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**Methodological Challenges in the analysis of male
sexual relations and reproduction in sub-Saharan
Africa**

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Executive Summary

Traditionally, demographers have studied the determinants of nuptiality, sexual behaviour and fertility patterns from the perspective of women. The 1994 Cairo UN International Conference on Population and Development was an important milestone in demography, since then, there have been efforts to understand the role of men in shaping nuptiality, sexual behaviour and fertility patterns and how men can be involved in population policies.

The recent effort to include men in demographic studies is a result of many factors. The most influential has been the feminist movement of the 1990s, which questioned the continuation of studies of marriage, sexual behaviour and fertility that made limited efforts in improving women's health. The debates also centred on the unequal responsibilities that women carried in the whole population control effort. The run up to the 1994 International Conference on Population and Development in Cairo saw numerous debates which argued that it was time that men also bore part of the responsibility. The 1994 Cairo International Conference on Population and Development and the 1995 Beijing Women's Conference were important milestones in shifting emphasis away from population control towards reproductive health. Among other issues, the agenda of the conferences made it clear that it was time men were more involved in reproductive and child rearing responsibilities. In addition, the conferences discussed matters of women's empowerment, and sexual and reproductive health; the most pertinent issue for the 1990s being the involvement of men in family life.

The Demographic and Health Surveys programme is probably the best source of data from male respondents as it offers a comparison across societies. The data from male respondents makes it possible to address some aspects of male nuptiality, sexual behaviour and reproduction. This paper summarises methodology constraints that are inbuilt in the questionnaire design of surveys such as the DHS. Such constraints make it difficult to fully understand the determinants of the wider male demography picture including reproductive health. It is for example important to understand patterns of childbearing among men if they are to be educated about the benefits of child spacing. The nature and patterns of sexual relations in and out of formal unions need to be fully understood but this is difficult if the marriage picture is hazy. In here recommendations are made on methodology and data requirements. Questionnaires need to be more detailed, for example, by including questions on the timing of various unions that men might have. In the study of male fertility, there is also need for information from more than one partner that a man has had. The paper ends with a note on the experience of analysing demographic data from men, at a time when research on men is still young compared to demographic research based on data from female respondents.

Introduction

The 1994 International Conference on Population and Development held in Cairo was an important milestone in population policy issues, it marshalled in efforts to really include men in reproductive health services. This necessitated the study of men and their role in reproduction. The Cairo agenda and the following efforts to include men in demographic studies is a result of many factors. The most influential has been the feminist movement of the last decade, which questioned the continuation of studies of marriage, sexual behaviour and fertility that ultimately had limited intentions of making improvements in women's health; as well as the unequal responsibilities that women carried in the whole population control effort.

There are several reasons why the demographic study of reproduction has focused on women and very little on men. The belief that men would not be able to give accurate information on events that did not occur to them directly such as pregnancy, childbirth or immunisation is one of them. The other is that men have traditionally played a very limited role in activities around the house including childcare, it is also easier to interview women than men, as women are usually found at or near the home. For such reasons, even the most recent of surveys still collect only the most basic of demographic information from men.

Post Cairo, it was recognised that the tradition of researching reproductive issues only from women's perspective, made it hard to implement the ambitions of the landmark conferences. Ambitions to make women empowered and to make men more responsible in family life would be hard to fulfil unless the demands and motivations of those who are believed to hoard power from women (i.e. men) are understood. Without understanding men's attitudes and fears regarding fertility control it will be a bigger struggle to offer reproductive freedom to women. This is especially true for an area such as sub-Saharan Africa which has strong pronatalist views, where the main purpose of marriage is to be able to have children to ensure lineage continuation, and where men have authority not only over economic resources but also over women's reproduction. For these reasons, it was important that research that includes men is undertaken so that appropriate policies can be designed and implemented.

The past lack of interest in male reproduction can be seen in the absence of male questionnaires from the early demographic surveys. In the last decade, the Demographic and Health Surveys Programme has made efforts to collect information on men collected from male respondents themselves and not just from women providing information about their partners. However, the most useful information is still that which concerns issues around the use of contraceptives. The wider issues of entry into marriage, the types of unions that men form and their fertility still receive comparatively less attention. Lack of analysis of these other data can be seen in the absence of literature based on analysis of male marriage and fertility from male respondents collected by DHS.

