FUNCTIONAL DISABILITIES AND ASSOCIATED FACTORS AMONG

ELDERLY PEOPLE IN MISUNGWI DISTRICT, MWANZA

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ABSTRACT

The older population is increasing worldwide and in many countries older people will outnumber younger people in the twenty first century. Change in age structure among the elderly is associated with functional disabilities by limiting performance of daily activities. . Functional disabilities increase dependency and institutionalization, also they are associated with higher mortality among elderly people. This study was carried out to assess functional disabilities in activities of daily living and associated factors among institutionalized and free living elderly in Misungwi district, Mwanza Tanzania. A cross-sectional research design was adopted involving a total of 120 elderly people in which 60 respondents were from Bukumbi elderly centre, 30 were randomly selected from Igokelo ward and 30 from Mabuki ward. A questionnaire-based survey was used to collect information and data were analysed using SPSS version 20, descriptive statistics was computed, independent t-test was performed to test median score difference and chi-square test was performed to determine association and for comparison between two groups. The study found a significant difference (p=0.0489) on the most leading functional disability since about a half (51.7%) of institutionalized elderly revealed mobility as their leading disability while in non-institutionalized respondents the leading disability was toileting (48.3%). In terms of gender, findings revealed that toileting disability was more common among males from both institutionalized and non-institutionalized respondents with 46.3% and 55.5% respectively while mobility disability was common among female respondents from both institutionalized and non-institutionalized with 56.2% and 66.7% respectively. Results of daily energy intake estimated from 3 food record was significantly higher (p=0.03) among institutionalized elderly (1632.3g) than non-institutionalized elderly (1317.0g). Also results showed significant difference (p=0.0182) in terms of nutritional status since more than a half (58.1%) of institutionalized respondents showed high prevalence of normal status while in

non-institutionalized elderly, about a half (53.7%) showed high prevalence in underweight. In terms of chronic diseases, majority of institutionalized respondents reported leprosy (40%) as their main chronic diseases while majority of non-institutionalized respondents reported arthritis (43.8%) as their main chronic diseases.

In conclusion, institutionalised elderly appeared to be better off than their counterparts in terms of daily energy intake, nutritional status reflected by their BMI levels and access to health services and chronic diseases were more prevalent in females than males.

DECLARATION

I, SALOME J KASAKE, I hereby declare to the Senate of Sokoine University of Agriculture that this thesis is my own original work done within a period of registration and has neither been submitted nor being concurrently submitted in any other institution.

_____   _____

Salome J Kasake   **Date**

(MSc. Candidate)

The above declaration is confirmed by

_____   _____

Prof. Nyaruhucha, C.   **Date**

(Supervisor)

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ACKNOWLEDGEMENTS

DEDICATION

This dissertation is dedicated to the Almighty God, who made me strong to persevere to the end of my study after the loss of my beloved father during the period of the study.

Also to my father, the late James Thomas Kasake, who passed away in the course of my Masters Study programme, may the Almighty God rest his soul in eternal peace.

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LIST OF ABBREVIATIONS

ADL   Activities of daily living

GHA   Global Health Action

HAI   Help Age International

NBS   National Bureau of Statistics

NGOs   Non-Governmental Organizations

P -value   Probability Value

SPSS   Statistical Package for Social Sciences

SUA   Sokoine University of Agriculture

NBS   National bureau of statistics

UN   United Nations

URT   United Republic of Tanzania

WHO   World Health Organization

CHAPTER ONE

1.0   INTRODUCTION

1.1   Background Information

World Health Organization defined, old age from the disability point of view as the period beyond 75 years (WHO, 2011). Old age disability is usually defined in terms of difficulties in one or more basic self-care tasks, often called physical activities of daily living (bathing, dressing, toileting, continence, feeding, transferring from chair to bed) (Global Health Action, 2010). World Health Organization perceives disability as the interaction between health conditions and contextual factors (WHO, 2011). Disability involves the inabilities, limitations or restrictions of capacity (Mohammed, 2018).

Functional disability is defined as difficulty or dependency in carrying out activities essential to independent living, such as tasks needed for self-care and living independently in a home and other activities important to one's quality of life (Fried *et al*., 2004). Functional disability can be seen as the gap between personal capability and environmental demands and it is not a personal characteristic but a social phenomenon that depends on the interaction between individuals and their environment (Mellouli *et al*., 2017). Functional disabilities are measured by using a scale with a series of self-reported measures for functional limitations in performing activities for daily living (ADL) adopted from WHO (2006) and Global Health Action (2010), these are limitations to bathing, dressing, feeding, use of toilet and walking. Older adults are vulnerable to a decline in physical functioning, including functional disabilities in performing basic activities of daily living (Kolk *et al*., 2020).

Functional disability compromises the quality of life and increases use of health services, besides being associated with higher mortality in the elderly (Maciel and Guerra, 2006;

Landi *et al*., 2010). Disability in old age is frequent and not only lowers the quality of life of its victims, but strains society's limited resources for assistance, care and rehabilitation (Chatterji *et al*., 2015). Functional disabilities in activities of daily living cause dependency and institutionalization and this is a serious social, medical and economic concern (Afrobarometer, 2006). Identification of risk factors associated with functional disability among elderly population is important in order to improve their quality of life (Aris *et al*., 2009). Aging is associated with increased vulnerability to chronic health problems and functional disabilities which frequently occur in a progressive and irreversible way, these factors tend to accumulate and complicate the health status and quality of life of the elderly (Landi *et al*., 2010; WHO, 2011). Dietary intake is significantly associated with a lower risk of incident functional disability in elderly people (Tomata *et al*., 2014). Prevention of disability in old age is therefore a matter of great humanitarian and economic concern (Retief and Letšosa, 2018).

1.2   Problem Statement and Study Justification

The older population is increasing worldwide and in many countries older people will outnumber younger people in the near future (Leslie and Hankey, 2015). The rate of population ageing in the twenty-first century will exceed that of the previous century (UN, 2016). In Tanzania, the elderly constitute 5.5% of the total population (URT, 2007; HAI, 2012) and this figure is expected to increase to 10% by the year 2050 (WHO, 2009). The reasons for the increase in the number of the elderly include advances in nutrition and lifestyles as asserted by Nhongo (2004a). Elderly population is increasing not only due to reductions in fertility but also in reductions in infant and maternal mortality, improved nutrition, reduction in infectious and parasitic diseases, as well as improvement in health care, education, and income (UN, 2016). This sizeable increase in elderly people is a social phenomenon with enormous economic and social repercussions, which have led to

increased interest in the study of this population segment especially with respect to their care (Nyaruhucha *et al*., 2004). The quality of life changes over life span and health becomes one of the major concerns about old age (WHO, 2006).

Globally, among the elderly aged 70 years and above, persons living with disabilities were 43.4% in lower income countries and 29.5% in higher income countries (WHO, 2011). The prevalence of functional disability in Tanzania is 7.8 % and the prevalence is higher in the rural areas (8.3%) than in urban areas (6.36 %) (NBS, 2008). In Tanzania, there has been limited research on explaining ageing issues and their impact on the health of the elderly who are among the people that are most overwhelmed by poverty (Afrobarometer, 2006; URT, 2007; HAI, 2012). Studies of the prevalence, causes, and effects of functional disabilities among the elderly population are therefore needed for appropriate public health policy and planning (WHO, 2008).

 Based on the above noted knowledge gap, this study aimed to assess functional capacity among institutionalized and free living elderly, as well as to undertake an exploratory analysis of its associated factors. By understanding the factors that make elderly people vulnerable to functional disabilities will inform government and other stakeholders to develop more effective strategies for helping elderly people out of functional disabilities and initiate ways of empowering this group to improve their functional abilities. Also results from this study will be used by policy makers, programme managers and researchers to understand on how this vulnerable group can be intervened and plan intervention programs which will provide care and support for elderly people.

1.3   Objectives

1.3.1   General objective

The general objective of this study was to assess functional disabilities in performing activities of daily living and associated factors among elderly people.

1.3.2   Specific objectives

The above general objective was attained by undertaking the following specific objectives;

(i)   To asses performance of activities of daily living among institutionalized and free living elderly

(ii)   To determine calorie intake of institutionalized and free living elderly

(iii)   To assess nutritional status of institutionalized and free living elderly

(iv)   To determine the frequency of chronic diseases and accessibility to health services among institutionalized and free living elderly.

