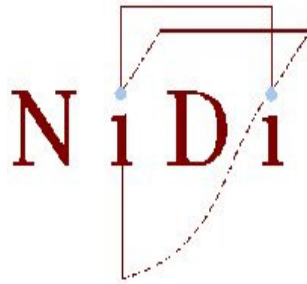# Gender and the Role of Men in Reproductive Health:

Applications in studies on
HIV Sexual Risk-behaviour in Zambia,
Safe Motherhood in Nepal

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Ronald Horstman
Bart de Bruijn

N i D i

Foreword

Gender aspects of reproductive health received increased attention since the 1994 International Conference on Population and Development (ICPD) in Cairo. Within the framework of the HERA programme, NIDI has been engaged in research addressing gender and sexual and reproductive health with particular attention to the role of men. The present report presents research carried out in 2003, within the framework of a target-subsidy arrangement between the Ministry of Foreign Affairs/Development Cooperation and NIDI.

The report consists of three chapters. In the first chapter, Bart de Bruijn provides a general framework for the subsequent studies on HIV sexual risk behaviour in Zambia and safe motherhood in Nepal in relation to gender issues and specifically the role of men. It gives a brief overview of the field of male involvement and its development into a new policy area during the last decade. Subsequently, it expounds the theoretical frame of reference that underlies the studies in this report and, more in general, the reproductive health research programme of HERA.

In the second chapter, George Groenewold explores poverty, gender and psychosocial dimensions of sexual risk behaviour in Zambia, using nationally representative survey data. Main findings are that women in the poorest households are least likely to practice safe sex and that effects of gender are mediated by other variables, such as educational attainment, marital status transitions and perceived behavioural control. Moreover, women with higher HIV risk perceptions are less likely to practice safe sex, which seems paradoxical. However, this finding may actually reflect a sense of lack of women's self-efficacy in negotiating safe sex. Women appear as the most disadvantaged and vulnerable group, but the resolve of this situation depends much on the success of programs to change men's sexual behaviour.

In chapter three, Ronald Horstman examines the role of husbands in maternal health in Morang district, Nepal. Using both qualitative and quantitative data, he examines the prevalence and determinants of husband's involvement in the prevention of and response to maternal ill health. Main findings are that husbands, if available, play a modest role in preventive tasks, but play a crucial role in responsive actions. Main factors that constrain men in preventive support are social pressure, an in-equal view on gender relations, lack of spousal communication and insufficient knowledge of maternal issues. Traditional health beliefs and lack of knowledge about obstetric danger signs hamper adequate responsive actions of husbands in cases of obstetric emergency.

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Chapter 1. Perspectives on men: the nexus of policy, theory and research

Bart de Bruijn

1.1 Introduction

In the last decade, attention to the role of men in reproductive health has dramatically increased. It is now widely recognised that men are key agents where a wide range of sexual and reproductive health practices is concerned. The field is still new and, despite fast developments, reveals many little explored areas. This report combines two studies covering different aspects of the male involvement theme, and contributes to filling presently existing research gaps. It also shows the convergence of the new approach to reproductive health signified by the 1994 ICPD in Cairo and a theoretical perspective that situates individual health behaviour in the broader context of life stages and a specific social environment. The first part of this paper is organised along these lines of attention. It commences with a brief overview of the field of male involvement and its development into a new policy area, and then proceeds with the theoretical considerations that guides research. These general reviews set the stage for the reports on two research activities, respectively addressing the relation between poverty, gender and HIV/AIDS risk behaviour in Zambia, and the role of men in safe motherhood in Nepal. The next section highlights the application of the theoretical perspective to these research topics within the policy framework of gender and men's involvement in reproductive health. The chapter is concluded with some general observations and reflections on the compilation of the three papers in this report.

1.2 Male involvement in the reproductive health debate

The attention to men's roles in the field of reproductive health distinguishes different areas, which are advocated from various interest backgrounds. One way in which the field is structured relates to the purpose of focussing attention on male involvement.

1. *Addressing the needs of men themselves*. There is a gender differentiation with regard to sexuality and reproductive health, which identifies men as a target group in its own right. This gender differentiation is reflected in men's and women's knowledge, perceptions, attitudes, goals and expectations, as well as in gender-specific health and sex education, and gender-specific needs for health services, including family planning and prevention, diagnosis and treatment of STIs (Alan Guttmacher Institute 2003). The male target group requires further differentiation, since men's needs and responsibilities change throughout stages in their life course.

2. *Addressing men as factor in the reproductive health of others*. In this respect, men's involvement can vary from strongly supportive to presenting barriers, to outright adversative to the health of these others.
   2a. *Men in their role of partner*. Men play an important role in the reproductive health of women, either within marriage or consensual union, or within sexual relations of casual or commercial nature. The involvement of men covers issues like avoiding unwanted pregnancies and the use of family planning methods, transmission of STIs (including HIV/AIDS), support in seeking care, gender-based violence, and power, communication and decision making in sexual and reproductive health matters.
   2b. *Men in their role of parent or caretaker*. The positive role of men may encompass the provision of information about reproductive health and sexuality, and of opportunities

to seek adequate care and counselling, especially for adolescents. In a more general sense, men as role models and by bringing up children play a crucial role in the formation of children's attitudes towards issues like gender equality, health and sexuality (UNICEF 1997).

3. *Men as service providers*. Men play important roles in health and education systems and NGO's, either as decision makers or as service providers and educators or counsellors. Especially in direct contact with clients, their contribution may critically depend on whether they service other men or women, adolescents and children.

It is only recently that the international debate and research agenda turned to the role of men in reproductive health. In the past, the focus was almost exclusively on women, and largely so because of their primacy in fertility and family planning, rather than in view of their own reproductive health needs (Presser 1997; Green and Biddlecom 2000). The increased attention to male involvement in the last decade can be attributed to several factors.

1. The 1994 ICPD marked a major shift in the mental framework on reproduction and emphasised the right and capability of people to choose freely and responsibly in the domain of reproductive health. It also highlighted the responsibility of men to be involved in family reproductive health, responsible parenthood and gender equality (United Nations 1994, paragraphs 4.24, 4.27, 7.8, 7.41).

2. The feminist perspective that gained ground – and also importantly fuelled the ICPD Programme of Action – accentuated the interests of women in reproductive health, but thereby also addressed the role played by men to realise reproductive wellbeing. This feminist thinking sparkled interest in the male perspective on reproductive health, which addresses men in their own right and which recognises that men's involvement often implies barriers and threats to the reproductive wellbeing of their partners, children and clients, but also can imply strong advocacy and support (Clark *et al*. 1999; Drennan 1998; Raju and Leonard 2000; UNFPA 1998). This, again, may have contributed to the shift in emphasis from 'women in development' to 'gender and development', which highlights the need to look at the dialectics and partnerships of women and men in a specific cultural and socio-economic context (Cleaver 2000; UNICEF 1997).

3. The urge for finding ways to stem the HIV/AIDS epidemic has drawn attention to the critical role of men. Transmission of the virus from men to women through unprotected sex is much more likely than vice versa (UNAIDS 1997). Risky behaviour, like having multiple partners without using condoms, and male dominance in sexual decision making are important reasons to target men in AIDS programmes and campaigns.

Despite the surge of interest in men's participation in the area of reproductive health, the field is not yet fully developed in the sense that there is common agreement about major concepts and a satisfying understanding of the determinants of specific male behaviour. Neither is it clear how gender relations, couples' decisions and male involvement work out in specific contexts and affect sexual and reproductive behaviour of men and women (Drennan 1998, p. 19; Green and Biddlecom 2000, p. 86; UNFPA 2000, p. 45). Small-scale studies and a few larger programmes in this area have been initiated and positive developments include the development and implementation of male modules in the latest DHS round, but research is still fragmented and results remain inconclusive. This is why the field calls for additional information from both basic and operational research. Priority areas that are mentioned include the better understanding of men's attitudes and perceptions on gender issues and reproductive health; more contextual depth to embed men's behaviour; and a conceptual perspective that relates people's roles, needs and perceptions to the stages in their life course (Alan Guttmacher Institute 2003; Cleaver 2000; UNFPA 2000, p. 75, 164; UNICEF 1997, p. 27).

1.3. Theoretical framework for studies in reproductive health

The general theoretical perspective that underlies this paper is drawn from the process-context approach developed by de Willekens (1990) and de Bruijn (1999). This approach integrates three basic conceptual components that are firmly grounded in social and psychological theory: choice, process and context. It presents an interpretative framework for the research agenda of HERA[1] and aims at the full understanding of the mechanisms involved in people's behaviour in a specific environment. This feature provides the scientific underpinning of behavioural interventions that is called for in the field of reproductive health (e.g. ESCAP 1993; UNFPA 2000; World Bank 1992), as well as the effective means to translate research results into action.

The 1994 ICPD and the process-context approach tread common ground as both adopt the perspective of the individual as point of departure. Where the ICPD articulates this in ideological terms in the sense that individuals should have the freedom to choose in matters of reproductive health, the process-context approach takes people's ability to make decisions based on rational considerations as its core assumption about human behaviour (Willekens 1992; de Bruijn 1999). The concept of choice that is applied here does not forcibly compress people's behaviour into the confines of objectified rationality, which leaves much behaviour incomprehensible to the outsider. Rather, it provides a tool to identify the decision frame on which people in reality act, which includes motivation, representations and self-efficacy that are produced in situation and time-bound processes of construction (Bandura 1977a, 1977b, 1991; de Bruijn 1999; Elster 1984; Rokeach 1973; Simon 1978). This approach allows for the subjective colouring, imperfections and constraints that affect people's decisions and performance. This conceptualisation of choice is seen as the principle mechanism to understand individual behaviour and provides the framework to capture the processes through which the societal context affects behaviour. Thereby, it also provides the appropriate framework to identify effective ways to influence adverse outcomes of behaviour at individual and societal levels (cf. Arrow 1994; de Bruijn 1999; Coleman 1990; Friedman and Hechter 1988). In the field of reproductive health, several theoretical models associated with this concept of choice have been applied, although less so in developing countries than in developed countries. These include, for instance the different versions of Fishbein and Ajzen's behaviour models (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980; Ajzen 1991), the Health Belief Model (Becker 1974; Rosenstock et al. 1994) and Bandura's Social Cognitive Theory and especially his development of the concept of self-efficacy, which provides important extensions to the other approaches (Bandura 1977a, 1977b, 1982, 1986, 1991).

The process-context approach explicitly acknowledges that individual behaviour is decisively located in a social environment, which captures cultural, political, legal and economic aspects. This contextual dimension is perceived as a fabric of social institutions that provide solutions to recurrent problems of individual action and interaction and encompass underlying structures of social knowledge (Eisenstadt 1968; Giddens 1984; Langlois 1986; Schotter 1981). Such institutions can be more or less formalised and, for instance, refer to legislation, family planning programmes, kinship, marriage and gender-systems, and modes of production (e.g. Boserup 1970; Cain 1989; Caldwell and Caldwell 1987; Hull 1987; Lesthaeghe and Wilson 1986; Lesthaeghe and Surkyn 1988; Mason 1987, 1989; McNicoll 1994; McNicoll and Cain 1990). Cognitive traditions in behavioural sciences[2] recognise that these social institutions provide people – depending on their position in society – with the mental schemes

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[1] HEalthy Reproduction: Research for Action; the collaboration between the Population Research Centre, Groningen and the Netherlands Interdisciplinary Demographic Institute.

[2] In this respect, substantial conversion of ideas can be observed in cognitive schools in sociology, anthropology, psychology and economics (e.g. Archer 1996; Arrow 1994; Bandura 1986; Berger and Luckman 1967; de Bruijn 1999; Burns and Flam 1987; D'Andrade 1995)

that generate decision components like motivation, representations and efficacy (de Bruijn 1999; cf. Hutter and Ramesh 2003). The task of contextual analysis, therefore, is to identify the relevant social institutions in a specific situation, together with any associated enforcement mechanisms, and determine how they give meaning and guidance to behaviour.

The second dimension in which the process-context approach embeds individual behaviour is time, represented in the concept of the life course. This acknowledges that people are in a continuous process of development and that this development process takes them through different life stages, which imply different needs, expectations, constraints and opportunities (Levinson et al. 1978; Willekens 1991). The restructuring of people's mental schemes that is associated with stages of development is influenced and fuelled by social institutions, but also by individual cumulative life experiences in previous stages, which provides additional understanding of behaviour (Matsuo 2003; Mayer and Tuma 1990; Sugarman 1986).

The interpretative framework of de Bruijn (1999; see Annex) provides an example of a holistic and coherent perspective for the study of fertility and reproductive health, encompassing individual behaviour, the social context and life course development. Adjustments of this framework to specific research topics gives a frame of reference for studies in the field of reproductive health. The framework expresses the impact of the social environment on individual considerations, behaviour and (health) outcomes, which again underlie outcomes at the societal level. The structural relations suggested in this framework can be substantiated and understood by a combination of quantitative and qualitative research methods (de Bruijn 1999, p. 139, 247; cf. Boerma 1996; Greenhalgh 1995; Obermeyer 1997), which is one of the key characteristics of HERA research (Hutter 1998).
No study, however, can effectively cover all possible dimensions of such an encompassive perspective (cf. UNFPA 1998, p. 4). Research will focus on specific aspects of the model, depending on the research topic and on practical considerations, like available time and data. Such focussing and practical limitations are reflected in the case studies in Zambia and Nepal.

1.4   Applications of the process-context approach

The subsequent studies on HIV/AIDS risk behaviour in Zambia and maternal health in Nepal are illustrations of process-context research. They share the interest in men's contribution to reproductive health of women. In a broader sense, they address the issue of gender relationships in different settings. Gender systems are socially constructed institutions that ascribe the social characteristics of men and women, which provide meaning and guidance with regard to their roles, rights and obligations over the life course. As such they contribute to people's mental schemes and influence their decisions and behaviour, as is documented for sexual engagements and domestic support in this report. Both studies try to capture the decision frame of respondents with regard to the respective research topics, by studying knowledge, attitudes and perceptions, and including contextual variables. Whereas the Zambia study relied on existing nationally representative DHS data, in Nepal local fieldwork was carried out that included quantitative and qualitative data collection supporting a choice approach based on the work of Ajzen and Fishbein (1980). The study on HIV/AIDS risk behaviour includes the concept of self-efficacy by constructing a proxy variable.

In both case studies, men are important representatives of their partners' social environment, and through their behaviour and expectations the gender system exerts influence on the reproductive health of women. In the Zambia study, gender is closely associated with power differences in sexual relations, which is regularly combined with the effect of interaction of people in different life stages. The study suggests that the transition into marriage has a negative impact on women's negotiating power with regard to safe sex. The Nepal case similarly describes how especially young women have little negotiating power when they enter marriage and depend on a new household environment, including a husband that is

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inexperienced in the field of reproductive health and ill-prepared for communication about this issue. The study also provides an elucidating example of the gender system giving different meaning to the same behaviour for men and women: certain household chores are considered normal for wives, but evoke feelings of shame and embarrassment with men. Both studies demonstrate the importance of ethnic backgrounds, even though it was often outside the present scope to substantiate exactly how ethnic affiliation influenced behaviour through people's mental schemes related to health behaviour and gender relations. In the Nepal study, however, the application of qualitative and quantitative research methods allowed to grasp the more traditional views on health among terai communities compared to those from the hills.

1.5 Conclusions and discussion

The subsequent chapters produce additional insights in the backgrounds and processes of reproductive health behaviour in different settings, and provide leads for interventions and further research. Specific points of interest for programme implementation are addressed in the chapters themselves, but here some general reflections on the relevance of contents and approach are given.

Both papers underscore the significance of paying attention to male involvement in women's health, but also indicate the different ways in which this involvement can manifest itself. With regard to safe motherhood in Nepal, the principle role of men is directly supportive, although room for improvements is identified. The main conclusion of the Zambia study is that men's dominance in sexual matters is a barrier to women's health-protection behaviour, and that women's empowerment in these matters is not very meaningful unless accompanied by related focus on change in male attitudes and behaviour.

To considerable extent the studies reflect the theoretical perspective described here, although accents vary. Both collected information about individual-level considerations on reproductive-health related behaviour, which allows identifying specific problem areas, barriers to change and knowledge gaps as subjects for programme interventions. It also contributes to establishing profiles of sub groups that can be targeted for own-health improvement or support to the improvement of health of others. Providing the contextual background of these individual considerations further helps identifying the origins of ideas and efficacy perceptions, which entrenches them in the width and depth of local society and culture, and again contributes to targeting specific groups. In addition, a life-course perspective profiles potential target groups for specific interventions according to stages in life development.

In methodological terms, the report shows the added value of a combination of quantitative information – providing a representative picture of characteristics, attitudes and knowledge in a population – and qualitative information that enriches these findings, allows associations to the broader context of behaviour and ideas, and directs quantitative research as well as interventions in relevant directions.

Annex. An integrated model of fertility and reproductive health.

Universal level

Social level

Individual level

Intra-individual level

Model of man
Mental agency
Rationality
Social embedment
Motivation
Development
Biological relevance

Social Context
Social Institutions (t-n)
Social Institutions (t-1)
Social Institutions (t)
Rules:
    Meaning-giving, behaviour-guiding
Structure:
    Levels, dimensions, life domains, formal-informal distinction
Social Institutions (t+1)
Social Institutions (t+n)

Social outcomes (t+x)
Levels and patterns of fertility
Reproductive health
Population growth
Status of women
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Learning processes
Observational learning
Verbalisation
Personal experience
Emotional arousal

Attention processes
Retention processes
Motivation processes

Individual backgrounds
Life course organisation
Diachronic arrangement
Synchronic arrangement

Personal development
Mental schemes

Personal endowments

Personal considerations
Problem space
    (options, goals)
Motivation
    (contents, structure, mechanisms)
Perceived personal control
    (self-efficacy, locus of control)
Decision style
    (decision rules, institutionalised behaviour, staging process)

Choice processes

Intermediate determinants
Marriage
Contraceptive use
Abortion
Sexual intercourse
Breastfeeding

Biological determinants

Biological processes

Reproductive behaviour
Starting
Spacing
Stopping
Number of children
Sex composition

Individual outcomes
Physical well-being
Material well-being
Safety
Affiliation
Social status
Power
Self-esteem
Pleasurable inner states
Creativity

De Bruijn, 1999

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Chapter 2. Poverty, Gender and HIV sexual risk behaviour in Zambia

George Groenewold

2.1 Introduction

According to UNAIDS statistics for the year 2002, about 70 percent of the 42 million people infected with the HIV virus live in the countries of Sub-Saharan Africa (SSA) and the main mode of transmission is heterosexual intercourse. HIV prevalence rates in Sub-Saharan Africa vary considerably between sub regions. In the adult population, in the age range 15-49 years, rates range from as low as 0.1 percent in Mauritius to as high as 39 percent in Botswana. Currently, the highest rates are found in countries of southern Africa, such as Zambia, where about 1.2 million people in a total population of 10.5 million are HIV positive. The HIV prevalence rate in the age range 15-49 years is about 16 percent (UNAIDS 2002; Central Statistical Office 2003).

In most of SSA, infection rates of women are considerably higher than of men, due to a combination of factors, including: (1) a much greater biological[1] vulnerability of women to venereal diseases and a high prevalence of such diseases in African populations; (2) a general lack of decision-making power of women, often due to their poverty and concomitant financial dependency on men; (3) the prevalence of culturally 'accepted' forms of dominance of men over women, and violence against women, frequently leading to forms of coerced sex (Blanc 2001; Catania 1994; Murray and Lopez 1998; UNFPA 2001; UNAIDS 2002; WHO 2000). So it seems that poverty and adverse gender relations have a negative effect on incidence and prevalence of sexually transferred infections, including HIV, notably among women.

HIV-infection rates reflect both *biological* and *behavioural* factors. Improvements in personal hygiene, physical well being and health care, including the availability of and access to relevant medication, help to bring down incidence rates of HIV infection. However, such biologically focused factors alone are not sufficient to bring down rates to acceptable levels. Change in sexual behaviour are also required, including determinants of behaviour, such as personal beliefs and attitudes regarding safe-sex behaviour, perceived behavioural control in sexual engagements, and changes in social beliefs, norms and expectations in the wider community regarding safe sex. Change in these determinants are affected by knowledge about the causes, mechanisms and personal consequences of HIV infection, as well as by person's assessment of the risk to contract the infection and perception about the severity of the infection.

Most theoretical and empirical social science research on HIV infection focus on psycho-social determinants of HIV sexual risk behaviour[2] and infections. The bulk of the empirical research builds on (components of) one of four main psycho-social behavioural models or a combination of them: (1) the Health Belief Model (HBM), (2) the AIDS Risk Reduction

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[1] Women are, on average, at least four times more vulnerable to HIV-infection then men due to a larger mucosal surface, which implies potentially more microlesions as entry points for the virus, especially in the case of coerced sex. Moreover, there is more virus in sperm than in vaginal secretions leading to higher infection probabilities. In countries with high prevalence of STI's, such as syphilis and gonorrhoea, infection risks of women are even much higher than those of men (UNAIDS 2002).

[2] In this paper the concept of HIV sexual risk behaviour means having sex without the use of a condom. In the remainder of the paper, the terms 'safe-sex' and 'unsafe-sex' are used to indicate whether or not condoms are used, respectively.

Model (ARRM), (3) the Stages of Change model, and (4) the Theory of Reasoned Action/Planned Behaviour (Ajzen 1991; Catania *et al.* 1990; Conner and Armitage 1998; Fishbein 2000; Rosenstock 1994). In these studies and theories, health-risk perceptions and perceived behavioural control (self-efficacy) in sexual engagements often stand out as most important psycho-social predictors of sexual behaviour (Ajzen and Fishbein 2004; Denison 2003; Calderon and Varnes 2001).

