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An Inter-survey Study of Adult Mortality in Rural Malawi (1998-2001)

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An Inter-Survey Study of Adult Mortality in Rural Malawi (1998-2001)

Abstract

This is a report of a study that examined adult (20-59) mortality in rural Malawi. Verbal autopsy information was obtained from 92 bereaved individuals on their experiences during the funeral and after burial. Results show that most of the deaths took place in the southern region compared to the central and the northern region. And more than two-thirds of the deaths are AIDS-related. These findings are consistent with other studies from sub-Saharan Africa where the main cause of death among prime-age adults is HIV/AIDS. This study is useful in understanding the disease burden in rural Malawi.

An Inter-Survey Study of Adult Mortality in Rural Malawi (1998-2001)

1. Introduction

In many areas of sub-Saharan Africa there is lack of reliable data on cause of death. This is due to incomplete coverage of vital registration systems with cause of death based on clinical diagnoses. This lack of data deters the understanding of cause of death in sub-national populations. This is a special problem for adults since children are more likely to have diagnosis (Kaufman **et al.**, 1997). Information on cause of death in sub-Saharan Africa and other developing countries would be useful to set priorities for public health and to evaluate the impact of health interventions on mortality (Kalter **et al.**, 1990; Asuzu **et al.**, 1996; Kahn **et al.**, 2000; Hoj, Stensballe, & Aaby, 2001).

One alternative to clinical diagnosis and vital registration to assess cause of death is to use the "verbal autopsy" (VA) questionnaires. This is a method of interviewing family members and caretakers knowledgeable about a recent death[1]. This method has been found to parallel systematically with clinical records on cause of death (Garenne & Fontaine, 1990; Kalter **et al**, 1990; Kamali **et al.**, 1996; Garenne **et al.**, 2000; Kahn **et al.**, 2000). The VA method assumes that most causes of death have distinct symptoms that can be recalled by lay respondents, and that the reported information can be classified into useful categories (Snow & Marsh, 1992; Asuzu **et al.**, 1996). Findings are determined in part by the causes of death in the community, and in part by the questionnaire, field procedures, and the analytic process used (Chandramohan **et al.**, 1994).

This paper presents the major findings of an examination of adult mortality in rural Malawi 2001 using VA. The principal aim is to provide basic information on the characteristics of the

1 This method was first proposed by the World Health Organization in 1956 (see Kaufman **et al.**, 1997).

Malawi Diffusion and Ideational Change Project (MDICP)[2] sample attrition in rural Malawi between 1998 and 2001. In addition, the VAs are aimed at increasing our understanding of illness, morbidity, death, and family welfare of deceased relatives.

The next section of this paper describes the mortality data and the methodology that was followed to collect the information from the relatives. In Section 3, I present the characteristics of prime-age adults who passed away between the 1998 and 2001 surveys. The discussion of morbidity, sources of care, and deaths in households is presented in Section 4 whereas illness and diseases that adults suffered are presented in Section 5. In Section 6, I present a discussion on death and household welfare. Conclusions are discussed in Section 7.

2. Data and Methodology

This paper uses information on adult mortality that was collected during the summer of 2001 in three rural areas of Malawi as part of the second round of a longitudinal MDICP[3]. In 2001, the MDICP re-interviewed ever-married women of reproductive age (N=1600) and their husbands (N=1500) who were originally interviewed in 1998. About 5% of these respondents passed away by the second round of the survey. Interviewers were trained and instructed to administer a detailed VA questionnaire to surviving relatives and close friends using the local language[4]. This meant that the

[2]The overall aim of this project is to examine the role of social networks in changing attitudes and behavior regarding family size, family planning, and HIV/AIDS in Malawi. Further details are available at www.pop.upenn.edu/networks.

[3] Because a large proportion of the population of sub-Saharan Africa has no access to clinics and hospitals, longitudinal surveys must necessarily be relied upon as sources of data on adult mortality (Kaufman **et al.**, 1997 p. 392).

[4] Except for one rural area where interviews were conducted using two languages that are commonly spoken. This rural area is in the southern part of Malawi where two languages are spoken: Chichewa and Yao. Since we had about 17% of the interviewers in the south who were not native speakers of Yao, we made sure to assign VA interviews based on the language of the relatives and interviewers. In short, we matched Yao-speaking interviewers with Yao-speaking respondents—similarly for Chichewa.

interviewers could understand the local phraseology in their questioning. It has been reported elsewhere (e.g., Garenne & Fontaine, 1990) that enumerators should be of the same ethnic group as the people who are surveyed, if possible of the same village or the same region, since words that designate diseases or symptoms may vary from place to place even within the same ethnic group.

