.29$ or -0.10 to -0.29 indicates small correlation; $r = 0.30$ to 0.49 or -0.30 to -0.49 medium and $r = 0.50$ to 1.0 or $r = -0.50$ to -1.0 strong correlation (57;58)

The extent to exposure to information, and sources of information were measured by six items, the pupils were asked how often they heard or read from various sources of information over the past month. Answers ranged from 1= never to 4 more than four times. For chi square,

scales were dichotomized into “1- those who heard or read once or twice over the last month and 2 those who read or heard more than three times in the same period”.

Communication was measured by five items. Question asked how often they have talked to various people in their immediate surrounding. Like in exposure to information scales, response categories ranged from 1- never to 4 more than four times. The scales were dichotomized into “1= never and 2= at least once (once or more)”. For knowledge there were 18 items, each with answers ranging from “1- yes correct, 2-no wrong and 3- I don’t know, these were recoded in to “0= incorrect knowledge and 1= correct knowledge”. Social norms, self efficacy, perceived risk and perceived severity; each had items with scales ranging from “1- strongly agree to 5- strongly disagree”. Where necessary the questions were reversed and recoded to allow running of independent sample T- test with high mean values denoting high social norms, self efficacy, perceived risk and high perceived disease severity respectively.

In the second step analysis was undertaken in order to compare the two surveys 2005 and 1992, to assess the differences in the findings and to investigate if there are any changes over time. Comparison of 2005 and 1992 pupils levels of communication, information, knowledge and behaviour was made. Urban, semi-urban, rural and gender differences for the two surveys was also compared. Independent sample t- test was used to compare the differences in the level of information, knowledge, social norms, self efficacy, perceived risk and perceived disease severity, between 1992 and 2005. Mean values standard deviation for 95% confidence interval (95% CI) and P. values are provided in the result. Effect size (Eta squared) was calculated by the formula “ $t^2 / t^2 + (N_1 + N_2)$ ” for independent sample t- test (59); in this study interpretation of the effect size used is .01 = small, .06= Moderate effect size and .14= large effect size as proposed by Cohen (57;59). The Chi-square test was used to assess differences in communication. As in step one above ANOVA was used to investigate urban-rural differences and Univariate analysis to control for gender effect.

Since participating pupils in the 2005 study were a little bit younger in age than those of 1992, adjustment was made by categorizing pupil’s age in three equal groups for both studies (each composed by 1/3 of the population). Categories were “1,-those aged ≤ 13 years (33.3%), 2, - those aged 14 years old (33.3%) and 3, age group - 15 years and above (33.3%). Analysis was then made by comparing the effect of age in the level of knowledge by using both one way between groups ANOVA with post hoc test. Pupils of different age groups were compared to see the differences in each study. Again pupils of the same age groups in 2005 were compared

with those of 1992 and two way between groups ANOVA was used to investigate the differences between groups for 1992 compared with 2005 to see the impact of time on the level of knowledge(see result section).

4.0 RESULTS

4.1 Study population

In a total 2,069 pupils from grade six and seven from all 18 schools were recruited in 2005. None of the pupils from these classes present on the day of interview refused to participate. Those absent on the day of study were not re-contacted and asked to participate. Of 2,069 pupils who were recruited, 9 (0.4%) of the pupils could not complete the questionnaire because they were not able to write or could not read normal letters because of either physical or mental disabilities), these were excluded from the study leaving us with a sample of only 2,060 pupils (Table1,).

For 2005 pupils, the males and female distribution is presented in Table1. The total number and the gender distribution of this (2005) study are similar to that of 1992 survey as around 50% for both genders. In the1992 study the total number of participants was 2,026 male, making 50.4% while females made up 49.6%. The 2005 study population was comprised with somewhat younger pupils Mean age of 13.5years with median age of 13years compared to mean age of 14years and median age of 14 years in 1992. In both studies age of the participants ranged from 10 years or younger to17 years or older (Table 2 below).

Table1 Participants by gender (2005 survey)

	Number	Percent
Male	1017	49.2
Female	1043	50.4
Total	2060	99.6

Table 2 Age distribution of participant for 1992 and 2005 studies

Age	1992	Percent	2005	Percent
10 yrs or younger	13	0.6	6	0.3
11 yrs	36	1.8	71	3.4
12 yrs	177	15.6	322	15.6
13 yrs	479	23.6	703	34.0
14 yrs	552	27.2	526	25.4
15 yrs	468	23.1	272	13.1
16 yrs	203	10.0	86	4.2
17 yrs or older	62	3.1	34	1.6
Missing	40	1.8	36	2.0
Total	2026	100	2060	100

There were almost an equal number of participants in both grades six and seven for 2005 survey (see Table3).

Table 3 Distribution by grade (2005 survey)

Grade	Number	Percent
STD Six	1004	48.5
STD Seven	995	48.1
Total	1999	96.6
Missing	61	3.4
Total	1069	100.0

4.2 COMMUNICATION AND INFORMATION (2005)

4.2.1 Communication

Communication was assessed by investigating sources and frequency of communication about HIV/AIDS among primary school pupils with parents, friends, teachers, religious leaders and

doctors. Pupils reported teachers as the most frequent people to communicate with them about AIDS than others n = 1841 (91.6%), followed by friends n = 1689 (84.3%), religious leaders n= 1602(79.9%), and then parents n=1522 (75%). Pupils reported that they communicated least with doctors about AIDS n = 1343 (67.8%). Results also show statistical significant difference on pupils' response to the extent in which parents communicated with girls and boys. Girls reported to have communicated more with parents than boys'. There was no significant difference in the extent to which the boys and girls communicated with teachers, friends, religious leaders and doctors (Table 4 shows gender differences).

Table 4 Gender differences in communication (2005)

Proportion of pupils by gender, who talked about AIDS ≥ 1 times over the past month, P values are as per two-tailed chi-square test.

	Male's %	Females %	P- value
Have talked about AIDS with			
Parents	71.7	78.2	0.001
Friends	84.1	84.3	0.936
Teachers	90.8	92.5	0.160
Doctors	66.9	68.6	0.425
Religious leaders	79.9	75.5	0.828

There were no significant differences in the level of communication among school pupils' attributed to geographical setting characteristics of a school such as, "urban and semi urban (p =1.00), urban and rural (p = .966), semi urban and rural (p = .267)" (Means, standard deviations of the means and 95% confidence intervals are provided in the Table 5 below. Neither was there any statistical significance difference between boys and girls on communication when the items were added together (p =.392).

Table 5 urban rural means and standard Deviations for communication

Scales; 0 = Never, 1= once or more

	N,	Mean,	SD	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Urban	991	3.99	1.27	3.91	4.07
Semi urban	528	3.99	1.33	3.88	4.11
Rural	408	3.86	1.41	3.72	4.00
Total	1927	3.96	1.32	3.90	4.02

4.2.2 Levels and sources of information by gender 2005

Exposure to AIDS information and sources of information for primary school pupils during the past month were investigated to determine how often the primary schools pupils get AIDS information and from which sources.

At least 97.1% of pupils responded to each item. The level of exposure to information was generally high in 2005 study. Of those who responded, 100% were exposed to information at least once in every single item (source of information) within one month preceding the date of study. For chi-square test, the scales were dichotomized to 1 – those who heard or read once or twice in the last month and 2- those who heard or read more than three times in the same period. Results by gender are shown in Table 6, below.

Table 6; Have heard or read about HIV/AIDS from (2005study);

P- Values are based on two sided chi square test (a 2x2 table).

Source	Males %		Females %		p-values
	1- 2 times,	≥ 3 times	1-2 times,	≥ 3times	
Radio	35.3	64.7	39.1	60.1	0 .079
News paper/Magazine	59.2	40.8	63.1	36.9	0 .074
Public Poster	58.4	41.6	64.6	35.4	0 .004
School	35.4	64.6	37.7	62.3	0 .286
A doctor/ health worker	65.1	34.9	64.9	35.1	0 .931
Religious leaders	48.9	51.1	53	47	0 .068
Total					

As can be seen from Table 6 above, there was no significant difference in access to information between girls and boys in most sources of information except for public posters where many boys had access to information equal to or more than three times than girls. But there were no significant difference on how boys and girls heard or read about HIV/AIDS from radio, school, health workers and religious leaders.

4.2.3 Demographic influence on exposure to HIV/AIDS information

A comparison of demographic influence on pupil's access to information based on the geographical location of schools (urban, semi urban and rural) was made by one way ANOVA. Findings show that there was a significant difference between urban pupils and pupils from rural schools ($p = 0.028$). However there was neither a significant difference between urban school pupils and semi-urban pupils ($p = 0 .241$) nor were there significant difference between semi-urban pupils and rural school pupils ($p = 0 .386$). Means and standard deviations for 95% Confidence intervals are provided in Table 7 below.

Table 7 *Exposure to information by setting*
Scales ranging from 1 = never to 4 = more than four times

Setting	Number	Mean	SD
Urban	990	17.80	4.64
Semi Urban	519	17.30	4.77
Rural	412	17.08	4.75

Furthermore a two way between groups analysis of variance test was conducted to investigate if there was any confounding effect of sex on the effect of setting on exposure to information. All variables were summed up to form a single variable (total information). There was a statistically significant main effect for both setting and sex (that implies that there were variation on the level of exposure to information by setting and by sex). For setting $F(2, 1907) = 4.39$; ($p = 0.012$), but the effect size was small (Partial Eta square 0.01). Post hoc comparison using Tukey HSD test shown mean scores (shown on Table 7 above) for urban pupils, was significantly different from that of rural school pupils.

The main effect for sex $F(1, 1907) = 8.19$, ($p = 0.004$), was statistically significant. The effect size was small as shown by partial Eta square of 0.00. Moreover the interaction of sex on the effect of setting on the level of information did not reach statistical significance ($p = 0.182$). Therefore gender differences had no effect on the differences on the level of information noticed in setting.

4.2.3 Comparison of communication and information 1992/2005

In 1992 pupils reported to have communicated about HIV/AIDS mostly with friends followed by parents and health workers as shown in Table 8. Pupils reported that they communicated with teachers about HIV/AIDS least frequently. On the contrary, in 2005 pupils reported that they communicated with teachers most frequently about HIV/AIDS followed by friends, parents and religious leaders. Health workers were reported by pupils to communicate least frequently with pupils on AIDS in 2005 survey.

Overall pupils in 2005 communicated significantly with each group of individuals mentioned than those in 1992.

Table 8 *Proportion of pupils who communicated with various groups of people, Communication at least once in the past month*

	1992 %	2005 %	P- value
Parents	62.2	75.0	< 0.001
Friends	76.3	84.2	< 0.001
Teachers	50.3	91.6	< 0.001
Doctor/HW	61.8	67.8	< 0.001
Religious leader	57.8	79.7	< 0.001

A comparison was also made to investigate differences in exposure to AIDS information from various sources of information for 2005 pupils, as compared to 1992 pupils. Pupils in 2005 reported to have been exposed to AIDS information in many items investigated more than pupils in 1992 (Table 9). However there was no significant difference in exposure to AIDS information from news papers or magazine in 2005 compared to 1992.

