THE SOCIO-ECONOMIC IMPACT OF STROKE ON HOUSEHOLDS IN LIVINGSTONE DISTRICT, ZAMBIA

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Abstract

The study aimed at assessing the socio-economic impact of stroke in households in Livingstone district. A cross sectional study was conducted in Livingstone district to assess the socio-economic impact of stroke on households. A total of 50 households were conveniently selected from the Physiotherapy and CBR registers of Livingstone General Hospital. Self administered questionnaires and Focus group discussions were used to collect quantitative and qualitative data. The study involved interviewing stroke victims and one spouse or caregiver or guardian. The data was analyzed using SPSS and content analysis. Chi square tests to associate age category and period of stroke, period of stroke and change in relationships, change in relationships and sex, Stroke category and family role change were done

From the Focus Group Discussions, the social impacts were depression, difficulty, resentfulness, apathy, needy, separation, divorce, general marital problems, and neglect on the part of the victim with low family moods, fear and apathy in households.

The study also revealed an association between period of stroke and relationship changes ($p=0.003$). Sex and relationship changes were highly associated ($p> 0.001$) more females than males experiencing relationship changes. The chances of having relationship changes in stroke victims were 1.1 times higher.

The economic impacts were loss of employment, reduced business activity and loss of business on the part of the victim and reduced food consumption, inability to pay school fees, accommodation problems and loss of financial security in households. The study also showed that the stroke victims mostly lost salaries, followed by businesses, with the majority experiencing economic change after stroke and only a few were receiving economic assistance.

The activities forgone by stroke households were feeding, accommodation, and education in order to accommodate the stroke situation in the households.

The results of the study show that stroke has considerable socioeconomic impact on households which can deter the victims' development as well as the household and the nation at large. With its impact on household, stroke victims were all willing to form a support group in Livingstone district.

Declaration

I declare that this dissertation represents my own work and that all the sources I have quoted have been indicated and acknowledged by means of complete references. I further declare that this dissertation has not previously been submitted for a Degree, Diploma or other qualifications at this or another University. It has been prepared in accordance with the prescribed guidelines for Post graduate studies Dissertations of the University of Zambia.

Researcher's Signature------------------------------ Date---------------------------

Supervisor's Signature------------------------------- Date---------------------------

Certificate of Approval

The University of Zambia, School of Medicine approves this Dissertation of Miriam Mapulanga, as partial fulfillment of the requirements for the award of degree of Master of Public health.

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Examiner II: Name………………………………………………………………………………..

Signature……………………………………………….Date…………………………………………….

Dedication

To all the stroke victims and their households, for bringing to light their experiences.

For Aaron kaipu Mapulanga and Esther Musole Tombi Mapulanga.

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List of Abbreviations

AIDS	-	Acquired Immune Deficiency Syndrome
CBR	-	Community Based Rehabilitation
CSO	-	Central Statistical Office
CVA	-	Cerebral Vascular Accident
DALY	-	Disability Adjusted Life Years
HIV	-	Human Immuno Virus
MDGs	-	Millennium Development Goals
MoFNP	-	Ministry of Finance and National Planning
TIA	-	Transient Ischaemic Attack
UNDP	-	United Nations Development Programme
UTH	-	University Teaching Hospital
WHO	-	World Health Organization

Definition of Terms

Disability	Restriction or lack of an ability due to impairment to perform an activity in the manner or within the range considered normal
Household	People living together in a house whether nuclear or extended family
Impact	The long term consequence of an event
Opportunity cost	Best alternative forgone
Resident	Victim who resides in Livingstone permanently
Socio-economic	Pertaining to societal and monetary
Stroke Victim	An individual with history of major stroke

Chapter one

Problem Identification

1.0 Introduction

Stroke is non-communicable disease of socio-economic importance. The World Health Organization (1970) defined stroke as 'the neurological deficit of cerebral vascular cause that persists beyond twenty four hours or is interrupted by death within 24 hours'. The 24 hour limit divides stroke from Transient Ischaemic Attack (TIA), which is a related symptom of stroke that resolves completely within 24 hours. Stroke was referred to, in the past as Cerebro-Vascular Accident (CVA), but the term *stroke*, is now preferred. Kumar & Clark (2005) defines stroke as a focal neurological deficit due to a vascular lesion, usually of rapid onset and lasts longer than twenty four hours, and classified as *complete* when the neurological deficit has reached its maximum*, in-evolution* when signs and symptoms are getting worse, and *minor or transient* when a patient recovers without significant deficit.

The risk factors of stroke are varied, and include hypertension, advanced age, previous stroke or TIA, diabetes, increased cholesterol levels, estrogen containing forms of hormonal contraception, migraine with aura and thrombophilia and severe rare disorders (Gelb, 2005). The Framingham study revealed cardiovascular diseases, obesity and cigarette smoking to be highly associated with stroke and hence they are also risk factors (Framingham-study, 2008).

In Zambia, hypertension, diabetes, advanced age and increased cholesterol levels are the major risks of stroke, although with the advent of HIV/AIDS, the dimension of stroke especially in patients between 20-40 years is increasing (Sandala, 2006).

Beers & Berkow (2006) relates the clinical manifestations of stroke to the anatomical location, nature and severity of the damage of which the major symptoms include;

1. Paralysis of one side of the body (due to the decussating of the pyramids, paralysis is on the opposite side of the affected side of the brain).
2. Balance problems, altered smell, taste, hearing, vision, altered breathing and heart rate.
3. Loss of speech (aphasia) if accident happens on the left side where the speech centre is located.

The clinical care of stroke is costly and prolonged, qualifying stroke to be a chronic condition, hence the social and economic consequences, with the direct costs diverting the scarce family and societal resources to medical care (World Health Organization report, 2004). Stroke, which affects mostly the productive age group, leaves about 65% of its victims disabled, leads to increased loss of manpower both at individual and national levels (World Health Organization report, 2004). Gelb (2005) stated that stroke is the leading cause of adult disability worldwide, and this concept, on the Zambian perspective, is supported by Muyanga (2006) and this leads to poverty at household levels.

Due to changing lifestyles, the incidence of stroke is increasing, and thus, 28 million people are estimated to die in 10 years time, just in Africa, due to Non communicable diseases, largely stroke (Africa Health Monitor, 2008). The incidence of stroke is showing an increasing trend in Zambia (Ministry of Health, 2008). Livingstone district, of Southern province, Zambia has not been spared by this increase (Livingstone General Hospital, 2008). Stroke, being a chronic condition, has considerable socio-economic impact on households which could be aggregated to national impact.

Chapter two

Problem statement

2.1 The problem

Cassels (2007) stated that the world is facing a major stroke epidemic, with increasing trends in developing countries and threatens to overwhelm the healthcare resources. Clinical care of stroke is costly and prolonged, qualifying stroke to be a chronic condition, and hence the social and economic consequences, with the direct costs diverting the scarce family and societal resources to medical care (World Health Organization report, 2004). Stroke affects individuals in their peak mid life years disrupting the future of the family dependence on them and undermining the development of nations by depriving valuable human resources in their most productive years (World Health Organization report, 2008). This leads to the suffering of victims and their households as they are the ones facing the impact of stroke be it socially or economically.

When patients are not in employment, the family suffers the consequences of paying various bills, general care of the patient as well as divergence of resources to healthcare which could be used on other things to enable development e.g. foods, clothing, education etc. In case of a patient who is employed; there is reduced income, reduced tax for the government and reduced contribution to the country's development.

When the patient is the breadwinner, there could be increased expenditure as compared to the income at home, due to added healthcare expenditure. The patient himself or herself feels inadequate because he/she cannot provide. This further leads to self neglect, depression and breakdown of relationships, with the family having psychological, emotional problems as well as stress and thus social breakdown, changed roles, reduced income and reduced material and food security (Stokes, 1998). An opportunity cost could be children foregoing education and the spouse foregoing either work or business. However, for patients who are unemployed, the effect may be felt by the caretakers and providers. The patient may undergo emotional stress and personality changes as he becomes a burden to others due to increased expenditure resulting in the providers and caretakers struggling with economic support as well as taking care of the patient physically (Stokes, 1998).

In Zambia, healthcare expenditure is mainly out-of-pocket unlike the developed countries where health is highly insured (Saka et a,l 2005), hence the socio-economic impact is felt by the individual and family. In Zambia, according to Chongo (2005), the patient and the family incur the burden of paying the user fees, hospital stay and medication, rehabilitation fees, transportation, and the opportunity costs. In their study of the burden and costs of chronic diseases in low and middle income countries, Abegunde et al (2007) stated that when the individual costs are summed up, the loss to economy can be substantial. Although Zambia was not included in this study, its summed up costs can be equally be substantial.

