A COMPARATIVE STUDY OF INCOME GENERATION AMONGST LEPROSY DISABLES AND NORMAL PERSONS LIVING IN A LEPROSY VILLAGE SETTLEMENT

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MPH/Med/27165/2001-2002

Master of Public Health (MPH)

JANUARY 2003

Title Page

A COMPARATIVE STUDY OF INCOME GENERATION AMONGST LEPROSY DISABLES AND NORMAL PERSONS LIVING IN A LEPROSY VILLAGE SETTLEMENT

A Thesis submitted to the Postgraduate School,
Ahmadu Bello University, Zaria
In partial fulfilment of the requirements for the award of degree of
Master of Public Health (MPH)

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JANUARY 2003

DECLARATION

I hereby declare that this thesis has been written by me and that it is a record of my own research work. It has not been presented in any previous application for a higher degree. All quotation marks or indentations and the sources of information are specifically acknowledged by means of references.

Belel, Abdullahi Dauda

The above declaration is affirmed.

Professor W. N. Ogala
(Major Supervisor)

CERTIFICATION

This thesis entitled "A COMPARATIVE STUDY OF INCOME GENERATION AMONGST LEPROSY DISABLES AND NORMAL PERSONS LIVING IN A LEPROSY VILLAGE SETTLEMENT" meets the regulations governing the award of the degree of Master of Public Health (MPH) of Ahmadu Bello University and is approved for its contribution to knowledge and literary presentation.

Professor W. N. Ogala — Date
Chairman, Supervisory Committee

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Member, Supervisory Committee

Professor Abdu Aguyi — Date
Administrator, Dept. of Community Medicine

Professor S. B. Ojo — Date
Dean, Postgraduate School

DEDICATION

This work is dedicated to all those who have taken up to the plight of the voiceless leprosy affected disables, to give them a befitting and comprehensive rehabilitation through their own participation and empowerment.

ACKNOWLEDGEMENTS

Alham-du-lil-lah. I thank Allah (SWA) for the inspirations, good health and the strength to carry out this work, and also for choosing high calibre, well enlightened, open-hearted professionals to be there for me just when I needed them.

Professor W. N. Ogala, my major supervisor, I wished I had met you earlier, for I would have accomplished many projects before now.

My gratitude also goes to my teachers; ***Professor P. Singha, DR. Clara L. Ejembi*** and ***DR. Kabiru Sabitu***, who after impacting their knowledge and experiences, opened their doors for observations and criticisms that assisted me in completing this work.

I sincerely appreciate the efforts of ***DR. S. A. Ogunwale*** of Department of Agric. Econs, A. B. U. Zaria and his PhD student, ***MR. G. A. Abu*** of University of Agriculture Makurdi, for their insightful and enriching observations. ***Annette Noordzij*** of INFOLEP, Amsterdam for sending useful abstracts by e-mail and without any delay, and ***DR. Gidado Mustapha*** (NTBLTC)***, MR Anasu Rabe*** (Maths Dept, A.B.U.)***, MR. Oladipo Aina*** (Com-med Dept., A. B. U. Zaria), ***DR Muhammad Lawan Umar*** (Com-med Dept., Unijos) and ***Mal. Sadiq Saidu*** (Asst. Dean Pre-clinicals, A. B. U. Zaria) for the useful discussions, thank you very much.

The support of Adamawa State Government and The Netherlands Leprosy Relief (NLR) is acknowledged. ***MR. Henk Plomp***, NLR Representative in Nigeria, I appreciate your personal support in ensuring I become a Public Health Officer.

To my Co-workers at TBL Control Yola, I thank you for the assistance in data collection and to my wife, for the moral support and for sorting the filled questionnaires and inputting them into the Computer for analysis.

To my mother who supported me morally and financially, I pray for your long life and continuous good health. I thank all the members of my family and my in-laws for their support and patience while I was away.

My class-mates, the perfect mixture explains the intimacy. I will definitely miss the group and its characters! Much love to you all.

May Allah, Almighty continue to be with each one of us. Amen.

Belel, Abdullahi Dauda

ABSTRACT

The shift of the paradigm of rehabilitation to Community-Based Socio-economic Rehabilitation has paucity of literature to support the bases. This study aimed at determining the sources and distribution of household income and the pattern of household expenditure of leprosy disables and normal persons living in *Virgwi,* a leprosy village settlement in Adamawa State of Nigeria.

All the household heads within the village were interviewed using standard semi-structured questionnaire and analysed using the Microsoft Excel analysis tool pack.

The median age of the respondents were 45±14 years for normal persons and 50±12 years for the disabled persons. Most of them were farmers (80% of normal, 90% of disables) with no formal education (60% of normal, 67% of disables). The mean household income of the normal persons (N200,855.38 ± N154,729.34) was found to be higher than that of the leprosy disabled persons (N121,903.94 ± N148,821.45) by about 40% and the household income distribution was found to be more skewed among the leprosy disabled persons (Gini index = 0.49) than among the normal persons (Gini index = 0.35). Yet, their pattern of expenditure was found to be similar, with spending on food being the largest (51% for normal and 62% for disabled persons).

Special socio-economic programme is therefore justified and recommended for the disabled persons to reduce the income inequalities amongst them.

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CHAPTER I

INTRODUCTION

Leprosy has left a special terrifying image in the history and human memory of mutilation, rejection and exclusion from society.[3] It once affected every continent of the world, but by the end of the millennium, it is no longer the dreaded disease it used to be because of the existence of the robust, highly effective remedy called the multi-drug therapy (MDT) that now makes leprosy patients face a better future than ever before. However, individual disables due to the disease in many parts of the world still have the same social image of leprosy as manifest in the communities' attitude towards them.[4] Affected persons with clear signs of chronic manifestations of the disease are often unable to work or marry, they become dependent for care and financial support, leading to insecurity, shame, isolation and consequent economic loss.[5]

Most leprosy elimination programmes fail to provide adequate emphasis on the social aspect, especially deformity care and rehabilitation. The recent decline in the prevalence of the disease due to the effect of MDT has created interest in the provision of welfare and rehabilitation activities to leprosy affected persons.[7]

While considerable efforts have been made to reduce the development of disability in leprosy patients, there are still a large number of cured patients with residual deformity.[8]

Unfortunately, many leprosy control programmes do not have accurate data on the number of patients with disabilities. However, based on the number of new cases detected with disabilities and the life expectancy of these patients, W.H.O. estimates that at present the global prevalence of patients with severe disabilities due to leprosy ranges between 1.3 and 1.5 million.[1]

Leprosy patients suffering from disabilities can often be easily recognised by the presence of characteristic visible deformities on eyes, hands and feet. Most disabilities result from function loss of peripheral nerves supplying eyes, hands and/or feet.[1]

A fresh strategy for the implementation of disability prevention and rehabilitation is called for to ensure a practical, community-oriented approach aimed at reaching the largest number of persons in need with-cost effective interventions.[2]

Income generating activities done by the disables themselves, within their communities, have been shown to increase their self-confidence, bring back their dignity and allow them to participate in family and community activities. It also changed the attitudes of family members towards the disables.[7]

The work done by the German Leprosy Relief Association (GLRA) in the City of Madras in India has shown a significant increase in respect and recognition in their families after implementing a community based rehabilitation programme that provided income generation.[11]

Some western thinkers believe that income inequalities lead to economic growth and development. The urge to become rich motivates people to work hard and earn large incomes and accumulate wealth as experienced in the 18th century England, 19th century Europe and 20th century Japan.[28]

The major source of income of the Nigerian (including leprosy disables) villagers is small scale farming, producing non-export crops and non-industrial raw materials. In other words, they are peasant food-farmers.[25] But in spite of the numerous farm management research studies in literatures, the economies of scale associated with most crops in Nigeria are still unknown.[18]

JUSTIFICATION OF THE STUDY

The attention of the world on leprosy as a disease is fading since the World Health Organization declared target of elimination of leprosy as a public health problem by the year 2000. As with most countries of the world, leprosy is now considered not a public health problem at the national level in Nigeria, because the prevalence rate for the disease is below one case per ten thousand (1/10,000) population, as defined by the World Health Organization.

The danger of the above statement is manifesting in the decline in funding even the basic leprosy control activities by both the government and the non-governmental organizations. This is happening at the time when the world is fast integrating into a global village while the leprosy disables' socio-economic reintegration is largely been neglected. The effects of the disease will remain for many years to come, especially when the impairments and disability due to the disease are irreversible.

In trying to meet up with the challenges, the focus of international leprosy elimination programmes (ILEP) has now gone beyond the achievement of bacteriological cure of patient to the holistic approach of cure, rehabilitation and reintegration. The impact of this approach is still limited and significant future contributions identified include: advocacy and awareness creating among community based rehabilitation programmes and non-governmental organizations operating in the field of general development, about the needs of leprosy-affected persons; promoting greater participation of leprosy affected persons in all activities and strengthening their organizations.[17]

Many forms of socio-economic rehabilitation had been tried with successes recorded on individuals' rehabilitated and little impact on most leprosy village settlements. What is conspicuous is the fact that they all are trying to integrate the disables into the community's functional social and economic structure. Income generation could easily be singled out as the most important target activity that can acceptably aid participation at family and community level with resultant desired reintegration.

The community based rehabilitation programmes for leprosy affected persons have been solely directed to their needs as perceived either by them or by the planners and implementers of the programme or by both. Many of the difficulties hindering the full achievement of the programmes' objectives could be due to ignoring the income generation of the community at large.

The need to strengthen action against social, economic and psychological consequences of leprosy is overemphasized and not only for the persons affected by the disease but also for their families and communities at large.[17]

The equality or inequality in income distribution amongst the disables and normal individuals could be a factor that encourages income generation within the leprosy village settlements after the dismantlement of leprosaria. It could also form the basis for formulating a sound comprehensive community based rehabilitation programme within the village by planning the economic interaction of leprosy disables and normal persons living within the same village.

The justification for isolating the leprosy disabled persons as a subpopulation for community based socio-economic rehabilitation in a generally poor community has not been determined in any known study.

Since no similar study was done in the past, it is hoped that facts that will be generated from this study could help bring back the social, economic and political aspect of rehabilitation of leprosy disables to the public agenda.[12]

AIMS AND OBJECTIVES

General Objective

The goal of the proposed project is to examine the sources and distribution of income amongst the leprosy affected disables and the general population living within a leprosy village settlement.

The specific objectives are:

1. To determine the sources of income of the leprosy affected disables and those of the normal persons living in *Virgwi* leprosy village settlement.

2. To assess the income distribution among the households of the leprosy affected disables and those of the normal persons living in *Virgwi* leprosy village settlement.

3. To determine the pattern of household expenditure of leprosy disables and those of normal persons living within *Virgwi* leprosy village settlement.

4. To suggest appropriate recommendations that will provide encouragement and opportunity to the leprosy affected disables to make up their differences so as to make them as equal to the normal persons in every aspect.

CHAPTER 2

Literature review

Introduction

Leprosy is a chronic mildly infectious disease of man that principally affects the skin, mucous membranes and peripheral nerves leading to deformities of parts of the body that result into varying disabilities. The disease has been long known for its deformities and disfigurement.

Before the Dapsone era of the 1940's, leprosy control was by case identification and total isolation of patients in exclusive sites called *leprosaria* where they were expected to spend the rest of their lives as dictated by the implementers of the then available knowledge on control of leprosy.

Even though M*ycobacterium leprae*, the causative organism of leprosy, was recognised by Dr. Gerhard Henrik Armauer Hansen (1841-1912) and reported in his annual report since on 28th February 1873, it was the discovery of Dapsone in the late 1940s that brought significant changes in the method of leprosy patient management, which even initiated the dismantlement of the leprosaria.[21] It brought about the concept of outpatient treatment of leprosy patients. But in many centres, including Garkida, many circumstances (mostly socio-economic) forced leprosy patients to continue living within the leprosaria for easy access to regular treatment with Dapsone, care of their wounds and some form of vocational and physical rehabilitation services.

Virgwi, the study village, was a product of the leprosarium created in 1929 by missionaries of the Church of Brethrens Mission (USA) purposely for isolating diagnosed leprosy patients following their setting up of the then Garkida Agricultural Leper Colony (presently the *Garkida* leprosy Hospital), now in Adamawa State of Nigeria. Up till the early 1950's, the colony served as an isolation settlement of about 2,500 patients including 400 school children.

