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Exploring Disability and Poverty in Nepal: An Application of the Capability Approach

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EXPLORING DISABILITY AND POVERTY IN NEPAL:

AN APPLICATION OF THE CAPABILITY APPROACH

by

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ABSTRACT

The primary purpose of this dissertation is to examine the relationships between disability and poverty in Nepal. Linkages between disability, poverty, and deprivation are explored to develop an in-depth understanding of these relationships, to recommend strategies for intervention, and ultimately to improve the situations of individuals and their families experiencing disability and poverty.

Since traditional poverty measures such as income and consumption do not fully capture the multi-dimensional construct of poverty, a capability approach was used to further an understanding of the relationships between disability and deprivation at individual and household levels and to address three research questions. What are the ways in which disability contributes to individual deprivations? Is there a correlation between household poverty and the likelihood of having a family member with some type of disability? Do households with a disabled family member experience higher levels of deprivation than households without exposure to disability?

Secondary data was taken from two national data sets, A Situation Analysis of Disability in Nepal conducted by New Era and the Nepal Living Standards Survey (NLSS) conducted by the World Bank. Individuals with and without a disability were compared across income poverty and capability poverty using disability, chronic illness and activity limitation as disability indicators. Households with and without a disabled family member were compared across income poverty and asset poverty. Analyses were conducted using various methodologies including chi-square, t-test, ANOVAs, odds ratios, and logistic regression.

The prevalence of disability was estimated at 1.6% in the SITAN and at 6.4% in the NLSS using chronic illness as a proxy for disability. Differences in disability and deprivation were statistically significant for most demographic variables including gender, marital status, and geographical region. Findings indicate that disability is linked to poverty and deprivation at individual and household levels. Households with a disabled family member were more likely to be income and asset poor in terms of land ownership than households without a disabled family member. Although households with and without a chronically ill family member did not differ across income poverty, land and home deprivation, households experiencing chronic illness lacked piped water supply and electricity.

CHAPTER 1: INTRODUCTION AND RATIONALE

According to the World Factbook (Central Intelligence Agency, 2002), the population of the world equals approximately 6.23 billion. It is estimated that 7-10% of the world's population has some type of physical or mental disability with economic, educational, and/or social consequences (Brundtland, 1999).[1] Numerous definitions of disability exist in the literature[2] but disability is generally considered a limitation in completing activities due to a health problem, or a physical or mental condition.

Many disability definitions have been historically norm-preferred and negative disregarding the perspective of individuals with disabilities[3] (see Table 1). These traditional definitions have stressed body and/or mind impairments[4] and the functional limitations resulting from these conditions. Consequently, traditional interventions have focused mainly on the medical and rehabilitation side of disability.

However, disability has become increasingly recognized as the dynamic interaction of the individual within his/her particular environment. As indicated by the Economic and Social Commission for Asia and the Pacific, or ESCAP (1998, p. 3), "disability is an interaction between the functional decrements associated with an impairment and the demands and conditions of the environment." Recent definitions reflect the shift in perceiving disability as merely inherent within the individual to viewing disability as the combined interface of individual and environmental factors.

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[1] Note that disability estimates vary by age, gender, race and ethnicity.

[2] Examples of varying definitions of disability are presented in Table 1. For further detail, see de Kleijn de Vrankrijker, Heerkins & Ravensberg (1998) and Glass (1998).

[3] Both "individuals with disabilities" and "persons with disabilities" will be used as person-first language to emphasize that disability is not inherent in the person. "Disabled people" will be used to emphasize the perspective that society often disables people (Albrecht, Seelman, & Bury, 2001; Priestley, 2001).

[4] Impairment is a biological condition whereas disability is located at the intersection between the demands of an impairment, society's interpretation of the impairment, and the broader societal context of disability (Braddock & Parish, 2001).

Table 1

Examples of Common Definitions of Disability

Source	Definition
Nagi (1979)	The inability or limitation in performing socially defined roles and tasks expected of an individual within a social environment.
World Health Organization (1980) ICIDH- International Classification of Impairments, Disabilities and Handicaps	Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.
Pope & Tarlov Institute of Medicine, IOM (1991)	The inability or limitation in performing socially defined activities and roles expected of individuals within a social-cultural and physical environment.
National Center for Health Statistics National Health Interview Survey, (1992)	The state of being limited in type or amount of activities a person is expected to perform because of a chronic mental or physical health condition.
Brandt & Pope Institute of Medicine, IOM (1997)	A limitation in performing certain roles and tasks that society expects of an individual – the interaction of a person's limitations with social and physical environmental factors.
World Health Organization (2001) ICF- International Classification of Functioning, Disability and Health	An umbrella term for impairments, activity limitations or participation restrictions.
National Center for Health Statistics National Health Interview Survey (2002)	A general term that refers to any long- or short-term reduction of a person's activity as a result of an acute or chronic condition.

Factors contributing to disability include accidents, aging, chronic disorders, disease, land mines, malnutrition, physical abuse, sexually transmitted diseases, violence, and war (Abberley, 1987, pp.5-20; Seelman & Sweeney, 1995, pp.2-13). Increasing costs associated with a disability, including medical care and rehabilitation as well as lost income and productivity, burden both disabled individuals and their families. Consequently, disability has evolved beyond a medical problem into an expensive, complex public health concern and social problem (Pope & Tarlov, 1991, p.1).

Over the next several decades, it is predicted that the percentage of population with disability will increase in both developed and developing countries (MS-Nepal, 2000). Increased aging and violent conflict will contribute to the growth while "changes in epidemiology, improved health status, and medical care imply that every family in the world will likely be confronted with disability but will not necessarily know how to respond" (Albrecht, Seelman, & Bury, 2001, p.2). These circumstances have heightened interest in the area of disability among professionals from numerous non-medical fields. For those working in social, economic, and/or human development fields, there has been a realization that the needs of individuals with disabilities must be addressed if their respective development objectives are to be achieved.

Disability and poverty are inextricably related in every society (Peat, 1998, p.45). During the seventeenth and eighteenth centuries in the American colonies, disabled individuals were considered a threat to a community's economic well-being, and they were often forced to leave home (Braddock & Parish, 2001, p.13). Additionally, extreme poverty prevalent in several European countries during the thirteenth-century resulted in begging among individuals not capable of working, including individuals with disabilities

(Farmer, 1998). When begging became outlawed as a result of negative attitudes toward poverty, individuals with disabilities were cut-off from their primary income source.

While anecdotal evidence on the relationships between poverty and disability is abundant, comprehensive studies on these linkages and their relationships have not yet been conducted (Elwan, 1999). Disability is considered both a cause and consequence of poverty, and individuals with disabilities are amongst the poorest of the poor. But the strength and extent of each path (from disability to poverty, from poverty to disability) remains largely unsubstantiated especially in developing countries. A primary reason is the lack of disability data and disability data collection methodologies in many countries (e.g. no disability questions asked on the census, no specialized disability surveys, etc.) as well as the lack of a standard disability definition between and within countries.

Both poverty and human capital dimensions of disability, such as the increased incidence of poverty among individuals with disability and their families as well as decreased productivity due to inaccessibility and negative attitudes, have been largely ignored in development efforts. However, the importance of these issues is being increasingly recognized by organizations such as the World Bank, the Asian Development Bank, and the United Nations Development Programme (UNDP), indicating their interest and support in the area of disability and development.

Like disability, there are multiple definitions of poverty and ways to measure poverty. Generally, poverty is defined as the inability to achieve a minimal standard of living or what is considered adequate to meet one's basic needs (United Nations, 2002, pp.39-40). Poverty is whether individuals and/or households have enough resources or

abilities to meet their needs. Although poverty rates vary among countries, there are approximately 1.2 billion individuals experiencing poverty.[5]

Most of the world's poor live in developing countries, which also have high rates of disability (Barnes & Mercer, 1995, p.37). Poverty functions as a proxy for variables that increase the risk of disability, including unsafe living and working conditions, poor health and nutrition, and low educational attainment (Seelman & Sweeney, 1995, p.3). For example, infectious diseases and malnutrition widespread during the medieval period contributed significantly to higher rates of impairment[6] (Braddock & Parish, 2001, p.18).

