Voluntary HIV counselling and testing service uptake among primary school teachers in Mwanza, Tanzania: assessment of socio-demographic, psychosocial and socio-cognitive aspects

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SUMMARY

HIV/AIDS presents a major crisis that is increasingly affecting the most productive segments of the population across development sectors in Tanzania. The basic education sector, which is vital to the creation and enhancement of human capital, is equally affected. The loss of skilled and experienced teachers due to HIV/AIDS related deaths and the long-term HIV/AIDS related illnesses are increasingly compromising the provision of quality primary education in the country. Indeed, this situation demands appropriate intervention measures that will reverse the current trend on the sector of education.

Voluntary HIV counselling and testing (VCT) which allows teachers to know their HIV sero-status and prepare for treatment or care may represent a plausible commitment towards HIV/AIDS prevention. There is therefore a need to explore aspects that are important in promoting the uptake of VCT services among primary school teachers in Tanzania.

Objectives

The focus of this study was to assess the contribution of socio-demographic, psychosocial and social-cognitive factors on the use of VCT services among primary school teachers in Tanzania. The specific objectives were to:

1. find out the prevalence of testing for HIV status as well as socio-demographic and psychosocial correlates of testing for HIV among Tanzanian primary school teachers,
2. assess the prevalence and factors associated with anticipation of HIV/AIDS-related stigma in the utilization of VCT services among Tanzanian primary school teachers, and
3. examine the applicability of the theory of planned behaviour (TPB); and the additional predictive role of perceived risk in predicting use of VCT services among Tanzanian primary school teachers.

Methods

This cross-sectional questionnaire survey study was conducted between September and November 2003 in Mwanza, Northern Tanzania. The study involved 918 primary school teachers (mean age 38.4; range 21–59 years) from four districts namely Mwanza, Magu, Sengerema and Geita. Fifty-four government-owned primary schools selected from urban, semi-urban, and rural locations participated in the study. All teachers in the selected schools were eligible to participate in the study. The participation rate was 94% (918 out of 977). Descriptive statistics (frequencies, percentages, mean and standard deviation), chi-square test, binary logistic regression and hierarchical regression analyses were carried out using SPSS for windows version 12.0 and 13.0 (paper I-III).

Main results

Findings of the study were presented in three papers. Paper I, revealed that only 20% (181) of participating teachers had voluntarily tested for HIV. Assessment of the socio-demographic variables showed that teachers who were aged between 21 to 30 years, reported easy access to VCT services, had a partner with college or university education, perceived their health status positively, were more likely to have been voluntarily tested for HIV. Regarding psychosocial aspects, teachers who had not been tested for HIV were significantly more likely to believe that it was not necessary to be tested for HIV in absence of a vaccine or cure for HIV/AIDS, and that only people who suspected that they were infected with HIV should be tested for HIV. They furthermore believed that HIV infected people were likely to die faster if they were tested for HIV and informed of their positive results.

Findings in Paper II, indicate that participating teachers anticipated a substantial level of HIV/AIDS related stigma from significant others in their social networks. The anticipated reactions, in their rank order included gossip, blame, fear, avoidance, anger while neglecting

was ranked the least. Investigation of the socio-demographic variables showed that teachers in urban areas and those with a Grade A or Diploma level of education were significantly less likely to anticipate reactions of HIV/AIDS-related stigma, whereas teachers who were aged between 51-60 years were most likely to anticipate stigmatizing reactions. Regarding psychosocial factors, teachers who would like to be tested for HIV; who expected less care if they had AIDS; and who had less confidence in relation to the testing for HIV were more likely to anticipate HIV/AIDS-related stigma than others.

In paper III, the findings provide support for the applicability of the theory of planned behaviour (TPB) in predicting teachers' intention to use VCT services. As for the components of the TPB, perceived behavioural control and attitude to the use of VCT emerged as significant predictors of intention to use VCT services. Perceived behavioural control added 12% of variance to intention over and above attitudes and subjective norms, while perceived risk added significantly 3% of variance over and above that of TPB components.

Conclusions

The present study identifies socio-demographic, psychosocial and social-cognitive factors that are important in promoting VCT service uptake among primary school teachers in Tanzania. The VCT promotion programme for Tanzanian primary school teachers has to focus on enhancing positive perception of VCT and alleviating perceived social-psychological barriers related to the use of VCT services. More specifically, messages that aim at enhancing the use of VCT services should mainly target augmenting favourable beliefs teachers hold about the consequences of using VCT services as well as alleviating perceived barriers related to the use of VCT services.

LIST OF PAPERS

This thesis is founded on three research-based articles as shown below:

I. Kakoko, D.C., Lugoe, W.L and Lie, G. T. (Accepted for publication). Voluntary HIV testing among a sample of Tanzanian teachers: A search for socio-demographic and socio-psychological correlates (***AIDS Care***).

II. Kakoko, D.C., Lugoe, W.L and Lie, G.T. (Submitted). Prevalence and factors associated with anticipation of HIV/AIDS-related stigma among Tanzanian teachers who have never voluntarily tested for HIV: an exploratory study (***AIDS and Behavior***).

III. Kakoko, D.C., Åstrøm, A.N., Lugoe, W.L. and Lie, G.T. (Revised and resubmitted). Predicting intended use of voluntary HIV counselling and testing services among Tanzanian Teachers Using the Theory of Planned Behaviour (***Social Sciences and Medicine***).

1.0 INTRODUCTION

1.0 An overview of the HIV/AIDS epidemic

For more than two decades now, the acquired immune deficiency syndrome and its aetiological agent, the human immunodeficiency virus (HIV/AIDS) has been a growing challenge that affects all segments of global population. According to the Joint United Nations Programme on HIV/AIDS and the World Health Organisation (UNAIDS/WHO, 2005), about 40 million people were living with HIV by the end of the year 2004, and more than 25 millions have already died of AIDS since the epidemic was identified. The majority of people with HIV/AIDS are living in developing countries. In particular, the sub-Saharan Africa region, which has adult prevalence of 7.7%, has continued to bear the overwhelming burden of the epidemic. Sub-Saharan Africa has about two-thirds of all people living with HIV/AIDS globally (UNAIDS/WHO, 2005). Table 1, below shows the summary of estimates of HIV and AIDS at the end of the year 2005.

Table 1: Estimates of HIV and AIDS as of the end of year 2005

Number of people:	**Globally (in millions)**	**Sub-Saharan Africa (in millions)**
Living with HIV/AIDS in year 2005	40.3 (36.7 - 45.3)	25.8 (23.8 - 28.9)
Newly infected with HIV in year 2005	4.9 (4.3 – 6.6)	3.2 (2.8 – 3.9)
Died due to AIDS in year 2005	3.1 (2.8 - 3.6)	2.4 (2.1 - 2.7)

Source: (UNAIDS/WHO, 2005). AIDS epidemic update, December, 2005.

Tanzania, one of the sub-Saharan African countries, has been severely affected by HIV/AIDS since the first three cases of AIDS were diagnosed in 1983 in Kagera region. The Ministry of Health estimated that 1, 810,000 people were living with HIV (840,000 males and 960,000 females) in the year 2003, in Tanzania mainland. Based on estimations that only 1 in 14 AIDS cases are reported, a total of 187, 940 are likely to have occurred in year 2003 alone, in which 98,290 were females and 89,650 were males. Assuming also total absence of antiretroviral drugs, the estimated annual AIDS deaths for the year 2003 were 186, 900 (88, 510 females and 98,860 males) in Tanzania mainland (Ministry of Health, 2004). Mwanza, the region of focus in the present study, was among eight regions (out of 20 Tanzania Mainland regions) that had reported AIDS cases as early as 1985. The region ranked third with 15 AIDS cases after Kagera and Dar es Salaam regions that had reported 322 and 51 cumulative AIDS cases respectively at that time. Despite reporting AIDS cases much earlier, the region reported relatively few AIDS cases at the rate of 15.1 per 100,000 people in the year 2003 (Ministry of Health, 2004). This may partly be due to HIV/AIDS intervention programmes that had been wide spread in Mwanza region.

In Tanzania, the predominant mode of HIV transmission has continuously been heterosexual contact. In the year 2003, heterosexual intercourse constituted the cause of up to 78.8% of 18,929 AIDS cases that were reported to the National AIDS Control Programme (NACP). The most affected age group was between 20-49 years both for males and females (Ministry of Health, 2004). Such prevailing mode of HIV transmission and the age clustering of AIDS cases in Tanzania may suggest two issues. First, HIV infection levels are highest among sexually active people who are also of reproductive age. Secondly, the epidemic affects mostly the segments of the population who are the productive workforce. Consequently, the HIV/AIDS epidemic has severe impact at all levels of human life. At the micro level, the

epidemic affects family members who are the supportive network for households and communities (Urassa, 1998). At the macro level, the epidemic is a serious threat to the country's economy and social welfare (Wobst & Arndt 2004). In practice, deaths due to HIV/AIDS result both in family disruptions and a shortage of human labour across all sectors. Given also that HIV/AIDS illness is a gradual and long time illness, absenteeism from work has been increasing as workers living with HIV/AIDS grow weak (ILO, 2004).

Despite the fact that the epidemic is increasingly affecting almost all development sectors, it is widely asserted that the basic education sector in sub-Saharan Africa has been profoundly affected (Barnett & Whiteside, 2002; Bennell, 2003; Bennell, Hyde, & Swainson, 2002; Carr-Hill, Katabaro, Katahoire, & Oulai, 2002; ILO, 2004a; Kelly, 2000; UNAIDS/ILO, 2000; UNICEF, 2000; Wobst & Arndt 2004; World Bank, 2000). Indeed, the impact of HIV/AIDS on the basic education sector has serious implications for the effectiveness and efficiency of the sector.

1.1 Teachers' vulnerability and the impact of HIV/AIDS on education

Although teachers in sub-Saharan Africa are regularly singled out as being vulnerable to HIV infection, credible empirical evidence is lacking (for review, see Bennell, 2003). Worse still, there are limited or partial assessment on the risk and impact of HIV/AIDS among teachers. Overall, presentation of data on HIV prevalence among teachers relies mostly on projections and standard demographic models that may have limited accuracy (UK working group on education and HIV/AIDS, 2003). On the one hand, lack of specific information on the risk and impact of HIV/AIDS among teachers in sub-Saharan African countries may be exacerbated by ineffective or absence of vital information systems on mortality (IIEP-UNESCO, 2004). Mandatory nation-wide death registries and medical death certificates

confirming the cause of death are rarely sought or issued in most of developing countries. Where such certificates are given out, in most cases cause of death is indicated as unknown or uncertain. However, such practices are more of a norm rather than an exception in the context of HIV/AIDS where social and medical factors are also conspire to conceal information on AIDS related deaths.