1.4   Research questions

(i)   What is the prevalence of functional disabilities among institutionalized and free living elderly people

(ii)   Which demographic and socio-economic factors are associated with functional disabilities among institutionalized and free living elderly people

(iii)   Does chronic disease influence occurrence of functional disabilities among institutionalized and free living elderly people

(iv)   Does daily energy intake and nutritional status influence occurrence of functional disabilities among institutionalized and free living elderly people

1.5   Conceptual Framework

A conceptual framework is a narrative outline presentation of variables to be studied and hypothetical relationships between and among them. The conceptual framework of this study (Fig. 1) links the independent variables (socio-economic and demographic variables, health services, health and nutritional status, lifestyle behaviours) and the dependent variable (Functional disabilities among elderly people). In this study it was hypothesized that the independent variables have influence on functional disabilities of elderly people and these types of linkages among variables established in the conceptual framework (Fig.1) are based on the idea that the elderly with different socio-economic and demographic characteristics do differ in terms of their health and nutritional status, which are associated with their functional disabilities.

Socio-economic and demographic factors such as isolation from family members, poor income, old age can limit both physical and economical access to adequate food which will result to poor nutritional status and some chronic ill-health conditions hence decline in elderly functional capacity. Some lifestyle behaviours among elderly people such as alcohol consumption and smoking can lead to chronic diseases and inadequate dietary intake which later on result to poor nutritional and health status which cause functional disabilities. Also elderly friendly environment may have positive or negative influence on their access to health services since lack of institutional care and support for elderly, lack of effective policies to allow elderly free access to health services and limited health facilities especially in rural areas can limit elderly's free access to health services.

CONCEPTUAL FRAMEWORK
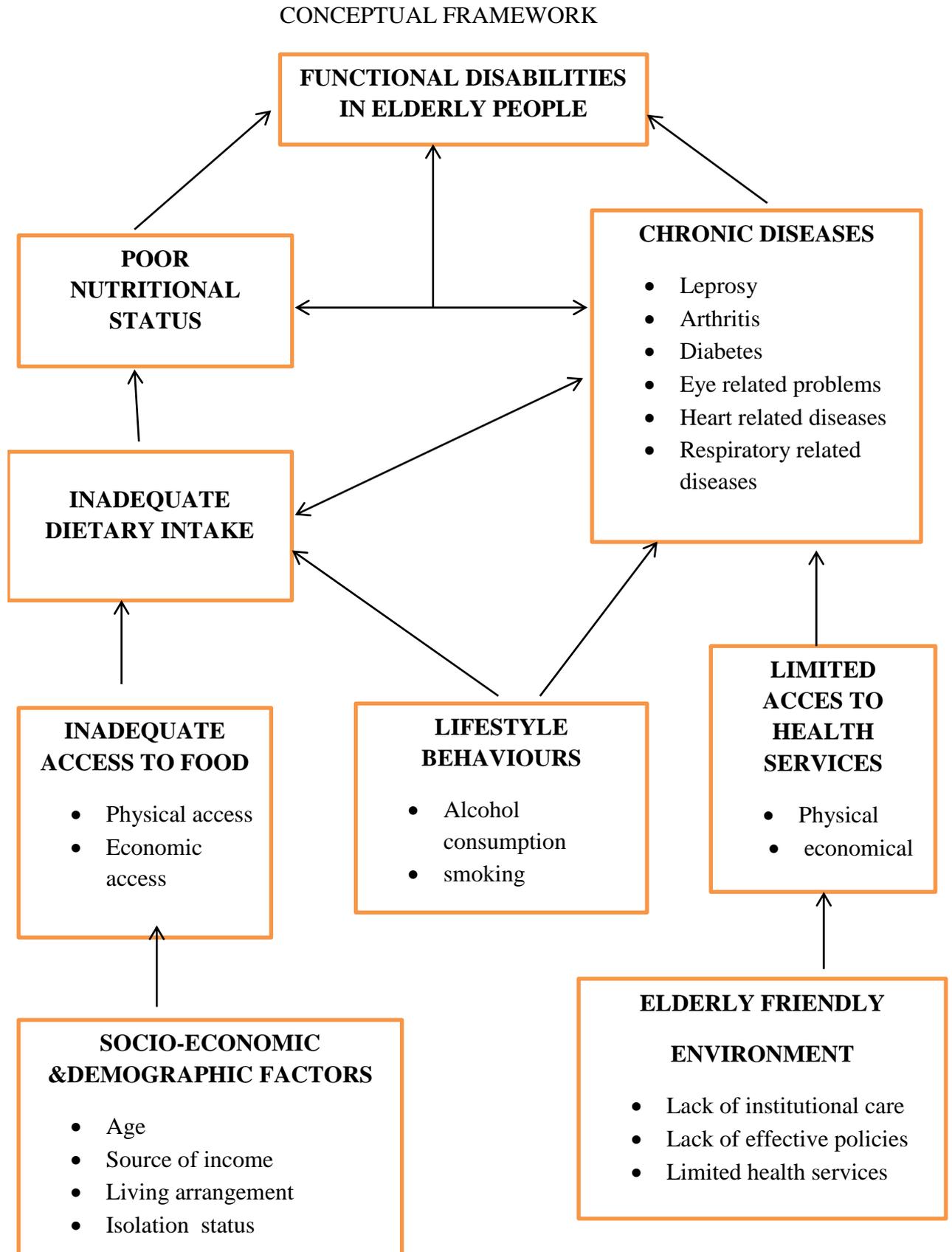
Figure 1: Conceptual framework showing factors associated with functional disabilities in elderly people

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   Functional Disabilities of Elderly People

Functional disability refers to a person's inability to perform tasks that are required for living (Da Silva *et al*., 2012). Functional disability is common in older adults and is associated with a high risk of subsequent health decline (Yoshida *et al*., 2012). Evaluation of functional disability is most effective when the physician determines the cause of the disability, associated symptoms, effects on specific activities, and coping mechanisms the patient uses to compensate for the functional problem (Alexopoulos *et al*., 2011). The functional capacity of elderly individuals described by Activities of Daily living (ADL) is extremely important for maintenance of their independence and several risk factors associated with incapacity are potentially modifiable (Mattos *et al*., 2014).

2.2   Assessment of Activities of Daily living in Elderly People

The geriatric assessment begins with a review of the key division of functional ability the activities of daily living (Elsawy and Higgins, 2011). Activities of daily living (ADL)are self-care activities that a person performs daily such as eating, dressing, bathing, transferring between the bed and a chair, using the toilet, controlling bladder and bowel functions (Liu *et al*., 2015). Activities of daily living (ADL) are one of the most important factors in characterizing the health status of frail elderly adults, because they are associated with dependence and it is ordinarily evaluated to determine the levels of care that people should receive (Nakazawa *et al*., 2012). Activities of daily living (ADL) scores capture levels of functional status better because every indicator in ADLs is individually rated and this enables a respondent to state the level of limitation ability in performing certain tasks which are important in daily living (Stineman *et al*., 2014). The functional capacity of elderly individuals described by activities of daily living (ADL) are

extremely important for maintenance of their independence and several risk factors associated with old population (Berlezi *et al*., 2016).

2.3   Factors Associated with Functional Disability in Elderly

Functional disability in elderly people is affected by a number of modifiable and non-modifiable predisposing factors such as age, female sex, perceiving a bad health status and a lack of social support appeared to be the most important risk factors of disability among elderly (Whitson *et al*., 2013). Modifiable determinants of disability should be the most important targets for preventive interventions (Yoshida *et al*., 2012). Interventions for functional decline in older adults are almost always multifactorial because they must address multiple conditions, impairments and contextual factors (Whitson *et al.,* 2013).

2.4   Nutritional Status of Elderly People

Nutritional status is an important element of health in the older population and affects the aging process (Amarya *et al*., 2015). The prevalence of malnutrition is increasing in this population and is associated with a decline in functional status, impaired muscle function, decreased bone mass, immune dysfunction, anaemia, reduced cognitive function, poor wound healing, delayed recovery from surgery, higher hospital readmission rates and mortality (Soenen and Chapman, 2013). Aging presents a number of challenges for the maintenance of good nutritional health in older adults (Ahmed and Haboubi, 2010). Maintaining a good nutritional status has significant implications for health and wellbeing, delaying and reducing the risk of developing disease, maintaining functional independence and thus promoting continued independent living (Leslie and Hankey, 2015).

2.5   Elderly People's Chronic Diseases

World Health Organisation (2006) confirms that chronic diseases are more prevalent among older population. Aging is associated with increased vulnerability to chronic health problems and decreases in physiological activity (Landi *et al*., 2010; WHO, 2011). Chronic disease can contribute to functional disability which can degrade quality of life (Donini *et al*., 2015). However, the prevalence of functional disability and its association with outcomes among patients with chronic diseases need further study (Dunlay *et al*., 2015). Chronic diseases may also contribute to reducing an individual's functional independence hence healthy lifestyle practices and prevention of chronic disease are important for maintaining functional independence in older adults (Mwanyangala *et al*., 2010).