This paper is based on the experience of analysing male nuptiality, sexual behaviour and fertility in Tanzania and Zimbabwe. It looks at the challenges of analysing the wider issues that shape male reproduction and have the potential to influence men's reproductive health. The data used came from the 1992 and 1996 Tanzania Demographic and Health Surveys (DHS); and the 1994 Zimbabwe DHS. The 1992 TDHS interviewed 2,114 men aged 15-60; the 1996 TDHS interviewed 2,256 men aged 15-59 and the 1994 ZDHS interviewed 2,141 men aged 15-54. The choice of variables was based on the literature about which characteristics have been found to affect women's nuptiality, sexual behaviour and fertility patterns. The analyses therefore looked at differentials by current residence, childhood place of residence, religion, education, zones, occupations and age cohorts. The data did allow for a range of methods to be used; these included life table analysis, multivariate logistic and Poisson models. It was hoped that the analysis would identify men with characteristics that are associated with an early marriage and sexual relations, a large number of partners and a large number of children.

The challenges

The main challenge arose from methodological constraints, insufficient information, poor data quality, choice of socio-economic variables; as well as a deficit of comparative literature, which for the most part meant that it was hard to find a benchmark from which to assess the results obtained. This is especially true for sections on determinants of male fertility, though not so much on sexual behaviour; this is due to growth of research in this area in response to the HIV/AIDS epidemic. Starting with literature based on women, it was speculated that since certain female socio-economic characteristics lead to different sexual behaviour and fertility patterns, this would also be the case for men, although not necessarily of the same direction and magnitude.

a) Analysis of entry into unions

A number of issues compromised the quality of information that could be gained from analyses of nuptiality patterns. These include: the appropriateness or adequacy of the definitions of marriage used in the three surveys, the possibility of changes in definitions over the years, there were also issues of the reporting of age at first marriage that could compromise the quality of results.

Definitions of marriage used in the 1992 and 1996 TDHS are very similar but not identical. The questions are also very similar to those in ZDHS, though Zimbabwe put little emphasis on the difference between formal and non-formal unions, which compromises the degree of comparisons of marriage between the two countries. For Tanzania, it is unlikely that the different ways in which the questions were asked in the two surveys could lead to differentials in how initiation into marriage is recorded. In addition, an important difference in the design of the three surveys is that they all had different upper age limits, 60 years for Tanzania 1992, 59 years for Tanzania 1996 and 54 years for Zimbabwe 1994. As for the reporting of current age, completeness of reporting was better in Zimbabwe than in Tanzania and in both countries, more complete information was provided by younger than older men.

The above could have led to a distorted picture of marriage. For a start cumulated ages at first marriage show a different picture between the two Tanzanian surveys as age at marriage is always earlier in 1992 than in 1996. It is likely that in the 1992 TDHS survey, men are reporting more on consensual unions while in 1996 men are reporting on the ages at which they formally got married. Indeed, it was later seen that the percentage of men in consensual unions is considerably lower in 1996 compared to 1992 suggesting different definitions used in the two surveys. For some zones of Tanzania, the change in the picture of entry into marriage between the two surveys is very large, making one question whether interviewers were instructed differently in the two surveys.

b) Analysis of types of unions

The different types of unions that can be studied using data from the DHS are limited to the distinctions between formal and consensual unions, and between monogamous and polygamous unions. Given the complexity of marriages in sub-Saharan Africa the distinctions used in the DHS type of surveys are not as informative as they could be. In sub-Saharan Africa marital status might not be defined by a single event. It is of course not possible to look at issues regarding the stage of the union (whether bride wealth had been paid or not) or what form their marriage took (e.g. formal, elopement or abduction). While this might compromise data comparability within and between countries, it is conceivable that additional questions specific to certain societies could be asked (Meekers 1994a).