A shortcoming of the above theories and studies is their sole focus on psycho-social factors and lack of attention to the role of structural and contextual factors, such as type of society, ethnicity, poverty and gender relations. Another potential shortcoming is that these 'western'-based behavioural theories may not (always) hold in the context of non-western populations, such as in Sub-Saharan Africa, in spite of the fact that the validity of these theories has been confirmed by several meta studies of behaviour in western populations (Albarracin *et al.* 2001; Denison 2003; Sheeran *et al.* 1999; Sutton 1998). In general, behaviour (e.g. whether or not a condom is used) can be understood and explained by assuming decision-making processes that acknowledge the 'bounds' of a person's decision frame (related to knowledge, skills, motives, etc.) in specific situations (de Bruijn 1999). However, in non-western populations, a person's motivation, expectations and behaviour could, more than in western settings be influenced by traditions and social norms of the larger cultural or ethnic group (Denison 2003).

This study is part of a larger comparative study of six countries[3] in Sub-Saharan Africa in which underlying and proximate factors of safe-sex behaviour are examined, with particular attention to the effect of household wealth. The specific question to be answered in this study is to examine what the effects of indicators of household wealth[4], gender relations and psycho-social factors are on safe-sex behaviour. Comparisons between men and women are made, where data permit, but the focus in the analysis is on a special subgroup of Zambian women because of their higher vulnerability to sexually transmitted infections (STI), including HIV, and poorer negotiating power in sexual relations (see section 3, appendices 1 and 2).

Section 2 describes the data, main concepts and their operationalisation, and methods used. Section 3 presents a country profile focusing on poverty, gender, HIV prevalence and health policies, with the objective of contextualising the analytical results which are described in section 4. Conclusions and recommendations are presented in section 5.

2.2   Data, Concepts and Methods

2.2.1   Data

The data used in this paper are those of the Zambia Demographic and Health Survey 2001/2002 (ZDHS). The objective of ZDHS was to provide health planners and policy makers with up-to-date information on: (1) fertility, infant and child mortality, and family planning; (2) health-related issues, such as breastfeeding, antenatal care, childrens' immunisations and childhood diseases; (3) the nutritional status of mothers and children; (4) gender relations including domestic violence and, (5) attitudes and behaviour regarding sexually transmitted infections, including HIV (CSO 2003).

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[3] Southern Africa (South Africa, Zambia), West Africa (Ghana, Nigeria) and East Africa (Uganda, Ethiopia).

[4] In this paper, poverty is considered as a wealth-status category in this paper.

The 2000 population census provided the sampling frame for the ZDHS so that nationally representative data from women and men age 15-49 and 15-59, respectively, could be derived. All women in that age range were interviewed in sampled households whereas men were interviewed in one third of these households. The sampling design ensured that nationally representative population and health indicators could be derived as well as representative indicators of urban and rural areas. Moreover, the design ensured representativeness of the data for the main development planning areas, which are, the nine provinces of Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, North-Western, Southern, and Western (CSO 2003).

2.2.2   Main concepts and indicators

2.2.2.1 Poverty
The conceptualisation of poverty used to be restricted to define a state of material deprivation, that is, a certain degree of lack of access to income sources, productive assets and consumption. The focus of research and policy making was on assessment and intervention of absolute rather than relative poverty. Over time, it became clear that lack of access and control (i.e. entitlements) to common property resources and services (e.g. education, wage labour), to household and community assets as well as quality of gender relations, status of women, and freedom and decision-making power in various domains of life are also important dimensions of poverty. This shift from income/consumption poverty to human development poverty helped to better see the causes and consequences of poverty and not merely its symptoms (Sen 1980; Sen 1992; Baulch 1996; Kabeer 1996; Agarwal 1997). From a practical analytical point of view, to examine the effects of human development poverty on, say HIV sexual risk behaviour, requires that effects of constituent parts are identified and measured. Living in a poor state of material well being is one of these constituent parts, and coincides with the initial definition of poverty. As income, consumption and expenditure data are not collected in DHS surveys, a wealth-status index is derived from information on ownership by the household of assets (e.g. radio, refrigerator, bicycle, TV, sofa), availability of certain amenities (e.g. type of water supply and toilet) and quality of housing (e.g. quality of roof, floor, walls) (Filmer and Pritchett 1999; Filmer and Pritchett 2001; Bollen *et al.* 2002). Other dimensions of human poverty included in the analysis are quality of gender relations, measured in terms of women status indicators, and perceived level of control in sexual relations. These are addressed below.

2.2.2.2 Gender
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, as is documented for sexual engagements and domestic support in this paper. Gender varies by culture and class, making gender a fundamental dimension of social stratification (Kishor 1999; Bertand and Escudero 2002).

The quality of gender relations is another dimension of human poverty and the association between wealth status and safe-sex behaviour is likely to be affected by gender relations in households. Unequal gender relations are often associated with early age at marriage of women and large differences in age, education and income between spouses (Narayan *et al.* 2000a; Narayan *et al.* 2000b). The degree of imbalance in gender relations in a household is eventually reflected in the status of women in the household. That is, status in terms of degree of control over, access to, and utilisation of information, education, and income and, more generally speaking, over their life and environment, including fertility, sexual and reproductive health.

The derivation of a single gender index, comparable to the aforementioned wealth index, is problematic due to the multi-dimensional nature of the gender concept, such as inequity, social norms and values system, power in decision making and control over resources (Cagatay 1998; Bertrand and Escudero 2002). This is also confirmed in Blanc's review of indices of the balance of power in sexual relations, in which she concludes that there is a lack of useful and practical measures of the nature and quality of gender relations (Blanc 2001). ZDHS 2001/2002 collected data of women on their opinion about who in the household is the major decision maker in purchasing major household items and on woman's health and fertility. Moreover, women were also asked about whether they think 'wife beating' is acceptable if a woman refuses sex. In the absence of more refined indicators, this study assumes that these ones capture to some extent the quality of gender relations in households leading to a particular status of women in those households. If, in a sexual engagement, a male partner does not want to use a condom, it is expected that if a woman has a low status she will be less likely to be successful in negotiating condom use or refuse sex than if she would have a high status. More specifically, it is expected that women who have little or no say in the purchase of household items, about their own health and fertility, and accept 'wife beating', such women are less likely to use condoms.

2.2.2.3 Safe-sex behaviour, risk perceptions and self-efficacy

In contrast to family planning behaviour[5], HIV risk behaviour lacks a set of reliable, easily measurable evaluation indicators because it has a more complex set of proximate determinants and biological outcomes than does fertility. Condom use to avoid HIV infection can be used as an (intermediate level) indicator that directly links current safe-sex behaviour to a long-term outcome: HIV incidence and prevalence. Beyond mutual lifelong monogamy among uninfected couples, condom use is the only method for reducing the risk of HIV infection and STI's available to sexually active individuals. However, condom use to avoid HIV infection may be erratic and, in sexual networks with multiple partners, its use may vary by type of partner. Also, if the last sexual partner is an extra-marital relation, the reporting on whether or not a condom was used may not be so reliable (NIAID 2004; Bertrand and Escudero 2002).

Bearing the above in mind, this study examines safe-sex behaviour in terms of the likelihood that a condom was used in the last sexual engagement and to what extent household wealth status and quality of gender relations affect this likelihood. The focus in the analysis is on a special subgroup of women, that is, women who know that the use of a condom is an appropriate way to protect against HIV infection and who had sex without the aim of becoming pregnant (see annex 1). It is the behaviour of this particular subgroup that we are interested in understanding, that is, women who have unsafe sex but are consciously aware of the health risk of unprotected sex. Apparently, HIV awareness and sensitisation programs have reached such women but this has not lead to changes in their behaviour. To properly examine the above, the analysis controls for differentials in other contextual, household and person-level characteristics, such as: ethnicity, province and urban or rural type of residence, sex of head of household, as well as for age, marital status, working status and level of education of the respondent (see annex 2).

As was mentioned in the previous section, theories on (sexual health) behaviour attach importance to HIV-risk perceptions and the extent that a person perceives to be in control in sexual engagements (Bandura 1977). In this study risk perceptions are represented by the response of women on whether they perceived to be at small, medium or high risk of becoming infected with HIV, or whether this risk is absent. ZDHS has limited information that can serve as proxy information for the extent of self-efficacy of women. In this analysis,

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[5] e.g. FP program level indicator: couple-years of protection (CYP); intermediate outcome level indicator: contraceptive prevalence rate; long-term outcome indicator: fertility rate.

the following indicators are used as proxies for a sense of personal efficacy in sexual relations: (1) a respondent's knowledge about where to get condoms and to get them, if wanted, and (2) the ability to successfully negotiate condom use with a husband or partner. A high degree of self-efficacy and high risk perception is expected to be associated with a higher likelihood of condom use.

A number of the characteristics included in the analysis have special policy relevance, as they are 'visible' characteristics of persons. These are of help in the profiling of persons exhibiting high-risk sexual behaviour, such as: poverty in terms of possession of assets, amenities and housing quality, province and urban/rural place of residence, ethnicity and age. Intervention programs could start out with targeting persons with the highest likelihood of practising unsafe sex in particular age, ethnicity, place of residence, and wealth-status groups.

2.2.3 Methods

The technique of Principle Component Analysis (PCA) is used to construct a summary index for the wealth status of households. To examine whether and how household wealth status, indicators of gender relations and psycho-social factors and other relevant control characteristics affect the likelihood that women use condoms, logistic regression is used. This is the appropriate approach when the characteristic to be explained is dichotomous (i.e. whether or not a condom was used in the last sexual engagement).

2.3 Context of poverty, gender and HIV: a country profile

As figure 1 shows, the country is administratively divided into nine provinces. The 2000 census counted 10.3 million people who belong to 73, mainly Bantu-speaking ethnic groups of which the Bemba (35%) are the largest.

Figure 1: Main administrative regions in Zambia

In the provinces of Lusaka and Copperbelt, 80 percent of the population lives in densely populated urban areas. In the other provinces—Central, Eastern, Northern, Luapula, North-

Western, Western and Southern—most people (85percent) live in rural areas. The deteriorating economic conditions in the past decades resulted in a decline in urbanisation rates from 40 percent in 1980 to 36 percent in 2000. Provincial levels of urbanisation vary from as high as 91percent in Copperbelt province to as low as 9 percent in Eastern province (CSO 2002).

2.3.1 Poverty and the economy

Zambia has a mixed economy consisting of a modern urban sector that, geographically, is concentrated along main railroad tracks in the country, and a rural agricultural sector. Copper mining is the country's main economic activity, accounting for 95 percent of export earnings and contributing 45 percent of government revenue during the decade following independence (1965-1975). In the mid-1970s, following a sharp decline in copper prices and a sharp increase in oil prices, the country's economy deteriorated. The 1980s marked the start of the first phase of implementing Structural Adjustment Programs (SAP) amidst a stagnating economy.

However, the SAP failed to substantially alter the economy and essentially contributed to poverty of the majority of Zambians. Zambia ranks 163 on the Human Development Index scale (1 to 175) and qualifies for soft loans (i.e. IDA eligibility, also see below) of the World Bank. In terms of income, the people of Zambia belong to the poorest in Sub-Saharan Africa: almost two third of the population earns an income of less than 1 dollar a day. In rural areas, where most people live, prevalence of poverty is particularly high due to a lack of access to income, employment opportunities, and entitlements to goods and services, shelter and other basic needs of life.

In their Poverty Reduction and Strategy Paper (PRSP), the government of Zambia is committed to combat poverty by stimulating the economy through development of the private sector and by reforming the public sector, including government expenditures. Currently, the economy is not really 'on track', partly due to Zambia's severe external indebtedness. The dependence of the economy on foreign (donor) capital is reflected in the share of development aid in the gross national product, which was about 10 percent (373 million dollar) in 2003 (MOFNP 2002; World Bank 2003).

Development requires good governance, both in the civil and private sectors. In spite of the 'zero tolerance on corruption' policies launched by the new government, progress has been rather slow as corruption is still widespread. Overall, Zambia ranks low (77) among the 102 countries for which the Corruption Perception Index (CPI) was calculated (Transparency International 2003). But in spite of this, the overall rating of the management of Zambia's economy, expressed in terms of its IDA Country Performance Rating, is improving and above average[6] (IDA 2003).

2.3.2 Gender

The economic crises in the past decade have affected gender relations in Zambia and this had a negative impact on the status of women (Narayan *et al*. 2000a). In general, gender roles in

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[6] The International Development Association (IDA) of the Worldbank assists the world's poorest countries to reduce poverty by providing loans *without* interest. Access to such loans depends on a country's CPR (Country Performance Rating). This Performance Based Allocation (PBA) of financial resources using CPRS is based on an annual review of 20 indicators of performance in the following domains: economic management, structural policies; social inclusion/equity policies, public sector/institutional management, development program management and 'good governance'.

Zambia make it hard for women to protect themselves against HIV due to a combination of factors such as the dominant role of men, misconceptions of many men (and women) about HIV transmission, and lack of empowerment of women to refuse risky sexual engagements. For instance, in a study in Zambia, more than 75 percent of the women interviewed believed that a married woman cannot refuse to have sex with her husband, even if she knew he had been unfaithful and was infected. Economic dependence of poor women on men is highest and their empowerment lowest leading to low negotiating power for safe sex so that they are potentially most vulnerable in terms of HIV infection, in particular in circumstances of conflict within the household (UN 2001). Another study reveals that misconceptions, folk beliefs and denial are responsible for Zambian men's low personal risk perception for HIV infection. Misinformation is spread through gossip and hearsay, and men fear retribution or are too shy to ask for clarification from friends or family. Folk-belief explanations for transmission include attributing infection to sorcery or to the strength of a person's blood. Many respondents cited promiscuous-looking women as the most frequent transmitter of STIs/HIV and therefore avoid such women as a precautionary method. However, most of them do not realise that all sexually-active people are at risk of HIV (PSI 2003).

Discussion groups in Zambia indicate that increased poverty of households, due to the remaining adverse economic conditions, has lead to rising alcohol and drug abuse among men and increased domestic conflicts and violence. Types of abuse and violence against women that are typical in Zambia are wife beating, property grabbing, and sexual intimidation. The general tolerance of domestic violence is a significant barrier to the empowerment of Zambian women, with consequences for their sexual and reproductive health and health-seeking behaviour, and the health of their children (Narayan *et al.* 2000a; Narayan *et al* 2000b; Central Statistical Office 2003).

According to ZDHS 2001/2002, more than half of the women (53percent) reported to have experienced beatings or physical mistreatment since age 15 and almost one out of four women (24 percent) report having experienced physical violence in the past 12 months. Almost eight out of ten women currently in union and experiencing physical violence mention that their current husband/partner is the perpetrator. Women living in the highly urbanised Copperbelt and Lusaka provinces report more often to be victim of physical violence than those in other provinces do (Central Statistical Office 2003).

Regarding control over assets, women are underprivileged as in Zambia, though no legal restriction on land use exists, it is difficult for women to obtain land from land authorities. Under the statutory system, in some districts, married women must provide evidence of their husband's consent to obtain land, while unmarried women are often not recommended for allocation of land if they do not have children (Narayan *et al.* 2000a; Narayan *et al* 2000b; Central Statistical Office, 2003).

2.3.3 HIV and health policy context

The most recent Demographic and Health Survey of 2001/2002 reports that almost one in six Zambians is infected with the HIV virus. HIV and other sexually transmitted infections (STI), such as syphilis, have now become the major health threats for the Zambian population.

After Zambia's first case of AIDS was diagnosed in 1984, the government, supported by the international donor community, launched the National AIDS Prevention and Control Program in 1986, as part of the WHO Global Program on AIDS. Over time, the cross-cutting and multi-dimensional nature of the HIV epidemic was recognised and this lead to a broad and multi-sectoral response. This reflected in the 'Strategic Framework 2001-2003' whereby a combination of interventions are being implemented aiming at reducing HIV transmission and reducing the socio-economic impact of HIV (National HIV/AIDS/STD/TB Council 2002).

According to the report Financial Resource Flows for Population Activities, produced by UNFPA in collaboration with NIDI, the international donor community has gradually stepped up its assistance to combat the HIV/AIDS epidemic in Zambia and in neighbouring countries. International donor assistance to finance expenditures on reproductive health, family planning and HIV/AIDS programs in Zambia more than doubled in the period 1996-2001: from about US$ 14 to US$ 30 million. The domestic expenditures in 2001 were only little over US$ 0.5 million. The share of HIV/AIDS programs and projects in total expenditures on the above themes increased from 25 to 55 percent (UNFPA 2003).

In Zambia, HIV prevalence among of women (18 percent) is *higher* than the rate of men (13 percent). HIV prevalence vary by age and place of residence[7]. Highest HIV rates are observed among women in the age group 25-29 (25%) and 30-34 (29%). Prevalence rates of men peak at later ages, which are 35-39 (25%) and 40-44 (22%). Rates in urbanised provinces such as Lusaka (25%) and Copperbelt (22%) are higher than in rural areas. Lowest figures are reported for the provinces of North-Western and Lualapula, 9 and 13 percent, respectively. The urban-rural gap is wider at all ages among women as compared to men, which is a clear indication of the critical level of the epidemic among urban women. At the peak ages of infection in urban areas, 30-39 years, two in five urban women are infected with HIV compared with less than one in five rural women (CSO 2003).

Figure 2. Indicators of Poverty, HIV infection and gender for Zambia compared to average conditions (=100) in Sub-Saharan Africa (Source: World Bank 2000).

To conclude, the above account of poverty, gender and HIV infection conditions in Zambia shows that Zambia is a country that belongs to poorest in Sub-Saharan Africa, experiencing increases in poverty partly as a negative by-product of SAP (Structural Adjustment Program). Regarding gender relations, women have little control in various domains in life, including in sexual engagements, household decision making, and financial independence. In spite of stepping up HIV/AIDS prevention programs in the country, prevalence rates have remained high, raising doubts about their effectiveness. HIV rates are among the highest in the continent. Figure 2 compares Zambia with the average (=100) conditions in Sub-Saharan Africa regarding a number of poverty, health and gender indicators. The diamond graph shows that Zambia's GNP is far below the SSA average and that the proportion of persons

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[7] HIV infection status of respondents, for privacy reasons, was de-linked from other characteristics of respondents (except for age, sex, place of residence).

living *without* aids is below the SSA average. The representation of women in parliament, a macro-level indicator of the status of women, shows that their representation is below the SSA average.

2.4 Results

Below, in sub section 2.4.1, we take on a bi-variate approach to examine to what extent differentials in wealth status of households are associated with differences in levels of knowledge about HIV, risk perceptions and safe-sex behaviour of Zambian men and women. In sub section 2.4.2 we take on a multi-variate approach and examine what the individual (gross) and combined (net) effects are of wealth status, gender relation indicators and psycho-social indicators on safe-sex behaviour of women. As households differ according to various other relevant contextual, household and person characteristics, such as ethnicity, place of residence, and socio-economic and demographic characteristics of persons the analyses explicitly takes these also into account.

2.4.1 Wealth status and safe-sex behaviour

Table 2 shows which household items were used to construct a so-called wealth index and to what extent each item is present in the population of households in Zambia.

Table 2. Ownership of household assets and housing characteristics (N=7126)

		Percentage
Assets	Electricity	14
	Radio	39
	TV	15
	Refrigerator	8
	Bicycle	31
	Car/truck	2
	Telephone	3
	Solar Power	1
	Mosquito nets	27
Water supply	Piped water inside	12
	Piped water outside	14
	River/pond/lake, etc.	20
Sanitation	Flushtoilet	12
	Pit Latrine	56
	Bush/field/other	31
House	Earthen floor	69
	Concrete floor	28
	Carpet	2

The table shows that the majority of Zambians have earthen floors in their house (69%) and that most households use a traditional pit latrine (56%). Only a small segment of the households have a carpet on the floor (2%), owns a car (2%) or has a telephone (3%). The items listed in table 2 were used to construct a wealth-status index for households. The extent that such items are owned or present in a household determines what the index score of the household is. The scores of all households are sorted and grouped into 5 equal size wealth classes.

To examine whether the derivation of a wealth status from the above items generates a plausible wealth index, the derived wealth status of households was cross-tabulated with information on 'the ability of the household to provide enough daily food to its members'. As the results presented in table 3 is what we would, *a priori*, expect to find, it is concluded that wealth status of households can be estimated by means of the wealth-status index and classification. Table 3 shows that poorer households find it more difficult to ensure food provisioning than richer households, according to *a priori* expectations.

Table 3. Wealth status and household ability provide food to its members (n=7126 households)

		Poorest 20%	Second quintile	Middle group	Fourth quintile	Richest 20%	Total
Enough food to eat?	Usually	25	31	43	45	52	39
	Sometimes	45	44	41	44	42	43
	Seldom	28	23	16	11	5	17
	Never	2	2	1	0	0	1
	Total	100	100	100	100	100	100

Now, let us look to what extent persons from poorer households differ from those in richer household regarding HIV infection.

Table 4 shows a number of interesting findings. Regarding knowledge about HIV infection, respondents in different wealth classes do not seem to differ much, including differences between men and women. Knowledge is almost universal. The majority of respondents also report that they know about ways to avoid HIV infection, but here we notice that knowledge in poorer households is less than in richer households and that the knowledge is lowest among women in the poorest households. Moreover, the poorer the household the larger the discrepancy between men and women regarding whether or not they know how to avoid HIV infection.

However, the data do not give us information about the *depth* of the knowledge and this is important as a number of qualitative studies show that there are many misconceptions about HIV transmission and risk of infection in Zambia. The knowledge of an unknown part of the population about HIV/AIDS may come from hearsay and gossip, instead of from objectively credible sources regarding HIV/AIDS information messages (PSI 2003). In Zambia, the radio is an important mass medium to convey HIV/AIDS messages, but, as table 1 shows, only about 40 percent of the households own a radio, and, according to table 4, about 40 percent of the women and 20 percent of the men never listen to a radio. In the poorest households, almost 80percent of the women never listen to the radio, about the twice the percentage of men in such households.