Free medical treatment and some form of medical and vocational rehabilitation were rendered by the missionaries since then, and later on by the Netherlands Leprosy Relief (NLR). The most popular treatment of leprosy then, though not effective, was daily injection with ***Oil of Chaulmogra*.**[24]

The dismantlement of the leprosaria that followed the Nigerian government's policy of resettling leprosy affected persons in their own home communities could not achieve its objective as most of them were unable to return home due to external or self-stigma.[9]

The area grew into three settlements that surround the Garkida leprosy hospital which is referred to as *Virgwi* leprosy village settlement. These villages are *Kwalamba*, *Cross* and *Layin-Bazza*. The Netherlands Leprosy Relief and the Lutheran Church of Christ in Nigeria (LCCN) designed and implemented vocational rehabilitation in the form of crafting and communal farming on borrowed pieces of land in 1980s and early 1990s.

As the support for their welfare wanes, most of the leprosy patients including the disables tried to survive by intermarriage amongst themselves within the village and were able to establish their households and somehow managed to raise children to compliment living. Since then, many have had children that grew to adult with their own homes and children too, and among them, very few had the disease in varying stages of its manifestation. The introduction of multi-drug therapy (MDT) in 1991 and the subsequent prevention of impairments and disability (POID) programme have now interrupted leprosy transmission in the area.[10]

The village also attracted other people who are not leprosy affected persons that compete with the settlers for income and survival. The village has two-hundred and seventy-seven (277) households with a population of one-thousand six-hundred and twenty-six (1,626) out of which ninety-eight (98) are leprosy disables with World Health Organization (WHO) grade II leprosy disability.[14]

Education was only for the children affected by leprosy during their isolation in the Garkida leprosarium and was the elementary type. Those adults that had any formal education had it before they were diagnosed as patients. The Garkida primary school provided education to the communities after the end of isolation era, and in 1980, a government day secondary school was established. In recent years, a primary school was built in *Kwalamba,* one of the settlements, which is grossly understaffed but serve the nearby villages as well.

Like most villages in the Adamawa State, poverty is glaring from the poor housing standards, built of mud and grass, and their poor clothing and personal hygiene. Most of the villagers are peasant (small scale) farmers, growing crops on small pieces of land or rearing animals locally. The leprosy affected disables amongst them could not continue with the handicraft work they learnt in the institution-based rehabilitation programme because the market for their products disappeared with foreigners that initiated and ran the programme and who were the main customers. Begging by the leprosy affected persons has been discouraged in the area by both the government and other non-governmental organizations that support leprosy control activities there.

Leprosy is a medico-social problem and more than just a disease, with a declining trend in its medical form due to the presence of effective treatment, but its social dimensions in terms of stigma, poverty, disability and deformities, loss of self-respect and dignity continued to constitute a major social problem in many developing countries.[26]

Programmes which are community-oriented in approach to help leprosy disables, and especially if shall benefit other people, are more likely to be accepted and be sustained. Direct involvement of family and community members and sharing of benefits further increases the sustainability. And a regular income can often bring respect and overcome stigma.[27]

Poverty can be measured in three ways: a scalar approach using a single indicator such as income or consumption, a multidimensional-indexed approach where several indicators are combined in a single index of poverty, and a vector multi-dimension where several indicators are used to classify people as poor on each indicator (for example, income poor but health non-poor).[29]

Income is money or other gain or return resulting from goods or services produced in a given period of time, usually measured annually. The various types of income are usually described within the private or the public sector of economic activity. In the private sector the four major types of income are ***wages*** (the return for labour); ***rent*** (the return for use of land); ***interest*** (the return for the use of capital); and ***profit*** (the return to the business owner). Income is normally measured in money terms.[12]

The income distribution among individuals or households within a community, which is determined by many factors, has important influence on motivation for income generation.

Economic predicament of leprosy disables

The earliest written records describing true leprosy came from India in about 600 BC, but recent excavations in the Egyptian oasis of *Dakhleh* that disclosed four leprous skulls in white representatives of the ruling class buried there in the second century BC gave the earliest objective evidence of leprosy.[20] The economic predicament of leprosy

affected persons is mainly attributed to the multidimensional factors associated with the social stigmatisation of the leprosy patients.

Early influences to stigmatisation of leprosy patients could be traced to earlier religious and cultural believes on leprosy. The Old Testament texts which were uncritically accepted by succeeding generations of the Christendom is responsible for the western world's attitudes towards leprosy patients.

The interpretation, by a group of Alexandrian scholars in about 200BC,of the Hebrew term ***tsara'ath*** in the Mosaic code (Leviticus 13 and 14), whose precise meaning was much uncertain, seems to be ritual uncleanness associated with changes in the colour of a surface of human skin, or cloth or leather, or the damp walls of dwellings. This term was later replaced by another vague Greek term ***lepra***.

The establishment of the first leprosy hospitals in Rome and Caesarea by the Christians in the 4th century AD marked the beginning of formal institution based care of leprosy patients in the world.[29] That also began the process of total isolation of leprosy affected persons without considering the socio-economic consequences on their lives.

Improvement in concern for the plight of the leprosy affected started at the time when believe of the disease as hereditary in nature was high when the early masters of the Orders of Chivalry became victims of the disease. Since then, conditions of appointment by the Order include the care for leprosy affected persons, and the

Knights of the Order have been noteworthy for their concern. The Order of St. Lazarus of Jerusalem paid special attention the sick and to the needy beggars afflicted with leprosy. The Order was founded in 1050 with its headquarters in Burton Lazars situated in the rural midlands of England.

The disease widely regarded as divine punishment for sin was later contracted by some of Christian warriors engaged in a Crusade that had attracted Episcopal blessing. This was accepted by the faithful as a privilege to share the sufferings. Their return coincided with the time Christian charity wave that created almshouses and hospices for the leprosy affected, i.e. 1096 onwards. These hospices were like prison, monastery and almshouse combined. And around 1100, during the reign of Henry I in England, a statutory measure entitled *Leproso Amovendo* regulated the movements of those afflicted with leprosy.

The fourteen century saw the scourge of new places of refuge for leprosy victims, who were infested with fleas and were malnourished. They became victims of the Black Death of 1349 that eliminated leprosy in England. But at the height of the leprosy endemic, there thought to have about 2,000 lazarets and hospices in France, for leprosy victims.

The dual events, between 1867 and 1873, of a Belgian Roman Catholic priest, Father Damien, contracting leprosy and the founding of Mission to Lepers in India, now The Leprosy Mission International (TLMI), brought about an organised common front to

combat leprosy. From then were witnessed increasingly beneficent global achievements in medical and scientific aspects of leprosy. Reconstructive surgery and rehabilitation became increasingly improved and utilized.[21]

Leprosy epidemiology that supports the occurrence of the disease in communities that have low standard of living, poverty and overcrowded conditions could also explain the low status treatment patients received in the isolation homes and subsequently by rehabilitation programmes.

Socio-economic factors have been well recognized as playing important roles in leprosy. The patients are more vulnerable to destitution due to the progressive nature of the physical disability by the disease and most importantly, the social disability from the social stigma that leads to social isolation.

Starting comprehensive community based rehabilitation for leprosy disables with their full participation was unacceptable in leprosaria due to organisational set-up of the vertical approach to care.[32]

Distribution of income in communities

There is no unambiguous definition of poverty. Several concepts are commonly used, the main distinction being between absolute and relative poverty. Under the absolute concept, the value of the minimum food intake for survival and some non-food requirements are translated into a corresponding income level that constitutes the poverty line. The relative poverty concept is based on the notion that minimum needs

vary with increasing stratification, with changes in the division of labour in a society, and with increasing overall prosperity. Poverty is defined as the situation of households or persons with the lowest incomes or expenditures, and the poverty line is determined as a proportion of the average income per person, usually one half to two thirds of GDP per person. The difference between the concepts is that the absolute measure ignores distribution aspects of poverty. In some cases, absolute poverty may be reduced while at the same time inequality is rising. This appears to happen more frequently in sub-Saharan Africa than in other regions.[29]

An important finding from analysing the survey data from the poverty assessment study on Nigeria is the concentration of the poor in communities in which most of the other households are also poor, and the tendency of the non-poor households to reside in communities in which the population is largely non-poor. As a result, the overall income inequality in the country is due largely to income inequality *between* communities and much less to income inequality between households *within* communities.

To illustrate this concentration of the poor and the non-poor in separate communities, all the communities that were included in the Household Expenditure Survey were divided into four categories according to two criteria: first, the *share* of poor households in the community and second, the *average per capita income* of all the households in the community. Although the sample for each community is very small,

all the conclusions have been drawn for the entire *category* of communities in which the size of the sample was adequate. Specifically, the classification was based on the following criteria:

(i) ***Poor communities***: Defined as communities in which the majority of the households were poor and the *average* per capita expenditure of the households in the community was below the poverty line.

(ii) ***Low income communities*****:** in which the minority of the households were poor and the *average* per capita expenditure of all households in that community was *below* the national median level.

(iii) ***Middle income communities*****:** in which minority of the households were poor and the *average* per capita expenditure of the households in that community was *above* the national median level.

(iv) ***Non-poor communities*****:** in which *all* the households included in the survey had per capita expenditures above the national median income.

The distribution of all individuals across these four categories of communities was examined. The most noteworthy observation was the concentration of nearly 80 percent of all the *'poor' individuals* in the two categories of communities that were classified as 'poor' and 'low income' even though these two categories of communities constitute only one-third of the total number of communities. The average per capita income of the households in the 'poor' communities was 30 percent below the poverty

line. On the other hand, in the 20 percent of the communities that have been classified as 'non-poor,' *all* the households that were included in the Survey had per capita expenditures well above the national median level. Indeed, the average income of all the households in this category of communities was more that five times greater than the average income per capita of the households in the category of 'poor' communities.

The relative homogeneity of most communities, particularly the rural communities, in terms of the level of income and the standard of living of the majority of their households, is a direct product of environmental factors that affect most, if not all households in a community in very similar ways. Most households in a rural community are equally affected by the same agro-climatic conditions and by the same geographical/location conditions - primarily the distance from the large urban centre and the distance from the trade centre or the port. All households in a community are also equally affected by the availability (or unavailability) of certain public goods in their community that have a direct impact on their earning capacity. Of particular importance is the quality of the access road to the community that determines, in turn, their capacity to engage in trade.

In Nigeria, there are, however, considerable differences between regions in the concentration of the poor (and the non-poor) in separate communities. In the northern agro-climatic zone, nearly 70 percent of the poor reside in 36 percent of communities that were classified as 'poor'. In the central region, 61 percent of the 'poor' individuals

reside in 21 percent of the communities that were classified as 'poor'. In the south, only 9 percent of the communities were classified as 'poor' and 38 percent of the poor individuals in that region reside in these communities.

There are also large differences between regions in their share in the total number of the 'poor' and 'non-poor' *communities*. Whereas nearly two-thirds of the 'non-poor' communities are in the south, almost half of the 'poor' communities are in the north. In the south, only 18 percent of the region's population resides in communities that have been classified as 'poor' whereas in the north nearly half of the population of that region resides in such communities.[31]

The study by Sabitu, K. et al (2002) on "the Nigerian rural community health insurance scheme: what premium to charge?"[39] also showed similar income distribution in Nigeria.