2.6   Elderly People's Access to Health Services

Elderly people don't know the mechanism of free health service delivery and so they don't know how they could access this right of receiving free health services (HAI, 2012). It is also argued in Poverty and Human Development Report (URT, 2009) that poor health systems is one of the factors that may hinder access to health services and that they have to be studied in order to assess the application of health exemption policies. Ageism occurring in the health sector is severely affecting elderly people because they are the most users of health services compared to other age groups (Nzali, 2016). This is because medical professionals consider the care for elderly people as undesirable, unpleasant, less motivating and not paying (Smith *et al*., 2008).

CHAPTER THREE

3.0   METHODOLOGY

3.1   Description of the Study Area

The study was conducted in Misungwi district which is one of the 7 districts in Mwanza region, Tanzania. Misungwi is bordered to the north by Nyamagana District and Magu District, to the east by Kwimba District, to the south by Shinyanga Rural District and to the west by Nyang'hwale District and Lake Victoria. Administratively Misungwi district is sub-divided into 4 divisions, 27 wards, and 78 villages. According to the 2012 national census, Misungwi district have a population of 345,025 persons in which 170,176 are male and 174,849 are female while elderly people of 75 years and above are 2,097 (NBS, 2012). Majority of residents of Misungwi are of Sukuma tribe and they are engaged in subsistence farming and livestock keeping as their main economic activities.

 Misungwi district was selected as a study area because only few researches has been done there concerning aging issues in elderly people and it is the only rural district in Lake Zone with an institutional care for elderly people and according to NBS (2008) prevalence of disability was   higher   in the rural areas (8.3%) than in urban areas (6.36%) .
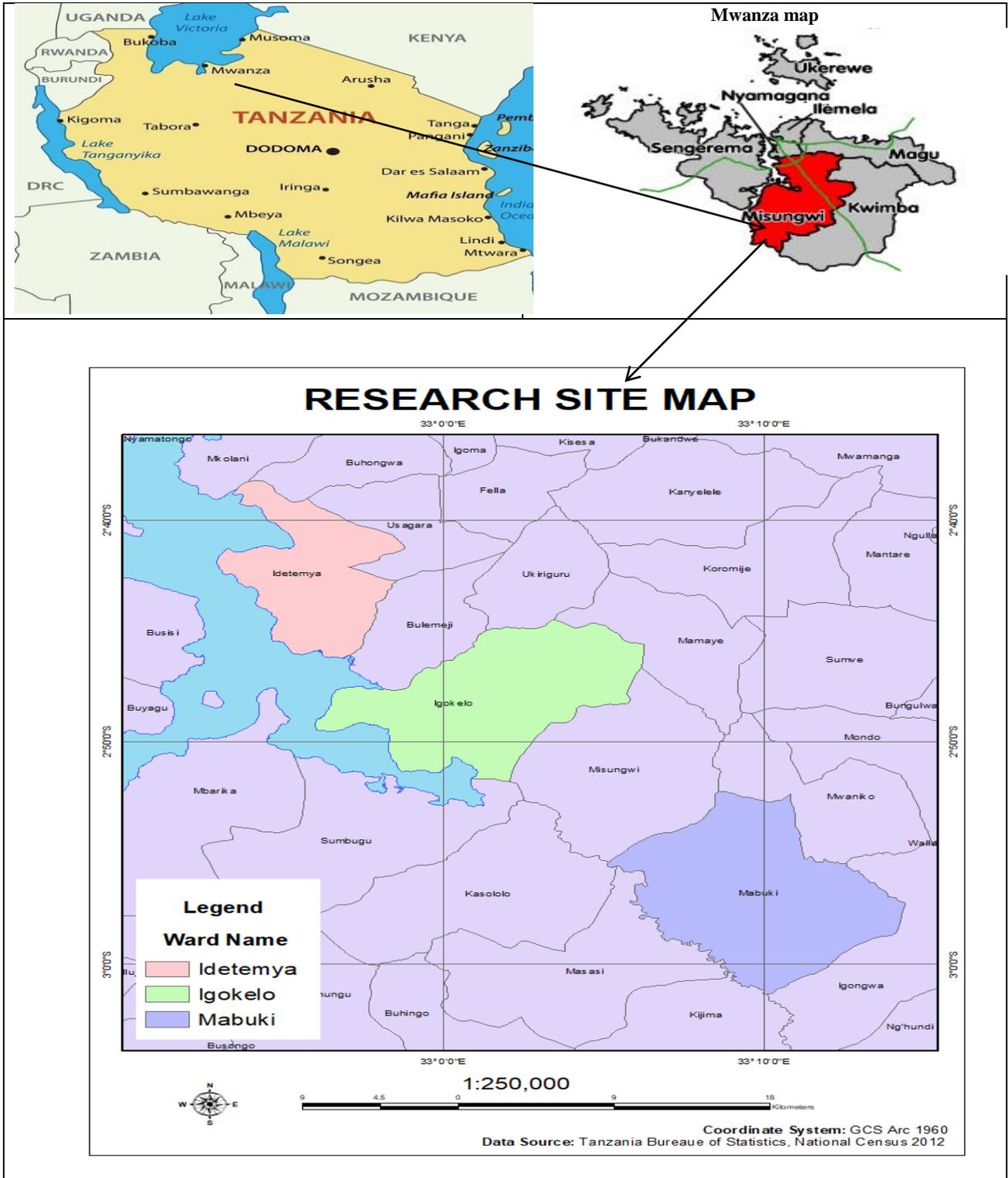
Figure 2: Map Showing Location of Study Area in Misungwi district

Source: Tanzania Bureau of statistics, National Census 2012

3.2   Study Design

A cross-sectional design was used in which data was collected once. Data was used for describing as well as determining the relationship between variables. This design, according to Armitage and Matthews (2008) is known to be useful for descriptive purposes as well as for determination of the relationship between and among variables at a particular point in time.

3.3   Study Population

World Health Organization defined old age from the disability point of view as the period beyond 75 years (WHO, 2011). Therefore elderly people aged 75 to 90 years from an institutional care (Bukumbi elderly centre) and free living community, formed the study population.

3.4   Sampling Procedure and Sample Size

In sampling procedure, purposive and random samplings were applied to select areas in which 3 wards were involved in the study. The first ward was Idetemya which was selected purposively because an institutional care for elderly, the Bukumbi elderly centre and 60 elderly people were randomly selected from there. Free living respondents were selected from Mabuki and Igokelo wards because they have high prevalence of elderly people than other wards, and respondents were randomly selected from the households with elderly people, 30 respondents from each wards to make a sample of 60 free living elderly and a total of 120 samples for the study.

3.4.1   Sample size

The sample size was justified on the fact that "too large sample implies a waste of resources, and too small sample diminishes the utility of the results" by Zhao *et al*. (2015).

It is argued by de Vaus (2002), Kothari (2005) and Kimia (2008) that, regardless of the population size, the minimum sample size is 30 cases (respondents) for a research in which statistical data analysis is to be done. According to Matata *et al* (2001), 120 respondents are adequate number for most socioeconomic studies in sub-Saharan Africa hence for these reasons a sample size of 120 respondents was appropriate for this study in which 60 from institutionalized elderly and 60 from free living elderly.

3.5   Data Collection

3.5.1   Primary data

Primary data was the main source of information whereby quantitative data were collected using a structured questionnaire with closed ended questions for capturing data on the respondents socio-economic and demographic characteristics, nutritional status and some health indicators such as frequency of illness, chronic diseases, and health seeking behaviour ,were conducted by a trained individuals.

3.5.1.1 Assessment of functional disability

 A self-health rating scale was constructed to determine respondents' functional ability. On the scale, a series of self-reported measures for functional limitations in performing activities for daily living (ADL) adopted from WHO (2006) and Global Health Action (2010) were used. These were limitations to bathing, dressing, feeding, use of toilet and walking. For the ability to perform activities for daily living (ADL), each activity had a three level score whereby, performing the activity with no difficulties was denoted by 0, performing activity with some difficulties was denoted by 1and performing activity with difficulties / full dependency was donated by 2.

3.5.1.2 Anthropometric measurements for assessing nutritional status of eldelry people

Standard techniques and equipment were used for collecting anthropomentric measurements by adopting WHO (2008) guideline. Weight was recorded using the UNICEF Electronic scale-Seca Model. Elderly were weighed with light clothing and with no shoes to minimize error and they were asked to stand upright on the measuring scale then the scale was tarred to zero and weight was recorded, all the measurements were recorded in duplicate to the nearest 0.1 gram.

Height boards (Stadiometer) were used to measure standing height for elderly people who were able to stand, the Stadiometer was set up on the flat surface and elderly people were asked to stand upright on the middle base of the Stadiometer with the back and shoulder touching the vertical backboard and ankles touching the base of the vertical backboard. Measurements were recorded to the nearest 0.1cm.