When asked whether the consistent use of a condom helps to prevent HIV infection, about three in four men and women give an affirmative answer. In poorer households proportions are somewhat lower and women in the richer segments of the population seem to be more aware of the linkage between condom use and HIV infection than men. Having heard about HIV/AIDS and ways to avoid it, and that use of condoms helps to prevent HIV infection does not mean that condoms will be used at all times, for instance when a pregnancy is desired. In other situations, the use of a condom seems warranted in a country where one in six adults in the age group 15-49 is already infected with the virus. Table 4 shows, that discussion about the use of condoms with a sex partner is not common practice. Women, more often than men, report that the issue cannot be discussed, and this is particularly so among the poorest

Table 4. HIV/Aids related knowledge, perceptions and behaviour in households with a different wealth status.

		poorest 20%	second quintile	middle group	fourth quintile	richest 20%	Total	N
Ever heard of HIV/AIDS	Men	98	97	98	98	100	99	2145
	Women	98	98	99	99	99	99	7658
Ways to avoid HIV/AIDS	Men	90	89	95	94	96	94	2116
	Women	75	79	84	88	94	86	7603
Never listens to a radio	Men	40	32	21	15	8	20	2142
	Women	78	71	45	33	14	42	7652
Consisten condom use reduces HIV/AIDS infection	Men	72	75	77	76	78	76	1985
	Women	74	76	78	83	85	81	6527
Can talk with partner about use of condoms	Men	61	63	71	74	83	73	1737
	Women	53	55	59	66	73	63	7631
If condom wanted, could get one	Men	87	91	86	87	87	87	1780
	Women	51	52	57	60	64	59	5938
Used condom during last intercourse	Men	8	13	16	23	27	20	1737
	Women	6	9	9	14	17	12	5673
Perceived risk of HIV infection (small, moderate or high risk)	Men	59	57	59	58	70	63	1396
	Women	71	66	67	70	70	69	7599

But even if the issue can be discussed between sex partners, it does not mean that a condom will actually be used. The latter, may be the result, among others, of non-accessibility to or non-availability of condoms. Table 4 show, that, overall, almost 40 percent of the women mention not being able to get a condom if they want, and the percentage is highest among women in the poorest households. Apparently, almost 90 percent of the men, irrespective of whether they live in a rich or poor household can get condoms if they want. Almost two of three women (62%) who mentioned not be able to get condoms when they want, report that the main reason is 'embarrassment'. Although most men do not have this barrier, it is still the main reason (41%) why one out of ten men do not get a condom when they want. The price of condoms is rarely (less than 1%) mentioned as a barrier to get condoms.

Taking account of the above, it comes as no surprise that, overall, condom use during the last sexual intercourse is low in Zambia and lowest in the poorest households. Compared to women, men in richer households more often report to have used a condom in the last sexual engagement. Men in the richest households also more often than men in poorer households mention to be at risk of infection but their risk perceptions are much lower than those of women. This confirms results of qualitative studies in Zambia (see section 2.3.2), where due to various reasons, men have relatively low risk perceptions in spite of the fact that they are living in a high HIV risk environment (PSI 2003).

The low use of condoms, the presence misconceptions regarding the link between condom use and HIV infection, and the fact that partners do not easily discuss about the use of condoms must be weighted against the undesirable fact that about two out of three Zambians mention that they are at risk of becoming infected. What might then be main reasons for not using a condom if a person perceives to be at risk of becoming infected?

Obviously, the desire of becoming pregnant is a valid reason, but only five percent of the women and nine percent of the men mentions this. Overall, main other reasons for non-use mentioned by women are: condoms not available/out of stock (23%), male partner refused use (17%), male partner is trusted not to be HIV infected (11%), and respondent uses another family planning method (12%). Apparently, use of another family planning method is considered a legitimate reason for respondents not to use a condom as protection against HIV infection. Moreover, one in ten women trust their partner on his word that he is not infected,

and this is somewhat surprising to hear from women who live in a culture where promiscuity, virility and manhood are important aspects in the life of men (PSI 2003). In this respect it of interest to note that 'trusted' means 'trustworthy in the current relation'. Qualitative studies report that persons may not make the link between past sexual risk-taking behaviour and acquired HIV infection and current infection status. In other words, the enduring nature of an HIV infection in a person is not recognised (PSI 2003). Overall, women report more often than men that the reason for non-use is that condoms are not available/out of stock. The difference between them is largest among the poor, 38 and 22 percent respectively. Overall, this difference may, may reflect shyness on the side of women to buy condoms.

Figure 3: Geographical distribution of the poorest and richest households in Zambia

Percent distribution of the poorest 20 percent of households

Percentage distribution of the richest 20 percent of households

The response of women regarding reasons for non-use differs by wealth status of households. Women in the poorest households mention as main reasons for non-use: condoms not available/out of stock (38%), partner refused use (11%), respondent does not like to use condoms (9%). Women in the richest segment mention as main reasons: used other family

planning method (24%), partner refused (22%), and trustworthy partner (17%). Main reasons for 'non-use' mentioned by men in poorest households are: trustworthy partner (30%); condoms not available/out of stock (22%), and dislike using condoms (21%). Men in the richest household show similar answers, about 35 percent mention that the sex partner is trustworthy, and 15 percent mention that they do not like to use condoms.

Contrary to men in poorer households, men in richer households do not report that condom availability is an important reason for non-use, suggesting that the richest are concentrated in particular areas where provisioning of services and goods are best, such as urbanised areas. This is confirmed and shown in figure 3. Almost 60 percent of the poor live in three rural provinces: Northern (20%), Eastern (21%) and Western province (18%). The highly urbanised provinces of Lusaka and Copperbelt are where more than 60 percent of the richest households live.

So far, we examined whether persons in households with a different wealth status also show difference in indicators of knowledge and perceptions regarding safe-sex behaviour. It was found that household wealth-status matters and that those who live in the poorest households are worst off and that they exhibit lowest condom use rates. Moreover, differences between men and women regarding the above issues vary according to the household wealth status. The geographical distribution of the poorest 20 percent shows that most of them live the three rural provinces of Eastern, Northern and Luapula. The analysis also showed that women, in particular those living in the poorest households, are particularly disadvantaged in terms of being reached by HIV/AIDS programs through mass media (e.g. radio, newspapers) and in terms of getting access to condoms and discussing the use of condoms with a partner.

2.4.2 Poverty, gender and safe-sex behaviour

Table 5 shows the results of logistic regression analysis. The values in the main body of table 5 show the extent that particular categories of characteristics have on the likelihood that safe sex is practised, compared to the effects that reference categories (column 1) have. The reference category has the value of 1.0 so that a value less than one indicates that the effect of a category is 'x times' less than that of the reference category. A value higher than one means the opposite. Following the value of the coefficient, a symbol is placed (e.g. * or **) that value, statistically speaking, significantly differs from that of the reference category. Thus, only values followed by such kind of symbol are to be taken 'serious' in the interpretation of results. In the bottom of the table, R-square values are reported. The value of 27.4 percent for model 6 means that the characteristics included in that model explain 27.4 percent of the variation in safe-sex behaviour among respondents.

Models 1, 2 and 3 show what the (gross-) effects of the main characteristics of interest (wealth status, gender and psycho-social condition) are on the likelihood that safe sex is practised. Models 4, 5 and 6 show net effects. Model 6 is of particular interest, as it shows net effects of all characteristics included in the analysis, including interaction effects between characteristics. From the row of R-square values for models 1, 2 and 3 it is concluded that proximate characteristics of safe-sex behaviour explain more of that behaviour. More specifically, the gross effect of psycho-social characteristics of women (8.5%) have almost four times as much effect on safe-sex behaviour than wealth characteristics of households (2.2%), about twice as much as women-status characteristics (4.3%). In Model 6, these differences are by and large maintained after account is taken of effects of all other relevant characteristics, including in interaction effects. Net effects of psycho-social indicators drops to 4.2 percent (derivation data not shown), but this is still about four times higher than the net effect of household wealth status (1.1%) and more than twice the effect of gender (1.7%). Overall, net effects of person and interpersonal level characteristics (14.5%, derivation not

shown) appear to be more important than effects of contextual and household level characteristics (11.7%).

Now, let us look in more detail to the effects and changes in effects of different characteristics in the models. Model 1 shows the gross effect of household *wealth status* on the likelihood that safe sex is practised. However, no account is taken of other characteristics yet. Apparently, the richer the household the higher the likelihood that women practice safe sex as the values for wealthier households increase. Women in the richest households apparently are 2.5 times more likely to practice safe sex than women in the reference category, those in the poorest household. However, there appears to be no significant difference between safe-sex behaviour of respondents in households of the group of 'below middle' households and the 'poorest 20 percent' households. Essentially, the general relation between household wealth status and safe-sex behaviour remains significant, but the magnitude of the effects becomes smaller when other contextual, households and respondent characteristics are taken into account (models 4, 5 and 6). According to model 6, women in the richest households are still about 1.5 time more likely to practice safe sex than women in the poorest households.

It is important to note (model 4) that contextual characteristics, in particular province of residence and less so ethnicity, contribute significantly to the explanation of safe-sex behaviour. These characteristics together eventually explain 10.7 percent of the variation in safe-sex behaviour (model 6). Apparently, ethnic affiliation in Zambia means that there are ethnic differences in social norms, expectations and motivations affecting sexual behaviour of women. Women of the Kaonde and Tonga ethnic groups are the least likely to use condoms.

Values for provinces indicate that there are large differences between provinces regarding safe-sex behaviour. Women in Lusaka province are about twice as likely to practice safe sex as women in Eastern province and women in North-Western province are even 8 times more likely to practice safe sex than women in Eastern province. Women in Luapula province are the least likely to practice safe sex.

Model 2 shows the gross effect of indicators of women status. Women who mention that they are the main decision maker regarding the number of children and the timing of becoming pregnant are 2.1 times more likely to use condoms than women who do not have this decision-making power. Similarly, women who mention having full say over their own health are 1.4 times more likely to use condoms than women who depend on the opinion of others regarding seeing health care.

However, when other relevant characteristics are taken into account, interaction effects with these characteristics make that effects of women status indicators on safe-sex behaviour are mediated by other, more proximate, characteristics, in particular by martial status and level of education of women (model 5), and later by psycho-social characteristics of women (model 6). Womens' status indicators, marital status and education appear to be correlated (correlation's not shown). A higher level of education is associated with a higher likelihood of practising safe sex, whereas being married is associated with a lower likelihood of practising safe sex.

Married women are more than 3 times less likely to practice safe sex than unmarried and formerly married women. Apparently, the transition in the life course from being unmarried (or formerly married) to being married results in a significant change in safe-sex practices. This is consistent with findings of other research on Zambia (see section 2.3.2). Models 4 and 5 lend additional support for this, because, when women are heads of household, the likelihood of practising safe sex is twice as high than among women who live in male-headed households.

*Table 5. Effect of different types of characteristics on the likelihood of condom use by women (†, *, ** = significant at 10%, 5% and 1% level. Reference category in italics).*

Independent variables		Gross Effects			Net Effects		
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Context and household level							
Eastern	Northern				1,5	1,5	1,8
	Luapula				0,5 *	0,5 *	0,5 †
	Copper				1,1	1,0	1,0
	Central				1,2	1,1	1,1
	Lusaka				2,1 **	2,1 **	2,1 **
	Southern				1,5	1,4	1,3
	Western				1,2	1,0	1,1
	North-west				8,5 **	9,0 **	8,6 **
Urban	Rural				0,9	1,0	0,9
Other Ethnic	Bemba				0,9	0,9	0,9
	Tonga				0,6 *	0,6 *	0,6 *
	Lozi				1,1	1,0	1,0
	Chewa				0,9	1,0	1,0
	Kaonde				0,2 **	0,2 **	0,2 **
	Nsenga				1,1	1,0	1,0
Male h.o.h.	Female h.o.h.				2,0 **	1,1	1,2
Poorest	Low middle	1,4			1,3	1,2	1,3
	Middle	1,5 *			1,5 *	1,4 *	1,5 †
	Middle high	2,3 **			2,0 **	1,6 †	1,6 *
	Richest 20%	2,5 **			2,3 **	1,5 †	1,5 †
Interpersonal (gender) level							
Status of women:							
Others	Purchases: woman decides		1,0		0,9	1,0	1,0
Others	Own health: woman decides		1,4 **		1,0	1,1	1,1
Others	Fertility: woman decides		2,1 **		1,9 **	1,0	1,0
Beating o.k.	Wife beating wrong		1,5 **		1,4 **	1,2 †	1,2
Person level							
Socio-economic/demographic:							
15-19	20-24					0,8	0,8
	25-34					0,7 *	0,7 *
	35-49					0,4 **	0,5 **
Unmarried	Currently married					0,3 **	0,3 **
	Formerly married					1,0	1,1
Not working	Currently working					1,0	1,0
No schooling	Primary: incomplete					1,3	1,2
	Primary: complete					1,4	1,2
	Secondary: incomplete					2,1 **	1,7 *
	Secondary: complete					2,7 **	2,2 *
	Higher education					3,6 **	2,7 **
Psychosocial:							
No risk	Small risk			0,9			0,9
	Moderate risk			0,6 **			0,7 *
	High risk			0,5 **			0,6 *
Can't obtain	Knows where, can't get			2,8 **			2,4 **
	Knows where, can get			2,5 **			2,3 **
No success	Succes in condom negot.			4,7 **			3,8 **
Constant		0,09 **	0,10 **	0,03 **	0,05 **	0,17 **	0,05 **
Likelihood (-2LL)		3070 **	3027 **	2934 **	2795 **	2592 **	2488 **
R-square (Nagelkerke's % explained variance)		2,2	4,3	8,5	14,6	23,2	27,4
N		3746	3746	3746	3746	3746	3746

Apparently unmarried or formerly married women are over-represented in such type of households because when, in model 5, the variable 'currently married' enters the equation, the value of 2.0 drops to 1.1 and becomes non-significant. Apparently, women who are heads of household and get married loose much of their negotiating power regarding safe sex, and show similar safe-sex behaviour as women in households headed by men.

The effects of all womens' status indicators in model 2 vanish when, in model 6, perceived behavioural control (self-efficacy) and HIV risk perceptions of women are included in the equation. Self-efficacious women are women who know where to get condoms, and can get them if needed, and they are able to successfully negotiate condom use with husbands and partners. Thus, this sense of being self-efficacious is associated with a higher likelihood that safe sex is practised, which is according to expectation (see section 2.2.2.3)

In model 6 we expect to find a positive relation between risk-perception and condom use. However, model 6 presents a negative relation: the higher the perceived risk of becoming infected, *the lower* the likelihood that women practice safe sex. This finding may point to a case of reverse causality, that is, risk-perceptions are a consequence of condom use rather then a cause. In the context of Zambian gender relations (i.e. see section 2.3.2), this reverse causality is interpreted as follows: women with a higher risk perception have this perception because of their inability to successfully negotiate and practice safe sex with partners. Apparently, the opinion of men about safe sex practices overrules the opinion of their partners, especially within marriage. The consequence of this interpretation is that, in the case of Zambia, the question posed in ZDHS about women's perceived level of risk of infection essentially measures the degrees of lack of self-efficacy and fear to negotiate safe sex with partners.

Models 5 and 6 confirm findings of other research in various parts of the world regarding the importance of having at least completed primary schooling and preferably a few years of education beyond that level. Women who have such a level of education more often mention to practice safe sex than women with lower levels. The positive correlation (not shown) between level of education and self-efficacy indicators in model 6, explain the drop in effect of the education characteristic between models 5 and 6. The higher the level of education, the more self-efficacious and the more likely it is that women practice safe sex.

2.5   Conclusions and recommendations

The results of analyses in the previous section show that about eight out of ten men and nine out of ten women did not use a condom in the last sexual engagement. Among women who are married, use rates are even (much) lower. This low use rates are observed in a country where one in six persons is infected with the HIV virus and where the great majority has heard about HIV/AIDS, and where about three out of four persons know that HIV infection can be avoided if condoms are properly used.

The review of literature on HIV sexual risk behaviour revealed a strong focus on psycho-social determinants and a lack of attention to structural and contextual underlying determinants of sexual behaviour, such as poverty, ethnicity, gender relations and place of residence. Particular interest was to examine whether differences in wealth status and quality of gender relations lead to significant differences in safe-sex behaviour. To examine safe-sex behaviour the focus was on women who had sex without using a condom for reasons other than becoming pregnant, and who know about HIV/AIDS and ways to avoid it.

Analysis of ZDHS data started with the analysis of data of both men and women. It was found that women in Zambia, compared to men, appeared to be in a particular disadvantaged position. Women, more often than men, perceive to be at risk of HIV infection, they more often indicate that they cannot bring up the issue of condom use in a sexual engagement, and, because of feelings of embarrassment, they often do not try to get condoms, even if they want to use them and know where to get them. These experiences are even more pronounced among married women as condom use within marriage is not considered an accepted subject of conversation, in particular by women. Use of condoms may be associated with extra-marital relations, something that is less likely to be perceived as a problem by men, but more so by women as they frequently mention to feel 'embarrassed' when issues of access to and use of condoms turn up in discussions. The analysis into underlying determinants of safe-sex behaviour proceeded by looking at safe-sex behaviour of women.

Regarding the central question of this study, multivariate analysis clearly demonstrates that the underlying factor of household wealth status is important to explain and predict safe-sex behaviour, even after account is taken of effects of other contextual, household, interpersonal and person-level characteristics. The effect of gender, represented by status-of-women indicators, is important, but the effect dilutes when more proximate characteristics, notably level of education, marital status, HIV risk perception and perceived behavioural control are included in the analysis. The underlying contextual factors, in particular province of residence and ethnicity, showed important net effects in the explanation of safe-sex behaviour. Apparently, women in particular provinces and of different ethnicity exhibit quite distinct safe-sex behaviours.

It may be argued that the indicators that were used as proxies for self-efficacy could also be interpreted as gender and 'status of women' indicators. This is indeed true, but there were substantive reasons not to include them as women status indicators. Reason was the need to distinguish between effects of decision and opinion characteristics that are defined by the presence of a relationship between persons, and characteristics that express the mind-set of a person, such as feelings and perceptions that are present without the necessary presence of another person (i.e. husband or partner).

This study showed that safe-sex practices vary in households with a different wealth status and by persons that hold different risk and self-efficacy perceptions. It is recommended that further research takes on a regional comparative perspective by examining DHS data of other countries in Sub-Saharan Africa to examine the variation in effects of determinants across SSA and identify common features and salient differences between countries. In addition, differences in risk-taking behaviour of men and women in different wealth-status groups could be examined, as this will further help targeting particular groups for specific HIV/AIDS intervention programs.

The unexpected finding that a higher risk-perception of becoming infected is associated with a lower likelihood that safe sex is practised is interpreted as a case of reverse causation, that is, lack of self-efficacy to successfully negotiate condom use results in a sense of fear on the side of women. As all women in this study were selected (see annex 1) based on their knowledge that condom use helps to prevent HIV infection, their degree of inability to negotiate safe sex is expressed in their stated level of risk of becoming infected. Thus, the lower the level of self-efficacy in sexual engagements, the higher the expressed level of concern of becoming infected. If this interpretation is plausible, it is recommended that HIV/AIDS programmes need to specifically target men as their domination in sexual relations essentially inhibit women to protect themselves against a potential source of HIV infection. As other research showed, misconceptions about HIV infection among men are widespread. It is recommended that the prime focus of

intervention programmes should be on resolving this and to make men aware of their responsibility to ensure sexual health and survival of their women and of themselves.