Pupils in 2005 significantly reported to get AIDS information from school and radio more than those of 1992. Similarly in 2005 pupils were more exposed to information from public posters, religious leaders and health workers than those in 1992. Unlike in 1992 the schools were the arena where pupils got AIDS information the most, followed by radio and then religious leaders' in 2005. Health workers were considered by the respondents to be the least in informing pupils about AIDS in 2005. While in 1992, the school was the arena from which pupils got information the least as opposed to 2005. Mass media (radio and newspapers) were the means by which pupils got information most frequently from, in 1992. Generally, there was increase in levels of communication and so information in 2005 compared to 1992. Bivariate analysis was performed on the 2005 data and revealed strong positive correlation between communication and information, $r = 0.567$.

There was no demographic influence on the level of exposure to information in 1992 with regards to school location; "urban (Mean 14.97, SD 4.70) and rural (Mean 14.53, SD 4.7) ($p = 0.301$), semi-urban (Mean 15.01, SD 4.77) compared to urban ($p = 0.987$), semi-urban and rural ($p = 0.369$)". Likewise in 2005 there was no significant difference in exposure to HIV/AIDS related information between urban and semi-urban pupils ($p = 0.775$), but urban pupils had significantly more access to AIDS information than rural pupils ($p = 0.028$) (see Table 7 above).

Table 9 Exposure to various sources of AIDS information
Scales ranging from 1= Never, 4 = more than four times

	Survey 92 or 05	N	Mean	Std. Deviation	P-value
Radio	1992	1912	2.9	1.14	<0.001
	2005	2036	3.3	1.06	
Newspaper / magazine	1992	1885	2.7	1.13	0.863
	2005	2009	2.7	1.20	
Public poster	1992	1858	2.3	1.23	<0.001
	2005	2015	2.7	1.21	
School	1992	1872	2.1	1.12	<0.001
	2005	2031	3.3	0.97	
A doctor/HW	1992	1897	2.4	1.19	<0.001
	2005	2016	2.6	1.20	
Religious leader	1992	1920	2.4	1.23	<0.001
	2005	2037	3.0	1.12	

Further analysis was done by summing up the information items to form total information scores to allow for comparison of overall exposure to information for both 1992 and 2005 pupils. Results show that there was a 7% variance in exposure to information between the two groups of pupils. Pupils in 1992, n=1673 (M= 14.90, SD 4.60) were less exposed to AIDS information compared to pupils in 2005, n= 1921, (M=17.51, SD 5.70);

T (3592) = -16.74, (p <0.001) with effect size of Eta square 0.07.

4.3 Knowledge

4.3.1 Knowledge 2005

Generally, there was good level of knowledge on HIV/AIDS in 2005. From Table 10, below we can see that the majority knew well that someone can acquire AIDS virus by having sex with someone with AIDS virus (HIV), also that some one can get AIDS by having unsterilized injections. They knew well that having many sex partners increases the risk of

getting infected with HIV. The majority of pupils knew that a healthy looking person with HIV can transmit the virus to others, but still some were not clear with this point in their answers, as more than a half of pupils did not know that a person can have HIV and shows no signs of disease. Approximately one third did not know that you cannot tell whether a person is infected by the way he or she looks. The level of knowledge on condoms, that condom can prevent HIV infection was low. More than one third of pupils thought wrongly that mosquito can transmit the disease. But it is also encouraging to see that most pupils know that a person can change behaviour to reduce the risk of getting AIDS.

4.3. 2 Social demographic characteristics and knowledge 2005

A) - Gender differences

The level of knowledge for both boys and girls was almost equal in most of the items with minor variations which did not reach statistical significance (Table 10). However the knowledge level of boys was higher and statically significant on few items. For example, high proportion of boys than girls knew that use of condoms can prevent HIV infection, and that a mosquito bites can not transmit HIV infection. Boys also knew better than girls that there is no vaccine against HIV infection. Compared to boys, a smaller proportion of girls knew that a person may not get infected by wearing clothes used by infected person. Boys knew better than girls that most people with AIDS will die as a result of it, and also that someone can have HIV infection and shows no sign of the disease. In spite of those differences the overall knowledge of condom as a preventive measure was low for both boys and girls, as more than a half of all pupils in 2005 thought that the use of condom during sexual act can not prevent one from acquiring HIV infection.

B) Urban rural differences

Urban pupils (Means 15.67, SD 2.18) had significantly higher knowledge than those of semi-urban (Mean 14.83, SD 2.88; ($p < 0.001$), and also higher than those of rural (Means 14.66, SD 3:00; ($p < 0.001$). There was no significant difference in the level of knowledge between semi-urban and rural pupils ($p = 0.604$). When controlled for gender there was no influence of sex in the difference of level of knowledge between urban, semi-urban and rural setting noticed above, interaction effect $F(2, 1853) = 1.135, P .321$, (partial Eta squared of 0.001).

Table 10; Knowledge; a proportion of students who answered correctly in 2005

	Male%	Female%	P-value
A person can get infected with HIV;			
- By shaking hands with someone who has the virus	86.5	85.9	0.696
- By having unsterilized injections	86.2	84.6	0.332
-By having sex with someone who has the virus	95.7	95.5	0.839
-By wearing clothes used by an infected person	70.0	64.1	0.004
-By being beaten by mosquito which has fed on Someone with this virus	59.1	52.0	0.001
-By hugging someone who has the AIDS virus	83.6	83.5	0.951
-By receiving blood transfusion	82.5	82.7	0.909
- But show no sign of disease	47.4	42.5	0.025
Most people with AIDS virus will die as a result of it	66.1	70.7	0.025
A healthy looking person with AIDS virus can pass it on	82.6	82.8	0.868
A pregnant woman can pass the virus on to her baby	69.7	71.1	0.489
AIDS can be cured if detected early	69.6	70.8	0.557
There is a vaccine which can prevent people from getting AIDS	73.1	68.1	0.014
There are tests that can show if a person has the AIDS virus	92.7	93.1	0.750
One can tell if a person has AIDS virus by the way he or she looks	75.9	72.9	0.122
Condoms can prevent infection by the virus	47.2	39.9	0.001
Many sex partners increases the risk of getting infected with AIDS virus	91.8	90.2	0.199
A person can change the behaviour to reduce the risk of getting AIDS virus	83.8	83.4	0.808

4.3.3 Comparison of HIV/AIDS knowledge for 1992 and 2005 surveys

Generally knowledge level of grade six and seven pupils in 2005 are higher compared to that of 1992 grade six and seven pupils. These findings can be seen on Table 11, which shows mean scores standard deviation and P- values of 1992 and 2005 pupils' for different knowledge constructs used in both surveys. Pupils in the 2005 survey had significantly higher levels of knowledge on most knowledge items investigated compared to those of 1992. Even when all 18 knowledge items were summed up to form a total knowledge score, the 2005 pupils still had significantly high knowledge (M= 13.57, SD=2.71) compared to those of 1992(M=12.03, SD 3.26); $T(3347.91) = -15.15$,

($p < 0.001$) the magnitude of the difference (Eta squared 0.06), was moderate(59). Furthermore there was significant difference even within gender, boys in 2005; $n=903$,

(M=13.76, SD 2.67); $T(1671.58) = -8.54$ were more knowledgeable compared to boys in 1992 survey, $n = 858$, (M= 11.51, SD 3.24), ($p < 0.001$), with small effect size of Eta squared, 0.03. Likewise girls in 2005, $n=956$, (M=13.38, SD 2.74) were more knowledgeable than their counterparts in 1992, $n=859$, (M=11.51, SD 3.24) ($p<0.001$), Eta squared, .08

Scales for the items ranged from 1- yes correct, 2- no wrong, 3- I don't know, but in the analysis presented in the Table11 they were recoded and dichotomized into (0- incorrect knowledge and 1- correct knowledge).

Table 11 Comparison of 1992 and 2005 levels of knowledge, mean values, Standard (std.) deviation for 95% confidence interval and P-values (2-tailed)

	Survey 92 or 05	N	%	SD.	P
Aids can be transmitted; -By shaking hands	1992	1941	68	0.47	< 0.001
	2005	2054	86	0.35	
-By wearing clothes	1992	1969	62	0.49	0.002
	2005	2053	67	0.47	
AIDS can be cured	1992	1963	50	0.50	< 0.001
	2005	2051	70	0.46	
There is a vaccine against HIV/AIDS	1992	1986	50	0.50	0.001
	2005	2061	71	0.46	
By a mosquito bite from infected person transmits HIV	1992	1986	30	0.46	< 0.001
	2005	2052	55	0.50	
Aids can be transmitted by hugging someone	1992	1976	53	0.50	< 0.001
	2005	2065	83	0.37	
One can tell if a person has AIDS	1992	1981	38	0.49	< 0.001
	2005	2058	74	0.44	
A person can have HIV and show no Signs	1992	1961	52	0.50	< 0.001
	2005	2052	45	0.50	
Most people with AIDS virus will die from it	1992	1980	86	0.35	< 0.001
	2005	2030	69	0.47	
A person can get AIDS through injection with unsterilized needles/syringes	1992	1981	81	0.39	0.001
	2005	2055	86	0.35	
A person can look healthy but has HIV	1992	1993	78	0.42	< 0.001
	2005	2055	83	0.38	
A pregnant woman with HIV can pass it to her baby	1992	1986	88	0.33	< 0.001
	2005	2057	70	0.46	
A person can get HIV through blood Transfusion	1992	1980	67	0.47	< 0.001
	2005	2019	83	0.38	
There are tests that can show if a person has HIV	1992	1982	83	0.38	< 0.001
	2005	2063	93	0.26	
Use of condom can prevent HIV	1992	1988	62	0.49	< 0.001
	2005	2044	43	0.50	
Having many sexual partners increases risk of getting AIDS	1992	1993	82	0.38	< 0.001
	2005	2055	91	0.29	
Behaviour change can reduce the risk of getting AIDS	1992	2009	72	.45	< 0.001
	2005	2059	84	.37	
You can have HIV by having sex with some one with HIV	1992	1982	85	.36	< 0.001
	2005	2058	96	.21	
Total knowledge Mean values Scales 0 – 18	1992	1718	12.03	3.27	< 0.001
	2005	1866	13.56	2.72	

4.3. 4 Age group and knowledge levels

The researcher went further to determine the effect of age on the level of knowledge for both studies. Of subjects which participated in the 2005 study, there were no significant differences in the level of knowledge across age groups. However in the 1992 survey the older age groups tended to have higher knowledge than younger pupils. For instance, 14 years old had significantly higher knowledge than those of 13 years or below, similarly the 15 years and above group had a significantly higher level of knowledge than those of 13 years or below (Table 12).