The first constraint that has arose in analysis of types of unions concerns the ways in which questions were asked in the two Tanzania surveys, this is serious enough to render the results not fully comparable over time. A confusion that arose is that the distinction supposed to

be made between those who are formally married and those who are living together (in a consensual union) is not clearly made. The question as to what exactly 'living together' means, can be confusing to the respondent himself let alone to those collecting or working with the data. It could mean cohabitation of couples that are formally married and live in one house or it could mean living together as a form of union. Given the criteria that were used to define a respondent as married or not, there is the possibility that some consensual unions that do not involve cohabitation were may be missed out. For this study, in order to avoid the confusion, the term consensual unions was used to describe those couples who are not formally married but have a regular partner (whether they live in one house or not). This makes it possible for a man to be in a consensual union and to be polygamous at the same time. The Zimbabwe survey did not distinguish consensual from formal unions, comparison with Tanzania on this aspect was therefore not possible.

Another constraint built in the DHS data is that not enough questions were asked to compile marriage histories of respondents. As stated above, marriage in sub-Saharan Africa is a fluid institution that can change several times in an individual's lifetime, and asking a question at one point in time does not provide the analyst with enough information. For example, a man can be a divorcee at the same time that he can be married (either monogamously or polygamously), a man can be a widow, a divorcee and married monogamously or polygamously. For men, there was no extra question on the number of unions in which they had participated, while for women the information on whether a woman had been married more than once was available. For men an assumption has to be made that the current status as married, divorced, widowed, monogamous or polygamous, has been their status for a reasonably long time.

Since a comprehensive study of polygamy requires that women are also included in analysis, several assumptions have to be made. For example an assumption has to be made that the women know for sure what type of union they are in, and what their rank is, if polygamous. There is always the possibility that a woman might not know for sure whether her husband has other wives and even if she is aware of other wives she might not know what her rank is in the union. This is very possible for women whose husbands leave their wives in rural areas to live in urban centres or in the case of separate households. It could also be speculated that women in polygamous unions might deliberately mis-state their union type since polygamy is considered less desirable. However, while this might be true for a very small group of the educated or the elite, it would be rare, as for most women there is nothing unusual or shaming about polygamy. On the other hand, an assumption has to be made that men are not exaggerating the number of wives they have, polygamy being prestigious for men.

When differentiating women in monogamous unions from first wives in polygamous unions, or when looking at whether the women in polygamous unions are senior or junior wives, an assumption is made that the rank they are in at interview date has been stable. In addition, given that it is at the survey date that socio-economic characteristics of respondents are collected, an assumption has been made that these characteristics applied at the time the union was taking place. To fully study the dynamics of polygamy, it would have been useful to have information such as how many times a man has been married as well as the timing of these unions. These would enable one to pinpoint, when for example, men become polygamous for the first time and be able to identify the circumstances that led them to become polygamous.

On the reporting of the types of unions, results of this section called to attention to the validity of results when only women or only men are interviewed. In both countries, where couples were matched, a percentage of couples did not have the same responses regarding the type of union they were in. This was true even for couples where the wife responded that the husband was living in the same household (and not 'just staying'). There were also cases of women not knowing what type of union they were in. Where there was a mismatch of reported type of union that a couple was in, it was more common for the women to report that the union was polygamous and the husband to respond that it was monogamous. It is usually assumed that

men would respond that they are polygamous to gain prestige and the reverse for women, but this assumption did not find support. This was not expected since a logical speculation is that if a woman wants to portray a more favourable impression, then the preferred response would be that the union she is in is monogamous. However, as Timaeus and Rayner (1998) discussed, women whose husbands report their union as monogamous might actually be 'outside wives' who would report themselves as junior wives in a polygamous union. This result has, therefore, implications as to how far one can trust reports from respondents regarding the type of union they are in.

c) Analysis of fertility

A number of constraints were met in this section of analysis, most of them being a result of inadequacy of questions on fertility and to a lesser extent for sections on sexual behaviour. The first shortcoming was that dates of births of the children born to men were not available; data were in the form of counts of births only. The second was that information was available only from one partner irrespective of how many times the men had been married or how many partners they had at the time of the survey. Only one partner (for men with more than one partner) who was living in residence with the man was interviewed. This means that even when some men can be linked to their partners and birth histories could therefore be used, this will still include information from only one partner. Moreover, there is no way of establishing or distinguishing whether the children reported by the women belong to the man the woman is currently living with, or are from previous or extra marital unions.