The results of the analysis point to women as a particular vulnerable group and calls for efforts to increase their empowerment, in particular in the domain of sexual health. At the same time it must also be realised, in the case of Zambia, that empowering women is by necessity part of a dialectic process, as empowerment of women can only lead to safe-sex practices if the men are also empowered in the sense of resolving their misconceptions about HIV transmission and educating and involving them more actively in sexual and reproductive health matters of their partners and children, and of themselves. So far, programs apparently have not managed to change the mind set of large parts of the population in terms of norms and values regarding condom use. Efforts should be stepped up to change the image of condoms so that a condom and its use are (also) seen as a legitimate and intelligent way of protection against a deadly virus.
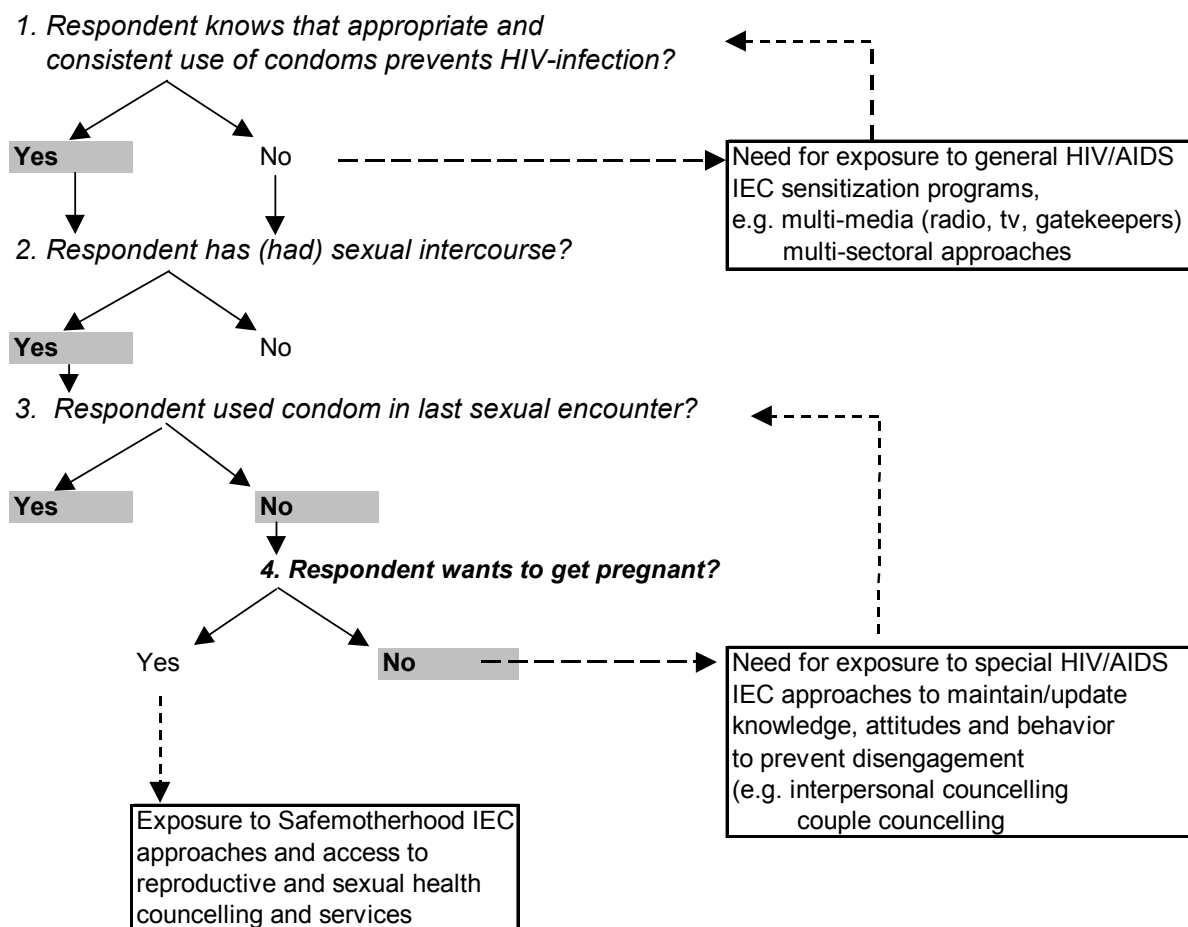
To reach the poorer segments in the population a focus on the use of mass media, such as radio, TV or newspapers may not be recommendable as the sole solution as only about 30 percent of the households own a radio, 15 percent a TV and about 70 percent of the women in the poorest households never even listen to a radio. It seems that programs, more than before, should focus on the training gate keepers at village and town levels so that these persons assume the task of being change agent in their community regarding social and sexual norms and behaviour to the benefit of the health of community members.

The results of multivariate analysis showed the importance of underlying contextual characteristics in the explanation of safe-sex behaviour. These characteristics are particularly useful in the profiling of target groups for HIV/AIDS intervention programs and of help in prioritising who should be targeted first. Households with a minimum of assets listed in table 2 are the prime target group and, in particular, women (and their partners and other household members) in such type of households in the province of Luapula should receive increased attention. These are laggards in condom use, followed by women in Eastern, Copperbelt, Central, Western, etc. Moreover, women (and their partners and other household members) belonging to some of the main ethnic groups in Zambia, i.e. Tonga and Kaonde, should receive special attention as they are the least likely to use condoms. It would be of interest to examine the variation in schemata of sexual behaviour in different ethnic groups, as this will reveal both barriers and channels for change in sexual and reproductive health behaviour in Zambia.

It is also recommended, that general development programs continues to work towards educating people to at least primary school levels, preferably complemented with some additional general education. The analysis showed that significant gains would be made in safe-sex prevalence if persons attain that level of education. That educational attainment level is a necessary condition for the proper acquisition, selection and processing of relevant knowledge and self-propelled and sustainable changes in sexual and reproductive health behaviour.

Annex 1. Selection of a special of subgroup of women and their relevance to HIV/AIDS, Sexual and Reproductive Health IEC programs and services

The shaded path in the flowchart below shows which particular *subgroup of wome*n is subject of investigation in this paper, that is: *women who know that proper and consistent use of condoms help to avoid HIV infection, who are sexually active but do not want to become pregnant.* In an environment where the risk of contracting the HIV infection is high, as in Zambia, such women engage in 'high-risk sexual behaviour' if a condom is not used during sexual intercourse. Such women are of particular interest to Sexual and Reproductive Health programs and services, including HIV/AIDS IEC programs.

1. Respondent knows that appropriate and consistent use of condoms prevents HIV-infection?

- **Yes**
- No → Need for exposure to general HIV/AIDS IEC sensitization programs, e.g. multi-media (radio, tv, gatekeepers) multi-sectoral approaches

2. Respondent has (had) sexual intercourse?

- **Yes**
- No

3. Respondent used condom in last sexual encounter?

- **Yes**
- **No**

4. Respondent wants to get pregnant?

- Yes → Exposure to Safemotherhood IEC approaches and access to reproductive and sexual health councelling and services
- **No** → Need for exposure to special HIV/AIDS IEC approaches to maintain/update knowledge, attitudes and behavior to prevent disengagement (e.g. interpersonal councelling couple councelling

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Annex 2. Analytical model

The figure below shows, in a simplified manner, which underlying household, interpersonal and person characteristics are expected to affect the use of condoms in the last sexual engagement in a *special subgroup of wome*n (see Annex 1). Of particular interest is to examine to what extent the underlying (proxy) indicators for wealth status, gender relations (i.e. the interpersonal variables) and indicators of self-efficacy and risk perceptions (i.e. the psycho-social variables) affect the likelihood that women will (not) use a condom. The characteristics included in the model can be justified on the basis of existing theories on contraceptive use and (health) behaviour.

Household level
      Poverty wealth status
      Sex head of household
      Province of residence
      Rural/Urban type of residence
      Ethinic group

Interpersonal (gender) level
      Decision-making large household purchases
      Decision-making woman's health care
      Decision-making fertility (number & timing)
      Attitudes towards wifebeating, if sex refused

Person level
-Socio-economic and demographic
      Age
      Marital status
      Working status
      Level of education

-Psychosocial:
      Perceived control in sexual relations:
            Ability to obtain condoms, if wanted
            Ability to ask condom use to partner
      Perceived risk of HIV infection

HIV/AIDS sexual risk behavior:

      whether or not a condom was used in last sexual encounter

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Chapter 2. Poverty, Gender and HIV sexual risk behaviour in Zambia

George Groenewold

2.1 Introduction

According to UNAIDS statistics for the year 2002, about 70 percent of the 42 million people infected with the HIV virus live in the countries of Sub-Saharan Africa (SSA) and the main mode of transmission is heterosexual intercourse. HIV prevalence rates in Sub-Saharan Africa vary considerably between sub regions. In the adult population, in the age range 15-49 years, rates range from as low as 0.1 percent in Mauritius to as high as 39 percent in Botswana. Currently, the highest rates are found in countries of southern Africa, such as Zambia, where about 1.2 million people in a total population of 10.5 million are HIV positive. The HIV prevalence rate in the age range 15-49 years is about 16 percent (UNAIDS 2002; Central Statistical Office 2003).

In most of SSA, infection rates of women are considerably higher than of men, due to a combination of factors, including: (1) a much greater biological[1] vulnerability of women to venereal diseases and a high prevalence of such diseases in African populations; (2) a general lack of decision-making power of women, often due to their poverty and concomitant financial dependency on men; (3) the prevalence of culturally 'accepted' forms of dominance of men over women, and violence against women, frequently leading to forms of coerced sex (Blanc 2001; Catania 1994; Murray and Lopez 1998; UNFPA 2001; UNAIDS 2002; WHO 2000). So it seems that poverty and adverse gender relations have a negative effect on incidence and prevalence of sexually transferred infections, including HIV, notably among women.

HIV-infection rates reflect both *biological* and *behavioural* factors. Improvements in personal hygiene, physical well being and health care, including the availability of and access to relevant medication, help to bring down incidence rates of HIV infection. However, such biologically focused factors alone are not sufficient to bring down rates to acceptable levels. Change in sexual behaviour are also required, including determinants of behaviour, such as personal beliefs and attitudes regarding safe-sex behaviour, perceived behavioural control in sexual engagements, and changes in social beliefs, norms and expectations in the wider community regarding safe sex. Change in these determinants are affected by knowledge about the causes, mechanisms and personal consequences of HIV infection, as well as by person's assessment of the risk to contract the infection and perception about the severity of the infection.

Most theoretical and empirical social science research on HIV infection focus on psycho-social determinants of HIV sexual risk behaviour[2] and infections. The bulk of the empirical research builds on (components of) one of four main psycho-social behavioural models or a combination of them: (1) the Health Belief Model (HBM), (2) the AIDS Risk Reduction

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[1] Women are, on average, at least four times more vulnerable to HIV-infection then men due to a larger mucosal surface, which implies potentially more microlesions as entry points for the virus, especially in the case of coerced sex. Moreover, there is more virus in sperm than in vaginal secretions leading to higher infection probabilities. In countries with high prevalence of STI's, such as syphilis and gonorrhoea, infection risks of women are even much higher than those of men (UNAIDS 2002).

[2] In this paper the concept of HIV sexual risk behaviour means having sex without the use of a condom. In the remainder of the paper, the terms 'safe-sex' and 'unsafe-sex' are used to indicate whether or not condoms are used, respectively.

Model (ARRM), (3) the Stages of Change model, and (4) the Theory of Reasoned Action/Planned Behaviour (Ajzen 1991; Catania *et al.* 1990; Conner and Armitage 1998; Fishbein 2000; Rosenstock 1994). In these studies and theories, health-risk perceptions and perceived behavioural control (self-efficacy) in sexual engagements often stand out as most important psycho-social predictors of sexual behaviour (Ajzen and Fishbein 2004; Denison 2003; Calderon and Varnes 2001).

A shortcoming of the above theories and studies is their sole focus on psycho-social factors and lack of attention to the role of structural and contextual factors, such as type of society, ethnicity, poverty and gender relations. Another potential shortcoming is that these 'western'-based behavioural theories may not (always) hold in the context of non-western populations, such as in Sub-Saharan Africa, in spite of the fact that the validity of these theories has been confirmed by several meta studies of behaviour in western populations (Albarracin *et al.* 2001; Denison 2003; Sheeran *et al.* 1999*;* Sutton 1998). In general, behaviour (e.g. whether or not a condom is used) can be understood and explained by assuming decision-making processes that acknowledge the 'bounds' of a person's decision frame (related to knowledge, skills, motives, etc.) in specific situations (de Bruijn 1999). However, in non-western populations, a person's motivation, expectations and behaviour could, more than in western settings be influenced by traditions and social norms of the larger cultural or ethnic group (Denison 2003).

This study is part of a larger comparative study of six countries[3] in Sub-Saharan Africa in which underlying and proximate factors of safe-sex behaviour are examined, with particular attention to the effect of household wealth. The specific question to be answered in this study is to examine what the effects of indicators of household wealth[4], gender relations and psycho-social factors are on safe-sex behaviour. Comparisons between men and women are made, where data permit, but the focus in the analysis is on a special subgroup of Zambian women because of their higher vulnerability to sexually transmitted infections (STI), including HIV, and poorer negotiating power in sexual relations (see section 3, appendices 1 and 2).

Section 2 describes the data, main concepts and their operationalisation, and methods used. Section 3 presents a country profile focusing on poverty, gender, HIV prevalence and health policies, with the objective of contextualising the analytical results which are described in section 4. Conclusions and recommendations are presented in section 5.

2.2   Data, Concepts and Methods

2.2.1   Data

The data used in this paper are those of the Zambia Demographic and Health Survey 2001/2002 (ZDHS). The objective of ZDHS was to provide health planners and policy makers with up-to-date information on: (1) fertility, infant and child mortality, and family planning; (2) health-related issues, such as breastfeeding, antenatal care, childrens' immunisations and childhood diseases; (3) the nutritional status of mothers and children; (4) gender relations including domestic violence and, (5) attitudes and behaviour regarding sexually transmitted infections, including HIV (CSO 2003).

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[3] Southern Africa (South Africa, Zambia), West Africa (Ghana, Nigeria) and East Africa (Uganda, Ethiopia).

[4] In this paper, poverty is considered as a wealth-status category in this paper.

The 2000 population census provided the sampling frame for the ZDHS so that nationally representative data from women and men age 15-49 and 15-59, respectively, could be derived. All women in that age range were interviewed in sampled households whereas men were interviewed in one third of these households. The sampling design ensured that nationally representative population and health indicators could be derived as well as representative indicators of urban and rural areas. Moreover, the design ensured representativeness of the data for the main development planning areas, which are, the nine provinces of Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, North-Western, Southern, and Western (CSO 2003).

2.2.2 Main concepts and indicators

2.2.2.1 Poverty

The conceptualisation of poverty used to be restricted to define a state of material deprivation, that is, a certain degree of lack of access to income sources, productive assets and consumption. The focus of research and policy making was on assessment and intervention of absolute rather than relative poverty. Over time, it became clear that lack of access and control (i.e. entitlements) to common property resources and services (e.g. education, wage labour), to household and community assets as well as quality of gender relations, status of women, and freedom and decision-making power in various domains of life are also important dimensions of poverty. This shift from income/consumption poverty to human development poverty helped to better see the causes and consequences of poverty and not merely its symptoms (Sen 1980; Sen 1992; Baulch 1996; Kabeer 1996; Agarwal 1997). From a practical analytical point of view, to examine the effects of human development poverty on, say HIV sexual risk behaviour, requires that effects of constituent parts are identified and measured. Living in a poor state of material well being is one of these constituent parts, and coincides with the initial definition of poverty. As income, consumption and expenditure data are not collected in DHS surveys, a wealth-status index is derived from information on ownership by the household of assets (e.g. radio, refrigerator, bicycle, TV, sofa), availability of certain amenities (e.g. type of water supply and toilet) and quality of housing (e.g. quality of roof, floor, walls) (Filmer and Pritchett 1999; Filmer and Pritchett 2001; Bollen *et al.* 2002). Other dimensions of human poverty included in the analysis are quality of gender relations, measured in terms of women status indicators, and perceived level of control in sexual relations. These are addressed below.

2.2.2.2 Gender

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, as is documented for sexual engagements and domestic support in this paper. Gender varies by culture and class, making gender a fundamental dimension of social stratification (Kishor 1999; Bertand and Escudero 2002).

The quality of gender relations is another dimension of human poverty and the association between wealth status and safe-sex behaviour is likely to be affected by gender relations in households. Unequal gender relations are often associated with early age at marriage of women and large differences in age, education and income between spouses (Narayan *et al.* 2000a; Narayan *et al.* 2000b). The degree of imbalance in gender relations in a household is eventually reflected in the status of women in the household. That is, status in terms of degree of control over, access to, and utilisation of information, education, and income and, more generally speaking, over their life and environment, including fertility, sexual and reproductive health.

The derivation of a single gender index, comparable to the aforementioned wealth index, is problematic due to the multi-dimensional nature of the gender concept, such as inequity, social norms and values system, power in decision making and control over resources (Cagatay 1998; Bertrand and Escudero 2002). This is also confirmed in Blanc's review of indices of the balance of power in sexual relations, in which she concludes that there is a lack of useful and practical measures of the nature and quality of gender relations (Blanc 2001). ZDHS 2001/2002 collected data of women on their opinion about who in the household is the major decision maker in purchasing major household items and on woman's health and fertility. Moreover, women were also asked about whether they think 'wife beating' is acceptable if a woman refuses sex. In the absence of more refined indicators, this study assumes that these ones capture to some extent the quality of gender relations in households leading to a particular status of women in those households. If, in a sexual engagement, a male partner does not want to use a condom, it is expected that if a woman has a low status she will be less likely to be successful in negotiating condom use or refuse sex than if she would have a high status. More specifically, it is expected that women who have little or no say in the purchase of household items, about their own health and fertility, and accept 'wife beating', such women are less likely to use condoms.

2.2.2.3 Safe-sex behaviour, risk perceptions and self-efficacy

In contrast to family planning behaviour[5], HIV risk behaviour lacks a set of reliable, easily measurable evaluation indicators because it has a more complex set of proximate determinants and biological outcomes than does fertility. Condom use to avoid HIV infection can be used as an (intermediate level) indicator that directly links current safe-sex behaviour to a long-term outcome: HIV incidence and prevalence. Beyond mutual lifelong monogamy among uninfected couples, condom use is the only method for reducing the risk of HIV infection and STI's available to sexually active individuals. However, condom use to avoid HIV infection may be erratic and, in sexual networks with multiple partners, its use may vary by type of partner. Also, if the last sexual partner is an extra-marital relation, the reporting on whether or not a condom was used may not be so reliable (NIAID 2004; Bertrand and Escudero 2002).

Bearing the above in mind, this study examines safe-sex behaviour in terms of the likelihood that a condom was used in the last sexual engagement and to what extent household wealth status and quality of gender relations affect this likelihood. The focus in the analysis is on a special subgroup of women, that is, women who know that the use of a condom is an appropriate way to protect against HIV infection and who had sex without the aim of becoming pregnant (see annex 1). It is the behaviour of this particular subgroup that we are interested in understanding, that is, women who have unsafe sex but are consciously aware of the health risk of unprotected sex. Apparently, HIV awareness and sensitisation programs have reached such women but this has not lead to changes in their behaviour. To properly examine the above, the analysis controls for differentials in other contextual, household and person-level characteristics, such as: ethnicity, province and urban or rural type of residence, sex of head of household, as well as for age, marital status, working status and level of education of the respondent (see annex 2).

As was mentioned in the previous section, theories on (sexual health) behaviour attach importance to HIV-risk perceptions and the extent that a person perceives to be in control in sexual engagements (Bandura 1977). In this study risk perceptions are represented by the response of women on whether they perceived to be at small, medium or high risk of becoming infected with HIV, or whether this risk is absent. ZDHS has limited information that can serve as proxy information for the extent of self-efficacy of women. In this analysis,

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[5] e.g. FP program level indicator: couple-years of protection (CYP); intermediate outcome level indicator: contraceptive prevalence rate; long-term outcome indicator: fertility rate.

the following indicators are used as proxies for a sense of personal efficacy in sexual relations: (1) a respondent's knowledge about where to get condoms and to get them, if wanted, and (2) the ability to successfully negotiate condom use with a husband or partner. A high degree of self-efficacy and high risk perception is expected to be associated with a higher likelihood of condom use.

A number of the characteristics included in the analysis have special policy relevance, as they are 'visible' characteristics of persons. These are of help in the profiling of persons exhibiting high-risk sexual behaviour, such as: poverty in terms of possession of assets, amenities and housing quality, province and urban/rural place of residence, ethnicity and age. Intervention programs could start out with targeting persons with the highest likelihood of practising unsafe sex in particular age, ethnicity, place of residence, and wealth-status groups.

2.2.3   Methods

The technique of Principle Component Analysis (PCA) is used to construct a summary index for the wealth status of households. To examine whether and how household wealth status, indicators of gender relations and psycho-social factors and other relevant control characteristics affect the likelihood that women use condoms, logistic regression is used. This is the appropriate approach when the characteristic to be explained is dichotomous (i.e. whether or not a condom was used in the last sexual engagement).

2.3   Context of poverty, gender and HIV: a country profile

As figure 1 shows, the country is administratively divided into nine provinces. The 2000 census counted 10.3 million people who belong to 73, mainly Bantu-speaking ethnic groups of which the Bemba (35%) are the largest.

Figure 1: Main administrative regions in Zambia

In the provinces of Lusaka and Copperbelt, 80 percent of the population lives in densely populated urban areas. In the other provinces—Central, Eastern, Northern, Luapula, North-

Western, Western and Southern—most people (85percent) live in rural areas. The deteriorating economic conditions in the past decades resulted in a decline in urbanisation rates from 40 percent in 1980 to 36 percent in 2000. Provincial levels of urbanisation vary from as high as 91percent in Copperbelt province to as low as 9 percent in Eastern province (CSO 2002).

2.3.1 Poverty and the economy

Zambia has a mixed economy consisting of a modern urban sector that, geographically, is concentrated along main railroad tracks in the country, and a rural agricultural sector. Copper mining is the country's main economic activity, accounting for 95 percent of export earnings and contributing 45 percent of government revenue during the decade following independence (1965-1975). In the mid-1970s, following a sharp decline in copper prices and a sharp increase in oil prices, the country's economy deteriorated. The 1980s marked the start of the first phase of implementing Structural Adjustment Programs (SAP) amidst a stagnating economy.

However, the SAP failed to substantially alter the economy and essentially contributed to poverty of the majority of Zambians. Zambia ranks 163 on the Human Development Index scale (1 to 175) and qualifies for soft loans (i.e. IDA eligibility, also see below) of the World Bank. In terms of income, the people of Zambia belong to the poorest in Sub-Saharan Africa: almost two third of the population earns an income of less than 1 dollar a day. In rural areas, where most people live, prevalence of poverty is particularly high due to a lack of access to income, employment opportunities, and entitlements to goods and services, shelter and other basic needs of life.

In their Poverty Reduction and Strategy Paper (PRSP), the government of Zambia is committed to combat poverty by stimulating the economy through development of the private sector and by reforming the public sector, including government expenditures. Currently, the economy is not really 'on track', partly due to Zambia's severe external indebtedness. The dependence of the economy on foreign (donor) capital is reflected in the share of development aid in the gross national product, which was about 10 percent (373 million dollar) in 2003 (MOFNP 2002; World Bank 2003).

Development requires good governance, both in the civil and private sectors. In spite of the 'zero tolerance on corruption' policies launched by the new government, progress has been rather slow as corruption is still widespread. Overall, Zambia ranks low (77) among the 102 countries for which the Corruption Perception Index (CPI) was calculated (Transparency International 2003). But in spite of this, the overall rating of the management of Zambia's economy, expressed in terms of its IDA Country Performance Rating, is improving and above average[6] (IDA 2003).