Stroke affects business and threatens economic sustainability due to disability, unplanned absences, reduced workplace effectiveness and increased accidents (Price Water House Coopers, 2008). Kadiri (2008) writes that the number of Disability Adjusted Life Years (DALYs) lost, due to cardiovascular diseases (mostly stroke), in sub Sahara Africa rose from 5.3 for men and 6.3 for women in 1990 to 6.5 and 6.9 in 2000 and may rise to 8.1 and 7.9 in 2010. This means that for Zambia, a developing country, with life expectancy at 37 years, DALYs between 6.5 and 8.1 are too much and may retard the economic development. For a country with 64% of the population in poverty, mean monthly income of K511, 377 with the majority (65%) having income below the basic need basket (Central Statistical Office, 2008), stroke could increase poverty. With the reduction in the workforce, stroke may contribute in hindering Zambia's attainment of the Millennium Development Goals (MDGs) as it may take away the household provider or increase the support to the unemployed patient resulting in reduced proper food consumption at home and drop the poverty datum levels lower (United Nations Development Program 2007; Ministry of Finance and National Planning, 2004).

If the socio-economic impact of stroke has been studied, and officially documented, the victims and their families may benefit from Social welfare services (Saka et al, 2005). This has been the ideal situation in countries where the impact of stroke has been appreciated at higher levels of authority and the formation of support groups has been advocated. But this has not been the case in Zambia, Livingstone. Victims and their households are left to face the impact on their own as the socio-economic impact of stroke on households even at national level is not known.

Although stroke has such socio-economic impact, the impact is not known in Zambia at either household or national levels, but in some European and American countries, it has been documented at national levels (Saka et al, 2005; Milken institute, 2007). Livingstone district, which has more than 50 stroke victims, about 30% of them, report its adverse impact on their lifestyle including loss of employment or business to neglect or divorce (Livingstone General Hospital, 2008). The adverse effect may have negative impact on the recovery of the victims and prolongs morbidity and could enable mortality.

2.2 Study justification

There is need to analyze the socio-economic impact of stroke on households in Zambia and hence will document the magnitude of the problem officially. As the initial impact of disease manifests at the individual level, the assessment would therefore start on this micro level of analysis.

The socio-economic impact of a condition which affects mostly the productive population and leaving 65% disabled, is worth studying (World Health Organization, 2004). Although the prevalence of stroke is showing an increasing trend in Zambia, its socio-economic impact has never been studied. (Muyanga, 2006; Chongo, 2005).

The study will help the stroke households to see its impact and may motivate them to form a support group or an association which can enrich them both emotionally and psychologically.

The researcher has worked in the Stroke clinical areas and has appreciated the socio-economic impact of stroke of stroke households from depression and bankruptcy to divorce or relationship breakdown, and hence the impact worth studying and documenting.

The study could be used as a reference by the Ministry of Community development and Social welfare and the Zambia Association for the Physically Handicapped for the inclusion of stroke victims in their programs.

Chapter Three

Literature review

3.1 Burden of Stroke

The literature reviewed focused on stroke in terms of Burden, magnitude of the problem globally, regionally and nationally with socio-economic impact. Sources of review included books, articles and journals. Most of the studies were done in the developed countries where the health setup is different from Zambia. Few articles reviewed were from developing countries like South Africa, Tanzania etc. The review established what is already known about the socio-economic impact of stroke on healthcare as well as patients and families and hence tried to identify gaps in the existing literature.

The World Health Organization (2006) described strokes as one of the main non-communicable diseases of *public health importance* and the most common cause of death in industrialized countries and notes that reliable estimates of stroke prevalence are difficult to obtain. The World Health Organization cites stroke as the number one cause of adult disability, second leading cause of mortality worldwide and third leading cause of adult mortality in developing countries (World Health Organization report, 2008). The developing countries had a lagging of prevalence of stroke in the recent past but the picture has since changed from communicable infections to a balance between communicable and non- communicable infections (Muyanga, 2006). Stroke burden is projected to rise from around 38 million DALYs globally in 1990 to 61 million DALYs in 2020 (World Health Organization, 2008). The increase in DALYs is due to the disability as a result of stroke. Bull (2008) found that

65% of stroke survivors were functionally independent leaving 35% being dependant on others and the community. Rehabilitation of stroke patients is long and hence expensive for both the healthcare and the stroke survivors.

Stroke is the seventh cause of disease burden globally (Lyons & Rudd, 2006). According to the 2006 World Health Organization factsheet, every year, 15 million people suffer from stroke, 5 million die and 5 million are left permanently disabled worldwide, placing the burden on the family and community. The WHO factsheet further stated that stroke prevalence in white people was 500/600 per 100 000 while the prevalence of stroke in New Zealand was 793/100 000, Finland was 1030/100 000, the prevalence of France was the highest at 1445/100 000. In developing countries, the prevalence was lower than that of the developed countries, e.g. India stood at 58/100 000 with Tanzania at 76/100 000.

Globally, stroke accounts for 49 million DALYs. Studies on the economic impact of stroke done in America and Europe, focus on healthcare provision mainly. This is due to the fact that healthcare financing in America and Europe is mainly by private insurance leaving the government to finance for the poor who cannot afford the private insurers (Musgrove, 2000). But this has not been the case for the developing countries including Zambia where the government subsidizes healthcare with the large population paying direct out of pocket for healthcare (Phiri & Marie, 2004).

Africa, most of it being developing, has a high disease burden of communicable diseases like Malaria, Tuberculosis, HIV/AIDS etc and thus the burden of stroke has been neglected (Kengue, 2008). Little information about stroke is known in Africa of which Thorogood *et al*

(2004) explained that this was due to the economic transition and hence the disease transitions from communicable to non-communicable diseases like cancer, cardiovascular diseases and equally stroke. Although stroke has not been studied widely in Africa, Kengue (2008) further observed that the neglected burden of stroke in Sub Sahara Africa may interfere with economic development.

In Nigeria, a study which focused on the prevalence of an urban, mixed-income commonly in Lagos found the country's prevalence to be lower than that of the developed countries with more men affected than women (Mustapha et al 2007). This could be the case because stroke as a non communicable disease may appear to be insignificant due to the high burden of communicable diseases in the developing countries. Meanwhile, the *African Health monitor* (2008) reports that 80% of non communicable diseases occur in low and middle income countries where most of the population lives.

A study in South Africa, revealed that stroke was a significant cause of illness and disability although viewed as a chronic illness of the affluent countries and hence found the prevalence of stroke in rural South Africa to be at 300/ 100 000 (Thorogood et al, 2004).

In an age specific prevalence of impairment and disability relating to hemiplegic's stroke in Hai district of Tanzania, Walker (2000) found that 23% of those affected by stroke were bedridden, and 6% were above 65 years of age, thus indicating the burden of disease in just one district with the remaining 94% of the cases in the productive age group suggesting socio-economical impact.

3.2 Impact of stroke

Like any other chronic condition, stroke has got significant impact on the victim, family and the community. Stroke has physical, social and economical impacts. The physical impact is as a result of direct lesion on the nervous tissue. Haan et al (2003) stated that the stroke type, patient and clinical characteristics, are important in explaining impaired quality of life pattern. The fact that the nervous tissue does not regenerate, makes the lesion permanent but due to its property of plasticity, rehabilitation is possible which aims at reminding the brain of its previous functions (Stokes, 1998). This is to say that ischaemic stroke has got more impact than haemorrhagic type, and a self-determined patient fares better than the undetermined one.

Due to its chronicity and productive target group, stroke has an economic burden on healthcare as well as individual level.

Saka et al (2004) analyzed the economic burden of stroke in the United Kingdom; they calculated the cost of stroke from a societal perspective including direct healthcare costs together with informal care costs and productivity losses. They reported that previous estimates suggest that 7.4% of spending in community healthcare was consumed by stroke while that of the spending on hospital care was between 4.6 -5.5% of the total expenditure on the National Health Services. The overall lifetime costs of stroke in England, in 1995-96 per patient ranged from 2 000 to 62 000 pounds in care only. In England, the National Audit Office produced data suggesting the annual cost to the nation as being 7 billion pounds with 2.5 billion pounds attributed to direct costs (National Audit Office, 2005). This shows what impact stroke has, but unlike the developed countries, developing countries like Zambia with no much insurances, the impact is on the households (Phiri & Marie, 2004).

The study results presented at the International Stroke Congress (ISC) in Florida, USA, highlighted the increasing financial burden caused by outcomes of strokes and its impact on a variety of healthcare resources (Medical News Today, 2006). One of the studies presented examined the impact of the length and cost of hospital stays. The analysis was done in 350 000 Medicare insurance claims. The lifetime cost of stroke in the United States of America was done in Iowa, indirect costs (the value of forgone market and non- market product) associated with premature morbidity and mortality were estimated and the results were found to be highly significant.

In a similar study done in Australia; which aimed at finding out the cost of stroke from a societal perspective, the costs of stroke during the first year after stroke and the present value of total life time costs were estimated. The hospital and nursing home costs were found to contribute the most to the cost of stroke (Dewey et al, 2001).

In Taipei, analysis of costs borne by families of patients hospitalized for stroke was done. Labour contributed by families was estimated by assigning current monetary market rate of providing health. The economic impact was found to be highly significant to deter the family's development. (Chui et al, 1998).