Poor people typically save in good seasons but run down their reserves in lean times; overall, their consumption is seldom much below their income. Of their consumption, typically 45-60% is on food staples – cereals, roots and tubers, and pulses – and a further 15-20% on other foods.[29]

Economic inequalities that stem from inequality of opportunity are more intolerable and at the same time more remediable than those that emerge even when opportunities are equal.[36]

Lord John Maynard Keynes (1883-1946), a British economist, identified that the level of consumption is dependent upon income and that income is the sum total of consumption and savings. It has also been shown that savings and investments are closely related.[16]

Income = Consumption + Savings/Investments

The variables used to measure goods and services consumed by households living in all parts of Nigeria are: Food; Drinks, Tobacco and Kola; Clothing and Footwear; Accommodation, Fuel and Light; Household goods; Medical care and Health expenditure; Transportation; Recreation, Entertainment, Education and Cultural services; Other services.[22]

Socio-economic developments in leprosy management

The evaluation of the community based rehabilitation programme for leprosy affected disables rehabilitated in the Madras City, India by the German Leprosy Relief Association (GLRA), between 1974 and 1983, has shown that income generation by the

disables has made them to regain respect and recognition in their families and communities.[11]

A similar programme sponsored and implemented by the Netherlands Leprosy Relief (NLR) and Mangu Leprosy and Rehabilitation Centre in Plateau State of Nigeria between 1986 and 2002 also showed improvement of income generation by about 70% of the leprosy affected disables involved in the programme.[38]

The 44th World Health Assembly adopted a resolution in 1991 to eliminate leprosy as a public health problem by the year 2000.[34]

The statements at the Hanoi International Conference held between 4th and 7th July 1994 on the elimination of leprosy includes "To ensure that prevention and management of disability become an integral part of leprosy elimination programmes so that all leprosy patients are rehabilitated and reintegrated within their communities".[32]

The social aspect of leprosy was re-emphasised by the organising committee of the International Leprosy Association (ILA) congress in 1996 when they adopted the theme for the 15th ILA congress held between 7th and 12th September 1998 at Beijing, China as "Towards a world without leprosy".[35]

Considering the variety of needs, no one solution to rehabilitation is applicable to the Nigerian situation, but the situation and context of individual settlements should be considered, looking at general health care, income generation or loan schemes, schooling and water supply. Some leprosy settlements have achieved social integration and urbanisation with persons affected by leprosy living alongside people not affected by leprosy.[9]

CHAPTER 3

METHODOLOGY

Location – Demographic data

Virgwi is a compound village made up of three settlements surrounding the Adamawa State Leprosy Hospital, Garkida located on Latitude N $10^{o}23^{I}$ 04.00^{II} Longitude E $12^{o}33^{I}$ 13.32^{II} at an altitude of 393m above sea level.[6] It is accessed through a poorly maintained but asphalted 178 kilometre road from Yola, the State capital.

The village has a total population of one-thousand one-hundred and ninety-seven (1,197) people consisting of six-hundred and forty-five (53.9%) males and five-hundred and fifty-two (46.1%) females, living in two-hundred and twenty-eight (228) houses. One-hundred and sixty-nine (74.1%) of these houses are owned by normal persons without any leprosy affected disables living as a household member, while the remaining fifty-nine (35.9%) of the houses are owned by leprosy affected disables.

Most of the residents are predominantly peasant farmers, but some engage in other forms of income generating activities like petty trading, domesticating animals or poultry, or dry season farming to augment their income.

Study design

The study is a cross-sectional study of income sources, distribution and pattern of expenditure in *Virgwi* leprosy village settlement after which the data for the two groups were sorted, stratified and compared.

Study population

All the household heads living within the study village over the period of the study and have satisfied the selection criteria.

Selection criteria

Those eligible for the study were all household heads, both males and females, who reside within the study village at the time of the study.

A household head is defined as any adult (man or woman) person who the members of the household recognize as such and bears the major responsibility of maintenance of the household and takes decisions on its behalf.[19]

Disability is recognised only in leprosy affected persons with WHO grade II disability.

Instruments for data collection

The instrument for data collection was a semi-structured questionnaire consisting of four sections;

Section A - Bio-data

Section B - Household Investments/Savings

Section C - Household Consumption/Expenditure

Section D - Perception of dependence and opportunity to earn.

Methods of collection/standardisation

A dejure census was conducted that provided baseline information on the study population so that only residents are included in the study.

Questionnaires were pre-tested and administered on the household heads with the assistance of five community health officers, who have vast experience in leprosy control field work including health system research in leprosy control activities.

Estimation of value of items such as grains were given as obtained from the current prices in the local market. For the purpose of this study, all grains (rice, maize, guinea-corn, millet etc) produced or consumed, were quantified by estimates using a common unit of measurement. The unit of measurement is 50kg sac locally called *buhu*. The total estimated values of animals reared were mentioned for computation of income. The villagers' estimates of value of items were also considered during the study.

Methods of data analysis

Measures of central tendencies and dispersion (mean, median and standard deviation) were used, in addition to Percentages, to bring out the picture of the findings on the

socio-demographic characteristics, sources of income and pattern of household expenditure. Lorenz Curve was used to determine household income distribution while the Gini Coefficient (Gini Index) was used to measure the differential in income distribution (income inequalities) between the two groups. [23] The Gini index was determined by extrapolating the trapezoidal area between the egalitarian line and the Lorenz curve in relation to the area under the egalitarian line.

Duration of study

Five weeks of field activities including preparation of tools, taking census of the village and the project data collection.

Ethical considerations

The community's consent was obtained from the village head before the commencement of the study, and then the household heads' consents were obtained from them at the time of administering the questionnaire. Thorough explanation of the purpose of the research and confidentiality were emphasized for their maximum cooperation.

LIMITATIONS OF THE STUDY

The use of memory recall to obtain information regarding income especially per annum is also a limitation in this study.

The degree of disability which is difficult to assess amongst all disables could affect income generation. The use of WHO grading of leprosy disability is definitely a limitation in this regard.

Although leprosy village settlements are very similar in their characteristics in Nigeria[9], a wider study than this may give a different result than what could be obtained from this study which is limited to only one village settlement due to constrain of resources.

CHAPTER 4

4.0 Presentation and Analysis of Data

4.1 Introduction

Virgwi village has a total of two hundred and twenty-eight (228) households consisting of one-hundred and sixty-nine (169) households headed by non-leprosy affected (normal persons) and fifty-nine (59) households headed by leprosy affected disables. A total of one hundred and sixty-four (71.9%) household heads were interviewed using pre-tested semi-structured questionnaires (appendix i) which were administered by trained Community Health Officers. Of the one-hundred and sixty-nine (169) normal persons' household heads, one-hundred and thirty-one (77.5%) were interviewed while out of the fifty-nine (59) leprosy affected disables' household heads, thirty-three (55.9%) were interviewed.

The interview was carried out between 23rd August and 8th September 2002. The rest of the household heads were not accessed mainly because they were involved in seasonal farming in neighbouring Borno State's territory, and six of the disables have travelled to as far as the Republic of Cameroon for trading. Some household heads refused participation, as the timing was not favourable due to their attention on their farms.

4.2 Socio-demographic characteristics of respondents

4.2.1 <u>Age distribution</u>: The median age of the normal persons' household heads respondents was 45 (± 13.96) years, while those of the disabled household heads are 50

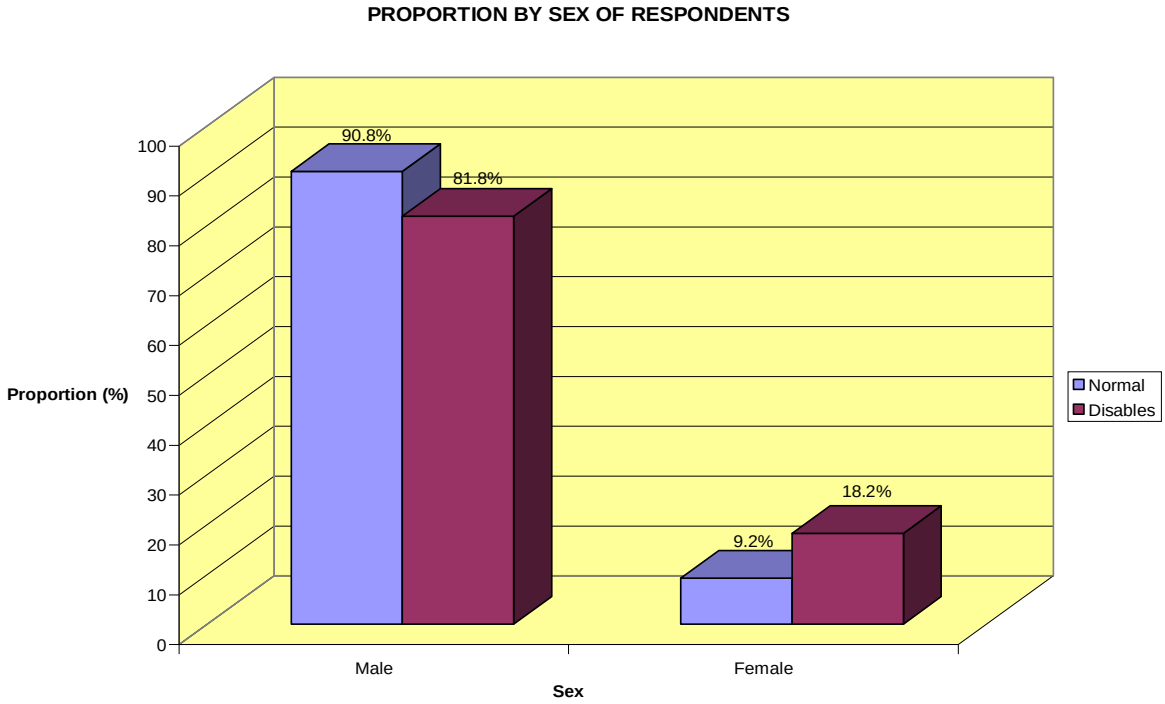
(± 11.95) years. The age distributions of the respondents are summarized in *Table 1* below.

Table 1: Table of proportions of household heads interviewed by age category

	NORMAL		DISABLES	
Age group	Number	%	Number	%
20 - 39	38	28.6	5	15.2
40 - 49	35	26.3	8	24.2
50 - 59	34	25.6	9	27.3
60 - 69	14	10.5	7	21.2
70 +	12	9.0	4	12.1
Total	**133**	**100.0**	**33**	**100.0**

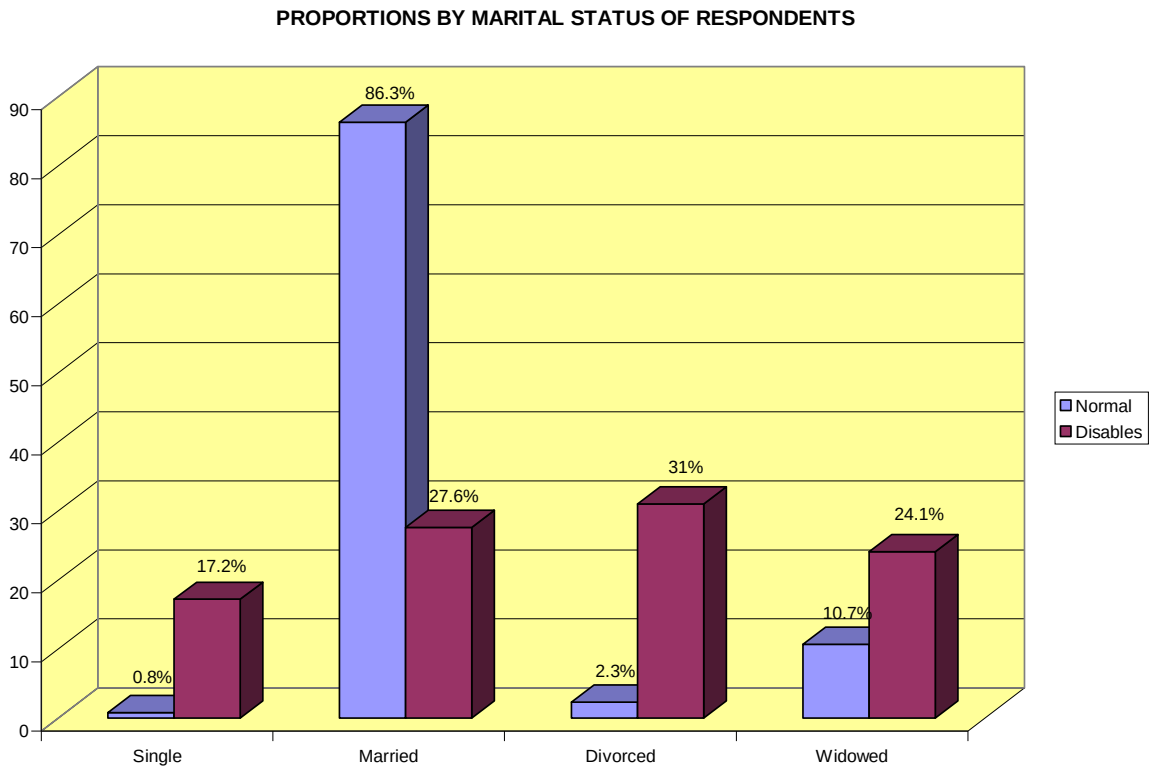
4.2.2 <u>Sex distribution</u>: Most of respondents were males. The breakdown by sex and group is given in *figure 1* below.