2.3.2 Gender

The economic crises in the past decade have affected gender relations in Zambia and this had a negative impact on the status of women (Narayan *et al*. 2000a). In general, gender roles in

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[6] The International Development Association (IDA) of the Worldbank assists the world's poorest countries to reduce poverty by providing loans *without* interest. Access to such loans depends on a country's CPR (Country Performance Rating). This Performance Based Allocation (PBA) of financial resources using CPRS is based on an annual review of 20 indicators of performance in the following domains: economic management, structural policies; social inclusion/equity policies, public sector/institutional management, development program management and 'good governance'.

Zambia make it hard for women to protect themselves against HIV due to a combination of factors such as the dominant role of men, misconceptions of many men (and women) about HIV transmission, and lack of empowerment of women to refuse risky sexual engagements. For instance, in a study in Zambia, more than 75 percent of the women interviewed believed that a married woman cannot refuse to have sex with her husband, even if she knew he had been unfaithful and was infected. Economic dependence of poor women on men is highest and their empowerment lowest leading to low negotiating power for safe sex so that they are potentially most vulnerable in terms of HIV infection, in particular in circumstances of conflict within the household (UN 2001). Another study reveals that misconceptions, folk beliefs and denial are responsible for Zambian men's low personal risk perception for HIV infection. Misinformation is spread through gossip and hearsay, and men fear retribution or are too shy to ask for clarification from friends or family. Folk-belief explanations for transmission include attributing infection to sorcery or to the strength of a person's blood. Many respondents cited promiscuous-looking women as the most frequent transmitter of STIs/HIV and therefore avoid such women as a precautionary method. However, most of them do not realise that all sexually-active people are at risk of HIV (PSI 2003).

Discussion groups in Zambia indicate that increased poverty of households, due to the remaining adverse economic conditions, has lead to rising alcohol and drug abuse among men and increased domestic conflicts and violence. Types of abuse and violence against women that are typical in Zambia are wife beating, property grabbing, and sexual intimidation. The general tolerance of domestic violence is a significant barrier to the empowerment of Zambian women, with consequences for their sexual and reproductive health and health-seeking behaviour, and the health of their children (Narayan *et al.* 2000a; Narayan *et al* 2000b; Central Statistical Office 2003).

According to ZDHS 2001/2002, more than half of the women (53percent) reported to have experienced beatings or physical mistreatment since age 15 and almost one out of four women (24 percent) report having experienced physical violence in the past 12 months. Almost eight out of ten women currently in union and experiencing physical violence mention that their current husband/partner is the perpetrator. Women living in the highly urbanised Copperbelt and Lusaka provinces report more often to be victim of physical violence than those in other provinces do (Central Statistical Office 2003).

Regarding control over assets, women are underprivileged as in Zambia, though no legal restriction on land use exists, it is difficult for women to obtain land from land authorities. Under the statutory system, in some districts, married women must provide evidence of their husband's consent to obtain land, while unmarried women are often not recommended for allocation of land if they do not have children (Narayan *et al.* 2000a; Narayan *et al* 2000b; Central Statistical Office, 2003).

2.3.3   HIV and health policy context

The most recent Demographic and Health Survey of 2001/2002 reports that almost one in six Zambians is infected with the HIV virus. HIV and other sexually transmitted infections (STI), such as syphilis, have now become the major health threats for the Zambian population.

After Zambia's first case of AIDS was diagnosed in 1984, the government, supported by the international donor community, launched the National AIDS Prevention and Control Program in 1986, as part of the WHO Global Program on AIDS. Over time, the cross-cutting and multi-dimensional nature of the HIV epidemic was recognised and this lead to a broad and multi-sectoral response. This reflected in the 'Strategic Framework 2001-2003' whereby a combination of interventions are being implemented aiming at reducing HIV transmission and reducing the socio-economic impact of HIV (National HIV/AIDS/STD/TB Council 2002).

According to the report Financial Resource Flows for Population Activities, produced by UNFPA in collaboration with NIDI, the international donor community has gradually stepped up its assistance to combat the HIV/AIDS epidemic in Zambia and in neighbouring countries. International donor assistance to finance expenditures on reproductive health, family planning and HIV/AIDS programs in Zambia more than doubled in the period 1996-2001: from about US$ 14 to US$ 30 million. The domestic expenditures in 2001 were only little over US$ 0.5 million. The share of HIV/AIDS programs and projects in total expenditures on the above themes increased from 25 to 55 percent (UNFPA 2003).

In Zambia, HIV prevalence among of women (18 percent) is *higher* than the rate of men (13 percent). HIV prevalence vary by age and place of residence[7]. Highest HIV rates are observed among women in the age group 25-29 (25%) and 30-34 (29%). Prevalence rates of men peak at later ages, which are 35-39 (25%) and 40-44 (22%). Rates in urbanised provinces such as Lusaka (25%) and Copperbelt (22%) are higher than in rural areas. Lowest figures are reported for the provinces of North-Western and Lualapula, 9 and 13 percent, respectively. The urban-rural gap is wider at all ages among women as compared to men, which is a clear indication of the critical level of the epidemic among urban women. At the peak ages of infection in urban areas, 30-39 years, two in five urban women are infected with HIV compared with less than one in five rural women (CSO 2003).

Figure 2. Indicators of Poverty, HIV infection and gender for Zambia compared to average conditions (=100) in Sub-Saharan Africa (Source: World Bank 2000).

To conclude, the above account of poverty, gender and HIV infection conditions in Zambia shows that Zambia is a country that belongs to poorest in Sub-Saharan Africa, experiencing increases in poverty partly as a negative by-product of SAP (Structural Adjustment Program). Regarding gender relations, women have little control in various domains in life, including in sexual engagements, household decision making, and financial independence. In spite of stepping up HIV/AIDS prevention programs in the country, prevalence rates have remained high, raising doubts about their effectiveness. HIV rates are among the highest in the continent. Figure 2 compares Zambia with the average (=100) conditions in Sub-Saharan Africa regarding a number of poverty, health and gender indicators. The diamond graph shows that Zambia's GNP is far below the SSA average and that the proportion of persons

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[7] HIV infection status of respondents, for privacy reasons, was de-linked from other characteristics of respondents (except for age, sex, place of residence).

living *without* aids is below the SSA average. The representation of women in parliament, a macro-level indicator of the status of women, shows that their representation is below the SSA average.

2.4   Results

Below, in sub section 2.4.1, we take on a bi-variate approach to examine to what extent differentials in wealth status of households are associated with differences in levels of knowledge about HIV, risk perceptions and safe-sex behaviour of Zambian men and women. In sub section 2.4.2 we take on a multi-variate approach and examine what the individual (gross) and combined (net) effects are of wealth status, gender relation indicators and psycho-social indicators on safe-sex behaviour of women. As households differ according to various other relevant contextual, household and person characteristics, such as ethnicity, place of residence, and socio-economic and demographic characteristics of persons the analyses explicitly takes these also into account.

2.4.1   Wealth status and safe-sex behaviour

Table 2 shows which household items were used to construct a so-called wealth index and to what extent each item is present in the population of households in Zambia.

Table 2. Ownership of household assets and housing characteristics (N=7126)

		Percentage
Assets	Electricity	14
	Radio	39
	TV	15
	Refrigerator	8
	Bicycle	31
	Car/truck	2
	Telephone	3
	Solar Power	1
	Mosquito nets	27
Water supply	Piped water inside	12
	Piped water outside	14
	River/pond/lake, etc.	20
Sanitation	Flushtoilet	12
	Pit Latrine	56
	Bush/field/other	31
House	Earthen floor	69
	Concrete floor	28
	Carpet	2

The table shows that the majority of Zambians have earthen floors in their house (69%) and that most households use a traditional pit latrine (56%). Only a small segment of the households have a carpet on the floor (2%), owns a car (2%) or has a telephone (3%). The items listed in table 2 were used to construct a wealth-status index for households. The extent that such items are owned or present in a household determines what the index score of the household is. The scores of all households are sorted and grouped into 5 equal size wealth classes.

To examine whether the derivation of a wealth status from the above items generates a plausible wealth index, the derived wealth status of households was cross-tabulated with information on 'the ability of the household to provide enough daily food to its members'. As the results presented in table 3 is what we would, *a priori*, expect to find, it is concluded that wealth status of households can be estimated by means of the wealth-status index and classification. Table 3 shows that poorer households find it more difficult to ensure food provisioning than richer households, according to *a priori* expectations.

Table 3. Wealth status and household ability provide food to its members (n=7126 households)

		Poorest 20%	Second quintile	Middle group	Fourth quintile	Richest 20%	Total
Enough food to eat?	Usually	25	31	43	45	52	39
	Sometimes	45	44	41	44	42	43
	Seldom	28	23	16	11	5	17
	Never	2	2	1	0	0	1
	Total	100	100	100	100	100	100

Now, let us look to what extent persons from poorer households differ from those in richer household regarding HIV infection.

Table 4 shows a number of interesting findings. Regarding knowledge about HIV infection, respondents in different wealth classes do not seem to differ much, including differences between men and women. Knowledge is almost universal. The majority of respondents also report that they know about ways to avoid HIV infection, but here we notice that knowledge in poorer households is less than in richer households and that the knowledge is lowest among women in the poorest households. Moreover, the poorer the household the larger the discrepancy between men and women regarding whether or not they know how to avoid HIV infection.

However, the data do not give us information about the *depth* of the knowledge and this is important as a number of qualitative studies show that there are many misconceptions about HIV transmission and risk of infection in Zambia. The knowledge of an unknown part of the population about HIV/AIDS may come from hearsay and gossip, instead of from objectively credible sources regarding HIV/AIDS information messages (PSI 2003). In Zambia, the radio is an important mass medium to convey HIV/AIDS messages, but, as table 1 shows, only about 40 percent of the households own a radio, and, according to table 4, about 40 percent of the women and 20 percent of the men never listen to a radio. In the poorest households, almost 80percent of the women never listen to the radio, about the twice the percentage of men in such households.

When asked whether the consistent use of a condom helps to prevent HIV infection, about three in four men and women give an affirmative answer. In poorer households proportions are somewhat lower and women in the richer segments of the population seem to be more aware of the linkage between condom use and HIV infection than men. Having heard about HIV/AIDS and ways to avoid it, and that use of condoms helps to prevent HIV infection does not mean that condoms will be used at all times, for instance when a pregnancy is desired. In other situations, the use of a condom seems warranted in a country where one in six adults in the age group 15-49 is already infected with the virus. Table 4 shows, that discussion about the use of condoms with a sex partner is not common practice. Women, more often than men, report that the issue cannot be discussed, and this is particularly so among the poorest

Table 4. HIV/Aids related knowledge, perceptions and behaviour in households with a different wealth status.

		poorest 20%	second quintile	middle group	fourth quintile	richest 20%	Total	N
Ever heard of HIV/AIDS	Men	98	97	98	98	100	99	2145
	Women	98	98	99	99	99	99	7658
Ways to avoid HIV/AIDS	Men	90	89	95	94	96	94	2116
	Women	75	79	84	88	94	86	7603
Never listens to a radio	Men	40	32	21	15	8	20	2142
	Women	78	71	45	33	14	42	7652
Consisten condom use reduces HIV/AIDS infection	Men	72	75	77	76	78	76	1985
	Women	74	76	78	83	85	81	6527
Can talk with partner about use of condoms	Men	61	63	71	74	83	73	1737
	Women	53	55	59	66	73	63	7631
If condom wanted, could get one	Men	87	91	86	87	87	87	1780
	Women	51	52	57	60	64	59	5938
Used condom during last intercourse	Men	8	13	16	23	27	20	1737
	Women	6	9	9	14	17	12	5673
Perceived risk of HIV infection (small, moderate or high risk)	Men	59	57	59	58	70	63	1396
	Women	71	66	67	70	70	69	7599

But even if the issue can be discussed between sex partners, it does not mean that a condom will actually be used. The latter, may be the result, among others, of non-accessibility to or non-availability of condoms. Table 4 show, that, overall, almost 40 percent of the women mention not being able to get a condom if they want, and the percentage is highest among women in the poorest households. Apparently, almost 90 percent of the men, irrespective of whether they live in a rich or poor household can get condoms if they want. Almost two of three women (62%) who mentioned not be able to get condoms when they want, report that the main reason is 'embarrassment'. Although most men do not have this barrier, it is still the main reason (41%) why one out of ten men do not get a condom when they want. The price of condoms is rarely (less than 1%) mentioned as a barrier to get condoms.

Taking account of the above, it comes as no surprise that, overall, condom use during the last sexual intercourse is low in Zambia and lowest in the poorest households. Compared to women, men in richer households more often report to have used a condom in the last sexual engagement. Men in the richest households also more often than men in poorer households mention to be at risk of infection but their risk perceptions are much lower than those of women. This confirms results of qualitative studies in Zambia (see section 2.3.2), where due to various reasons, men have relatively low risk perceptions in spite of the fact that they are living in a high HIV risk environment (PSI 2003).

The low use of condoms, the presence misconceptions regarding the link between condom use and HIV infection, and the fact that partners do not easily discuss about the use of condoms must be weighted against the undesirable fact that about two out of three Zambians mention that they are at risk of becoming infected. What might then be main reasons for not using a condom if a person perceives to be at risk of becoming infected?

Obviously, the desire of becoming pregnant is a valid reason, but only five percent of the women and nine percent of the men mentions this. Overall, main other reasons for non-use mentioned by women are: condoms not available/out of stock (23%), male partner refused use (17%), male partner is trusted not to be HIV infected (11%), and respondent uses another family planning method (12%). Apparently, use of another family planning method is considered a legitimate reason for respondents not to use a condom as protection against HIV infection. Moreover, one in ten women trust their partner on his word that he is not infected,

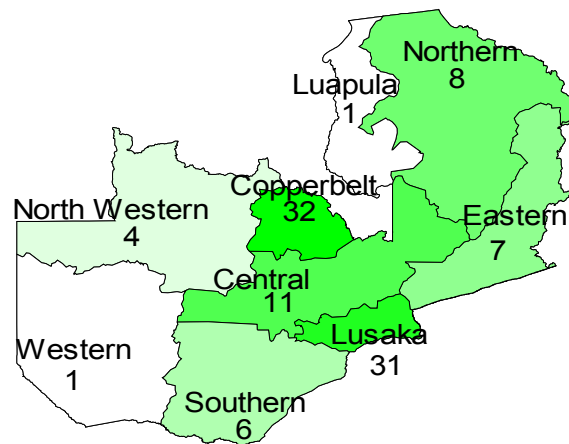and this is somewhat surprising to hear from women who live in a culture where promiscuity, virility and manhood are important aspects in the life of men (PSI 2003). In this respect it of interest to note that 'trusted' means 'trustworthy in the current relation'. Qualitative studies report that persons may not make the link between past sexual risk-taking behaviour and acquired HIV infection and current infection status. In other words, the enduring nature of an HIV infection in a person is not recognised (PSI 2003). Overall, women report more often than men that the reason for non-use is that condoms are not available/out of stock. The difference between them is largest among the poor, 38 and 22 percent respectively. Overall, this difference may, may reflect shyness on the side of women to buy condoms.

Figure 3: Geographical distribution of the poorest and richest households in Zambia

Percent distribution of the poorest 20 percent of households

Percentage distribution of the richest 20 percent of households

The response of women regarding reasons for non-use differs by wealth status of households. Women in the poorest households mention as main reasons for non-use: condoms not available/out of stock (38%), partner refused use (11%), respondent does not like to use condoms (9%). Women in the richest segment mention as main reasons: used other family

planning method (24%), partner refused (22%), and trustworthy partner (17%). Main reasons for 'non-use' mentioned by men in poorest households are: trustworthy partner (30%); condoms not available/out of stock (22%), and dislike using condoms (21%). Men in the richest household show similar answers, about 35 percent mention that the sex partner is trustworthy, and 15 percent mention that they do not like to use condoms.

Contrary to men in poorer households, men in richer households do not report that condom availability is an important reason for non-use, suggesting that the richest are concentrated in particular areas where provisioning of services and goods are best, such as urbanised areas. This is confirmed and shown in figure 3. Almost 60 percent of the poor live in three rural provinces: Northern (20%), Eastern (21%) and Western province (18%). The highly urbanised provinces of Lusaka and Copperbelt are where more than 60 percent of the richest households live.

So far, we examined whether persons in households with a different wealth status also show difference in indicators of knowledge and perceptions regarding safe-sex behaviour. It was found that household wealth-status matters and that those who live in the poorest households are worst off and that they exhibit lowest condom use rates. Moreover, differences between men and women regarding the above issues vary according to the household wealth status. The geographical distribution of the poorest 20 percent shows that most of them live the three rural provinces of Eastern, Northern and Luapula. The analysis also showed that women, in particular those living in the poorest households, are particularly disadvantaged in terms of being reached by HIV/AIDS programs through mass media (e.g. radio, newspapers) and in terms of getting access to condoms and discussing the use of condoms with a partner.

2.4.2 Poverty, gender and safe-sex behaviour

Table 5 shows the results of logistic regression analysis. The values in the main body of table 5 show the extent that particular categories of characteristics have on the likelihood that safe sex is practised, compared to the effects that reference categories (column 1) have. The reference category has the value of 1.0 so that a value less than one indicates that the effect of a category is 'x times' less than that of the reference category. A value higher than one means the opposite. Following the value of the coefficient, a symbol is placed (e.g. * or **) that value, statistically speaking, significantly differs from that of the reference category. Thus, only values followed by such kind of symbol are to be taken 'serious' in the interpretation of results. In the bottom of the table, R-square values are reported. The value of 27.4 percent for model 6 means that the characteristics included in that model explain 27.4 percent of the variation in safe-sex behaviour among respondents.

Models 1, 2 and 3 show what the (gross-) effects of the main characteristics of interest (wealth status, gender and psycho-social condition) are on the likelihood that safe sex is practised. Models 4, 5 and 6 show net effects. Model 6 is of particular interest, as it shows net effects of all characteristics included in the analysis, including interaction effects between characteristics. From the row of R-square values for models 1, 2 and 3 it is concluded that proximate characteristics of safe-sex behaviour explain more of that behaviour. More specifically, the gross effect of psycho-social characteristics of women (8.5%) have almost four times as much effect on safe-sex behaviour than wealth characteristics of households (2.2%), about twice as much as women-status characteristics (4.3%). In Model 6, these differences are by and large maintained after account is taken of effects of all other relevant characteristics, including in interaction effects. Net effects of psycho-social indicators drops to 4.2 percent (derivation data not shown), but this is still about four times higher than the net effect of household wealth status (1.1%) and more than twice the effect of gender (1.7%). Overall, net effects of person and interpersonal level characteristics (14.5%, derivation not

shown) appear to be more important than effects of contextual and household level characteristics (11.7%).

Now, let us look in more detail to the effects and changes in effects of different characteristics in the models. Model 1 shows the gross effect of household *wealth status* on the likelihood that safe sex is practised. However, no account is taken of other characteristics yet. Apparently, the richer the household the higher the likelihood that women practice safe sex as the values for wealthier households increase. Women in the richest households apparently are 2.5 times more likely to practice safe sex than women in the reference category, those in the poorest household. However, there appears to be no significant difference between safe-sex behaviour of respondents in households of the group of 'below middle' households and the 'poorest 20 percent' households. Essentially, the general relation between household wealth status and safe-sex behaviour remains significant, but the magnitude of the effects becomes smaller when other contextual, households and respondent characteristics are taken into account (models 4, 5 and 6). According to model 6, women in the richest households are still about 1.5 time more likely to practice safe sex than women in the poorest households.

It is important to note (model 4) that contextual characteristics, in particular province of residence and less so ethnicity, contribute significantly to the explanation of safe-sex behaviour. These characteristics together eventually explain 10.7 percent of the variation in safe-sex behaviour (model 6). Apparently, ethnic affiliation in Zambia means that there are ethnic differences in social norms, expectations and motivations affecting sexual behaviour of women. Women of the Kaonde and Tonga ethnic groups are the least likely to use condoms.

Values for provinces indicate that there are large differences between provinces regarding safe-sex behaviour. Women in Lusaka province are about twice as likely to practice safe sex as women in Eastern province and women in North-Western province are even 8 times more likely to practice safe sex than women in Eastern province. Women in Luapula province are the least likely to practice safe sex.

Model 2 shows the gross effect of indicators of women status. Women who mention that they are the main decision maker regarding the number of children and the timing of becoming pregnant are 2.1 times more likely to use condoms than women who do not have this decision-making power. Similarly, women who mention having full say over their own health are 1.4 times more likely to use condoms than women who depend on the opinion of others regarding seeing health care.

However, when other relevant characteristics are taken into account, interaction effects with these characteristics make that effects of women status indicators on safe-sex behaviour are mediated by other, more proximate, characteristics, in particular by martial status and level of education of women (model 5), and later by psycho-social characteristics of women (model 6). Womens' status indicators, marital status and education appear to be correlated (correlation's not shown). A higher level of education is associated with a higher likelihood of practising safe sex, whereas being married is associated with a lower likelihood of practising safe sex.

Married women are more than 3 times less likely to practice safe sex than unmarried and formerly married women. Apparently, the transition in the life course from being unmarried (or formerly married) to being married results in a significant change in safe-sex practices. This is consistent with findings of other research on Zambia (see section 2.3.2). Models 4 and 5 lend additional support for this, because, when women are heads of household, the likelihood of practising safe sex is twice as high than among women who live in male-headed households.

Table 5. Effect of different types of characteristics on the likelihood of condom use by women (†, *, ** = significant at 10%, 5% and 1% level. Reference category in italics).