The traditional method of measuring poverty is the lack of income, or when income falls below an absolute poverty line. Another frequent measure of poverty uses consumption, specifically the use of minimum standards of consumption to meet basic physiological criteria (such as hunger or malnutrition). However, neither income nor consumption measures may be adequate since poverty has increasingly deviated beyond conventional definitions to include notions of exclusion, powerlessness, and stigma (May, 2001, p.24). In fact, economic poverty is just one form of poverty as individuals can be impoverished in many different ways including social deprivation and political deprivation (Sen, 2000, p.94-95).

In both developed and developing countries, disability is associated with lower income levels and an increased likelihood of experiencing poverty (Gooding, 1994; McNeil, 1993, 1997; National Organization on Disability, 2001). Not only do individuals with disabilities typically earn less than those without disabilities, individuals with severe

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[5] The percentage of the world's population living on less than 1 U.S. dollar per day, a widely accepted international measure of poverty and deprivation (World Bank, 2002a).

[6] Impairment and disability differ. Impairment is considered a problem, a significant deviation, or loss in body function or structure. Disability is situated within the broader social, economic, and political context as the umbrella term for impairments, activity limitations, or participation restrictions. (WHO, 2001)

disabilities earn less than individuals with slight disabilities. In fact, the likelihood of poverty increases for individuals with severe disabilities than individuals with slight disabilities and without disabilities (NOD, 2001). Since earned income is the primary determinant of poverty, it is not surprising that "good earnings keep families out of poverty; a lack of wages causes families to be poor" (Schiller, 1998, p.49).

Individuals with disabilities frequently experience unemployment as well as exclusion from the education and training necessary to prepare them for employment (Bruyere, 2000; International Labour Organization, 2001; Loprest & Maag, 2001; NOD, 2001). Individuals with disabilities are less likely to complete high school and college than individuals without disabilities, and the severity of disability significantly impacts educational attainment as with employment (NOD, 2001). Thus, individuals with very severe disabilities are less likely to be highly educated than individuals with slight disabilities. These circumstances apply to individuals with disabilities in both developed and developing countries as they "endure levels of economic and social deprivation rarely encountered by other sections of the population" (Barnes & Mercer, 1995, pp.33-34).

Poverty affects individuals beyond simply experiencing a deficiency in income – it creates a paucity of information, loss of power, and little or no control over basic life decisions. Not only does poverty occur when a set of minimum needs is not met (May, 2001, p.25), it results from the deprivation of essential assets and opportunities to which every individual is entitled. These circumstances occur to a greater extent in developing rather than developed countries. However, individuals with disabilities are more likely to experience these conditions than individuals without disabilities whether they are in developing or developed countries. In fact, disability is likely to make individuals poorer

than individuals who do not experience disabilities as a result of limited opportunities (loss of income and exclusion for labor force participation), additional costs associated with the care of the disability, and institutional and attitudinal barriers to services.

Disability and poverty are synergistic, contributing to increased exclusion and vulnerability (Asian Development Bank, 2000, p.1). Individuals with disabilities and the poor have been denied rights and have faced discrimination, exclusion, and isolation as they continue to be marginalized socially, economically, and politically across the world (Coleridge, 1993, p.4; Oliver, 1996, pp.23-29). Similarly, both groups have faced limited opportunities, resources, and support, especially in developing countries. And they have been excluded frequently in the discussions and developments affecting them (see Beresford & Croft, 1995, pp.75-95; UNDP, 2000b, pp.109-110). For these reasons, there is much overlap between these two groups that warrants further exploration.

Disentangling the relationships between disability and poverty – specifically the ways in which disability (including mental, physical, developmental, sensory, and other types of disabilities) and deprivation (including income poverty, material hardship, asset poverty, and other forms of social and economic deprivation) are related – is critical for developing effective policy and for affecting disabled people and the poor.

As indicated by Yeo (2001, p.6), "it is important that the focus of research is on practical benefits for reducing the chronic poverty faced by disabled people, not just on gathering data to prove something that is already well known. An approach that facilitates the development of interventions to improve the lives of individuals with disabilities has widespread implications in development strategies."

UNDERSTANDING THE CAPABILITY APPROACH

Determining how to address the linkages between disability and poverty is difficult considering both constructs are dynamic, interactive conditions and they are both measured in different ways. Originating from a predominantly medical perspective, disability is measured often in terms of functional limitations, capacity, and performance although more recent disability measures have focused on non-medical aspects, including economic measures (e.g. the DALY, or Disability Adjusted Life Year)[7] and social measures (e.g. attitudinal scales toward disability).

Although these measures could be adapted and applied to poverty (determining an individual's adjusted life year resulting from poverty or measuring attitudes toward the poor), these measures seem insufficient for analyzing the multi-dimensional relationships between disability and poverty. Attitudes are only one factor influencing the status and treatment of individuals with disabilities, and the DALY fails to provide a realistic depiction of disability. As criticized by Kleinman and Kleinman (1996, p.15) "the economistic measurement of suffering leaves out most of what is at stake for peoples globally." Consequently, the poverty literature was reviewed for a potential mechanism to explore the overlapping issues of disability and poverty.

Traditionally, poverty has been assessed using income-based measures. These measures use income as the critical means for comparison among individuals and households. Certainly, income is needed to purchase goods and services which enable individuals to meet their needs and desires. However, goods and services can be acquired by alternative means to income, such as accumulated savings, credit, bartering, exchange,

[7] This measure combines estimates of healthy life years lost due to premature mortality with years lost from disability/morbidity.

and gifts. Therefore, income may not accurately represent the total economic and material resources of individuals or households.

Since income-based measures focus on potential rather than actual consumption, there has been support for the use of more direct measures of poverty, such as material hardship or material deprivation measures. These measures recognize that individuals and households vary in their access and command over income and other resources. Material deprivation or hardship indices have been developed (Desai & Shah, 1988; Edin & Lein, 1997; Fergusson, Horwood & Beautrais, 1981; Goedhart, Halnerstadt, Kapteyn & van Praag, 1977; Mack & Lansley, 1984; Mayer, 1997; Mayer & Jencks, 1989; Townsend, 1979), but even these measures have been criticized for their flaws and/or limitations (Beverly, 1999).

Several factors explain the shift away from consumption (or expenditures) measures and lend further support away from income measures. Individuals may report incorrect information about their income or spending so measures based on these aspects would be inaccurate. This occurs both intentionally (purposefully hiding information to avoid taxes or ineligibility in benefits programs) or unintentionally (legitimately forgetting). In addition, many facets of well-being[8] are not attained through normal market transactions, making measuring these facets impossible with traditional poverty methods (Gottschalk & Mayer, 1997; Ringen, 1988, p.358).

Furthermore, poverty affects deprivation in multiple dimensions of individuals and households, such as housing, property ownership (such as land or livestock), assets,

[8] Well-being has been compared to the related concept, "standard of living" (Sen, 1983, 1985a, 1987a). Well-being is the broader, more inclusive of the two constructs. Well-being is closely related and used often interchangeably with quality of life. For purposes of this dissertation, well-being as well as quality of life will be used.

health, education, employment, and social institutions (social capital, social networks). Since income and consumption measures do not fully capture the multi-dimensional construct of poverty, a more appropriate measure is needed.

These reasons have prompted additional conceptual changes in poverty measures, as supported by recent international development goals and publications, such as the World Development Report 2000/2001: Attacking Poverty (World Bank, 2001), which increasingly have included non-income and non-consumption poverty dimensions (World Bank, 2002a). One such alternative developed by Nobel Laureate Amartya Sen (1980, 1984, 1985a, 1985b, 1987a, 1987b, 1992, 1993, 1999) uses a capability approach to poverty, which extends beyond economic and material deprivation.

Although Sen is attributed with the development of the capability approach, aspects of the framework have been linked to the works of Aristotle, John Stuart Mill, Karl Marx, and Adam Smith. More recently, the capability approach has been advanced by the philosopher, Martha Nussbaum (1992, 1995, 2000, 2003) whose works have examined the philosophical implications of the capability approach and have applied it to gender inequality and other issues.

