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**Poverty, Gender and Psychosocial Dimensions of  
Safe Sex Behaviour of Women in Zambia**

**George Groenewold**

Netherlands Interdisciplinary Demographic Institute (NIDI)  
Lange Houtstraat 19, 2511 CV The Hague  
E-mail: groenewold@nidi.nl

**Inge Hutter**

Population Research Center (PRC), University of Groningen  
E-mail: i.hutter@frw.rug.nl

**Jeroen van Ginneken**

Netherlands Interdisciplinary Demographic Institute (NIDI) and  
School of Health Systems and Public Health, University of Pretoria South Africa  
Email: ginneken@nidi.nl, jvginneken@postillion.up.ac.za

**Bart de Bruijn**

Netherlands Interdisciplinary Demographic Institute (NIDI)  
Lange Houtstraat 19, 2511 CV The Hague  
E-mail: bruijn@nidi.nl



## INTRODUCTION

In 2001, about half the population of Sub Saharan Africa lives in absolute poverty, that is, on less than 1 dollar a day. The region is home to two thirds of the 42 million HIV/AIDS infected people in the world. Zambia belongs to the poorest countries in the region and HIV infection rates are among the highest. Moreover, women are over-represented among the poor and among the HIV/AIDS infected people and the gap between women and men is growing (Wach and Reeves 2000). In a population of 10.5 million, about 18 per cent of the Zambian women and 12.0 per cent of the men in the age-range 15-49 years are infected and, so far, AIDS has killed 700,000 adults and children in Zambia. If the trend is not reversed, another 1.6 million Zambians will have died by 2014. Twenty years ago, life expectancy stood at 54 years. Due to HIV/AIDS it has now plunged to 40 years. Beyond abstinence and mutual lifelong monogamy, condom use is currently the only practical solution to reduce the risk of HIV infection. Yet, current condom use in the adult population is low and does not exceed 5 percent (UNAIDS 2003 UNAIDS 2004, WHO 2003).

Main reasons for higher HIV infection rates of women in Sub Saharan Africa include: (1) a higher *susceptibility* of women to sexually transmitted diseases, such as HIV, and a high prevalence of such diseases in the region (Murray and Lopez 1998, UNAIDS 2000); (2) a generally *low status of women*, associated with a lack of decision making power and access to income sources, make women financially dependent on men. This may lead to poverty-driven unprotected 'survival sex' practices (Preston Whyte 2000; UNPFA 2001); (3) expectations on the side of men of subservient and submissive behaviour of women viz. the social tolerance of high-risk sexual behaviour of men and accepted forms of sexual violence against women. In such a context, *low self-efficacy<sup>a</sup> beliefs* of women are cultivated so that they may more often engage in unsafe sex practices than they would like to (e.g. Maharaj and Cleland 2004, UN 2001, UNAIDS 2000). Several studies show that these reasons also apply to Zambia (e.g. CSO 2003, CSO 2004, PSI 2003).

It is increasingly acknowledged that marriage is a major route of infection in Sub Saharan Africa. In fact, the majority of newly infected persons with HIV are women who contracted the virus from their spouse. Married women find it often hard to negotiate safe sex with their spouses and this is further complicated because they live in an environment where having extramarital sexual relations is an 'accepted' form of male sexual behaviour (Sinding 2005; Stanecki 2002).

A similar situation is found in Zambia. There, daily life of women is embedded in that of the extended family, lineage and the wider ethnic group. Their rights, obligations and the sanctions applied to them, including those regarding their sexual behaviour, are subject to the customary laws of the ethnic group. Overall, the belief in male supremacy underpins most customary law of ethnic groups in Zambia and it is the ideological basis for male domination in both domestic and public life. Many women in Zambia live in matrilineal and matrilineal ethnic groups (e.g. the Bemba, Tonga and Lozi). Many customary laws in this system are not conducive to gender equality in decision making and put women in a vulnerable position, in particular when they are married, become widows or get divorced. Although in matrilineal ethnic groups descent is traced through the female line this does not mean women are in charge, on the contrary. It is the brother of the female spouse who exerts influence in the marital union of his sister because her children constitute his descendants as they will inherit his property. The strength of the brother-sister bond enforces the mother-child bond, so that natal kin become more important than marital kin, which may go at the expense of the bond

between spouses. Conversely, on the side of the husband it is the maternal uncle (mother's brother), his sister and children where his loyalties lie. Most Zambian women therefore do not inherit from their husband and widows often have to face property grabbing (e.g. agricultural land) by the family of the deceased husband, contributing to their poverty, which is particularly problematic if they cannot be supported by their matrilineal kin. In case a marriage involved a considerable bridewealth (lobola), a woman who has been granted divorce of her husband by his family frequently remains under (sexual) control of male in-laws until part of the lobola has been returned (Araki 2001; Kajoba 2002; O'Laughlin 1995).

In addition to this, most ethnic groups socialise new generations of girls in a way to prepare them for a subordinate position to their future husbands and to other men in their environment. By not wanting to engage in (unprotected) sex, even if a woman perceives that her husband may be HIV positive, could be interpreted by men as a marital 'offence', giving way to domestic and sexual violence (Chaze 2000; Chuulo 2001; Macmillan 2002). Thus, the husband-wife bond is often under great pressure of male matrilineal relatives and the aforementioned social arrangements are not really conducive to the position and advancement of women in general, and to their negotiation position regarding safe sex.

The above is a pointer to the role that marriage, wealth status, gender and psychosocial factors play in safe sex practices in Sub Saharan Africa and Zambia. Moreover, it seems reasonable to expect that effects of these factors will vary according to a person's marital status.

Most studies carried out so far do not focus on such factors but either focus on the role of psychosocial determinants, whereby demographic and socio-economic factors feature as 'controls' only, or they address the socio-economic 'correlates' of condom use, downplaying psychosocial factors (e.g. Conner and Armitage 1998, Denison 2003). The focus on psychosocial factors in studies using social-psychological theories is understandable but a consequence of this is that effects of background characteristics are always viewed as indirect and operating through psychosocial ones. This approach should not imply, according to us, that background characteristics are less relevant. On the contrary, they can be more appealing to health policy makers because, more than psychosocial ones, they often are more 'visible' so that they could be used for the profiling of target groups for HIV/AIDS programs. Few studies systematically examine these 'proximate' and background characteristics in conjunction.

Therefore, this paper examines to what extent 'proximate' determinants (i.e. social-psychological factors) and more 'distal' factors (i.e. poverty, gender factors and demographic and socio-economic background characteristics) affect condom use of women in Zambia, and what the implications are of the findings for HIV/AIDS interventions programs.