Socially, the stigmatized nature of HIV/AIDS makes disclosure of AIDS-related deaths difficult and many people are likely to attribute such to other non-stigmatized causes. In the medical context, the complexities and syndromic nature of AIDS makes disclosure on what is the exact cause of death challenging, especially where certification is required. In such circumstances where a number of diseases are involved, the medical authority may not be obliged to mention HIV or AIDS on the medical certificate. For example, the report on HIV/AIDS, Work and Development in the United Republic of Tanzania (ILO, 2004b) revealed that 1,045 deaths of teachers in year 2000, 2001 and the second half of 2002 were not certified as being caused by HIV/ AIDS. However, the causes of deaths were indicated as cancer, Kaposi's sarcoma, pneumonia, persistent diarrhoea and others that are also associated with HIV infection. Studies elsewhere particularly show that AIDS is not a notifiable disease and there is considerable non-certification of AIDS as a cause of death (Bobby et al, 1988; Pai, 2002).

Overall, there is lack of statistics that could compare teachers' HIV/AIDS-related morbidity and mortality with that of other professional groups or the general population in Tanzania. Hence, information from other high HIV prevalent countries of sub-Saharan African countries is varied and therefore not conclusive. In some countries, HIV prevalence rates among teachers have been reported to be higher than the average prevalence rates in the

adult population. In Zambia, for example, there was an annual loss of 4 per cent of all registered primary school teachers in 1998 (Grassly et al., 2003) and this was 70 per cent higher than that of the 15–49 age groups in the general population in the same year (Badcock-Walters & Whiteside, 2000). Conversely, in other countries such as Malawi that has also acknowledged the severe impact of HIV/AIDS on the education sector (Harries et al, 2002), mortality rates in 1998 were reported to be lower among primary school teachers (1.01 per cent) compared to the overall mortality rate of 1.37 per cent for the 20-49 adult population (Malawi Institute of Management/UNDP, 2002).

Despite of the delineated statistical caveats, it is conceivable to have some concerns on teachers' predisposition to and risk for HIV/AIDS. As stated by Badcock-Walters and Whiteside (2000), the comparatively high incomes, often remote postings and social mobility of teachers in Zambia may suggest that teachers are at a greater risk of HIV infection. According to the Educational Research Network for West and Central Africa (ERNWACA, 2004), factors contributing to the infection of teachers within the basic education sector in Western African countries may include higher disposable incomes, temporary separation from spouses while working in remote areas and frequent change of work stations, which encourage teachers' multiple sexual relationships. In the same vein, Motghegwe (2003) identifies assertiveness, young age and sexually activeness, long distances from their work stations to the health service delivery centres where they could get things like condoms and the low level of empowerment as factors contributing to the high HIV/AIDS prevalence among primary school teachers in Botswana.

In Tanzania, primary school teachers in rural areas have high social status in their working environment and regular cash income that also dispose them to sexual favours in an

environment with little liquidity throughout the year (Kauzeni & Kihinga, 2004). Specific studies conducted in Tanzanian schools have also indicated that male teachers engage in sexual relations with their female pupils (Matasha et al., 1998; Mgalla, Schapink, & Boerma, 1998; Silberschmidt & Rasch, 2001). Such school girls who have sexual intercourse with teachers may already be HIV infected as they also engage in un-protective sexual activity with their fellow pupils as well as other adults (Lugoe, 1996). In general, risk factors for HIV infection among primary school teachers are embedded within their working and living conditions as well as their behavioural repertoire.

In practice, information on HIV prevalence, mortality rates and HIV risk among teachers in the countries most seriously affected by the epidemic remains an important indicator of the impact of the epidemic. For instance, in a relatively large sector such as education, an AIDS-related teacher mortality rate of even one per cent or less may mean that a sizeable numbers of teachers die each year. With an estimation of AIDS-related teacher mortality rate of 0.8 per cent in Tanzania, it is estimated that about 100 primary school teachers are dying each month due to AIDS. The implications are that by the year 2006, an estimated 45,000 trained primary school teachers will be needed to make up for those lost to AIDS. Worse still, the largest numbers of teachers who die are in the 41-50 year age group, implying that they are those with high levels of skills and experience (ILO, 2004a). In view of that, the capacity of the country to deliver education is being severely affected by HIV/AIDS at a time when enrolment of pupils has been increasing due to the implementation of universal primary education (UPE) programme.

The increasing shortfall in skilled and experienced teachers is an appalling loss that compromises the provision of quality primary education in Tanzania. The high death rates

and absenteeism of teachers has been causing either cancellation of classes or combining several streams and thus creating a large group of pupils in already congested classrooms. This may result in unmanageable number of students per teacher and lead to poor delivery and quality of learning. In addition, teacher underperformance due to long-term AIDS related illnesses contribute considerably to the interruption of teaching programmes and ultimately affect the coverage of the syllabi (Carr-Hill, et al., 2000). As such, the need for appropriate intervention measures to reverse the current trend is not just a socio-economic or political obligation but also a most salient moral and human rights issue requiring attention. The next section therefore accounts for the national responses to the HIV/AIDS epidemic.

1.2 National responses to the HIV/AIDS epidemic

There have been diverse efforts to mitigate the increasing and devastating impact of HIV/AIDS in Tanzania. Initially, the Ministry of Health adopted the World Health Organization/ Global Programme on AIDS (WHO/GPA) comprehensive strategy of HIV prevention that was based on HIV prevention as well as reducing the personal and social impact of the epidemic (WHO, 1988). Through the WHO/GPA, the National AIDS Control Programmes (NACP) were established to respond to the epidemic in all countries, to provide policies and education campaigns as well as central co-ordination and technical support to all involved partners (Adler & Cowan, 2004). In response, the focus of the NACP was on Information, Education, and Communication (IEC) that were regarded as vital in improving people's knowledge, attitudes and practices concerning HIV prevention. Several campaigns on HIV prevention were initiated to promote change of risky sexual behaviours mainly through sexual abstinence, reduction of the number of sexual partners and the use of condoms by ensuring the availability and adequate supplies of condoms (Lugoe, 1996; Tatantola & Mann, 1994). A unique element of HIV prevention programmes compared to

prevention of other infectious diseases was the recommendation that discrimination against persons with HIV/AIDS be prevented (WHO, 1988).

Clinical measures were also introduced in Tanzania to prevent HIV transmission. The clinical strategies included ensuring the availability of sterile equipments, testing blood and blood products before transfusion, prevention of mother-to-child transmission (PMTCT), control of tuberculosis (TB), and laboratory analysis and treatment of sexually transmitted diseases (STDs). Accessibility of antiretroviral therapies (ARVs) that prolongs the life of infected people has also been a priority of the Tanzanian government. In addition, research has been conducted on clinical diagnosis and regimens of HIV/AIDS using Tanzanian population [see for example, (Mwansasu, Mwakagile, Haarr, & Langeland, 2002; The Petra study team, 2002; Thorstensson et al., 1998; Urassa et al., 2002)].

Voluntary HIV counselling and testing (VCT) is currently used as a strategy for preventing HIV and for providing care among people living with AIDS in Tanzania. According to the national policy on HIV/AIDS (United Republic of Tanzania, 2001), the target of the government is to encourage 85-90% of the population to use VCT services and therefore take definitive steps to avoid becoming infected (for people who are HIV negative) or receive the necessary counselling to cope with their status and prolong their life without infecting others (for people who are HIV positive). As the thrust of the present study is on aspects related to the use of VCT services among primary school teachers in Tanzania, the next section presents a brief description of VCT as a response to the HIV epidemic.

1.3 Voluntary HIV counselling and testing

In Tanzania, VCT services are provided by trained counsellors either in public health facilities (integrated VCT) or in separate sites (stand-alone VCT). By the end of 2003, there were 255 VCT sites integrated into public health facilities (hospitals, health centres, dispensaries, and clinics which are either government or privately owned) and 34 stand-alone sites which were specifically managed by the ANGAZA VCT programme of the African Medical and Research Foundation (AMREF). Other stand-alone sites were also managed by non-governmental organisations (NGOs), faith based organisations (FBOs), and private institutions. Health facility based sites have largely been accessed by patients suspected to be HIV infected, while the stand-alone sites are largely accessed by apparently healthy members of the general public who are curious to know about their sero-status for various reasons including pre-marital HIV testing (Ministry of Health, 2004).

Studies conducted in Tanzania and elsewhere (Fox, Odaka, Brookmeyer, & Polk, 1987; Macneil, Mberesero, & Kilonzo, 1999; Painter, 2001; Sangiwa, Grinstead et al., 2000; Voluntary HIV-1 Counselling and Testing Efficacy Study Group, 2000) show that VCT provides an opportunity for people to know and accept their HIV status and therefore decide to protect themselves and their sexual partners from HIV infection. VCT is also acknowledged as an effective way of reaching out to high risk groups (Balmer et al., 2000; Kalichman, 1998). In addition, people who attend VCT services and test positive benefit from early and appropriate medical care (La Croix & Russo, 1996). Pregnant women who use VCT services and learn early about their seropositive status benefit in terms of preventing HIV transmission to their infants through the use of anti-HIV drugs, safer breastfeeding practices, replacement feeding or early weaning for infants after birth (de Paoli, Manongi, & Klepp, 2002 & 2004; Peffer, Osman, & Vaz, 2002; UNAIDS, 2000;

UNAIDS & WHO, 2000). Studies that assessed the number and cost per HIV infections averted and cost per disability-adjusted life-year (DALY) saved indicate that VCT is a cost-effective strategy for preventing and coping with HIV/AIDS (Creese, Floyd, Alban, & Guinness, 2002; La Croix & Russo, 1996; Phillips & Fernyak, 2000; Sweat et al., 2000).