Ideally, one would need a complete marriage history and all children's dates of birth or information from all wives. Given that men are likely to have more than one relationship, it is desirable that more information concerning such relationships is collected. This might ultimately involve getting this information from men themselves, given that some of the women might have died or moved away following a divorce. It was very common to find the number of children ever born to differ within couples either due to polygamy or (among current monogamous couples) due to other unions. Given such data and methodological constraints, it is only possible to do further work if one restricts analysis to those couples who met a number of conditions such as both partners agree that their union is monogamous, that the wife has been married only once, and both the husband and the wife report an equal number of children ever born. This is not error proof and given the small sample sizes ultimately leaves only a few cases with which to work, which might render the exercise unfruitful.

Questionnaire design also makes it very hard to address under or over-reporting of children ever born to men. If information from all partners/wives were interviewed it would have been possible to add up their children and check whether it agreed with the children ever born reported by the man. Failing that, one could ask the question about children ever born in the household questionnaire, that way one could crosscheck whether the reporting in the household population is similar to that in the individual questionnaires.

While it was not feasible to use the birth histories of the women who were matched to men because of too few matched cases, it was possible to look at the nature of differentials in the reporting of children ever born for couples. Given the prevalence of polygamy and high possibilities for union dissolution and remarriage, only about half the number of couples reported an equal number of children between them. It was also rare that a couple would report no children at all and where this was the case, it was those couples who were young or had been in a union for a comparatively shorter duration. The analysis of cumulative fertility from couples' data showed that in most cases the number of children reported by a man is higher than that reported by the woman even in cases of monogamous unions. Of course, the mean of the difference in the reported children was higher among polygamous than monogamous couples. Identical numbers of children were reported more frequently by couples where the man or the woman was young, where the duration of the union was short and among couples where the woman had been married

only once. For couples where the woman was older, it was also the case that the number of children reported by the woman would be higher than that reported by the man.

Even among those couples where the number of children reported is the same, there were still some differentials in the whereabouts of the children. The difference in the reporting of children ever born was not the only area that showed differentials in reporting between couples. Even for other characteristics it was found that reports by women about their husbands' characteristics were not 100 percent correct. For example, only about 70 percent of women gave the same answer as the husband regarding the husband's age. There were other characteristics that were not identically reported, such as the level of education of the husband. This section of the thesis informs of the risks of measuring indicators based on the reports of a partner.

The major conclusion for this section was that male fertility was hard to analyse effectively and despite a lot of effort it was challenging to overcome the constraints built into the data as collected by DHS. In addition to methodological constraints, the lack of a benchmark with which to assess results also made the topic of male fertility hard to investigate fully. Despite the large number of surveys that have collected male fertility data in the DHS not much literature has been published in this area. While authors such as Ezech et al. (1996) or more recently Bledsoe et al. (2000), present some information on children ever born to men, this did not go deep into demographic or socio-economic determinants of fertility as has come to be expected for women. For men there is no such work as that by Cleland and Rodriguez (1988), where one could effectively look at determinants of fertility in a multivariate model. It was therefore hard to rank the results obtained on male fertility in terms of high, middle or low male fertility. Nevertheless, there were useful insights gained in this analysis.

d) Data Quality

A number of data quality concerns had to be handled during this analysis. The most frustrating issue was that there is no supporting literature on the nature and patterns of misreporting of events by men in the DHS surveys. All the three surveys showed evidence of heaping of current age as well as age at first sex but, short of deviating the purpose of the study and start a data quality one, it was not possible to check and compare how this fared in comparison with other. In addition to misreporting of ages, the second data related concern is that the two Tanzanian surveys used two different reference periods for the question concerning the number of sexual partners. Respondents in 1992 were asked how many partners they had in the previous four weeks while in 1996 the reference period was 12 months. For the 1994 ZDHS the reference period was the four weeks before the survey. This means that the results of the two Tanzanian surveys might not be completely comparable unless one assumes that behaviour in the last 12 months is comparable to that in the last four weeks.