Stroke has social impact as well. Stein (2004) discussed the impact of stroke on marriages where he ascertains that the spouse is the one mostly affected by providing care to the victim, and sex could be a problem. He mentions that stroke can be a final stressor for a troubled marriage, when the victim's participation in marriage is lessened when needed more.

The prevalence of stroke in Zambia has never been captured at national level. Cure research (2008) has extrapolated the prevalence of stroke for Zambia at 24,321 of the population 11, 025,890 making the prevalence at 0.2 % (based on the American estimates hence could be misleading). Zambia being a developing country has more communicable diseases on the top 10 disease burden in the country (Ministry Of Health, 2006).

A study at the University Teaching Hospital estimated that out of the 1696 patients who attended physiotherapy out patients department in 2004, 33% were stroke victims, showing a high prevalence and disability levels (Chongo, 2005). A subsequent study disclosed an increase in the number of stroke patients at the University Teaching Hospital out patient physiotherapy department (Muyanga, 2006). This evidently suggests that the prevalence could be more, as both studies focused on the outpatients' department and those attending physiotherapy only.

Livingstone has a considerable prevalence of stroke victims. Livingstone has a population of 103 288 people (Central Statistical Office, 2003). Cases are captured by the hospital when referred for further management, but those unable to go to the hospital are cared for by the Community Based Rehabilitation supervised by Livingstone General Hospital. Livingstone hospital register has more than 50 stroke victims in Livingstone district alone, of these; about 30% indicate socio-economic problems, (Livingstone General Hospital, 2008). No study of the socio-economic impact has been done at household levels in Livingstone.

Despite such an impact, stroke victims are not catered for by the Social welfare (Ministry Of Community Development and Social Welfare, 2007). Support from Social welfare departments or disability association would help cushion the economic impact of stroke on both the victim and their households.

Zambia has no Stroke association or support group for stroke victims and so the victims are not organized in any way (Ministry of Home Affairs, 2008). Support groups would equally be useful in victims supporting one another to care for psychological welfare. This may reduce the social impact of stroke on victims and the households.

Chapter Four

Objectives

4.1 Research Question

What impact does stroke have on households socially and economically?

4.2 Objectives

4.2.1 General objective

To assess the socio-economic impact of stroke on households in Livingstone.

4.2.2 Specific objectives

- To determine relationship and role changes in households due to stroke.
- To verify lost incomes in households due to stroke.
- To verify opportunity costs in households due to stroke.
- To assess victims' willingness to form a stroke support group in Livingstone district.
- To document basis for liaison with Ministry of Community development and Social welfare for the inclusion of stroke victims in their programmes.

4.3 Research Hypothesis

Stroke has considerable socio-economic impact on households.

Chapter Five
Methodology

5.1 Study design

A cross sectional study design was used. Both qualitative and quantitative data was collected. A self administered questionnaire and Focus group discussions were used to collect data.

5.2 Study site

The study was conducted in Livingstone district, Southern province of Zambia. Livingstone district has a population of over 103, 288 and 18, 000 households (Central Statistical Office, 2003). Livingstone General Hospital has in place a Community Based Rehabilitation (CBR) programme spearheaded by the Zambezi paramedical centre, offering rehabilitation services in the community. More than 50 stroke patients are registered in the hospital register and in the CBR register.

5.3 Study Population

The study consisted of households who have stroke victims, in Livingstone district. The target population was the victim of stroke, with the spouse or caregiver or guardian.

5.3.1 Inclusion criteria

- Stroke survivors with their spouses, caregivers or guardians who reside in Livingstone.
- Stroke survivors whose condition had been diagnosed not less than one month.

5.3.2 Exclusion criteria

- Stroke survivors with their spouses, caregivers or guardians who did not reside in Livingstone.
- Stroke victims whose condition had been diagnosed in less than one month.

5.3.3 Case definition of stroke

As defined by Kumar & Clark (2005), stroke is "the clinical syndrome of rapid onset of cerebral deficit (usually focal) lasting more than 24 hours or leading to death, with no apparent cause other than a vascular one." Case definition of stroke in this study will be weakness on one side of the body with a history of hypertension, TIA, diabetes, high cholesterol levels or any other risk factors of stroke. Type of investigations done will not be considered as some investigations may not be available in Livingstone. Diagnosis will be based on clinical findings.

5.4 Sample size

With more than 50 stroke victims in the Hospital and CBR register, using the formula

$n=z^2PQ/d^2$

Where z is the degree of freedom at *95%* confidence interval being 1.96

P is the target proportion required being 30% (Being the indication for socio-economic problems among stroke victims)

Q is (100% -P) being 70

D is the error level

Therefore: At 95% power of achieving a significant result at 5% level

SE=√P (100-P)/n

=√30 (100-30)/50

=√2100/50

$=6.5$

Confidence Interval $=30 \pm (2 * 6.5)$

$=30\% \pm 13$

$=17\%$----43%

Width of CI=26

$d=1/2*CI= 13$

$n=z^2PQ/d^2$

$=1.96^2*30*70/13^2$

$=1.96^2*2100/169$

$=8,067.36/169$

$=47.7$

=48 households

= 50 households were sampled

= *50 stroke victims answered the questionnaire, 20 spouses or caregivers or guardian participated in the Focus group discussion*

5.5 Sample selection

Convenient sampling method was employed in order to select 50 participant households. The sampling frame was the physiotherapy and CBR registers of the hopsital. Victims and spouses or care takers or guardians of stroke victims were interviewed. Interviewees below the age of eighteen did not qualify to be included in the study.

5.6 Data collection

The study involved collection of data on the social and economic impact of stroke on households.

Structured questionnaires were used to collect data on the impact of stroke on households from the stroke victims. Translated questionnaires were provided when needed.

Focus Group discussions were done to collect qualitative data on the impact of stroke from spouses or guardians or caregivers. Two focus group discussions were done for women and men separately, each containing 10 respondents.

5.7 Variables

In this study, the dependent variable was stroke and the independent variables were relationship changes, family role changes, lost income and opportunity costs.

Operationalizing variables

Variable	*Operational definition*	*Indicator*
Relationship changes	Social relationship changes due to stroke	Marital problems, separation, divorce, abandonment, family problems, apathy, neglect
Family role changes	Changes in family roles due to the impact of stroke	family provider, dependency, assisted
Income lost	Income lost due to the impact of stroke	Employment termination, Business termination
Opportunity costs	Costs forgone due to stroke	Reduced food, clothes, unpaid school fees, others

5.8 Data processing and analysis

After data collection, coding was done and responses were entered into a computer package, Statistical Package Social Sciences (SPSS). Data was analyzed using Statistical Package for Social Sciences with content analysis. Chi square test to associate age category and period of stroke, period of stroke and change in relationships, change in relationships and sex, Stroke category and family role change were done The Odds of having relationship changes in stroke calculated to measure the impact of stroke.

5.9 **Pretesting**

Pretesting of the tools was done before use in the field to test validity and reliability. Identified shortcomings of the tool were corrected in order to answer the objectives of the study. Participants of the pretest were excluded from the sampling frame.

5.10 Ethical consideration

Ethical clearance for the study was obtained from The Research Ethics Committee of the University of Zambia, School of Medicine. An informed consent form was prepared according to the Research Ethics Committee guidelines which were issued to the participants in order to guarantee voluntary participation, confidentiality, benefits and maintenance of privacy of all participants in the research. Only those who volunteered to participate were included in the study. Written permission to conduct the study was sought from Livingstone General Hospital Management.

5.11 Study limitation

The study was conducted in Livingstone district and the extent to which findings can be generalized to other settings is assumed.

5.12 Presentation of data

The data was summarized and presented in tables, pie charts, bar charts, etc, to facilitate understanding.

5.13 Data dissemination

Presentation of findings was done to the University of Zambia's School of Medicine.

Chapter six

Data presentation and analysis

6.1 Section A-*Data from structured questionnaire*

6.1.1 Description of the respondents

This gives the description of the sample taking into consideration their location in Livingstone, age, sex, marital status, occupational status before stroke, highest education attained, victim's role in the household, the number of dependants for family providers and contributors, financial aid for respondents who were dependents, and length of time respondents had been victims of stroke.

6.1.1 Location in Livingstone district

Table 1

Area	Frequency	Percentage
Town Centre	11	22
Elaine Brittel	8	16
Maramba	9	18
Dambwa	9	18
Nottie Broadie	9	18
Other	4	8
Total	50	100

Table 1 show that the respondents came from all over Livingstone district. The majority, 22% reside in town centre area. Town centre is within the radius of 2km. Maramba, Dambwa and Nottie Broadie had equal respondents of 18% each.