Information for each death included specific symptoms the deceased experienced in the last few months of their life, the relative timing and duration of those symptoms, and the types of medical treatment sought and received. Interviews were conducted by asking several open- and closed-ended questions. Responses to some open-ended questions on illness were used to check against closed questions. This report is based on responses to closed-ended questions only because the information obtained from the qualitative part of questionnaire was not very detailed. Only 69% of the verbal autopsies had detailed (but not sufficient) accounts of the deceased death. I decided to analyze only the prompted accounts since they contained more information.

The interviewers were male and female, almost of them (99.4%) had completed secondary school, and most of them were experienced in conducting surveys[5]. After each VA interview, interviewers were asked to write down any general comments about the interview. These comments were either questions from the respondents or general observations made by the interviewer. Because of the nature of the VA questions, that is, asking about things that might be considered private, I expected that informants would be very uncomfortable to answer the questions. Contrary to expectation, most informants were very willing to answer the questions. According to the

[5] For example, some of them also worked on the first round of the MDICP (1998) and the Family Transfers Project (FTP) in 1999 and had demonstrated the ability to conduct a VA interview with insight and empathy. The FTP is a sub-sample of the MDICP which interviewed 1,257 respondents. The aim of the project is to examine the relationship between family transfers (goods, money, and other services) and health status of people. A detailed description is available at www.pop.upenn.edu/networks. Having worked on the first round of the MDICP and also on the FTP, the interviewers proved experienced and able to convince (but not to force the informants) and interview

interviewer's comments, it was reported that some informants cried during the interview and were comforted. Other people expected to receive money whereas others just showed some signs of discomfort during the interview. It is not clear whether those who were willing to answer the questions were "motivated" by the gifts[6] that they received or they were just open to discuss their relative's death.

According to the daily formal and informal field reports in this study, no comments were raised regarding lack of understanding with some of the words that were used in the questionnaire. I am skeptical with this since I would expect that even if an illness such as diarrhea is a universal experience, misunderstandings occasionally arise. Most people take diarrhea to mean the passage of loose stools three or more times per day. It can be "acute", which means that it has been going on for less than two weeks, or "persistent"- more than two weeks (Kelly, 1998). It is possible that this misunderstanding of diarrhea might have been circumvented in advance, by distinguishing in the VA questionnaire, "ordinary diarrhea" and "bloody diarrhea".

Some comments from the VA questionnaires on "any general comments about the interview" are reported below. Although they are not exhaustive they present a snapshot of the interviewer's experience with the VAs. At least three-quarters of the interviews had the "very-good-interview" category of comments. The comments in brackets are by the author.

> Interview 1: "I had a thorough discussion with the member of the bereaved family. She was free with me." *Interview with female informant for ID#M39511, Central Region.*

> Interview 2: "We discussed well with his brother-in-law, [name]. He was in good mood in such a way

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relatives who were uncomfortable with reporting deaths.

6 Each respondent in the main MDICP survey and the VA interviews was given a packet of sugar (1 kilogram) and 2

that he did not show much concern during the interview. I did not manage to chat with the lady/wife of the deceased since she was far away but I just chatted with his brother-in-law alone." *Interview with male informant for ID#M39503, Central Region.*

Interview 3: "We discussed freely. She did not show any concern as if she was not related to the dead." *Interview with female informant for ID#M39500, Central Region.*

Interview 4: "The respondent was expecting to receive money that he wasted during [the] funeral. This is my observation according to the way she was answering questions." *Interview with female informant for ID#F71002, Central Region.*

Interview 5: "She started crying just when I started the interview. I tried my best to comfort her. Still she was answering me directly up to when I finished." *Interview with female informant for ID#F85006, Central Region.*

Interview 6: "When we started the interview the respondent was a bit sad since it was as if she was being reminded of the past but later on she became flexible and we managed to talk." *Interview with female informant for ID#M31504, Central Region.*

Interview 7: The woman was very sorry and she thought that I went for consolation from the research team. She is still sad because of the death of her first daughter. Consequently, the interview was done quite good." *Interview with female informant for ID#F132206, Northern Region.*

Interview 8: "The respondent was asking why I was asking about the deceased. She was surprised

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tablets of detergent soap.

why asking about the late [deceased] but later she agreed after giving them more explanations." *Interview with female informant for ID#M109506, Northern Region.*

Interview 9: "The respondent was touched the time we were discussing her relative. She said she is very sad because I have reminded her of her close sister-in-law." *Interview with female informant for ID#F118007, Northern Region.*

Interview 10. "We've had a nice interview because the informant was free upon giving out responses though he was complaining about the children who up to this very day feel very lonely." *Interview with male informant for ID#F102015, Northern Region.*

Interview 11. "It was a good interview because I found an informant who was present during the deceased's sickness and death. She was very free to tell me everything." *Interview with female informant for ID#F121008, Northern Region.*