Arm span method was used for some participants who couldn't stand straight due the problem of back bent in which the tape measure was placed at the end of the middle finger of the right hand and the tape measure was stretched out to the middle finger of left hand and length measurement were recorded nearest to 0.1 cm. Also half span method was used to participants who were unable to fully outstretch both arms in which tape measure was used on one hand which was able to stretch.

3.5.1.3 Assessment of energy intake

Dietary intake data was collected using the estimated food record method. This method was used to assess the food intake by observing and recording specific amount of all foods and drinks consumed and full descriptions of all the ingredients used in food consumed for three random consecutive days including two weekdays and one weekend day.

These units were converted to weight in grams for each food item before nutrients analysis. The nutritive value of the daily diet was computed using the Tanzania Food Composition table. Dietary data obtained were not normally distributed so median scores was calculated to present daily intake of energy from macronutrients which were carbohydrates, protein and fat.

3.5.2 Secondary data

Secondary information for the study was obtained from reports from different international and national sources such as WHO data on BMI levels, Tanzania national bureau of statistics, national ageing policy and published journals

3.6   Data Analysis

Data were analyzed using the IBM SPSS version 20 computer package in which descriptive statistics was computed to determine frequency, mean and median scores, independent t-test was performed to determine significant difference and chi-square was performed to determine if there was a significant association between variables and for comparison between two groups

The dependent variable, functional status was determined through respondents self-reported perceived activities of daily living and was measured using three options, which were good, moderate and poor (Global Health Action, 2010). The individual scores were added to form a scores ranging from 0 (minimum total score) to 10 (maximum total score). The mean, median, minimum, maximum and mean scores were computed. Thereafter, the mean scores were categorized into three categories, those who scored below the median were categorized as good functional ability, those who scored at the median were moderately functional ability, and those who scored above the median were poorly functional ability.

3.7   Ethical Consideration

Ethical consideration Permission to conduct the study was obtained from Sokoine University of Agriculture, Mwanza regional office and Misungwi district office. Respondents were informed about the study and invited to participate in the study. The purpose and nature of the study was explained and those who agreed to participate gave their verbal consent. Assurance was made to the respondents that participation was voluntary and that confidentiality for the information provided will be ensured.

CHAPTER FOUR

4.0   RESULTS AND DISCUSSION

4.1   Respondent's Socio-demographic Characteristics

The socio-demographic characteristics of the elderly considered in this study include: age, gender, marital status, education level, source of income, living arrangement and isolation status. Table 1 shows the results of the stated socio-demographic characteristics.

4.1.1 Age

The study showed that respondent's age ranged between 75 and 90 years with a mean age of 82 years. More than a half (60%) of the institutionalized respondents was aged between 75 to 82 years followed by 40% of those who were aged 83 to 90 years while in non-institutionalized elderly, majority (68.3%) were aged between 75 to 82 years and few (31.7%) were aged 83 to 90 years (Table 1).

4.1.2 Gender

The results showed that in both institutionalized and non-institutionalized majority of respondents were females with 53.3% and 55% respectively, while males from institutionalized and non-institutionalized respondents were 46.7% and 45 % respectively (Table1).

These results indicate that majority of elderly people are women and this can be due to the fact women have high life expectancy than men and this results to an increase in women population among elderly people. These findings are similar to Hartholt and his colleagues (2011) pointed out that, in Dutch population people aged 65 years or older are women who comprise 60% of the population. Nearly all countries of the world, women,

currently standing at 55% of older people, are in the majority and they will remain so (Nhongo, 2004b).

4.1.3 Marital status

Results showed that majority of the elderly in both institutionalized and non-institutionalized were single with 86.7% and 71.6%, respectively (Table 1).

These results indicate that many elderly people from the study were single and this is due to fact that many were widowed due to loss of spouse and few were divorced. Similar findings have been reported by Vincent and Velkoff (2010), that about 70% of older people living alone are women, and 46% of all women aged 75 years or above they live alone. Nearly 29% of the 46 million community-dwelling older adults are single and live alone (Tanaka *et al*., 2012). Men are more likely to die before their wives, and widowed or divorced men are more likely to remarry than widowed or divorced women (Berntsen and Kravdal, 2012).

4.1.4 Education level

The results revealed that two-thirds (65%) of the institutionalized respondents had never attained any formal education while in non-institutionalized ones about three- quarters (71.7%) had never attained any formal education (Table 1). The rest of respondents from both institutionalized and non-institutionalized had either primary or secondary education.

These results indicate that majority of elderly people in this study were illiterate, this may be due to the fact educational opportunities were scarce by the time of their childhood and youth. This result consistent with the findings of Adam *et al*. (2014) and Aboelfetoh *et al*. (2015) reported most of the elderly more than three fourth were illiterate since percentage

of illiterate elderly was found to be more than half of the studied population and only 2% of the elderly have done study till graduation or post-graduation. Kawano *et al.*(2010) reported that prevalence of low education was higher in the oldest group (>75 years old) while high education level predominated in the youngest group (≤75 years old). Low education status is shown among elderly people who live in rural areas than those who live in urban areas (Drop, 2018).

4.1.5   Source of income

The study showed that more than three- quarters (83%) of non-institutionalized respondents depend on grants from government and non-government organizations as their main source of income while non-institutionalized respondents reported to have some main source of earning , though were very limited such as agriculture (66.7%), handcrafting (21.7) and assistance (11.7%) (Table1).

These results indicate that observed sources of income among elderly were mostly informal ones, which included agriculture, hand crafting and assistance from relatives or other members of their households. Similar study done in Iringa by Nzali (2016), reported that free living elderly in Makete district had to work hard, whether they liked it or not so that to earn some income through some informal ways such as agriculture, timber selling, handcrafts, selling medicinal herbs, and few earned from pension schemes.

4.1.6   Living arrangement

The result from study showed that all (100%) of institutionalized respondents lived within the institution with other elderly people, this is due to the fact that most of them had lost their children and isolated by their family members while majority (43.8%) of the non-institutionalized elderly were living with their partners and other relatives (Table1).

These findings are similar to Lini *et al*.(2016) reported that families, which historically have taken care of the elderly, have now changed to institutionalization through the state or religious organisations in such a way that some elderly people today receive care in public institutions other than from their families.

4.1.7   Isolation from a family

More than three quarters (75%) of non-institutionalized were not isolated by their family members and they live with their relatives while more than half (63.3%) of institutionalized respondents were isolated by family members (Table 1).

This indicate that the non-institutionalised ones appear to be better off than their counterparts in term of isolation status since majority of institutionalized elderly were isolated and abandoned with no support by their families. Similar findings were reported by Nzali (2016) reported that nearly a quarter (22.5%) of the respondents were isolated by family members, of whom 61.9% were women. Kaseke (2003) pointed out that in many cases the elderly are more susceptible to all forms of abuse, assaults and isolation at the hands of those from whom they should expect support and protection.

Table 1: Distribution of Respondents Socio-demographic Characteristics (n = 120)

Variables	Institutionalized		Non-institutionalized	
	Frequency	Percentage	Frequency	Percentage
Age of respondents				
75-82 years	36	60	41	68.3
83-90 years	24	40	19	31.7
Total	**60**	**100**	**60**	**100**
Gender				
Male	28	46.7	27	45
Female	32	53.5	33	55
Total	**60**	**100**	**60**	**100**
Marital status				
Single	52	86.7	43	71.6
Married	8	13.3	17	28.4
Total	60	100	60	100
Education level attained				
Never gone to school	39	65	43	71.7
Primary education	15	25	14	23.3
Secondary education	6	10	3	5
University/college	0	0	0	0
Total	**60**	**100**	**60**	**100**
Main source of income				
Grants (Government & NGOs	50	83	0	0
Agriculture	0	0	40	66.3
Handcrafting	0	0	13	21.7
Begging	4	6.6	0	0
Assistance from relatives	6	10	7	11.7
Total	**60**	**100**	**60**	**100**
Living arrangements				
Living with partner only	0	0	12	20
Living with partner and relatives	0	0	35	59
Living in the institution with others	60	100	0	0
Total	**60**	**100**	**60**	**100**
Isolation by family members				
Isolated	38	63.3	15	25
Not isolated	22	36.7	45	75
Total	**60**	**100**	**60**	**100**

4.2   Functional Disabilities in Activities of Daily Living

Activities of daily living (ADL) scores capture levels of functional status better because every indicator in ADLs is individually rated and this enables a respondent to state the level of limitation or ability in performing certain tasks which are important in daily living. Hence activities of daily living were considered more reliable and formed a basis for reporting general functional status of the respondents in the study area.