Independent variables		Gross Effects			Net Effects		
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Context and household level							
Eastern	Northern				1,5	1,5	1,8
	Luapula				0,5 *	0,5 *	0,5 †
	Copper				1,1	1,0	1,0
	Central				1,2	1,1	1,1
	Lusaka				2,1 **	2,1 **	2,1 **
	Southern				1,5	1,4	1,3
	Western				1,2	1,0	1,1
	North-west				8,5 **	9,0 **	8,6 **
Urban	Rural				0,9	1,0	0,9
Other Ethnic	Bemba				0,9	0,9	0,9
	Tonga				0,6 *	0,6 *	0,6 *
	Lozi				1,1	1,0	1,0
	Chewa				0,9	1,0	1,0
	Kaonde				0,2 **	0,2 **	0,2 **
	Nsenga				1,1	1,0	1,0
Male h.o.h.	Female h.o.h.				2,0 **	1,1	1,2
Poorest	Low middle	1,4			1,3	1,2	1,3
	Middle	1,5 *			1,5 *	1,4 *	1,5 †
	Middle high	2,3 **			2,0 **	1,6 †	1,6 *
	Richest 20%	2,5 **			2,3 **	1,5 †	1,5 †
Interpersonal (gender) level							
Status of women:							
Others	Purchases: woman decides		1,0		0,9	1,0	1,0
Others	Own health: woman decides		1,4 **		1,0	1,1	1,1
Others	Fertility: woman decides		2,1 **		1,9 **	1,0	1,0
Beating o.k.	Wife beating wrong		1,5 **		1,4 **	1,2 †	1,2
Person level							
Socio-economic/demographic:							
15-19	20-24					0,8	0,8
	25-34					0,7 *	0,7 *
	35-49					0,4 **	0,5 **
Unmarried	Currently married					0,3 **	0,3 **
	Formerly married					1,0	1,1
Not working	Currently working					1,0	1,0
No schooling	Primary: incomplete					1,3	1,2
	Primary: complete					1,4	1,2
	Secondary: incomplete					2,1 **	1,7 *
	Secondary: complete					2,7 **	2,2 *
	Higher education					3,6 **	2,7 **
Psychosocial:							
No risk	Small risk			0,9			0,9
	Moderate risk			0,6 **			0,7 *
	High risk			0,5 **			0,6 *
Can't obtain	Knows where, can't get			2,8 **			2,4 **
	Knows where, can get			2,5 **			2,3 **
No success	Succes in condom negot.			4,7 **			3,8 **
Constant		0,09 **	0,10 **	0,03 **	0,05 **	0,17 **	0,05 **
Likelihood (-2LL)		3070 **	3027 **	2934 **	2795 **	2592 **	2488 **
R-square (Nagelkerke's % explained variance)		2,2	4,3	8,5	14,6	23,2	27,4
N		3746	3746	3746	3746	3746	3746

Apparently unmarried or formerly married women are over-represented in such type of households because when, in model 5, the variable 'currently married' enters the equation, the value of 2.0 drops to 1.1 and becomes non-significant. Apparently, women who are heads of household and get married loose much of their negotiating power regarding safe sex, and show similar safe-sex behaviour as women in households headed by men.

The effects of all womens' status indicators in model 2 vanish when, in model 6, perceived behavioural control (self-efficacy) and HIV risk perceptions of women are included in the equation. Self-efficacious women are women who know where to get condoms, and can get them if needed, and they are able to successfully negotiate condom use with husbands and partners. Thus, this sense of being self-efficacious is associated with a higher likelihood that safe sex is practised, which is according to expectation (see section 2.2.2.3)

In model 6 we expect to find a positive relation between risk-perception and condom use. However, model 6 presents a negative relation: the higher the perceived risk of becoming infected, *the lower* the likelihood that women practice safe sex. This finding may point to a case of reverse causality, that is, risk-perceptions are a consequence of condom use rather then a cause. In the context of Zambian gender relations (i.e. see section 2.3.2), this reverse causality is interpreted as follows: women with a higher risk perception have this perception because of their inability to successfully negotiate and practice safe sex with partners. Apparently, the opinion of men about safe sex practices overrules the opinion of their partners, especially within marriage. The consequence of this interpretation is that, in the case of Zambia, the question posed in ZDHS about women's perceived level of risk of infection essentially measures the degrees of lack of self-efficacy and fear to negotiate safe sex with partners.

Models 5 and 6 confirm findings of other research in various parts of the world regarding the importance of having at least completed primary schooling and preferably a few years of education beyond that level. Women who have such a level of education more often mention to practice safe sex than women with lower levels. The positive correlation (not shown) between level of education and self-efficacy indicators in model 6, explain the drop in effect of the education characteristic between models 5 and 6. The higher the level of education, the more self-efficacious and the more likely it is that women practice safe sex.

2.5   Conclusions and recommendations

The results of analyses in the previous section show that about eight out of ten men and nine out of ten women did not use a condom in the last sexual engagement. Among women who are married, use rates are even (much) lower. This low use rates are observed in a country where one in six persons is infected with the HIV virus and where the great majority has heard about HIV/AIDS, and where about three out of four persons know that HIV infection can be avoided if condoms are properly used.

The review of literature on HIV sexual risk behaviour revealed a strong focus on psycho-social determinants and a lack of attention to structural and contextual underlying determinants of sexual behaviour, such as poverty, ethnicity, gender relations and place of residence. Particular interest was to examine whether differences in wealth status and quality of gender relations lead to significant differences in safe-sex behaviour. To examine safe-sex behaviour the focus was on women who had sex without using a condom for reasons other than becoming pregnant, and who know about HIV/AIDS and ways to avoid it.

Analysis of ZDHS data started with the analysis of data of both men and women. It was found that women in Zambia, compared to men, appeared to be in a particular disadvantaged position. Women, more often than men, perceive to be at risk of HIV infection, they more often indicate that they cannot bring up the issue of condom use in a sexual engagement, and, because of feelings of embarrassment, they often do not try to get condoms, even if they want to use them and know where to get them. These experiences are even more pronounced among married women as condom use within marriage is not considered an accepted subject of conversation, in particular by women. Use of condoms may be associated with extra-marital relations, something that is less likely to be perceived as a problem by men, but more so by women as they frequently mention to feel 'embarrassed' when issues of access to and use of condoms turn up in discussions. The analysis into underlying determinants of safe-sex behaviour proceeded by looking at safe-sex behaviour of women.

Regarding the central question of this study, multivariate analysis clearly demonstrates that the underlying factor of household wealth status is important to explain and predict safe-sex behaviour, even after account is taken of effects of other contextual, household, interpersonal and person-level characteristics. The effect of gender, represented by status-of-women indicators, is important, but the effect dilutes when more proximate characteristics, notably level of education, marital status, HIV risk perception and perceived behavioural control are included in the analysis. The underlying contextual factors, in particular province of residence and ethnicity, showed important net effects in the explanation of safe-sex behaviour. Apparently, women in particular provinces and of different ethnicity exhibit quite distinct safe-sex behaviours.

It may be argued that the indicators that were used as proxies for self-efficacy could also be interpreted as gender and 'status of women' indicators. This is indeed true, but there were substantive reasons not to include them as women status indicators. Reason was the need to distinguish between effects of decision and opinion characteristics that are defined by the presence of a relationship between persons, and characteristics that express the mind-set of a person, such as feelings and perceptions that are present without the necessary presence of another person (i.e. husband or partner).

This study showed that safe-sex practices vary in households with a different wealth status and by persons that hold different risk and self-efficacy perceptions. It is recommended that further research takes on a regional comparative perspective by examining DHS data of other countries in Sub-Saharan Africa to examine the variation in effects of determinants across SSA and identify common features and salient differences between countries. In addition, differences in risk-taking behaviour of men and women in different wealth-status groups could be examined, as this will further help targeting particular groups for specific HIV/AIDS intervention programs.

The unexpected finding that a higher risk-perception of becoming infected is associated with a lower likelihood that safe sex is practised is interpreted as a case of reverse causation, that is, lack of self-efficacy to successfully negotiate condom use results in a sense of fear on the side of women. As all women in this study were selected (see annex 1) based on their knowledge that condom use helps to prevent HIV infection, their degree of inability to negotiate safe sex is expressed in their stated level of risk of becoming infected. Thus, the lower the level of self-efficacy in sexual engagements, the higher the expressed level of concern of becoming infected. If this interpretation is plausible, it is recommended that HIV/AIDS programmes need to specifically target men as their domination in sexual relations essentially inhibit women to protect themselves against a potential source of HIV infection. As other research showed, misconceptions about HIV infection among men are widespread. It is recommended that the prime focus of

intervention programmes should be on resolving this and to make men aware of their responsibility to ensure sexual health and survival of their women and of themselves.

The results of the analysis point to women as a particular vulnerable group and calls for efforts to increase their empowerment, in particular in the domain of sexual health. At the same time it must also be realised, in the case of Zambia, that empowering women is by necessity part of a dialectic process, as empowerment of women can only lead to safe-sex practices if the men are also empowered in the sense of resolving their misconceptions about HIV transmission and educating and involving them more actively in sexual and reproductive health matters of their partners and children, and of themselves. So far, programs apparently have not managed to change the mind set of large parts of the population in terms of norms and values regarding condom use. Efforts should be stepped up to change the image of condoms so that a condom and its use are (also) seen as a legitimate and intelligent way of protection against a deadly virus.
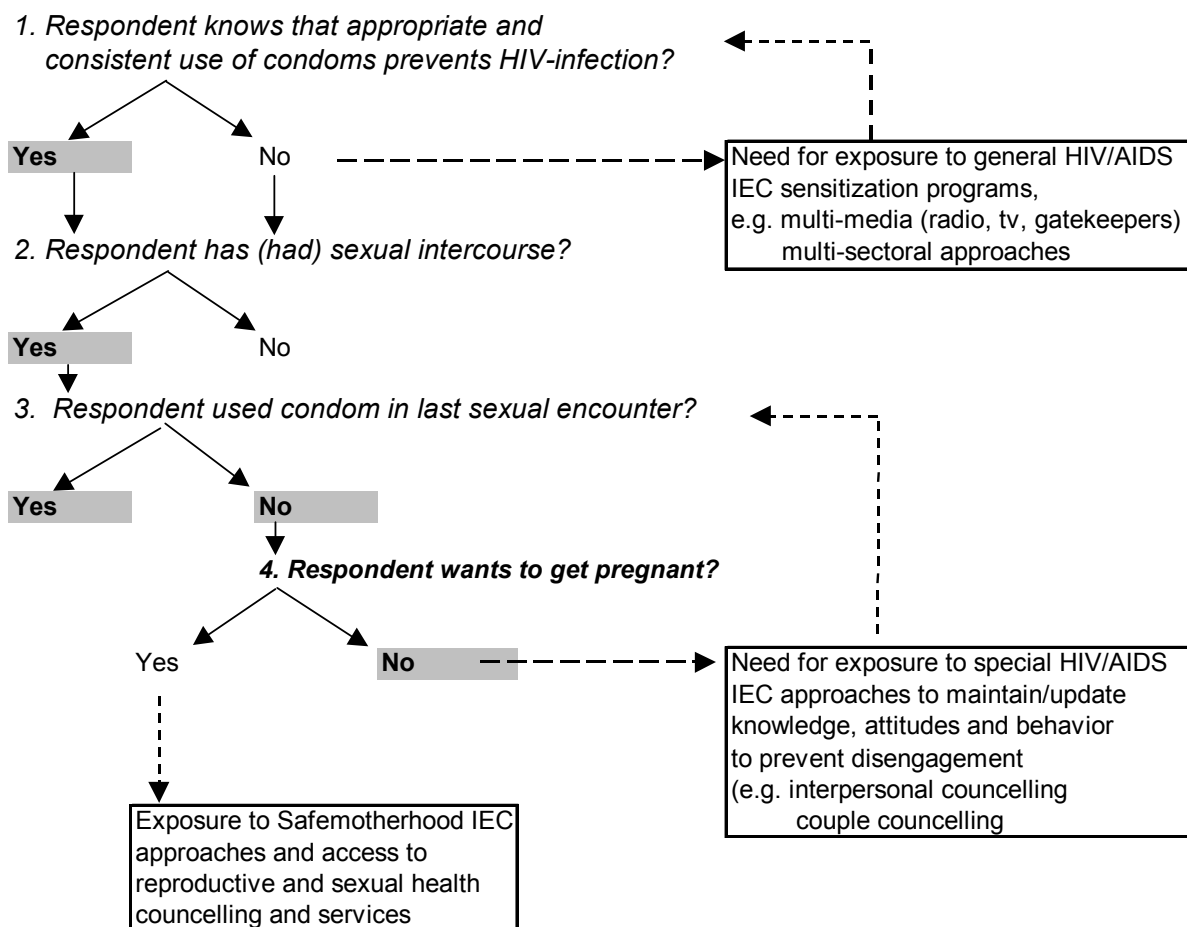
To reach the poorer segments in the population a focus on the use of mass media, such as radio, TV or newspapers may not be recommendable as the sole solution as only about 30 percent of the households own a radio, 15 percent a TV and about 70 percent of the women in the poorest households never even listen to a radio. It seems that programs, more than before, should focus on the training gate keepers at village and town levels so that these persons assume the task of being change agent in their community regarding social and sexual norms and behaviour to the benefit of the health of community members.

The results of multivariate analysis showed the importance of underlying contextual characteristics in the explanation of safe-sex behaviour. These characteristics are particularly useful in the profiling of target groups for HIV/AIDS intervention programs and of help in prioritising who should be targeted first. Households with a minimum of assets listed in table 2 are the prime target group and, in particular, women (and their partners and other household members) in such type of households in the province of Luapula should receive increased attention. These are laggards in condom use, followed by women in Eastern, Copperbelt, Central, Western, etc. Moreover, women (and their partners and other household members) belonging to some of the main ethnic groups in Zambia, i.e. Tonga and Kaonde, should receive special attention as they are the least likely to use condoms. It would be of interest to examine the variation in schemata of sexual behaviour in different ethnic groups, as this will reveal both barriers and channels for change in sexual and reproductive health behaviour in Zambia.

It is also recommended, that general development programs continues to work towards educating people to at least primary school levels, preferably complemented with some additional general education. The analysis showed that significant gains would be made in safe-sex prevalence if persons attain that level of education. That educational attainment level is a necessary condition for the proper acquisition, selection and processing of relevant knowledge and self-propelled and sustainable changes in sexual and reproductive health behaviour.
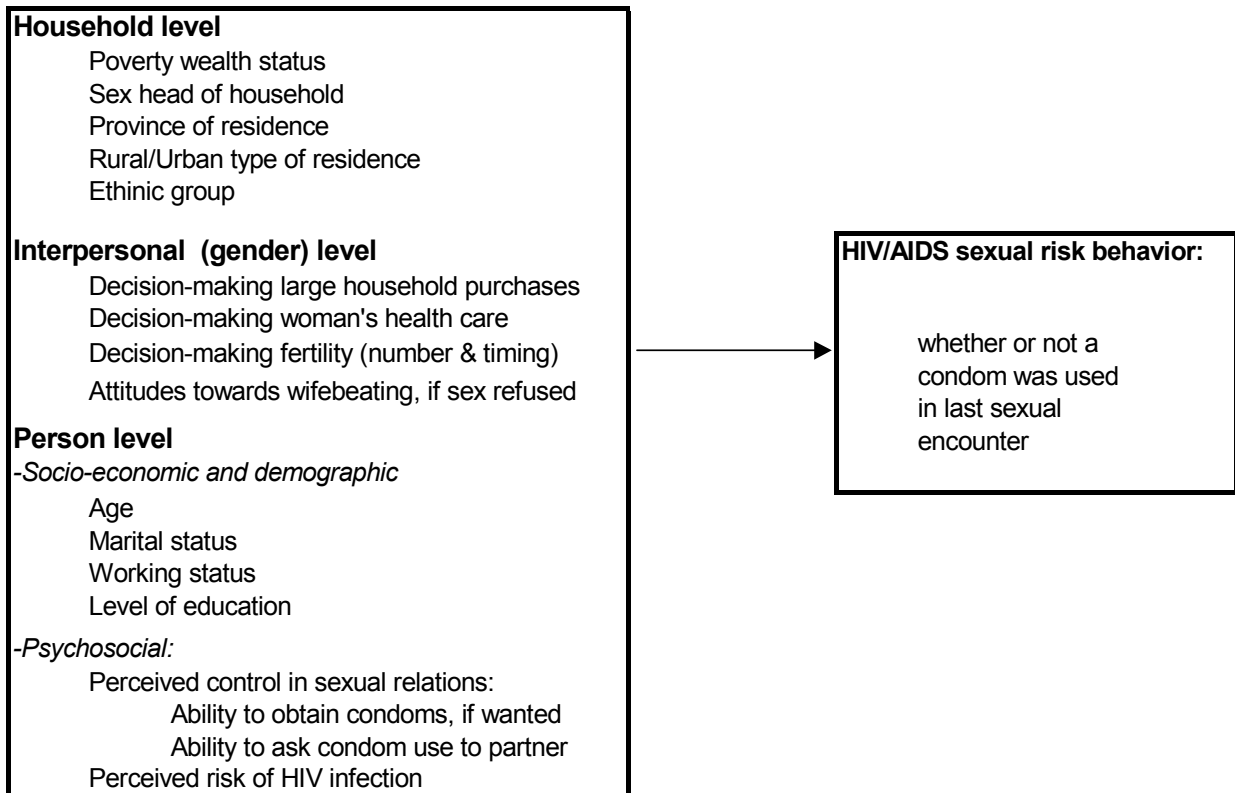
Annex 1. Selection of a special of subgroup of women and their relevance to HIV/AIDS, Sexual and Reproductive Health IEC programs and services

The shaded path in the flowchart below shows which particular *subgroup of wome*n is subject of investigation in this paper, that is: *women who know that proper and consistent use of condoms help to avoid HIV infection, who are sexually active but do not want to become pregnant.* In an environment where the risk of contracting the HIV infection is high, as in Zambia, such women engage in 'high-risk sexual behaviour' if a condom is not used during sexual intercourse. Such women are of particular interest to Sexual and Reproductive Health programs and services, including HIV/AIDS IEC programs.

1. Respondent knows that appropriate and consistent use of condoms prevents HIV-infection?

Yes   No

2. Respondent has (had) sexual intercourse?

Yes   No

Need for exposure to general HIV/AIDS IEC sensitization programs, e.g. multi-media (radio, tv, gatekeepers) multi-sectoral approaches

3. Respondent used condom in last sexual encounter?

Yes   **No**

4. Respondent wants to get pregnant?

Yes   **No**

Need for exposure to special HIV/AIDS IEC approaches to maintain/update knowledge, attitudes and behavior to prevent disengagement (e.g. interpersonal councelling couple councelling

Exposure to Safemotherhood IEC approaches and access to reproductive and sexual health councelling and services

Annex 2. Analytical model

The figure below shows, in a simplified manner, which underlying household, interpersonal and person characteristics are expected to affect the use of condoms in the last sexual engagement in a *special subgroup of wome*n (see Annex 1). Of particular interest is to examine to what extent the underlying (proxy) indicators for wealth status, gender relations (i.e. the interpersonal variables) and indicators of self-efficacy and risk perceptions (i.e. the psycho-social variables) affect the likelihood that women will (not) use a condom. The characteristics included in the model can be justified on the basis of existing theories on contraceptive use and (health) behaviour.

Household level
     Poverty wealth status
     Sex head of household
     Province of residence
     Rural/Urban type of residence
     Ethinic group

Interpersonal (gender) level
     Decision-making large household purchases
     Decision-making woman's health care
     Decision-making fertility (number & timing)
     Attitudes towards wifebeating, if sex refused

Person level
-Socio-economic and demographic
     Age
     Marital status
     Working status
     Level of education

-Psychosocial:
     Perceived control in sexual relations:
          Ability to obtain condoms, if wanted
          Ability to ask condom use to partner
     Perceived risk of HIV infection

→

HIV/AIDS sexual risk behavior:

whether or not a condom was used in last sexual encounter

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3. Role of Husbands in Maternal Health in Morang District, Nepal

Ronald Horstman

3.1 Introduction

The male involvement discussion has developed mainly around contraceptive use, STDs and HIV. Comparatively, little research and few programs focus on men's relationships to maternal health, though the need for information in those areas of health is no less compelling (Carter 2002). Exceptions include studies by Bloom *et al. (*2000), Johansson *et al.* (1998). Clark *et al.* (1999) argue that one of the challenges for men's participation in reproductive health is the 'as yet untapped potential to help reduce maternal mortality, as there is clearly a potential for a much greater role of men in safe motherhood initiatives'. Others have specified how men could help in safe motherhood: by providing resources and transport for ante-natal care (ANC), and accompany women there if they want this; by arranging for skilled attendance during delivery; by knowing the danger signs of complications and avoiding delays in decision making and transport; by ensuring good nutrition, rest and alleviating women's workload during pregnancy and postpartum, as well as the related physical, financial and emotional support (Drennan 1998; PATH 2001).

Nepal has a high maternal mortality rate of 539 per 100,000 live births (Ministry of Health etc. 1996). The leading cause of maternal mortality is postpartum haemorrhage (33%), followed by obstructed labour/ruptured uterus (11%), (pre-) eclampsia (10%) and puerperal sepsis (8%). An estimated 5-10 percent of maternal deaths are due to septic abortion. Thirty percent of the new-borns are reported to have low birth weight (Family Health Division and USAID 2000; Pradhan *et al.* 1997; CREHPA 2001).

Most of the deliveries take place at home (89%) (Ministry of Health, etc. 2002). Maternity health services utilisation is lower in Nepal compared to other countries with similar infrastructure. Explanatory factors are cultural barriers, perceived low quality of care, perceived discrimination of rural people, and lack of perceived health gain (Jahn *et al.* 2000).

Women show good knowledge of the importance of immunisation, proper nutrition and rest during pregnancy – but in practice pregnant women work hard until delivery, eat the same as others, and are reluctant to be immunised for fear of difficult childbirth. Men's awareness of the problems and risks women face during pregnancy and delivery is very low (Manandhar 2000; Wadenya 1999), and usually lower then that of women (CICD undated).