Interview 12. "The interview was done well although the man was interested to know the main role [aim] of the research team." *Interview with male informant for ID#F132019, Northern Region*

Interview 13: "The respondent was so touched that at first he said he isn't able to talk about his brother but at least [later] he said it's okay we can discuss." *Interview with male informant for ID#M113512, Northern Region*

Interview 14: "The respondent just wanted to know why we are so much concerned in asking about the deceased. Rather what correlation is there between the goal/objective of the study and

information about the deceased which was given by him." *Interview with male informant for ID#F10029, Southern Region*

Interview 15: "The respondent was concerned and she even cried during the interview." *Interview with female informant for ID#M92080, Southern Region.*

Interview 16: "A respondent was not happy when I was asking him more about his uncle. He was failing to explain well." *Interview with male informant for ID#F8505, Southern Region.*

Interview 17*:* "On the question of the amount of money spent on the funeral, the informant thought that the research team will refund the money. Apart from that the informant tried to give the correct information of the deceased." *Interview with female informant for ID#F9020, Southern Region.*

Interview 18: "The respondent was not comfortable. It appeared as if I am trying to remind her about the death of her husband. But all the same the interview ended so well." *Interview with female informant for ID#F11064, Southern Region*

Although reporting of death is very sensitive in most ethnic groups in Africa due to taboos and general reluctance to speak about deaths (Garenne & Fontaine, 1990), a little words of comfort helped the interviewers to complete the VAs. During interviewer training, emphasis was made on ways of dealing with these situations and this might have been the reason for a successful completion of the interviews. In addition, the general comments after the interview do not differ in the three study sites.

A study using VAs conducted by Nykanen **et al.** (1995) on infant and adult mortality in rural

areas of Mangochi district in the southern part of Malawi[7] found that, from their experience, VAs appeared simple to administer and relatively easy to interpret. Although they do not discuss exactly what was "simple" their study does not indicate any general problems related to willingness of the respondents to answer the questions during the interview. However, some of the problems experienced in their study include difficulties in locating the homes of the deceased children, difficulties with the questionnaire specifically the concept of "day" meaning 12 or 24 hours, and also families who received some form of medical information during a child's hospitalization might have provided different information from those who never come to a health facility.

3. Characteristics of Deceased Prime-age Adults

This section provides a descriptive summary of some demographic and socioeconomic characteristics of the deceased members. This information comes from the first round of the MDICP and is essential for understanding the sociodemographic structure of our sample members.

Table 1 presents basic characteristics of the 104 adults (54 females and 50 men) aged 20-59 who passed away since the 1998 survey and also the 2,552 adults (1,467 females and 1085 males) who survived to the 2001 survey. The VAs were conducted on 92 deaths, that is, missing 12 deaths (9 females, 3 males) due to no contacts. The results also show that male deaths are higher in the 40-49 age group whereas female deaths are higher in the 30-39 age group. Overall, the deceased prime-age women were younger than deceased men at the time of their death. The average age for the deceased women was 33.5 years old, while it was 38.4 years old for men. The overall mean years of education completed is 3.31 and it is very low for females (about 3) whereas it is higher for males

[7] This is about 70 kilometers (45 miles) from the MDICP's study sites

(3.6). The mean number of children born is 4.97 with males reporting a higher number of births (5.8) than females (4.2). Most people lived in houses with thatch or grass roof and in 1998 about two-thirds of the deceased respondents said they were very worried about catching AIDS.

Most of the deaths are from the southern region. This finding is expected. Doctor (2002) has shown that for the 20-49 age group, mortality in rural Malawi 2001 more than doubled over 1987 life tables, a period when HIV prevalence was lower than current estimates of about 15%. In addition, the effect is more concentrated in the southern region than the northern and central regions. Using DHS sibling histories based on the 1992 Malawi DHS, Bicego (1997) also found that adults in the northern region followed by the central region have better survival advantages than those in the southern region. In short, adult mortality was high in the south.

Table 1 about here

3.1 Data Quality Issues

Consistency checks have been made on three aspects of the mortality data: 1] the year of death, 2] the characteristics of the deceased and those who survived to the 2001 survey, and 3] the characteristics of the 12 deaths without VAs compared to those with VAs. The FTP provides an opportunity to check the year of death only for people who died after the 1998 survey and before the FTP in 1999. Another limitation with checking the date is that the informants were not asked the month of death. This means that we cannot check the reporting of year of death for those who died after the FTP since there is no survey against which to check the reporting. Therefore, the checking is only applicable to deaths after the 1998 survey and before the 1999 survey. All the people who died in 1999 and appear in the FTP data will indicate that their deaths occurred after the FTP.