Table 12 Age group differences in the level of knowledge for 1992 and 2005 surveys

Survey	Age in Years	Compare to Age years	Mean difference	95% CI		P. value
				Lower Bound	Upper Bound	
1992	≤ 13	14	-.68	-1.15	-.22	0.002
		≥ 15	-.77	-1.20	-.33	< 0.001
	14	≥ 15	-.08	-.55	.38	0.915
2005	≤ 13	14	-.22	-.57	.13	0.315
		≥ 15	-.11	-.50	.28	0.786
	14	≥ 15	.11	-.34	.55	0.835

The effect of age on general level of knowledge for 2005 pupils compared to those of 1992 was also investigated, as the 2005 pupils population was a bit younger compared to that of 1992. After adjustment for age (see methods section), one way analysis of covariance was conducted to determine the differences in the level of knowledge between 2005 survey and that of 1992. The independent variable was survey period (1992, 2005), the dependent variable was the scores of knowledge for each period and covariate was age group in three groups. The researcher checked to make sure that there were no violations of the assumptions of normality, linearity and homogeneity of variance before proceeding with the test. The results show that pupils in 2005 still had statistically significant increase in the level

knowledge even after the adjustment of age, $F(1, 3524) = 244.97$; ($p < 0.001$), with effect size of partial Eta squared 0.07. For unadjusted means see Table 11, after adjustment for age, means level of knowledge for 1992 pupils were 12.01; 95% CI, 11.87 – 12.5 lower than that of 2005 means 13.62; 95% CI, 13.48 – 13.76.

4.3. 5 1992/ 2005 urban rural comparison of knowledge

In Table 13 it can be seen that in 1992 survey there was no statistical significant difference in the level of knowledge on AIDS between urban pupils and that of semi-urban pupils. In 2005 urban pupils had significantly higher level of knowledge than that of semi urban. This indicates significant increase in the level of knowledge for urban pupils than that of semi urban. Again in 1992 semi-urban pupils had significantly high level of knowledge than rural pupils, but in 2005 there is no significant difference in pupil's level of knowledge from the two settings (semi urban and rural). In general rural school pupils continued to have significantly lower levels of knowledge compared to urban pupils despite their remarkable increase in the mean level of knowledge if you compare with that of urban or semi urban.

Table 13 Urban, semi-urban and rural influence on knowledge 1992/2005,
*The mean difference is significant at the .05 level.

95% CI = 95% confidence interval

Survey	Location	N	Mean	SD for 95%CI	Location compared to	Mean Differen ce	P. value
1992	Urban	1053	12.27	3.32	Semi urban	-0.02	0.991
	Semi urban	366	12.29	3.08	Rural	-1.45*	< 0.001
	Rural	299	10.84	3.06	Urban	-1.42*	< 0.001
2005	Urban	961	14.02	2.34	Semi urban	0.93*	< 0.001
	Semi urban	521	13.09	2.83	Rural	0.05	0.958
	Rural	381	13.03	3.20	Urban	-0.98*	< 0.001

4.4 Social norms for 2005 survey pupils

Pupil's levels of social norms were investigated, and comparison of girls and boys levels of social norms for the 2005 survey was done. Boys had mean values of 24.29; SD 5.32 (out of a maximum of 30 scores) and girl's mean 24.29; SD 5.77. There was no significant difference in the levels of social norms between girls and boys for 2005 pupils when all items were summed up ($p = 0.938$).

In the Table 14 below, the mean values for levels of social norms by gender are shown. There were significant difference between boys and girls on their opinion on the view of their parents being upset in case parents found out that they were engaging in sexual activities. Boys were more afraid than girls. Girls were significantly more likely to think that people would have less respect for them if it was discovered that they were engaging in sexual intercourse than boys. There was no significant difference between boys and girls response, in the response to the opinion of relatives, people in their surroundings, teacher and religious leaders about adolescent's engagement in sexual activities.

Table 14 Levels of social norms by gender for 2005
Answers recoded to "1- strongly disagree to 5-strongly agree"

Norm	Male		Female	Means	P.value
	Mean	SD	SD		
My parents would be upset if had sex	4.26	1.22	4.15	1.35	0.050
My relatives would be upset if had sexual intercourse	4.02	1.37	4.05	1.41	0.608
If I had sexual intercourse people would have less respect to me	3.85	1.34	4.05	1.31	0.001
Most people I know think people my age should not have sexual intercourse	3.93	1.36	3.91	1.40	0.709
My religious leader think people my age should not have sexual intercourse.	3.88	1.46	3.85	1.50	0.614
My teachers are strongly against people my age having sexual intercourse	4.27	1.20	4.20	1.30	0.249

4.5 Comparisons of Social norms, attitudes towards sex, self-efficacy, perceived risk and perceived severity of HIV/AIDS 1992/2005

Pupil's social norms, attitudes towards sexual intercourse, levels of self efficacy and risk perception were examined and compared by a researcher. In addition pupil's perception of AIDS severity was investigated. Mean values for 1992 and 2005 pupil's scores were then compared. High mean values denote high levels of social norms, self efficacy and risk perception and perceived AIDS severity. While high mean values for attitude indicates negative attitudes towards sexual relationships.

4.5.1 Social norms

Six scales measuring social norms were summed up to form single scale total social norms. The results show that primary school pupils' social norms have risen significantly over time, (this means they were likely to respect the wishes of older and influential people in their communities and abide by societal norms restricting them to engage in sexual relationship). In 2005 survey pupils had significantly higher level of social norms $n=1950$, (Mean =24.27, SD 6.01) compared to 1992 pupil's level of social norms, $n =1886$, (Mean =23.50, SD 5.27), ($p < 0.001$), but the magnitude of change as seen by effect size of $T(3810) = -4.48$, Eta squared of 0.005 was very small. When pupils were asked about the normative beliefs of their friends regarding sex, pupils in 2005 were more restrictive towards engaging in sexual intercourse and thought it was not acceptable to engage in sexual intercourse at their age $n = 2034$, (Mean 8.13; SD 2.02) than pupils in 1992, $n= 1963$, (Mean 6.90; SD 2.23), ($p < .001$), $T(3923) = -18.16$ with Eta square of 0.08.

4.5.2 Attitudes to be sexually active

Pupil's attitudes (intention) towards being sexually active are displayed on Table 15. There was a significance difference in the views of pupils on involvement in sexual activities when all items were summed together. In 1992, more pupils were in favour of engagement into sexual activities than those of 2005 ($p < 0.001$), with a variance of 3%, $T(3708) = -11.51$, Eta square 0.03 (see the results of combined girls and boys (Table 12). In both surveys girls were less favouring sexual involvement than boys. Girls in 2005 displayed more restrictive attitude towards sexual involvement than all groups of boys in both studies and that of 1992 girls when mean values are compared. But also boys in 2005 significantly demonstrated more negative attitudes regarding sexual involvement compared to boys in 1992.

When pupils were asked if they intended to have sexual intercourse within the next three months, in both surveys the majority were not ready to engage in sexual acts within the next three months 96.7% of 1992pupils (Males 94% and girls 99.3%), and 95.9% of 2005 pupils (Males 93.9% and 97.8% girls). There was no statistical significant difference between the two surveys on intention to have sexual intercourse within the next three months, ($p = 0.245$) even though almost all girls in 1992 said no.

Table 15 Pupils attitudes towards becoming sexually active by gender
Highest mean score indicates Negative or restrictive attitude towards involvement into sexual acts

Gender	Survey	Number	Mean	SD	P. value
Male	1992	939	28.26	6.72	<0.001
	2005	951	30.10	5.96	
Female	1992	918	29.52	5.99	<0.001
	2005	965	32.23	5.36	
Total combined	1992	1858	28.89	6.40	<0.001
	2005	1925	31.17	5.70	

4.5.3 Self-efficacy

Measuring the level of self efficacy, pupils in 2005 were more likely to resist pressure to engage in sexual intercourse, and were more likely to reject presents aimed to persuade them to engage in sexual act. They could easily refuse sexual intercourse even if it was someone older whom they respect, who requested to have sex with them than those of 1992. In addition scores, for each scale measuring self efficacy were summed up to form a total self efficacy scale. Finding indicates that pupils in 2005, $n = 1915$ (Mean 25.41, SD 5.34), had higher self-efficacy than pupil in 1992, $n = 1870$, (Mean 23.38; SD4.25); ($p < 0.001$). Pupils in 2005 could easily reject pressure and persuasion to engage into a sexual act compared to those of 1992 $T(3635) = -12.99$, Eta squared 0.04.

The results on table 16 also show that urban pupils have significantly higher perceived ability to resist pressure to engage into sexual intercourse than semi-urban and rural pupils over the last decade Table16. Rural pupils have significantly lower levels of self efficacy than both urban and semi-urban pupils' in 2005. On the contrary, in 1992 there was neither significant

difference between rural and semi urban nor between semi-urban and urban pupils. The gap between urban, semi-urban and rural on ability to resist pressure to engage in sexual intercourse has widened remarkably over time.

Table 16 Rural/urban comparison on the level of self efficacy in each survey

	Location	Mean	SD	Location	Mean difference	P- value
1992	Urban	23.62	4.34	s-urban	.41	0.195
	S-urban	23.21	3.90	Rural	.50	0.246
	Rural	22.70	4.30	Urban	-.91*	0.003
2005	Urban	26.15	5.13	S-urban	.99*	<0.001
	S-urban	25.16	5.34	Rural	1.26*	0.001
	Rural	23.90	5.49	Urban	-2.26*	0.001

4.5.4 Perceived risk of acquiring HIV/ AIDS

The theory of reasoned action considers risk perception (susceptibility) as one of the determinants of behavioural change. We therefore investigated and compared the finding of the two studies. In the 2005 survey it was revealed that pupils in 2005 had significantly higher levels of personal risk perception and also reported that they perceived their friends to be at higher risk of contracting HIV/AIDS, n=1959, (Mean 16.78, SD 2.88) than did pupil's in 1992, n= 1838 (Mean 14.66, SD 2.87). The effect size was fairly moderately high, Eta square 0.12; $T(3795) = -22.71$.

4.5.5 Perception on AIDS severity

Four items were also included to investigate pupil's perception of AIDS severity in their "country, village, society and in their family". Pupils from both 1992 and 2005 surveys were then compared to determine any difference in their perception on AIDS as the most severe disease. Answers in likert scale ranging from strongly agree to strongly disagree (recoded) were provided for them to choose. There were no significant difference in their perception of ADS severity $n = 1847$, (Mean 18.15; SD 2.70), for 1992 pupils and $n = 2032$ (Mean 18.05; SD 2.74) for 2005 pupils, ($p = 0.243$) for the total score.