## **CONCEPTUAL FRAMEWORK**

We start out with a brief discussion of the concept of safe-sex behaviour. This will be followed by a review of theories that have been used to explain health behaviour and that may be relevant to explain condom use. Next, hypotheses will be formulated regarding determinants of condom use, with particular attention to the following group of factors: social-psychological factors, poverty, gender and demographic and socio-economic characteristics.

In contrast to family planning behaviour, safe-sex behaviour lacks a set of reliable, easily measurable indicators because it has a more complex set of proximate determinants and biological outcomes than does family planning. 'Abstinence, be Faithful to one partner and use condoms (ABC) are often referred to as ways to avoid or reduce the risk of HIV infection. Condom use though is frequently used as an intermediate level indicator that directly links current safe-sex behaviour to a long-term outcome: HIV infection (Bertrand and Escudero 2002, NIAID 2001). In this paper the focus is on the condom use component of safe sex behaviour.

A number of psychological and social-psychological theories emerged that focus on determinants<sup>b</sup> of (health) behaviour. Glanz and others (2002) reviewed these theories and rated their popularity in research on health behaviour. One of the most applied theories is the theory of reasoned action/planned behaviour (Ajzen 1991, Ajzen and Fishbein 2004, Conner and Armitage 1998) which argues that, to understand behaviour, we need to know what a person's beliefs are about a particular behaviour (e.g. condom use). Hence, such beliefs affect the attitude towards the behaviour and the intention to perform the behaviour. In the formation of intentions, opinions on the behaviour of 'important others' are also taken into account. In later versions of the theory, the notion of perceived behavioural control was included, inspired by the notion of self-efficacy from social cognitive theory (Bandura 1977, 1997). According to that theory, human behaviour is viewed as the product of a dynamic interplay of cognitive, behavioural and environmental influences, called 'triadic reciprocity', whereby self-efficacy is considered the core determinant of behaviour. The self-efficacy construct was also integrated in later versions of another popular health theory, the Health Belief Model (HBM) (e.g. Rosenstock *et al.* 1994). The HBM has guided various health research and intervention programs. Applied to the context of safe sex behaviour, a person will use condoms if he/she: (1) perceives that HIV infection has serious consequences for one's health (i.e. perceived severity), (2) perceives to be at risk of infection (i.e. perceived susceptibility), (3) concludes, after considering the pro's (i.e. perceived benefits) and con's (i.e. perceived barriers) of condom use, that, on balance, condoms should be used, and (4) perceives to be capable of successfully using condoms now and in the future (i.e. perceived self-efficacy). Various studies repeatedly show that risk-perceptions and perceived self-efficacy stand out as important predictors of intentions and behaviour (Fishbein 2000, Luszczyńska *et al.* 2004, Maharaj and Cleland 2004, Meekers and Klein 2002). These social-psychological theories have been applied to western populations and a number of meta studies have concluded that theories are capable of explaining various types of health behaviour, including safe sex behaviour (e.g. Albarracín *et al.* 2001, Sheeran *et al.* 1999, Sutton 1998). However, these theories place the individual at the core of attention and assume that health behaviour is the result of an explicit, consistent, deliberate and informed choice. Arguably, they may be less well designed to explain behaviours in non-Western settings as much behaviour is shaped by social structures (e.g. lineage, ethnic group) and processes (e.g. customary laws, initiation rituals, folk beliefs) that are either not present or not functional anymore in shaping behaviour in western populations. Therefore, it becomes important to include contextual factors in analyses of sexual health behaviour and in the design of health intervention programmes in non-western settings (Airhihenbuwa 1995; Bruijn 1999, Esser 1993).

The role of contextual factors, such as poverty, ethnic affiliation and gender, does not receive much attention in the above theories which is partly due to the premise that contextual factors affect behaviour in an indirectly way only, and through psychosocial ones. The ecological model of health behaviour though takes more explicit account of the importance of context

and asserts that it is important to understand people's transactions with their physical and social environment. Different contextual layers, in a dynamic manner, affect health behaviour during the life course (e.g. age, gender, ethnicity, socio-economic status) and, therefore, a deficit in health is seen as the outcome of an accumulation of multi-layered disadvantages that combine, interact and change over time. To change health behaviour, an 'enabling environment' should be created and intervention programs should address contextual, interpersonal and person level determinants of health behaviour in conjunction (Bronfenbrenner 1979; 2004).

Theories on development and poverty, initially, used a restricted definition of poverty which is the state of material deprivation as indicated by levels of income, productive assets and consumption. Over time, new dimensions were added such as entitlements to common property resources and gender relations and even psychosocial conditions. This shift in development theories towards a holistic conceptualization, called human development poverty, was adopted to better express the causes and consequences of poverty rather than its symptoms only (Agarwal 1997, Baulch 1996, Kabeer 1996, Sen 1980, 1992). However, a holistic conceptualization of poverty is difficult to operationalise and measure, and, even more so, effects are difficult to interpret. In this study, poverty is conceptualized in terms of indicators of material wealth.

Development of hypotheses about the effect of poverty on safe sex behaviour is problematic because the relationship is far from simple and direct. Unsafe sex and HIV infection are not only confined to the poorest households even though they account in absolute terms for most of those infected in Sub Saharan Africa. Non-poor households may also become poor as a result of the financial burden of having one or more members infected with HIV. Not surprisingly, there is limited evidence for a socio-economic scale of HIV infection, with higher rates as one moves towards the low end of the scale. While acknowledging the complexity of the relationship, we expect that, on balance, poverty will have a negative effect on safe sex behaviour because poorer households are more often politically and socially excluded, so that HIV/AIDS programs may not reach many of them. But even if they are reached, people in poverty may not be able to respond given the reality of their lives in which there are more barriers for behavioural change to overcome than among the better-off (Cohen 2000).

Gender systems are social institutions that ascribe social characteristics to men and women, providing meaning and guidance regarding their roles, rights and obligations over the life course. As such, they contribute to peoples' mental schemes and influence their decisions and behaviour, including sexual behaviour. Gender varies by culture and class, making it a fundamental dimension of social stratification (Bertand and Escudero 2002, Kishor 1999). Gender is a multidimensional concept and includes aspects of equity, equality, social norms and values, decision-making and control over resources, and this makes it difficult to unambiguously measure its effect. The role of gender can partially be captured by the decision-making power of women in reproduction, health, income and expenditure matters and their resilience against sexual and domestic violence between spouses or partners (Blanc 2001; Cagatay 1998; Narayan *et al.* 2000a, Narayan *et al.* 2000b). We expect, *ceteris paribus*, that women who have more decision making power in family matters and reject forms of violence against women are the ones most likely to practice safe sex.