Out of the seven people who passed away in 1998 (see Table 2), five respondents (4 male, 1

female) were not interviewed in the FTP. Since the FTP was a sub-sample of the MDICP, these respondents (or some villages) were not sampled. Therefore, we can only assume that they died between 1998 and 1999. One male respondent is reported dead in 1999 where as another male was interviewed in 1999 implying that he must have died after the survey in 1999 but he is reported to have died in 1998. This is the only observed misclassification of the deaths for 1998. In short, among the seven respondents who were reported to have died in 1998, five were not sampled in 1999, one respondent was correctly classified whereas another respondent was wrongly classified. The non-sampling (five out of seven) makes the reporting of deaths for 1998 inconclusive unless we assume that the year of death for the non-sampled respondents was correctly reported.

Checking the year of death for the 22 respondents (8 female, 14 male) who were reported dead in 1999 shows that: 13 respondents (5 female, 8 male) were either dead before the FTP survey or they were not sampled; 3 respondents (1 female, 2 male) were interviewed in 1999 and they died later in the year; 6 respondents (2 female, 4 male) died before the FTP. Compared to the reports for 1998 deaths, the reporting of 1999 as the year of death for some respondents seems to be reliable except for the 13 respondents who have only two possible outcomes: dead before 1999 survey or not sampled at all. As discussed earlier, it is hard to check the year of death for 2000 and 2001 since we do not have any benchmark.

Comparing the characteristics of those who died with those who survived to the 2001 survey (see Table 1) shows that there is not much difference in proportions for the ages of those who died and those who survived. Although the differences are not huge, the results show that younger females survive than males. On average, those who survive are younger than those who die. For example, the mean age for people who survive is about 31 - almost five years younger than the mean

age for those who die. Again, there are not huge differences in years of schooling and mean children ever born but a substantial difference exists in survival for people who live in houses with metal roof. The proportion of the deceased who lived in metal-roofed houses is about five points higher than those who survive. About two-thirds of those who died were very worried about catching AIDS compared to about half of those who survived. Regional differences in sample attrition show the southern region on top of the list than the central and northern regions although the proportions surviving are not very different. Although we cannot make solid conclusions with the various characteristics presented in Table 1, at least one pattern is clear: the results in general do not show any huge differences between those who died and those who survived.

Similarly, comparing the characteristics of the 12 deaths without VAs to those with VAs has also shown (results not presented) that the demographic characteristics such as mean age, mean years of schooling, mean children ever born, type of house material, worry about catching AIDS, region of residence, and duration of illness do not differ that much. The results mirror the comparison between the characteristics of those who died and those who survived.

4. Morbidity, Sources of Care, and Death in Households

This section presents information on the events and symptoms that the deceased respondents experienced before they died. Table 2 shows duration of illness, source(s) of care, and the year of death. The results show that of the 92 cases with information, about 22% of the deceased people were ill for less than one month, 15% were ill between 1 to 2 months, 14% were sick for a period of 2 to 6 months, and about 43% were sick for longer than 6 months. The duration of illness for 5% of the sample was not known. While most respondents sought treatment from government hospitals

(70%) and traditional healers (54%), a small proportion sought treatment from government health centers or clinics (15%), private hospitals (13%), relatives or friends (8.2%) and religious leaders (8.2%).

Table 2 about here

Parallel to this information, informants were asked whether friends or relatives sought any medical care or help from other sources. A higher proportion of the relatives or friends sought medical care from government hospitals (64%) and traditional healers (60%). At least 1 in 10 of every relative or friend went to government health centers or clinics and private hospitals. It is clear from these proportions that apart from government or public hospitals, a substantial number of people still choose traditional medicine as an alternative or complementary therapy. In general, these percentages are consistent with the VAs which show that respondents and their relatives sought multiple forms of therapy during illness.

The distribution of year of death shows that, 8% of the deaths occurred in 1998, 24% occurred in 1999, 47% took place in 2000, and 22% died within the five months before the 2001 household survey.

The VA questionnaire also asked information on the terminal illness of the respondent. These were collected using open-ended questions and the results are not reported here. However, a series of symptoms that were mentioned in the closed-ended questions are presented in Table 3.

Table 3 about here

Table 3 shows that at least one-fifth of the deaths are associated with coughing, diarrhea, difficult breathing, fever, malaria, pneumonia, and loss of weight (very thin). A combination of some illnesses into "AIDS-related" illnesses shows that about 69% of the deaths are AIDS-related.

These "AIDS-related" symptoms were established based on The World Health Organization (2001) classification of "AIDS-related" symptoms. The prevalence of the "AIDS-related" illnesses is consistent with the high prevalence of HIV/AIDS in Malawi where 16% of adults aged between 15 and 49 are estimated to be living with HIV/AIDS. This prevalence might lead us to associate most of the adult deaths in rural Malawi with HIV/AIDS. In fact, AIDS was given as a "cause" in 10% of the deaths and this percentage is three points higher than a similar study that was conducted in rural communities of Mwanza region, Tanzania, where HIV/AIDS was mentioned during the VA interview in 7% (n=178) of the deaths (Todd **et al.** 1997).