Quality of data men's fertility was partly evaluated by looking at the reported number of children ever born and then making comparisons with reports in other countries. Keeping in mind that these surveys had different upper age limits, it was still the case that the reporting of the total number of children ever had by men in Tanzania and in Zimbabwe is not very different from that of men in a number of countries in different parts of Africa. The proportion of married men with no children is very similar, apart from reported cumulated fertility of men in Burundi, which has almost a quarter of married men who are still childless.

There were some men who seemed to have an unusually large number of children but this is just as likely to be correct since a man with eight wives can easily father 50 children. There are, however, very few men in Tanzania 1992 who report having more than fifteen children, the maximum number reported was 50 and this was very unusual. The maximum in 1996 was 26 children and such large number of children in Zimbabwe is even more rare. In the reporting of children ever born, it would be expected that the number of children is higher among older than younger men, that is unless fertility is rising. Given that some respondents are more likely to be classified to popular ages than others, it was expected that at such ages the mean number of

children will be higher than at subsequent ages. Especially in the older age groups, there are some age groups that have a higher mean number of children ever born than the following ages. These irregularities disappear when the number of children ever born is grouped into five-year age groups.

e) Choice of variables

The purpose of this study was to identify characteristics of men that enter marriages early, those that enter sexual relations early, those that have a large number of partners and those that have a large number of children. The list of variables available for analysis of these characteristics was not as extensive as is desirable. Indeed, in many cases, the relationships between the various socio-economic characteristics and demographic outcomes that we have become accustomed to finding when we study women were not found. This brought to question whether the study of male nuptiality, sexual behaviour and reproduction requires a different set of questions all together.

Socio-economic characteristics that were assessed for differentials included current place of residence, childhood place of residence, religion, education, zone of residence and occupation. For the analysis of fertility differentials factors that affect fertility such as age at marriage, type of union (whether monogamous or polygamous; consensual or formal (for Tanzania)); as well as duration since first marriage and age at first sexual relations were also included. In the beginning it could only be anticipated what effect certain socio-economic characteristics of men would have on their demographic outcomes. This was because, for example, while there are areas where characteristics that affect female fertility might also affect men's fertility in the same direction, one can also think of reasons why the reverse could also be true. While education might reduce the reproductive span for women and hence their fertility, education for men might give them the means and the opportunities to acquire more wives. While education does shorten the total number of years in a union, once married men can easily catch up on lost time. Similarly, education for men might expose them to a different way of thinking and a desire for a smaller family, social and peer pressure might work to pull their fertility in a different direction. Issues are therefore very complicated, though in the end this section of the study showed that most socio-economic characteristics are not strongly important in affecting male fertility, once controls for demographic characteristics are in place.

The surprising outcome was that in most cases socio-economic characteristics were not found to be important correlates of demographic outcomes such as age at marriage, the number of sexual partners or the number of children that men have. Even when multivariate analyses were used socio-economic differentials by urban-rural residence, level of education and religion are not very large. For example, after controlling for age and duration of marriage, there was no significant differential in the fertility of urban men from those in rural areas in Tanzania, and for Zimbabwe this differential was very small. In fact for Tanzania, more educated men showed a higher fertility compared to men with fewer years of schooling as has been found that for men in sub-Saharan Africa, the association of husbands' education on fertility has been found to be weak (Rodriguez and Cleland 1988; Mbizvo and Adamchack 1994). It seems that while education might delay onset of childbearing, this might only be a postponement of childbearing. Religion was another characteristic that showed very little variation and seemed to be more important in Zimbabwe than in Tanzania but even then the differentials are very small.

Having looked at the literature and the socio-economic characteristics as collected in the DHS, it is sensible to conclude that these characteristics though useful, probably miss out on a lot of an important mix of cultural and poverty determinants of demographic outcomes that are not easily captured by the basic variables we have become accustomed to. It is sensible to speculate that characteristics such as education, religion, place of residence and type of work become important well after one has already had sex for the first time for example.