Figure 1



4.2.3 <u>Marital status</u>: only 0.8% of the normal persons' respondents were single while up to 17.2% of the disabled persons' respondents were single. 86.3% of the normal persons were married and only 2.3% and 10.7% were divorced and widowed respectively, while only 27.6% of the leprosy disabled household heads were married but up to 31.0% and 24.1% were divorced and widowed respectively. This is summarized in *figure 2* below.

Figure 2



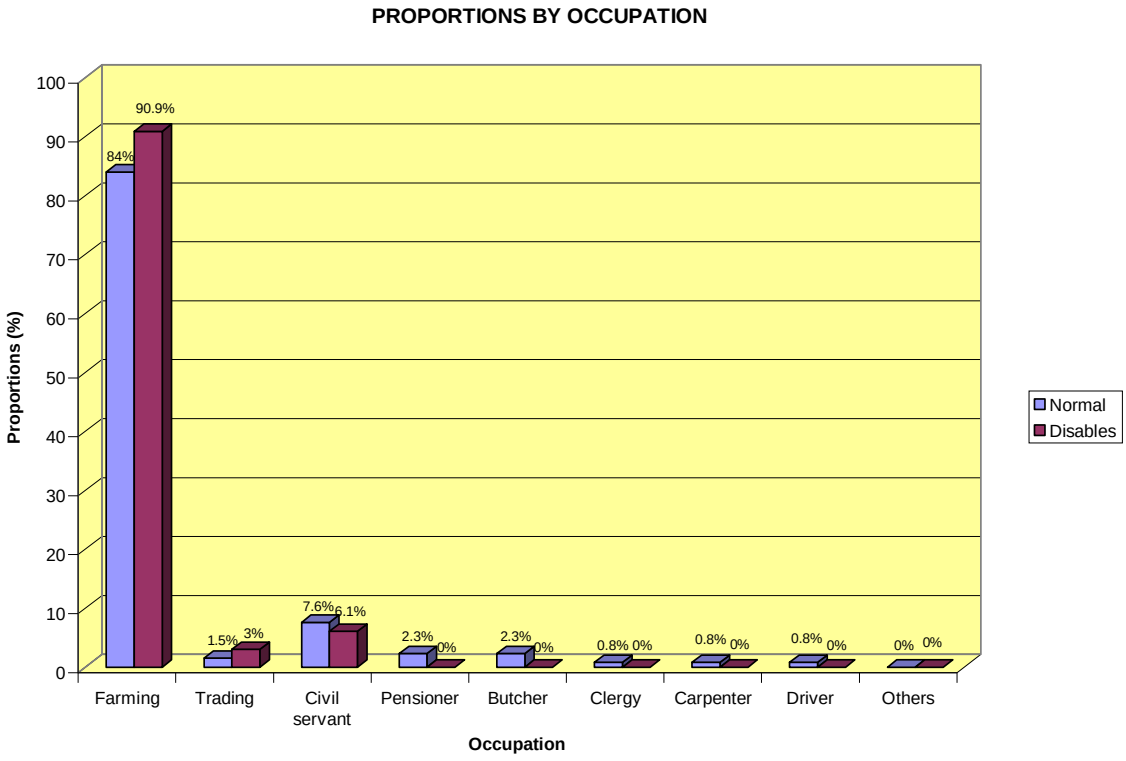
4.2.4 <u>Occupation</u>: Farmers dominate the occupations found within the village across the two groups. 84.0% of the normal persons and 90.9% of the disables were farmers. Other occupations that were common to the two groups were trading which was 1.5%

among the normal persons and 3.0% among the disables, and Civil servants who constitute 7.6% of the normal persons and 6.1% of the disables interviewed.

Other occupations found amongst the normal persons' group that included Pensioners (2.3%), Butchers (2.3%), Clergy (0.8%) and Drivers (0.8%) were not seen amongst the disabled group.

The proportion of respondents by occupations is pictured in *figures 3* below.

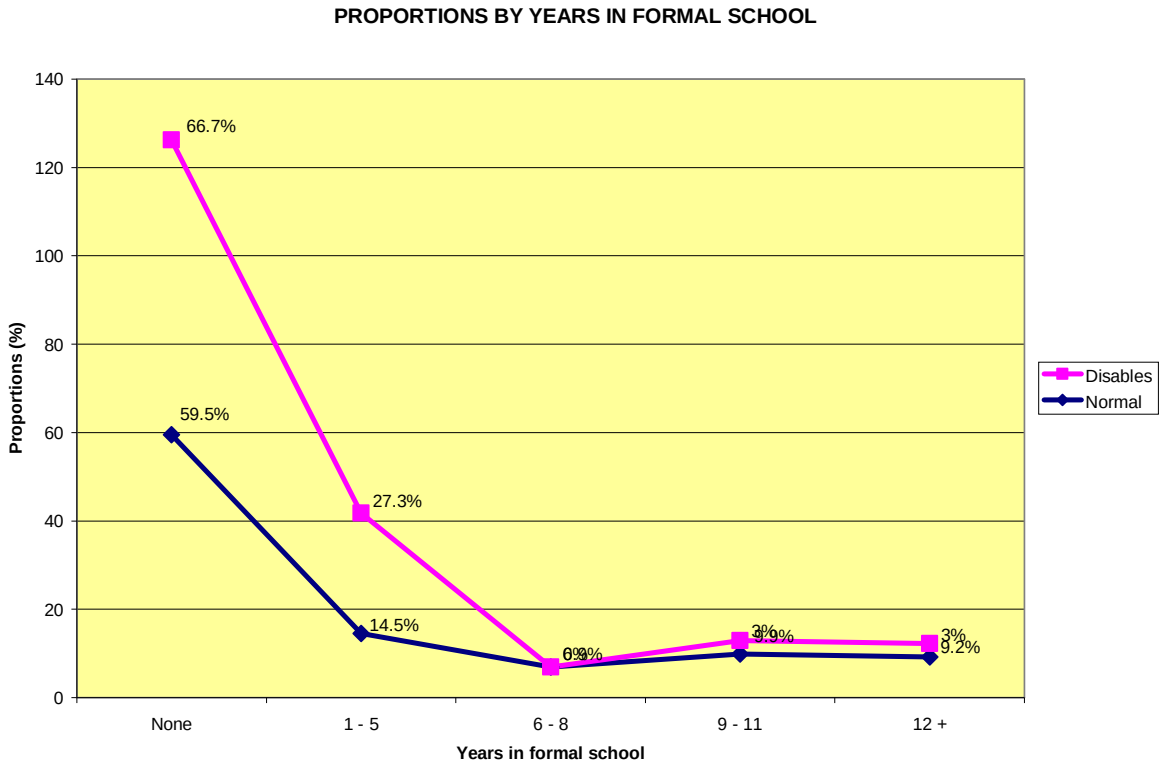
Figure 3



4.2.5 <u>Education</u>: The majority of the respondents had no formal education. Only 9.2% of the normal persons and 3.0% of the disables had completed secondary school (12 + years in formal school).

The summary of the educational status of the respondents by number of years spent in formal school is tabulated below in *figure 4*.

Figure 4

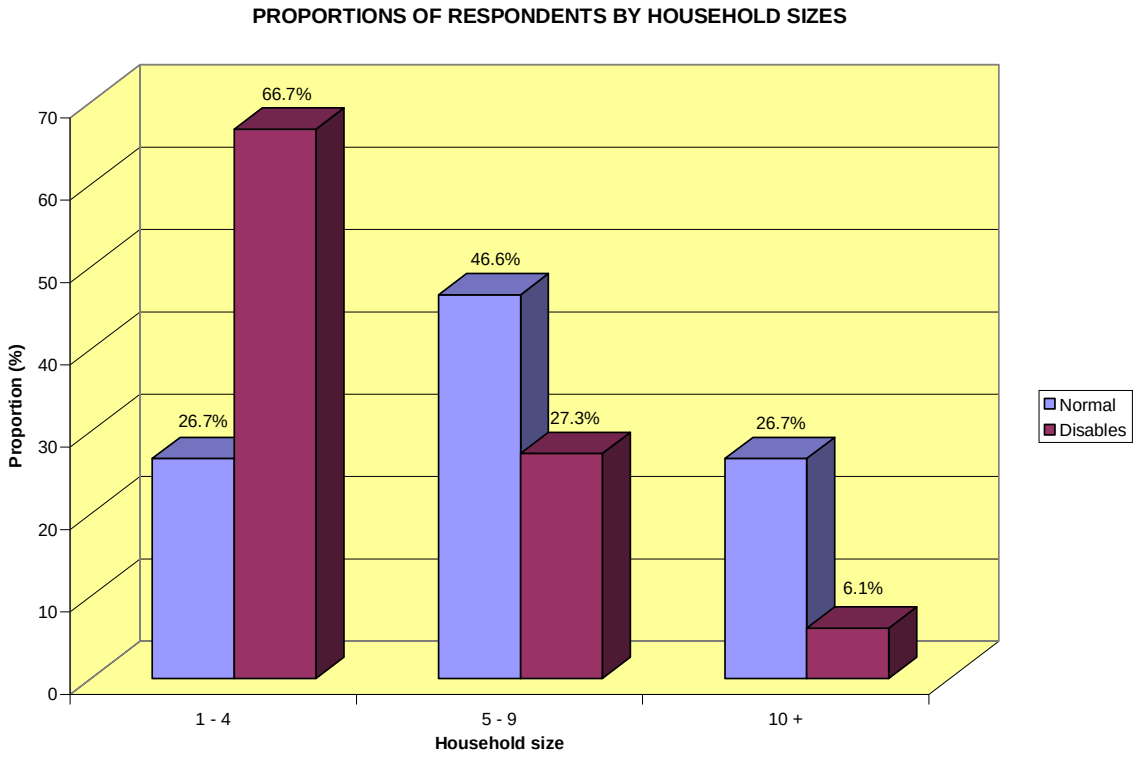


The mean number of years spent in formal school by the normal persons was 3.11 (± 4.51) years, while that of the disabled persons was 1.73 (± 2.93) years.

4.2.6 <u>Household size</u>: 27.3% and 66.7% of the normal persons' and the disabled persons' households sizes respectively were between 1 and 4. More than 70% of the respondents have household size of less than 10. The mean household size for normal persons' and disabled persons' households was found to be 7.78 (± 4.97) and 4.48 (± 3.31) members respectively.