4.1 Diagnosis of Disease

One of the concerns with the use of VA is the extent to which extent they agree with clinical reports (Boulle, Chandramohan & Weller 2001). In this study a question was asked to find out if the deceased was clinically diagnosed with their terminal illnesses. According to informants' reports, about 66% of the illnesses were clinically diagnosed. In addition, 2% of the informants knew nothing about illness or clinical diagnosis of their deceased relatives. Unless death certificates were available we cannot conclude anything from the proportion of reported clinical diagnoses, that is, whether they are true or not. We hope that the respondents told the interviewers the truth and also that the doctors told the relatives the truth about the clinical diagnosis, otherwise the use of the VA is challenged. Although most people in the rural areas are poor (National Statistical Office [Malawi] & ORC Macro, 2001), attempts are made to take the sick to the hospital or traditional healer.

4.2 Place of death

Place of death has a significant implication for quality and type of care given during illness. For people who die at a place different from the hospital, it might imply financial problems to seek proper care. However, reading through the VAs it is clear that there were instances where people (apparently with AIDS) were sent home from the hospital by the doctors who told them that there was nothing more the hospital could do. Sometimes there were people who chose to go home if they saw no improvement in their health. These two aspects, that is, financial problems and personal choice to go home might interact, and therefore, proportions of people dying at certain places have to be interpreted with caution. The data shows that 55% of the deaths took place at home whereas 31% took place at the hospital. Small proportions (accounting for 14%) of the deaths took place at the health center, traditional healer and private clinic. The high proportion of death at home is similar to another study in rural South Africa (Kahn **et al.**, 2000) where 60% of the children and adult deaths (n=1,001) occurred at home or at the site of an injury.

5. Illness and Diseases

This section provides results on questions that sought information about the illness and diseases that the respondent had before death. Specifically, information was sought on duration of illness and whether the illness continued until the time of death. Information on 12 illnesses or diseases was collected: severe fatigue, severe backache, pneumonia, chronic coughing, high fever, difficulty breathing, lack of appetite, vomiting, weight loss, bloody diarrhea, pain when urinating, and surgery. Surgery was considered as an illness since literature from developing countries include deaths arising from medical complications such as surgery as one of the causes of death (National

Statistical Office [Malawi] & ORC Macro, 2001). For example, the 2000 Malawi Demographic and Health Survey reports that maternal mortality ratio[8] has almost doubled between 1992 and 2000 from 620 deaths per 100,000 to 1,120 deaths per 100,000 partly because of lack of proper health services (e.g. surgical equipment. In an earlier section I looked at the proportion of people who had these symptoms or diseases but this section only presents reports about the timing of illness. The objective is to identify those illnesses that can be associated with HIV/AIDS since the illness usually takes a long time. In addition, we find that about 4% (results not presented) of the deceased people underwent surgery. This information is presented in Table 4.

Table 4 about here

The results in Table 4 show that some illnesses took a long time such as chronic coughing, weight loss, and diarrhea. Others were short lived such as lack of appetite, vomiting, and pain when urinating. One way to understand this pattern is to find out whether people had these diseases until death. This is important to separate those illnesses that might take place for a short time from those that might persist until death. For example, someone may have high fever for a short time and develop diarrhea leading to death. Informants were asked information about the persistence of the illness until death, that is, whether the deceased showed any signs of such diseases until and at the time of their death.

In rural Malawi the results show that illnesses remained untreated or uncured until the time of death. For each disease/illness reported, at least 70% of the people experienced it until their time of death. In addition, analysis of cause of death is problematic in sub-Saharan Africa because of lack of clinical reports, specifically death certificates. An attempt was made to find out the

8 Per 100,000 live births calculated as the maternal mortality rate divided by the general fertility rate (Births divided by total number of women of reproductive age).

proportion of the deceased with death certificates. Results confirm evidence of lack of death certificates in rural areas. None of the deaths that took place at the hospital had a death certificate at the time of the interview. However, this may be biased in that most of the informants might not have access to the death certificates. Or if they had the death certificate they might have forgotten about it or they did not know or care about it. If their relative is dead they might not feel the need for a death certificate. One study in south west Uganda, sub-county of Masaka district, reported that even though clinics and health centers may give death certificates which describe signs and symptoms that led to death (but not the cause of death), the certificates are often destroyed by the relatives immediately after burial and the centers do not keep any back up documents (Kamali **et al.**, 1996). In the study sites of rural Malawi it might be possible that the death certificates were either destroyed or lost (assuming that the relatives were given one at the hospital or clinic).