One variable that consistently showed significant differentials is the zone of residence. This was true in both countries where certain zones consistently showed variation in entry into unions, types of unions and fertility. In Tanzania, the Southern zone was the most outlying zone in terms of demographic outcomes. This zone is one of the most remote and least developed in the country in terms of infrastructure and levels of education (Seppala and Koda 1998). The population in the zone is very sparsely distributed (apart from a few areas such as the Newala plateau), and farming land is widely available. Development experts have described the residents of this zone as almost apathetic when it comes to development efforts. The earlier work of Liebenow (1971) and the later of Seppala and Koda (1998), on several attributes of modernity, show inhabitants of this zone to be even less modern than the Gogo (who inhabit the Central zone); usually considered the least modern in Tanzania. The Southern zone is also subject to high levels of out migration especially of young men who become petty traders in large cities like Dar es Salaam.

In Zimbabwe, Matabeleland was an outlier in terms of demographic outcomes. For example, its later ages at marriage have also been noted by Meekers and Wekwete (1997). They found that among women, ages at marriage were high and that the zone also had one of the lowest fertility rates in the country. Later marriages for men in this zone are consistent with low food production; as well as fewer economic activities in the area and high levels of out-migration. Matabeleland is home to the Ndebele, culturally different from the Shona (who make 80 percent of the population). The rest of the zones in Zimbabwe are predominantly in Mashonaland and likely to be culturally very similar. The homogeneity between the other zones is possibly a reflection of the fact that Zimbabweans have had wide access to education, especially after independence. Most men had at least primary education (90 percent compared to 42 percent in Tanzania); and in addition, unlike most sub-Saharan African countries, a comparatively higher percentage of the population lives in urban areas.

Surveys from the DHS framework are obviously not well equipped to study marriage patterns and so more useful variables, such as those used by Hirschman (1985) or those used by Kiernan and Diamond (1983) i.e. characteristics of the family such as parents' education, social class (occupation), status of the parents' union when the children were adolescents, the level of parents' interests in their children; as well as variables that represent respondents' characteristics before marriage (e.g. type of work, residence and education), were not included. In addition to the socio-economic characteristics available, it would have been useful to work with variables that represent risk taking behaviour such as drinking, smoking and leisure/ entertainment behaviour (Mott et al. 1996; Mturi et al. 1997). While it might complicate questionnaires, attitudinal questions regarding sexual behaviour would be more useful in helping in the understanding of these issues.

Methodology and data desiderata

Despite all the data deficiencies in data from male respondents as collected by the DHS, the data are not completely useless. A number of useful results and hence important policy implications arise out of the analysis of data on male nuptiality, sexual behaviour and fertility patterns, Bakilana (2000). Most of the recommendations hinge on findings regarding sexual behaviour, especially since the most urgent concerns in Tanzania and Zimbabwe would probably be those related to the HIV/AIDS epidemic and how its spread can be checked.

While efforts to collect demographic data directly from male respondents are to be supported, there is still a lot to be done before analysis can yield more useful insights as to what the determinants of male demographic behaviour are. In the course of this analysis, a list of data requirements emerged.

The first general issue is that of sample size, as was seen before, lack of a large enough number of respondents necessitated the use of broader than desirable groups in order to have

meaningful results. For example, for Tanzania, it was impossible to use the tribal characteristic of respondents as there were too many tribes and too few respondents in each category. In addition, some of the tribes were even too obscure to appear in anthropological literature, making it impossible to construct meaningful categories. As zonal differentials showed, there is a lot to be gained by looking at cultural/ tribal characteristics. To be able to look at such characteristics might mean more involvement of ethnographers and anthropologists in the questionnaire design stage.

The second point concerns the surveys' upper cut-off age for male respondents. It seems that not enough thought went into the implications of having the cut-off age as age 54, 59 or 60. The little that is known about male fertility tells us that men can father children well beyond these years and so, if men marry in their mid to late twenties, only part of their experience is being studied. It is important that men older than 60 are interviewed so that issues of fertility and polygamy can be explored more fully, as it is known that it is in the older ages that men acquire additional wives. Moreover, as the study by Donadje and Tabutin (1994) shows, it is possible to get such information from men who are older than those in the surveys used in these analyses.