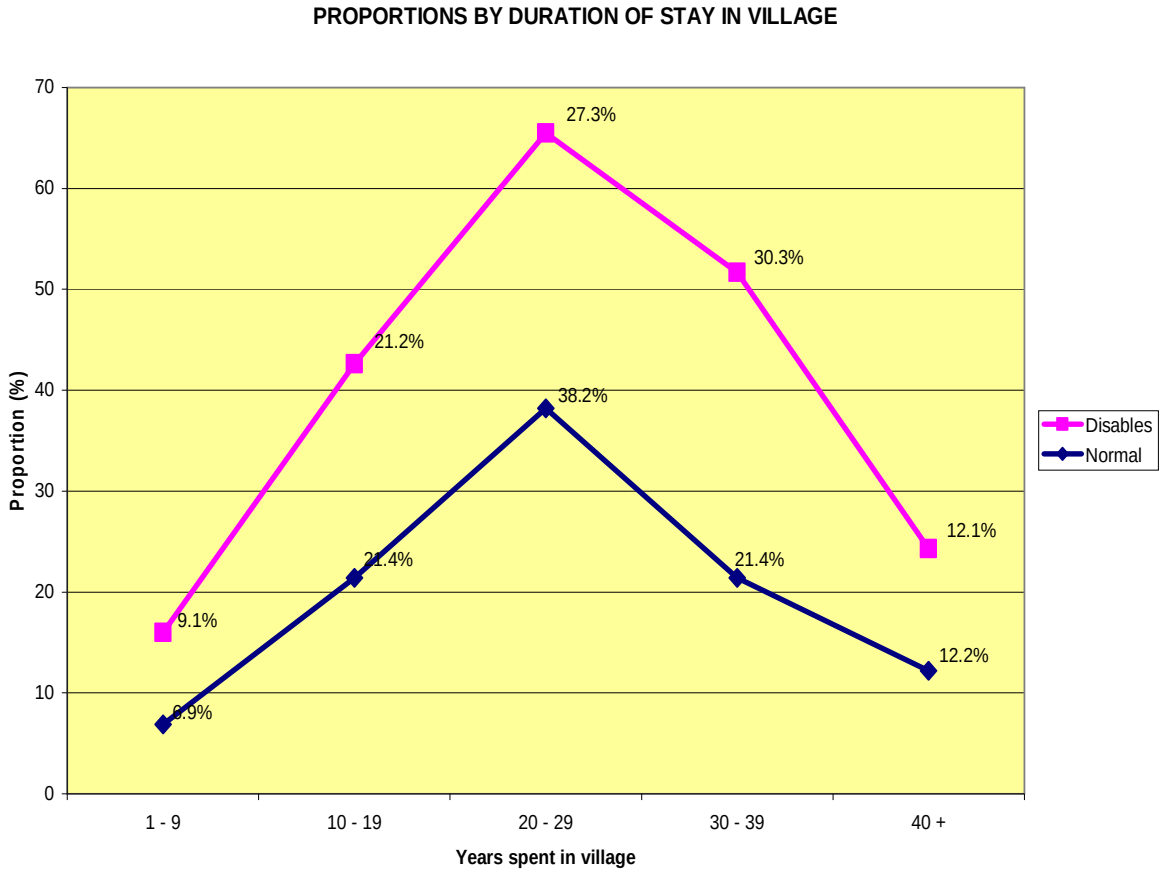
A comparative household size of the two groups is given in *figure 5* below.

Figure 5



4.2.7 <u>Duration of stay in the village</u>: The duration of stay in the village by the respondents in the two categories was similar in almost all aspects as shown in *figure 6* below.

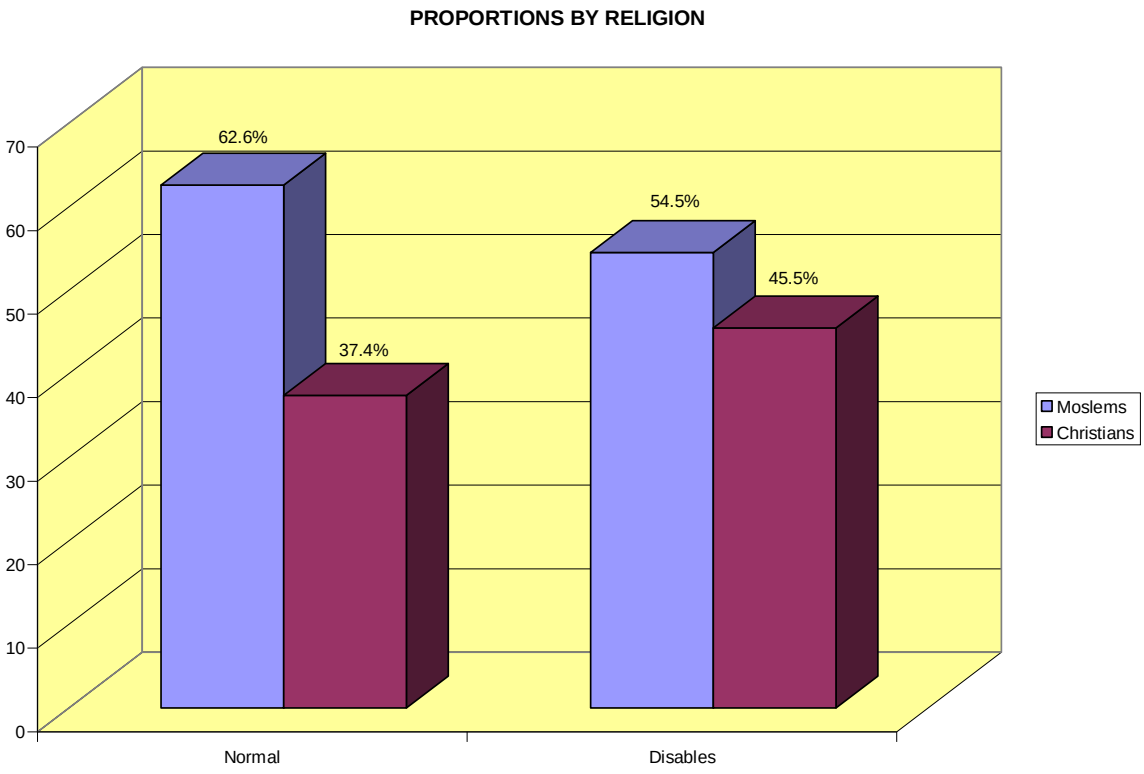
Figure 6



The mode and median duration of stay in the village by the both the normal persons and the disabled persons are the same and are 20 and 24 years respectfully.

4.2.8 <u>Religion</u>: 62.6% and 54.5% of the normal persons' and disabled persons' respondents respectively were Moslems while 37.4% and 45.5% of the normal persons' and disabled persons' respondents respectively were Christians.

Figure 7: Distribution of respondents by religion

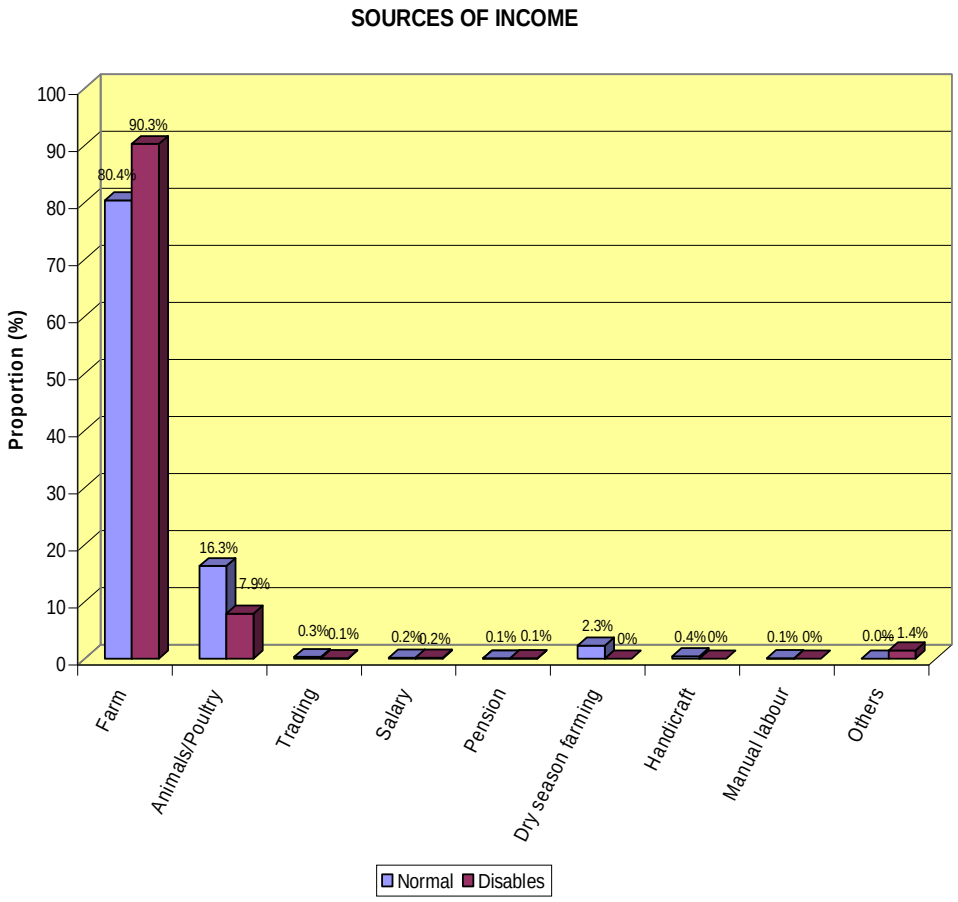


4.3 Sources of income in leprosy village settlement

Farm-income constitutes the largest contributor to the household annual income of the village. 80.38% and 90.27% of the normal persons' and disabled persons' annual household income were from farm-income. This was followed by small scale animal rearing and poultry farming which contributes 16.26% and 7.92% for normal persons' and disabled persons' households respectively.

The summary of the contributions is given in *Figure 8* below.

Figure 8: Contributions of sources to income of the village



The distribution of household income

House-hold income of leprosy village settlement

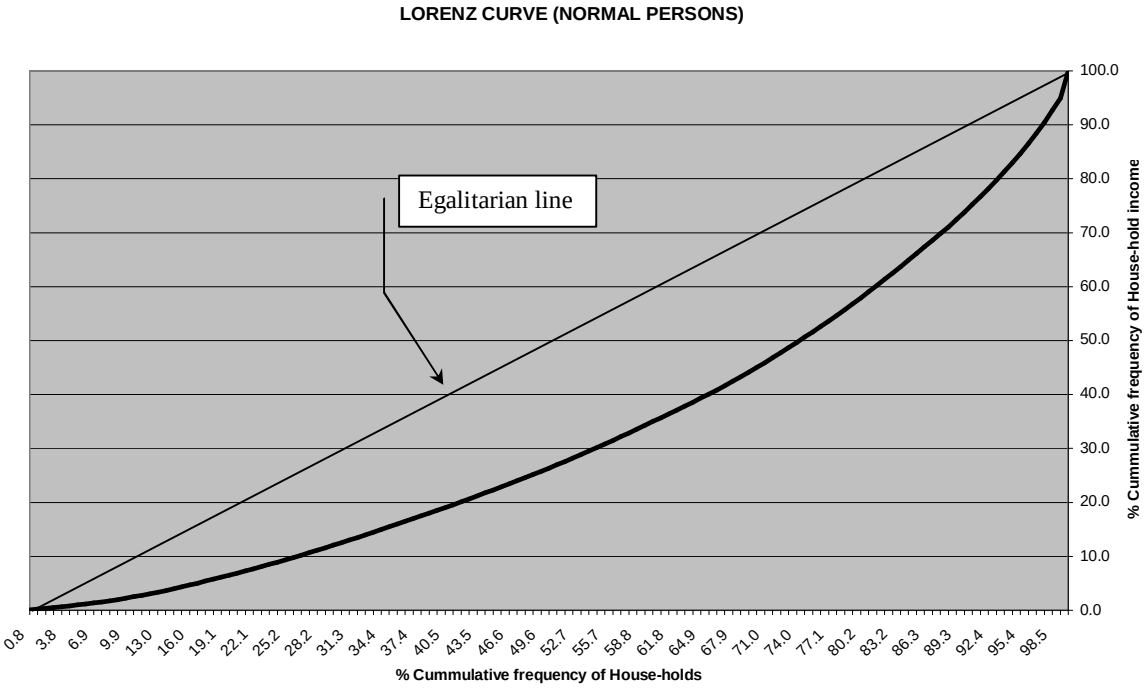
The mean annual household income for the normal persons' households was ₦200,855.38 (± ₦154,729.34) and their mean per capita annual income was ₦25,821.45, while those for the disabled households was ₦121,903.94 (± ₦148,252.15), and their mean per capita annual income was ₦27,181.28.

General distribution of annual household income

The Lorenz curve for income distribution amongst the normal persons' households and that for the disabled persons' households were plotted to compare income distribution amongst the two groups.