Other important gender related factors are *the size and composition of sexual networks* in which persons participate. However, the effect of these factors may be either positive or

negative. For instance, a woman who can more freely decide what to do, who is aware of the risk of HIV infection and about protective effect of condoms may maintain sexual relations with more and different types of persons without increasing their infection risk by simply becoming more conscientious and consistent condom users. However, if freedom of deciding what to do is less and there is an economic motive involved in sexual engagements (i.e. survival sex), a woman maintaining sexual relations with several and different types of men may be forced to accept unsafe sex practices under pressure of men who prefer to have sex without a condom. In general though one may expect that a condom is used more often if the sex partner is a more distant and the sex contact casual compared to a fiancée or spouse (Agha 1998).

In addition to determining gender and sexual relations, membership of a particular *ethnic group* also determines health beliefs, practices and health seeking behaviour. For instance, among the Tonga and Bemba people of the Southern and Northern Provinces, young girls are learned how to use corrosive herbs and ingredients to dry out the vagina in order to increase male sexual pleasure (i.e. 'dry sex'). Examples of other harmful cultural practices are: the practice of sexual cleansing, that is, a widow in Zambia is encouraged to have (unprotected) sex with another man following the death of her husband to purge 'evil forces' that are assumed to have caused the death of her husband (Chaze 2000; Human Rights Watch 2000; Muvandi *et al.* 2000). Though differences in condom use rates can be expected between ethnic groups, no hypothesis is currently formulated regarding the direction of the effect of 'the ethnicity factor'.

Another group of factors, demographic and socio-economic characteristics of individuals, also play a role in explaining condom use. We hypothesize that important factors are age, marital status, marital duration, education and working status. *Age* is important, because we may expect that period and cohort effects impinge on health behaviour and lead to age differences in response to IEC messages and adoption of condom use. *Marital status* and *duration of marriage* are relevant, because we expect that condom use for HIV/AIDS protection is lower within than outside marital or cohabiting unions and becomes less as the duration of marriage increases. Lower condom use rates within marriage can be expected if most spouses have fertility aspirations and if reproduction is mostly confined to marriage. Besides that, a spouse proposing condom use may raise doubt about his/her trustworthiness. As the duration of marriage increases, perceived trust between partners regarding extra marital relations may lead to lower condom use to protect against HIV/AIDS. *Education* is important, because increases in level of education are associated with increases in quality of HIV/AIDS information gathering and processing leading to a higher likelihood of safe-sex practices. *Paid working status* can be relevant, because it may contribute to women's general self-efficacy and condom-use self-efficacy. However, some argue that it is important to also look at the kind of work a woman is doing. If most women carry out subordinate type of work, gender relations at the workplace may be unfavourable leading to unsolicited exposure of women to unprotected sex. A number of studies have provided empirical support on the importance of the above characteristics of condom use (e.g. Amouzou 2003, Kusanthan 2001, Lagarde *et al.* 2001, Maharaj and Cleland 2004, Vass 2003).

On the basis of this review of various theories, models and concepts we conclude that we will make use of them in our study on the topic of determinants of safe sex behaviour. We will focus in particular on the following groups of factors which we expect will be associated with condom use: social-psychological factors such as risk perception and self-efficacy, poverty, gender and sexual networks, and demographic and socio-economic characteristics. As we also

found indications that safe sex behaviour within and outside marriage may differ we postulate that effects of determinants of condom may also differ according to the marital status of women.

## **METHODOLOGY**

### **Data**

We use nationally representative data of the Zambia Demographic and Health Survey 2001/2002 (ZDHS). In 7,126 households information was collected of 7,658 women in the age group 15-49 years old (CSO 2003). Our focus is on examining *recent* safe sex behaviour and we therefore selected the subgroup of 5,732 women who were sexually active in the 12 months period before they were interviewed. As we are primarily interested in examining the determinants of safe sex behaviour of women who had sex for reasons other than becoming pregnant, so we excluded 326 women who stated that they did had sex because they wanted to become pregnant and therefore did not use a condom during their last sexual engagement, leaving the data of 5406 women for further analyses.

The strength of DHS survey data is that the data are nationally representative and provide a rich source of information on socio economic, demographic, knowledge and attitudinal characteristics of the survey population. However, a limitation is that for specific health research questions, not all theoretically relevant characteristics are (adequately) covered. Furthermore, causality claims derived from multivariate analysis using this type of cross-sectional data are subject to the validity of the assumption of a steady-state social process because most of the collected data pertain only to the situation at one point in time, which may not be realistic (Blossfeld and Rower 2002).

### **Methods**

Logistic regression analysis is used because the dependent variable is a binary variable. We present odds ratios to reflect effects of independent variables. These express the magnitude of effect of each category of the independent variable relative to a reference category of that variable. Reference categories are presented in the first column of table 3 and all have the value of 1.00. An odds ratio significantly greater than 1.00 denotes a positive effect of a particular variable category on condom use. A value less than 1.00 means a negative effect. Coefficients are adjusted for clustering-effects (i.e. correction for intra-class correlation) because often the data of more than one woman of the same household are included in the analysis. Clustering effects impinge on statistical significance of model coefficients through increased standard errors.

Principle Component Analysis (PCA) was used to construct a wealth index using household information on ownership of a radio, TV, refrigerator, bicycle, car/truck, telephone, mosquito nets, availability of amenities in the household such as electricity, solar power, type of water supply, type of sanitation, and the quality of the house. The methodology of constructing a wealth index using information on households assets and amenities is described by Bollen *et al.* (2002), Filmer and Pritchett (1999, 2001), and Ruthstein and Johnson (2004).

ZDHS collected information on the ability of the household to provide enough daily food to its members, so it was possible to examine the plausibility of the wealth status index by cross-tabulating food provisioning ability and household wealth status. The results (data not shown)



confirm the *a priori* expectation that households with a higher wealth status will be in a better position to provide enough daily food to its members than less endowed households.

Building on the intercorrelation between four decision-making variables we also applied the above methodology to derive an index that reflects the degree of participation in decision making in family matters, health and reproduction. The four decision making variables underlying the index are (1) the extent of participation in decision making in the purchase of major household items, (2) on woman's own health, (3) on number of children to have, and (4) on whether and when to visit relatives and friends. The plausibility of the participation-in-decision-making index was examined by cross-tabulating level of education and extent of participation in decision making. The results (data not shown) confirming the *a priori* expectation that higher levels of education are associated with higher levels of participation in decision making. Therefore, it is plausible to conclude that both indices measure what they intend to measure.

#### *The dependent variable*

Information on condom use is obtained from a question on whether or not the respondent used a male or female condom in the last sexual engagement during the 12 months period before the interview. The dependent variable is a binary variable, that is, whether or not a *condom was used in the last sexual engagement* in that reference period.