As it is usually expected that men are not able to give accurate accounts of their fertility, (either because they do not know or might be reluctant to admit paternity), it is understandable that questions on fertility were very basic. For work that goes beyond cumulated fertility, it is clear that questions on fertility of men need to be better designed. First, the maximum age of eligibility for men needs to be raised since it is known that male fertility continues for longer than women. Second, it would be useful to be able to link a man to all the women he is partnered with. These partners might help in piecing together a better fertility history by providing birth histories for the children. This could be an alternative route to getting to more details on male fertility i.e. one that includes a picture of timing of births. Since the analysis of reporting of children ever born among couples showed that it is in about a half of cases that reporting of children ever born is equal for the man and the woman, this avenue still has limitations. For if conditions such as equality of children ever born by both parties and where the woman had been married only once are met, the numbers remaining are too small. It is also the case that the men whose reported number of children equals those of the women are probably less interesting to study. In such cases it is better to look at the birth histories of the women in the women file and classify results by characteristics of the husbands. The data as collected makes it impossible to study premarital fatherhood. To get a better understanding of men's premarital childbearing and sexual behaviour it might be useful to ask already married men how many of their children were born before marriage. As described above if questions about timing were asked of all the women it might be possible to look at such issues. It seems that men might be more open to discuss premarital childbearing once they are married, but not before.

On sexual behaviour there is the need for questions concerning the number of sexual partners in a certain period to be standardised. As questions stand, one needs to assume that behaviour in the last twelve months is comparable to behaviour in the last four weeks. Another issue that needs to be addressed further concerns who the sexual partners of young men were. Questions about age and marital status of sexual partners would be useful especially in order to understand more about sexual activities of young people and to see whether the sexual networks as described by Caldwell and his colleagues are universal in sub-Saharan Africa (Caldwell et al. 1989; Caldwell et al. 1991; Caldwell et al. 1992a, Caldwell et al. 1992b). If one of the aims of the questionnaire is to look at factors that influence initiation into sexual relations, then the range of questions as provided in the DHS is inadequate. There is a need for questions regarding activities at younger ages which would define risk taking behaviour. The type of questions in the study by Mturi et al. (1997), are more appropriate since risk taking behaviour like drug usage and alcohol consumption might better explain riskier sexual behaviour. If such questions are not feasible then there is a possibility of targeting questions to men and women with children about whether they were aware of the sexual activities of their children. Investigating the attitude of parents to the

sexual activities of their children, and how they educate their children on sexual relations is probably more informative of entry into sexual relations than socio-economic characteristics such as residence at time of interview

Marriage in sub-Saharan Africa is complicated, described as a process rather than a single event, and entry into and exit from unions is frequent. However, little of what is known about the process of marriage in this region was translated into the questions posed to men. Questionnaires were too simplistic to capture many of the special features of marriage in sub-Saharan Africa. For a start, questions were only raised concerning the current marriage for the man. No attempt was made to further ask whether he had been married before, as was done for women respondents. In addition to asking how many times a man has been married, it might be desirable to include questions on dates of other unions as well as the possible reasons why the unions were dissolved (Meekers 1992; Meekers 1994a). This would create a marriage history sequence of questions.

It would also be useful to have questions as to whether such past unions were consensual or formal. If quantitative questionnaires can not be useful, it might be desirable to design a different type of survey, i.e. opting for smaller scale and culture-specific qualitative questions where respondents can respond to issues such as their motivation for marrying more than one wife. This would be more useful compared to the same old battery of correlations between urban residence, education, or religion with the type of union a man is in at the time of the survey. In addition, the issue of 'outside' wives deserves exploration in such surveys, this is especially a phenomenon of urban areas where it has been learnt that outside wives might be replacing polygamous unions (Bledsoe 1990).

Issues of interviewer training cannot be overemphasised. Given that the nature of questions that are to be asked of men is different from that of those asked of women, there is need to train interviewers appropriately. They should be aware of the different avenues through which errors can creep into data. For example, it is more likely that men will over-report the number of wives or their children not because of recall errors as is usually the case, but because these two things stand for higher status in traditional African societies. In addition, interviewers need to be aware that there is the potential to get faulty data on marriage as older men, who are now formally married, might not report on past 'living together' arrangements when answering questions on age at first marriage.