Uniquely, the capability approach uses basic achievements – both actual achievements and potential achievements - such as the ability to meet basic needs by converting commodities rather than actual commodities as the primary means for comparison (Ravallion, 1994, pp.4-5). Although the market generally values commodities or goods, they are "no more than means to other ends. Ultimately, the focus has to be on what life we lead and what we can or cannot do, can or cannot be" (Sen, 1987, p.16). Accordingly, the capability approach shifts the ultimate focus away from

philosophical concerns of desire fulfillment and happiness as well as from practical approaches based on income, consumption, and basic needs. And in doing so, the capability approach facilitates not only the evaluation of poverty but also the evaluation of inequality, social arrangements, and the overall well-being of individuals.

However, commodities are still recognized in the capability approach. Commodities are generally valued in terms of their "characteristics", or desirable properties (Gorman, 1956; Lancaster, 1966, Sen, 1987). By securing these commodities, individuals gain command over their associated characteristics. For example, possession of a bicycle provides the owner access to those characteristics of the bicycle - to provide recreation or leisure, to provide a means for transportation, and to satisfy pleasure derived from riding a bicycle. Although ownership of commodities varies among individuals, their characteristics do not change. Thus, the bicycle retains its characteristics, regardless if the owner has a bicycle or not or if the owner can use the bicycle or not or if the bicycle itself varies somewhat in its design and appearance.

In determining an individual's well-being it is necessary to assess what the individual succeeds in doing with the commodities and characteristics at his/her command. In one of his few references to disability, Sen (1987) states, it is essential to "take note that a disabled person may not be able to do many things an able-bodied individual can, with the same bundle of commodities" (p.7). Moreover, certain commodities, such as a telephone or a television set, deemed important in many developed countries are not "necessary for community life in poorer societies" (Sen, 1999, p.74). There is significant variability on certain commodities from one society to another based on cultural and other influences (e.g. types of clothing – kimonos in Japan

versus saris in India versus dresses in the United Kingdom). Therefore, it would be premature to limit the analysis to commodities and their characteristics as a basis for comparison in evaluating individual well-being.

Two primary components, functionings and capabilities, are integral to understanding the capability approach. Functionings are an individual's set of achieved doings and beings, or what an individual manages to do or be, which together constitute a valuable life. Functionings are the actual achievements and thus, differ from the commodities or goods used to achieve these functionings. As used in the previous example, a bicycle (commodity) differs from the functionings of riding the bicycle, moving oneself, or transporting oneself.

Comparing individuals in terms of bicycle ownership indicates certain things (specifically, being able or unable to afford a bicycle and/or choosing to have or not have a bicycle). However, comparing individuals who actually own a bicycle in terms of their functionings provides a different type of information (e.g. using the commodity – or as in the example, riding or not riding the bicycle). For that reason, functionings incorporate the aspect of choice or preference into the framework.

Nevertheless, well-being is not just a matter of what an individual achieves, but also the options from which he/she has had the opportunity to choose. Capabilities[9] are an individual's potential to achieve certain functionings, or the various combinations of what he/she can really do or be (Sen, 1980). The difference between capabilities and

[9] Many scholars, including Martha Nussbaum, support the terminology "capabilities" and its use as the number of individual elements within the "capability set" of an individual. Although Sen uses capabilities and capability interchangeably in his more recent work, initially he used only "capability" in the singular form to indicate an individual's combination of potential functionings.

Functionings is essentially the difference between the potential and the actualized (e.g. being able to ride a bicycle versus riding a bicycle).

Sen equates capabilities with freedoms in that capabilities reflect the freedoms of individuals to do what they wish to do and be what they want to be (Sen, 1999). According to Sen (1987, p.36) "Functionings are, in a sense, more directly related to living conditions, since they are different aspects of living conditions. Capabilities, in contrast, are notions of freedom, in the positive sense: what real opportunities, you have regarding the life you may lead."

The capability approach involves assessing the fundamental capabilities of individuals, namely what individuals are able to be or do (e.g. being able to live a long and healthy life, be informed and knowledgeable, and participate fully in society).[10] Identifying individuals who can or cannot ride the bicycle and the reasons why they cannot ride the bicycle, such as lack of knowledge or inability to manipulate features of the bicycle, are important.

By describing these factors that affect the conversion from commodities into capabilities, the capability approach facilitates a greater understanding of individual circumstances and respective factors that either facilitate or hinder that individual's capability development. In emphasizing outcomes rather than inputs, the capability approach provides a greater wealth of information on individual well-being. Moreover, comparing individuals in terms of their functionings and capabilities provides the best understanding of their life situations.

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[10] Sen (1992, 1999).

Take two individuals with bicycles. Individual A does not use the bicycle since he/she prefers to drive for mobility and transportation but he/she knows how and can actually ride the bicycle. This differs from individual B who does not use the bicycle because he/she was never instructed on its use, or whose parents restrict his/her usage, or who cannot manipulate the pedals due to a mobility limitation or physical impairment. By integrating opportunity or advantage into the evaluative framework and by emphasizing the importance of interpersonal variations in the conversion process, the capability approach recognizes human diversity and provides a more accurate depiction of the overall well-being of individuals.

The capability approach has been illustrated by several schematic representations in the literature. John Muellbauer (1987) in his essay on "Professor Sen on the Standard of Living" provides a diagram depicting Sen's views (p.40). First, he emphasizes that Sen is doubtful about utility as the "ultimate definition of the living standard" since it can be interpreted in multiple ways such as "pleasure or happiness, desire fulfillment or simply as the reflection of choice" (Muellbauer, 1987, p.39). Therefore, he uses dotted lines to signify this weakness in the final link to utility.

Muellbauer emphasizes that three key links exist in the cycle. First, there is the transformation of conventional market goods to their fundamental intermediate goods deemed characteristics (e.g. food into calories). Secondly, there is the influence of these characteristics on the capability of an individual to function (e.g. being well nourished) as well as the different possibilities of translating these capabilities into functionings, or actual achievements. Finally, there is the utility that results from the higher levels of these achieved functionings.

A final point involves the recognition of additional factors that leads to utility. Sen recognizes that the environment along with market goods determines the amount of material characteristics (e.g. public goods). Personal characteristics (e.g. metabolism) along with material characteristics contribute to the development of capabilities. The psychic state, influenced by things such as religious faith as indicated in Muellbauer's example, along with the capabilities of the individual leads to specific functionings.

Alternatively, Robeyns (2003, p.544) presents a different schematic interpretation of the various constituents that comprise the capability approach and the role of resources within the capability framework. First, items necessary to acquire commodities including market and non-market production, net income, and transfers-in-kind are recognized and listed specifically within her diagram. This list highlights the typical means used to achieve capabilities and functionings. Secondly, several terms have been selected for use that differ from Muellbauer's version such as her use of "commodities" instead of the term "goods" as well as "personal, social and environmental conversion factors" instead of merely "personal characteristics."

Like Muellbauer, Robeyns refers to the characteristics of commodities and includes personal, social and environmental aspects. As indicated, these are labeled "personal, social and environmental conversion factors" and their placement differs in that collectively these factors affect the conversion from commodities to capabilities. This differs from Muellbauer who separates the environment, which influences material characteristics and personal characteristics, which influence the conversion from material characteristics to capabilities.

Finallly, Robeyns differs from Muellbauer in that she schematically includes achievement in her version of the capability framework. Specifically, commodities represent the means to achieve, potential functionings or capabilities are considered the freedom to achieve, and achieved functionings indicate actual achievement.

Figure 1 by Welch Saleeby (2003) differs from both Muellbauer's and Robeyns' diagrams of the capability approach. The arrows are situated accordingly to denote where certain elements participate in the overall capability framework. Arrows indicate whether these elements either directly influence a specific component (e.g. commodities) or on the conversion process from one component to another (e.g. transformation from commodity characteristics to the capabilities to function). These elements have been collectively deemed "factors" either personal or environmental factors to facilitate greater congruity within the capability framework.