6. Death and Household Welfare

This section provides information on death and welfare of the relatives, specifically the experiences of the informants and relatives after the death of their relative. Understanding the effect of death on household dynamics is an important aspect in areas with high prevalence of HIV/AIDS. However, the link between AIDS-related or AIDS deaths and household dynamics is not clear. Findings are different across studies. For example, Boerma, Nunn, & Whitworth (1998) found that since most of the people who die of HIV/AIDS are breadwinners, mortality has a negative impact in societies with strong inter-generational resource transfers.

Contrary to this finding, Ainsworth, Beegle, & Koda (2000) assessed whether orphans or children in households with an adult death are less likely to be enrolled in primary school. Using

data from four rounds of a survey in Kagera region (northwestern Tanzania) between 1991 and 1994 when HIV infection was roughly 25% among adults in main towns and about 10% in surrounding rural areas, and about 5% to10% in the rest of the region, they found that Tanzanian households are coping with adult deaths by delaying enrollment of young children (7-10), while maintaining enrollment of older children (11-14). Among orphans, only maternal orphans are being held back. They report that the practice of delaying enrollment of primary-aged children is already the norm in Tanzania and recent studies (see Ainsworth **et al.**, 2000 for details) have found that over 80% of primary-aged children have delayed enrollment. The reasons for such a delay are well known, having to do with the opportunity costs of the children's time, overcrowding in schools, low returns to primary schooling, and limited opportunities for secondary schooling. Multivariate results found that these same factors are affecting enrollment decisions in their sample. However, controlling for these factors and for household wealth, they found that maternal orphan status and adult deaths have a separate and *independent* effect on delayed schooling of the youngest children (25).

These findings may suggest the importance of extended families and the presence of strong intergenerational resource transfers in these societies. Support networks may be effectively fostering-in children or transferring resources between households thereby suppressing or attenuating the impact of adult death on the household.

In addition, I wanted to find out the extent of financial assistance at the time of the funeral. The results show that 77% of the relatives received financial assistance from other people. This help largely comes from village collections (43%) and family members (35%). Other sources include the church and borrowing from other people. Related to the source of financial assistance I wanted to find out how much money was actually spent during the funeral. Chatting informally with

supervisors on the MDICP they said that funerals are sometimes considered as a social activity where people come from different areas, slaughter chickens, goat(s), or even a cow for rich households--and have feasts. The funeral in general attracts different people and is considered as a "meeting place" for some people. If this is true, we would expect people to spend a lot of money and stay longer at the funeral. But it is very important to take into account the level of poverty in these areas. As shown in Table 1 where type of house material is considered as an index of wealth, 88% of the deceased lived in houses with grass roofing. In addition, the results show that during the funeral about 27% of the relatives spent between MK500-MK999 (about US$8-US$20 at the time of the 2001 survey), whereas 24% spent between MK1500 and above (US$24 and above). Contrary, the results show that people do not stay very long at the funeral: 69% of the people stayed at the funeral for a period of 2-3 days.

6.1 Resource transfers after death

6.1.1 Help from Relatives to Respondent

When death takes place, it is a period of showing sympathy and providing assistance in cash or in kind. The results show that after death almost half of the people do not receive any help. For example, 53% of the relatives reported that they do not get any help from anyone. For those who get help (47%) the source of help comes from different types of relationships such as mothers, grandparents, brother and sister-in-laws, parents-in-laws and children. For the people who reported being assisted, I wanted to find out whether they had been assisted by those people or whether they started getting help because of their relative's death. This can provide some information on family relations: are they strengthened more in times of mishaps or not? Results show that 72% had been

helped after the death of their relative--which confirms evidence of strong support kin networks in rural Malawi (Weinreb, forthcoming).

6.1.2 Help from Respondent to Relatives

Another interest was to find out whether respondents also give help to other people after the death of their relatives. The assumption is that the loss of a breadwinner would affect the relatives' ability to support other people although it is reasonable to think that not everyone who died was a breadwinner and as discussed earlier, the level of inter-household social support can confound the level of support. Results show that 47% of the respondents gave financial assistance to others after the death of the breadwinner. The type of people they gave help are similar to those who gave them help in section 6.1.1. Most people give money and food.

6.2 Household Composition and Dynamics

In societies where households are nucleated or extended, it is generally accepted that death has a significant effect on household structure. Families are disturbed with members leaving the households to stay with other people or other family members coming to live in and help. The results show that 18% of the family members left to stay with other family members where as 31% of the informants reported having family members who came to live in. About 59% of the family members who left to live with other family members went to live in the city, 18% went to live in the same district (different Traditional Authority), and 12% went to live in another district. A small proportion went to live in the same village or Traditional Authority.