4.6 Correlation between social norms, attitudes, self-efficacy, and perceived risk on HIV/AIDS with knowledge and behaviour basing in 2005 results

Bivariate analysis was done in order to explore correlation between different constructs such as social norms, self-efficacy and perceived risk of HIV/AIDS in relation to sexual behaviour, knowledge, attitude towards becoming sexually (intention) active and self efficacy. Findings (Table 17 below) reveal that there is a positive correlation between attitudes towards becoming sexually active and sexual behaviour. Those who intend to have sex are more likely to engage into sexual act than those who do not. However there is a negative correlation between social norms and intention to be sexually active, while social norms have a positive association with self efficacy. Pupils who have higher social norms are more likely to resist pressure to engage in sexual intercourse. On the other hand, knowledge has a positive association with risk perception. Those who have higher knowledge are more likely to perceive themselves to be vulnerable of acquiring HIV and are less likely to intend to become sexually active, for there are negative associations between risk perceptions with intention (attitudes) towards becoming sexually active. Those who perceive themselves to be at high risk are less likely to intend to become sexually active. There is a positive correlation between sexual behaviour and knowledge on HIV, and those who are sexually active are more likely to have knowledge on HIV.

Further bivariate analysis was done to determine association between information communication and knowledge (table not shown). It was revealed that there was a positive association between communication, information and knowledge. There was stronger positive

association between communication and information $r = 0.58$ ($p < 0.001$), than there was a positive association between communication and the level of knowledge $r = 0.20$, as it was also between information and knowledge $r = 0.16$ ($p < 0.001$).

Table 11 Pearson product moment correlation between determinants of sexual behaviour based on 2005 survey

Attitude SA = attitude towards becoming sexually active (intention to be sexually active),

*** = correlation is significant at the 0.01 level (2-tailed)*

** = correlation is significant at the 0.05 level (2-tailed)*

	Sexual behaviour	Knowledge	Attitude SA	Self-efficacy	Social norms
Sexual behaviour					
Knowledge	0.10*				
Attitude SA	0.16**	-0.26**			
Self efficacy	0.04	0.26**	-0.09**		
Social norms	-0.03	0.34**	-0.27**	0.48**	
Risk perception	0.05*	0.11**	-0.12**	0.04	0.04

4.7 Behaviour

4.7.1 Behaviour 2005

Pupils sexual behaviour were examined by checking the proportion of pupils who had already engaged in sexual intercourse, age of sexual debut, frequency of sexual intercourse and condom use for those who had had sex already. 18.4% of respondents had already had sexual intercourse at least once in their life time. 7.3% had sexual intercourse at least once during the past three months. Of the respondents 11.4% were sexually active that is, “they had sexual intercourse more than once in their life time”. Pupils from rural schools were less sexually active compared to their urban counterparts (Means and SD, 1.67, SD .47; 1.80, SD .395, respectively). Semi-urban pupils (Mean 1.74, SD .47) did not differ significantly with either of the groups. More boys (29.4%) were sexually active than girls (8.5%).

Age of sexual debut ranged from ≤ 10 years to ≥ 17 years, with a mean age of sexual debut being 11.9, SD 2.38 median age of sexual debut 11 years. Most pupils had sexual debut at a younger age, for example of those who already had sexual intercourse 48 %, had sexual debut at the age of 10 years, while at the age of 15 and 16 years only 4.5% in each, and 8.6% at the age of 17 years.

Many pupils who were sexually active used condom the last time they had sexual intercourse, 74.8% of those who had sex, used condom the last time they had sex. Awareness of condom seems to be low in primary school pupil's population. Almost a half of respondents (41.8%) did not know what condom is, even fewer (18.4%) knew how to use condom, implying that even among those who are aware of condoms, only few of them have skills on how to use condom.

4.7.2 Behaviour 1992/2005

Sexual behaviour and condom use

The proportion of pupils in 2005 who had already had their sexual debut was significantly less compared to those of 1992 (Table 18). When pupils of the same gender were compared, such as female by female, the similar results were seen for both sexes, a higher proportion of those of 1992 had already had sexual intercourse than those of 2005. In both studies more boys had already had sexual debut than girls. Age of sexual debut ranged from $\leq 10 - \geq 17$ years in both studies. Mean age of sexual debut was a bit higher in 2005 pupils (11.9 years; SD 2.38) than 1992 pupils (11.5 years; SD 1.96). However 2005 pupils, were less likely to use condom during sexual act, 74.8% (2005) versus 86.6 % (1992) used condom the last time they had sexual intercourse. There was also significant difference in the level of sexual activity between the two groups ($p < .001$); pupils of 2005 were less sexually active than those of 1992, (measured as repeated sexual intercourse twice or more in life time). There was a reduction in the proportion of pupils who were sexually active by almost a half (8.4%) in 2005, considering 15.4% in 1992.

Table 18 Comparison of sexual behaviour by gender 1992 versus 2005

Proportion of pupil who have had sexual intercourse in there life time, (2x2Table) P-Value is for two tailed chi square test.

	1992(%)	2005 (%)	P- value
Male	51.6	29.4	< 0.001
Female	12.0	8.5	0.011
Total	31.8	18.8	< 0.001

4.8 Other risk related behaviour

Smoking habits, alcohol consumption and pupils' use of marijuana were investigated and a comparison was made between the two surveys. The proportion of pupils who ever smoked cigarette has decreased among primary school pupils, with only 4.8% of the sample in 2005 reported a history of smoking cigarettes, a proportion which is significantly less than that in 1992 (9.3%) ($p = 0.001$). Alcohol consumption levels in 2005 were also significantly lower than that in 1992. In 2005 survey, 9.9% of the pupils consumed alcohol at least once in the past three month compared to 22.2% in 1992 ($p < 0.001$). The proportion of those who have ever used marijuana has significantly increased among primary school pupils over a period of 13 years, in 1992 only 2.1% reported smoking marijuana but the proportion has significantly risen to 3.5% in 2005 ($p = 0.01$).

5.0; DISCUSSION

5.1 Strengths and Limitations of the study

In this study we had a high participation rate. The research instrument used was a self-administered questionnaire, which makes it convenient to the respondents, because their response can not be directly linked to them as they do not write their names or identification. As the result they may be more confident, and more honest compared to face to face interview as was noted by Plummer and colleagues (60).

Survey also helps measurement by quantification and allows generalization. Self-administered questionnaires also remove potential observer effects. The results are respondent's view as given by his or her opinion, without external influence of the observer. There is also no misinterpretation, resulting from the observer trying to interpret what the respondent meant in responding to a question.

In self-administered questionnaires a researcher relies mostly on the honesty and accuracy of participant's responses. The accuracy of responses also depends on a respondent's understanding of the questions. This problem has been dealt with by breaking questions into short and understandable sentences, and also by pre-coding of answers.

However one of the main weaknesses is a recall bias. That some may not recall well past events. The implication of this idea is that events that have occurred too far back will be forgotten or under reported. Foddy referring to a study by Bachman and O'Malley suggests that forgetting increases over time (61). He further comments that the ability to recall an event is also related to its salience. Sequence of events surrounding particular incidence have influence on recall. To minimise this kind of bias we made as short as possible reference time whenever questions referring to previous events were used.

5.2 Theoretical Discussion

Our study was based on the Theory of reasoned action.

Critics of the theory of reasoned action reject the construct of intention towards the behaviour to be individualistic and Western oriented, therefore does not fit in African context because it is not collective. They all agree that family and community collectively influence individual behaviour (62). Implicitly or explicitly this refers to subjective or social norms which are components of theory of reasoned action. The argument supported by a study done in Ethiopia which found the decision to use contraceptives, to be influenced more by social rather than by individual consideration (63). Our study (Ngao 2005 survey) has similar findings and so, supports the theory of reasoned action. A note however should be taken that our study was not aiming to prove the theory but was based on the theory of reasoned action for planning and for data analysis

5.3 Participants

Our sample was comprised by pupils from rural semi-urban and urban settings as it was in 1992. Gender distribution was also similar to that of 1992, a range in age distribution was also similar even though 2005 pupils were a little younger than 1992.

There were large numbers of pupils in urban schools than rural and semi urban, so pupils in urban school were many compared to rural and semi urban pupils, representing a large number of urban pupils. Therefore we assume that our sample is comparable with that of 1992 and also representative of pupils of grade six and seven in Arusha and Kilimanjaro in Tanzania.

5.4.1 Communication and information

Sources and extent of communication about HIV/AIDS were investigated. The level of communication about HIV /AIDS in 2005 was relatively high compared to 1992 as of all the respondents, 100% of them communicated at least once with at least one or two sources within a month preceding the date of study. These findings are similar to those of a study done in Mbeya region among primary school pupils in Tanzania (13), which also observed an increase in the level of communication over time among primary school pupils in issues related to AIDS. The levels of communication in our study are higher than those in Mbeya

study; however the study in Mbeya was comparing changes of communication over a shorter period of time of five years.

Pupils in 2005 communicated significantly more with parents, friends, teachers, health workers and religious leaders than those of 1992. Teachers were reported by pupil to be the most frequent people to communicate about AIDS with them than others, followed by friends and then parents in 2005. These findings are different from the 1992 findings, where teachers were reported by pupils to be the least frequent people to communicate with pupils about AIDS. Pupils in 1992 communicated with friends about HIV/AIDS more than other people.

Numerous other studies have shown that in general communication about sexual and reproductive health including HIV/AIDS among school children and adolescent occurs mostly with peers (15;17;33). In most cases the message they give each others may encourage early initiation of sexual activity or may even be wrong and therefore put them in danger of practicing unsafe sexual behaviours (15;17), something Leshabari termed as a blind leading a blind man (17). On the other hand if proper and constant HIV/AIDS education is provided to these pupils, they can be used to disseminate AIDS education among peer. It has been observed in other studies that peer education involving school children or other risk groups increases knowledge(13;15), and have been successful in inducing change of behaviour among target groups, especially if the peer educator is used as a role model (44).

Some obstacles are that, public and parents often have fears as to how young people will respond to information presented to them. HIV/AIDS and sexual health education have been subject to the criticism that the discussion of sexual health for purposes other than promotion of abstinence is an incitement and enticement to precocious sexual involvement. For example in Kenya, the parliament stopped its plan to introduce sexual education in school after public and Catholic Church demonstration to oppose the plan (46). These criticisms have significant effect on the nature and how HIV/AIDS information is given. Previous studies have found this not to be true (23;64). Instead early sexual health education can lead to the delay of sexual initiation, or to extent to which safer sex is practiced (64).

The findings that teachers were the most frequent people to communicate about AIDS with pupils in Tanzania, may indicates a positive change especially when 2005 findings are compared with those of 1992 survey. It may reflect a change of teachers' attitudes in discussing reproductive health issues with pupils or change in Ministry of Education and

culture primary school educational curriculum. The findings agree with another study which was conducted recently in Tanzania (37).

Previous study conducted in Kilimanjaro among adolescents where a part of this study was conducted, and in primary schools in Mwanza region of Tanzania found that, it was adolescent's desire to get AIDS information more from teachers, health workers and parents than from other sources (15;17). Therefore this could answer the needs of primary school children. Another study elsewhere have found out that communication between teachers and students were significantly associated with the high level of knowledge (23).