#### *The independent variables*

Except for the variables number of sexual partners, age and duration of marriage, all independent variables are nominal or ordinal scale variables consisting of two or more categories. *Province of residence* is included to reflect spatial variation in condom use, in particular between predominantly rural (e.g. Eastern, Western) provinces and highly urbanized provinces (e.g. Copperbelt, Lusaka provinces). In Zambia, availability of reproductive health services, including the availability of condoms, varies considerably, so that condom non-use may be simply explained by non-availability, which is of particularly importance in remote areas in rural areas. *Regarding ethnic affiliation* the main seven of the 73 Zambian ethnic groups are explicitly included in the analysis whereas the remaining are grouped together to constitute the reference group.

As information on income, consumption and expenditure data is absent in ZDHS, a *wealth status* index was constructed, using information on household assets, amenities and housing quality (see above).

ZDHS collected information on *gender and sexual networks*. The derived decision-making index, described above, divides respondents in three categories: those who fully participate in decision making on family matters, those who only participate in some types of decisions, and those who do not participate at all in decision making. The variable *acceptance of wife beating, should she refuse sex* was included to reflect another dimension of gender: the quality of relations between spouses or partners. It is expected that women who fully participate and who do not accept 'wife beating' are the ones most likely to practice safe sex. Two variables were included to reflect sexual networking, that is: *number of different sex partners in the past 12 months* and *type of relationship with the most recent sex partner* (i.e. spouse or cohabiting partner, fiancée or regular friend, and casual partner). It is expected that the probability of condom use is higher if a woman has more than one sexual partner and if the relationship to the person is more of a casual nature as compared to the spouse or fiancée.

The importance and expected effects of demographic and socio-economic characteristics of persons was already discussed and we included the following variables: age, marital status, duration of marriage, highest level of education attained, and current (paid) working status.

The survey collected proxy information on the determinants of health behaviour according to the HBM model. The concept of 'perceived severity' is not included in the analysis because almost all respondents report to know about the health threat of HIV/AIDS (CSO 2003), so it will not add to the explanation of condom use. The variable *knows that condom use helps to prevent HIV infection* (viz. does not know) was included to measure effect of the HBM concept 'perceived benefit'. The expectation is that such knowledge is associated with a higher probability of condom use. The variable *perceived risk of becoming infected with the HIV virus* (i.e. small, medium, high risk viz. no risk at all) is included to measure the effect of the HBM construct 'perceived susceptibility'. HBM suggests that as risk perceptions increase we should expect higher condom use probabilities. Two variables are included as indicators 'perceived self-efficacy': (1) knowledge about where to get condoms and whether condoms can be obtained, if wanted, and (2) perceived capability to successfully negotiate condom use with a husband or partner. Social cognitive theory and HBM suggest that we may expect higher condom use probabilities when the capability to successfully negotiate condom is higher. These indicators are also part of the set of indicators to construct a HBM condom use self-efficacy scale (see: Lux and Petosa 1992, Jerusalem and Schwarz 1994).

## RESULTS

### Descriptive analysis

Below we start out with a general description of the study population of women in terms of model variables and we conclude by showing how the wealth and decision making indices relate to indicators of HIV/AIDS, including condom use at the time of the last sexual engagement.

Of all Zambian women in the age range 15-49 years old, 88.2 per cent ever had sex in their life while 74.1 per cent had sex in the 12 months period before the survey and 69.7 per cent, our study population, had sex in that period for reasons other than becoming pregnant. Besides the desire to become pregnant main other reasons for non use are: condoms not available (23.4 per cent); male partner refused (17.5 per cent); male partner is trusted not to be infected with HIV (11.4 per cent); and respondent used another family planning method (12.5 per cent).

Table 1 presents the characteristics of the study population in terms of the model variables. Overall condom use at the time of the last sexual engagement is about 13 per cent but it varies considerably in different marital status groups. Condom use was highest among the never married women, about one in three, and was about one in four among formerly married women. Considerably fewer married women used a condom at that occasion, only about one in thirteen, and when they had sex for reasons other than becoming pregnant. Such married women are thus vulnerable to HIV infection if they are monogamous and their spouses periodically engage in risky sexual engagements with other women. Some bias is present in these results because marital status is measured at the time of the survey and not at the time of the last sexual engagement, so a woman may have been unmarried at the time of her last sexual engagement whereas she was married at the time of the interview.

Table 1. Characteristics of the study population by their marital status

Model variables (weighted percentages and means)		Never Married	Currently Married	Formerly Married	Total
N (weighted)		610	4194	486	5290
N (%)		12	79	9	100
Condom use in last sexual engagement		34	8	23	13
<b>Household context</b>					
Province	Luapula	5	9	7	8
	Northern	8	14	9	13
	Eastern	7	14	8	12
	Lusaka	18	14	14	14
	Central	7	8	8	8
	Copperbelt	19	19	19	19
	Southern	14	11	14	12
	Western	16	7	15	9
	North-Western	7	5	7	5
Ethnic affiliation	Bemba	17	20	18	19
	Tonga	13	13	11	13
	Lozi	10	6	8	6
	Chewa	4	7	5	7
	Kaonde	3	3	4	3
	Lunda	3	2	3	3
	Nsenga	6	5	6	5
	Other ethnic groups	43	45	45	45
<b>Household wealth</b>					
Wealth status	Poorest	19	20	27	20
	Low middle	13	19	15	18
	Middle	17	22	18	21
	Middle high	23	20	25	21
	Richest 20%	28	20	15	20
<b>Gender and sexual networks</b>					
Decision making	Full participation	24	31	65	33
	Intermediate	38	33	26	33
	No participation	38	36	9	34
Wife beating	Wrong, even if she refuses sex	53	48	47	48
Sex partners	Mean number	1.08	1.01	1.08	1.03
Relation to last sex partner	Cohabiting partner/spouse		99.6	45	83
	Fiancee/steady boy friend	94	0.3	50	16
	Casual partner	6	0.1	6	1
<b>Demographic/socioeconomic variables</b>					
Age	Mean age	20	30	30	29
Marriage duration	Mean duration of marriage		12	12	11
Education	No education	4	14	15	13
	Incomplete primary	33	41	38	40
	Complete primary	17	21	22	20
	Incomplete secondary	33	20	22	21
	Complete secondary	8	2	2	3
	Higher education	6	3	2	3
Working status	Currently working	44	60	67	58
<b>Psychosocial variables</b>					
Knowledge	Condoms help preventing HIV	75	69	74	71
HIV risk perception	Not at risk	29	25	20	25
	Small risk	23	17	14	17
	Moderate risk	25	29	34	29
	High risk	22	29	33	29
Access to condoms	No access	18	19	18	19
	Access, but can't obtain condoms	30	30	28	30
	Access and can get condoms	52	51	53	51
Self efficacy	Successfully discusses condom use	80	67	75	69

Other main features of the study population are that, regarding household wealth, formerly married women are overrepresented in the poorer segment of the society, which is in line with what we expect to find, given the economic weak position of widows and divorced women in Zambia.