Despite the enumerated benefits of HIV testing, millions of apparently healthy looking people in Tanzania remain uninformed about their HIV status (USAIDS, UNAIDS, WHO, UNICEF, & Policy-Project, 2004). While this situation is partly the result of unavailability, inaccessibility and unaffordability of HIV testing services, social and psychological aspects play a substantial role on the actual demand and utilization of VCT services. Accordingly, factors such as lack of treatment and care among HIV infected people (Macneil et al., 1999; Tanzania National AIDS Control Program, 2001) HIV-related stigma and discrimination (Lie & Biswalo, 1996; Sangiwa, Grinstead et al., 2000; Sangiwa, van der Straten, Grinstead, & The VCT Study Group, 2000; UNAIDS, 2000) and little or no perceived risk of HIV infection (Kilewo et al., 1998; Ministry of Health, 2002) have been identified as main barriers of testing for HIV.

1.4 Rationale for the study

While HIV testing and associated characteristics have been studied in the general population, sector-specific information is largely lacking. As articulated by the International Labour Organization (ILO, 2004b), there is a paucity of information that would contribute specifically to the multilateral effort to combat HIV/AIDS at workplaces. Such studies are expected to provide important information that may guide VCT interventions in workplaces especially within the highly affected countries of sub-Saharan Africa.

The extent to which Tanzanian primary school teachers use VCT services and factors associated with their use of VCT services are not known. The present study therefore focuses on assessing socio-demographic, psychosocial, and socio-cognitive factors associated with the use of VCT services among the basic education teachers in Tanzania. The basic education sector is crucial foundation in the creation and enhancement of human capital for sustainable economic and social development and must therefore be protected against the epidemic. Moreover, primary school teachers are role models in their communities and may influence other peoples' knowledge, attitudes, and perceptions including those related to the use of VCT services.

The findings of the present study have the following practical and theoretical significance:

- Providing information to counsellors on social-demographic and psychosocial factors that are important in VCT service delivery among Tanzanian primary school teachers.
- Identifying factors that are important in the process of scaling-up and promoting VCT services among primary school teachers in Tanzania.
- Guiding policy makers at the Ministry of Health (MoH) and Ministry of Education and Culture (MoEC) on policies related to VCT services among Tanzanian primary school teachers.
- Adding theoretical knowledge to research on the role of social cognitive theories in terms of understanding the enactment of HIV preventive behaviours.

2.0 THEORETICAL PERSPECTIVES OF THE STUDY

2.1 Health care-seeking and VCT service utilization behaviour

Seeking and utilizing health services is an area of great concern in the context of HIV/AIDS. Part of the challenge lies in identifying factors associated with seeking and utilizing HIV/AIDS-related health services. As such, the main barriers to seeking and utilizing health services are not only financial but also psychological, informational, cultural, social, and organisational factors play a substantial role (Donabedian, Axelrod, & Wyszewianski, 1980). Based on this understanding, the study on correlates of voluntary testing for HIV (Paper I) employed the health care seeking and utilization behaviour framework (Andersen, 1968; Andersen & Newman, 1973) that successfully guided large-scale health survey analysis in the United States of America (Aday & Andersen, 1974; Aday, Andersen, & Fleming, 1980; Andersen, 1968; Andersen & Aday, 1978). This framework has also guided research studies focusing on factors which inhibit or facilitate testing for HIV [see for example, (Holtzman, Rubinson, Bland, & Mcqueen, 1998)].

The behavioural framework conceptualizes health care-seeking and health care-utilization behaviour as a consequence of the characteristics of the health system and characteristics of individuals who comprise the population at health risk. On the one hand, the characteristics of the health care system are related to the health technology (for example, HIV-antibody test, antiretroviral therapy), as well as health-related beliefs (for example, believing that HIV infected people are likely to die faster if they are tested for HIV and informed of their positive results) as well as values (for example, confidentiality of HIV test results among service providers). Likewise, health service utilization may depend on the nature of the health services (for example, hospital-based services; stand-alone VCT services; home-based

services); and policies related to health delivery (for example, visiting health services as a couple or single; single visit or a series of visits).

On the other hand, the individuals in the population at risk are specifically characterised as having predisposing, enabling and need characteristics (Branch et al., 1981). Predisposing variables normally exist prior to the onset of the illness and they consist of individual characteristics that can be altered (for example, perceived barriers to the use of VCT) or demographic characteristics (for example, level of formal education, age, gender, and marital status). The enabling component describes the means individuals have for using health care services including the resources available (for example, the extent to which the population at risk can afford the cost of the services) and some attributes of the community in which an individual lives (for example, attributes of the rural versus that of the urban). The need component, which is the immediate cause of health care seeking and utilization, refers to the illness level. Need for health services can be based on individual's symptoms, evaluation of health status, and perceived susceptibility (chances of getting the disease) or severity (the extent to which the disease is perceived to be dangerous).

The present study expected characteristics of the health care system and characteristics of individuals in the population at risk to be associated with an increased or decreased likelihood of having been tested for HIV among primary school teachers in Tanzania.

2.2 HIV/AIDS-related stigma as an anticipated discrediting phenomenon

The study on the prevalence and factors associated with anticipation of HIV/AIDS-related stigma (Paper II) employed Goffman's classic concept of stigma as "an attribute that is significantly discrediting" (Goffman, 1963; p.3). Stigma is usually discrediting mainly

because it results from blemishes of personal character (having individual traits, actions and behaviours that are negatively marked), spoiled social identity (belonging to social group that has a tarnished image), and physical deformity (disfiguring conditions or physical defects) of an individual (Goffman, 1963). Other researchers have also defined and explained stigma following Goffman's work. For example, Crandall & Coleman (1992: p.163), defines stigma as "a mark which legitimizes treating the bearer in some ways less humanly than those without the mark". This definition is based on the earlier notion that stigma is conceptualized by the community on the basis of what constitutes "difference" or "deviance" (Goffman, 1963).

In the era of HIV/AIDS, qualities which cause reactions directed toward individuals who are suspected or known to have HIV/AIDS may deserve the label "discrediting attributes" because they bring about sense of disgrace, indignity, shame, humiliation, or dishonour to the individual. Previous studies conducted in Tanzania (Biswalo & Lie, 1995; Kohi & Horrocks, 1994) for example, point out that people who are known or suspected to have HIV/AIDS are prone to reactions such as fear, anger, rejection, gossip, avoidance and blame from others. The survey on the general public's attitude toward people who are suspected or known to have HIV/AIDS in United States (Herek & Capitanio, 1993) also identified that the public favoured coercive policies that would control the spread of HIV/AIDS. The public was also found to exercise avoidant behaviours towards people living with AIDS.

Most of the previous research on HIV/AIDS-related stigma have been focused on *'self stigma'* that is manifested in self-blame due to guilt feelings (For example, Duffy, 2005); *'enacted stigma'* that is manifested in the actual reactions and behaviours that depict stigma and discrimination (For example, Lie & Biswalo, 1996), and *'perceived stigma'* that refers to

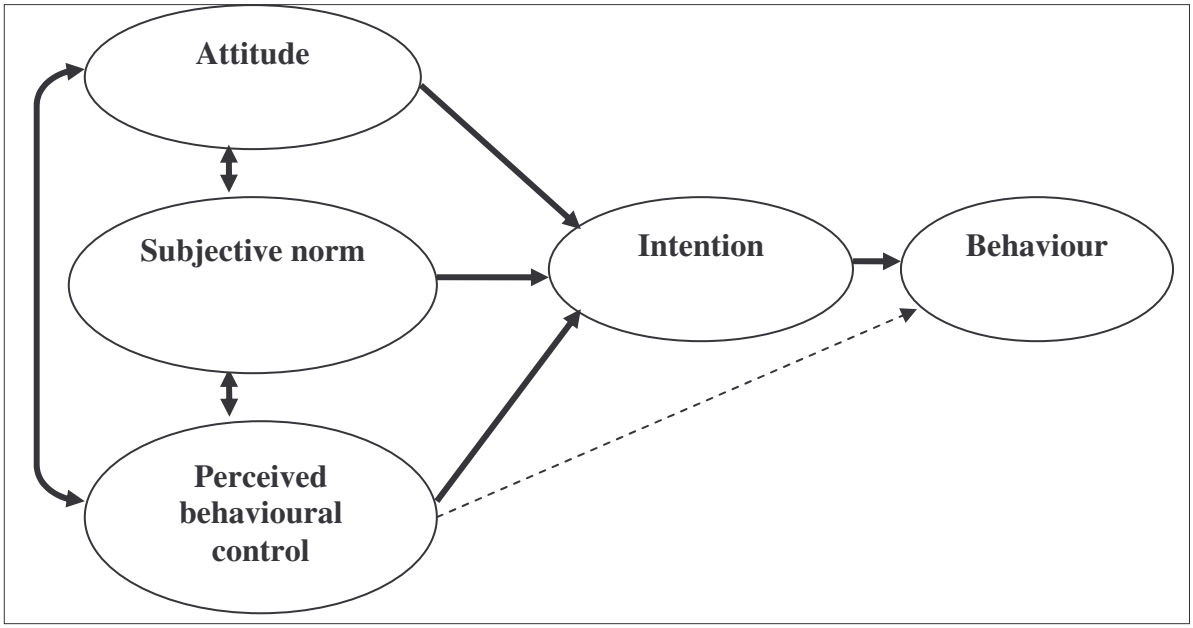
the attitude toward being stigmatized or stigmatizing others (For example, Kohi & Horrocks, 1994). Unlike previous studies, the focus of the present study was on the social-psychological consequences of HIV/AIDS-related stigma in form of *anticipated stigma.* This kind of stigma refers to the discrediting reactions that people may personally expect, foresee, look forward to, await, predict, or think likely to occur if they would be suspected or known to have HIV/AIDS. In practice, the experience of the stigmatizing reactions toward people who are suspected or known to have HIV/AIDS, is likely to evoke feelings of HIV/AIDS-related stigma even before individuals test to know about their HIV status or even before they are actually stigmatized. As Kleinman (1988) noted, the stigmatization process usually begins with the society's actual responses, but eventually the person "comes to expect such reactions, to anticipate them before they occur and even when they don't occur" p. 160. The anticipation of the discrediting reactions was therefore taken as a point of departure in assessing HIV/AIDS-related stigma in this study.