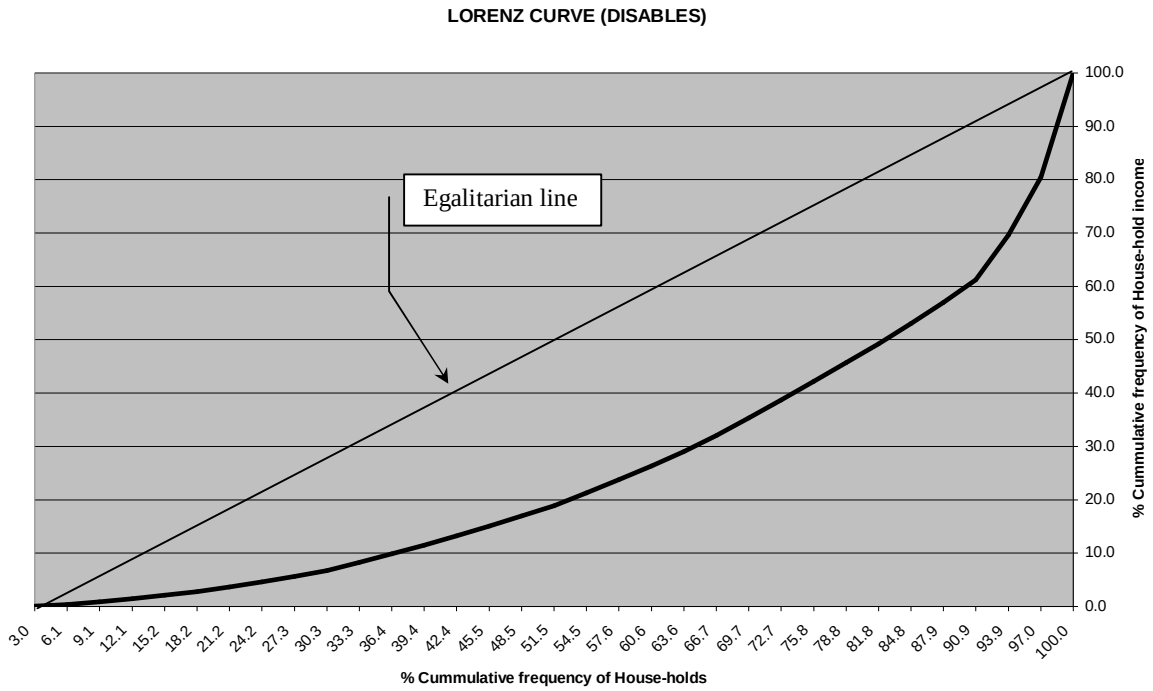
For the normal persons' household income distribution, the curve showed that lowest 10% of their total income is shared amongst 28% of their households, while the lower 50% of total income is shared amongst 75% of households, as shown in *figure 9* below.

Figure 9



The Lorenz curve for the disabled persons' household income distribution showed that the lowest 10% of their total income is shared amongst 37.5% of their households, while the lower 50% of total income is shared amongst 82% of households, as seen in *figure10* below.

Figure 10



The Gini coefficients for the two groups were computed and found as follows. For the normal persons' household income, the value extrapolated from *table 40* below was 0.35.

Table 2: Table for extrapolating Gini index for normal persons' household income

		NORMAL PERSONS					
S/No	INCOME	Number	% House-holds	% income	Cum % income	Paired Sum	Trapezoidal Area
1	23,700.00	1.00	0.7634	0.09	0.09	0.09	0.07
2	33,560.00	1.00	0.7634	0.13	0.22	0.31	0.23
3	36,720.00	1.00	0.7634	0.14	0.36	0.57	0.44
129	581,360.00	1.00	0.7634	2.21	92.67	183.14	139.80
130	603,560.00	1.00	0.7634	2.29	94.97	187.64	143.24
131	1,324,040.00	1.00	0.7634	5.03	100.00	194.97	148.83
Tot	**26,312,055.00**	**131.00**	**100.00**	**100.00**		**8,459.89**	**6,457.93**

Gini coefficient/index = 0.35

The Gini coefficient for the disabled persons' household income was computed and found to be 0.49 using *table 41* below.

Table 3: Table for extrapolating Gini index for disabled persons' household income

		DISABLES					
S/No	INCOME	Number	% House-holds	% income	Cum % income	Paired Sum	Trapezoidal Area
1	3,720.00	1.00	3.0	0.09	0.09	0.09	0.28
2	11,440.00	1.00	3.0	0.28	0.38	0.47	1.42
3	20,800.00	1.00	3.0	0.52	0.89	1.27	3.85
31	339,600.00	1.00	3.0	8.44	69.67	130.90	396.66
32	435,480.00	1.00	3.0	10.83	80.49	150.16	455.04
33	784,660.00	1.00	3.0	19.51	100.00	180.49	546.95
Tot	**4,022,830.00**	**33.00**	**100.00**	**100.00**		**1,674.80**	**5,075.14**

Gini coefficient/index = 0.49

4.5.1 Age-income distribution

The mean annual income for different age groups were computed and compared between those of the normal persons' and the disabled persons' households.

4.5.1.1 Income distribution among age group 20 – 39 years

For the age group 20 – 39 years, the mean annual income for the normal persons' was ₦191,344.74 (± ₦102,381.18) while that for the disabled persons' was ₦91,658.00 (± ₦37,567.88).

4.5.1.2 Income distribution among age group 40 – 49 years

For the age group 40 – 49 years, the mean annual income for the normal persons' was ₦244,269.71 (± ₦68,077.05) while that for the disabled persons' was ₦93,023.75 (± ₦48,466.64).

4.5.1.3 Income distribution among age group age group 50 – 59 years

For the age group 50 – 59 years, the mean annual income for the normal persons' was ₦198,647.50 (± ₦147,459.69) while that for the disabled persons' was ₦136,426.00 (± ₦124,589.82).

4.5.1.4 Income distribution among age group 60 – 69 years

For the age group 60 – 69 years, the mean annual income for the normal persons' was ₦113,497.14 (± ₦71,797.37) while that for the disabled persons' was ₦171,866.67 (± ₦300,834.13).

4.5.1.5 Income distribution among age group 70 years and above

For the age group 70 years and above, the mean annual income for the normal persons' were ₦214,854.00 (± ₦184,507.71) while that for the disabled persons' was ₦106,222.50 (± ₦157,411.09).

4.5.2 Sex income distribution

4.5.2.1 Income distribution among males

The mean annual income for male normal persons' household was N211,919.12 (±N157,041.92) while that of disabled persons' male households was N123,689.26 (± N148,929.46).

4.5.2.2 Income distribution among females

The mean annual income for female normal persons' household was N91,140.00 (± N62,668.18) while that of disabled persons' female households was N113,870.00 (± N158,848.81).

4.5.3 Marital status – income distribution

4.5.3.1 Income distribution among married respondents

The mean income for married normal persons' respondents was N216,959.42 (± N158,254.46), while that of the disabled persons' respondents was N169,102.78 (± N185,681.51).

4.5.3.2 Income distribution among divorced respondents

The mean income for divorced normal persons' respondents was N80,846.67 (± N51,673.26), while that of the disabled persons' respondents was N81,402.22 (± N24,765.01).

4.5.3.3 Income distribution among widowed respondents

The mean income for widowed normal persons' respondents was N89,838.57 (± N60,790.48), while that of the disabled persons' respondents was N46,984.00 (± N24,765.01).

4.5.4 Household size – income distribution

The mean annual income by household size were computed for each range of household size and analysed for similarities and differences.

4.5.4.1 Income distribution among household sizes between 1 and 4 members

For households size between 1 and 4 members, their mean annual income were N105,218.86 (± N54,729.34) and N101,775.95 (± N102,841.86) for normal persons' and disabled persons' households respectively.

4.5.4.2 Income distribution among household sizes between 5 and 9 members

For households size between 5 and 9 members, their mean annual income were N217,743.28 (± N180,813.16) and N93,333.33 (± N55,141.07) for normal persons' and disabled persons' households respectively.

4.5.4.3 Income distribution among household sizes between 10 members and above

For households size between 10 members and above, their mean annual income were N267,058.71 (± N128,411.33) and N471,880.00 (± N442,337.72) for normal persons' and disabled persons' households respectively.

4.5.5 Occupation – income distribution

Only the farmers and civil servants had adequate number of respondents for analysis of income between the two groups of amongst the occupations sorted out of the respondents interviewed.

4.5.5.1 Income distribution among farmers

The mean annual income of the farmers were N204,323.23 (± N164,697.24) and N124,346.67 (± N154,619.49) for the normal persons' and disabled persons' households respectively.

4.5.5.2 Income distribution among civil servants

The mean annual income of civil servants were N176,878.00 (± N97,532.11) and N134,065.00 (± N2,948.64) for the normal persons' and disabled persons' households respectively.

4.5.6 Education – income distribution

The mean annual income by education (years spent in formal school) were computed for the normal persons' and the disabled persons' respondents. Only data for those with no formal education and those who had spent between 1 and 5 years in formal school were adequate for comparison.

4.5.6.1 Income distribution among those with no formal education

For those with no formal education, their mean annual income were N187,761.99 (± N116,588.31) and N103,140.00 (± N89,078.52) for normal persons' and disabled persons' respectively.

4.5.6.2 Income distribution among those who spent 1 - 5 years in formal school

For those who spent 1 – 5 years in formal education, their mean annual income were N171,509.47 (± N136,867.00) and N171,652.22 (± N251,131.68) for normal persons' and disabled persons' respectively.

4.5.7 Religion – income distribution

Only followers of two religions, Moslems and Christians, were found in the village.

4.5.7.1 Income distribution among Moslems

The mean annual income of Moslems were N224,490.18 (± N172,911.65) and N107,195.56 (± N74,887.56) for normal persons' and disabled persons' respondents respectively.

4.5.7.2 Income distribution among Christians

The mean annual income of Christians was N161,303.27 (± N108,792.48) and N139,554.00 (± N206,918.37) for normal persons' and disabled persons' respondents respectively.

4.5.8 Duration of stay in village – income distribution

The number of years spent in the village by the respondents was categorized and computed for mean annual income and compared between the two groups.

4.5.8.1 Income distribution among those who spent between 1 and 9 years

The mean annual income for those who spent between 1 and 9 years in the village were N211,937.78 (± N418,923.68) and N61,040.00 (± N36,158.47) for normal persons' and disabled persons' respondents respectively.

4.5.8.2 Income distribution among those who spent between 10 and 19 years

The mean annual income for those who spent between 10 and 19 years were N232,162.86 (± N116,260.69) and N91,657.14 (± N48,476.13) for normal persons' and disabled persons' respondents respectively.

4.5.8.3 Income distribution among those who spent between 20 and 29 years

The mean annual income for those who spent between 20 and 29 years was N210,595.50 (± N125,378.90) and N145,432.22 (± N120,256.54) for normal persons' and disabled persons' respondents respectively.

4.5.8.4 Income distribution among those who spent between 30 and 39 years

The mean annual income for those who spent between 30 and 39 years was N180,571.43 (± N110,037.56) and N65,950.00 (± N47,430.52) for normal persons' and disabled persons' respondents respectively.

4.5.8.5 Income distribution among those who spent between 40 years and above

The mean annual income for those who spent between 40 years and above was N144,892.50 (± N100,435.31) and N307,430.00 (± N346,013.62) for normal persons' and disabled persons' respondents respectively.

4.6 Perceptions of dependence

The respondents' perception of being dependent or not was compared in percentages in table below.

Table 4: Responses on perception of dependence by respondents

DEPENDENT	Disabled	Normal	Total
Yes	5(15.6%)	4(3.1%)	9(5.5%)
No	27(84.4%)	127(96.9%)	154(94.5%)
Total	32(19.6%)	131(80.4%)	163(100%)

4.7 Perceptions of income opportunities

The respondents' perception of having same opportunity to earn or not was compared in percentages in table below.

Table 5: Responses on perception of opportunity to earn by respondents

OPPORTUNITY	Disabled	Normal	Total
Yes	31(96.9%)	126(96.2%)	157(96.3%)
No	1(3.1)	5(3.8%)	6(3.7%)
Total	32(19.6%)	131(80.4%)	163(100%)

4.8 Correlation of income and some socio-demographic variables

The annual income of the respondents have been categorized based on their age, household size, duration of stay in the village, years in formal school and the value of their dwellings, and analysed for correlation.

The coefficients of correlation of annual income and age, household size, duration of stay in village, years in formal school and house value is tabulated in *Table 6*.

Table 6: Coefficients of correlation of Income by age, household size, duration of stay in village, and years in formal school

Coefficients of Correlation (r)	***NORMAL***	***DISABLES***
Income Vs Age	0.0	0.1
Income Vs HHS	0.4	0.5
Income Vs Duration in village	-0.1	0.3
Income Vs Years in formal school	0.2	0.1
Income Vs House value	0.1	0.4

This has shown significant variations in the nature and strength of correlations computed for the annual income and the other variables, especially those of duration of stay in village and household value. There appears to be insignificant correlation between annual income of the respondents and their ages and years in formal school.