6.1.2 Age categories of the respondents

Figure 1

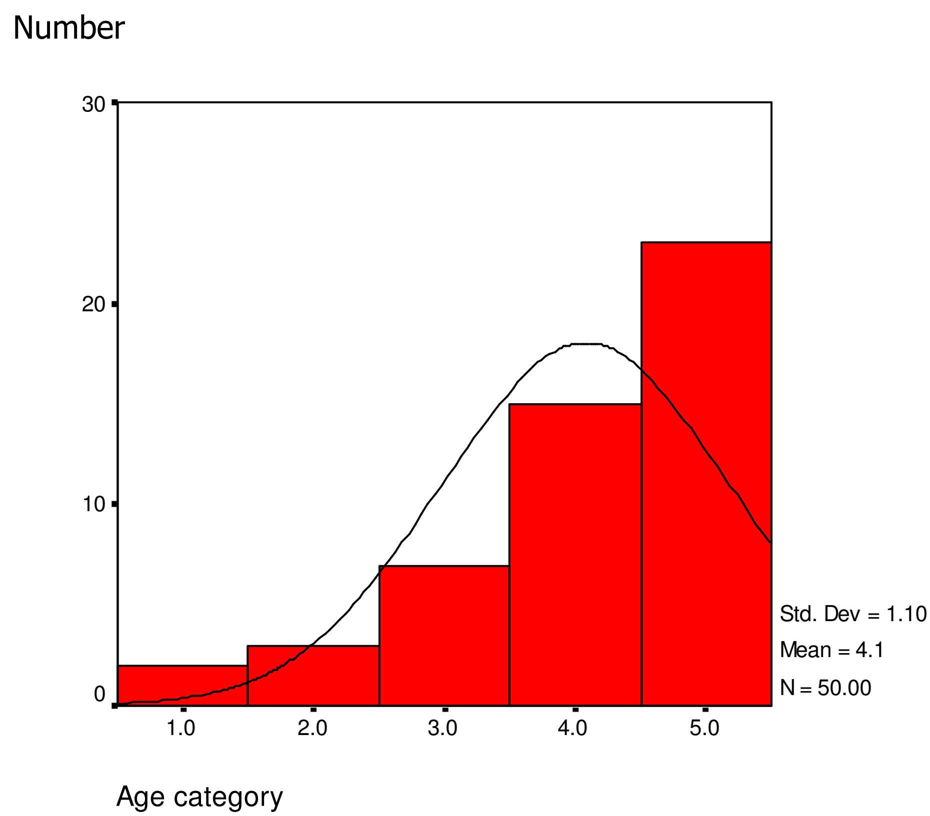


Figure 1 shows the age categories of the respondents.

Category **1** is below 19 years (4%),

Category **2** is between 20 and 29 years (6%),

Category **3** is between 30 and 39 years (14%),

Category **4** is between 40 and 49 years (26%),

Category **5** is 50 years or above (46%).

Figure 1 shows that the respondents' age ranged from below 19 to more than 50 years. The number of stroke victims was increasing with age. Those above the age of 50 years were the majority (46%), followed by those who were between 40 and 49 years (26%).

Table 2 Sex distribution in age categories

Age group of respondents	Male	Female	Total
Below 19 years	1	1	2 (4%)
20-29 years	1	2	3 (6%)
30-39 years	3	4	7 (14%)
40-49 years	6	9	15 (30%)
Above 50 years	11	12	23 (44%)
Total	22 (44%)	28 (56%)	50 (100%)

Table 2 shows the sex distribution in the various age categories, having more females than male in all the categories with the exception of those below 19 years.

6.1.3 Marital status of the respondents

Table 3

Status	Male	Female	Total
Married	8	4	12
Never married	1	5	6
Widowed	3	4	7
Divorced	8	10	18
Separated	2	5	7
Total	22	28	50

Table 3 shows marital status of the respondents. The majority in these categories were females with the exception of the married category where males were the majority.

6.1.5 Occupational status before stroke

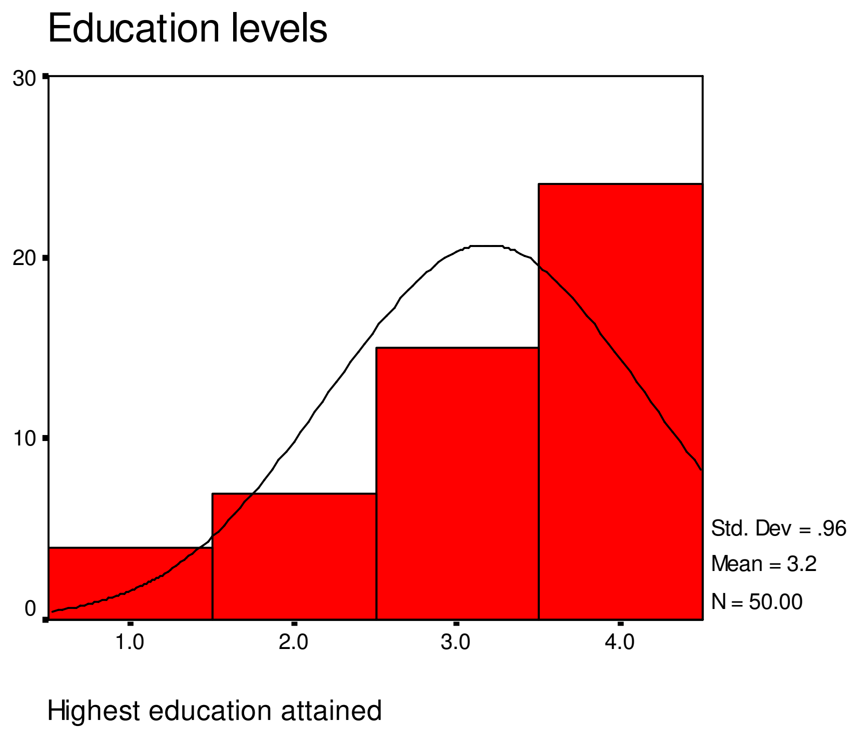
Table 4

Status	Frequency	Percentage
Dependant	11	22
Formally employed	24	48
Self employed	15	30
Total	50	100

Table 4 shows that the respondents who were in formal employment were the majority with 48% representation, while those in self employment and dependency were 30% and 22% respectively.

6.1.6 Highest education attained

Figure 2



Category 1-Primary level

Category 2- Junior secondary level

Category 3- Senior secondary level

Category 4- Tertiary level

Figure 2 shows that most of the respondents had gone up to tertiary level (category 4.0) of education representing 44%. Senior secondary level (category 3.0) had 30%, while junior secondary level (Category 2.0) had 14% with the least of the respondents being educated at primary level (category 1.0) 12%.

Table 5- Highest education attained with sex

Highest education attained	Male	Female	Total
Secondary education and below	6	20	26 (52%)
Tertiary level	16	8	24 (48%)
Total	22(44%)	28(56%)	50(100%)

The majority (52%) had only attained secondary school education and below. There is an association between education and gender (P value =0.003).

6.1.7 Victim status /role in the household

Figure 3

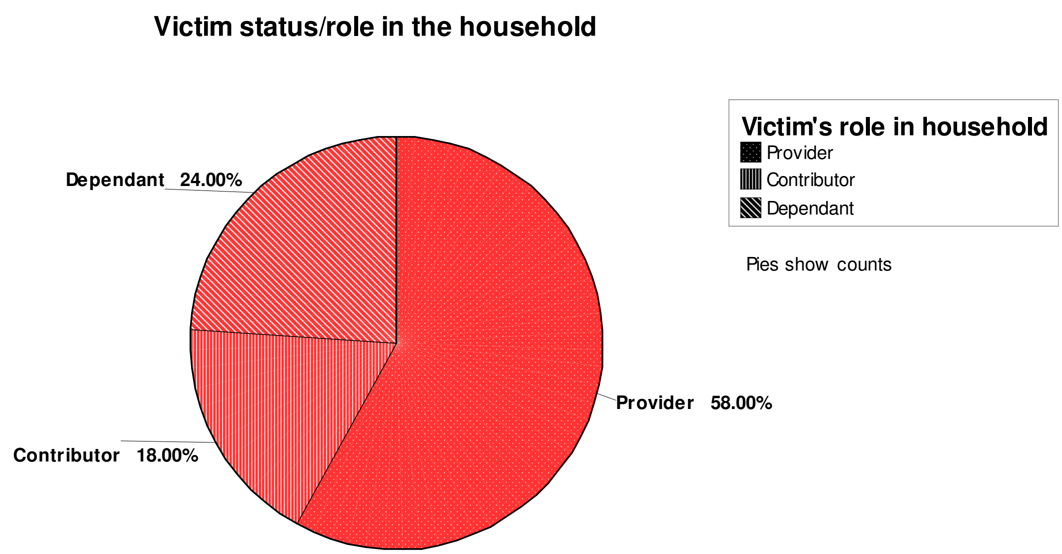


Figure 3 highlights that the majority of the respondents were family providers 58%, followed by dependants being 24%. Family contributors were the least, 18%.

6.1.7 Dependants for Family providers or Family contributors

Table 6

No. of dependants	Frequency	Percentage
Below 5	10	26.3
Between 6 & 10	22	57.9
Above 10	6	15.8
Total	38	100

Table 6 shows that of the 38 respondents who were contributors or providers, 57.9% of them had dependants between 6 and 10, while 26.3% of them had dependants less than 5 and 15.8% had dependants above 10.