Regarding gender and sexual networks characteristics, about two third of the formerly married women fully participate in decision making on household, health and reproduction. In spite of the fact that married women are about 10 years older than never married women, their participation in household decision making does not seem to be higher, which underlines the general weak position of women once they are married. The fact that one in two women, irrespective of their marital status, agree that wife beating is acceptable if a woman refuses sex, may be a pointer to the socialisation of women in which they find it more or less acceptable not to refuse sex to a partner, in particular within marriage. About seven per cent of the never and formerly married women mentioned that they had more than one sex partner in the past year, while this is only one per cent only among married women, suggesting that the majority of married women are essentially monogamous. There may be a bias here as a question on number of sex partners is prone to underreporting. Not surprisingly, almost all married women reported that their last sex partner was their spouse. Never married and formerly married women though more often report to have had sex with a casual partner (i.e. 6 per cent).

Regarding their demographic and socioeconomic characteristics main features of the women are their low level of education of women, as more than half of the married and formerly married women do not have any education at all or dropped out at primary school level. HIV/AIDS programmes therefore have the difficult task to develop IEC messages and choose appropriate channels of communication to reach an audience with a very low level of education. Table 1 also shows that most Zambian women work for pay and that this is more often the case among married and formerly married women than among never married women.

Regarding psychosocial characteristics, about three out of four women know that condoms help to protect against HIV infection, though married women less often know this. Moreover, half of the married women and two thirds of the formerly married women perceive that they have an intermediate to high risk of becoming infected, which seems to suggest that they are afraid of becoming infected by a husband or cohabiting partner, as the great majority of married women say that only have sex with their spouse. It is somewhat disturbing to note that almost half of the women mention that they do not know where to get condoms or, if they do, that they are aware of actual obstacles to get condoms (e.g. out of stock, shame). The data on condom self-efficacy confirm that many women, once married, seem to loose influence over their lives and sexual health as only two third of the married women think that they can bring up the issue of condom use with their partner and make him use condoms.

In the introduction, it was argued that higher HIV infection rates of women are, among others, attributable to poverty. Table 2 shows how various safe sex related indicators vary by household wealth status. Almost all women heard about HIV/AIDS, irrespective of their wealth status, but regarding knowledge about the preventive effect of condoms, exposure to radio messages, requesting condom use to a partner, condom use in last sexual engagement, women in poorer households are clearly in a disadvantaged position.

The frequency distribution of household characteristics that were used to construct the wealth index (data not shown) shows that, overall, Zambian households are poorly endowed. For instance, only 39 percent of the households own a radio and 15 percent a TV. Table 2 shows that majority of the poor never even listen to the radio. This poses limits to HIV/AIDS programs using the mass media. Similarly, a great majority of Zambians lack their own means of transportation and, in areas with limited or costly public transportation, this means that distances that can be travelled to reach health and family planning centres are limited.

*Table 2. Selected indicators of safe-sex behaviour of women who live in households with a different wealth status.*

	Poorest 20%	Second quintile	Middle group	Fourth quintile	Richest 20%	Total
Ever heard of HIV/AIDS	99	99	100	100	100	99
Knows condom use helps preventing HIV infection	56	62	72	78	82	70
Never listens to the radio	76	58	41	24	11	44
Can talk to/ask partner to use condoms	62	63	66	73	80	68
Can get condom, if wanted	59	58	62	66	70	63
In last intercourse in past 12 months, used condom	8	8	12	17	18	13
Perceives to be at risk of HIV infection	77	72	74	76	78	75

It was also argued that gender and sexual networks are positively associated with condom use. The derived decision making index indeed confirms this expectation. Table 3 shows that participation in decision-making in household, health and reproduction matters is positively related to education, which can be expected, so that finding confirms the plausibility of this index. Moreover, the table shows that women who fully or partially participate in this kind of decision making more often know about the HIV preventive effect of condoms, more often know how to obtain them and more often use them than women who do not participate at all in such type of decision making.

*Table 3. Percentage of the study population with safe sex related characteristics and their level of participation in household decision making*

	Full Participation	Intermediate	No participation	Total
Secondary education or higher	33	28	20	27
Knows condom use helps preventing HIV infection	72	71	66	68
Can get condom, if wanted	66	65	60	63
In last intercourse in past 12 months, used condom	15	14	10	13

## Multivariate analysis

In this subsection we examine gross and net effects of four main groups of variables on the probability of condom use, for all women and for different marital status groups. The main task here is to examine the contribution of groups of determinants to the explanation of safe sex behaviour, i.e. condom use, and what the particular effects of selected determinants are, that is, poverty (i.e. wealth status), gender and sexual networks, and psychosocial characteristics. We are particularly interested in examining this for different marital status groups.

Results are presented in table 4. Gross effects represent the effect of variables without considering the effects of the other variables in the model whereas net effects do take account of them. As the dependent is a binary variable, we use Nagelkerke's R-square statistic to estimate how much variation of the dependent is explained by a group of variables in the model. Table 4 reports, in percentages, the gross and net contribution of groups of variables to the explanation of variation in condom use. The column of gross effects in the general study population shows that all proposed model variables are relevant and all but one (i.e. HIV risk perceptions) show effects in the predicted direction.

We will first discuss the gross and net contributions of groups of variables and then proceed with a discussion of the gross and net effects of individual variables.

In the bottom of the table it is shown that, for all women, irrespective of their marital status, all main groups of variables contribute significantly to the explanation of variation in condom use, although the magnitude of group effects clearly vary by marital status group. The gross contribution of the group of gender and sexual networks variables (13.6 per cent) and the group of demographic/socioeconomic status variables (15.4 per cent) are the largest. However, when we examine group contributions (i.e. *net* contributions) while taking account of the contribution that other groups of variables make, the picture changes as the context variables (7.0 percent) and psychosocial variables (3.5 per cent) now show the largest contribution in the explanation of condom use.

The above change between gross and net contributions of groups of variables is a pointer to variation that may exist between marital status categories regarding the relative importance of different groups of variables to the explanation of condom use. This is confirmed by the fact that the gross effect odds ratios of the marital status variable 'Currently married' (0.17) and 'Formerly married' (0.60) in the 'All women' column are statistically significantly different from 1.00. Moreover, interaction effects (data not shown) between these marital status categories and many of the other variables in the model also appear to be statistically significant. This means that *levels as well as patterns* of effects of (groups of) model variables are different in the subgroups of never married, currently married and formerly married women, and that the rank order of importance of each group of variables will also differ in each of these marital status subgroups of women. The latter can be verified in the bottom part of the table by ranking the gross and net percentages of total variance explained by these five groups of variables.

When gross contributions are looked at, context and demographic/socioeconomic status variables are most important for the explanation of condom use of never married women, context and psychosocial variables are most important among currently married women, and context and gender variables among formerly married women.