As with teachers communication between pupils and parents has also increased, this is also a positive change. Similar to our results, the study done in Kilimanjaro years later after 1992 found that parents, though reluctant were becoming more communicative to adolescent than before (17). Parents though concerned and keen to help their children, still do not communicate adequately with them. The finding which were supported by other studies conducted inside and outside Africa (23;64).

5.4.2 Gender and communication

In our study (2005) parent communicated significantly more to girls than boys (Table 4). Similar results were also seen in previous studies in Tanzania (36;37). This may be explained by the fact that in Africa and in most part of the world, parents often communicate reproductive health message as a list of prohibitions or reprimands (17;36). There is a concern in many societies of the implications of sexual activity among girls such as pregnancy and its associated stigma and shame if it occurs before marriage. This may be one of the reasons why parents talk more often with girls than boys. During menarche for instance warnings may be given to girls and not boys. A multi-country research conducted by USAID, revealed that in some cultures girls are given strict rules to avoid sexual activity before marriage to preserve virginity (10). Similar findings were also reported by another study in Ethiopia (65). In this case, HIV may be used as threat to make them avoid sex, instead of providing appropriate information.

Gender norms of masculinity in most of these societies dictate that men and boys should be experienced in sexual matters. In some societies boys early initiation of sexual activities may be condoned or even encouraged (10). These norms of masculinity surrounding sexual initiation and multiple partners among men and boys may become barriers to HIV prevention

which needs to be overcome. Parents therefore can be helped and used to educate children to get rid of harmful social and cultural norms that put both boys and girls at risk. This can be achieved only if there is good communication between parents and children. At the same time it may be valuable to identify and strengthen positive cultural practices that can be used to improve the sexual health of pupils.

Unlike 1992 in 2005 doctors and health workers were the people who communicated the least with pupils. The reason could be that health workers think teachers or other NGOs can effectively work so they have reduced the effort, or it could be teachers and parents are more concerned and have increased their efforts. Whatever explanation, health workers in Tanzania society are one of the most knowledgeable groups in the context of HIV/AIDS. Nevertheless engagement of all actors in the fight against HIV/AIDS is of the utmost importance. Health workers should support parents and teachers through school health programs going on in Tanzania, by providing them with proper knowledge and skills. At the same time they should conduct education sessions for pupils to achieve information push. UNAIDS has insisted through its experience that, for HIV/AIDS prevention to be effective, the preventive efforts should be properly planned, implementation intensified and focus should be for sustainable long term goals (52).

Encouraging finding is that, generally there are no significant gender differences in the level of communication with pupils between teachers, doctors and religious leaders. This covers the gap that has been observed of gender biasness in giving information, where girls were the victims of lack of information seen in many societies (10). The current equal communication to both genders may make both girls and boys to have knowledge and skill to protect them from HIV infection.

5.4.4 Urban rural differences in communication 1992/2005

Furthermore for 2005 study, there was no significant difference between urban, rural and semi urban in the extent to which they communicated about HIV/AIDS. The same results were found in 1992 study. The repeatability of similar results may also indicate the reliability of the instrument and of the two surveys. The findings also show that even in rural areas human resources are available who can communicate with Pupils on AIDS related information. What may be needed is to make use of them by giving them correct information and skills to deliver HIV education to primary school pupils and other people in the society.

5.5.1 Information 2005

As 100% of respondents communicated about HIV/AIDS, so they did receive information, 100% of respondents having had information at least once in every single item in a period of one month preceding the date of study for 2005 survey. The school was the arena where pupils got information many times more than other sources followed by radio and religious leaders. Above we saw teachers to be the most frequent people to communicate about AIDS with pupils, findings which go in line with the school to be the place where pupils' gets more information. Radio was the second major source of information, which agree with many other studies which show mass media to be one of the commonest way of providing HIV/AIDS information (17;33;43;44;66).

It is obvious that in Tanzania pupils spend much of their day time in school. Therefore they are more in contact with teachers than any other people in the society apart from their parents. If teachers can be used to provide continuous and consistent information about HIV/AIDS, it is likely that knowledge imparted to them will be sustained. There is growing evidence that constant (intensified) preventive measures such as provision of correct information, gives knowledge that can make people change their behaviour (43;45;52;64;67).

The main challenge is what kind of information the teachers have and what are the means and skills of giving that information. It has been observed from experience that, if teachers are empowered with life skills and adopt them specifically for HIV education in primary school and positively implement them, may positively impact behaviour change and lower risk of HIV infection among pupils (17;30;31;67). Experience from Ngao intervention studies in a Tanzania local setting have shown this to be true as was also seen in Zimbabwe(30;31;68). Unfortunately our study did not go to the extent of interviewing teachers, as to how many are trained to provide HIV/AIDS information and the ways of disseminating information.

Early in this thesis a review was made on the use of mass media in the provision of AIDS information and its impact on information and behaviour change. If properly used mass media can positively affect behaviour change. If improperly used the desired effect may not be achieved and can negatively influence the behaviour change. Therefore close collaboration between programmers in mass media and HIV/AIDS prevention activist is necessary as well as evaluation of the effects of programmes conducted in mass media.

5.5.2 Gender and information 2005

Boys were significantly more exposed to information from public posters than girls. Similar to communication as discussed above, there were no major differences on access to information between boys and girls generally and from radio, News papers, school, doctors or health workers and religious leaders. The results of 2005 study indicated that doctors were less frequent people to communicate with pupils about AIDS. The implication is seen by pupils report that doctors and health workers were the least sources of information about AIDS to pupils. Recent study in Arusha had similar findings showing health workers were the most infrequent sources of information among primary school pupils (36). These finding suggests that, the ministry of health should revise or evaluate the contents and implementation of its school health program. A study by Kaaya realised that there were problems in the organization of school health programme from the National level to the local level (37). AIDS is a public health problem that deserves to be given priorities in planning within health sector. Ministry of Health is the main actor in the fight against HIV and AIDS. If it is lagging behind in the implementation of HIV preventive efforts, it will be difficult to curb AIDS epidemic in the country.

Around 50% of pupils received AIDS related information more than three times within a month period from religious leaders, this finding is higher than were found in another study (37), and higher than that of 1992. The findings show active participation of faith institutions on the fight of AIDS. As reviewed in section 1.5.11, involvement of religious leaders should be taken with caution, for the danger of mixed or distorted messages. For example, it was observed in Tanzania that, some religious leaders were giving distorted messages that condom can protect against HIV infection only by 3% (17). Similar problems were seen in Kenya (46). In Uganda too it was observed that the presence of uncoordinated different actors in different settings creates a mismatch between information and knowledge(45), therefore creating the co- existence of correct and incorrect knowledge. This can also explain findings in this study where we observed a rise in general level of Knowledge in 2005 compared to 1992. At the same time knowledge on condom use as protective measure against HIV infection was low.

There was a positive association between communication and information observed in 2005 survey. Those who communicated more were likely to have more information about AIDS. This may imply that, increased communication about AIDS with pupils from various

individuals may increase AIDS awareness among pupils. If sustained, may in turn have a protective effect against HIV infection.

5.5.3 Exposure to information by setting 2005

When geographical location was considered, urban pupils were more exposed to information than rural pupils. A similar observation was also seen in Kenya (46). This could be explained by easier access to mass media in urban areas than rural areas such as newspaper, radio and public poster, because in our study there was no difference on pupil's levels of communication attributed to geographical location. In Tanzania often as you go in rural areas you meet people with lower social economic status than urban areas, hence not many families possess even a radio. Elsewhere it was observed that social economic status determine the level of access to information (23). In addition news papers are not readily available in rural areas like in urban areas. The differences observed here imply that in planning for dissemination of information, different approaches should be used depending on the location of target groups. The use of mass media does not equally reach all people even though it reaches many people at the same time and at a lower cost. Alternative means should be looked upon to reach the disadvantaged. There was neither major difference in access to information between semi urban and urban, nor between semi-urban and rural pupils.

5.5.4 Comparison of exposure to information for 1992/2005

When compared, pupils' in 2005 were more exposed to AIDS information than those in 1992. While in 2005 urban pupils had more access to AIDS information than rural pupils, in 1992 there was no significant differences in the level of access to information between urban, semi-urban and rural pupils. Results may serve as warning on the widening gap between urban societies and rural societies.

Pupils in 2005 had more access to information from radio, public poster, school and religious leaders than those of 1992. It may imply that currently there is more access to media than before. The result may also indicate public concern and increased activities to inform pupil or public at large. These efforts if increased and maintained may bring a change in behaviour of pupil and adolescents in general. The most important aspect to be observed is the coordination from the relevant sectors such as health officials from the districts or respective areas to avoid conflicting messages or duplication of the activities by different actors (information providers), considering limited resources available. Instead different actors may target

different groups with specific goal or area to focus on. But messages should be consistent. For example some may focus school pupil, some parents, some peer groups and some religious leaders after which these groups can also be used to disseminate information.

5.6 Social norms, attitudes towards sexual intercourse and self efficacy

When social norms were investigated in the 2005 survey both girls and boy had relatively high social norms. There was no significant difference between boys and girls when all items were summed up. There were also no differences in most items making social norms (Table 9), such as the opinion of relatives, religious leaders, and teachers on pupils' sexuality, between boys and girls. However boys were more afraid of their parent's reaction, if they had sexual relation, while girls were significantly more concerned than boys by societal norms regarding sexual relations. For both boys and girls the findings may have positive effect on the abstention from sexual acts, basing on theoretical frame work and from evidence of other studies conducted in African context. For example a study in South Africa which used the theory of reasoning action/ theory of planned behaviour to identify predictor of condom use, found that self-efficacy and subjective(social) norms were the strongest predictors of intention to use condoms (62).

When the 1992 survey is compared to the 2005 data (Table 12); social norms and section 4.6.2; self efficacy), findings suggest that pupils in 2005 had significantly high levels of social norms (restrictive attitude) than those in 1992. In addition in section 4.6.2; we also see that pupils in 2005 had high levels of self-efficacy than those of 1992. If trends of sexual behaviour are also considered, pupils in 2005 were less sexually active than those of 1992. Again Table 12 shows that girls in 2005 had the highest level of social norms compared to boys and girls from both studies. If you compare this with the rate of sexual activity (table 16, section 4.7.5), they were the least sexually active.

Self-efficacy was further investigated by comparing two studies 1992 and 2005 with respect to urban, semi-urban and rural settings. As there was generally an increase in the levels of access to information, social norms, so it was with self efficacy in 2005 than 1992. In 1992 it was only rural pupils who had significantly lower levels of self efficacy than urban and semi urban. In 2005 the three locations differed significantly from each other.

Urban pupils (2005) were more able to resist pressure to engage in sexual intercourse even if it meant rejecting gifts or if it was someone they respect that wanted to have sex with them than both rural and semi-urban pupils. The same applied to semi-urban pupils compared to rural pupils. One could argue that urban pupils are more exposed to HIV/AIDS related information than rural pupils. In our finding that is not the reality because there was no significant difference between urban and semi-urban in exposure to information and also between semi-urban and rural for 2005.