6.1.8 Financial aid for dependants

Table 7

Source of aid	Frequency	Percentage
Guardian	3	25.0
Spouse	5	41.6
Relative	2	16.7
Religious group	2	16.7
Total	12	100.0

Table 7 shows that of the 12 respondents who were dependants, 41.7% of them were provided for by their spouses, 25% were provided for by their guardians, while 16.7% were helped by their relatives with 16.7% being helped by social or religious organization.

6.1.9 Period with stroke

Table 8

Period of stroke state	Frequency	Percentage
Less than one year	10	20
Between one and two yrs	14	28
Between three and Five yrs	21	42
More than five yrs	5	10
Total	50	100

Table 8 shows that the majority of the respondents representing 42% had been victims for 3 to 5 years, followed by those who had been victims for 1 to 2 years represented by 28%.

Table 9 Age category and period of stroke

Age category	Below 3 years	3 yrs and above	Total
19-49 years	15	12	27 (54.0%)
50 years and above	9	14	23 (46.0%)
Total	24 (48%)	26 (56%)	50 (100%)

Most of the respondents had had stroke for three years or more (56%). There was no relationship between period of stroke and age (P- value=0.247).

6.2 Impact of stroke

6.2.1 Social impact

6.2.1.1 Relationship changes

Table 10 Presence of change in relationships

Change in relationship	Frequency	Percentage
Change in relationship	34	68
No change in relationship	16	32
Total	50	100

Table 10 shows that the majority, 68% of the respondents reported to have had change in their relationships. The remaining 32 % did not experience change in relationships.

Table 11 Change in relationship with period with stroke

Period of stroke	Change in relationships	No change in relationships	Total
Below 3 years	11	13	24 (48.0%)
3 years and above	23	3	26 (52.0%)
Total	34 (68%)	16 (32%)	50 (100%)

Table 11 shows that those who were victims for 3 years and more were 1.1 (26/24) times more likely to have relationship changes as compared to those who were victims for less than 3 years.

There was an association between the period of stroke and the relationships changes ($p<0.001$)

Table 12 Change in relationship and sex

Change in relationship	Male	Female	Total
Change in relationship	8	26	34 (68%)
No change in relationship	14	2	16 (32%)
Total	22 (44%)	28 (56%)	50 (100%)

Table 12 shows that the majority of those who had change in their relationships were females. Only few males had change in relationships.

A significant relationship between change in relationship and sex was observed ($p<0.001$).

6.2.1.2 Type of relationship changes

Table 13

Type of change	Frequency	Percentage
abandonment	11	32.4
Apathy	8	23.5
Neglect	8	23.5
Other	7	20.6
Total	34	100

Table 13 shows the different types of changes experienced by those who had changes in their relationship due to stroke. The majority being 32.4% experienced abandonment, followed by apathy and neglect at 23.5% each. The remaining 20.6% experienced other unspecified types of changes.

6.2.1.3 Relationship changes for married victims

Table 14 Presence of relationship changes for married victims

Status	Male	Female	Total
Change in marital relationship	5	2	7
No change in marital relationship	3	3	6
Total	8	5	13

Table 14 shows presence of relationship changes in marriage for married stroke victims. Of the 13 who were married, 7 had change in marital relationship while the remaining 6 did not have changes in marital relationship. No association was observed between change in marital relationship and gender (P value=0.413).

6.2.1.4 Type of changes for married victims

Table 15 Type of relationship changes for married victims

Type of change	Male	Female	Total
Marital problems	2	1	3
Neglect	1	1	2
Other (unspecified)	2	0	2
Total	5	2	7

Table 15 shows the type of relationship changes experienced by married stroke victims, males were the majority in this category (n=7).

6.2.1.5 Stroke being a contributing factor to being divorced or separated

Table 16 Stroke as a contributor to divorce or separation

Stroke as a contributor To stroke	Frequency	Percentage
Yes	13	52
No	12	48
Total	25	100

Table 16 shows the response to stroke as a contributing factor to being either divorced or separated. Those who had stroke as a contributing factor were 52%.

6.2.1.6 Presence of family role changes

Table 17

Family role change	Male	Female	Total
Present	18	26	44 (88.0%)
Absent	4	2	6 (12.0%)
Total	22 (44%)	28 (56%)	50 (100%)

Table 17 shows percentages of family role changes at 88%. Females experienced more family role changes as compared to their male counterparts. There was no relationship observed (p value=0.2).

Table 18 Family role changes in two age groups

Stroke categories	Family role change	No family role change	Total
49 years and below	19	5	24 (48%)
50 years and above	25	1	26 (54%)
Total	44 (88 %)	6 (12 %)	50 (100%)

Table 18 shows family role changes in stroke age categories between those were 49 years and below, with 50 years and above. There was no association observed between family role change and stroke age categories (p value= 0.0913)

6.2.1.7 Type of family role changes

Table 19 Type of change

Victim role change	Frequency	Percentage
Victim dependant	28	63.6
Victim assisted	16	36.4
Total	44	100.0

Table 19 shows the type of family role changes for those who experienced change in roles with 63.6% of the respondents reduced to dependency.

6.2.2 Economic impact

6.2.2.1 Retention of occupational status after stroke

Table 20

Retained occupational status	Male	Female	Total
Retained	9	6	15 (38.5%)
Not retained	11	13	24 (61.5%)
Total	20 (51.3%)	19 (48.1%)	39 (100%)

Table 20 shows the outcome situation of victims after stroke regarding their occupational status by gender. Only 38.5% of them retained their occupational status of which the majority were males. No association observed between retention of occupational status and gender (p value=0.318).

6.2.2.2 Income lost following stroke

Table 21

Lost income	Male	Female	Total
Salary	6	8	14
Business	4	3	7
Other	1	2	3
Total	11	13	24

Table 21 shows the incomes lost by those who did not retain their occupational status. Most of the respondents had lost salaries, while 7 lost businesses and the remaining 3 lost other unspecified incomes.

6.2.2.3 Estimate of income lost per month

Table 22

Income	Frequency
Less than K500,000.00	5
Between K600,000.00 and K1,000,000.00	4
Between K1,100,000.00 and K2,000,000.00	5
More than K2,000,000.00	10
Total	24

Table 22 shows the estimates of incomes lost due to stroke. Out of the 24 who lost incomes, the majority (n=10) lost more than K2, 000,000.00 each. These were monthly incomes.

6.2.2.4 Presence of economic change following stroke

Table 23

Stroke group	Presence of economic change		Total
	Economic change	No change	
Below 3 years	18	6	24 (48%)
More than 3 years	21	5	26 (52%)
Total	39 (78%)	11 (22%)	50 (100%)

Table 23 shows the respondents who experienced economic changes following stroke (78%). The majority were those who had been victims for more than 3 years. No relationship between stroke group and presence of economic change was observed (p value=0.623).

6.2.2.5 Presence of activity affected requiring finance

Table 24

Presence of activity affected	Frequency	Percentage
Yes	39	78
No	11	22
Total	50	100

Table 24 shows that those who had affected economic activities following stroke were 78% and those who did not were 22%.

6.2.2.6 Type of activities affected

Table 25

Type of activity affected due to stroke	Frequency	Percentage
Education	13	33.3
Assistance to family members	7	18.0
Food	17	43.6
Other	2	5.1
Total	39	100.0

Table 25 shows the type of activities affected following stroke. Food was the most affected at 43.6%, followed by education at 33.3%. Assistance to family members was at 17.9% and other unspecified activities at 5.1% were the least.

6.2.2.7 Economical adjustments made in households following stroke

Table 26

Economic adjustment made	Male	Female	Total
Reduced food consumption	5	4	9
Reduced school fees	4	6	10
Accommodation	3	8	11
Clothing	3	1	4
Reduce support to family	1	2	3
Other	2	0	2
Total	18	21	39

Table 26 shows the economic adjustments made in households following stroke. Accommodation was the most negotiated, followed by School fees and food consumption. The males made more adjustments in food, clothing and other unspecified adjustments while the females made mode adjustments in school fees and accommodation.

6.3 *Section B- Data from Focus group discussion*

Focus group Discussion summary for Spouses, caregivers or guardians

Female victims

Interviewees:	8 women and 2 men
Topic:	Social economic impact of stroke on households
Venue:	Livingstone General Hospital
Date:	2nd October, 2009
Time:	9:30 hours-10:10 hours
Age group:	23-64 years

Male victims

Interviewees:	7 women and 3 men
Topic:	Social economic impact of stroke on households
Venue:	Livingstone General Hospital
Date:	2nd October, 2009
Time:	10:30 hours-11:10 hours
Age group:	30-50 years

Summary of Focus group discussion

Topics discussed

a) Causes of stroke

Female victims

Five of the respondents named hypertension as the cause of stroke in their victims, although two respondents reported that stroke in their victims was caused by the stress of life, and other two respondents named depression, due to social issues. One respondent reported stroke to be caused by acts of witchcraft by a family member.