Table 4. Effects of context, interpersonal and person level variables on probability of condom use in the last sexual engagement (odds ratios)

Explanatory variables		All women		Never married		Currently married		Formerly married		
		Gross	Net	Gross	Net	Gross	Net	Gross	Net	
<b>Context</b>										
<i>Eastern</i>	Luapula	0.28 **	0.34 **	0.17 **	0.23 †	0.21 **	0.32 *	0.93	0.89	
	Northern	0.85	1.22	0.51	0.60	0.94	1.62 †	0.98	1.21	
	Lusaka	2.51 **	1.53 *	1.51	1.25	2.12 **	1.70 *	4.32 **	1.85	
	Central	0.90	0.83	0.29 *	0.31 *	0.79	0.90	2.90 †	3.90 †	
	Copperbelt	1.15	0.79	0.94	0.81	0.64 †	0.57 †	3.23 *	2.79	
	Southern	0.99	0.89	0.71	0.99	0.57 *	0.74	1.79	2.07	
	Western	0.93	0.75	0.32 **	0.90	0.80	0.93	0.86	0.80	
	North-Western	5.65 **	18.13 **	1.50	3.19 †	6.98 **	37.42 **	4.67 **	7.49 *	
	<i>Other Ethnic</i>	Bemba	0.98	0.97	1.52 †	1.53	0.76 †	0.78	1.53	2.33 *
		Tonga	0.75 *	0.72 †	1.17	0.81	0.61 *	0.79	0.63	0.59
Lozi		1.27	1.03	0.90	0.61	1.04	1.13	1.57	3.49 *	
Chewa		0.96	1.07	1.67	1.70	0.98	1.04	1.05	0.91	
Kaonde		0.97	0.11 **	0.73	0.29 †	0.94	0.07 **	1.12	0.42	
Lunda		1.85 **	0.21 **	1.79	0.94	1.84 *	0.11 **	1.37	0.83	
Nsenga		1.39 †	1.11	1.97 *	1.04	1.40	1.40	0.31 †	0.80	
<b>Household wealth</b>										
<i>Poorest</i>	Low middle	1.05	1.07	0.93	0.79	1.13	1.01	1.42	1.28	
	Middle	1.58 **	1.73 **	2.33 **	1.84	1.34	1.51 †	3.19 **	2.93 *	
	Middle high	2.35 **	1.63 **	3.47 **	1.96 †	1.52 **	1.23	5.92 **	4.03 **	
	Richest	2.47 **	1.60 *	3.81 **	1.35	1.88 **	1.87 *	3.35 **	1.34	
<b>Gender and sexual networks</b>										
<i>No particip.</i>	Intermediate	1.28 *	1.02	1.00	0.99	1.35 *	1.21	1.10	0.51	
	Full participation	1.42 **	0.90	0.73	0.45 *	1.68 **	1.06	1.21	0.57	
<i>Beating o.k.</i>	Wife-beating is wrong	1.56 **	1.19 †	1.82 **	1.41	1.43 **	1.16	1.57 *	1.57	
	Number of sexpartners	1.86 **	1.20	1.09	1.52	0.72	0.49	1.32	1.42	
<i>Casual partner</i>	Cohab. partner/spouse	0.30 **	0.24 **			0.14 †	0.06 *	0.31 *	0.19 **	
	Fiancee/boyfriend	1.85 *	1.22	2.36	1.70	0.81	0.30	1.49	1.33	
<b>Demographic/socioeconomic status</b>										
<i>Never married</i>	Age	0.94 **	1.00	1.07 **	1.06 *	0.96 **	0.99	0.98 †	0.96	
	Currently married	0.17 **	1.51							
	Formerly married	0.60 **	2.17 **							
<i>No schooling</i>	Duration of marriage	0.93 **	0.96 **			0.95 **	0.97 †	0.98 †	0.99	
	Incomplete primary	1.65 **	1.34	5.78 †	6.35 †	1.49 †	1.54	1.29	0.65	
	Complete primary	1.99 **	1.25	11.65 **	8.67 *	1.43	1.22	1.94	0.63	
	Incomplete secondary	3.70 **	1.75 **	19.16 **	13.98 **	2.08 **	1.41	4.35 **	1.48	
	Complete secondary	5.53 **	1.88 *	24.18 **	14.08 *	2.39 *	1.11	9.08 **	3.07	
<i>Not working</i>	Higher education	6.29 **	2.68 **	37.80 **	19.69 **	3.71 **	2.00 †	5.05 *	2.70	
	Currently working	0.69 **	0.99	0.66 *	1.03	0.70 **	0.88	1.26	1.30	
<b>Psychosocial status</b>										
<i>Doesn't know</i>	Condoms prevents HIV	2.10 **	1.21	2.06 **	0.97	1.88 **	1.19	2.80 **	1.16	
	No access	2.18 **	1.85 **	2.36 **	1.40	1.87 **	1.86 *	3.97 **	3.59 *	
<i>No HIV risk</i>	Knows where, can't get	4.02 **	1.84 **	3.61 **	1.75	4.08 **	2.06 **	7.44 **	1.95	
	Small risk	1.04	0.94	0.88	0.91	1.08	1.01	0.91	0.80	
	Moderate risk	0.65 **	0.74 *	0.51 **	0.61 †	0.70 **	0.86	0.76	0.44 *	
<i>Can't negotiate</i>	High risk	0.54 **	0.63 **	0.54 **	0.60 †	0.48 **	0.61 **	0.83	0.58	
	Negotiates condom use	4.66 **	2.98 **	4.20 **	2.18 *	3.72 **	2.94 **	8.03 **	7.17 **	
<i>N (weighted cases)</i>		5290		610		4194		486		
<i>Percent of total variance in dependent explained by: (i.e. Nagelkerke R<sup>2</sup>)</i>										
- Context		10.6	7.0	12.3	5.2	13.8	12.3	15.8	5.5	
- Household wealth		2.8	0.5	9.1	1.5	0.8	0.5	11.2	3.1	
- Gender and sexual relations		13.6	1.5	4.9	2.2	1.7	0.6	13.6	9.8	
- Demographic/socioeconomic status		15.4	1.8	14.9	5.4	4.0	2.0	10.3	3.9	
- Psychosocial status		9.9	3.5	11.5	3.7	7.7	4.1	18.0	5.4	
- All groups			30.2		29.1		23.1		44.1	

Note: \*\*, \*, † =significant at 1%, 5% and 10% level, respectively. Model constants not reported

When net effects are looked at the picture remains the same for never married and currently married but alters for formerly married women.