2.3 VCT service uptake as a planned behaviour

Paper III used the theory of planned behaviour, TPB (Ajzen, 1991), which is a social cognition model (SCM) that constitutes a promising framework for understanding and predicting behaviours and behavioural intentions. The TPB is an extension of the earlier Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) proposing that people are rational actors who voluntarily process and use available information before performing behaviour. According to the TRA, intention to perform the behaviour is a function of attitude and subjective norms and is the immediate determinant of behaviour performance (Ajzen, 1985). Given that the TRA did not account for behaviours that were not under volitional control, Ajzen and Madden proposed the TPB that consisted of perceived behavioural control (Ajzen & Madden, 1986) which is similar to Bandura's

concept of self-efficacy (Bandura, 1982). Perceived behavioural control was therefore added on a level with attitude and subjective norms as a predictor of intention so as to measure persons' perceived ability to perform a particular behaviour in different situations (Ajzen, 1991). In the TPB, attitude towards performing behaviour reflects a favourable or unfavourable evaluation of the particular behaviour; subjective norm refers to the perceptions of specific significant others' preferences of whether one should or should not engage in behaviour; and perceived behavioural control manifests the perceived ease or difficulty associated with behaviour performance. The three predictors of the TPB influence subsequent behaviour indirectly through behavioural intention. However, perceived behavioural control may influence behaviour directly if it reflects actual control and whenever the behaviour in question is not under complete volitional control by the individual as shown in figure 1 below.

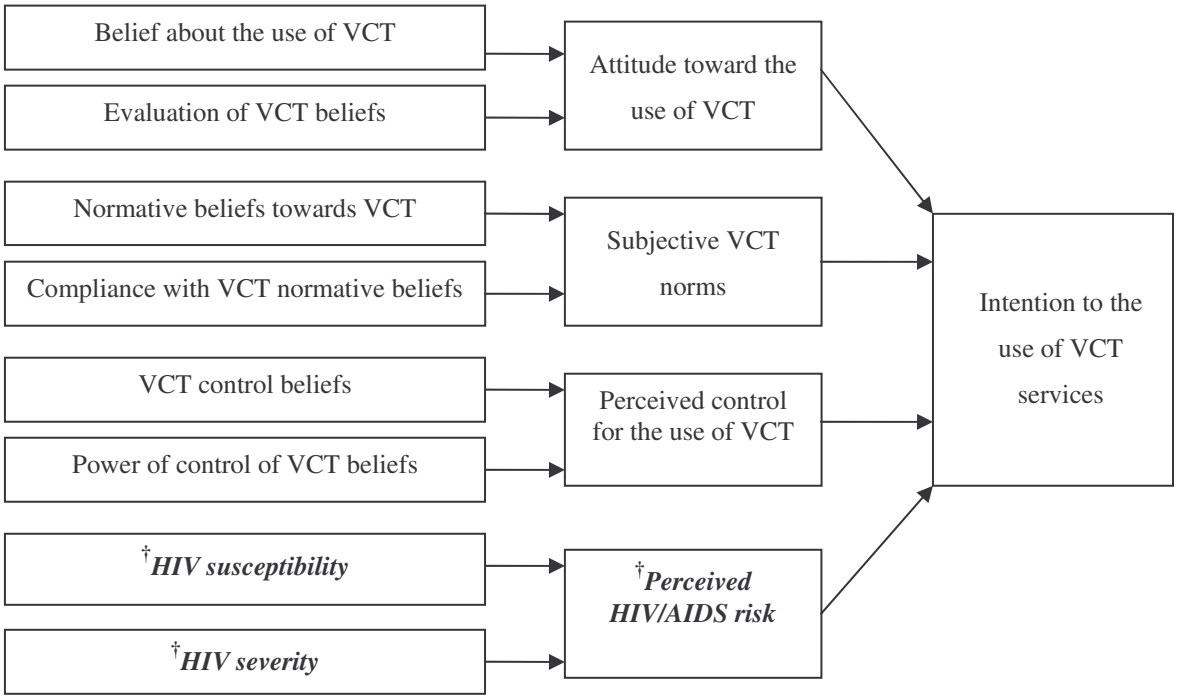
Figure 1: The Theory of Planned Behaviour (Ajzen, 1991)



The TPB specifies the determinants of attitude, subjective norm and perceived behavioural control that are assumed to combine multiplicatively. Attitude towards the behaviour is determined by individuals' beliefs about the outcomes of performing the behaviour (behavioural beliefs) weighed by the extent to which these outcomes are valued (belief outcomes). Subjective norms are governed by perceptions of whether significant others think that one should or should not perform the behaviour (normative beliefs) and one's motivation to comply with the wishes of significant others (motivation to comply). Similarly, beliefs about the presence of factors that might hinder the behavioural achievement (control beliefs) and perceived ability to control factors that might hinder the behavioural achievement (power of control) provide the basis for perceived behavioural control.

Despite the success of the core components of the TPB model in predicting behavioural intention and subsequent behaviours, it has been recommended that the TPB is open to the inclusion of other variables if they increase the predictive utility of the model after the theory's core variables have been taken into account (Ajzen, 1991). Consistent with this reasoning about the sufficiency of this theory, the current study extended the TPB by adding a measure of perceived risk as indicated in figure 2.

Figure 2: The extended theory of planned behaviour as applied to the present study



†**Component added to the TPB**

This inclusion of perceived risk was deemed necessary because of the high prevalence of HIV in Tanzania. In addition, perceived HIV risk has been reported to have a significant role in decisions related to HIV prevention in the previous studies that were not theory driven (Fylkesnes & Siziya, 2004; Gage & Ali, 2005; Holtzman et al., 1998).

The TPB is the most widely tested and validated model in the prediction of health behaviours in different social-cultural contexts (Godin and Kok, 1996). Whereas most of studies have been conducted in western countries and cultures where the theory was developed, a few studies have been published in an African context. For instance, the TPB has been useful in predicting condom use behaviour in Tanzanian (Lugoe and Rise, 1999), Ghana (Bosompra, 2001), and Zimbabwe (Wilson, Zenda, McMaster, & Lavelle, 1992). Similarly, the TPB was successful in predicting contraceptive use among adolescent girls in

Ethiopia (Fekadu, 2001). Furthermore, studies on sugar restriction in Tanzania employed the TPB (Kida and Åstrøm, 1998; Masalu, and Åstrøm, 2002). However, the differences in relation to the predictive validity of TPB components have also been noted. Such differences are likely to be a result of several factors such as research design, items used to measure TPB components, and the type of behaviour studied.

3.0 AIMS AND OBJECTIVES OF THE STUDY

3.1 Aims of the study

The main aims of the present study were:

(a) investigating the extent to which primary school teachers in Tanzania use voluntary HIV counselling and testing services to know their HIV status,

(b) exploring factors associated with anticipation of HIV/AIDS-related stigma among Tanzanian primary school teachers who have never been tested for HIV, and

(c) identifying social-demographic and psychosocial factors predictive of the use of voluntary HIV counselling and testing services among primary school teachers in Tanzania.

3.2 Objectives of the study

Specific objectives of the study were to:

(a) find out the prevalence of testing for HIV among primary school teachers in Tanzania,

(b) investigate the association between socio-demographic characteristics and testing for HIV among Tanzanian primary school teachers,

(c) examine the relationship between Tanzanian primary school teachers' socio-psychological perceptions toward the use of VCT services and the actual testing for HIV,

(d) investigate the extent to which Tanzanian primary school teachers who have never been tested for HIV anticipate HIV/AIDS related stigma from key persons in their social networks,

(e) explore the association between socio-demographic characteristics and anticipation of HIV/AIDS-related stigma among Tanzanian primary school teachers who have never been tested for HIV,

(f) investigate the relationship between psychosocial factors and anticipation of HIV/AIDS-related stigma among Tanzanian primary school teachers who have never been tested for HIV,

(g) assess the predictive capacity of the TPB in explaining intentions to use VCT services among primary school teachers in Tanzania

(h) describe the extent to which the three components of the TPB namely; attitude, subjective norms and perceived behavioural control, are predictive of the intention to use VCT, and establish their relative contributions, and

(i) examine whether perceived risk of HIV infection would add significantly the explained variance to the prediction of behavioural intention over and above the components of the TPB model.

4.0 MATERIALS AND METHODS

4.1 Design and area of the study

The design is the overall structure and strategy of the research study (Coolican, 2004). The design of the present study was cross-sectional. The self-administered structured questionnaire survey was conducted between September and November 2003 in four out of seven districts of Mwanza region, Northern Tanzania. The four districts namely Mwanza Municipal, Magu, Geita and Sengerema were involved in the study mainly because they had relatively well established and functioning public and private health facilities offering integrated VCT services. Such facilities included dispensaries, health centres, general district hospitals, and a referral hospital. The four districts also had several stand-alone VCT service sites that were managed by non-governmental organisations (NGOs), faith based organisations (FBOs), and private institutions. In addition, these districts were involved in HIV/AIDS interventions with both national and international reputations. For example, the Tanzania-Netherlands Project on HIV/AIDS control (TANESA) and Mema kwa vijana programme "good things for young people" had been running HIV/AIDS interventions in some schools of the selected districts. However, like in other districts, the participating districts had experienced HIV/AIDS cases among teachers (personal communication with the Mwanza Regional Education Office).

4.2 Study population and sampling procedures

The population of this study constituted teachers in government-owned primary schools in Mwanza Municipal, Magu, Geita and Sengerema districts. According to the statistics availed by the Mwanza Regional Education Office (REO), the selected districts had a total number of 5503 teachers and 694 government-owned primary schools.

The present study employed a proportionate cluster sampling method. The sampling units were mainly schools. On the basis of information from Tanzania Demographic and Health Survey (TDHS, 1996) and African Medical and Research Foundation (AMREF, 2001), it was estimated 10% of teachers in the four selected districts had used VCT services. The degree of precision was set at 0.05 while the standard z-value was 1.96. Using this information with a formula derived from Epi Info, the required number of schools turned out to be 54. The numbers of participating schools for each district was based on its proportion to the total number of schools in all participant districts. All schools were alphabetically listed separately for each district and systematic sampling was used to select the participating schools. All teachers in the sampled schools were eligible to participate and the participation rate was 94 per cent (918 of 977) as shown in Table 2 below.