A recent study in rural Mwanza (69), found that adolescents and young women could easily engage in sex when given gift than when not, the reason was some had to have friends who can support them financially or materially so they can also support their siblings or families. Another study in Tanzania reported similar findings (60). The former was also associated with a feeling that AIDS was not common in their society with a prevailing myth of existence of a disease similar to AIDS but not AIDS which can be caused by bewitching. Therefore poverty and traditional beliefs could also contribute to explaining the differences observed in the level of self-efficacy and behaviour attributed to geographical location.

5.7 Risk perception and perceived AIDS severity

Risk perception was negatively associated with intention to engage in sexual intercourse, but positively associated with knowledge. It was also positively associated with sexual behaviour. Contrasting the two studies, 2005 pupils perceived themselves to be at higher risk as they also had higher knowledge on HIV/AIDS than those of 1992. Perception of AIDS severity has not changed, as there was no significant difference between the pupils in the two surveys.

5.8 Knowledge

5.8.1 2005 survey

Pupils in 2005 had generally high knowledge on most of items covering routes of transmission like sexual transmission, transmission through unsterilized needles and syringes as well as on blood transfusion. They could also reject the misconception that AIDS can be transmitted by shaking hands and by hugging someone with the virus. Almost a half of the pupils held the misconception that a mosquito bite can transmit infection. The bite of mosquito may not be seen as very important point to education providers, making it less known but it is an indicator that is used to measure the general level of knowledge. It has been

argued that this misconception can weaken the motivation to adopt safe behavior (52). Most studies which included this item had similarly high level of misconception on it (70;71). The level of misconception on this item in our study is lower than in studies done among secondary schools in Kenya and South Africa (71; 72). The reason why this misconception is common could be due to the lack of emphasis put on it during AIDS education sessions and campaigns. Emphasis may be put only on scientifically documented routes of transmission and on symptoms and signs of HIV/AIDS.

5.7.2 Gender differences in the level of knowledge 2005

Girls had high level of misconception that a mosquito bite can transmit HIV than boys. But girls knew better than boys that those who have HIV are more likely to die of AIDS. Boy knew also better than girls that HIV can be transmitted through blood transfusion, that there is no vaccine against AIDS and that condom can prevent HIV infection. Except for these few items there was no difference in the knowledge of girls and boys in majority of items. There could be other explanations for the lack of major difference between the level of boys and girls but from our study one of the explanations could be that they both had equal opportunity of communication about AIDS.

Most boys and girls had high knowledge on risky behaviour that having many sexual partners increases a chance of being infected by HIV. With this knowledge if it is followed with safe practice, they can minimize chances of acquiring HIV infection. As most of them also knew that a person can change behaviour to reduce the chance of acquiring HIV infection.

5.7.3 1992/2005 comparisons of knowledge

There was a good overall increase in the level of knowledge in 2005 compared to 1992. Pupils had significantly high levels of knowledge in fourteen out of eighteen items than those in 1992. The most outstanding negative finding is that knowledge on condom as a way to prevent HIV not only did not increase, but was much lower than that of 1992. the reasons can bet the existence of myth and distortion of information when it comes to condom use from religious leaders and people who advocate abstinence, and who claims that condoms are not effective as was mentioned earlier (17;46). A study conducted in Mwanza Tanzania recently documented the existence of a myth that white people have intentionally introduced HIV in condoms to kill Africans (69). This kind of misinformation can create disbelief among pupils and therefore have a negative impact on their knowledge on modes of HIV prevention.

In addition to the above problem, another study in Arusha revealed that despite the fact that, teachers give AIDS and reproductive health education now in schools as components of family life education, condom and contraceptives are not promoted by teachers, teachers were ranked low in providing information about condoms by primary school pupils (36).

So far UNAIDS recommends Latex condom to be the most efficient available technology to reduce the sexual transmission of HIV, and give an example of reduction of prevalence of HIV among youth in Uganda which was attributed to by increase in use of condom among other factors, despite the increase in the proportion of youth who had multiple sexual partners (1).

Pupils in 2005 also had low levels of knowledge compared to those of 1992 when they were asked “Most people with AIDS virus will die from it, and that a pregnant woman can pass the virus to the baby”. The reasons behind the decline in knowledge on these items are unclear, but could be associated with the introduction of “antiretroviral therapy (ARVs)” in Tanzania which may wrongly misinterpreted by these pupils as curative treatment. Further research is needed to identify reasons for this vagueness in knowledge, because misconception can cause negligence of safe sexual behaviour which may lead to HIV infection.

Another item which pupils in 2005 scored lower than those of 1992 was that “a person can have HIV and show no signs”. Failure to know that there are asymptomatic carriers of HIV is dangerous for the fact that they may be tempted to have unprotected sexual relationship with someone who looks healthy but has HIV. These findings mimic the findings of a study conducted in South Africa. It may be that when AIDS education is given, emphasis is put on routes of transmission and signs and symptoms of the disease, but little or no information is given that someone can have HIV but appear healthy. Another explanation may be that, because of stigma associate with people who are HIV positive, there is no openness for those with HIV but look healthy, pupils become less experienced by not knowing those who have HIV but looks healthy.

5.7.4 Age and knowledge

In the 1992 knowledge level increased by age while in 2005 survey there was no significant difference in the level of knowledge caused by age. The fact that there is currently family life education in primary schools (15;36), where AIDS education is also given, has made it possible for all pupils to get information equally. In early times the older pupil used to learn

from peer and reproductive health discussions were limited to the older while younger adolescents were left with no information. The increase in access to mass media that every one can receive the same information at the same time can also be the reason why pupils in 2005 of all ages have the same level of knowledge.

When age of pupils was adjusted for both 1992 and 2005 survey to remove the confounding effect of age, as pupils in 2005 survey were younger than those of 1992, the gap of knowledge between the two surveys widened with 2005 having significantly higher knowledge than before adjusting. These findings may reflect the impact of an increase in the level of communication and also the level of access to information related to HIV by primary school pupils.

5.7.5 Knowledge by setting

This study indicates that urban pupils in 2005 have higher knowledge than rural pupils, the same finding was found in 1992 survey. Urban pupils in 2005 had also significantly higher knowledge than semi-urban while in 1992 there was no difference between urban and semi-urban. It seems knowledge levels for urban and rural pupils have significantly increased while the difference in the level of knowledge between semi-urban and rural pupils which was there in 1992 is being reduced. Therefore despite of an increase in the level of knowledge for semi-urban pupils in 2005 compared to 1992 (Table 17), they have not covered the gap between them and urban pupils while rural pupils are closing the gap between them with semi urban.

Our findings that urban residence influences the level of HIV/AIDS related knowledge are similar to other studies done in Tanzania schools and outside Tanzania (23;42;71). One of the studies found positive association between knowledge and access to information, high social economic status and postulated these to be the reasons why urban residence has influence on knowledge (42). However in our study there was no significant difference between urban pupils and semi-urban on exposure to information on AIDS. It is worth to note that, our study did not go into details of what kind of information (contents) was given and how. Moreover it referred only to information received in the past short period of one month. With this in mind caution should be taken to interpret the results as the contents and methods of communication as well as the fact that delivery of information may differ from setting to setting.

London and Robles (2000), noted the existence of formal documented knowledge of HIV and informal knowledge which was culturally constructed through belief and reasoning which was

incorrect. Findings which were similar to a study conducted in rural Tanzania (69). They argue that, the reason of existence of correct and incorrect knowledge refers to different constructs “on one hand documented knowledge of HIV transmission received from media, prevention campaigns or health services. On the other hand people have beliefs and knowledge from peer, interpreted from existing scientific information and assimilated into cultural framework”. They based their argument on findings by Tyndale (1992) that respondents had accurate knowledge but used common sense or folk knowledge to guide their actions.

We can therefore say education on modes of transmission and on signs and symptoms of AIDS alone is not enough. More education is needed to deal with existing myths and beliefs as well as emphasizing the reality that people can be infected with HIV and remain without symptoms but transmit the disease.

5.8 Associations between different variables with knowledge and behaviour

Bivariate analysis revealed a considerable negative association between social norms and attitude (intention) towards engaging in sexual act, while intention to have sex was positively associated with sexual behaviour. This means that those who are intending to have sex are more likely to engage in sexual acts and those who do not intend to engage in sex were less likely engage in sex. Therefore those with high (positive) social norms are less likely to engage in sexual behaviour. Social norms were also positively associated with knowledge of HIV/AIDS.

Social norms in our study emerged to be most strongly associated with self-efficacy. This means that those with high social norms were more capable of resisting pressure to engage into a sexual intercourse. Self-efficacy was further having negative influence on intention to have sex, which intention to have sex had positive association with sexual behaviour. Though from our results social norms had no direct influence on individual behaviour, implicitly it had influence on behaviour basing on its influence on intention and on self efficacy as seen in the discussion above.

5.9 Behaviour

There were significant changes in the proportion of sexually experienced primary school pupils since 1992 when the two surveys are compared. There was reduction in proportion of pupils who had their sexual debut by almost a half in 2005 compared to 1992. Girls in 2005 were the least likely to have had their sexual debut compared to other groups in both studies, but a major decline in a proportion of pupils who had sexual experience was noted in boys who had a reduction by 43 %, compared to girls reduction by 29 %, when 1992 data are compared to 2005 data. These findings may be representing a true decline in the sexual activity of primary school pupil due to an increase the knowledge of dangers of sexual intercourse. A caution is also taken, since there might be a possibility of current less over reporting due to their experience with AIDS patients and the knowledge of the associated sexual transmission of HIV.

In both studies girls were less sexually active than boys. This is a common phenomenon seen in most studies investigating sexual behaviour of youth and adolescent that boys are usually more sexually active than girls (9;15;23;27;36;42;65;71). In Africa culturally constructed and shaped socialization processes play a major role in this difference between boys and girls. For example a study conducted in Ethiopia found that norms of virginity were emphasized more in female than male (65); “Some interviewee said boys had right to have premarital sex, have multiple partners and feel less vulnerable of consequences such as pregnancy”. Girls on the other hand are encouraged to remain faithful as it is shame to have a premarital sex, and pregnancy (10;65). These norms might have had less fatal effect in pre HIV era to boys, but with current HIV situation, boys are as vulnerable as girls.

The mean age of sexual debut in 2005 was slightly higher than that of 1992, findings consistent with another study conducted in primary schools in Tanzania(13), but still lower compared to other African studies (65;71). The same pattern noted in sexual debut was also found in sexual activity. Pupils in 2005 were less sexually active than those 1992. Pupils who were sexually active were more likely to have high knowledge on AIDS. Several other studies have found positive association between knowledge and sexual activity²³⁻. The assumption is that those who are less sexually active tend to have less interest in the topic of sexuality and HIV/AIDS, on contrary the sexually active tend to inquire more on the topic.