The result shows a moderately strong positive correlation between annual income and household size of the respondents in both the normal persons' and the disables' groups.

4.9 Household expenditure of leprosy village settlement

The expenditure on food items forms the highest source of spending for both normal persons' and disabled persons' household expenditure in the leprosy village settlement. The breakdown of the groups' expenses is given in *table 42* below.

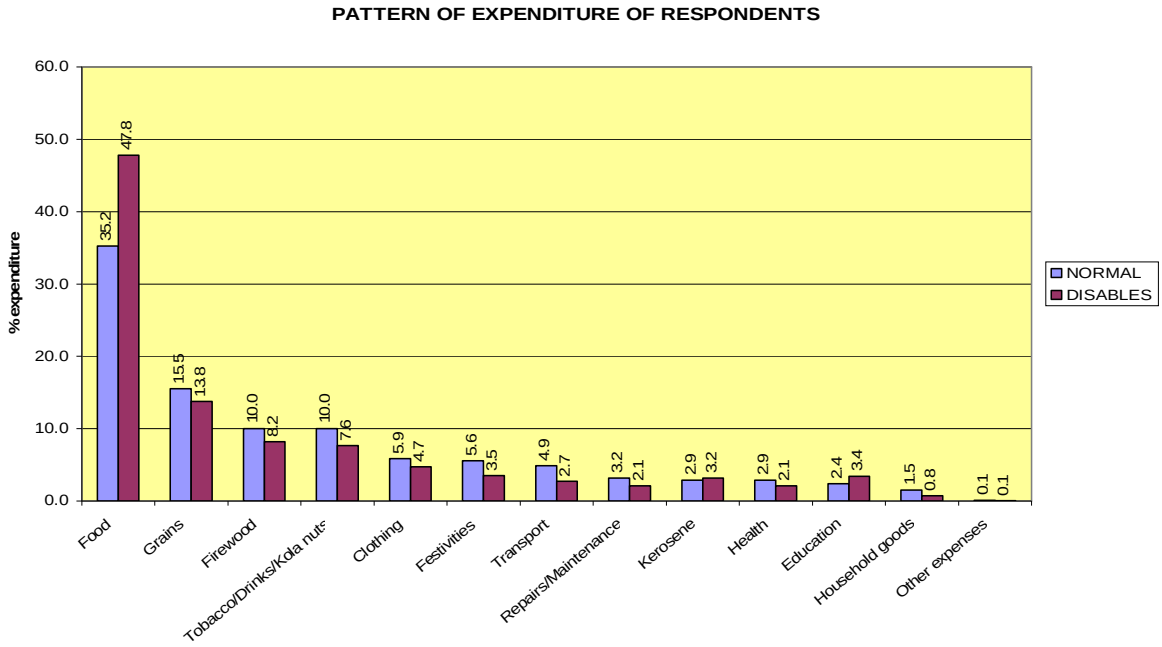
Table 7: Breakdown of annual expenditure of the respondents

		NORMAL		*DISABLES*	
S/No	*Description of expenses*	Annual expenses	%	Annual expenses	%
1	Food	8,131,760.00	35.24	1,770,080.00	47.81
2	Grains	3,579,000.00	15.51	510,000.00	13.77
3	Firewood	2,308,280.00	10.00	303,940.00	8.21
4	Tobacco/Drinks/Kola nuts	2,306,200.00	9.99	283,140.00	7.65
5	Clothing	1,351,100.00	5.85	175,850.00	4.75
6	Festivities	1,283,600.00	5.56	130,800.00	3.53
7	Transport	1,126,580.00	4.88	100,670.00	2.72

8	Repairs/Maintenance	733,000.00	3.18	77,300.00	2.09
9	Kerosene	662,480.00	2.87	117,260.00	3.17
10	Health	662,480.00	2.87	77,120.00	2.08
11	Education	552,920.00	2.40	126,200.00	3.41
12	Household goods	352,200.00	1.53	27,900.00	0.75
13	Other expenses	26,700.00	0.12	2,250.00	0.06
14	Total	23,076,300.00	100.00	3,702,510.00	100.00

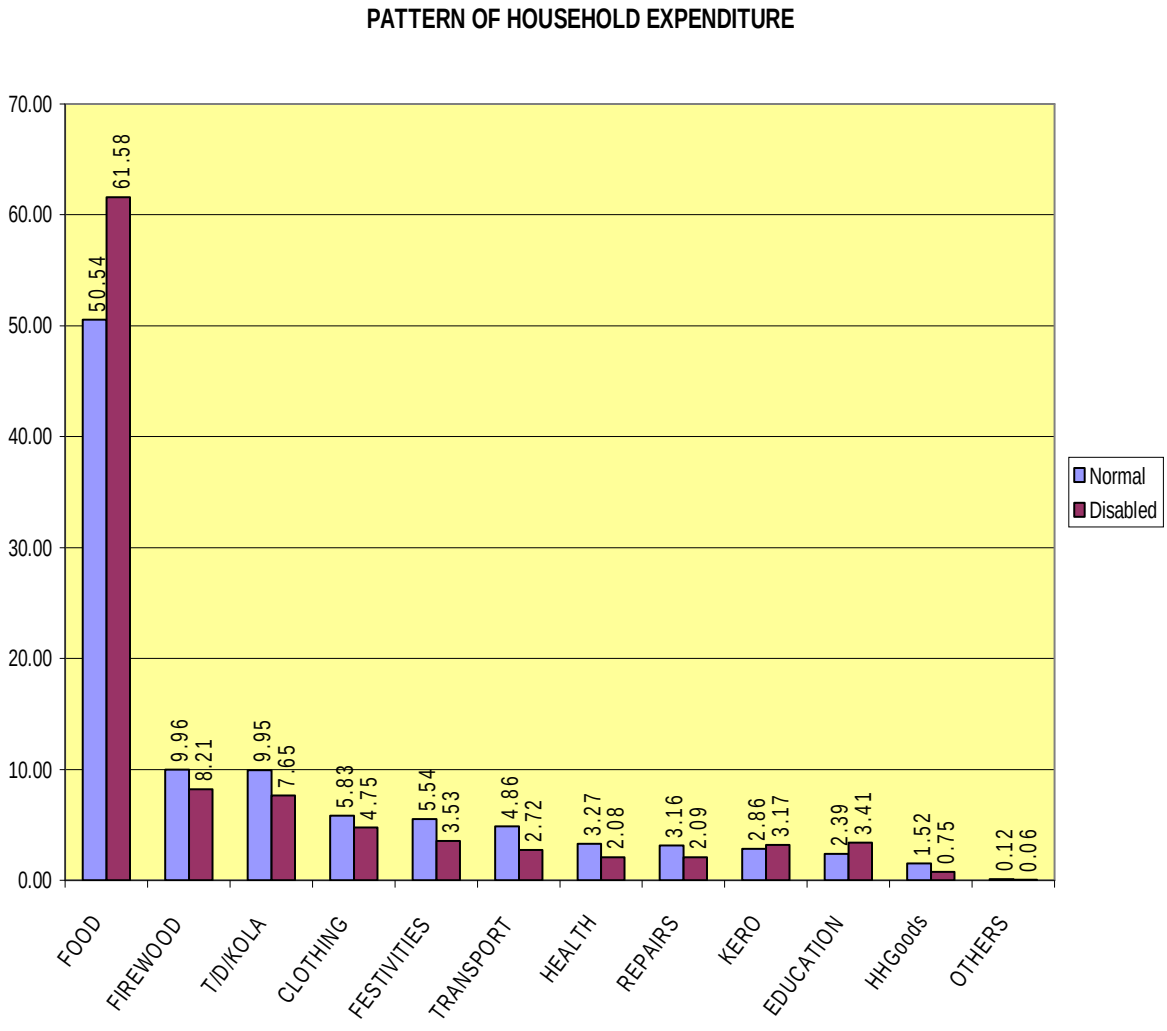
35.24% of the total annual expenses for normal persons' household were spent on food items excluding the amount spent on grains. The disabled persons' household percentage spending on food items was 47.81%. The bar chart featuring percentage expenditure for the two groups is shown in *figure10* below.

Figure 10: Bar chart of % annual expenditure of respondents



15.51% of the total annual expenditure was on grains for the normal persons' households, while that for the disabled persons' households was 13.77%. When the expenditure on grains is merged to that of food, the percentage expenditure on food in general for the two groups are shown in *figure 11* below.

Figure 11: Bar chart of % annual expenditure of respondents when expenditure on grains is merged to food



Conclusion

Although the sizes of the two sub-populations studied are disproportionate, many similarities were observed that made comparison in terms of their socio-demographic distribution, annual income and expenditure possible.

CHAPTER 5

Discussion and Recommendations

Discussion

This study assessed the sources and distribution of household income, and the pattern of household expenditure of *Virgwi*, a leprosy village settlement in Adamawa State of Nigeria.

The majority of the household heads interviewed were within the age range of 22 to 98 years with the median age of 45 (± 13.96) years for the normal persons and 50 (± 11.95) years for the disabled persons. These are slightly higher than the average age (41.2 years) of household head in Northwest zone and much lower than the average age (63.0 years) of household head in Southeast zone of Nigeria.[39] This may be because the village is located in the Northeast zone of the country that shared a lot in common with other villages in the Northern region.

The sex distribution of the respondents that clearly showed male preponderance in the two groups was in consonance with the findings of the National Demographic Health Survey (NDHS) in 1992.[19] This is strongly attributed to the globally accepted male leadership in household affairs that is more pronounced in the African setting.

A lot of variations in the marital status of the two groups were observed. While most (86.3%) of the normal persons' household heads were married, only a proportion

(27.6%) of the disables were married. Majority of the later are either divorced (31.0%) or widowed (24.1%). This finding may be explained by the consequences of the social stigma and poor health associated with leprosy.[40]

Farming was found to be the predominant occupation amongst the two groups. This is due to the fact that the study area is a village setting and many studies show that the predominant occupation of rural setting in the developing world, including Nigeria, is farming.[44]

Attendance of formal school by the household heads of the village was very low (39%). This is not far from the 40.7% male adult literacy rate for Nigeria.[41] This again may be explained by poor access to education by rural communities in Nigeria.

The mean household size of the village was 5.87 which is closely in agreement with the findings of the result of 1991 census in Nigeria of 5.1 for rural areas.[19] But this varied between the two groups as the normal persons' had a mean household size of 7.78 which is much higher than the 1991 census report, while the disabled persons' had a mean household size of 4.48 which is fairly close to that.

The duration of stay in the village by the two groups as found in this study was very similar. The homogenicity may be as a result of the economic activity within the village and its long history which has developed over time.

The village has a marginally more Moslems than Christians in both the groups. This finding is in agreement with that of the 1991 finding on religion distribution in Northern Nigeria.[19]

Farm-income constitutes the highest share of annual household income of the village which is in agreement with many studies. Generally, farm-income contributes up to 60% of the annual household income in Africa.[42] This is also similar to the findings in a resent study on Nigeria.[39]

In this study, the mean annual household income of the disabled persons was found to be lower than that of the normal persons by 64.8% but the per capita annual income of the disabled persons was even more than that of the normal persons by 5.3%. This is not surprising as the village is a rural setting with unilateral source of income as noted already and the positive correlation between household size and household income could explain the differences in the mean annual household incomes, while the reversal in per capita income could be explained by the smaller household size of the disabled persons (4.5±3 members) than those of the normal persons (7.8±5 members). The mean annual household income for the normal persons, when compared with the findings in a similar study done almost at the same period, was found to be almost twice that of *Dadin-Kowa*, a village in the Northern region of Nigeria[39] but was almost the same for the disabled persons' household.

The household income distribution for normal persons from the Lorenz curve showed that the lowest 10% household income was shared among 28% household while for the disabled persons, the lowest 10% income was shared among 37.5% household. This clearly indicates a more pronounced mal-distribution of income among the disabled persons' household that for the normal persons'. Income distribution for Nigeria has shown that the lowest 10% income was distributed amongst 25.5% (1996/97) of household[43] which was much lower than the findings in the study village.