In the Welch Saleeby diagram, the terms "well-being and/or quality of life" replace "utility" as the end product of the capability approach since both constructs are generally considered the intended ultimate outcome of capability development. Both constructs are referenced in the capability literature including much of Sen's work (1993, 1999) and Nussbaum's work (1993). While some researchers view the two constructs as identical and use these constructs inter-changeably, other users perceive them as distinct. Generally, well-being is seen more in the economics literature whereas quality of life is a more predominant construct used in the health and social sciences.

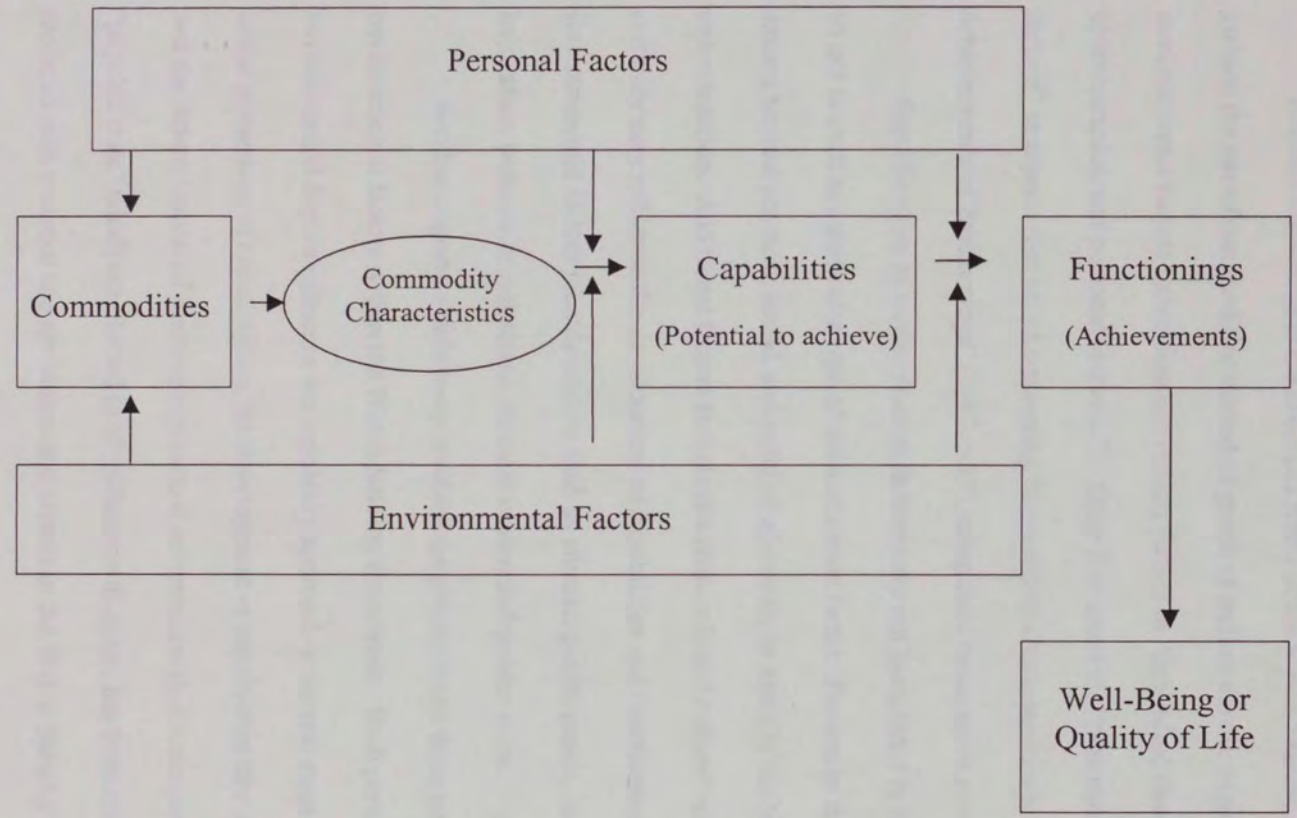

Figure 1. Welch Saleeby diagram of the capability approach (Welch Saleeby, 2003).

Another distinction is the choice of terms in the Welch Saleeby representation that include the use of commodities instead of goods as well as the use of personal factors and environmental factors rather than conversion factors or "individual characteristics, social characteristics, and personal features."[11] Since Sen mentions "personal factors and social factors" as aspects that affect converting "commodity-characteristics into personal achievements of functionings" (1987, p.17) using these terms seem more appropriate.

Specific types of environmental factors have not been listed in this representation so not to omit any particular type of environmental factor. Factors in the environment extend beyond physical, social, and political elements, as listed in the Muellbauer's representation. Additional factors include the economic and cultural environments that certainly may influence the development of capabilities and functionings of individuals. Environmental factors include aspects such as climate, public goods, institutions, legislation, policies, social norms, cultural values, and gender roles.

Another important difference involves the placement of these personal and environmental factors within the Welch Saleeby framework. Both personal and environmental factors influence the capability approach at several stages, including the initial possession of commodities, the development of capabilities (the ability to achieve), and the determination of functionings (actual achievements). Consequently, the term "psychic state" which is reflected in Muellbauer's diagram, has been eliminated and replaced with personal and environmental factors in the Welch Saleeby interpretation of the capability approach.

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[11] See Gorman (1956), Lancaster (1966), and Muellbauer (1987) for references to the term "characteristics." Sen refers to "personal features" in the conversion process of characteristics into functionings (Sen, 1987, p.9).

Personal and environmental factors do not influence transformation from commodities into their characteristics since these remain constant. For example, food items are converted into the same amount of calories and other nutritional components regardless of the individual who consumes them. This differs from an individual's personal factors, such as a metabolic disorder, which interferes with the proper absorption or bodily use of these nutritional components and the conversion from commodity characteristics to the capability of being nourished.

Consider the following example of the capability approach using the Welch Saleeby schematic representation from Figure 1. Commodities are first converted into their commodity characteristics such as a manual wheelchair into its mobility properties or transportation properties. Although these commodity characteristics remain unaffected, actual possession of these commodities is affected by both personal factors including adequate and available financial resources to purchase the wheelchair and environmental factors such as the availability of the wheelchair commodity itself and geographical access to a wheelchair manufacturer.

The next step is transforming commodity characteristics into capabilities – specifically, from the mobility and transportation properties of the wheelchair into the ability to move around, or the ability to transport oneself. This process is affected again by personal factors such as the severity of an individual's impairment affecting his/her ability to maneuver the wheelchair as well as environmental factors including the type of terrain or street conditions to facilitate or prevent wheelchair movement such as flat, paved roads or dirt roads with grooves.

At this stage of capabilities, the inclusion of the individual's environment is particularly important since it provides a more realistic assessment of that individual and his/her true abilities by factoring in the environmental barriers and/or facilitators. Determining whether an individual can use a wheelchair in a standard environment is one thing, but identifying whether that individual can use a wheelchair in their own environment is more practical. Hence, the capability approach facilitates a more accurate determination of what an individual can really do or his/her real potential to achieve certain functionings within the context of his/her real-life settings.

This differs from the traditional, clinical setting in which merely capacity or functional ability is taken into account when determining the functional status of individuals with impairments. Of course, personal factors may directly affect capacity or functional ability, as well. For example, the height or weight of an individual may affect his/her use or manipulation of certain wheelchairs and thus, adjustments are made in the clinical environment to facilitate improved use such as raising or lowering the seat cushion or altering the back lumbar support.

However, capacity in its traditional context is only one component contributing to the overall construct of capabilities. The other crucial component is the environment since inclusion of environmental factors permits a mechanism to capture the true picture of the lived situation of individuals. Without both capacity and environment, it is not possible to understand fully an individual's potential and actual life participation.

As far as what an individual actually does do or his/her functionings, these achievements are selected from the range of all possible functionings, or capabilities, of that individual. Like other stages of the capability approach, the selection process is influenced by both personal and environmental factors.

For example, an individual may be capable of moving around in a wheelchair in a clinical setting (capacity) as well in his/her particular actual setting (capability). Yet, he/she may be prevented from such functioning due to personal factors, such as choice or preference, religious faith, cultural values and beliefs. The individual may choose not to go outside using a wheelchair due to the perceived or actual likelihood (resulting from previous experiences) of being ridiculed by his/her peers.