Table 2: Number of teachers who participated in the study from selected districts

	Population		Sample	
DISTRICT	Number of schools	Number of teachers	Number of participating schools	Number of participating teachers
Mwanza	139	1019	11	306
Geita	227	1610	18	174
Magu	170	1402	13	211
Sengerema	158	1472	12	227
ALL	694	5503	54	918

*Source: Regional Education Office

Participation rate was high mainly because school teachers were easily accessible within the selected schools and the importance of this study to the basic education sector was explained

before administering questionnaires at each school. The 6 percent who did not participate were absentee teachers when the questionnaire was administered. Reasons for non-participation included attending in-service examinations, sick leave, maternity leave or attending other family problems such as funerals or sick relatives.

4.3 Data collection instrument

A detailed questionnaire was used in data collection. Questionnaires sought information concerning social-demographic characteristics, perceptions toward VCT services in terms of availability; accessibility; affordability, perceived benefits and barriers for VCT service uptake, perceived HIV susceptibility, perceived AIDS severity, anticipation of HIV/AIDS-related stigma and care (specific items and measures are detailed in paper I, II and III). Information on components of TPB namely attitudes, perceived social norms, perceived behavioural control, and intention towards using VCT services were also tapped by the questionnaire (details are in paper III). Questions with regard to the TPB were generated after the elicitation study. This is in accordance with Ajzen and Driver as cited in Conner & Sparks (1995) suggesting that individuals from the target population should be asked about factors related to the TPB components and then the frequently mentioned items (modal beliefs) are used in the questionnaire.

The questionnaire was originally written in English and later translated into Kiswahili which is the most widely spoken language in Tanzania. Kiswahili is also the national language and the medium of instruction in the government-owned primary schools in Tanzania. Thus, translation from English to Kiswahili was intended to increase validity of responses since most of participating teachers were more likely to express themselves in Kiswahili than in English. In order to check the validity of translated version, there was a back-translation of

the questionnaire from Kiswahili to English. Translation and back-translation were done with assistance of Translators from the Institute of Kiswahili Research of the University of Dar es Salaam, Tanzania.

4.4 Pilot study

Prior to the main fieldwork, a pilot test study was conducted using twenty-five primary school teachers from three schools. The schools involved in the pilot study did not participate in the main study. These schools were characteristically similar to the participant schools. The pilot test was deemed important for identifying any problems and omissions as well as checking time spent in responding. Pilot testing of instruments was also intended to improve the precision, reliability, and cross-cultural validity of data. Following the analysis of the pilot study data, ambiguous or unclear questions were either rephrased or removed.

4.5 Recruitment and training of research assistants

Two health professionals (male and female) with experience in HIV/AIDS research were recruited as research assistants. Prior to the actual fieldwork, researcher assistants underwent a three day training that was conducted by the researcher. The training content comprised a briefing on the aim and content of the study, familiarization with and how to administer questionnaires. Research assistants were also introduced to research ethics, their responsibility and administrative issues including the work schedule.

4.6 Administration of questionnaires

Administration of questionnaires did not interfere with classroom sessions. In schools where it was found convenient, teachers sat together in the staffroom or in one of the classrooms and were all guided together on how to fill in the questionnaire. The time for filling in the

questionnaires ranged from one hour to one and a half hours. The researchers responded to questions related to VCT services that were raised in some of the schools by participating teachers. This was mainly after the process of filling in questionnaires was completed. At the end of each day's data collection activities, the research team held feedback meetings to evaluate their work, identifying and resolving any problems encountered in the field. The researcher used such meetings as an opportunity for controlling the quality of information through checking the questionnaires for completeness.

4.7 Ethical considerations

Prior to the study, ethical approval was sought and obtained from the Regional Medical Research Ethics Committee in Norway (refer appendix A). The research permit and approval to conduct the study were sought and obtained from the University of Dar es Salaam (refer appendix B) and the Regional Education Officer (REO) of Mwanza region (refer appendix C). Institutional consent was communicated to education officials at the district level before conducting the study at their respective districts. Moreover, the Head-teachers were briefed about the study before meeting with teachers.

Informed consent was sought and obtained from participants before they filled in questionnaires. Specifically, participants were informed about the objectives of the study and were informed that their participation was purely voluntary and they were free to decline or withdraw at any time in the course of the study. It was transparently clarified that the information provided whether orally or in writing was for research purposes and would therefore be strictly anonymous and dealt with confidentially.

4.8 Data analysis and statistical procedures

The data were analysed quantitatively using SPSS for windows (Version 12.0 and 13.0). Analyses varied according to the papers. In general, descriptive and association statistics were employed.

Distribution statistics: The background information of teachers who had been tested for HIV (Paper I), the prevalence of anticipated reactions of HIV/AIDS-related stigma (Paper II), and the sample characteristics (Paper I-III) were analyzed as frequencies, percentages, mean, and standard deviation.

Chi-square test for independence: This non-parametric test was used to examine between-group differences on categorical variables (Paper II). Given that chi-square is a test of proportions (Pallant, 2005), the data analysed using this method were nominal and ordinal.

Internal reliability analysis: This analysis provided information on whether items that measured the same phenomenon or concept were similar or consistent (Coolican, 2004). Cronbach's alpha which is a measure of internal consistency (Cronbach, 1951) was examined before constructing scales (Paper I-III).

Binary logistic regression analysis: This was used in the models where the dependent variable was dichotomous. Binary logistic regression analysis was specifically used to assess the association between predictors (independent) variables and a criterion (dependent) variables (Paper I & II). Ninety-five per cent confidence intervals (CI) were given for odds

ratios (OR) and indicated statistically significant association if both values were either greater or lower than 1.

Hierarchical regression analysis: This analysis was used to predict the amount of variance accounted for in the criterion (dependent variable) from a set of predictors (independent variables). Independent variables were entered into the equation in specified order based on the TPB (entered in steps). Each independent variable was assessed in terms of what it added to the prediction of the dependent variable, after the previous variables were controlled for (Paper III).

5.0 SUMMARY OF THE PAPERS

Outputs of the study are presented in three papers. The focus of the papers was on assessing socio-demographic, psychosocial and socio-cognitive aspects related to the use of VCT services as well as anticipation of HIV/AIDS stigma among primary school teachers in Mwanza, Tanzania.

5.1 Paper I

Voluntary testing for HIV among a sample of Tanzanian teachers: A search for socio-demographic and social-psychological correlates

The purpose of this paper was to determine the overall prevalence of testing for HIV among primary school teachers in Mwanza, and to identify socio-demographic as well as social-psychological factors associated with having been tested for HIV. This cross-sectional design study was conducted between September and November 2003 in Mwanza, Northern Tanzania. The questionnaire survey covered 918 primary school teachers (mean age 38.4; range 21–59 years) from four districts namely Mwanza Municipal, Magu, Sengerema and Geita. Participating teachers were from fifty-four schools located in urban areas (34.7%), semi-urban areas (31.9%) and rural areas (33.3%). About 20% (n=181) of the respondents reported that they voluntarily tested for HIV. Majority of these had been tested for HIV more than three months prior to the study. A substantial proportion of respondents received counselling before an HIV test and prior to being informed about their HIV test results. Teachers who were aged between 21 to 30 years, who had easy access to HIV testing services, who had a partner with college or university education, and who perceived their health status positively were more likely to have been tested for HIV. Regarding psychosocial aspects, teachers who had not been tested for HIV were significantly more

likely to believe that it was not necessary to be tested for HIV in absence of a vaccine or cure for HIV/AIDS, and that only people who suspected that they were infected with HIV should be tested for HIV. They furthermore believed that HIV infected people were likely to die faster if they were tested for HIV and informed of their positive results. This paper provides important information on the correlates of VCT service uptake among Tanzanian primary school teachers. Such findings can be used in scaling-up VCT service uptake among teachers in Tanzania.

5.2 Paper II

Prevalence and factors associated with anticipation of HIV/AIDS-related stigma among Tanzanian teachers who have never been tested for HIV: An exploratory study

This study explored the prevalence and factors associated with anticipation of HIV/AIDS-related stigma. The cross-sectional survey was conducted between September and November 2003 in Mwanza, Northern Tanzania. The questionnaire survey covered 918 primary school teachers (mean age 38.4; range 21–59 years) from four districts namely Mwanza Municipal, Magu, Sengerema and Geita. About 80% (n=737) of teachers who participated reported that they had never been voluntarily tested for HIV (mean age 38.9 years; range 21 to 59 years). These were therefore analysed in this paper. The anticipated reactions in their rank order included gossip, blame, fear, avoidance, anger, while neglection was ranked the least. Teachers who were in urban areas (OR=0.54; CI: 0.40-0.74) and those whose level of education was either grade A or diploma (OR=0.62; CI: 0.45-0.86) were less likely to anticipate stigmatizing reactions than others. However, teachers who were aged between 51-60 years were significantly more likely to anticipate stigmatizing reactions than those who were aged between 20-29 years (OR=2.06; CI: 1.17-3.63). Regarding psychosocial correlates, teachers who had a lower aspiration to test for HIV (OR=1.43; CI: 1.04-1.97);

teachers who expected a low level of care if they were to have AIDS (OR=4.41; CI: 3.08-6.33) and teachers who perceived themselves less confident in relation to the testing for HIV (OR=1.52; CI: 1.09-2.11) were more likely to anticipate reactions of HIV/AIDS-related stigma from key persons in their social networks. Since HIV/AIDS-related stigma presents a major challenge to the successful implementation of HIV prevention programmes, the findings of the present study provide important information for developing appropriate interventions that would mitigate the fear of HIV/AIDS-related stigma among Tanzanian primary school teachers who are yet to be tested for HIV. The findings on factors associated with HIV/AIDS-related stigma are also likely to contribute substantially in the effort to develop a conceptual framework for studying the relationships between HIV/AIDS-related stigma and testing for HIV.