This study also found that the Gini index for the normal persons' households was 0.35 which was much lower than that for the disabled persons' households of 0.49. experience has shown that the Gini coefficients for countries with highly unequal distributions typically lies between 0.5 and 0.7 while for countries with relatively equitable distributions it is in the order of 0.2 to 0.35.[36] Nigeria has the Gini coefficient of 0.51 (1996/97).[43]

Despite the lack of correlations observed in this study between the annual income of the respondent and the other variables, many similarities and variations of the mean annual income were observed between the two groups within the observed variables.

The age distribution of annual income has shown that the disabled persons' annual household income is more than 100% lower than that of the normal persons' for households headed by people within the productive ages (20 – 49 years) and the elderly (70 years and above). This difference reduces to about 50% for the ages 50 – 59 years

and then reversed such that the disabled persons had higher income by about 50% within the ages of 60 – 69 years. This may be explained by possibility of the effects of their disability which has not been explicitly assessed as it is not part of the terms of reference for the study. Other factors like the relationship between age and household size, duration of stay in village and the opportunity to earn, the possibility of aging compounding disability, etc could also affect the interpretation of these findings and may require further studies to elucidate.

The income distribution amongst normal persons' households headed by males was found to be higher than that of the disabled persons' by 71.3%, but the disabled households headed by females had higher income by 24.9%. The explanation for this finding could lie in the fact that males have more zeal for laborious activities in the study area than females and since farm income contributes the majority source, then the effects of leprosy disability becomes apparent among males. For the females, their incomes are mostly indirectly earned through other household members explaining the more equitable income seen than amongst the males.

The married and widowed disabled persons have lower income by 28.3% and 91.2% than the married normal persons respectively, but have almost equal income (disables > normal by 0.7%) among the divorced. The differences in income between the normal persons and the leprosy disabled persons' married and widowed households could also be explained by the possible workforce available to them. The lack of differences

amongst the divorced could be because of the consequences of sudden loss of support from other household members whose contribution might have been substantial among the normal persons.

The household size has demonstrated a positive correlation with income amongst the two groups in this study. When the household size is small (1 – 4 members) the mean household income was almost the same with the disabled income lower by about 3.4%. When moderate (5 – 9 members), the mean household income of the disabled persons became much lower by 133.3% of the normal persons. And when the household size is large (more than 10 members) the mean household income became even more than that of the normal persons by 76.7%. This might have something to do with the coordination of income generation by the disabled persons when they either have a small or large household sizes and when the family size is very large, then the dilution factor for income generation by individual members becomes obvious.

The mean income of the disabled persons who are farmers was found to be lower than those of the normal persons by 64.3%. This could be due to the possibilities that determinants of farm-income may be related to physical disabilities or deformities. The lower income by the disabled persons who are civil servants by 31.9% may not be unconnected with the social stigma associated with leprosy and its deformities.

Those leprosy disabled persons with no formal education had lower income by 82.0% than the normal persons but those who had some formal education (1 – 5 years in

formal school) showed no differences in income. This may also be due to the association of skills and education and the more opportunities available to the educated disabled persons that could have made it up to their income.

Amongst the Moslems, the disabled persons' income was much lower (by 109.4%) than the normal persons, but the difference found amongst the Christians was much less (disables had 15.6% lower income). An in-depth study may be required to look into specific income generation to explain this as there was no known socio-economic intervention within the village.

The study found that the annual income of those leprosy disabled persons who stayed between 1 and 39 years in the village had lower annual income than the normal persons in living in the village, but those that stayed for 40 years and above had higher income. This could be explained by the fact that most normal persons that migrated to the village recently do so for economic reasons and might have come with capital, while the disable might come for care from the available nearby leprosy hospital and since farm-income constitute the major source and it is a primarily leprosy village settlement, land allocation may be time dependent that should be verified in subsequent studies of the area.

Despite the low income by both groups, the respondents had a clear feeling of independence and opportunity to earn income. This is contrary to the studies on rehabilitation of leprosy disables.

The household expenditure of the two groups are very similar with over 50% of their income spent on food. This is a typical pattern of expenditure of rural setting in Nigeria.[29] Energy (firewood and kerosene) is the second largest share on expenditure by both groups. Expenditure on health is substantial (3.3% for normal persons and 2,1% for disabled persons) compared with that of *Dadin-Kowa* (0.7%).[39] The disabled persons get subsidy from organisations at the leprosy hospital which explains the lower expenditure on health than the normal persons.

Conclusion and Recommendations

This study has found that households headed by leprosy disables can generate income comparable to those of normal persons living within the same village setting despite their limitation to certain occupations, but the income distribution between the two groups varied significantly. The study also found that there is a gap of income inequalities between the two groups living together in the same village and despite that, their pattern of expenditure is similar in all respect.

In the view of the findings of this study, the following recommendations have been proposed;

1. It is desirable to close the gap in income inequalities that exist between the two groups. The Netherlands Leprosy Relief as the major funding organisation should take initiative to start socio-economic programmes for leprosy disabled household to make it up for the inequality of income.

2. It is desirable that general poverty reduction interventions be initialised in the village. The Adamawa State office of United Nations Development Programme (UNDP) should provide seed loans to individuals and groups to boast especially farm-income which contribute substantially to their income yet independent of their status.
3. Further research is needed to determine the contribution of varying disability to income inequality noticed.

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APPENDIX 1

MASTERS IN PUBLIC HEALTH PROGRAMME
DEPARTMENT OF COMMUNITY MEDICINE
FACULTY OF MEDICINE
AHMADU BELLO UNIVERSITY, ZARIA

Questionnaire

A. <u>Bio-data</u> Please tick box as appropriate

Name: Disabled ☐ Non-disabled ☐

Age:

Sex:

Marital status:

Marital Union:

Total number of household members:

Occupation:

Educational status:

Religion:

Duration of stay in the village:

B. <u>Investments/Savings</u>

1. Housing
    i. Whose house are you living in?
    ii. How did you get it?
    iii. How many rooms are there in it?
    iv. How much have you spent to obtain it?
    v. Like how much can somebody buy a house like this now?

2. Farming
    i. Do you have a farm?
    ii. How big is it (in hectares)?
    iii. How did you get it?
    iv. How much do you spend (fertilizer, labour, rent etc) on it averagely in a year?
    v. Do you rear animals/poultry?
    vi. If you are to sell all of the animals/poultry, how much will you realise?
3. How much are you able to save in the last one year?
4. Others (trading, salary, pension, dry season farming, handicraft, manual labour, etc)
    i. What type(s) of other business/source(s) of income do you have?
    ii. How much did you spend to start it?
    iii. How much on average do you make from it in a week?

C. <u>Consumption</u>

1. How much do you spend weekly of food?
2. From where do you get the grains consumed in your house?
3. How long does it take your household to consume one sac of grain on average?
4. How much do you spend on tobacco/drinks/kola nuts in a week?
5. How often do you buy clothing materials in your house?
6. How much on average do you spend on clothing and footwear in a year?
7. In the last one year, how much have you spent on repairs and maintenance (including rent) of your house?

8. Did you buy household goods (beddings, cooking tools, furniture etc) in the last one year?
9. How much did you spend on the household goods?
10. How much do you spend on kerosene in a week?
11. How much do you spend on firewood in a week?
12. How much do you spend on electricity in a month?
13. How much on average do you spend on health in a year?
14. How much do you spend on public transport in a year?
15. How much on average do you spend on festivities like marriages, naming ceremonies, Christmas, Sallah etc in a year?
16. How much do you spend on education (school fees, books, transport, levy etc) in a year?
17. What are your other expenses in a year?

D. <u>Perceptions</u>

1. Have you ever stayed for a whole day without food in your house?
2. How often do you depend on other people for your basic needs?
3. Do you think leprosy affected disables are given equal opportunity like any other person in this village to earn income?

SUMMARY OF DATA COLLECTED

	NORMAL				DISABLES			
	Number	Total Income	Mean	Std Deviation	Number	Total Income	Mean	Std Deviation
AGE GROUP								
20 - 39	38	7,271,100.00	191,344.74	102,381.18	5	458,290.00	91,658.00	37,567.88
40 -49	35	8,549,440.00	244,269.71	215,278.53	8	744,190.00	93,023.75	48,466.64
50 -59	34	7,335,375.00	215,746.32	147,459.69	9	1,256,160.00	139,573.33	124,589.82
60 - 69	14	1,588,960.00	113,497.14	71,797.37	7	1,139,300.00	162,757.14	275,678.31
70 +	10	1,567,180.00	156,718.00	140,149.93	4	424,890.00	106,222.50	157,411.09
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**
SEX								
Male	119	25,218,375.00	211,919.12	157,041.92	27	3,339,610.00	123,689.26	148,929.46
Female	12	1,093,680.00	91,140.00	62,668.18	6	683,220.00	113,870.00	158,848.81
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**
MARITAL STATUS								
Single	1	295,360.00	295,360.00		1	11,440.00	11,440.00	
Married	113	24,516,415.00	216,959.42	158,254.46	18	3,043,850.00	169,102.78	185,681.51
Divorced	3	242,540.00	80,846.67	51,673.26	9	732,620.00	81,402.22	49,517.27
Widowed	14	1,257,740.00	89,838.57	60,790.48	5	234,920.00	46,984.00	24,765.01
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**
HOUSE-HOLD SIZE								
1 - 4	35	3,682,660.00	105,218.86	54,011.33	22	2,239,070.00	101,775.91	102,841.86
5 - 9	61	13,282,340.00	217,743.28	180,813.16	9	840,000.00	93,333.33	55,141.07
10+	35	9,347,055.00	267,058.71	128,411.33	2	943,760.00	471,880.00	442,337.72
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**

	NORMAL				DISABLES			
	Number	Total Income	Mean	Std Deviation	Number	Total Income	Mean	Std Deviation
OCCUPATION								
Farmer	110	22,475,555.00	204,323.23	164,697.24	30	3,730,400.00	124,346.67	154,619.49
Trader	2	377,060.00	188,530.00	56,610.97	1	24,300.00	24,300.00	
Civil Servant	10	1,768,780.00	176,878.00	97,532.11	2	268,130.00	134,065.00	2,948.64
Pensioner	3	469,040.00	156,346.67	101,491.54	0	0.00	#DIV/0!	
Butcher	3	746,380.00	248,793.33	89,539.95	0	0.00	#DIV/0!	
Clergy	1	189,120.00	189,120.00		0	0.00	#DIV/0!	
Carpenter	1	102,920.00	102,920.00		0	0.00	#DIV/0!	
Driver	1	183,200.00	183,200.00		0	0.00	#DIV/0!	
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**
YEARS IN FORMAL SCHOOL								
None	78	14,645,435.00	187,761.99	116,588.31	22	2,269,080.00	103,140.00	89,078.52
1 - 5	19	3,258,680.00	171,509.47	136,867.00	9	1,544,870.00	171,652.22	251,131.68
6 - 8	9	2,182,820.00	242,535.56	100,109.53	0	0.00	#DIV/0!	
9 - 11	13	3,757,500.00	289,038.46	323,093.94	1	76,900.00	76,900.00	
12 +	12	2,467,620.00	205,635.00	150,432.81	1	131,980.00	131,980.00	
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**
RELIGION								
Moslem	82	18,408,195.00	224,490.18	172,911.65	18	1,929,520.00	107,195.56	74,887.56
Christian	49	7,903,860.00	161,303.27	108,792.48	15	2,093,310.00	139,554.00	206,918.37
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**

	NORMAL				DISABLES			
	Number	Total Income	Mean	Std Deviation	Number	Total Income	Mean	Std Deviation
DURATION OF STAY								
1 - 9	9	1,907,440.00	211,937.78	418,923.68	3	183,120.00	61,040.00	36,158.47
10 - 19	28	6,500,560.00	232,162.86	116,260.69	7	641,600.00	91,657.14	48,476.13
20 - 29	50	10,529,775.00	210,595.50	125,378.90	9	1,308,890.00	145,432.22	120,256.54
30 - 39	28	5,056,000.00	180,571.43	110,037.56	10	659,500.00	65,950.00	47,430.52
40 +	16	2,318,280.00	144,892.50	100,435.31	4	1,229,720.00	307,430.00	346,013.62
Total	**131**	**26,312,055.00**	**200,855.38**	**154,729.34**	**33**	**4,022,830.00**	**121,903.94**	**148,252.15**