This would be an example of what Sen considers "constrained choice" where external forces have influenced the individual's personal factor of choice. Not only the physical environment (e.g. physical aspects such as accessibility versus inaccessibility) but also the social environment (e.g. social forces such as positive versus negative attitudes toward disability and individuals with disabilities) play an integral role in determining an individual's functionings by influencing aspects like his/her choice, preference, and importance.

Accordingly, an observation of this individual's functioning level in his/her current environment may actually result in the inaccurate assumption that the individual is incapable of moving around in a wheelchair when actually the individual is capable but chooses not to do so. By comparing his/her functionings with his/her capabilities, discrepancies can be identified and a more realistic picture of the individual's lived situation and participation can be determined.

Emphasizing the necessity to examine capabilities in conjunction with functionings leads to a greater wealth of information and understanding. As a result, explanations for the differences between what an individual can really do and what an individual is actually doing can be determined. Additionally, appropriate interventions can be identified and implemented to remove barriers and to promote overall functioning. For example, improving positive attitudes and greater acceptance toward individuals with disabilities in their respective community is highly likely to influence their choice to participate in their community and interact with fellow community members.

Although considered more subjective, aspects such as choice, preference, and importance are increasingly being recognized for their role in understanding the lived situation of individuals with and without disabilities. The subjective dimension of functioning and disability interacts with the objective dimension – specifically, the individual's health condition, body functions and structures, activities, participation, and his/her environment. As indicated by Ueda and Okawa (2003), the subjective dimension of functioning and disability may be considered "a set of reactions to those things based on his/her personality and such psychic factors as the value system, self image, ideal, belief, the purpose of life, and past experience of coping" (p.599).

ADDRESSING DISABILITY AND POVERTY USING A CAPABILITY LENS

The capability approach method constitutes the objective of poverty analysis, which determines "what those capabilities are in specific societies, and who fails to reach them."[12] As supported by the UNDP in its Technical Support Document on Poverty Reduction (McKinley, 1997, p.39), determining an individual's lack of basic capabilities provides valuable information. Moreover, ascertaining discrepancies in attaining equal achievements among certain population groups facilitate the identification of factors that prevent equal participation in society.

In the capability approach, poverty represents the deprivation or lack of fundamental capabilities among individuals. Likewise, disability may be considered a deprivation of basic capabilities resulting from environmental barriers (e.g. lack of assistive technology, inaccessible facilities, negative attitudes, and lack of effective social policies) that essentially contribute to or create disability among those with impairments or health conditions. Individuals with disabilities "argue that most of society's efforts to help them are designed to maintain inactivity rather than to invest in their well-being or productivity" (Albrecht, 1992, p.16).

The capability approach provides a mechanism to shift the locus of the problem from a purely medical context focusing on impairment to a more social model emphasizing how the environment affects individual capabilities. As stated by Sen (1992, p.91), "attainment equality" or equal achievement of capabilities may be difficult, or even impossible, in the case of individuals with disabilities. "A person who has a disability may have a larger basket of primary goods and yet have less chance to lead a

[12] Ravallion (1994: 6).

normal life (or to pursue her objectives) than an able-bodied person with a smaller basket of primary goods" (Sen, 1999, p.74).

For instance, an individual who is a quadriplegic may earn a higher salary than an individual without a disability. However, a large percentage of her income must pay for costs associated with the disability (medical bills, electric wheelchair costs, and personal care attendant fees) leaving a smaller percentage of discretionary or net disposal income. Therefore, individuals with disabilities may possess more income but might require a greater amount to accomplish identical outcomes as other individuals without disability.

Despite the context differing between developed and developing countries, both industrialized and third world countries are burdened by both disability and poverty. However, the concept of attainment equality remains applicable. Consider the boy who is blind, the son of a business owner in a developing country. He would have a relatively larger basket of goods including perhaps enough financial resources to attend school. But, he might be unable to get an education due to the lack of access to educational materials in Braille or text readers. Although his family might be able to pay for his schooling, the additional costs of Braille textbooks might be impossible for them to afford or these specialized textbooks might be unavailable in his country. Furthermore, discriminatory practices in the education system and stigma among his classmates and teachers might prevent him from attending school.

The capability approach attempts to alleviate and/or eliminate poverty by enhancing the capabilities of individuals. Likewise, it may be used to address disability by raising the capabilities of disabled individuals. "We should constantly evaluate people's capabilities and potential. As people develop, their capabilities grow. New

capabilities should continually be assessed, nurtured, and maximized" (Mackelprang & Salsgiver, 1999, p.242). The capability approach emphasizes the role of individuals as active agents with abilities and capacities whereas other approaches, such as basic needs, puts individuals in a more passive role, as the recipients in need of certain goods and services (McKinley, 1997, p.42).

Both poverty and disability affect an individual's capabilities, impacting their full participation in society. Disability and poverty frequently undermine the civil, economic, political, and social rights of individuals (Beresford, 1996, p.555). Inequalities resulting from poverty and/or disability partially hinder economic growth since it denies a large segment of the population access to education and health services (Lipton, 1997, p.1004). In turn, the lack of education and poor health stymies employment by contributing to the lack of credentials and missed days at work. These parallels between disability and poverty motivate the application of a single approach, the capability approach, to explore their related dimensions and to facilitate strategies to promote capability development.

As recognized by the UNDP in preparation for its Poverty Report (UNDP, 2000b, p.94) "the links between protecting health and reducing poverty need to be strengthened. Ill health and income poverty are mutually reinforcing and thus need to be addressed together." Since disability is a major component of health, disability and poverty need to be examined systematically together and the capability approach presents an innovative way to accomplish this task using a unified framework. This would respond to criticism regarding the lack of integration between economic and social policies as well as between sectors and governmental departments, which has been considered a general weakness of poverty programs.

Finally, a well-conducted and well-represented poverty profile becomes a valuable resource to many stakeholders (individuals, organizations, governments). As indicated in the World Bank's Poverty Analysis Initiative (PAI) course manual (Khandker, 2003, p.4), "Constructing a nationwide poverty profile supports the government's efforts to strengthen poverty reduction policies...A well-presented poverty profile is invaluable." As further indicated in the PAI manual, a poverty profile details the major facts on poverty, determines the poverty pattern, and then examines variations of the poverty pattern by geography, community and household characteristics.

However, the majority of poverty profiles disregard disability as a demographic variable, which is problematic since individuals with disabilities have unique experiences and perspectives related to poverty than individuals without disabilities. Individuals with disabilities frequently experience discrimination and exclusion based on their physical or mental disability, which generally contributes to and exacerbates their poverty status. For example, an individual with a disability may be unemployed not as a result of his/her inability to complete a certain work task but rather due to inaccessibility and the lack of accommodation for his/her disability at potential work sites.

Rather than treated as another dimension for comparative analysis like gender or race and/or ethnicity, disability is ignored generally as a potential comparative variable. Instead, disability is considered more frequently as an outcome indicator for poor health status and for poverty. While poverty and poor health do contribute to disability, examining how poverty specifically impacts individuals with disabilities as compared to those without disabilities would enhance any poverty profile as well as improve the development and implementation of overall poverty alleviation strategies.

RESEARCH AIMS AND QUESTIONS

This dissertation attempts to further the understanding of the lives of individuals and their families experiencing disability and poverty in Nepal by utilizing a capability approach. Despite some efforts to address these issues as discussed in previous sections, there remains a considerable lack of understanding about the relationships between disability and poverty in both developing and developed countries.

Furthermore, there is a dearth of policies to assist individuals with disabilities and their families experiencing poverty as well as individuals and families who are poor faced with the increased risk and onset of disability. "We need better information about the nature of disabling conditions and their social and economic consequences, both to guide policy and programmatic decisions as well as to enrich our understanding of disability" (Scotch, 1990, as cited in NIDRR, 1993, p.1).