Some of the problems faced by relatives include repayment of loans left by the deceased,

lack of money for food, tuition, and other household expenditures. Others mentioned that they did not face any problems after the death. However, the problems faced varied from relative to relative but the ones mentioned are common.

Taking time out of work is also one thing that most people do in the event of death of a family member or close relative. The results show that 57% of the family members took time off to help at the funeral. In addition, about 46% of the respondents reported that family members had lost remittances. Remittances or resource transfers are very important in rural Malawi. For example, Weinreb (forthcoming) using data from the FTP examined transfers between adult respondents and their surviving paternal and maternal aunts and uncles. The findings suggest that intergenerational support networks in rural Malawi are not only both vertical and lateral, but there is also substantial network effects in family support. For example, surviving parents appear to play an important bridging role in lateral transfer relationships between their adult children and their own elderly siblings. Thus, adult respondents without surviving parents report fewer transfers to and from both paternal and maternal uncles and aunts. It is against this background that I wanted to find out whether after death the relatives were doing any form of income generating activities for their financial security. Eighty percent reported engaging in income generating activities which mostly involve agricultural activities and small business (e.g., farming, brewing beer, fishing, and making mats).

The effect of death on social life is also an important aspect of household dynamics. In this study, about 31% reported experiencing changes in their life such as lack of advice, lack of cooperation between family members, property grabbing, bigger families to take care of, and lack of food and money.

7. Conclusions

The results of this study have shown that the MDICP sample attrition between females and males is almost equal, male deaths are higher in the 40-49 age groups and female deaths are also higher between 30-39 years. In addition, most deaths occurred in the southern region of Malawi. Although it is not possible to check the quality of year of death reporting for deaths after the FTP, the reported proportions show that almost half of the deaths took place in 2000. There are no huge differences in terms of demographic characteristics between: 1] respondents who died and survived, and 2] between deaths with VAs and those without VAs. In addition, the mean age of surviving respondents is younger than that of the deceased respondents.

The most common diseases or illnesses associated with the deaths are "AIDS-related" such as coughing, diarrhea, difficulty breathing, fever, and weight loss. In addition, most of the illnesses are reportedly clinically diagnosed. During the course of illness respondents and their relatives sought treatment from both modern and traditional sources. At least half of the deaths took place at home. This is consistent with findings from rural Tanzania (Todd **et al.**, 1997) where most deaths occur at home and medical diagnoses of cause of death are not available. In rural Malawi, there is evidence of strong social support for the bereaved relatives at the time of the funeral and after death. For example, family composition was affected: some family members went to live with other relatives either in the same village, district or in the city whereas other people also came to live in and help their relatives. Reading through the VAs show that the most common problem associated with death is financial insecurity.

The ability of informants to recall and report the illnesses of their deceased relatives influences the reliability of VA interviews in establishing signs and symptoms. In this study, recall

is an important factor since some interviews took place nearly three years after the death of the respondent. Despite these limitations, other studies (e.g., Todd **et al**, 1997) have found that the VA instrument is able to detect clear differences in reported symptoms according to HIV status of the deaths. That is, detection of differences in reported symptoms between HIV-negative and HIV-positive deaths. In this study, only 10% of the deaths were directly associated with HIV or AIDS. Lack of known HIV status and other traditional beliefs (e.g. witchcraft) can sometimes be used to deny the consequences of HIV infection. Some people find it had to openly disclose the HIV status of their deceased relatives even if they know that they died with AIDS (Nicoll **et al.**, 1993).

Another limitation of this study, as Garenne & Fontaine (1990) points out is the problem with investigating adult deaths since nobody pays as much attention to other adults when they are sick as a mother to her child. Garenne & Fontaine (1990) also point out that the most serious problems in the investigation of deaths occur among the elderly[9]. Old people who feel sick have a tendency to hide their disease, do not go to dispensaries, refuse to take drugs, and declare they want to die within the village like their ancestors. Although this study was not aimed at picking up the effects of Garenne & Fontaine's points, it is reasonable to think that these problems might be present among the deceased prime-age adults. Therefore, this paper has presented the major findings of a study of adult mortality using VAs in rural Malawi where, as in many areas of sub-Saharan Africa, reliable data on cause of death is lacking.

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9 I assume that they mean those aged 50 and over since in their paper the last age group that was used for analysis is 50+.

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Table 1. Percent distribution of deceased and surviving respondents by selected characteristics in rural Malawi.