Male victims

Five of the respondents reported that their victims' stroke was caused by marital issues. Four respondents named hypertension as the cause of stroke in their victims. One reported that the victim's stroke was caused by excitement after promotion.

b) Social changes experienced by Stroke victims following stroke

Female victims

Four of the respondents reported that their victims experienced depression, because their victims have not come to accept the situation. Two respondents said that their victims were difficult, while the other two respondents reported that their victims were resentful and blamed relatives as being part of the cause. The remaining two reported apathy and needy as the social change experienced by the stroke victim.

Male victims

Four of the respondents reported that their victims became difficult, complaining about everything even the best service. Three reported depression because of loosing position both at work and home. Two respondents reported apathy while one, reported resentfulness.

c) Social changes of stroke in the household

Female victims

Four of the respondents reported that the household experienced apathy because relatives were not helpful. Unhappiness was stated as the household experience, by the three respondents while the remaining three experienced low moods in their household because they did not know how long it would take for their victims to be fully functional.

Male victims

Five of the respondents reported unhappiness in their households including children, and the remaining half of them reported fear for spouses, at the prospect of caring for the victim for a long time.

d) Marital relationship changes experienced by stroke victims

Female victims

Four respondents mentioned neglect as the marital relationship change experienced by their victims because the victims' spouses were not giving them attention and some were too busy to care for them. Two respondents reported separation as the marital relationship change for their victims, while one respondent mentioned divorce as the marital change as the victim's marriage was strained even before stroke occurred. One respondent reported no marital change for the victim. Two respondents had victims who were single.

Male victims

Seven respondents reported no marital changes for their victims as marital problems were present even before stroke occurred, while two respondents reported increased care in this stroke state (which is a positive change). One respondent's victim was single.

e) Economic changes experienced by victims as a result of stroke

Female victims

Four respondents reported loss of employment as the economic change experienced by their victim, while two reported victims reduced business activity and could not make more money like before. One respondent reported loss of business for the victim. Three reported no economic change at all for their stroke victims.

Male victims

Six respondents reported their victims' loss of employment, as their conditions of service did not give long-term sick leave. Two reported reduced business activity, because they had to rely on people's help and hence not efficient. Two reported no economic change as they were still receiving salary and local support from government as their employer.

f) Economic changes experienced by households as a result of stroke

Female victims

Three respondents reported reduced food consumption in the households, and the two reported inability to pay school fees for school going children. Two households experienced accommodation problems, while three households reported loss of financial security due to spending on health services, transportation and traditional doctors.

Male victims

Four of households were unable to pay for children's extra lessons and so had to cut tuition for extra lessons while grown children could not go to university hence had to get jobs which are temporal. Three households had to change accommodation and move in uncompleted houses and low cost house. Two households had reduced food consumption because they could only afford two meals per day. One household lost financial security in that the victim lost employment while expenses increased.

g) Victims' economic future plans

Female victims

Four respondents reported their victims' prospect of starting some businesses. One respondent reported that her victim plans to go for training as a pastor or counselor if funds become available so that she can help other people also. Three respondents did not report their victims' future plans because their victims could not function. Two respondents reported that their victims had no idea on what to do in future and would help them think about it

Male victims

Five of the respondents reported that their victims had plans of starting up businesses to enable them work for themselves. Two respondents had victims who looked for casual work to enable them go on with life. One respondent's victim would go back for work in a different department (he had been promised to be taken on by the same employer for receptionist duties). One respondent is considering farming after retirement from civil service, and so is one after medical discharge from the service.

h) Support of the victim from the family

Female victims

Three respondents reported that their family discusses with the victims about acceptance of the situation, the victims are in denial. Three of the respondents encouraged their victims to go to the hospital because only exercise can restore their function. Three respondents reported that their families helped the victims with rehabilitation as transportation to the general hospital was expensive. One respondent reported that as a family, they supported their victim in traditional medicine as this was the only solution looking at the cause and the patient was thus improving slowly.

Male victims

Three respondents reported that their victims were receiving help with business especially with “orders”. Three respondents reported that their victims were encouraged to go to the hospital for treatment of hypertension and exercises. Three respondents reported that their victims were supported in rehabilitation in form of assistance in home advice from the doctor. One respondent reported that his victim was being helped to find a wife because the victim really he needed a wife.

i) How strokes victim can be helped to reduce the impact of stroke

Female Victims

Five respondents suggested that doctors should be discussing with employers not to fire stroke patients, meaning a system should be put in place where stroke victims do not loose jobs. Three of the respondents suggested that healthcare should be free for stroke victims like Anti retroviral therapy is free for HIV/AIDS patients. Two respondents suggested that physiotherapy departments be opened in the clinics because clinics are nearer their homes meanwhile transport to the hospital is expensive.

Male victims

Two respondents suggested that the city council should be considering stroke victims when allocating market stands because they cannot be employed and hence need to flourish in business. The two respondents suggested that stroke prevention should be emphasized by the hospitals as prevention is better than cure. Three respondents suggested that Zambia Revenue Authority should be lenient with stroke victims who are doing cross boarder trade, meaning customs duty should be reduced considering that this is the way for them to support their families. The other three suggested that healthcare should be free for stroke victims.

Chapter 7
Discussion of the Findings

7.1 Socio-demographic data

The findings show that the respondents came from all over Livingstone district. Although the low density residential areas (Town centre-22%, Elaine Brittel-16%, Nottie Broadie-18%) had more respondents, the high density residential areas (Maramba-18%, Dambwa-18%, other areas-8%) had a considerable number of respondents.

These findings agree with the association of stroke not only to the affluent population, but also to the low class. This was also shown by Mbanya (2001) that highest levels of risk factors of non-communicable diseases like hypertension, are found not only in the well off society of Cameroon which is low income country like Zambia. Although in western countries, stroke is as a result of bad lifestyle in form of high cholesterol intake and a sedentary lifestyle which is associated with the low class, in the developing countries including Zambia, this is associated with high cholesterol intake and a sedentary lifestyle in every society due to the economic transition coming with development as shown in the findings.

The findings reveals that the majority 46% of the respondents was above 50 years and the least 4% were below 19 years of age. The figure shows the increase of stroke prevalence with increase in age and this is the characteristic of stroke. Unwin (2001), in his commentary highlights that non-communicable diseases are a major burden amongst the adults due to the fact that the risk factors of stroke, which is mostly hypertension due to atherosclerosis increases with age.

The results also show sex distribution in different age categories, with more females than males in all the categories. Chintu (2006), in his study, to determine caregiver experiences in caring for stroke patients attending physiotherapy at the university teaching hospital found that the majority of stroke patients were males.

The marital status with sex of the respondents is shown. The majority being divorced had more females followed by those married which had more males; those separated had more females. The more females in the divorced and separated categories could be due to the fact that their spouses could not cope with the demands of stroke unlike the spouses of their male counterparts. Women are more likely to care for their ailing spouses unlike men, due to their nature of withstanding pressure and difficult circumstances.

Since most of the victims were likely to be older, therefore, the majority were formally employed followed by those who were self employed. This also tallies well with the respondents' education status. The majority had tertiary education (being College or University), followed by those in senior secondary school. The prevalence reduces with less education as in junior secondary and primary school. The majority, having tertiary education and followed by those with senior secondary school, hence they are likely also to be either formally employed or self employed than dependants. Unwin (2001) commented that the risk factors of stroke are increasing with change in lifestyle due to urbanization in Sub Sahara Africa, most likely affecting the employed, who are the elite in their societies as the results have shown.

The findings also show education category and sex, revealing more females with low education as compared to males. Primary and junior secondary were exclusive to females, while males appeared only at senior secondary school and above. This is similar to the presentation of the Zambian general population where males have higher education as compared to the females (Central Statistical Office, 2003).

The victims' status/role in the household is shown where the majority 58%, were providers. The family contributors were 18% of the total. Together, the family providers and contributors made 76% of the victims. This shows that the majority of stroke victims were economic assets to their families and nation at large and hence stroke can deter national development. The findings further show dependants for the family providers and contributors. The majority 57.9% reported dependants between 6 and 10 followed by those with less than 5. The least had above 10 dependants. This kind of dependency has been accepted as normal where extended family ties are strong in ethnic cultures, including Zambia. This also shows the average number of individuals who are affected when their guardian is affected by stroke. The stroke victims who were dependents had the financial aid; with the majority of them were financed by their spouses followed by those of guardians.

The results show the period victims have had stroke. The majority 42% had stroke for 3 years and more followed by the 28% those who had stroke for less than 3 years. This finding confirms that the period of recovery for stroke is long, making stroke a chronic condition of public health importance. The results show two age categories (below 49 and above 50) and periods of stroke (below 3 years and 3 years and above). The age category of 49 years and below (54%) was separated from that of 50 years and above (46%) in order to find out the relationship between age and period of stroke. There was no relationship between period of stroke recovery and age of the victim with the P value of 0.247.