In 2005 pupils who were sexually active were less likely to use condom than those of 1992. These results reflect the finding we saw before that knowledge level of condom as a means that can prevent HIV transmission was lower for 2005 than of 1992. Despite the wide social marketing of condom in media, public posters and awareness campaigns, there appears to be no improvement in the knowledge of protective effect of condom. It is difficult to say that it is lack of knowledge because they have not heard, or is it that they heard but do not believe in it due to myths in their societies. This is something that needs further research. A recent survey in Arusha district, one of the districts included in our study indicates that there is a relatively good exposure to information about condoms by primary school pupils (36). The same study also found very low condom use among the sexually active, at only 26% compared 74.8% in our study. Possibility could also be that access to condom by primary school pupils is also limited due to social sanctions hence a barrier to use condom.

Alcohol consumption, smoking of cigarette and illicit drug use have been associated with high sexual activity(4;65;72). Alcohol and marijuana in particular have been associated with high risky sexual behaviour. It is encouraging to see that the proportion of pupils who drinks alcohol and smokes cigarette has decreased in 2005 from 1992. But the proportion of pupils who smoke marijuana has increased. The use of alcohol and other non injected illicit drugs such as cannabis often leads individuals to take risk. They become less careful than they could be if they were not under the influence of these substances. They have also been shown to increase sexual drive (73). Therefore special precaution should also be taken about these behaviours among school pupils. They need to be educated about the dangers of these substances as early as possible before they become addicted.

6 Conclusions

There was general increase in the level of communication in 2005 compared to 1992.

There was an improvement in the level of communication on HIV/AIDS between teachers and primary school pupils in 2005 compared to other people and to 1992. In 2005 teachers were reported to be the most frequent people to communicate with pupils on HIV/AIDS than other people (the reverse of the situation in 1992) followed with friends, religious leaders then parents. Doctors and health workers were reported to communicate less frequently with pupils about HIV/AIDS compared to other people in 2005 than it was in 1992. In 1992 pupils reported communication about AIDS was mostly with friends, followed with Doctors and health workers. Teachers were the least group of people reported to communicate with pupils about AIDS in 1992. There has been a biased increase in communication between parents and girls than with boys in 2005.

There was positive correlation between communication and information in 2005 survey, hence 2005 pupils were more exposed to AIDS information than 1992 pupils, and school was the arena where pupils got more AIDS information than other sources. In the same way Doctors and health workers have become the least source of information compared to others, they either feel less responsible or do not focus school pupils in their efforts to fight AIDS.

Girls and boys were equally exposed to AIDS information in 2005, but there has been an increased gap in access to information between urban and rural pupils, rural pupils having less access to information than urban pupils. The gap between urban and semi urban has not significantly changed.

There was an overall increase in the level of social norms, self efficacy, and perceived risk of HIV/AIDS in 2005 compared to 1992. Boys in 2005 were more afraid of parents concern while girls were more afraid of concern of people in the community in case it was discovered they were engaging in sexual relationships. 2005 pupils were more likely to resist pressure to engage in sexual intercourse and had more negative attitudes towards sexual intercourse than those of 1992. Urban pupils were more likely to resist pressure to engage in sexual act than those of semi urban and rural in 2005 than it was in 1992.

There was general increase in the level of knowledge in 2005 than 1992, but pupils in 2005 had lower knowledge on “condom use as way by which HIV infection can be prevented, vertical (mother to child) transmission of HIV and that a person can have AIDS but shows no sign than 1992 pupils.” There was a higher misconception that “a mosquito bite can transmit HIV infection” among 2005 than was for 1992 pupils. Urban pupils had higher knowledge than non urban pupils. In addition knowledge level as noted in 2005 survey decreases as you move further from urban to rural areas.

There was reduction of pupils who were sexually experienced in 2005 compared to 1992. In both studies boys were more sexually experienced than girls. The age of sexual debut did not differ much between the two studies. In 2005 survey rural schools were less sexually active than pupils from urban schools. Use of condom among sexually active primary school pupils has decreased as was seen in 2005 survey compared to 1992 survey.

Remarks and recommendations

Further research is needed to find out why the level of knowledge on condom use and on existence of asymptomatic carriers has dropped among primary school pupils. These are crucial issues to be dealt with, because they have direct impact on HIV transmission. They may lead primary school pupils to engage in unprotected sex with serious consequences of contracting HIV infections. Of interest in research is also what messages and how do parents communicate with children about AIDS, as well as the content of information teachers gives to pupils.

More emphasis need to be given on the fact that AIDS has no cure and most of those who have HIV infection are most likely to die of AIDS when giving HIV/AIDS information to primary school pupils and adolescents at large. Special attention should be given to boys as they have less restrictive attitudes towards engaging in sexual intercourse and are more sexually active than girls. Likewise rural pupils also need focus because of their low levels of knowledge, less exposure to AIDS information and less capacity to resist pressure into engaging in sexual intercourse.

Annex I

(Information to participants and questionnaire)

NGAO

Health Promotion and Reproductive Health among Primary School Children - 2005

INTRODUCTION

This is a study of what adolescents of your age think about their health situation and factors that influence their own health. We are hoping to use all of this information to make better programs to meet the educational and health needs of young people in Tanzania. Please read each question carefully and show your answer by putting a circle around the number of your choice from the list subsequently after each question. Please note, this is not a test. We are only interested in your own thoughts, so please do not ask your fellow students what to answer. If you have questions about any of the items, please raise your hand and ask the project staff.

It is voluntary for you to participate in this study. You can withdraw from the study at any time, and you can also skip questions that you find too personal to answer. Please do not write your name on this questionnaire. The questionnaire is completely anonymous, and nobody from your school, your neighbours or family will see your answers. Please read all the instructions carefully, and answer each question as best you can.

THANK YOU FOR YOUR HELP

SCHOOL NAME and NUMBER: _____

NGAO Sch Surv Eng Ver 01; 2005

Annex 11
The questionnaire to the participants

Primary schools'

Grade six and seven pupils

In Kilimanjaro and Arusha regions

Tanzania

Ngao survey 2005

These first questions are about you and your family. Please read each question carefully and answer by circling the number which is right for you.

1. Are you a boy or a girl?

- 1 Boy
- 2 Girl

2. How old are you?

- 1 10 years or younger
- 2 11 years
- 3 12 years
- 4 13 years
- 5 14 years
- 6 15 years
- 7 16 years
- 8 17 years or older

3. What school grade are you in?

- 1 Grade 6
- 2 Grade 7

4. What is your religion?

- 1 Christian - catholic
- 2 Christian - protestant
- 3 Islam
- 4 Other: _____

5. How often do you usually go to church or mosque?

- 1 Never
- 2 A few times a year
- 3 About once a month
- 4 Every week

6. What is your tribe?

- 1 Chaga
- 2 Mpare
- 3 Masai
- 4 Meru
- 5 Mwarusha
- 6 Other _____

7. Do you live with both your mother and your father?

- 1 Yes, I live with both of them
- 2 No, I live with my mother only
- 3 No, I live with my father only
- 4 No, I do not live with either my mother or my father

8. How many people all together, including yourself, live in your home (household)?

_____ people

9. Does your family have a radio at home?

- 1 Yes
- 2 No

10. Does your family have a TV at home?

- 1 Yes
- 2 No

11. Does your family have a video machine at home?

- 1 Yes
- 2 No

12. Does your family have a bicycle at home?

- 1 Yes
- 2 No

13. Does your family have a motorcycle at home?

- 1 Yes
- 2 No

14. What kind of roof does your house have?

- 1 Corrugated
- 2 Thatched

15. How many rooms are there in your home?

_____ rooms

16. How many people besides you sleep in the room with you at night, when you are at home?

_____ people

17. How do you consider your economic situation at home? Please mark the statement that best describes your situation:

- 1. We are among the well-off in the area
- 2. We are not rich, but we manage to live well
- 3. We are neither rich nor poor, but just about average

4. We struggle with the strict minimum required to make ends meet

The next questions are about how you think about school.

18. What do you think you will be doing when you finish primary school?

- 1 Attend secondary school
- 2 Go to trade school, vocational or courses
- 3 Get a paid job
- 4 Start a business
- 5 Become a peasant farmer

I will probably be unemployed

19. How do you like being at school at present?

- 1 I do not like it at all
- 2 I do not like it very much
- 3 I like schooling a bit
- 4 I like being at school very much

20. In your opinion, what do you think your class teacher thinks about your school performance compared to that of your classmates?

1. He/she thinks I am doing very poorly
 2. He/she thinks I am doing below average
 3. He/she thinks I am about average
- He/she thinks I am doing above average

4. He/she thinks I am doing very well

The following questions are about AIDS. Please circle only one number next to each question.

21. Over the past month or so how often have you heard or read about AIDS from:

a) Radio

1. Never
2. Once or twice
3. Three or four times

4. More than four times

b) Newspaper/magazine

1. Never
2. Once or twice
3. Three or four times
4. More than four times

c) Public poster

1. Never
2. Once or twice
3. Three or four times
4. More than four times

d) School

1. Never
2. Once or twice
3. Three or four times
4. More than four times

e) A doctor or a health worker

1. Never
2. Once or twice
3. Three or four times
4. More than four times

f) Religious leader

1. Never
2. Once or twice
3. Three or four times
4. More than four times

22. Over the past month or so, how often have you talked about AIDS with the following?

a) Parents

1. Never
2. Once or twice
3. Three or four times
4. More than four times

b) Friends

1. Never
2. Once or twice
3. Three or four times
4. More than four times

c) Teachers

1. Never
2. Once or twice

3. Three or four times
4. More than four times

d) A doctor or a health worker

1. Never

Once or twice

2. Three or four times
3. More than four times

e) Religious leader

1. Never
2. Once or twice
3. Three or four times
4. More than four times

Please read the following statement carefully. Answer whether you think the statements are correct or not by circling only one number after each statement.

23. A person can get infected with AIDS virus by shaking hands with someone who has this virus.

1. Yes correct
2. No wrong
3. I don't know

24. A person can get infected by AIDS virus and not show signs of the disease.

1. Yes correct
2. I don't know
3. No wrong

25. Most people with the virus of AIDS will die as a result of it?

1. Yes correct
2. No wrong
3. I don't know

26. A person can get AIDS virus by having injections with needles or syringes that have not been properly cleaned.

1. Yes correct
2. No wrong
3. I don't know

27. A person who looks healthy but has the AIDS virus can pass it on to other people.

1. Yes correct
2. No wrong
3. I don't know

28. A person can get the AIDS virus by having sex with someone who has the virus.

1. Yes correct
2. No wrong
3. I don't know

29. A pregnant woman who has the AIDS virus can pass it on to her baby.

1. Yes correct
2. No wrong
3. I don't know

30. A person gets the AIDS virus by wearing clothes used by someone who has the virus

1. Yes correct
2. No wrong
3. I don't know

31. AIDS can be cured if detected early.

1. Yes correct
2. No wrong
3. I don't know

32. A person get AIDS virus through blood transfusion.

1. Yes correct
2. No wrong
3. I don't know

33. Doctors have discovered a vaccine which can prevent people from getting AIDS

1. Yes correct
2. No wrong
3. I don't know

34. There are tests that can show if a person has the AIDS virus.

1. Yes correct
2. No wrong
3. I don't know

35. A person can get the AIDS virus by being bitten by a mosquito which has already fed on a person with this virus.

1. Yes correct
2. No wrong
3. I don't know

36. A person can get the AIDS virus by hugging someone who has this virus.

1. Yes correct
2. No wrong
3. I don't know

37. One can tell if a person has the AIDS virus by the way he or she looks

Yes correct

1. No wrong
2. I don't know

38. Use of condom when having sex can prevent infection by the AIDS virus

Yes correct

1. No wrong
2. I don't know

39. Having sex with many partners' increases a person's risk of getting infected with the AIDS virus.

1. Yes correct
2. No wrong
3. I don't know

40. A person can change his or her behaviour to reduce the risk of getting AIDS virus

1. Yes correct
2. No wrong
3. I don't know

We will now ask you some questions about food and eating habits.