	Died (1998-2001)			Survived to wave 2 in 2001*		
Characteristic**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Age						
20-29	22.0	35.2	28.9	22.2	40.4	31.3
30-39	22.0	46.3	34.6	32.6	34.5	33.6
40-49	42.0	18.5	29.8	31.6	23.9	27.8
50-59	14.0	0.0	6.7	13.6	1.7	7.6
Mean age	38.4	33.5	35.9	35.6	27.5	31.0
Mean years of schooling	3.6	3.0	3.3	3.7	2.8	3.2
Mean children born	5.8	4.2	5.0	5.5	4.2	4.8
Roof Material						
Metal	12.2	13.2	12.7	7.5	7.3	7.4
Thatch/Grass	87.8	86.8	87.3	92.5	92.7	92.6
Worry about catching AIDS						
Not worried	7.7	16.7	12.2	25.3	17.0	21.1
Little worried	23.1	20.9	22.0	19.8	20.3	19.8
Very worried	69.2	62.2	65.7	54.3	62.2	58.2
Sample Area						
South	42.0	51.85	47.1	35.0	32.4	33.7
Center	28.0	27.78	27.9	33.7	34.4	34.0
North	30.0	20.37	25.0	31.3	32.3	32.3
*Probability of dying****	0.02	0.01	0.02			
N	**50**	**54**	**104**	**1085**	**1467**	**2552**

Source: Calculated from the MDICP 1998 and 2001 data.

*Notes: *This does not include the new spouses interviewed in 2001, i.e., new wives and husbands of respondents who remarried; ** This is based on the 1998 survey for the deceased and on the 2001 survey for the surviving; This is the annual probability of dying for all ages (20-59) for the period 1998-2001.*

Table 2. Proportion of respondents by year of death, duration of illness, and source(s) of care in rural Malawi.

Variable	Percent	N
Duration of illness		
Less than 1 month	21.7	20
1 to 2 months	15.2	14
2 to 6 months	14.1	13
6 months and above	43.5	40
Don't know	5.4	5
Source of care/treatment sought by deceased[a,b]		
Government District Hospital	70.2	65
Government/Primary Health Center/Clinic/Dispensary[g]	14.8	14
Private Hospital/Clinic[f]	12.9	12
Traditional Healer	54.1	50
Relatives or friends	8.2	8
Religious leaders[c]	8.2	8
Source of care/treatment sought by relatives or friends[d,e]		
Government hospital	64.4	59
Government/Primary health center	10.9	10
Private hospital/clinic	12.7	12
Traditional Healer	60.0	55
Year of death		
1998	7.6	7
1999	23.9	22
2000	46.7	43
2001	21.7	20
Total	**100.0**	**92**

Source: Calculated from the 2001 mortality study data.

[a] Respondent paid for their own medication and/or travel to the source of care; [b, e] Percentages do not add up to 100 since people had multiple sources of care; [c] This was for moral support; [d] Other people (relatives or friends) paid for medicine and/or travel to the source of care; [f] This is different from government Hospital; [g] These names are used interchangeably by the local people and they all refer to all sources other than the main district/referral hospitals.

Table 3. Proportion of deaths with specific illnesses/diseases as reported by relatives and neighbors in rural Malawi (Note: the "AIDS-related" illnesses were not directly reported by informants)

Disease/Symptom	Percent of deaths[b]
Accident	7.7
Coma	5.5
Complications of delivery	3.3
Cough	42.9
Diarrhea	29.7
Difficult / Rapid breathing	22.5
Fever / Malaria	30.3
Pneumonia	27.5
Rash	10.0
Stiff neck	7.8
Weight loss / Very thin / Malnutrition	17.2
Fit	10.0
HIV/AIDS	10.0
"AIDS-related"[a]: AIDS+cough+diarrhea+difficult and rapid breathing+fever and malaria +pneumonia+rash+very thin and malnutrition.	68.9

Source: Calculated from the 2001 mortality study data.

[a] Adopted from World Health organization (2001). This includes respondents who reported a combination of these illnesses; [b] Percentages do not add up 100 because some people had multiple diseases or symptoms.

Table 4. Proportion of deaths by illness and their duration from onset until death, rural Malawi.

Illness	Duration of illness					
	>6 months	**>1 month**	**> 1 week**	**Immediately before death**	**Don't know**	**Total (%)**
Severe fatigue	7.8	37.3	19.6	35.3	0.00	100
Severe backache	26.1	34.8	30.5	8.7	0.00	100
Pneumonia	19.2	34.6	23.1	19.2	3.9	100
Chronic coughing	32.6	37.2	16.3	11.6	2.3	100
High fever	23.3	27.9	37.2	11.6	0.0	100
Difficulty breathing	7.8	29.4	17.7	45.1	0.0	100
Lack of appetite	9.3	20.9	41.9	25.6	2.3	100
Vomiting	12.5	12.5	50.0	25.0	0.0	100
Weight loss	43.1	43.1	7.8	5.9	0.0	100
Bloody diarrhea	17.2	58.6	13.8	6.9	3.5	100
Pain when urinating	18.2	27.3	45.5	9.1	0.0	100

Source: Calculated from the 2001mortality study data; Note: Proportions based on the number of deaths with reported illness.