5.3 Paper III

Predicting Intended Use of Voluntary HIV Counselling and Testing Services among Tanzanian Primary School Teachers Using the Theory of Planned Behaviour

The objectives of the study were three-fold. First, to test the ability of the TPB to predict intentions to use VCT services among primary school teachers in Tanzania; second, to report on the extent to which the three components of the TPB namely; attitude, subjective norms and perceived behavioural control, are predictive of the intention to use VCT in terms of their relative contributions; and third, to examine whether perceived risk of HIV infection would add significantly to the prediction of behavioural intention over and above the components of the TPB. This cross-sectional design study was conducted between September and November 2003 in Mwanza, Northern Tanzania. The questionnaire survey covered 918 primary school teachers (mean age 38.4; range 21–59 years) from four districts namely Mwanza Municipal, Magu, Sengerema and Geita. Analysis was based on 737

respondents (mean age 38.9; range 21-59) who had never been voluntarily tested for HIV at the time of the study. As to the relative weight of the components of the TPB, the most important predictor of intention was perceived behavioural control, followed by attitude toward VCT and subjective norm was the least. However, perceived behavioural control (β=0.37, $p<0.001$) and attitude (β=0.29, $p<0.001$) emerged as significant predictors of intention to use VCT services. The components of TPB accounted for 30% of the variance in intended use of VCT services. Perceived behavioural control added 12% of variance to intention over and above attitudes and subjective norms, while perceived risk added 3% of variance over and above that of TPB components. The findings of the present study provide support for the applicability of the TPB in predicting and explaining intended use of HIV counselling and testing services among Tanzanian primary school teachers. VCT intervention programmes among teachers who have never tested for HIV should aim at augmenting favourable beliefs teachers hold about the consequences of using VCT services and eliminating or reducing psychosocial barriers of using VCT services.

6.0 GENERAL DISCUSSION

6.1 Discussion of methodological issues

6.1.1 Design of the study

Among the strengths of a quantitative study designs is the possibility of drawing causal inferences (Sutton, 2002; Sutton & French, 2004). This is mainly illustrated when the research design employs repeated measures over a substantial period. Since the present study was of cross-sectional design, in which participants were assessed at the same instant in time, it was implausible to interpret and discuss the findings in terms of cause and effect. However, as Sutton and French (2004) argue, the cross-sectional studies can be more informative in terms of causal relationship when one of the variables of interest has fixed values. For example, the relationship between the residential location and having been tested for HIV should specifically be explained as residential location, i.e., being in rural, semi-urban or urban areas either influencing or not influencing the likelihood of having been tested for HIV. Besides, the study also gained from the advantages of the cross-sectional design including conducting a study at a relatively low cost and within reasonable time (Coolican, 2004).

6.1.2 Reliability

A scale or test is reliable if measurements made under constant conditions are likely to give the same results, assuming that no changes in the basic characteristics being measured occur (Moser & Kalton, 1979). However, in the research situation, measurement scores normally constitute the true component and the error component. In this way, the reliability is higher when the degree of error in an instrument is lower (Kumar, 2005). The analysis of reliability is specifically important when there are several items that measure the same concept or

phenomenon (before constructing an index or scale) so as to minimize errors of single items (Kerlinger, 1986). Reliability may be measured in terms of stability or consistency. The stability aspect of reliability refers to a comparison of the same measure for the same sample at two or several points in time, i.e., test-retest (Moser & Kalton, 1979) whereas internal consistency, reflects homogeneity of the several items comprising a scale (Cronbach, 1951).

In this study, Cronbach's alpha coefficient which is a measure of internal consistency was used to assess reliability. Although there is no set interpretation as to what is an acceptable alpha value, Robinson, Shaver, & Wrightsman (1991) assert that, an alpha coefficient above 0.80 is "exemplary", in the range between 0.70 and 0.79 is "extensive", whereas coefficients in the range between 0.60 and 0.69 indicate a "moderate" level of internal consistency. However, Cronbach's alpha values are quite sensitive to the number of items in the scale. In particular, it is common to find quite low Cronbach values when the number of items is less than ten (Pallant, 2005). Despite this, the constructs of this study had reliability indices ranging from 0.62 to 0.94 and so they suggested acceptable levels of internal consistency (paper I-III). This specifies that the items included in measuring different constructs were indicative of the same underlying disposition. Conversely, it has to be noted that components of the TPB may not necessarily reflect underlying theoretical disposition because they are formative indices that are measured indirectly in terms of sums of additive variables (for review see, Lauver & Knapp, 1993). Thus, the reporting of Cronbach's alpha for TPB constructs in this study may be superfluous.

6.1.3 Validity

Validity, which refers to the conceptual and scientific soundness of a research study or investigation (Marczyk, DeMatteo, & Festinger, 2005) may be threatened in the survey due

to self-reported data (Samdal, 1998). Validity takes different forms including content, criterion-related and constructs validity (Creswell, 2003). According to Kerlinger (1986), emphasis should be put on construct validity, which denotes the links between empirical or psychometric and theoretical properties of a measure. In this study, construct validity was dealt with in two ways. First, the principal component analyses (both exploratory and confirmatory) were employed to test the construct validity of behavioural and cognitive constructs. Second, in-depth interviews were conducted prior to the construction of the questionnaire so as to solicit valid concepts from informants. For the TPB components, the elicitation study was useful in identifying behavioural and cognitive constructs based on the social-cultural context.

Content validity that refers to whether the items measure the substance or subject matter they were intended to measure was another important aspect addressed. In this study, content validity was as well achieved in two ways. First, through administering the instrument in Kiswahili, the language that was familiar and well understood by all teachers who participated in the study. The translating of the English version questionnaire into Kiswahili, back-translating into English and pilot testing the Kiswahili version prior to final data collection were important steps taken to ensure content validity. Second, as mentioned earlier, the pilot study was carried out prior to the main study so as to test the content of data collection instrument. However, the main weakness that has to be noted in relation to the pilot study is the very small number of teachers participated in the pilot study (n=25). This being the case, there was no possibility of estimating internal consistency of scales based on those data. Along this, the pilot study could not provide adequate and fairly accurate information about variances and correlations needed for analysis of power and sample size for the future full-scale study.

The study has also to determine the criterion-related or predictive validity, which reflects whether the findings corroborate results of previous studies. One way to obtain this would be to use standardized questions that provide a criterion measure. However, due to the lack of VCT scales that had been tested to check internal consistency or test-retest reliability in previous studies conducted in Tanzania and elsewhere, it was implausible to establish criterion-related validity. Actually, with an exception of the six questions that measured anticipation of HIV/AIDS-related stigma (Paper II), all other items used in the questionnaire were partly built on identified salient contextualized information and not only based on standardized questions.

6.1.4 Generalizability of findings

Inferential statistics in Psychology research involves taking a group of participants and generalizing from them to the population as a whole (Jones, 2004; Coolican, 2004). However, it is worth considering the extent to which findings based on a sample are generalizable and applicable to the study populations as well as outside the study setting. As discussed elsewhere, the districts that participated in this study were purposively sampled, based on the availability of health facility-linked or stand-alone VCT services. Accordingly, it is reasonable to doubt the generalizability of the findings to all primary school teachers in Tanzania or to the Mwanza region in particular. The district selection criterion was not representative of all primary schools with respect to factors associated with the use of VCT services. As such, generalizing the results of this study may depend much on availability and accessibility of VCT services.

6.1.5 Possibility of errors due to the sampling design

Data from sample surveys are prone to errors particularly when the information is from a portion of the population of interest rather than from the whole population. In order to investigate differences that are based on individual characteristics, the sample has to be representative of the population to which results are generalized. Since the unit of analysis in this study was individual teachers while the unit of sampling was the school, there are possibilities of making type 1 errors, i.e., reporting differences between groups (location, for example) when no differences are present. As such, this may represent a bias to the assumption that the unit of analysis is independent of the measured concepts (Kerlinger, 1996). Given also that the sampling procedures deviated from simple random sampling; the ordinary estimates of standard errors, p-values (in significance testing) and confidence intervals in this study may be less accurate. As such, deviations from simple random sampling may have lead to a loss of precision (Fowler, 1988). Nevertheless, the fact that systematic sampling was used to select participating schools and that the sample size for this study was reasonably large may invalidate the possibility of errors due to sampling design (Coolican, 2004). In addition, analyses were controlled for factors that were likely to confound the results.

6.1.6 Chances of non-response and missing information bias

Non-response bias that refers to "misrepresentation of the target population by the sample that constituted the responders" (Åstrøm, 1996: p.37) is likely to be of great concern when characteristics of the non-respondents are not known (Kerlinger, 1986; Locker, 2000). Likewise, there is a concern for the missing information mainly because missing values of a particular value hides a true underlying value that is meaningful for analysis. Despite these remarks, there seem to be no consensus on the maximum proportion acceptable for the non-

response and missing cases. As for this study, no analysis was done on non-response and missing information. Overall, the study had a very low attrition rate (6%) and none of the items had missing information of above 15%. It is thus feasible to argue that the non-response and missing information might not have biased the study findings.

6.1.7 Theoretical and measurement issues of the TPB

Some theoretical and measurement concerns of the TPB also need to be raised. First, the TPB is based on the subjective expected utility theory that offers a simple mathematical model for predicting intentions from a set of proximal factors (Norman, Conner and Bell, 1999). Accordingly, our study tested the multiplicative assumption of the expectancy value theory (see details in paper III) prior to the construction of scales for the TPB (Evans, 1991; Fekadu & Kraft, 2001). Results affirmed the importance of including belief evaluations in the construction of attitude, subjective norm and perceived behavioural control scales. However, consistent with the findings of previous studies (Armitage, Conner, Loach, & Willets, 1999; Fekadu & Kraft, 2001) the multiplicative assumption as in the case of expectancy value model failed to account for additional variance in the TPB components. In that way, the present study adopted an additive term.

Second, the TPB should adhere to the principle of compatibility. According to this principle, behaviour should be predicted at any level of generality or specificity as long as the predictor is equally general or specific (Ajzen, 1988). In particular, the principle of compatibility posits that any measure of a behavioural disposition can be identified in terms of four elements namely; the target at which the behaviour is directed, the involvement in a particular action or actions, the context in which behaviour occurs and the time of its occurrence. In the present study, these requirements were met with respect to behavioural

intention by measuring intention regarding actions (need, request, and accept); target (HIV counselling and testing service uptake); time (the next time); and context (going for health care services).