7.2 Impact of Stroke

7.2.1 Social impact

Of the 50 victims, 68% reported changes in their relationships as a result of stroke. The study did not set out to ascertain the cause and effect between stroke and relationship changes. The relationship changes could have been caused by stigma from the peers or the disability itself pausing a threat to relationship ties due to the immobility of the victim and hence could not socialize. The findings show period of stroke and relationship changes, with the majority 67.6% having had stroke for 3 years and above. There is an association between period of stroke and relationship changes with the P-value of 0.003.

More female respondents (76.5%) experienced the relationship changes as compared to their male counterparts. There was a strong relationship between sex and relationship changes with the P-value less than 0.001.

The types of relationship changes which included apathy, abandonment, neglect and others unspecified, were categorized from the victims' point of view. The majority experienced abandonment as a relationship change. In this group, more females experienced abandonment. This could be due to female gender role of care giving in societies. In their absence, less care is given resulting in abandonment. Some were shown apathy and neglect while a few had unspecified changes. These are different personal responses of calamities due to fear.

The results show the relationship changes for married victims in relation to their spouses. More males experienced relationship changes as compared to females. Most males' experienced marital problems and other unspecified issues. This could have led stroke to be a contributing factor to either divorce or separation. This could be as a result of lack of duties expected in matrimony, from affection to intimacy, and when the victim is unable to offer or to be offered, this could bring strains on a marriage.

Those who experienced family role changes were the majority i.e. 88 %, and they were females. This condition has so much impact in family roles with the family role changes being more pronounced in those 50 years and above. The majority of the respondents were reduced to either dependants (63.6%) or to be assisted (36.4%) by family members. This could be due to disability resulting from stroke.

7.2.2 Economic Impact

Of the 50 victims, the 39 respondents who were either formally employed or self employed, only 38.5% (less than half) retained their occupational status following suffering stroke. The remaining 61.5% were either severely disabled to work or to do business again. This is really a hit on the labour market having 61.5% not retaining their status because they could not do the former job or the employer could not keep them following a long sick off and hence laid off as being a liability to the company. In this study, more males retained their occupational status because they had more stable jobs with the higher education levels than their female counterparts.

The results go further to show the type of income lost by those who did not retain their status. The majority 58.3% of the respondents lost salaries while those who lost business income were 29.7%. The remaining 12.5% lost unspecified incomes. More females than males lost income, and could be because there were more females in the study, and they are less likely to be highly educated for job security. The findings also show estimates of income lost per month. The majority 41.7% lost income more than K2 000, 000 each per monthly. Of those who lost incomes, 78.2% were living above the poverty datum levels, but since such incomes were lost, this increases poverty in households and the nation. The incomes lost could help sustain families economically by bringing development to households and nation at large. Abegunde et al (2007) termed such losses as "health related set back to development"

The findings reports economic change as sequelae of unretained economic status. The economic change is present in 78% of the respondents in this study; hence the impact is very considerable. This goes with the activity affected requiring finance parallel to unretained status. This is also at 78% which is considerable. The findings names the activities affected namely education, assistance to family members, food and other unspecified activities. Food and education were most affected and yet these are what are needed for household growth and development as these are the basis for any development, be it household or national. In this case it can be said that the affected families' development has been deterred by stroke.

The economical adjustments made following stroke were reduced food consumption, reduced school fees, accommodation, clothing, reduce support to the family. More males adjusted food, more females adjusted accommodation and a considerable number of males and females adjusted education. The difference could have been that more males owned their own houses than females but both had children's education to consider. These adjustments are the opportunity costs of stroke in this study. These adjustments made can hinder a household and nation to progress. Of those 50 victims, 8% were receiving economic assistance from social/religious organization. The remaining 92% had to fend for themselves. At the moment, Zambia has no social system to support disadvantaged individuals after stroke. Those organizations offering assistance are non-governmental with special interest.

The respondents' willingness to form a support group is very overwhelming. All the respondents yearn for a support group where they could support, encourage and build one another. The response was 100%. This support group is for Livingstone district.

7.3 Focus Group

The causes of stroke as named by the participants were varied. Evidently, hypertension stood out, which is related to stress of life, depression, marital issues and excitement as cited. Witchcraft is also cited as the cause of stroke in some cultural context of our society, and in this study, it was cited as such. The major social changes experienced by the victims, from the participants' perspective, are depression, difficulty, resentfulness, apathy and needy. These associated these with detoriation of quality of life in all dimensions. These are the varied emotional reactions coming with change of situation. On the other hand, the entire households experienced unhappiness leading to low moods, fear and apathy.

The marital changes cited were neglect, separation, divorce, general marital problems while some had increased care by their spouses. Stroke being a chronic condition may require much time and dedication from the spouse. In the event when the spouse has to attend to other issues, the victim feels neglected. Females especially felt neglected by their spouses who had to work outside home as accepted according to their gender roles. Divorce can be a result of marital problems fuelled by stroke of a partner while separation as well as marital problems could be due to lack of marital duties, usually by the stroke victim. Pistotia et al (2006) stated that the co-morbidity and general health status together with psychological factors are the determinants of post stroke sexual dysfunction. Victims with sexual dysfunction may end up with marriage problems as sex, which a very important part of marriage is not assured in such cases. Sexual dysfunction is as a result of muscular imbalance making sexual intercourse difficult for stroke victims (Stein, 2004). Meanwhile most of the males cited absence of marital changes as they had marital problems even before stroke.

The economic changes by the victim were mainly loss of employment, reduced business activity and loss of business. Due to the chronic nature of the condition, victims become liabilities and hence are laid off from work. With the reduced activity due to the residual disability, there is reduced business activity or even loss of all the business. At household level, following the individual economic change, reduced food consumption, inability to pay school fees, accommodation problems and loss of financial security were mentioned and discussed as due to the victim not being economically productive or high expenditure on care. These led to the victims making plans for future by starting up their own businesses, training for a vocation, piece work, going back for work in different capacity. These plans encompass occupational therapy which is not very pronounced in Zambia. Ergonomics, which is suiting the best job for the recovering person, is rarely practiced in Zambia, due to lack of expertise and lack of industrial rehabilitation recognition.

Households' help to the victim is varied depending on the victim's situation, ranging from discussion to support in rehabilitation and business. To reduce the impact of stroke, the suggestions given were varied e.g. system to be put in place with employers so that victims are not laid off, highly subsidizing healthcare for stroke victims, taking rehabilitation services to the clinics, local authorities to help in business progression, stroke prevention campaigns and Zambia Revenue Authority's reducing duty services for stroke victims. This is in line with what Abegunde et al (2007) concluded that " if nothing is done to reduce the risks of chronic diseases, an estimated US$84 billion of economic production will be lost from heart diseases, stroke and diabetes" in some stated low and middle income countries, like Zambia. This will require the effort of health policy makers to take non-communicable diseases seriously even if the budgets are small and the burden of communicable diseases is high, and challenge two related myths that NCDs are not a significant cause of mortality and morbidity and that they are diseases of the affluent not important to our country and region (Unwin, 2001).

For such suggestions to be in place, mediation need to take place and this can only be done with a body like a stroke support group of which willingness to form a support group in Livingstone was 100% from the victims.

7.4 Implications of the study

The study findings have shown that stroke has considerable impact on victims and households socially and economically, which can deter the victim's development as well as the household and the nation at large. The findings reveal that the chances of having relationship changes due to stroke were 1.1 times. The social impacts on the victims were depression, difficulty, resentfulness, apathy, needy and for those who were married, some went through separation, divorce, general marital problems and neglect while on the households were low moods, fear and apathy. The economic impacts on the victim were loss of employment, reduced business activity and loss of business. On the household, its impact was reduced food consumption, inability to pay school fees, accommodation problems and loss of financial security.

The relationship changes due to stroke were apathy, abandonment, neglect and those married experienced marital problems. The family role changes were victims becoming dependents or needing assistance in the execution of their duties of the family. The incomes lost in households due to stroke were mainly salaries, business and other unspecified incomes lost by victims who were formally or self employed. The opportunity costs in households due to stroke were food, accommodation and education.

The victims' willingness to form a stroke support group in Livingstone was unanimously positive. The findings of the study will be used as a document for liaison at a policy level with Ministry of community development, department of social welfare for the inclusion of stroke victims in their programs.

Chapter 8

Conclusion

8.1 Findings

Stroke has considerable socioeconomic impact on households. Stroke victims need support in order to alleviate the impact of stroke on individuals and households. The study has analyzed the social and economic impact of stroke on households.

It is of common knowledge that stroke affects adults individuals, who are assets to their families as well as the nation. The myth is that stroke is for the affluent nations but literature review has shown that the burden is increasing in the low and middle income countries of which Zambia is found. The study findings in Livingstone, Zambia show that its impact is very considerable and its impact is felt on more than half of its victims. The findings also show that the impact of stroke goes way beyond daily living and extends into the victims' welfare and development.

According to this study, social impacts such are depression, neglect, apathy, separation, divorce on the individual part, and low moods in households are the sequelae of stroke and hence the impact is considerable. Economic impacts such as the loss of employment, reduced business activity and entire loss of business on the individual's part, while the same can equally occur in household in that caregivers may need to let go of either job or business in order to care for the victim, with opportunity cost such as food, accommodation and education may need to be forgone in order to accommodate the stroke situation in the family.