To further an understanding of the relationships between disability and poverty at the individual and household levels, this research addresses the following questions:

1. What are the ways in which disability contributes to individual deprivations?
2. Is there a correlation between household poverty and the likelihood of having a family member with some type of disability?
3. Do households with a disabled family member experience higher levels of deprivation than households without exposure to disability?

Multiple linkages between disability, poverty, and deprivation are explored in order to develop an in-depth understanding of these relationships, to recommend potential strategies for intervention, and ultimately to improve the life situations of individuals and their families experiencing disability and poverty.

This dissertation research focuses on developing countries for several reasons. It is generally accepted that there are proportionately more individuals with disabilities in developing countries (Barnes & Mercer, 1995, p.37; Peat, 1998, pp.46-47). In fact, it is estimated that 80% of individuals with disabilities live in developing countries, doubly disadvantaged by disability and poverty.[13] For individuals with disabilities in developing countries, characterized by high rates of poverty and non-existent benefits system, the risk of death is very high (Yeo, 2001, p.5). Moreover, the capability approach has been applied in many developing countries, primarily those with significant development efforts. Although implications exist for developed countries, it seemed a higher priority to begin the proposed research with data from a developing country.

Therefore, Nepal was selected as a developing country to explore the application of the capability approach in addressing disability and poverty issues. As one of the poorest countries in the world, Nepal receives a significant amount of development assistance from other countries. As indicated by the World Bank (1998, p.1), "Poverty in Nepal is deep and complex, and only a concerted effort to improve public interventions while mobilizing community initiative holds hope for a reduction in poverty."

Additionally, Nepal has received assistance from multiple international entities in addressing its disability issues. There are approximately 60 disability organizations in Nepal including the Nepal Disabled Association, the National Association for the Welfare of the Blind, the Association for the Welfare of the Mentally Retarded, and the National Association of the Deaf and Hard of Hearing.

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[13] For additional information see the following web-sites, the National Organization on Disability in its section describing the World Committee on Disability (http://nod.org.wcod) and the United Nations in its statement, the United Nations Commitment to Advancement of the Status of Persons with Disabilities (http://www.un.org/esa/socdev/disun.htm).

Although poverty and disability data have been collected in many developing countries, Nepal has lacked representation in several important studies. For example, the World Bank did not include Nepal among the countries selected for its landmark poverty study "Consultations with the Poor" or "Voices of the Poor."[14] Similarly, the United Nations Disability Statistics Database (DISTAT)[15] version two, DISTAT-2, excludes Nepal although the first statistical database version included disability data from Nepal, specifically from the 1980 Nepal national survey.

Another example involves the World Bank's Demographic and Health Surveys (DHS) Program,[16] which uses Nepal data from 1996, but does not ask disability questions in its surveys. Since the DHS are large-scale household surveys collecting demographic, social and economic data and information on health, nutrition, population and health service use from numerous countries, it misses the opportunity to examine disability within and between these countries. Therefore, additional research is needed in addressing disability and poverty in Nepal both independently and as overlapping issues.

Two recently collected data resources provided the opportunity to examine poverty and/or disability in Nepal. First, the Nepal Living Standards Survey (NLSS) conducted in 1995-1996 by the World Bank is a survey that examines multiple aspects related to household welfare including income, consumption, employment or labor markets, education, health, and housing.

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[14] "Consultations with the Poor" or "Voices of the Poor" is a multi-method study using primarily participatory and open-ended techniques to learn more about the situation of poor people including their experiences, priorities, reflections and recommendations. See World Bank (1999) for detailed information on the methodology used in the study.

[15] The United Nations released the Disabilities Statistics Database, DISTAT, in 1988 as a compendium of national disability data for the purpose of cross-country comparisons. The second version, DISTAT-2, was released in 2001as a global database of disability statistics and indicators, as it updated its database increasing the number of studies and countries.

[16] The Demographic and Health Surveys are part of the World Bank's HNP/Poverty Thematic Group.

Like all data sources, the NLSS has its strengths and weaknesses.[17] As a standard household survey, the NLSS provides "a rich source of data on economic behavior and its link to policy" (Deaton, 1997, p.2) and provides valuable demographic, social and economic information on the entire household. However, the NLSS is limited in its questions related to disability since disability is merely one aspect of the health section within this larger household survey.

Therefore, a second study entitled "A Situation Analysis of Disability in Nepal or SITAN" conducted in 1999-2000 was used in conjunction with the NLSS data to fully capture the relationships between disability and poverty in this country. Guided by the National Planning Commission of His Majesty's Government of Nepal, the SITAN study was conducted by New Era and supported financially and technically by UNICEF-Nepal. Interestingly, twenty years had elapsed between the completion of the Situation Analysis of Disability in Nepal and the last national survey on disability in 1980. Availability of more conclusive and recently collected data on disability was a key factor in the selection of Nepal for this study.

In the following sections, theoretical and empirical justification for the research questions and hypotheses will be provided in an overview of the literature. The research investigation will be described including a contextual overview of disability and poverty in Nepal, a description of the data sets and variables, and an explanation of the methods for analyses. Findings of the data analyses will be discussed along with limitations of the dissertation research and implications for policy, practice, and research.

[17] For additional information on the advantages and disadvantages of the living standards measurement surveys, see Deaton (1997).

CHAPTER 2: OVERVIEW OF THE LITERATURE

There has been limited empirical research directly examining the complex relationships between disability and poverty. Of the literature, the majority has been generated in developed countries, especially in North America and Europe, rather than in developing countries for various reasons including the availability of data necessary for such analyses. In summarizing the existing literature, several recent reports describe the current status and situation of disability and poverty, characterizing the causal relationship between poverty and disability as a vicious cycle (Turmusani, 2001 p.194).

In a report for Action on Disability and Development (ADD), Yeo (2001) highlights key issues surrounding the cycle of chronic poverty and disability. She discusses the causes and consequences of chronic poverty among individuals with disabilities as well as the actions being used to alleviate it. After providing two case studies of Uganda and India, Yeo proposes a research agenda on disability and chronic poverty, endorsing a twin track approach as recommended by the British government's Department for International Development (DFID).[18]

The twin track approach emphasizes the need to address inequalities between individuals with and without disabilities in all strategic areas and supporting specific initiatives to enhance empowerment of disabled people. In its report, the Department for International Development (2000) recognizes the significance of disability as a critical development issue. Furthermore, it emphasizes the importance of disability in relation to human rights, poverty, and achieving internationally established development targets.

[18] See the DFID policy issues paper, entitled "Disability, Poverty and Development."

As the British government department responsible for promoting development and poverty reduction, DFID determines ways to address the needs of individuals with disabilities in the mainstream of its poverty reduction work. According to DFID (2000),

> The international development targets are directly relevant to women, men and children with disabilities in poorer countries. Their needs and rights cannot be fully addressed unless the underlying causes of poverty are tackled, unless they are empowered to gain access to education, health services, a livelihood and participate fully in social life. (p.2)

Hence, DFID recommends an integrated approach, which links prevention and rehabilitation along with strategies for empowerment and attitudinal changes.

A related discussion paper by Miles (1999) provides an overview of work in relation to disability and poverty such as that by DFID and recommends strategies to strengthen disability and development work.[19] As recommended in her paper, disability should be adopted as a cross-cutting issue in development and an inclusive approach to development must be promoted. As Miles states, "the relationship between poverty, disability, gender inequality and social exclusion seems obvious, but primary research is desperately needed to highlight the links" (Miles, 1999, p.2).

Similarly, Elwan (1999) recognizes that linkages between disability and poverty are noted often, but not been examined systematically. In consultation for the World Bank, she provides a comprehensive overview of disability and poverty in her literature survey, which summarizes the key related areas as being disability and education, employment, income, and access to basic social services. Given that minimal basic

[19] Miles developed the report in consultation with the Disability and Development Working Group (DDWG), which is part of the British Overseas NGOs for Development (BOND).

research on disability and poverty has been completed, Elwan endorses the investigation of data sources and the analysis of disability that facilitate a more detailed analysis of poverty-related factors in developing countries. [20]

Further support is provided in the Asian Development Bank (ADB) Report of its first Workshop on Disability and Development.[21] The workshop was organized to assist the Asian Development Bank in developing effective strategies addressing disability issues and in improving the well-being of disabled individuals as members of their community. As noted in their report (ADB, 1999, p.7), "The lack of comprehensive information on the poverty of individuals with disabilities is another indicator of their marginalized and invisible status in their societies. The obvious linkages between poverty and disability deserves urgent attention in the development context."