Third, empirical support for the TPB can be obtained by measuring the simultaneous predictive power of attitudes, subjective norms and perceived behavioural control on behavioural intention, on the one hand, and in terms of simultaneous predictive power of behavioural intention and perceived behavioural control upon performance of actual behaviour, on the other hand (Ajzen, 1991). Since the present study was not prospective in nature, it was not possible to measure actual behaviour "use of VCT services". This study is therefore limited in terms of predicting and explaining the use of VCT among Tanzanian teachers. For example, it was not possible to understand whether use of VCT is a volitional or non-volitional behaviour. Nonetheless, the TPB is argued to be a theory of intention formation and that reporting on the behavioural intention constitutes the major part of TPB studies (Fishbein & Ajzen, 2005). For itself, reviews of pertinent literature indicate that measures of behavioural intention account for only 20-40% of the variance in corresponding behaviour of prospective studies (Abraham, Sheeran, & Orbell, 1998; Ajzen, 1991; Corner & Armitage, 1998).

6.1.8 Ethical challenges

Research ethics covers a number of concerns including ensuring the welfare of those who participate in the research, maintaining honesty in conducting research and treating information given by participants with utmost anonymity and confidentiality (Field, 2004). As described in the methods section, such ethical procedures were adhered to. However, the high rate of participation may suggest to some people that teachers were not absolutely free

to refuse their participation. This may partly be the case because teachers were informed that the regional and district education authorities had approved their participation in the study. As Jones (2004) argues, research participants may try to be good; try to be neutral or even try to go against depending on the instructions given prior to the study. Nonetheless, as presented elsewhere, the low level of missing information might indicate the voluntarism of participating teachers.

Although it has been argued that paying money to subjects is unethical (McNeil, 1997), some payment is ethically acceptable, especially if it constitutes reasonable reimbursement for time and expenses. The ethical acceptability of this practice is based on the understanding that reimbursement for time and expenses permits people to participate in research without excessive cost to themselves, either in expenses, lost wages, or time. In view of this, most of the population based HIV/AIDS-related studies in Tanzania have a tendency to compensate people who take part in the study. As described somewhere else, teachers in Mwanza have been part of such studies. Taking that into consideration, participants were informed in advance that their participation was voluntary (i.e. without any payment for their participation or compensation for their time). Nonetheless, each of the participating teachers was given one red pen after filling-in the questionnaire as a gesture of appreciation.

6.2 Discussion of main findings of the study

6.2.1 Accessibility and utilization of VCT services among teachers

The national policy on HIV/AIDS (United Republic of Tanzania, 2001) emphasises that VCT services should be accessible to individuals who want to know their HIV status. This is echoed within the current study where about 82% of participating teachers reported that it

was easy for them to access VCT services if they needed to test for HIV. However, it is important to note that study participants from Magu, Sengerema and Geita districts were likely to access VCT services from various sources including the district hospitals, while those in Mwanza district could easily access the same services from either Mwanza regional or the Lake Zone referral hospitals located in Mwanza Municipality. The ANGAZA programme stand-alone VCT service sites were also present in Magu, Sengerema and Geita districts (one in each district) and two in Mwanza district.

As shown in paper I, the rate of teachers who had been tested for HIV (20%) was slightly higher compared to 12% and 11% that were reported previously from the general population by the Tanzania Demographic and Health Survey (TDHS, 1996) and the African Medical and Research Foundation (AMREF, 2001), respectively. Given the availability and perceived ease of access to VCT services in the study districts, it was expected that the proportion of teachers reporting having been tested for HIV would exceed the 20% reported. The prevailing situation is regardless of the fact that teachers constitute a relatively highly-educated group of people who are likely to be more informed about the benefits of undertaking an HIV test. Furthermore, some of the teachers who participated in the present study were involved in the Tanzania-Netherlands Project on HIV/AIDS control (TANESA) and Mema kwa vijana programme "good things to young people" (Hayes et al., 2005; Mgalla et al., 1998) and in the community based HIV/AIDS intervention programme that was integrated within the primary health care systems in Mwanza, from 1991 to 1994 (Grosskurth, Gray, Hayes, Mabey, & Wawer, 2000). Indeed, one would expect such programmes to have enhanced the positive perception and the use of VCT services among primary school teachers in Mwanza.

The extent to which teachers reported the use VCT services suggest that the availability and accessibility of VCT services may be necessary but not sufficient to make teachers use VCT services. This further emphasises the need to address the gap between VCT services availability and actual use by the primary school teachers in Tanzania.

6.2.2 Assessment of socio-demographic characteristics

Among the aims of the present study was to identify socio-demographic characteristics that are associated with the likelihood of having been tested for HIV, intention to use VCT services and anticipation of HIV/AIDS-related stigma among Tanzanian primary school teachers (Paper I, II and III).

The differences observed between teachers in urban and rural schools with respect to the likelihood of having been tested for HIV as well as their intention to use VCT services could be attributed to the rural-urban differences. This is particularly true in terms of availability and accessibility to the VCT services. In Tanzania, most of the health and stand-alone VCT facilities that offer VCT services are in urban areas. Given the problem of transport in many parts of the country, it may be difficult for primary school teachers in the rural areas to easily access VCT services. In addition, the differences between teachers in rural and urban schools concerning anticipation of HIV/AIDS-related stigma may possibly emanate from the distribution of HIV/AIDS. As HIV/AIDS in most parts of sub-Saharan Africa, including Tanzania, is more pronounced in urban than rural areas (UNAIDS/WHO, 2005), people residing in the former may have long experience of interacting with and caring for people living with HIV/AIDS. Consequently, the majority of teachers in urban areas might have developed feelings that they could be socially accepted and cared for if they are known or suspected to have HIV/AIDS.

With respect to age, the present study supported the presence of an exitence relationship between age and the rate of testing for HIV (Fylkesnes & Siziya, 2004; Gage & Ali, 2005; Mbago, 2004; Renzi, Zantededeschi, Signorelli, & Osborn, 2001). In view of the fact that the most affected age group in Tanzania is that of young people between 20-49 years (Ministry of Health, 2002, 2003, 2004), it is possible that teachers who fall within this susceptible age group are more eager to know about their HIV status than older age groups. Additionally, young teachers are likely to test for their HIV status before marriage. Recent studies conducted in Tanzania (Lugalla et al., 2004) and Ghana (Luginaah, Yiridoe, & Taabazuing, 2005) support this notion by reporting the increasing tendency for young people to test for HIV before marrying. The information on age and anticipation of HIV/AIDS-related stigma is also worth noting. The trend in anticipating HIV/AIDS-related stigma (Paper II) may be a reflection of traditional expectations regarding sexuality. In particular, social norms concerning sexual behaviours are least stringent among young adults compared to adolescents and older people. In view of that, teachers who were aged between 50-59 years were more likely to anticipate HIV/AIDS-related stigma than those who were in other categories of age.

The lack of association between gender and the likelihood of having been tested for HIV, intention to use VCT services as well as anticipation of HIV/AIDS-related stigma was somewhat unexpected. This is mainly because women in most of African societies including Tanzania are vulnerable with respect to several factors that are biological, social or cultural (Lie, 1996). For such reasons, more than a half of the HIV-infected persons in Tanzania are women (Ministry of Health, 2004; UNAIDS/WHO, 2005). In many parts of sub-Saharan Africa, women are perceived as a source of HIV transmission (Campbell, 2003; UNAIDS, 1998) and their HIV infection may be interpreted as a proof of sexually “loose” behaviour

(Lie, 1996). Such aspects were likely to insinuate gender differences with respect to the use of VCT services as well as anticipation of HIV/AIDS related stigma. However, the insignificant gender differences in relation to the aspects related to use of VCT services as noted in this study may reflect that the social status of female teachers is different from that of other females in the general population.

6.2.3 Psychosocial correlates of VCT service utilization

As noted in this study, teachers who had not been tested for HIV were more likely to support the opinion that it is not necessary to be tested for HIV if there is no vaccine and cure for HIV/AIDS. This observation may presuppose that people who perceive very little or no benefits of testing for HIV may not be motivated to utilize VCT services. As Klepp, Mnyika, Ole-King'ori, & Bergsjø (1995) underlined, the majority of people in Tanzania may not need to know about their HIV status because they are aware that there is no cure for HIV/AIDS and that many local hospitals lack the medications for opportunistic infections and for managing associated health problems. This remark may still be important in the advent of life-prolonging antiretroviral treatment (ART). In resource-poor countries like Tanzania, neither individuals nor the government can afford the cost of ARVs for all people whose HIV test results are positive. For instance, the cost of the highly active antiretroviral therapy in year 2003 was US$ 360 (395,280 Tanzanian shillings) per person per year which was higher than the per capita expenditure on health that was US$ 12 (13,176 Tanzanian shillings) and also higher than the gross domestic product per capita of US$ 263 (288,774 Tanzanian shillings) in the same year (WHO, 2004). Even the “3 by 5” WHO programme that targeted to provide three million people living with HIV/AIDS in low-and middle-income countries with ARVs by the end of 2005 may not eradicate the problem. More recently, USAID et al., (2004) estimated that out of 313,000 AIDS patients in Tanzania who

needed antiretroviral therapy only 0.53% had access (1,250 in the commercial sector and 400 in the public sector).

Expansion of VCT services among Tanzanian teachers may be enhanced by their access to affordable ARVs. In this way, it is essential to ensure that teachers who test positive for HIV have access to the ARVs. In the mean time, the VCT intervention programme should continue to inform people and emphasize the various benefits of knowing about HIV status other than that of medical treatment and care.

The findings of this study confirm the tendency for people to associate VCT service utilization and perception of HIV risk (Fylkesnes & Siziya, 2004; Gage & Ali, 2005; Holtzman et al., 1998). The propensities of people to perceive that VCT services are meant for people who suspect being HIV infected compares well that of the general surveillance information showing that most of the AIDS cases are reported by VCT facilities. For example, in 2003 there was a higher overall HIV prevalence among users of VCT facilities (18.4%) compared to the prevalence of 8.8% among blood donors (Ministry of Health, 2004). However, the overall HIV prevalence among users of VCT services may be confounded by mixing voluntary testing per se and diagnostic testing. As underscored by the Ministry of Health, VCT services integrated in health facility are largely accessed by the HIV infected suspects (for diagnostic HIV testing), while the stand-alone VCT sites are accessed mostly by apparently healthy members of the general public who are curious about their sero-status (Ministry of Health, 2004). Given this observation and the fact that Tanzania has a generalized epidemic (i.e., HIV is spreading throughout the general population rather than being confined to population at higher risk groups) it is important for

the VCT intervention messages to address both teachers who are susceptible and not susceptible to HIV infection.