8.2 Recommendations

- Programmes of stroke prevention should be put into place. This is the health promotion of public health activities by advocating, enabling and mediation. All the approaches of health promotion, the disease prevention model, the educational approach, ecological model and the empowerment model should be used.
- A Zambia stroke support group should be formed following the formation of the Livingstone stroke support group, which at the time of this documentation, the Livingstone area member of parliament had shown much interest and pledged support.
- Health policy makers should take Non- communicable diseases seriously amid their struggle with small budgets against huge burden imposed by communicable diseases such as HIV, TB and malaria.
- Donors should come in for the Non- communicable diseases like they do for the communicable diseases before it is too late.
- Further studies are needed in the field of non-communicable diseases in Zambia. This will help estimate economic impacts.

Appendix 1: Ghant chart

Task to be performed	March 2009	April 2009	May 2009	Oct 2009	Nov 2009	Dec 2009	Jan 2010	Apr 2010
Proposal development	X							
Presentation to graduate forum		X						
Submission to the REC			X					
Data collection				X				
Data analysis					X	X		
Report writing						X		
Submission of 1st draft							X	
Submission of 2nd draft							X	
Dissemination of results								X

Appendix 2: Budget

Item	Unit cost (ZMK)	Quantity	Total
1. Stationary			
a) Flash disk	350 000	1	350 000
b) Bond paper	25 000	4 reams	100 000
c) Toner for printer	800 000	1	800 000
e) Pencils/ pens	1 000	8	8 000
f) Eraser	5 000	4	20 000
g) Note books	10 000	4	40 000
h) Tippex	10 000	1	10 000
i) Stapler	10 000	1	10 000
j) Staples	10 000	1 box	10 000
k) Folders	15 000	4	60 000
l) Bag for questionares	150 000	1	150 000
Sub total			**1, 558 000**
2. Personnel			
a) Lunch allowance	50 000	4x10days	2 000 000
b) Transport allowance	50 000	4x10days	2 000 000
c) Statistic assistant	500 000	1	500 000
d) Research assistants	250 000	4	1 000 000
e) Ethics committee	500 000		500 000
Sub total			**6, 000 000**
3. Transport			
Researchers transport to	200 000	1	200 000

Livingstone			
Sub total			**200 000**
4. Secretarial services a) research proposal photocopying b) Research proposal binding c) Summary photocopying d) Photocopying questionnaires e) Research report photocopying f) Research report binding	 10 000 10 000 4 000 600 15 000 10 000	 5 copies 5 copies 20 copies 50 copies 5 copies 5 copies	 50 000 50 000 80 000 30 000 75 000 50 000
Subtotal			**335 000**
Communication facilities			300 000
Total			**8 893 000**
Contingency fund 10%			**889 300**
Grand total			**9 782 300**

Appendix 3: Consent form

Informed consent for participating households

Dear Participant,

The purpose of this study is to determine the socio-economic impact of stroke on households. Stroke is a very important condition, which is chronic and hence affects households socially and economically. Information is required from you on the social and economic impact of stroke in order to make conclusion regarding the study.

Voluntary participation

Your participation in the study and giving consent does not mean violation of your rights. Your are free to withdraw from the study at any time you wish to do so. You have the right to seek any clarification from the researcher whenever you wish to do so.

Risks and benefits

This is questionnaire based research where questions are asked regarding the impact of stroke on your household. There is no risk involved in this research. There are no direct benefits to you by participating in this study but the knowledge and information you will give by participation will help strengthen knowledge on the impact of stroke. There is no monetary gain.

Confidentiality

All information gathered will be highly confidential and privacy will be maintained at all times. The research information will be disseminated to the relevant authority but no such information released will lead directly to you as anonymity will be maintained.

Acceptability to participate

If you desire to participate, please sign or thumb print where indicated.

The purpose of this study has been explained to me. I further understand that: If I agree to take part in the study, I can withdraw at any time without having to give an explanation and that taking part in this study is purely voluntary.

Signature or Thumb print……………………………………………….Date…………………..

Participant

Signature…………………………………………………………………….Date…………………

Interviewer

If you wish to seek any clarification, please call at the following address:-

Ms Miriam Mapulanga

Livingstone General Hospital

P.O. Box 60091

Livingstone, Zambia

Tel. no. 0977747889

For any clarification please contact:-

The chairman

The University of Zambia

Research Ethics Committee

P.O. Box 50110

Lusaka, Zambia

Email: unzarec@zamtel.zm

Fax: +260-21-250753

Tel.no. 021 256067

Appendix 4:

Questionnaire for Households on the socio-economic impact of stroke

Instructions

1. Answer all questions
2. Tick the answer of your choice where they are provided

Section A: Socio-demographic Data

1. Location of household in Livingstone?

a) Town centre	[ ]
b) Ellaine Britell	[ ]
c) Nottie Broadie	[ ]
d) Maramba	[ ]
e) Dambwa	[ ]
f) Other	[ ]

2. Age of the stroke victim in your household

a) Below 19 years	[ ]
b) 20- 29 years	[ ]
c) 30- 39 years	[ ]
d) 40- 49 years	[ ]
e) 50 years and above	[ ]

3. Sex of the stroke victim in the household

a) Male	[ ]
b) Female	[ ]

4. Marital status of the stroke victim in the household

a) Married	[ ]
b) Single	[ ]
c) Widowed	[ ]
d) Divorced	[ ]
e) Separated	[ ]

5. Occupation status of the victim before stroke

a) Dependant	[ ]
b) Formally employed	[ ]
c) Self employed	[ ]

6. Victim's highest level of education

a) Primary School	[ ]
b) Junior Secondary	[ ]
c) Senior Secondary	[ ]
d) Tertiary	[ ]

7. Victim's status/role in the household

a) Provider	[ ]
b) Contributor	[ ]
c) Dependant	[ ]

8. If the victim was a provider or contributor, how many people were dependants on him/her?
a) Below 5 [ ]
b) 5-10 [ ]
c) Above 10 [ ]

9. If the victim was a dependant, who was the source of financial aid?
a) Guardian [ ]
b) Spouse [ ]
c) Relatives [ ]
d) Other [ ]

10. How long had the victim had stroke?
a) Less than one year [ ]
b) One year- two years [ ]
c) Three years-five years [ ]
d) More than five years [ ]

Section B- Impact of stroke

Part one- Social impact

11. Have there been any relationship changes in your house following stroke?
a) Yes [ ]
b) No [ ]

12. If yes, tick the changes
a) Abandonment [ ]
b) Apathy [ ]
c) Neglect [ ]
f) Other [ ]

13. If married, have you experienced relationship changes with your spouse?
a) Yes [ ]
b) No [ ]

14. If yes in question 13, what are the changes?
a) Marital problems [ ]
b) Neglect [ ]
c) Other [ ]

15. If divorced or separated, did stroke contribute to your status?
a) Yes [ ]
b) No [ ]

16. As a victim of stroke, have you been faced with any family role changes?
a) Yes [ ]
b) No [ ]

17. If yes, tick the changes
a) Victim now a dependant [ ]
b) Victim assisted in his/her role [ ]

Part two- Economic Impact

18. Has the victim retained the occupational status after stroke?
a) Yes [ ]
b) No [ ]

19. If no, what income has your household lost following stroke?
a) Salary [ ]
b) Business [ ]
c) Other [ ]

20. If income has been lost in salary, business or other activity, what is the estimate per month?
a) Less than K600, 000 [ ]
b) Between K600, 000 and K1, 000, 000 [ ]
c) Between K1, 100, 000 and K2, 000,000 [ ]
d) More than K2, 000, 000 [ ]

21. Has there been any economical change in your household following stroke of a family member?
a) Yes [ ]
b) No [ ]

22. Is any activity requiring finance been affected due to stroke of a family member?
a) Yes [ ]
b) No [ ]

23. If yes, what are the activities?
a) Education [ ]
b) Assistance to other family member [ ]
c) Food [ ]
d) Other [ ]

24. What economical adjustments have you made in your households due to stroke?
a) Reduce food consumption [ ]
b) Reduce payment of school fees [ ]
c) Accommodation [ ]
d) Clothing [ ]
e) Reduce support to other family members [ ]
f) Other [ ]

25. Are you receiving assistance from any person or organization?
a) Yes [ ]
b) No [ ]

26. Would you welcome a stroke support group in Livingstone?
a) Yes [ ]
b) No [ ]

Appendix 5: Topics for Focus group discussion

1. What is the cause of stroke in your victim?
2. What are the social changes experienced by your stroke victims?
3. What are the Social changes of stroke in the household?
4. What are the marital relationship changes experienced by your stroke victims?
5. What are the economic changes experienced by victims as a result of stroke?
6. What are the economic changes experienced by households as a result of stroke?
7. What are your Victim's economic future plans?
8. What support do you offer your victim as family?
9. How can the victims be helped to reduce the impact of stroke?

Appendix 6: Research clearance letter

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