As stated by Dudzik and McLeod (2000, p.1) in their analysis of World Bank social funds[22] targeting individuals with disabilities, the challenge for disability development involves constructing interventions that properly analyze and meet the needs of individuals with disabilities. The need for supporting individuals with disabilities is reinforced by the World Bank's efforts to alleviate poverty as well as its recent emphasis on vulnerability. Such increased interests in the area of disability, poverty, and development provide support for additional research in these areas.

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[20] This World Bank Report served as a background paper for the World Development Report 2000/2001and as a research component for the World Bank's Social Protection Unit examining the economic consequences of disability.

[21] Held in Manila on 13-14 October 1999 and co-financed by the ADB and the Government of Finland, the workshop represented the first of its kind for the ADB and provided a mechanism to advise the ADB in developing strategies to address disability within its mandate and operations.

[22] Social funds are considered the most effective World Bank instruments for targeting poor and vulnerable groups. These funds are community-level funding schemes to assist communities in addressing their development needs.

In a related report to the work of disability and poverty, Metts (2000) reviews the evolution of disability policy as well as current disability issues and trends to assist the World Bank in its policy efforts and strategic planning to address disability. The report reiterates the worldwide commitment to individuals with disabilities in ensuring their equal access to economic and social opportunities.[23] The commitment strives "to affirm the basic human rights of people with disabilities to equal access to social and economic opportunities and to create environments in which people with disabilities can maximize their capacity for making social and economic contributions" (p.35).

Of the research conducted related to disability and poverty, most studies have been quantitative in nature primarily focusing on how disability affects areas such as income, education, and employment. Generally, aggregate-level data at the household and country levels have been used. However, quantitative research at an individual level provides a more in-depth understanding of how disability affects individuals than what aggregated data forms can provide. Additionally, qualitative research provides insightful explanations not necessarily reflected in any type of quantitative research.

One increasingly popular research technique that involves both qualitative and quantitative methodologies is participatory action research.[24] The participatory action research approach involves individuals experiencing a problem and trained researchers who work collaboratively in all aspects of the research process. According to Tandon (1988, p.13) "It [participatory action research] is based on the belief that ordinary people are capable of understanding and transforming their reality."

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[23] This commitment is reflected in the United Nations World Programme of Action and its Standard Rules, the European Union's 1996 Resolution, and numerous individual countries' legislation and policies.
[24] Participatory action research (PAR) includes related research approaches such as participatory research, action research, and participatory evaluation.

An example of participatory action research is the World Bank's "Consultations with the Poor" or "Voices of the Poor" study conducted as a precursor to the World Development Report 2000/2001 on Poverty and Development. This study involved over 60,000 poor individuals who provided their input on what poverty means to them. Among the multiple issues discussed by these poor participants, disability was mentioned at several times. However, disability was never fully highlighted since poverty was the main focus of the study. The following summarizes the results of this comprehensive research study, which have been published in a three-part series.

The first volume associated with the study is entitled *Can Anyone Hear Us* (World Bank, 2000) and it describes the World Bank's detailed review of 78 national level participatory poverty assessments[25] conducted in the 1990s from 47 countries. Broad, basic questions were used in analyzing the various PPA studies including: (1) How do people understand and define poverty? (2) What is the role of formal and informal institutions in the lives of poor people? (3) How do gender relations within the household affect how poverty is experienced? (4) What is the relationship between poverty and social fragmentation? Using systematic content analysis, recurrent themes were unveiled and patterns of relationships were established.

Several examples throughout the publication, *Can Anyone Hear Us?* (World Bank, 2000) considered disability a frequently reported characteristic of the very poor (p.203). However, disability and its relationship to poverty were not explored in depth. In fact, disability was not even considered a primary issue related to poverty but rather it

[25] John Clark and Lawrence Salmen at the World Bank coined the phrase Participatory Poverty Assessment in 1992. A participatory poverty assessment or PPA is an iterative, participatory process used to understand poverty from the perspective of key stakeholders and directly involve them in planning follow-up action.

was grouped with others under the category of social exclusion. Although disability is considered health-related, it was excluded from this section on health care access.

The second component of the study involved fieldwork in 23 countries to obtain input from poor people on four primary themes including exploring ill-being and well-being, problems and priorities of the poor, institutional relationships, and gender relations.[26] In the second volume entitled *Crying Out for Change* (World Bank, 2000), individuals remarked frequently on the incidence and impact of injury and sickness. Although disability was mentioned as a consequence of sickness in one example and an accident in another, disability and its impact across certain groups were not described.

In contrast to the previous components, which examined common themes of poverty across multiple countries, the third component of the study describes differences in the poverty experience among individuals from selected countries. The third volume is entitled *From Many Lands* (World Bank, 2002) and highlights major findings from 14 different countries. Similarly, disability is not treated as a critical issue. Overall, the study provides new insight into understanding the lives of the poor, but it failed to include data from Nepal as well as to explore disability and poverty.

In conjunction with the "Consultations with the Poor" study, the Institute of Development Studies (Brock, 1999) synthesized participatory work on ill-being and poverty that had been conducted outside of the national level participatory poverty assessments. Practitioners working in participatory research recommended selected participatory work, the majority of which has been conducted by NGOs. Although

[26] Specific issues explored are "what is a good life and bad life, what are poor people's priorities, what is the nature and quality of poor people's interactions with state, market and civil society institutions, and how have gender and social relations changed over time." (World Bank, 1999)

disability did not rank high among indicators related to the themes of poverty, ill-being and vulnerability, disability was mentioned separate from poor health.

Prompted by the emergence of health and ill-health as an important theme among those participants of the "Voices of the Poor" study, the World Bank and the World Health Organization collaborated on an additional publication entitled "Dying for Change" (WHO & World Bank, 2002). This publication highlighted the relationship between poverty and poor health using comments resulting from participatory and qualitative exercises. Key aspects emerging during these interviews and small group discussions emphasize the belief that a sick, weak body is a liability to these individuals and their families who support them. While disability was mentioned at several points in the summary, it was treated as a component of ill-health rather than as a separate issue.

Although the "Dying for Change" summary provides valuable information, it has some limitations. First, the publication is based on a study using qualitative methods, rather than a combination of both qualitative and quantitative methodology. Secondly, health information was combined from several sources, such as study participants, researchers, and interviewers, which created difficulties in extracting and summarizing the information. As indicated by the World Health Organization and the World Bank (2002), "Inevitably, the specific context of the interviews has been lost and it is likely that some important lessons have been missed." Since the study focused on poverty rather than disability or the relationships between the two issues, it lacked a thorough examination and discussion of disability. Consequently, these reasons reinforce the need for further research specifically addressing the relationships of disability and poverty in both developing and developed countries.

KEY THEORETICAL MODELS ADDRESSING DISABILITY

Various theoretical models exist in defining and understanding disability (Asian Development Bank, 2000, p.1). Several models view individuals with disabilities as dependent upon society, which results in discrimination, paternalism, and exclusion. Others view in individuals with disability as individuals capable of contributing to society, which results in empowerment, choice, and integration. Although others may group these models differently, these models are classified and described in the following categories: individual, social, environmental, and biopsychosocial models.

Individual theories view disability as a problem located in the individual, one that originates from the limitations or losses associated with disability.[27] Social theories locate disability in society and explain disability as the function of restrictive factors, such as inaccessible facilities and discrimination. Environmental theories consider disability as a function of the interaction between the individual and his/her social and physical environment. Finally, biopsychosocial theories incorporate these various models of disability, recognizing the dynamic interaction between them.

Philanthropic or charity model. Traditionally used by charities to promote their respective fundraising efforts, the philanthropic or charity model treats individuals with disabilities as recipients of sympathy or charity as victims of unfortunate circumstances.[28] Individuals are seen as needy recipients who lack control over their life circumstances, and hence require financial and other forms of assistance from those more fortunate. This model is extremely patronizing toward individuals with disabilities who are suppose to be appreciative of whatever hand-out they receive.