As revealed, people may avoid using VCT services if they anticipate negative consequences when informed of their positive results. As such, the majority of the people who are tested and get informed of positive results may experience strong negative psychological symptoms such as deep anxiety and severe depression. However, such negative consequences may be attributed to the lack of psychosocial support and care which are potential resources for adjustment, coping and buffering the psychological problems (Burgoyne & Renwick, 2004). In addition, people who are tested for HIV and get informed of positive results may need to have a sense of self-efficacy that refers to the belief in personal capabilities to organize and execute the courses of action so as to manage the prospective situation (Bandura, 1986, 1995). In the HIV/AIDS context, self-efficacy may have some influence on the way people confront HIV/AIDS-related stressors. As such, people with high self-efficacy are more likely to view a stressful situation as more challenging than threatening.

6.2.4 Anticipation of HIV/AIDS-related stigma

The substantial level of anticipated reactions that depict HIV/AIDS-related stigma as observed in the present study may be attributed to the fact that HIV is mainly transmitted and spread through unprotected sexual intercourse with multiple sexual partners. For this reason, HIV/AIDS is linked to "sexual promiscuity," i.e., behaviour characterized by casual and indiscriminate sexual intercourse, often with many people (Derlega, Sherburne, & Lewis, 1998; Ezedinachi et al., 2002; Herek, 1999; Lawless, Kippax, & Crawford, 1996; Muyinda, Seeley, Pickering, & Barton, 1997; Nyblade et al., 2003; Powell et al., 1998). Likewise, the social and moral norms regarding sexual relationships may instil the belief that people get

HIV/AIDS through "immoral" behaviours and are "sinners" (Kleinman, 1988; Kopelman, 2002; Lie, 1996). Consistent with these reasons and in line with the "just-world" theory (Lerner, 1980) which argues that victims are normally judged to have got what they deserved, it was likely for most of the teachers to anticipate stigmatizing reactions such as gossip, blame, neglect and anger from significant others in their social networks if they were suspected or known to have HIV/AIDS.

Teachers' anticipation of reactions of social exclusion such as fear and avoidance may be ascribed to unnecessary doubt about HIV transmission. As Nyblade and colleagues argue, people are likely to shun those living with HIV/AIDS because they may lack knowledge about HIV transmission and thus feel threatened by the mere presence of people who are known or suspected to have HIV/AIDS (Nyblade et al., 2003). In the same vein, people may feel embarrassed to associate with those who have a "tarnished image" especially in public. Indeed, predisposed concern about HIV infection may interfere with the normal process of social relationship by significant others withdrawing from social interaction (Crandall & Coleman, 1992; Herek, Capitanio, & Widaman, 2003).

Importantly, the present study adds to the available information on the relationship between HIV/AIDS-related stigma and testing for HIV (Brown, Trujillo, & Macintyre, 2001; de Paoli et al., 2004; Muyinda et al., 1997; Nyblade et al., 2003; Tanzania National AIDS Control Program, 2001; UNAIDS, 1998, 2004). Similar to previous studies, participating teachers who aspired to use VCT services, were significantly less likely to report that they would be stigmatised compared to those who did not aspire to use VCT services.

6.2.5 Social-cognitive predictors of the intention to use VCT services

Among other roles of the researchers in health psychology is to test applicability of theories that explain and predict health related behaviours (Abraham, 2004). As discussed elsewhere, one of the theories that have been applied widely to scrutinize social-cognitive determinants of health behaviours is the TPB. As for this study, the simultaneous predictive power of attitudes, subjective norms and perceived behavioural control on intention to use VCT services among Tanzanian primary school teachers (Paper III) supports the previous evidence that the TPB is useful in predicting health related behaviours.

The significant contribution of attitude over subjective norm in the current study suggests that teachers' use of VCT services may depend more on their evaluations about the consequences of using VCT services than on their perceptions toward significant others' wish about their use of VCT services. However, as pointed out in a meta-analysis (Trafimow & Finlay, 1986), individuals differ in the relative weights they place on attitudes and subjective norms, and that the weights of these predictors also vary across behaviours and population sub-groups (see also, Ajzen, 1991). Biddle, Bank and Marlin also point-out that the sources and magnitude of social norms may vary according to the behaviour studied (Biddle, Bank, & Martin, 1980). As such, the observation that subjective norms was the least predictor of intended use of VCT services corroborate a recent meta-analysis of McEachan and others (cited by Corner and Sparks, 2005), who investigated screening behaviours using the TPB in a number of studies. In their findings, attitude towards behaviour was the strongest predictor of behavioural intention, followed by perceived behavioural control and subjective norms was the least. As for this study, it is worth commenting that intended use of VCT services and norms regarding use of VCT services were likely to be affected by HIV/AIDS-related stigma and its resulting discrimination (de Paoli et al., 2004; Lie &

Biswalo, 1996). Nevertheless, the fact that the relative weight of subjective norms was statistically significant before perceived behavioural control was included in the regression model indicates that significant others have partly a role to play in the use of VCT services.

The observation that perceived behavioural control improved the prediction of intended use of VCT services over and above attitude toward VCT and subjective-norms is consistent with the results of other TPB studies in Tanzanian context (Kida & Åstrøm, 1998; Lugoe & Rise, 1999) and in other African settings (Fekadu & Kraft, 2001). This may suggest the importance of a sense of confidence over social-psychological barriers to the use of VCT services. For example, it is important to control feelings related to fear of stigma and discrimination (Day et al., 2003; Sangiwa, van der Straten et al., 2000) as well as fear of gender-based violence if HIV test results are positive (Kilewo, Massawe, & Lyamuya, 2001; Maman, Mbwambo, & Hogan, 2002; Maman, Mbwambo, Hogan, Kilonzo, & Sweat, 2001).

Socio-cognition models such as TPB are considered to be sufficient if variables external to the model fail to account for variance in intentions of behaviour once the effects of attitudes to behaviour, subjective norms and perceived behavioural control have been taken into consideration (Ajzen, 1991; Beck & Ajzen, 1991; Sutton, 1994). However, there is a possibility for the TPB model to benefit from special adaptation depending on the health behaviour in question (Ajzen, 1998). In considering the importance of extending the TPB, the present study added the component of perceived HIV/AIDS risk to the traditional constructs of the TPB. Consequently, the added component had a residual effect on intention to use VCT services. This indicates that the inclusion of variables external to the TPB might improve the prediction of intention and behaviour beyond the traditional TPB variables. However, as discussed earlier, the cross-sectional design employed in the present study may

raise some concerns about the direction of causality of risk estimates with intention. It is not clear whether respondents may use their behavioural intentions to estimate future level of risk or vice-versa. Besides, this finding corroborates TPB studies of other behavioural domains (Fekadu & Kraft, 2001; Norman, Conner, & Bell, 1999; Sutton, Mc Vey, & Glans, 1999) that have noted that perceived risk has a substantial independent effect over and above the components of the TPB model.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The present study is in line with the government's effort to expand VCT services in Tanzania (United Republic of Tanzania, 2001, 2003). Overall, the present study observed that the availability and accessibility of VCT services may be necessary but not sufficient to make primary school teachers use VCT services. Accordingly, the study identified socio-demographic, psychosocial and socio-cognitive aspects that are associated with the use of VCT services among primary school teachers in Tanzania. In particular, the findings revealed that the school location and teachers' age are important factors in the use of VCT services and in anticipating of HIV/AIDS-related stigma. The finding that use of VCT services is invariably linked to the perception of social-psychological barriers, corroborate those of previous studies conducted in the general population. As regards the social cognitive predictors of VCT services, the TPB was useful in studying the intended use of VCT services among Tanzanian primary school teachers. Other findings in the current study revealed that evaluating the consequences of using VCT services as favourable or unfavourable and perceived ease or difficulty to the use of VCT services are important factors for motivating the teachers to uptake VCT services.

7.2 Recommendations

7.2.1 Recommendations for action

As the pandemic is having major consequences both on individual employees and on productivity, it is important for all sectors to design programmes that would mitigate the impact of HIV/AIDS at workplaces. Thus, the findings of the present study are useful in the designing of a VCT intervention programme specifically for Tanzanian primary school

teachers. In practice, individual and societal level factors significantly associated with the use of VCT services and anticipation of HIV/AIDS-related stigma are likely to be useful in scaling-up VCT service uptake among Tanzanian teachers.

In designing a VCT intervention programme for teachers, age and school location should be considered. Specifically, there is a need to make sure that primary school teachers in rural schools have access to the VCT-related information. Emphasis on messages related to the use of VCT services and alleviating social-psychological barriers such as fear of HIV/AIDS-related stigma should particularly address the needs of both young and older teachers. Additionally, effort should also be directed at augmenting favourable beliefs teachers hold about the consequences of using VCT services.

Given that HIV/AIDS is a stigmatized health problem due to its mode of transmission as well as its chronic, lethal and terminal characters, it is very important to design VCT related messages that would mitigate subjective feelings of HIV/AIDS-related stigma so as to decrease teachers' resistance to seeking VCT services. The fact that HIV/AIDS is psychologically and physically incapacitating, requires the government to establish appropriate long term counselling mechanisms to provide continuous psychological support and care among teachers who are tested for HIV and get positive results.

7.2.2 Recommendations for future studies

Future studies among Tanzanian primary school teachers may systematically target other behavioural aspects related to the use of VCT services including sexual histories, motives of testing for HIV, preferences about having a pre-test, post-test and follow-up counselling, feelings while waiting for the test results and aspects related to the change of risky behaviours or consolidating safer sex practices.

Since the present study is just an initial step towards exploring factors that are associated with the use of VCT services among teachers in Tanzania, there is a need for large scale or similar studies to consolidate much needed empirical evidence on factors that impact the use of VCT services. Such studies could be longitudinal in design and aim at establishing causal inferences or those that may only focus on cross-validating findings of the present study.

From the public health perspective, the current move to expand VCT services on its own may not be sufficient to enhance the use of VCT services among teachers. Thus, the effort of expanding the coverage of VCT facilities in Tanzania should be matched with efforts to promote the use of the VCT services. In this way, there is a need to scrutinize relevant messages and approaches of delivering such messages to Tanzanian primary school teachers. However, it is strongly suggested that the validity and acceptability of those messages should be tried before they are relayed to the target groups of teachers.

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