4.2.1   Functional disabilities by place of residence

The findings showed that there was a significant difference (p=0.048) between institutionalized and non-institutionalized respondents on the most leading difficult activities.   About half (51.7%) of institutionalized elderly revealed walking as their leading disability while in non-institutionalized respondents the leading disability was toileting with 48.3% (Table 2).

These results indicate that elderly people regardless their place of residence face some limitations in performing activities especially toileting and mobility were the most two leading disabilities. Similar findings have been reported by Nzali (2016) that majority of elderly people in Makete district faced difficulties in performing activities for daily living and the leading difficult activity was walking (46.7%) followed by use of toilet (44.2%). Jakobsson *et al*. (2007) and Boateng (2013) founded that, the most limiting condition in daily living among the elderly was mobility. The prevalence of toileting disabilities in elderly people gradually increases with advancing age, starts to accelerate after the age of 70 years and causes a growing need for help especially after the age of 80 years (Da Silva *et al*., 2012). Approximately 20% of people aged 70 years or older, and 50% of people 2aged 85 and older, report difficulty with urinary and faecal incontinence (Wehrberger *et al*., 2012).

Table 2: **Functional disabilities among institutionalized and non-institutionalized elderly (n=120)**

Functional disabilities	Institutionalized		Non-institutionalized		p-value
	Frequency	Percentage	Frequency	Percentage	
Bathing	1	1.7	3	5	0.048
Dressing	3	5	4	6.7	
Toileting	20	33.3	29	48.3	
Mobility	31	51.7	22	36.7	
Feeding	5	8.3	2	3.3	
Total	**60**	**100**	**60**	**100**	

Key: Significant difference at $p < 0.05$

4.2.2 Functional disabilities by gender

There was a significant difference ($p=0.033$) in a comparison results of functional disabilities between sexes, both institutionalized and non-institutionalized women were at high risk of disabilities than men since they showed high prevalence in all disabilities assessed than men (Table 3).

The findings reveals that toileting disability was more common among institutionalized and non-institutionalized male respondents with 46.3% and 55.5% respectively while mobility disability was common among female respondents from both institutionalized and non-institutionalized with 56.2% and 66.7% respectively and this can be due to increased risk of osteoporosis after menopause among women compared to men. These results imply that majority of male in elderly population face the problem of toileting especially urinary incontinence as their major disability and this can be due to the fact penile muscles become weak to mediate urine as age increase. These findings are similar to the study done by Drolet (2019) reported high prevalence of faecal and urine incontinence is common in male during the old age and this can lead to continuous limitation. Nyaruhucha and his colleagues (2004) pointed out that, urinary incontinence affected greater proportion of males that was more common among male members (60.9%) than female members (11.1%). The higher frequency of urinary incontinence

among males could be related to the anatomical features of their male reproductive organs (Gratzke *et al*., 2015).

Also these results indicate that majority of women face the problem of mobility (walking) as their major disability and this is due to the fact that joint pain and swelling increase as age increase and women have high risk of osteoporosis after menopause. These findings are similar to Kingston (2016), found that differences in functional disabilities by gender are the most apparent at the higher ages of 75 years and above, with a larger proportion of women experiencing more of transferring difficulties compared to men. The present study found that women have a greater incidence of mobility disability under conditions of social vulnerability and chronic disease (Tournier *et al*., 2016).

Table 3: Distribution of functional disabilities by gender among institutionalized and non-institutionalized elderly (n=120)

Functional disabilities	MALES		FEMALES	
	Institutionalized(n=28) n (%)	Non-institutionalized (n=27) n(%)	Institutionalized (n=32) n(%)	Non-institutionalized (n=33) n(%)
Bathing	1 (3.5)	0 (0)	2 (6.3)	2 (6.01)
Dressing	2 (7.2)	3 (11.1)	0 (0)	1 (3)
Toileting	13(46.3)	15 (55.5)	9 (28.1)	7 (21.2)
Mobility	8 (28.6)	9 (33.3)	18 (56.2)	22 (66.7)
Feeding	4 (14.4%)	0 (0%)	3 (9.375)	1 (3)

Key: Significant difference at p<0.05, p=0.047 (Males) and p=0.033 (Females)

4.2.3 General functional Status based on ADL

The total scores for ADL ranged from 0 to 10, thereafter the mean scores were calculated and they ranged from 0 to 5.0 with a median of 5.5. Therefore, respondents who scored above the median were categorised as poor functional status, those who scored at the median were of moderate functional status, and those who scored below the median were of good functional status.

The results showed that majority (43.3%) of the institutionalized respondents scored at the median, therefore had moderate functional status, while majority (38.3%) of non-institutionalized respondents scored below the median, therefore had good functional status (Table 4).

These results indicate that the non-institutionalized respondents were better off than institutionalized respondents in terms of functional status since majority of non-institutionalized elderly had good functional status. Similar findings were reported on a comparison study done by Mugo and his colleagues (2018) in Kenya which found that majority of elderly persons at institutions had moderate functional status, compared to non-institutions ones who were moderate dependency with good functional status. However this findings are in contrast with a research done by Nzali (2016) in Iringa region, reported that majority (60.8%) of elderly people respondents had poor functional status while only 24.6% had moderate functional status and 14.6% had good functional status.

Table 4: Functional status based on ADL among institutionalized and non-institutionalized elderly (n=120)

Functional status	Institutionalized		Non-institutionalized	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Good functional status	14	23.4	23	38.3
Moderate functional status	26	43.3	20	33.3
Poor functional status	20	33.3	17	28.4
Total	**60**	**100**	**60**	**100**

4.3 Dietary Intake

Dietary intake assessment of this age group was necessary to be compared with the intake of recommended dietary requirements that give a true and accurate judgment of their nutritional status.

4.3.1   Meals consumption

The results showed that nearly three quarters (70%) of non-institutionalized elderly consume two meals per day and about 80% of the non- institutionalized elderly family members and relatives were involved in meal preparation unlike they are counterpart, all of the institutionalized elderly (100%) consumed three meals per day and their meals were prepared by kitchen workers (Table 5).

These results indicate that non-institutionalized elderly were consuming inadequate meals than institutionalized since majority of non-institutionalized elderly consumed two meals and lunch was their main meal. Similar findings were reported by El Kady and Tayel (2011) in a nutritional assessment study done in Alexandria, revealed that the rate of meals consumption was significantly higher (p=0.025) among the institutionalized elderly (75.9%) compared to the free-living elderly (52%). Also a study done in New york by Deierlein *et al*. (2014) reported that about (90%) of institutionalized elders used to have 3 meals daily while free living elders considered lunch the main meal of the day.

4.3.1.1   Alcohol consumption

 The results showed that majority (60%) of non-institutionalized respondents were involved in alcohol consumption while in institutionalized respondents, alcohol consumption was 31.6% (Table 5).

These results indicate that majority of free living elderly were highly involved in poor life style behaviours such as alcohol consumption which may interfere with their dietary intake and threaten their health and nutritional status. Similar findings were reported by González-Rubio *et al*. (2016) reported that the higher rate of alcohol consumption among the non-institutionalised elderly than the institutionalised ones could be ascribed to the

fact that they are free to go anywhere unlike the elderly people in institutional centres who were restricted from going out from their centres. Also lacking sources of money among the institutionalised elderly may also explain their relatively limited intake of alcohol since to get the drink one needed to have money, something that was more difficult for the institutionalised elderly (Tome *et al* ., 2011).

Table 5: Distribution of dietary variables among institutionalized and non-institutionalized elderly (n=120)

Dietary related variables	Institutionalized		Non institutionalized	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Number of meals per day				
One	0	0	2	3.3
Two	0	0	42	70
Three	60	100	16	26.7
Total	**60**	**100**	**60**	**100**
Alcohol consumption				
Yes	19	31.6	36	60
No	41	68.4	24	40
Total	**60**	**100**	**60**	**100**
Meal preparation				
Kitchen Workers	60	100	0	0
Yourself	0	0	13	21.7
Relatives or family members	0	0	47	78.3
Total	**60**	**100**	**60**	**100**

4.3.2 Daily energy intake

The results from estimated food record showed there was significant difference (p=0.03) in total daily energy intake among institutionalized and non-institutionalized elderly. The total energy intake was significantly higher among institutionalized elderly (1632.3g) than non-institutionalized elderly (1317.0g) (Table 6).

These results indicate that daily energy intake was higher among institutionalized elderly than non-institutionalized elderly because they were consuming three meals per day and

their main source of food were carbohydrates unlike their counterparts .These findings are in accordance with other studies by Shayabek *et al*. (2010) and Villarreal *et al*. (2015) which reported that free-living elderly may lack interest in food, have poor appetite or have more social problems whereas the practice of sitting in groups during meals may result in an overall satisfactory energy intake among institutionalized elderly. This also may be due to higher intake of carbohydrates and fats among institutionalized elderly than free-living one (Cuervo *et al.*, 2019).