If we control for the effect of variables in other groups, the gender/sexual relation variables (9.8 per cent) and context variables (5.5 per cent) become most important to the explanation of condom use of formerly married women. It should be noted here that the group of currently married women constitute about 80 percent (i.e.  $4194/5290=79.3$ ) of the study population so that the relative importance of groups of variables and patterns of effects of variables in the general study population to a large extent reflect the level and pattern of effects in the sub-group of currently married women. For this large sub-group of currently married women, wealth status, characteristics of gender and sexual networks as well as socioeconomic and demographic characteristics, including education, contributes much less to the explanation of their condom use than contextual factors (i.e. ethnic group membership and province of residence) and psychosocial factors do (i.e. notably condom self efficacy and access to condoms).

Although the gross and net contribution of household wealth status to the explanation of condom use in the general study population seems modest (i.e. 2.8 per cent and 0.5 per cent, respectively), wealth status is more important to the explanation of condom use of never married women (i.e. 9.1 per cent and 1.5 per cent) and formerly married women (11.2 percent and 3.1 per cent) than to the explanation of condom use of currently married women (0.8 percent and 0.5 per cent).

Overall, table 4 shows that, for all women, the model variables together explain a fair amount of variation in condom use (i.e. 30.2 per cent), but this constellation of variables does much better in explaining condom use of formerly married women (i.e. 44.1 per cent) than it does for never married (29.1 per cent) and currently married women (23.1 per cent).

We now turn to a discussion of the effects of individual model variables with particular attention to their effects in different marital status groups.

Provinces and ethnic groups vary considerably regarding condom use. Compared to Eastern province, women in Luapula and Central province are the least likely to have used condoms in their last sexual engagement, in particular if they belong to the group of never married or currently married women. Women in the provinces of Lusaka and North-Western province are the ones most likely to have used condoms, notably if they are married or formerly married women. As compared to other ethnic groups, women of the Kaonde ethnic group are the ones least likely to have used condoms in their last engagement, in particular if they belong to the subgroup of never married or currently married women.

Regarding the effect of household wealth status, table 4 shows that the poorer the household the less likely it is that women report condom use, irrespective of their marital status. This confirms what we expected. The discriminating effect of wealth status is largest in the sub group of formerly married women. The positive correlation between wealth status and woman's education is the main reason for the difference between gross and net effect of wealth status on condom use, in particular for the sub group of never married women. This means that women with low levels of education tend to be found in poorer households and the probability of condom use is lowest among the poor and uneducated women. An explanation for the remaining net effect of wealth status on condom use might be that condoms are more often out-of-stock in areas where the poor live as compared to the situation in areas where the



richer households live. Or, if the costs of condoms or the cost of travel to get them is perceived as a barrier, it will affect poorer households more than richer households.

Regarding the gender and sexual networks variables gross effects in the general study population all show significant effects and in the predicted direction. For example, women who fully participate in decision making on household, health and reproduction matters are the ones most likely to have used condoms, and the larger the number of sex partners in the past 12 months the higher the chance that a condom was used in the last engagement. Also, the chances of condom use are least likely if the last sex partner was a spouse or cohabiting partner. However, these gross effects of indicators of gender and sexual networks on condom use, in particular the one on decision-making, are significantly reduced and even neutralized, due to the effect of marital status on the one hand and level of education and wealth status of the household on the other hand. This is partly shown by the figures in table 4 as the positive (gross) effect that participation in decision-making has on condom use is only relevant within marriage. However, when level of education and wealth status enter the equation, the effect of the decision making variable is neutralized. Wealth status and education though are strongly positively correlated indicating that richer households have better educated women and better educated women are more likely to participate in decision making. This is consistent with reality as costs of education are a great burden to Zambian households in spite of government policies and programmes promoting free basic education for all. The *de facto* high costs of education explain school drop out and explain why so many Zambians do not complete their education (e.g.: see table 1 and Boyle et al. 2002),

Regarding the gross effects of demographic and socio-economic person level variables the results also confirm our expectations. In general, the older a woman is the least likely it is that she will have used condoms in sexual relations. The reverse seems the case among the never married women but this is due to the fact that the age range is between age 15 and the age at marriage. Within that age range it is plausible that older 'young women' are more likely to have used a condom than the youngest. The values of the odds ratios of the marital status variables in the gross effect column of 'All women' are considerably different from the odds ratio values in the net effects column. This is due to the fact that 'relationship-to-last-sex partner' variables have been included into the equation. These variables have a high correlation with marital status variables and neutralise their effect. This high correlation is illustrated by the fact that almost all married women state that their last sex partner was their spouse/cohabiting partner (see table 1). Duration of marriage indeed has a negative effect on condom use, in particular among currently married women. The discriminating (gross and net) positive effect of level education on condom use is most impressive among the never married women, most of whom are young, but less so among married and formerly married women, in particular when psychosocial variables are included in the equation. The aforementioned positive correlation between household wealth and level of education is of particular importance to the explanation of why the net effect of education among formerly married and currently married women disappears. Thus, in wealthier households women generally have higher levels of education. The finding that women who engage in paid work are less likely to have used a condom lends support to those who argue that if women are involved in subordinate type of work they may more often be exposed to adverse gender relations and unsolicited exposure to (unprotected) sex.

All but one of four psychosocial characteristics show statistically significant gross effects in the expected direction and irrespective of marital status. Knowledge about the HIV preventive effect of condoms significantly contributes to condom use as those who have this knowledge

are more likely to use condoms than those who have not. However, contrary to expectation is that higher risk perceptions are associated with lower condom use. The self-efficacy variables 'access to condoms' and 'capability to negotiate condom use' (i.e. self-efficacy) show (very) strong positive effects on condom use, which is according to expectations. For instance, married women who perceive to be successful negotiators in sexual engagements when it comes to condom use are three times (i.e. odds ratio is 2.94) more likely to have used condoms than those who feel that they can't negotiate condom use. The net effects of these psychosocial determinants of condom use in the general study population are only somewhat smaller. Among never married women, the correlation between educational attainment and the HBM 'perceived benefit' variable 'knowledge that condoms help to prevent HIV infection' explains why the net effect of the latter disappears. In the subgroups of currently married women and formerly married women, it is only after incorporation of province of residence (after education has entered the equation) that the effect of the effect of this knowledge variable is neutralised. Indeed, ZDHS data pertaining to married and formerly married women only shows that the proportion of women with knowledge that condoms help to prevent HIV/AIDS transmission varies widely across provinces from as low as 48 per cent among such women in Western province and about 60 per cent in Central and Northern provinces to as high as 82 per cent in Lusaka province.