Maternal health is a gender issue[1]. A cross-national study of 79 developing countries found that women's status is a strong predictor of maternal mortality (Shen *et al*. 1999). A study of women's autonomy and use of maternal health care services in Uttar Pradesh, India, found that women with greater freedom of movement obtained more antenatal care and were more likely to use safe-delivery care (Bloom *et al.* 2001). In general, de Koning (1999) states that

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[1] Gender systems are social institutions that ascribe the social characteristics of men and women, which provide meaning and guidance with regard to their roles, rights and obligations over the life course. As such they contribute to people's mental schemes and influence their decisions and behavior. Gender is inherently about relations between women and men, as well as relations among groups of women and among groups of men.

sexuality and reproduction are at the basis of how men and women relate to each other, but at the same time involve and affect men and women differently, in terms of the *vulnerability to* and *prevention of* ill-health and the corresponding *responses to* ill-health. Thus, whether and why husbands play a role in their wife's maternal health can for a large part be explained by gender.

In Nepal, in general, women's status is low under the influence of culture, traditions, economic limitations, and educational and legal discrimination of the dominantly patriarchal Nepalese society. Isolation of the women and restriction to the home (*purdah*) is being practiced (Dar Iang 1999, Manadhar 2000, Family Health Division and USAID 2000), more in terai communities compared to hill communities. In hill communities a less rigid form of patriarchy is being observed (Morgan and Nirauli 1995). Dahal (1999) states that men dominate almost all household decision making. Other studies contrast these results for sub-regions (Wadenya 1999; Manandhar 2000; Samanata 2000). In his literature review Ormel (2003) observes that male decision making varies according to the topic at hand (more in family planning, less in safe motherhood) and between the different ethnic and cultural backgrounds of the Nepalese population groups. Marriage is a social contract between two clans rather than the personal affair of the bride and groom. Even though in the Tibeto-Burman groups the choice of marriage partners is far more flexible (Dahal 1996), with bride and groom free to decide about their life partner, the majority of the population possesses patriarchal value systems that accord dominance to males.

For Nepal results of studies on the effect of spousal communication on male behaviour could not be found. In general, Drennan (1998) and others argue that couple communication can be a crucial step towards increasing men's participation in reproductive health. However, communication between partners may not be desirable. Women may submit to men because they are afraid of retaliation, such as being beaten or divorced, and because their gender roles place them in subordinate positions in society (ibid).

3.2 Rationale and objectives

In Nepal, it is common for couples to start their married live in the household of the husband. The new daughter-in-law takes up her position and role in the household. As for other events her pregnancy is imparted in the social system of the household, and her vulnerability in the sense of being young, relatively new in the family of her husband, pregnant and being a women makes her dependent on other members of the household. Historically and physically, pregnancy and childbirth have mainly been a women's issue. However, with the change in household and family composition from large extended families towards smaller and nuclear families, other women are not always available and more support in daily activities is required from men and husbands in particular.

In terms of preventing maternal ill health a pregnant women depends on others regarding support in household work, necessary antenatal care visits and nutrition. In terms of responding to obstetric complications, apart from her own initiatives, she depends on the knowledge, decisions and actions of others. For example, as men are the usual decision makers in the household, she depends on the decision of the head of the household whether to seek medical advise or treatment. Literature indicates that the involvement of men in maternal health positively influences the status of maternal health (Bhalerao *et al.* 1984; Raju and Leonard 2000). Gender, decision making and intra-household communication, as well as couple relational aspects are likely to play a key role. Also, the level of knowledge and the beliefs on health are important factors.

A simplified model on behavioural determinants of maternal health guides the analysis (see

the Annex for a schematic presentation). The model includes components of two other models. The *behavioural model of reasoned action* (Ajzen and Fishbein 1980) and the *delay model* of Thaddeus and Maine (1990).

The reasoned action model is applied to explain individual behaviour of men in relation to maternal health status[2] and distinguishes attitudes, subjective norms, and skills and abilities as determinants of behaviour. Husband's view on gender and health care (attitude), the social pressure that he perceives (subjective norm) and his availability for support for and knowledge about maternal issues (skills and abilities), together with spousal communication and contextual factors including ethnic origin, marital type, household composition, and health status of the pregnant wife are included in the model and are assumed to affect the behaviour of husbands.

Individual behaviour of husbands is related to maternal health risk behavioural factors. These risk factors are behavioural determinants of maternal ill health. For example, to draw a parallel, they can be compared with smoking behaviour; smoking is a health risk behavioural factor for general health. Maternal health risk behavioural factors are preventive or responsive by nature. Health risk behavioural factors that relate to the prevention of maternal ill health include a too high workload of the pregnant women, insufficient nutrition and antenatal medical care seeking. Health risk behavioural factors that relate to responsive actions upon ill health are derived from the delay model of Thaddeus and Maine (1990). Risk factors include the delay to recognise a maternal health problem or complication, the delay to decide to do something about it, the delay to reach a health facility and the delay at that facility to receive treatment.

Given the need for information on male involvement in maternal health in Nepal and the dearth of results internationally, in 2002 the Netherlands Interdisciplinary Demographic Institute (NIDI) in collaboration with the Centre for Research on Environment, Health, Population Activities (CREHPA) and Amaa Milan Kendra (AMK) implemented the Safe Motherhood Male Involvement Research Project (SMMI) in Morang District, Nepal. Morang District has a relative higher socio-economic standard compared to the rest of Nepal. Compared to all 75 districts of Nepal, Morang District ranks 11 on the Composite Development Indicator and has rank 13 and 29 on the Population Deprivation Index and Women Empowerment Index respectively (ICIMOD 1997). Morang District borders India in the South and is located in the terai region.

The overall objective of the Nepal SMMI research project is to reduce maternal morbidity and mortality in Nepal. The purpose is to study the nature, prevalence and determinants of male involvement in the *prevention of* and *response to* ill-health of pregnant women. International consensus suggest that prevention in the sense of good nutrition, appropriate workload, and regular medical care visits of pregnant women have less impact on maternal health than appropriate responsive behaviour in case of emergency obstetric complications (Ormel 2003; also e.g. Maine and Rosenfield 1999). However, prevention is nonetheless regarded one of the critical domains of research for male involvement in safe motherhood. In this paper the analysis of male involvement in maternal matters has 2 objectives:
   (a) To analyse the extend of husbands' involvement in the prevention of and response to maternal ill health.
   (b) To analyse the determinants of husbands' preventive and responsive behaviour to maternal ill health.

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[2] Maternal health status reflects maternal health and/or maternal mortality and morbidity. Maternal morbidity includes hemorrhage, obstructed labor, (pre)eclampsia, sepsis, and is indicated by symptoms including severe headache, swollen hands and feet, severe abdominal pain, anemia, vaginal bleeding, prolonged labor, high fever, loss of consciousness.

The analysis will be related to the level of risky behaviour of pregnant wives themselves, that is, to her workload, nutritional intake and health seeking behaviour, during pregnancy and in case of obstetric emergency.

3.3   Data

The SMMI Nepal serves as the basis for the analysis. Both qualitative and quantitative data were collected in May 2002 and September/October 2002 respectively. Qualitative research included focus group discussions, key informant interviews and case studies on obstetric complication histories. Focus group discussions were conducted among adolescent boys and girls, married men with and without children, married women with and without children, mothers-in-law and fathers-in-law. Key informant interviews were conducted with health providers and community leaders. Unstructured interviews were conducted in the case studies for husband and his wife separately.

Preliminary results of the qualitative research were used in developing the questionnaires. A population-based survey was held among 595 ever-pregnant married women aged between 15-24 and their husband (445). In addition, the mother-in-law or the father-in-law, if residing with the index couples, was interviewed using separate sets of questionnaires.

Data were collected at individual and household level on demographic, socio-economic and cultural background characteristics and knowledge, attitude and behaviour regarding male participation in safe motherhood. In order to avoid response bias, field workers introduced the research project as a safe motherhood project rather than a male involvement project. Interview teams interviewed respondents (same sex) separately. The questionnaires were translated into Nepali and pre-tested in two representative villages of Morang District that were not included in the survey. In this paper the data set of matched spouses (445) is used.

Figure 1. Location of Morang District in Nepal

Morang District

3.4   Results

3.4.1   Extend of husbands' role in maternal ill health

The analysis focuses on the involvement of husbands in (1) preventive actions and (2) responsive actions to maternal ill health. It furthermore pays attention to (3) husband's availability as this is regarded a prerequisite for any involvement.

3.4.1.1 Husband's availability

Not all husbands were present during the survey period. Of these 150 men a considerable number were absent due to migration either within Nepal (28%) or abroad (61%)[3]. Demographic and socio-economic information of the absent husbands was collected by reports of their spouse. Level of education and wealth status were slightly higher in this group compared to the 445 matched husbands. The absence of this group in the analysis may impose a bias on the results.

The husband usually is the breadwinner in the household. The time available to support women in household work during pregnancy may therefore be limited. How wife and husband perceive this time limitation of the husband was asked: 'In general, does your husband (you) have enough time to support you (your wife) with domestic chores during pregnancy?' The general observation of the respondents is that half to two-thirds think that the husband has enough time to support in domestic chores during pregnancy. However, husband and wife perceive the available time differently. Whereas more than two-thirds (69%) of the female respondents said that their husband had enough time, half of the husbands (51%) mentioned to have enough time. This difference in perception shows that the availability of time for domestic support is not only determined by the actual time available. It is also influenced by intentional motives of the husband to support his wife in tasks that used to belong to the domain of women.

3.4.1.2 Husband involvement in preventive actions

Domestic chores
For most of the pregnant women their workload hardly changes during pregnancy. Majority of pregnant women reported to have worked the same as usual (57%) or more than usual (6%). One third of the pregnant women indicated that their workload was less than usual. Similarly, half of the women (49%) reported to have worked in agriculture/daily wage work up to delivery. One quarter (23%) ended this work more than 6 weeks before delivery[4].

Overall, with respect to sharing their work with a male member, three quarters of female respondents (75%) reported that they received help from male members during their most recent pregnancy (see table 4). Husbands are on top of the list of those substantially helping the pregnant women in reducing her workload. Other family members also provided support, especially the mother-in-law and sister-in-law. As a young married couple usually moves into the house of the family of the husband, it is not surprising that her 'in-laws' rather than her own mother and sister take part in this domestic support.

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[3] The rest (10%) could not be met in 3 visits or were incapable to communicate.
[4] There is little evidence that continuing to work adversely affects the outcome of the normal pregnancy. However, women with certain medical conditions, high risk pregnancies (e.g. young women, short birth intervals) or other complications may need to decrease working hours or discontinue working altogether to avoid maternal ill health. (www.engenderhealth.org/ wh/mch/ppreact.html#work; access 26/5/2003).

Table 1. Percentage of women reporting to receive substantial help from household members in reducing her workload during her last pregnancy.

	%
Husband	68.4
Mother-in-law	46.3
Sister-in-law	11.8
Father-in-law	9.6
Wife of brother-in-law	5.9
Brother-in-law	5.6
Own mother	5.3
Own sister	2.4
N = 374	

Asked about their share in household work during pregnancy of their wife, almost half of the husbands reported that they did more than usual compared to times when she is not pregnant (48%). Forty four percent reported to have carried out the same amount of work.

Asked about their specific domestic tasks during pregnancy, husbands report that washing dishes and clothes, cleaning the house, and cooking are not their favourites. Child care and fetching water are more likely to be carried out, although this contribution is still relatively low. Providing advice on refraining from lifting heavy loads is common among about half of the husbands. In general, we observe low levels of support and differences in perception. Figure 2 lists the perceived shares in domestic chores of husbands by response of the wife and husband. Wives report lower support levels than husbands do, with a difference of around 10-15 percent. This may be due to dissimilarities in the perception of the actual workload.

Figure 2. Percentage distribution of the perception of husband and wife on husband's contribution to domestic chores ((almost) always) during the last pregnancy
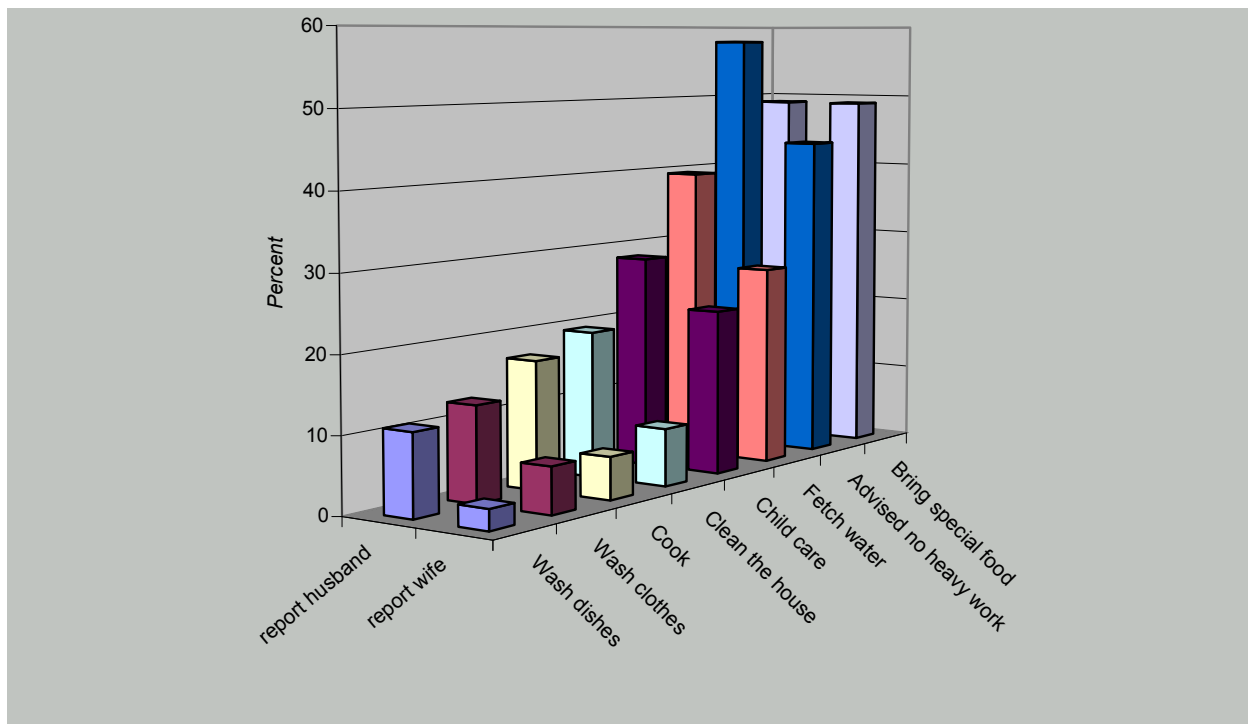
Nutrition

The importance of intake of nutritious food during pregnancy is a known issue among the population in Morang district. This was usually brought forward during focus group discussions and nearly half of the husbands (41%) and wives (43%) regard proper intake of nutritious food one of the components of safe motherhood. It is therefore not surprising that women report the regular intake of nutritious food (58% once a week or more). Husbands also take part in this care. Both spouses report that nearly half of the husbands (49%) bring this special nutritious food home most of the time (figure 2). The fact that we do not observe a difference in spousal perception underscores the finding that food intake during pregnancy is known and accepted. It should be note, however, that the research did not specify the components of nutritious food and results should therefore be handled with caution.

Ante Natal Care visits

Similar to awareness on food intake during pregnancy, knowledge about the need for regular medical antenatal check-ups during pregnancy is well known. However, awareness on the importance of postnatal medical check-ups is low.

On average, during their most recent pregnancy women had four medical check-ups. ANC is relative common (79%) and much greater than the national average of 49 percent (Ministry of Health, etc. 2002). Muslim women (2.7 visits), young women (3.5) and women originating from terai area's (3.3) were found to have less antenatal care visits.

A majority of the husbands accompanied their pregnant wife one or more times to a health clinic for a medical check-up. Of the husbands who reported that they went together with their wife, nearly half of them also met the health practitioner. They said they always do this while accompanying their wife (figure 3). For those who never met with the health practitioner shyness, not deemed necessary, lack of time, and the belief that the health practitioner normally treats the patient only are reasons given.

Figure 3. Percentage of pregnant women that were accompanied by their husband while visiting a medical facility for antenatal care (n=360)
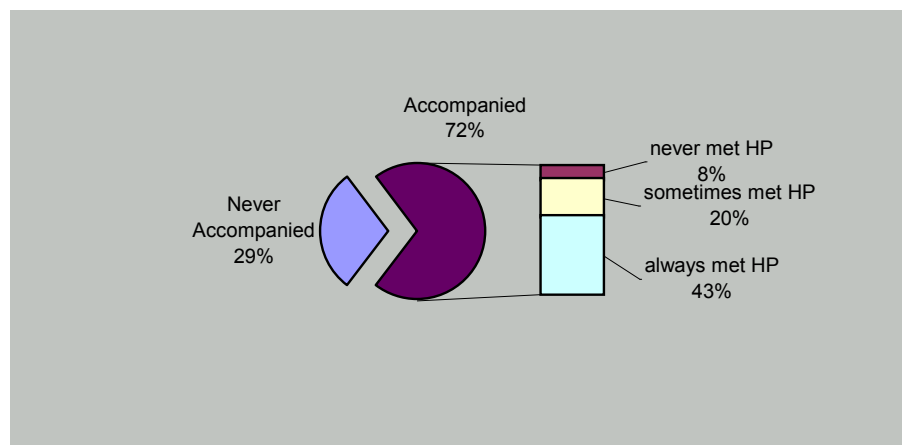
3.4.1.3 Husband involvement in responsive actions

Delays in the recognition of an obstetric problem, the decision to take action, and the time needed to reach a health facility and to receive treatment by the health practitioner are recognised as essential risk factors in maternal health.

Figure 4. Percentage of women with a maternal health problem by number of hours to recognise the problem, decide what to do, reach a health facility and receive treatment, Nepal Morang District (wife's response)
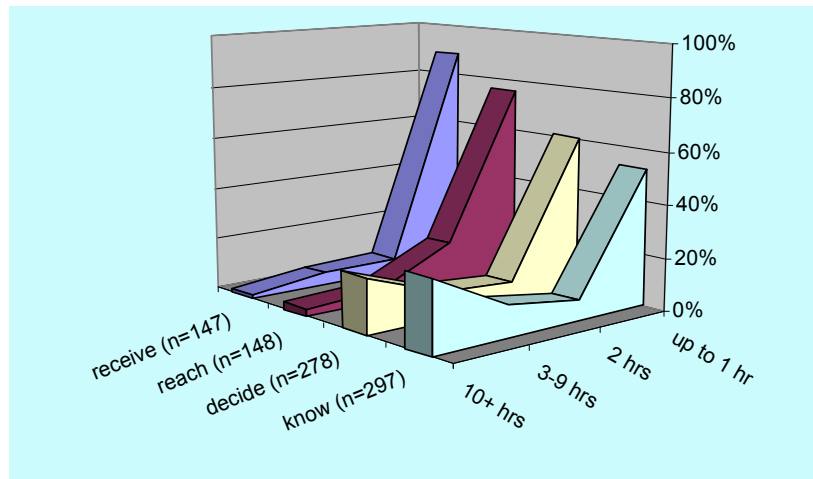

Figure 4 shows that the first two delays – to recognise the presence of a health problem and to decide to take action – are the important risk factors in Morang District. For around one third of the problem cases it takes more than three hours to get to know the problem or to decide to take action.

That the husband plays a crucial role in the decision making process is evident. Figure 5 shows that in more than half of all cases where a decision was made to seek medical care, the husband finally made the decision. All together, about two thirds of these decisions about the health of the pregnant women are made by men, whether they be the husband, the father-in-law or the father of the pregnant wife, or other male neighbours and family members. That the husbands plays a crucial role in decision making illustrates the saying by a women in one of the case studies:

> '*When I was on my 5th month I had oedema and told my husband about it, but he told me that it would get all right on its own, so I did not do anything."*

Figure 5. Percentage distribution of household and family members who finally decided to seek medical support upon occurrence of a maternal complication.
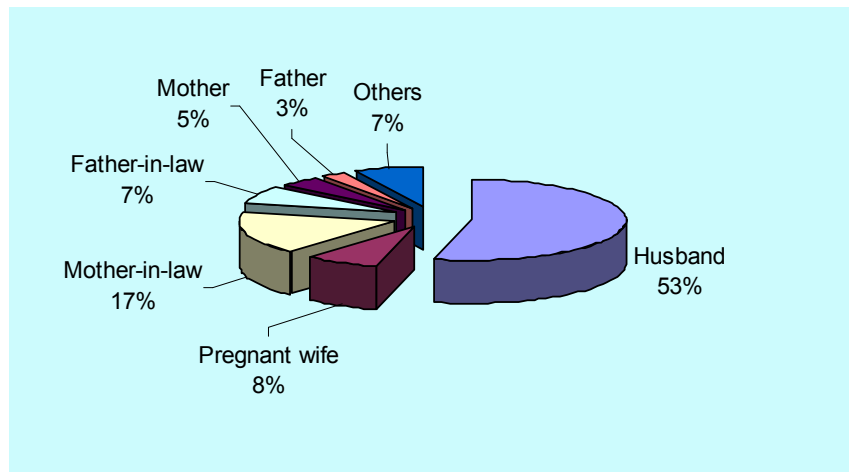
In Morang District, the last two delays – the time to reach a health facility and the time to receive treatment – are less problematic. Once a decision is taken, for most cases the time to reach a facility or receive treatment from a health practitioner is within the hour. This is probably due to the better accessibility to care in the district capital Biratnagar that lies close the research area. Husbands claim that their share is to arrange money and transportation, and get their wife to the health provider as soon as possible.