In addition to the above specific obstacles, for all areas of this study, questionnaire design was found to be inadequate suggesting that the range and depth of questions did not incorporate a great deal of knowledge regarding male demographic behaviour. There are areas where the questions, without any alteration, were lifted from female questionnaires. In other sections, questions for male respondents had less depth compared to questions on the same topic put to women, indicating that the watering down of questionnaires could have been conscious.

Further work in male demography

The work undertaken for this study was difficult because this is still very much a new area of research without well - developed methodology and without a broad literature within which to place the results. While one can conceive of a number of methods to address male demographic issues, it is important that data requirements, (some of which were mentioned above) are first met. This section looks at those areas that need further thought and research. Work on male demography would benefit from a comparative study of a larger number of countries to study issues such as age at marriage, age at first sexual relations, prevalence of polygamy and levels of fertility.

The study of sexual behaviour generated many results that require further work. It is obvious that a different type of survey would be required to capture issues such as why some men delay the onset of sexual relations and why others start much earlier. First, it would be useful to have better understanding of determinants for example the role of parental control of their

children's sexual behaviour. Second it would be useful to look at the sexual partners of young and unmarried men. Since it was seen that for married men there were few with extra-marital sexual partners, this was not the case for younger unmarried men but no information was obtained as to who these partners were. It would also be beneficial to analyse attitudinal questions regarding sex before marriage and how childbearing before marriage is regarded. Are there any social implications for a man who has children before he is married? Is the social stigma for a man the same as that for a woman who has a child before marriage? These findings might explain why unmarried men are not reporting on the number of children they have.

It should be possible to study more about the determinants of fertility if additional and detailed information were collected. For example, it would be possible to use a model fertility schedule if one had the dates of birth of the children born to men. In addition, if all the women married to a man with more than one wife were interviewed or included in the household questionnaire, it would be possible to use their birth histories more effectively.

Work on male demography would benefit from a comparative study of a larger number of countries to study issues such as age at marriage and prevalence of polygamy. This would make it possible to uncover regional patterns of behaviour and might enhance our understanding of socio-economic and cultural determinants. In addition to a more comparative approach, understanding of entry into marriage for men would be furthered by analysing information from cultural determinants of entry into marriage. For example, it might be useful to look into how different societies decide when an individual is ready for marriage. For most societies, a woman is ready for marriage soon after, or even before, first menses but not much is known about the definitions of ability to marry for men.

Further work on consensual unions would require better definitions as well as more accurate information, especially from older men. Questions in this area would have to be culturally specific, and based on research as to what exactly is marriage for a particular society. As the data stand, it would be hard to undertake a comparative study of the prevalence of consensual unions, because the definition of a union varies by culture. Further knowledge about polygamy and its determinants can be obtained by having more information of the dates of marriages in which a man has been. Information on dates of divorce would also be useful, and would provide us with more knowledge about the fluidity of marriage.

Since it has been hard to identify exactly what socio-economic determinants strongly define the probability that a man will be polygamous, it would be constructive to have information on the motivations for having additional wives and men's views on the advantages of having more than one wife. It might also be useful to ask women why they enter polygamous unions given the conventional ideas that this would not be the ideal type of union for them. In addition, it would be useful to have an idea of the prevalence of 'outside wife' or 'small house' unions as are known in Tanzania. Questions about the motivation for it, the 'main' wives' attitude and the characteristics of the women who opt for these arrangements would be vital.

In conclusion, the analysis of these aspects of male demography has been a useful experience, if at times incredibly frustrating. After working with data from male respondents it is very clear that it is an area that did not receive enough attention in the planning and collection of the data. Even after data have been collected for a number of countries, the area has not produced sufficient literature as its female counterpart has. The questionnaire design leaves a lot to be desired and in many areas shows that questions, without modification, were lifted from female questionnaires regardless of the complexities of male processes of reproduction. Future work in male demographic data collection will have to take a number of issues into consideration in the different stages of data collection. Otherwise, the data collected will only serve to inform research about very superficial dynamics of male reproduction.

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