## **Discussion**

In Zambia, HIV infection rates are high and nearly half of the women consider themselves to be at moderate to high risk of HIV infection. However, knowledge about the HIV protective effect of condoms among women is still insufficient, varies widely across the country and condom use rates are low, especially among married couples who have sex for reasons other than aiming for a pregnancy. Contrary to the practice in most studies on condom use, we examined to what extent contextual, gender and sexual networks, socioeconomic and demographic, and psychosocial factors explain safe-sex behaviour of women who belong to different marital status groups. We focussed on the analysis of safe sex behaviour at the time of the last sexual engagement in the 12 months period before women were interviewed and on sexual engagements that took place for reasons other than becoming pregnant. We were particularly interested in the effects of poverty, gender, and psychosocial characteristics and in finding out whether these effects vary in different marital status groups.

Regarding poverty, we found an inverse relationship between household wealth status and condom use. After taking account of other contextual, interpersonal and personal level factors, wealth status still shows significant effects on condom use in all marital status groups, but the contribution of wealth status to the explanation of condom use is highest in the subgroup of formerly married women. This remaining significant effect of wealth status may be explained by other factors not included in the modeling, such as the local availability of condoms or the cost of transportation to get them.

Regarding gender and sexual relation variables, we found that women who fully participate in decision making on household, family and reproduction matters, and who reject wife beating, are the ones most likely to practice safe sex. The role of this group of variables was found to be most important for the explanation of condom use of formerly married women, and much less so for currently married women. Full participation in decision making depends on level of education women and wealth status of the household, whereby the latter two variables are positively correlated so that full participation is furthered by level of education, while level of

education is likely to be furthered by the wealth status of households. In other words, poverty is associated with low levels of education and low levels of decision making and, ultimately, with low knowledge levels on the HIV protective effect of condoms and condom use, in particular within marriage.

Regarding psychosocial factors, we found that all but one has significant effects and, all but one, in the expected direction. The contribution of this group of characteristics to the explanation of condom use is most noticeable in the subgroup of currently married women. Condom self-efficacy stands out as an important factor in all marital status groups though its discriminating effect is highest among formerly married women. Contrary to expectation is the finding, in all marital status groups, of a negative relation between risk perceptions and condom use. A tentative explanation might be 'reversed causation', that is: because a woman is aware of living in a high-risk environment and could not use condoms in her last sexual engagement, she mentions that she is at risk of becoming infected with HIV. This would indicate a gap between desired and actual condom use, i.e. an unmet need for condom use.

We would like to conclude with some recommendations for research and HIV/AIDS programs.

First, the results suggest that reflection is needed about the applicability of present health models, including HBM, for the explanation of condom use. The premise that background characteristics influence behaviour -at least largely- through the proximate determinants of perceptions of threat (susceptibility and severity), benefits versus barriers, and self-efficacy seems to be violated given the modest explanatory power of these psychosocial characteristics compared to the other type of characteristics. We suppose that this modest importance is related to issues of operationalisation and conceptualization. On the one hand, DHS data limitations prevent optimal operationalisation of HBM constructs, for instance regarding perceived self-efficacy and barriers to condom use. On the other hand, the specific concept of choice underlying present health models, such as HBM, may not be appropriate to explain condom use. Representation and combination of health-related considerations as postulated in the HBM and measured in survey questionnaires may reflect interpretation processes that differ from the actual situation in which behaviour is shaped. Processes of attention highlighting salient behavioural alternatives, consequences and means-end frameworks, simplified decision rules and confined reasoning (like in institutionalized and habitual behaviour) are often highly context-specific. Critics who subscribe to the principle of choice as a theory of behaviour argue, therefore, that the strong assumptions about procedures, comprehensiveness and consistency of decision making need to be relaxed, and that the decision environment must be adequately represented in a conceptual model (de Bruijn 1999, Esser 1993, Hargreaves Heap 1999, Levi and Cook 1990). This suggests that present health models should be adapted to encompass decision making processes that better reflect the structuring role of the socio-cultural, economic and life course context.

Second, analysis of both proximate and more distal factors of condom use, using DHS data, produce result that can be useful for the profiling of targets groups for HIV/AIDS programs. Preferably profiling should be done separately for women in different marital status groups. More specifically, target groups can be identified using characteristics that are more 'visible', such as geographical location, wealth status, marital status, if they show a high correlation with less 'visible' but more proximate determinants of behaviour, such as psychosocial characteristics (e.g. perceived self-efficacy). The latter are important for the content of behavioural change programs, but they are less practical when it comes to the identification

and selection of individuals who need to be exposed to such programs. For instance, in the case of Zambia, obvious target groups would be married women who live in Luapula province, women in poorer households, and women belonging to Lunda and Kaonde ethnic groups.

Third, our interpretation of the unexpected finding that higher risk-perceptions are associated with lower condom use suggests that HIV/AIDS programs need to (continue to) target men, by promoting equity and equality principles in family life. Such programs must be sensitive to cultural barriers to behavioural changes as most customary laws of ethnic groups essentially promote gender inequity and make the husband-wife bond subordinate to the bond of each spouse with male kin of their matrilineal extended family. Currently, women constitute a special 'vulnerable group' as they perceive that they are not really in control of protection against HIV infection, in particular within marriage. It is acknowledged that empowering women within marriage, the extended family and wider community is by necessity part of a dialectic process. Their empowerment can only lead to safe-sex practices if men are also empowered, by dealing with their misconceptions about HIV transmission, as other studies showed, and by gaining their interest and support for healthy sexual practices. In addition, efforts could be stepped up for the promotion of a positive image of condom use as a legitimate and intelligent means of protection against a deadly virus.

Fourth, the poorer segments in the society cannot properly be reached with IEC messages, such as radio, TV or newspapers, as only few households own a radio and a TV so that about 70 percent of the women in the poorest households never even listen to a radio or watch TV. It seems that HIV/AIDS programs should focus more on the sensitization and training of village level gatekeepers, health extension workers, and schoolteachers. Some of these persons could be important as role model and change agent in their community regarding sexual and reproductive health norms and behaviour.

Fifth, the results of the analysis suggests that significant gains can be made in condom use and safe-sex behaviour if persons attain higher levels of education, so that general development programs should continue to put efforts in increasing people's education, preferably within the context of poverty alleviation programmes.

Sixth, follow-up research should include men into the analysis, or focus entirely on couples, to uncover common features and differences leading to the identification of possible avenues of behavioural change. Other types of sexual health research could focus on elements of the socio-cultural environment such as intra- and inter family bonds, loyalties, obligations, decision making processes, barriers and channels to behavioural change. We found that context variables, such as province of residence and ethnic group, are important dimensions of safe sex behaviour as substantial differences exist in condom use in different provinces and ethnic groups, which points to the need for more research on how cultural characteristics contribute to high or low condom use in different parts of Zambia.

## **Endnotes**

- a. The general and specific beliefs that people have about their capabilities to organize and implement particular actions to attain designated types of behaviour (Bandura 1977).
- b. Versus behavioural change theories such as Aids Risk Reduction Model (Catania et al. 1990), Health Action Process Approach (Schwarzer 1992).

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