3.4.2 Determinants of husbands' role in maternal ill health

The following section describes determinants of husbands' individual behaviour in relation to maternal health behavioural risk factors (see the model in the annex). In terms of these risk factors, the previous section shows that the relief of women's workload (that is domestic support), and the delays to recognise a problem and to decide what to do about it are the ones to which husbands can contribute most. We therefore concentrate on these risk factors in the present section. The section describes the following determinants of husbands' behaviour: his gender and health view, knowledge on maternal issues, perceived social pressure, spousal communication and the contextual factors women's health characteristics, household composition and type of marriage.

3.4.2.1 Husbands' view on gender equality and health

Violence related questions were used as proxy for estimating husbands' view on gender equality. Overall, almost two thirds of husbands do not justify that husbands beat their wives (63%). This is not the same for people originating from the terai region and people who originally migrated from hill areas. Almost half of the terai men (47%) justify beating their wife, whereas only a quarter of the hill men (23%) does so. This confirms findings by Morgan and Niraula (1995), concluding that terai communities are characterised by a less equal gender view compared to hill communities. Overall, this in-equal view influences husbands' treatment and support of their wife during maternity. Multivariate analysis shows that an unequal gender view of the husband is significantly negatively associated with his domestic support (Horstman *et al.* 2004). Whether this is the case for emergency obstetric responsive actions is still subject of investigation. Arguably, emergency obstetric complications are unique and life threatening. Crossing traditional gender boundaries may be socially supported while handling emergency situations.

Traditional beliefs on health and health care are assumed to have a bearing on husbands' role in maternity (Wadenya 1999; Manadhar 2000). The survey included statements on beliefs on health care and gender. These statements were based on results from the qualitative fieldwork. Analysis shows consistency in the following eight statements [5]:
- when a women dies during childbirth it is due to fate
- pregnancy related illnesses/complications are often caused by witchcraft
- sacrificing an animal for safe delivery is good
- intake of water chanted from a traditional healer is good
- been seen by a traditional healer before going to a doctor is good
- wishing something for God is good
- anything domestic is women's work
- family planning is a women's issue

We brought these eight items together into one composite indicator that we called 'traditional health belief'. Overall, more than one third (37%) of the husbands could be described as having a traditional view on health. Health belief systems are associated with ethnic origin, as

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[5] Factor and reliability analysis showed consistency in the statements (alpha=0.83).

a traditional view on health is much more common among terai communities (53%) compared to hill communities, where a more modern view prevails (Figure 6).

Multivariate analysis shows that a traditional health view of the husband is not significantly influencing his preventive behaviour, more specifically his domestic support (Horstman *et al.* 2004). However, for behaviour on delays in case of obstetric emergencies, it is assumed that husbands' health view has a bearing on the time needed for seeking non-traditional medical assistance. In view of the cost and time involved and advises of the traditional birth attendants, family members tend to wait and see whether the traditional remedies work[6].

Qualitative fieldwork shows that despite some awareness about the need for urgent medical care during obstetric complications, action is usually delayed due to underestimation of the threat, lack of money, or sometimes false assurance of traditional birth attendants. That husbands sometimes cannot withstand the advice from a traditional birth attendant who was first asked to help, is illustrated in the following report from a 16-year old women in the case studies:

> *After the chamarni arrived she felt my stomach and she put two fingers into my vagina and water flowed from it. After that I had severe abdomen pain and started crying. My husband wanted to take me to the hospital but the chamarni didn't allow him and told him that the delivery is about to take place.*

Figure 6. Percentage of husbands with a modern and traditional health view by type of population
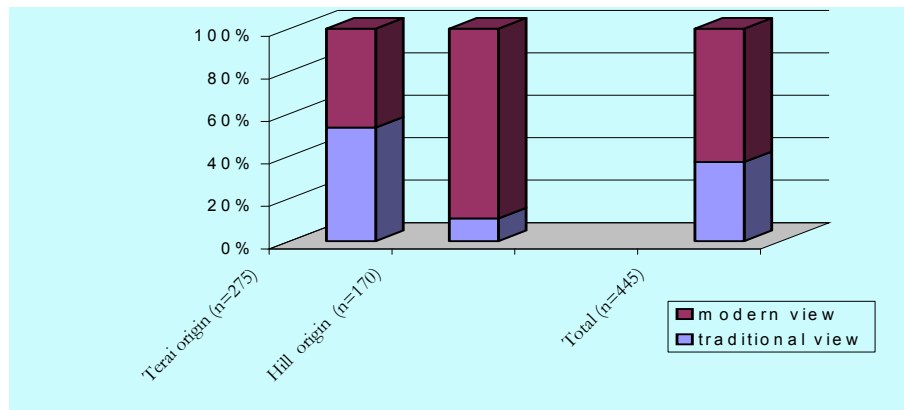
3.4.2.2 Husband's knowledge on maternal health

In general, knowledge on factors underlying obstetric complications is limited. Although findings from focus groups indicate that men are said to be more knowledgeable than women, due the fact they are more educated than women, the survey indicates the opposite. Table 2 shows that husbands mention relative few danger signs related to pregnancy, delivery, postnatal or to the neonatal period of the baby. Their wives also have gaps in their knowledge on these important health risks.

Husband and wife perceive each other's level of knowledge differently. The proportion of husbands who believe that their wives know about pregnancy and delivery complications is smaller (57%) than the proportion of women who believe that their husbands know about complications on pregnancy and delivery (71%). Compared to their knowledge level, the

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[6] Traditional remedies include herbal and spiritual remedies provided by traditional faith healers.

difference in perception is remarkable. Having more years of education and usually being the decision-maker in the household, husbands are perceived to also have knowledge of maternal issues, whereas in fact the wife is more knowledgeable.

Table 2. Percentage of spouses on knowledge of health risks and perception of each other's knowledge.

	Wife	Husband
Can mention 2 or more danger signs related to pre/(post)natal period	60.9	42.5
Can mention 2 or more danger signs related to neonatal period of the baby	40.0	32.1
Perceives spouse has enough knowledge of health risks	71.4	57.1

Multivariate analysis shows that a husband with limited knowledge is less inclined to help his pregnant wife in household tasks, thus alleviating her workload (Horstman *et al.* 2004). Similarly, qualitative results show that the likelihood of timely decision making in case of maternal complications is negatively influenced by a husband with limited knowledge of danger signs, complications and their consequences. Other studies confirm this finding (Drennan 1998).

The gaps in knowledge are recognised, and unmarried and married male and female participants of focus groups almost all point out that they need to know more about maternity issues.

3.4.2.3 Spousal communication

According to husbands, around half of them ever (since marriage) discussed with their spouse topics like the use of family planning methods (50%), taking rest during pregnancy (58%) and husbands' own feelings and emotions (55%). Asking their wives the percentages are about 10-20% higher.

Spousal communication about maternal issues is positively associated with husbands' preventive actions. Compared to non-communicating couples on maternal issues, a couple that talks about maternal issues has a seven percent higher chance of the husband assisting in domestic tasks (Horstman *et al.* 2004).

Gender and social-based factors influence spousal communication. Similar to findings in other area's of Nepal (Manadhar 2000), findings from focus group discussions clearly point to women's shyness and lack of confidence to tell about being pregnant or having a health problem. Young married girls suffer from the fear of childlessness (infertility and foetal loss) and its consequences (husband re-marries). They also undergo new challenges after marriage, such as their adaptation in a relative new family, coping with an increased work burden, the relative loss of independence, and a partner that she has not chosen herself. About this partner, focus group participants mentioned that an adolescent boy is 'spoiled' and it is difficult for him to adapt to the new responsibilities in marital life, especially while still in his mother's nest.

3.4.2.4 Social pressure

One of the very important barriers to male involvement is social pressure, both in terai and the hill communities. Survey results show that one fifth of the husbands (21%) has fears of being regarded *maugiya* or *joitingre*[7]. These terms are used for teasing a man involved in household work. In terms of prevention, in their model on the likelihood of husband's support in domestic chores, Horstman *et al. (*2004) show that during pregnancy of their wife this support increases with five percent if this fear is not felt.

Qualitative research elucidates this social pressure on men. A man helping his wife or daughter-in-law or sister-in-law in her domestic chores would undergo humiliating remarks from family members or neighbours or both. They would make unkind remarks such as *'Wife's servant'*, or *'What type of a husband is he, he does all his wife's work'*. A mother-in-law says *'We delivered at home and now why do you have to take your wife for check up?'*. Similarly, the father-in-law may have to listen to several remarks such as: *'don't you feel ashamed to work for your daughter-in-law', 'she will take advantage of you if you do her work', 'his daughter-in-law sits the whole day and he has to do her work'*. When the brother-in-law contributes in such situation, people may raise question to their relationship (blame of sexual affair) and tease him, because he is working for her and some may say that *'he doesn't love his children as much as he loves his sister-in-law'*. During focus group discussions unmarried boys were saying that the parents tell the son *'We will do it for you, you don't have to do it'*; other villagers say, *'You are namard* [not a man]*; you are a woman; women cook food; why are you cooking?'*; and family members tell him *'there are so many family members, and why do you have to do the work?'* [8]

Important to note is that, unlike the health view (traditional versus modern) or gender view of the husband, social pressure plays an inhibiting role both in terai and in hill communities. Thus, even in communities with a less strict patriarchal system, like the hill communities, social pressure that hinder men from providing preventive support is evident.

3.4.2.5 Other factors

Health Characteristics
In terms of preventive behaviour, health characteristics of the pregnant wife determine the likelihood of husband support in domestic chores during pregnancy. Forty-two percent of the pregnant women in the survey were pregnant for the first time. This first time event did not trigger husband's support. On the contrary, first-time pregnancy is likely to have a negative impact on household support by the husband. It may be that ignorance on maternity issues of the husband plays a role in first time pregnancies. One would also expect that a morbidity history of the women is positively associated with husband's assistance in domestic chores. Survey findings do not support this. However, obstetric problems during pregnancy generate some assistance in domestic tasks by the husband. This also extends to calling for a birth attendant (60% of the cases with a problem) or a doctor (33%), obtaining a safe delivery kit (33%), or arranging money (82%) and transportation (32%).

Type of Marriage
The type of marriage has a bearing on the role of the husband in support to his pregnant wife.

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[7] Terai and hill communities have their one words for a husband being hen-pecked by their wife: *maugiya* and *joitingre* among terai and hill communities respectively.
[8] Whether social pressure is a major influencing factor in emergency obstetric situations is subject of research in a forthcoming study by Horstman *et al.*

Arranged marriages by the family are common (80%). Spouses that have chosen each other themselves (20%) are much more likely to conduct household chores together during pregnancy. Multivariate analysis shows that domestic support increases with five percent if spouses married 'out of love' (Horstman *et al.* 2004). Qualitative research shows that this relationship indicator is also positively associated with husbands' responsive tasks in case of an obstetric emergency.

Household Composition
As any pregnancy is embedded in the system of the household, the composition of the household can be expected to affect the role of the husband during pregnancy both in preventive and in responsive way. Other women in the household, especially the mother-in-law (52%), are likely to take over household tasks from the pregnant women. When she does this the husband is inclined to do less. His domestic support would reduce with seven percent (ibid.). In general, the smaller the household size, the more the husband takes over the workload.

3.5   Conclusions and Recommendations

To date, the low status of women and its role in making motherhood unsafe has received considerable interest, while the nature of male roles and responsibilities and their impact on safe motherhood has not had much attention. In Nepal, little is known about men's role in safe motherhood and their responsibilities during emergency situations of pregnancy and delivery. The present study attempts to obtain insight into men's behaviour in risk prevention during pregnancy and delivery *(preventive actions),* and necessary actions to avoid delays in seeking care in case of obstetric complications *(responsive actions)* among young married couples in rural area's of lowland Morang, in economic terms one of the relative better off districts in Nepal.

Overall, it appears that a substantial segment of women are exposed to maternal health risk behavioural factors. Most pregnant women face a relative high workload and pressure to perform in the household of their parents in law. The importance of adequate nutritional intake and ANC visits is known and nutritious food intake and medical check-ups are relative common. Delays in seeking care are mainly caused by lack of knowledge of obstetric danger signs and timely decisions taken to act upon.

The study assessed husbands' behaviour with regard to these maternal health risk behavioural factors. Husbands' involvement in the prevention of ill maternal health is modest but noteworthy. Within the time that they can be present, they provide positive support to their pregnant wives, such as fetching water, bringing nutritious food, advising their spouse not to carry heavy loads, accompanying them on ANC visits and arranging ante natal care, money and transportation in case of emergency obstetric complications. Overall, it can be concluded that husbands are not merely a source of multiple barriers to better health for women. As Cornwall (1997) and others said, men cannot be viewed as simply 'the problem'.

Nonetheless, in order to relieve his pregnant wife's workload, husbands do not participate in all household chores, especially not those that are considered part of the domain of women, e.g. washing dishes or clothes, cooking or cleaning the house. Also, child care by husbands is uncommon. In terms of responsive actions, husbands who are the usual decision makers, bear responsibility for delays in seeking emergency obstetric care. This is particularly so with regard to those delays that are relatively important to maternal mortality and morbidity in Morang District, i.e. the first two delays that are caused by late recognition of the health problem and by deferred decision making.

Regarding determinants of responsive behaviour, it is not new that men's lack of knowledge on maternal issues causes these two delays. However in addition, the study indicates that husband's traditional view on health care is of influence, and that household members consider husbands to be the most knowledgeable person. These findings have consequences for intervention programmes and policies. Apart from the very important aspect of education on maternal issues and obstetric danger signs at schools and of individual husbands, it is recommended that at household and community level policies and programmes pay attention to the negative influence that husbands' traditional view on health care can have. Moreover, husbands should be made aware that any decision based on their inadequate knowledge of obstetric danger signs could cause life-threatening situations. A communication package on maternal health would need to be developed to gradually introduce the messages.

Regarding determinants of preventive behaviour, several factors were found to influence husbands' support in reducing women's workload. Besides husbands' lack of awareness and insufficient knowledge related to maternal health problems, an important finding of the study is that social pressure from within or outside the household is a significant barrier. The fear of being regarded by others as 'hen-pecked by their wife' substantially reduces the support of husbands in domestic chores. Also, in communities with a less strict patriarchal system, like the hill communities, social pressure prevents men from providing support in domestic chores. Another barrier to participation in domestic chores is the lack of communication on maternal issues between spouses. This finding contributes to filling the gap in information on the effect of spousal communication on male behaviour in Nepal.

Besides knowledge, social pressure and spousal communication, husbands' view on gender equality is a predictor for preventive support, as is the freedom of choice of a marriage partner. In addition, household composition is a factor that counts: if other women are living in the house the husbands tends to refrain from domestic support. During the last decade the inclination towards smaller households instigates tension on the distribution of household work and prompts a higher demand on the husband. This trend, however, is not yet paralleled by the level of social acceptance towards husbands supporting their pregnant wives in domestic chores.
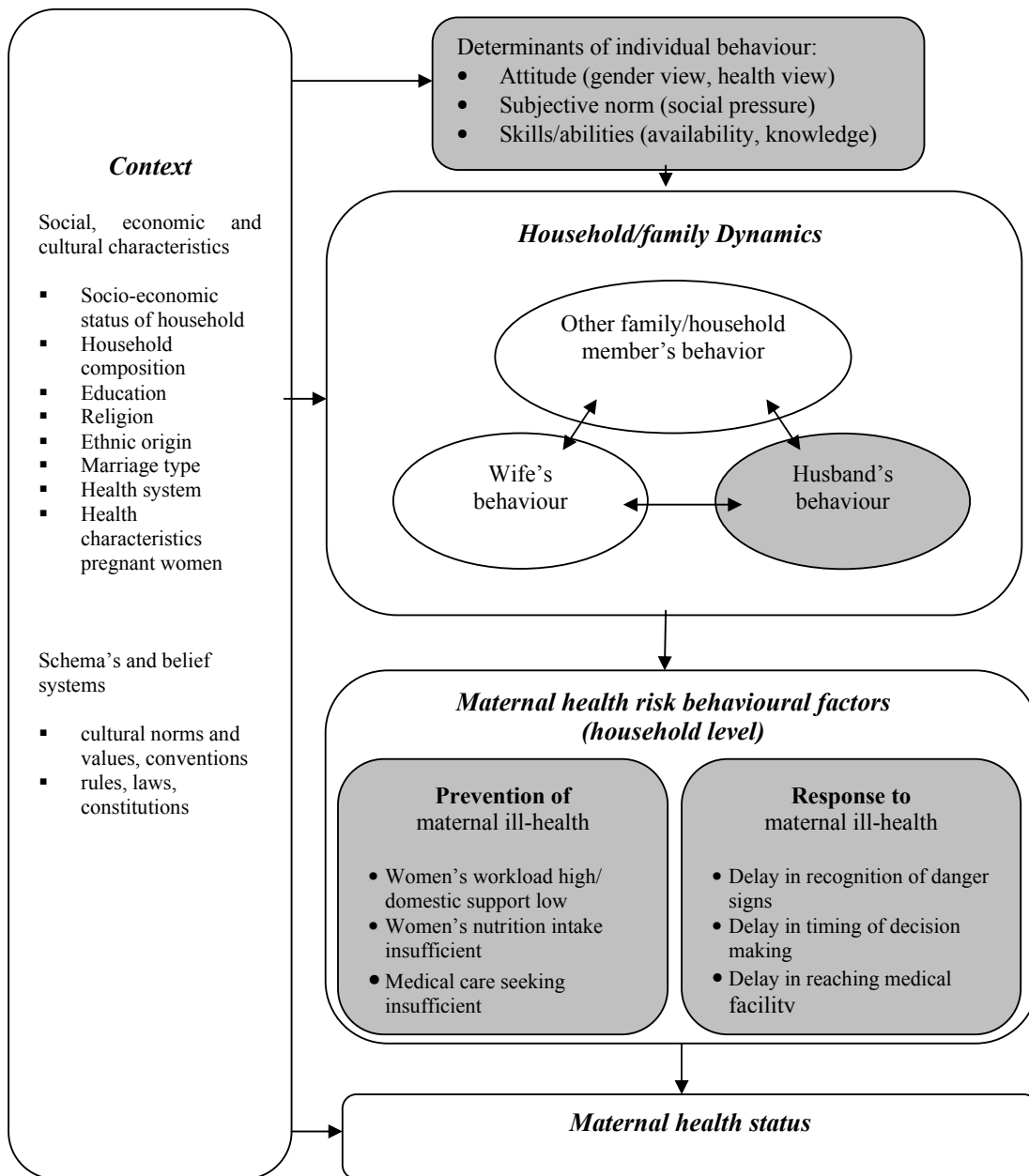
Most important barriers for husbands, like social pressure and spousal communication are gender related. Alike women who cannot solely escape from gender inequality, men are bound: the contextual factors that shape gender relations constrain husbands' behaviour. Therefore, it is crucial for policies and programs aiming at safer motherhood to focus on gender aspects and how these affect preventive and responsive actions. This means that interventions should not only target at the level of the individual, but very much also at household and community level. At these levels of intervention, policies and programs, while encouraging communication in the community at large, should aim at taking away the social stigmas that men face in support to their pregnant wives and reduce the ignorance on maternal health benefits from men's support. This can be done through a myriad of interacting and intensive information and communication campaigns targeting families and especially men in the community, and following a stepwise approach in the messages conveyed.

In this respect, it should be noted that the data point to the tension that exists between maternal health benefits from practical assistance by husbands (e.g. arranging money and medical care), and gender equality. For example, on the one hand a more involved husband in domestic chores and his access to household money may jeopardise women's domain, increase their vulnerability and deteriorate their gender relation. On the other hand, assisting women in domestic chores can raise men's awareness and understanding of the vulnerability and needs of their pregnant wives, thus supporting gender equality. It is recommended that safe motherhood interventions carefully monitor the way they impact on gender relations.

In general, the analysis highlights the multi-dimensionality of male involvement. The

dynamics of husband's participation varies with the context: prevention of and response to maternal ill health produce distinct patterns of male involvement, engage different elements of gender and are influenced by underlying belief systems. Based on the findings, future research should aim at (1) exploring the mechanisms and beliefs systems underlying gender-based social pressure that prevents men from actively supporting their pregnant wives, (2) carefully monitoring and evaluating gender-based interventions in safe motherhood, and (3) exploring husbands' involvement in preventive and responsive actions in remote hill areas, in order to fill the gap with the present study that is conducted in a relative accessible low-land setting.

Annex.   Simplified model of behavioural determinants of maternal health at household level

Context

Social, economic and cultural characteristics

- Socio-economic status of household
- Household composition
- Education
- Religion
- Ethnic origin
- Marriage type
- Health system
- Health characteristics pregnant women

Schema's and belief systems

- cultural norms and values, conventions
- rules, laws, constitutions

Determinants of individual behaviour:
- Attitude (gender view, health view)
- Subjective norm (social pressure)
- Skills/abilities (availability, knowledge)

Household/family Dynamics

Other family/household member's behavior

Wife's behaviour

Husband's behaviour

Maternal health risk behavioural factors (household level)

Prevention of maternal ill-health

- Women's workload high/ domestic support low
- Women's nutrition intake insufficient
- Medical care seeking insufficient

Response to maternal ill-health

- Delay in recognition of danger signs
- Delay in timing of decision making
- Delay in reaching medical facility

Maternal health status

Source: based on the three delay model of Thaddeus, S. and D. Maine (1990), Too far to walk: maternal mortality in context. Findings from a Multidisciplinary Literature Review. New York: Center for Population and Family Health, Columbia University School of Public Health. and model on reasoned action by Ajzen, I. and M. Fishbein (1980), *Understanding attitudes and predicting social behaviour*. Englewood Cliffs (N.J.), Prentice Hall.

Note: Grey marked boxes indicate the locus of research in the present paper.

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