4.3.2.1   Daily calories intake from carbohydrates

The results of daily intake of carbohydrates, estimated from 3 days food record showed significant difference (p=0.025) since   intake of carbohydrates was higher among institutionalized elderly than non-institutionalized elderly, with median scores of 326.4 g and 222.8 g respectively (Table 6).

These results indicate that there was higher intake of carbohydrates among institutionalized elderly than non-institutionalized elderly and this may be due to the fact that majority of foods provided in institutional centre were cereals. These findings are in agreement with the study done by Ahmed and Haboubi (2010), which reported that carbohydrates are more commonly provided in elderly homes due to being cheap and easy to prepare in mass production. Carbohydrates are easier to chew when having missing teeth or diseased gums among elderly with more advanced age in institutions (El Kady and Tayel, 2011).

4.3.2.2 Daily calories intake from fat

The results of daily intake of fat, estimated from 3 days food record significant difference (p=0.034)   since intake of fat was higher   among institutionalized elderly than non-institutionalized elderly , with median score of 35.7g and 18.7 g respectively (Table 6).

These results indicate that there were higher intake of fat among institutionalized elderly than non-institutionalized and this may be due to high consumption of fat source of foods among institutionalized elderly unlike majority of free living elderly who couldn't afford fat source of foods such as cooking oil. These findings agree with Khattab and Al-Saadoun (2016) findings which reported total fat intake of the study results showed that, institutionalized elderly consumed a high fat diet than they need (133.71% of DRI). Trabal *et al*. (2014) and Su *et al*. (2015) reported that, high fat intake of elderly participants may be due to the use of un-healthy cooking method which used high quantities of oils and fatty meats.

4.2.2.3 Daily calories intake from protein

The results of daily intake of protein, estimated from 3 days food records showed significant difference (p=0.002) since intake of protein was higher among non-institutionalized elderly than institutionalized ones, with median scores of 43.29 g and 31.41g and respectively (Table 6).

These results showed that higher intake of protein among free-living elderly than their counter parts and this may be due to consumption of large amounts of dietary protein sources during their meals such as sardines, fishes and eggs which are high source of protein unlike institutionalized ones who consumed beans as their major source of proteins. Similarly Cheserek *et al.* (2012) reported protein intake was adequate in more

than half of free living older adults in the urban areas of the Lake Victoria Basin. Khattab and Al-Saadoun (2016) reported high protein consumption among the subjects of the present study may be due to eating large amounts of dietary protein sources during their meals since animal protein intake was about two-thirds of total protein intake among elderly in the study. These findings agrees with Tur *et al*. (2005) who reported that, the animal protein intake was two-third of total protein intake among his studied elderly persons.

Table 6: **Comparison of daily energy intake among institutionalized and non-institutionalized elderly (n=120)**

Variables	Institutionalized Median score	Non-institutionalized Median score	t value	p-value
Energy intake (kcal)	1632.3	1317.0	-2.140	0.030**
Carbohydrates(g)	326.4	222.8	-2.103	0.025**
Fat (g)	35.7	18.7	-2.13	0.034**
Protein(g)	31.41	43.29	-3.025	0.002**

Key: ** Significant difference at $p< 0.05$

4.4 Nutritional Status by BMI

The body mass index (BMI) was derived using the equation: weight in kilogram divided by height in meter square BMI= weight (kg) / height (m) ^{2} BMI categorization was defined as underweight with BMI <18.5 kg/m^2, normal with BMI 18.5-24.9 kg/m^2, overweight with BMI 25.0-29.9 kg/m^2 and obese with BMI ≥ 30 kg/m^2 (WHO, 2006).

4.4.1 BMI according to place of residence

The results showed significant difference (p= 0.0182) in terms of nutritional status since more than a half (58.1%) of institutionalized respondents showed high prevalence of normal status while in non-institutionalized elderly, majority (53.7%) showed high prevalence in underweight (Table 7).

These results indicate that institutionalised elderly people appear to be better off than their counterparts in terms of nutritional status, this was probably due to the fact institutionalized elderly were assured of having three meals that were complete per day, as opposed to those free living elderly who were much depending on two meals and others one meal per day. On the other hand, little physical activities among the institutionalised respondents could also explain their relatively higher BMI. It is therefore not surprising that, those who were found to be overweight or obese came from the institutionalised group.

Similar findings were reported by Nyaruhucha *et al.* (2004) found that the BMIs of institutionalised males and females were slightly higher than those of non-institutionalised and this was probably due to the fact that elderly people in institutional centres were assured of having food, at least one meal that was complete per day, as opposed to those living freely who depended much on begging. According to Diaz *et al.* (2015) reported higher BMIs among the institutionalized elderly since 16% were underweight, 45% had normal status and 39.7% had excess weight while in free-living elderly, prevalence's were 8%, 22% and 29.7% respectively, even though normal nutritional status was highly prevalent, institutionalized elderly showed higher prevalence of nutritional alterations (underweight and overweight).

Table 7: Distribution of BMI by place of residence (n=120)

Nutritional status	Institutionalized		Non-institutionalized		
	Frequency	Percentage	Frequency	Percentage	p-value
Underweight	13	21.7	31	51.6	0.0182
Normal	34	56.7	23	38.3	
Overweight	8	13.3	5	8.3	
Obese	5	8.3	1	1.8	
Total	**60**	**100**	**60**	**100**	

Key: Significant difference at p<0.05

4.4.2 BMI according to gender

There was a slight significant difference (p=0.049) in terms of nutritional status revealed by males from institutionalised and non-institutionalised since majority had a normal nutritional status with 75.1% and 48.2% respectively. Also there was a significant difference (p=0.027) in terms of nutritional status revealed by females since majority (40.6%) of institutionalized females had a normal status while majority (57.6%) of non-institutionalized females were underweight (Table 8).

These results indicate that majority of non-institutionalized women were malnourished compared to others. Similarly, a study done in Uganda by Cheserek *et al*. (2012) observed more women being undernourished (68%) than men (32%). Tsai *et al*. (2011) reported increased rate of malnutrition in older women due to lack of education and employment opportunities, low involvement rates in the social activities and gender roles among rural women limit them from exposure to basic health information.

Table 8: Distribution of BMI by Gender (n = 120)

Nutritional status	MALES		FEMALES	
	Institutionalized (n=28) n(%)	Non-institutionalized (n=27) n(%)	Institutionalized (n=32) n(%)	Non-institutionalized (n=33) n(%)
Underweight	4 (14.3)	11 (40.7)	9 (28.2)	19 (57.6)
Normal	21 (75.1)	13 (48.2)	13 (40.6)	11 (33.3)
Overweight	1 (3.5)	2 (7.4)	5 (15.6)	3(9.1)
Obese	2 (7.1)	1 (3.7)	5 (15.6)	0(0)

Key: Significant at p< 0.05, p= 0.049 (Males) and p= 0.027 (Females)

4.5   Respondents Health Statuses

4.5.1   Frequency of Being Sick

During this study the elderly were requested to tell how often they fell sick in six months preceding the study. Nearly a half (48.3%) and (43.3%) of the institutionalized and non-institutionalized respondents respectively, had been very frequently sick in six months prior to the study (Table 9).

These results indicate that most of the old people had the tendency of being sick frequently. Similarly, Pastory (2013) found that majority of the elderly reported to have frequent illnesses. Also a study by Park (2014) revealed that most of the elderly were often ill. Nearly a half (46.7%) of the respondents had been very frequently sick in six months prior to the study (Nzali, 2016).

Table 9: Respondents Frequency of being sick (n = 120)

	Institutionalized		Non-institutionalized	
Variables	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Frequency of falling sick				
Very often	29	48.3	26	43.3
Often	23	38.3	23	38.3
Rarely	8	13.3	21	35
Total	**60**	**100**	**60**	**100**

4.5.2   Chronic diseases

The Self-reported chronic morbidity was also assessed with a checklist of 6 sentinel conditions (leprosy, Eye problem, Limb problems, Asthma, Diabetes, and Hypertension).

4.5.2.1 Prevalence of chronic diseases by place of residence

The results showed significant difference (p=0.029) in terms of chronic disease since majority institutionalized respondents reported to have chronic diseases, with the main chronic diseases being leprosy (40%) and arthritis (37.3%) while majority of non-

institutionalized respondents reported arthritis (43.8%) and leprosy (20%) as they are main chronic diseases (Table 10).

These results indicate that majority of elderly People are suffering from chronic diseases regardless their place of residence and chronic diseases which were more prevalent are arthritis and leprosy. Similar findings were reported by Hung *et al* .(2011) found that among the chronic diseases examined, nearly all diseases, including arthritis, hypertension, diabetes, cancer, and chronic lung disease showed an increasing trend throughout the study.