41. Which of the following statements best describes the amount of food eaten in your household?

1. We have enough food to eat
2. Sometimes we have enough food to eat

3. We often do not have enough food to eat

4. I do not know

42. In the last year (12 months), did you ever not eat for a whole day because there wasn't enough food?

1. Yes
2. No
3. I do not know

43. To what extent do you think hunger is a problem in your household?

1. It is not a problem at all
 2. It is a problem, but not a big one
- It is a big problem

44. How often do you eat anything before you go to school?

1. every school day
2. 3-4 days a week
3. 1-2 days a week
4. rarely or never

45. How often do you eat anything during a school day?

1. every school day
2. 3-4 days a week
3. 1-2 days a week
4. rarely or never

46. How often do you eat anything when you return from school?

1. every school day
2. 3-4 days a week
3. 1-2 days a week
4. rarely or never

47. Yesterday, did you eat fruit?

1. No
2. Yes, once only
3. Yes, twice or more

48. Yesterday, did you drink fruit juice?

1. No
2. Yes, once only
3. Yes, twice or more

49. Yesterday, did you eat green salad or vegetables?

1. No
2. Yes, once only
3. Yes, twice or more

50. Yesterday, did you eat cooked vegetables?

- 1 No
- 2 Yes, once only
- 3 Yes, twice or more

51. Do you ever skip any meal? (You can answer more than one option).

1. No, I never skip any meal
2. Yes, because I am not hungry
3. Yes, because there are no food available

Yes, because I am trying to loose weight

4. Yes, because I am sick
5. Other: _____

We would like to get your opinion on a number of statements about AIDS. Please answer how strongly you agree or disagree by circling one number after each statement as follows.

52. AIDS is the most serious disease in my country.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

53. My chances of getting AIDS are very small.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

54. AIDS is a very dangerous disease.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree

5. Strongly disagree

55. AIDS is the most dangerous disease in my village.

1. Strongly agree
2. Agree
3. Undecided

Disagree

4. Strongly disagree

56. It is unlikely that I will ever get AIDS.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

57. AIDS is the most dangerous disease anyone in my family could ever get.

1. Strongly agree
Agree

2. Undecided
3. Disagree
4. Strongly disagree

58. I am really worried about getting AIDS.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

59. I think I am at high risk of getting the AIDS virus.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

60. The chances of any of my friends getting AIDS are very small.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

61. I would rather take the risk of getting AIDS than miss the chance of having sex with an attractive stranger.

1. Strongly agree
2. Agree
3. Undecided
3. Disagree
4. Strongly disagree

62. My parents would be upset if they found out that I am having sex with someone.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

63. Most of my friends have already had sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

64. By not having sex until I am older I can avoid a lot of trouble.

Strongly agree

1. Agree
2. Undecided
3. Disagree
4. Strongly disagree

65. It is easier to be accepted by your friends if you have sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

66. If you do not have sex you do not get invited to the popular parties.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

67. You get more attention from others if you are willing to have sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

68. I would feel more grown-up if I had sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

69. For me, trying to have sex would be very exciting.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

70. I would like to have sexual intercourse if I am in love.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

71. Most of my friends think I should have sexual intercourse.

1. Strongly agree
2. Agree
2. Undecided
3. Disagree
4. Strongly disagree

72. My relatives would be upset if they found out that I am having sex with someone.

Strongly agree

1. Agree
2. Undecided
3. Disagree
4. Strongly disagree

73. For me having sex would be the best way to tell someone that I am in love.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

74. My best friend thinks it is all right if I have sex.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

75. I would visit a friend if I knew that he or she had the AIDS virus.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

76. If I had sexual intercourse, people would have less respect for me.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

77. Children with AIDS virus should be allowed to attend school with other children.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

78. I would be friends with someone who has AIDS.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

79. People who want to marry should be tested for the AIDS virus.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

80. I feel sorry for people who have AIDS.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

81. I can not refuse having sex with an adult out of respect for an elder.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

82. I would be willing to look after a relative who has AIDS.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

83. Most people I know think people my age should not engage in sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

84. Our religious leaders think people my age should not have sex.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

85. My teachers are strongly against people my age having sexual intercourse.

1. Strongly agree

2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

86. Most of my school friends think one has to be older before having sex.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

87. I can resist pressure to have sex.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

88. I do not have to have sex, if I do not want to.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

89. If decide, I can wait until I get older before having sexual intercourse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

90. It easy for me to refuse having sex with friends who offer me present for having sex.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

91. If my best friend wanted to have sex with me, it would be difficult for me to refuse.

1. Strongly agree
2. Agree

3. Undecided
4. Disagree
5. Strongly disagree

92. If I was in a party and someone I like wanted to have sex, it would be hard to refuse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

93. If someone much older than me wanted to have sex, it would be easy for me to refuse.

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

94. Do you know what a condom is?

1. No, I don't know
2. Yes, I do know

95. Do you know how to use a condom?

1. No, I don't know
2. Yes, I do know

The next few questions are about your own practices. Please answer as honestly as possible, and remember that your answers will not be seen by anyone from your school, neighbourhood, friends or family member.

96. How many times in the past three months have you smoked cigarettes?

1. Never
2. A few times
3. Every week

97. How many times in the past three months have you been drinking alcohol (pomme, beer, wine or liquor)?

1. Never
2. A few times
3. Every week

98. How many times in the past three months have you smoked hashish or marijuana?

- 1 Never
- 2 A few times
- 3 Every week

99. Have you ever had sexual intercourse in your lifetime?

- 1 No
- 2 Yes

100. How old were you when you had your first intercourse?

- 1 I have never had sexual intercourse
- 2 10 years or younger
- 3 11 years
- 4 12 years
- 5 13 years
- 6 14 years
- 7 15 years
- 8 16 year
- 9 17 year or older

101. How often have you had sexual intercourse in your life?

- 1 Never
- 2 Once
- 3 2-3 times
- 4 4-6 times
- 5 7 or more times

102. How many times have you had sexual intercourse in the last three months?

- 1 Never
- 2 Once
- 3 2-3 times
- 4 4-6 times
- 6 or more times

103. Have you ever used a condom in your life?

- 1 No
- 2 Yes

104. Last time you had sexual intercourse; did you or your partner use a condom?

- 1 I have never had sexual intercourse
- 2 No, we did not use condom
- 3 Yes, we did use condom

105. Last time you had sexual intercourse, was your partner your age, younger, or older?

I never have had sexual intercourse

- 1 Many years younger
- 2 A little younger
- 3 My age
- 4 A little older
- 5 Many years older

106. Do you think you will have sexual intercourse within the next three months?

- 1 No
- 2 I don't know
- 3 Yes, maybe
- 4 Yes, I am sure

107. Next you have sexual intercourse, do you think you will use a condom

- 1 No
- 2 I don't know
- 3 Yes, maybe
- 4 Yes, I am sure

THANK YOU FOR YOUR HELP

THE UNITED REPUBLIC OF
TANZANIA



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NIMR/HQ/R.8a/Vol. IX/393

29th September 2005

Dr Wicklif S Sango
Mwanga Government Hospital
P O Box 37
Usangi
Kilimanjaro

**CLEARANCE CERTIFICATE FOR CONDUCTING
MEDICAL RESEARCH IN TANZANIA**

This is to certify that the research entitled: Ngao School follow up survey 1992-2005: HIV/AIDS related knowledge beliefs and behavior, today among Primary School Children 2005 compared to 1992 in Northern Tanzania (Wicklif S Sango) whose Principal Investigator is W. S Sango, has been granted ethics clearance to be conducted in Tanzania.

The Principal Investigator of the study must ensure that the following conditions are fulfilled:

1. Progress report is made available to the Ministry of Health and the National Institute for Medical Research, Regional and District Medical Officers after every six months.
2. Permission to publish the results is obtained from National Institute for Medical Research
3. Copies of final publications are made available to the Ministry of Health and the National Institute for Medical Research.
4. Any researcher who contravenes or fails to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine

Name: Dr Andrew Y Kitua

Signature

**CHAIRMAN
MEDICAL RESEARCH
COORDINATING COMMITTEE**

Name: Dr Gabriel L Upunda

Signature *G. L. Upunda*

**CHIEF MEDICAL OFFICER
MINISTRY OF HEALTH**

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND CULTURE

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Reply please quote

Ref.No. ED/EP/CRF/0014/57

Date: 07/08/2005

Directors/Head of Institutions
REGIONAL ADMINISTRATIVE SECRETARIES
KILIMANJARO
ATT. REGIONAL EDUCATION OFFICER
KILIMANJARO

Dear Sir/Madam,

RE: RESEARCH CLEARANCE FOR DR W.S. SMUGO
TO CONDUCT RESEARCH AT YOUR ORGANIZATION/INSTITUTION

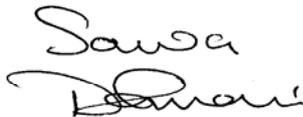
The captioned matter above refers. The bearer of this letter is a bonafide student of the UNIVERSITY OF OSLO and she/he is carrying out research on TRENDS OF HIV/AIDS RELATED KNOWLEDGE, BELIEFS AND BEHAVIOUR AMONG PRIMARY SCHOOL CHILDREN as part of her/his course programme for the award of a PhD/Masters/Postgraduate IN FORMER IN Diploma/Advance Diploma/Certificate/Tailor made course in COMMUNITY HEALTH of the UNIVERSITY OF OSLO

Your organization Institute has been identified as one of the resourceful center to generate the needed information. You are kindly asked to provide her/his needed assistance which will facilitate her/him to complete her/his research work successfully.

By copy of this letter, DR W.S. SMUGO is required to submit a copy of her/his research report to the Permanent Secretary, Ministry of Education and Culture for documentation and reference.

Yours Sincerely,


Dr. Emmanuel M. Nkumbi
For PERMANENT SECRETARY



c.c. Dr W.S. SMUGO

AFISA P. O. BOX 9121
KILIMANJARO

9/8/05

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