Table 10: Prevalence of chronic diseases by place of residence (n=120)

Chronic diseases	Institutionalized		Non-institutionalized		
	Frequency	Percentage	Frequency	Percentage	p-value
Leprosy	24	40	12	20	0.029
Arthritis	19	31	26	43.3	
Eye problems	10	16.7	11	18.4	
Asthma	2	3.3	5	8.3	
Diabetes	4	6.7	4	6.7	
Hypertension	1	1.6	2	3.3	
Total	**60**	**100**	**60**	**100**	

Key: Significant difference at $p<0.05$

4.5.2.2 Prevalence of chronic diseases by gender

There was a significant difference (p=0.024) in terms of chronic diseases revealed by males, since more than a half (57%) of institutionalised males reveal leprosy as their main chronic disease while about a quarter (33.3%) of non-institutionalised males revealed leprosy as their main chronic diseases. Also there was a significant difference (p=0.045) in terms of chronic diseases revealed by females since nearly half (46.8%) of institutionalized females reveal arthritis as their main chronic disease while about half

(51.5%) of non-institutionalized females reveal arthritis as their main chronic disease (Table 11).

These results indicate that high prevalence of leprosy was shown among institutionalized males and this is due to the fact that leprosy is a contagious disease and it spread by touching each other and elderly people at institution can touch each other easily. High prevalence of arthritis was shown among women and this can be due to the fact that women have high risk of osteoporosis after menopause unlike males. However in general, women respondents showed high prevalence of suffering from all chronic diseases assessed than male and this implies that women are at high risk of chronic diseases than women.

Similar findings were reported by Mugo and her colleagues (2018) found that greater prevalence and severity of arthritis and musculoskeletal disease was found among older women. Among impairments, the largest gender differences were observed for bone/joint problems, women are both substantially and statistically more likely to experience bone/joint problems compared to men for all age groups since more than one-third (34.2%) of women aged 65 and above have bone/joint problems compared to 17.8% for men (Yong *et al*., 2011). Female sex was associated with a higher prevalence of multimorbidity among this population since in both the age-groups, women had significantly higher proportions of multimorbidity than had men (Khannam *et al*., 2011)

Table 11: Prevalence of chronic diseases by gender (n=120)

	MALES		FEMALES	
Chronic diseases	Institutionalized (n=28) n(%)	Non-institutionalized (n=27) n(%)	Institutionalized (n=32) n(%)	Non-institutionalized (n=33) n(%)
Leprosy	16(57)	9 (33.3)	7 (21.9)	4(12.1)
Arthritis	6 (21.4)	8 (29.7)	15 (46.8)	17(51.5)
Eye problems	4 (14.3)	7 (25.9)	5 (15.6)	4(12.1)
Asthma	0 (0)	1(3.7)	2 (6.25)	4(12.1)
Diabetes	2 (7.1)	1 (3.7)	2 (6.25)	3(9.1)
Heart related problems	0 (0)	1 (3.7)	1 (3.2)	1 (3.1)

Key: Significant difference p<0.05, p=0.024 (Males) and p= 0.045 (Females)

4.5.3 Distribution of respondents by selected health variables indicators

4.5.3.1 Distance from health facility

Results showed that there was a great variation between elderly people who are cared in institutional centre and non-institutionalized ones in terms of distance from health facility. All (100%) of the institutionalized respondents lived within one kilometre from healthy facility and this is due to the fact that there was availability of the health centre inside the institution while more than a quarter (31.7%) of the non-institutionalized elderly lived beyond 5 kilometres from health facility (Table 12).

These results indicate that majority of elderly people in institutional care lived within the recommended distance (less than 5 kilometres) from the nearest functional facility in Tanzania (URT, 2005) and they have access to health services unlike their counter , majority lived beyond recommended distance from functional healthy facility hence they are limited to health services . Similar findings were reported by Sabates and Feinstein (2004), in their study about the effect of spatial allocation of hospitals and health centres, found that long distances from health facilities reduce access to health services and hence exacerbate health status of individuals. Nzali (2016) reported that socio-economic factors such as longer distance from health facilities, low income and old age expose the elderly to higher risks of chronic diseases and functional disabilities.

4.5.3.2 Accessibility to health services

The result from study showed that all (100%) of the institutionalized respondents have access of health services while majority (75%) of free living elderly don't have access to health services and major reasons were limited distance (56.7%), limited money (33.3%) and some were disabled (10%) (Table 12).

These results indicate that majority of free living elderly don't have access to health services and this can be due to the fact health facilities were located far from their homes in which it limit they are access. Similarly, Bhan *et al* (2017) reported the main reasons given from free living elderly who don't have access to health services were limited distance in the government hospital where they receive free services was located far from their homes and other reported financial constraints and frustration in the health facilities since they have to buy medicines when they are not available in the government hospital. Also a study done in rural areas of USA by Douthit *et al*. (2015) reported that elderly who lived in rural areas within long distance from health services reported to have less access to health services.

4.5.3.3 Health services seeking behaviours

The result showed that all (100%) elderly people in institutional care normally sought health services from government health facility which is located inside their institution hence this enable them to have free access to health services, while majority (48.3%) of non-institutionalized respondents don't have health facility in their location and nearly half (51.7%) treated themselves with herbs (Table 12).

These results indicate that all elderly people who lived in an institutional care seek health services from government health centre when they got sick and this is due to presence of

functional health centre inside their institution while majority of free living elderly normally treat themselves with herbs when they got sick and only few reported to seek health services from hospital.

Similar findings were reported in the study done by Nzali (2016) in Iringa where more than half (68.8%) of the elderly people in Iringa usually sought health services from government health facilities when they felt a need ,others sought health services from traditional herbalists (8.8%), some treated themselves with herbs (8.8%), other went to spiritual prayers (8.3%). Free living elderly people reported to start with self-medication and if there were no improvements they had to go to go different places such as traditional herbalists (Hossen and Westhues, 2012).

Table 12: Distribution of respondents by selected health variables indicators (n = 120)

Health related variables	Institutionalized		Non institutionalized	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Distance from health facility				
Less than 1km	60	100	8	1 3.3
1 to5 km	0	0	33	55
6 to 10 km	0	0	19	31.7
Total	**60**	**100**	**60**	**100**
Access to health facilities				
Yes	60	100	21	35
No	0	0	39	75
Total	**60**	**100**	**60**	**100**
Reason for no access to health facilities				
Limited distance	0	0	34	56.7
Limited money	0	0	20	33.3
Disabled	0	0	6	10
Total	**0**	**0**	**60**	**100**
Health seeking behaviors				
Government HF	60	100	18	30
Private HF	0	0	0	0
Traditional herbalist	0	0	11	18.3
Self-treatment with herbs	0	0	31	51.7
Total	60	100	60	100

4.6   Factors Associated with Functional Status

4.6.1   Association between socio-demographic variables and functional status

A chi-squared test was performed to determine association between socio-demographic factors and elderly functional status .The socio-demographic factors included age, gender, education level, marital status, Source of income, living arrangement and isolation status. Findings from this study showed only age and gender of respondents were significant associated with functional status and other factors were not significantly associated with elderly functional status.

4.6.1.1 Age and functional status

There was significant association between age and functional status of both institutionalized elderly and non-institutionalized elderly with p=0.026 and p=0.011 respectively (Table13)

These finding indicate that change in age structure among the elderly was associated with functional disabilities by limiting performance of daily activities. These findings are similar to Riebel *et al*. (2009), reported that the aging process tends to reduce physical fitness (strength, endurance, agility, and flexibility) and results in difficulties in daily life activities and normal functioning of the elderly. The level of daily activities of elderly person's decreases with aging and increase in age reduces physical capabilities, which undermines health status in health (Tuna *et al*., 2009).

4.6.1.2 Gender and functional status

There was significant association between gender and functional status of both institutionalized elderly and non-institutionalized elderly with p=0.006 and p=0.022 respectively (Table13).

These results indicate that both genders are associated with decline in functional ability among elderly people. Similar findings were reported by Al Snih *et al.* (2018) found an association between lesser hand grip strength and a greater risk of functional disability regarding both basic and instrumental activities of daily living in both genders, with a greater risk of disability among women.

Table 13: Relationship between socio-demographic factors and elderly functional status (n=120)

Variables	Institutionalized		Non-institutionalized	
	X^2	p-value	X^2	p-value
Age of respondents				
75-82 years	9.03	0.026**	9.04	0.011**
83-90years				
Gender				
Male	13.157	0.006**	7.06	0.022**
Female				
Marital status				
Single	5.09	0.07	5.04	0.08
Married				
Education level attained				
Never gone to school	1.47	0.06	1.34	0.512
Primary education				
Secondary education				
University/college				
Source of income				
Grants((Government and / or NGO	2.956	0.228	2.901	0.234
Agriculture				
Handcrafting				
Begging				
Assistance from relatives				
Living arrangements				
Living with partner only	4.59	0.1001	3.457	0.177
Living with partner and relatives				
Living in the institution with others				
Isolation by family members				
Isolated	0.50	0.778	9.04	0.011
Not isolated				

Key: Significant at p< 0.05

4.6.2 Energy intake and functional status

There was significant association between elderly energy intake and elderly functional status of both institutionalized elderly and non-institutionalized elderly with p=0.029 and p=0.011 respectively (Table14).

These results indicate that daily energy intake can influence occurrence of disabilities among elderly people. Similarly, a study done in Korea by Kim *et al*. (2013) reported that modified traditional dietary intake is associated with a decreased risk of functional disability in older Korean adults. Also a study done in Japan by Tomata *et al*. (2014), reported that Japanese dietary pattern is associated with increased risk of incident functional disability among older persons.

4.6.3   Nutritional status and functional status

There was significant association between nutritional status and functional status of both institutionalized elderly and non-institutionalized elderly with p=0.026and p=0.064 respectively (Table 14).

These results indicate that nutritional status influence the occurrence of functional disabilities and this can be due high prevalence of underweight among institutionalized and non-institutionalized elderly. Similarly, Ahmed and Haboubi (2010) pointed out that aging is associated with a decline in number of physiological functions that can affect nutritional status, including reduced lean body mass, changes in cytokine and hormonal levels, delayed gastric emptying, changes in fluid electrolyte regulation, and diminished sense of smell and taste. Malnutrition can adversely affect the wellbeing of older persons mainly by causing a decline in functional status, worsening of existing medical problems and even increasing mortality rates (El Kady and Tayel, 2011).

4.6.4 Chronic diseases and functional status

There was significant association between chronic disease and functional status of both institutionalized elderly and non-institutionalized elderly with p=0.001 and p=0.029 respectively (Table 14).

These findings indicate that elderly with chronic diseases such as arthritis and leprosy are more likely to increase occurrence of functional disabilities among older persons. Similar findings were reported by Bauer *et al*. (2014) that People aged 70 years and over usually have two or three chronic conditions that account for around two-thirds of their disabilities Majority of elderly people are associated with increased vulnerability to chronic health problems and decreases in functional activities (Landi *et al*., 2010; WHO, 2011). Chronic disease can contribute to functional disability, which can degrade quality of life. Chronic diseases among elderly people contribute to reducing an individual's functional independence hence healthy lifestyle practices and prevention of chronic disease are important for maintaining functional independence in older adults (Mwanyangala *et al.,* 2010).The absolute number of older adults with multiple chronic diseases, impairment and disability all continue to climb even though prevalence rates may be stable for impairments and disability (Van den Bussche *et al*., 2011).

Table 14: Factors associated with functional status (n=120)

Variables	Institutionalized		Non- institutionalized	
	X^2	p –value	X^2	p-value
Daily energy intake	7.06	0.029**	9..04	0.011**
Nutritional status	9.03	0.026**	8.213	0.064**
Chronic diseases	13.157	0.001**	7.06	0.029**

Key: Significant at p< 0.05

CHAPTER FIVE

5.0   CONCLUSIONS AND RECOMMENDATIONS

5.1   Conclusion

Most of the elderly people whether institutionalized or free living ones suffered from mobility and toileting as the leading functional disabilities. Also there was a great variation between elderly people who are cared for in institutional centres and those who are cared for by their relatives in terms of daily energy intake and nutritional status reflected by their BMI levels, the institutionalised ones appear to be better-off than their counterparts. Elderly in both residences are faced with problems of chronic diseases which are more common among females than males. Hence, elderly people whether institutionalized or free living ones had poor health and nutritional status which were linked to their decreased ability to perform activities for daily living.

5.2   Recommendations

 In the light of the findings of this study the recommendation that can be drawn is to widen coverage of interventions aimed at the effective prevention, management and reducing functional disability in the elderly population. This should be based on the fact that there are differences in the determinants of disability between elderly people who are living in institutional centres and those who live freely in the community with their relatives as well as their gender differences hence interventions should consider all these factors. Also it is recommended that additional research is needed in assessing the underlying causes of elderly disability such as diseases, malnutrition and processes of ageing, whereby it would be logical to examine the risk factors separately in relation to the causes.

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APPENDIX

Questionnaire No……………

Appendix 1: Questionnaire for collecting information

Introduction

Dear respondents, my name is .... a master of science in Human Nutrition Degree student at Sokoine University of agriculture, Morogoro. I am currently doing research so as to make my study successful. The tittle of my research is ―Functional disabilities and associated factors among elderly people". All the information that you provide will be treated confidentially and will be used only for the purposes of this stud

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Respondent number ……………………
2. Age of the respondent……………
3. Sex……………….
4. Date …………………………………….
5. Village …………………………………….
6. Ward ……………………………………
7. Age of the respondent ………………….
8. Marital status

    1. Single   2. Married

    3. Divorced   4. Others (specify)………………………………………… (   )

9. Level of education

    1. Never gone to school 2.Primary   3. Secondary level

    4. University 5. Adult education 6.Others (specify)…… (   )

10. What is the Main source of income?

 Self Employed (   )   Pension (   ) Remittances (   ) Charity or gifts (   )

11. What is your Living Arrangement?

 Living alone ( ) Living with g/child (   ) L/partner only (   ) L/ with partner and

relatives (   )

12. Isolation by family members

 Isolated ( ) Not isolated (   )

SECTION B: ASSESSMENT OF FUNCTIONAL DISABILITIES IN ACTIVITIES OF DAILY LIVING

Activities		No difficulties or independent (0 points)	Some difficulties (1points)	Dependence or all difficulties (2 points)
Bathing		Bathes self completely or needs help in bathing only a single part of the body, such as the back, genital area, or disabled extremity	Needs help with bathing more than one part of the body, getting in or out of the bathtub or shower; requires total bathing	Full dependence
	Points:_____			
Dressing		Gets clothes from closets and drawers, and puts on clothes and outer garments complete with fasteners; may need help tying shoes	Needs help with dressing self or needs to be completely dressed	Full dependence
	Points:_____			
Toileting (Faecal and urinary continence)		Goes to toilet, gets on and off, arranges clothes, cleans genital area without help or Exercises complete self-control over urination and defecation	Needs help transferring to the toilet and cleaning self, or uses bedpan or commode, Is partially or totally incontinent of bowel or bladder	Full dependence
	Points:_____			

Transferring		Moves in and out of bed or chair unassisted; mechanical transfer aids are acceptable	Needs help in moving from bed to chair or requires a complete transfer	Full dependence
	Points:_____			
Feeding		Gets food from plate into mouth without help; preparation of food may be done by another person	Needs partial or total help with feeding or requires parenteral feeding	Full dependence
	Points:_____			
Total points: _____				

SECTION C: ANTHROPOMETRIC MEASUREMENT

HEIGHT		WEIGHT (KG))	ARMSPAN\ HALFSPAN	BMI
(CM)	M^2			

SECTION D: CHRONIC DISEASES AND ACCESS TO HEALTH SERVICES

1. Do you have any of these chronic diseases?

A). eye problems   yes ( ) No ( )

b).Arthritis yes   ( ) No ( )

C).asthma Yes ( ) No ( )

D).Diabetes yes ( ) No ( )

f).Heart related diseases Yes ( ) No (   )

g).leprosy yes ( ) No ( )

2. If yes how frequently you have been sick in six months

    Very often ( ) often ( ) rarely ( )

3. Are there health facilities in your place? …………..yes (   ) No ( )

4. Distance   from health facility

Less than 1km ( ) 5km ( ) 6 to 10 km ( ) more than10 km ( )

4. Do you have access to health services..............yes (   ) No (   )

5. If no why you don't have access

Limited distance (   ) limited money (   ) disabled   (   ) other specify (   )

6. Health seeking behaviours

Government HF ( ) Private HF/bought (   ) Traditional herbalist (   ) Spiritual

prayers ( )   Self-treatment with herbs   (   )

SECTION D: ESTIMATED FOOD RECORD

1. How many meals do you eat per day

One (   ) two (   ) three (   )   other specify   (   )

2. Do you drink alcohol

Yes ( )   No ( )

3. Who is involved in meal preparation?

Family members (   ) yourself (   ) other specify ………..

3. DAYS ESTIMATED FOOD RECORDS

Days	Meals	When (time slot)	Full descriptions of meals and drinks consumed	Amount consumed
Monday	Breakfast			
	Lunch			
	Dinner			
Wednesday	Breakfast			
	Lunch			
	Dinner			
Saturday	Breakfast			
	Lunch			
	Dinner			