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[27] For a detailed discussion of the individual and social models, see Oliver (1996, pp.30-42).
[28] For further information on the philanthropic view of disability, see McColl & Bickenbach (1998, p. 6).

However, the position of being an object of pity and charity has a negative effect on individuals with disabilities. Specifically, this perspective lowers the self-image, self-esteem, and self-efficacy of individuals with disabilities. In fact, individuals who lack self-efficacy are likely to refrain from tasks, which they believe incapable of completing (Bandura, 1992). Consequently, the charity model decreases the likelihood of individuals with disabilities from participating in society.

Medical or biomedical model. The medical or biomedical model treats disability as a purely medical phenomenon, as if it were an illness. The cause of disability is "the loss of, or reduction in, biological capacity to perform 'normal' activities" (Gray & Hahn, 1997, p.396). Hence, the individual with a disability is seen as a patient, an individual in need of medical treatment and/or a cure. The exclusive focus on the individual's medical condition results in disregarding environmental aspects that frequently contributes to an individual's disability. Consequently, environmental interventions such as home and/or workplace modifications, which may contribute positively to the individual's functioning status or outcome, are ignored.

Another shortcoming in the biomedical model is the expectations for individuals to play the "sick role."[29] Sick individuals are expected to recover from their illness and usually do so as a result of the temporary nature of illnesses. These individuals are expected to do what they can to improve their health status. However, these expectations of recovery are not necessarily possible for individuals with permanent impairments. Therefore, this forfeiture of social, productive, and family roles creates a significant disadvantage for individuals with disabilities.

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[29] Parsons (1951; 1964) developed the "sick role." Realizing that sick individuals are unable to fulfill their social roles, he considered physicians instrumental in social control since they were responsible for treating the sick and returning these individuals to social obligations.

Economic model. The economic model treats disability as a social cost or burden– individuals with disabilities "simply cost more and contribute less" than individuals without disabilities (McColl & Bickenbach, 1998, p.7). Market efficiency is an essential premise of economic analysis. Since the costs of accommodating disability generally outweigh the economic benefits, economists consider individuals with disabilities less efficient and less competitive in the labor market (Bickenbach, 1993; Gray & Hahn, 1997, p.399; McColl & Bickenbach, 1998, pp.7-8). This viewpoint, similar to that underlying the philanthropic or charity model of disability, negatively impacts individuals with disabilities by lessening their self-image, self-esteem, self-efficacy, and self-sufficiency.

Although individuals with disabilities vary in their capacity and readiness for gainful employment, disability is not synonymous with incapacity for gainful employment. Placing value only upon the employment element diminishes the alternative contributions made by individuals with disabilities, including taxes associated with earnings, cultural influence for the appreciation of humanity, and the opportunity for giving others meaning to their lives (Gray & Hahn, 1997, p.401).

Programs that provide financial assistance and supportive services actually perpetuate the poverty status among individuals with disabilities. Eligibility depends on individuals maintaining a certain income level and limiting their assets (bank account balances, for example). Instead of emphasizing limitations, which qualify individuals for benefits, a more reasonable approach would be to focus on skill development to facilitate employment opportunities.

Sociological or psychosocial model. While the previous models fail to incorporate factors outside the individual, the sociological model, known also as the deviance or psychosocial model, views disability as "a form of human difference or deviation from the social norms of the acceptable levels of activity performance" (McColl & Bickenbach, 1998, p.7). Disability originates when individuals fail to meet standard role expectations or norms in society.

Consequently, individuals with disabilities are considered abnormal or inferior and labeled as such. Negative labeling affects individuals who might perceive themselves as incapable of ever meeting societal standards. It impacts professionals who direct all their assistance toward helping individuals with disabilities in conforming to the norm. Although this model considers the social context surrounding the individual, its focus remains on changing the individual to better meet societal expectations.

Social model. The social model differs from individual disability models and from the sociological model since it focuses solely on social factors that exist outside of the individual. These factors include attitudinal, economic, and environmental barriers that are encountered by disabled persons. Although the social model does not ignore the importance of medical treatment and therapy, it emphasizes the lack of medical and other services as contributing to individual suffering.

The social model is viewed as a more positive approach since disability is not considered a problem that is inherent within the individual but rather barriers that society imposes upon individuals with a type of impairment. Furthermore, the social approach recognizes that if societal members create barriers, then members of society can remove these barriers. Strategically, interventions address ways to remove barriers such as

raising awareness of disability issues, improving physical accessibility, and reducing structural discrimination. Since the focus is solely on ways to change the environment, the social model does not stress individual level interventions (e.g. rehabilitation) or the interaction of the individual within his/her environment.

Sociopolitical model. The sociopolitical approach considers disability the result of a dynamic interaction between individuals and their surroundings (Hahn, 1985; Scotch, 1994). This model "devotes primary attention to the social environment and to the notion of 'expectations,' which can be adapted to fit the capabilities of the individual rather than requiring all persons to adjust and conform to the demands of the economic or built environment" (Hahn, 1987, p.183)

The sociopolitical model emphasizes that disability cannot be defined and explained without the consideration of physical and social environmental factors. As a result, professionals have shifted their focus away from changing the individual to changing the environment. While providing accessibility, environmental modifications, and raising awareness are needed an exclusive social focus may lead to underestimating the medical aspects related to impairments and failure to address these needs.

Minority group model. The minority group model parallels the experiences of individuals with disabilities and other disadvantaged, oppressed groups. Similar to other minorities who have faced discrimination based on some criteria including age, gender, ethnicity, race, and/or sexual orientation, members of the disability minority group have experienced discrimination based solely on their disability. "Solidarity with the members of the minority group and members of allied minority groups is a source of strength and

help."[30] Like the social model, the minority group model shifts the focus from illness, impairment, and physical limitations to discrimination and negative public attitudes (Hahn, 1993, p.46-47). Hence, interventions are directed toward others to change their negative attitudes and create more disability-friendly policies.

The minority group model faces the same limitation as the socio-political model in that the focus shifts completely away from the individual so important individual needs related to impairment (medical, rehabilitative) may not be considered. By identifying oneself with a smaller group, a sense of isolation and difference from the larger group (society) is created. The needs, wants, and rights of individuals with disabilities are pitted against those of the rest of society, emphasizing existing differences.[31]

Biopsychosocial model. The biopsychosocial approach to disability synthesizes the biological, individual, and societal contributions to disability rather than emphasizing one specific aspect over another. As supported by the National Committee on Vital and Health Statistics in its report *Classifying and Reporting Functional Status* (2003, p.2), "functional status is affected by physical, developmental, behavioral, emotional, social, and environmental conditions. This encompasses the whole person as engaged in his or her physical and social environment." An application of such an approach is the World Health Organization's International Classification of Functioning, Disability and Health[32] (WHO, 2001), which uses such a biopsychosocial approach.

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[30] Woodill (1994, p.215-216) discusses the sick role versus the minority group membership role.
[31] Zola (1982) argues against the minority model and in favor of universalizing disability.
[32] The ICF is the revised version of the ICIDH, the International Classification of Impairments, Disabilities and Handicaps, released in 1980 by the World Health Organization as a complementary classification to the ICD, the International Classification of Diseases, now in its 10th version.

AN ALTERNATIVE FRAMEWORK OF DISABILITY: THE CAPABILITY APPROACH

Many traditional disability models are welfare-oriented, viewing individuals with disability as helpless and dependent on others. Resulting from these models are programs classified as collective welfare and organized charity, which attempt to meet individual needs but actually structure economic dependency through reliance on charitable giving, individual begging, and state benefits (Beresford, 1996, p.557).

To maintain eligibility, welfare programs usually prohibit recipients from earning or receiving more than a designated amount of financial resources. Many low-wage jobs pay only a fraction above welfare benefits so many individuals choose to remain on welfare despite their ability to work. In fact, significant disincentives to labor force participation exist in the public policies of developed countries such as Sweden and the United States (Schriner, 2001, p.648). This is one reason why social assistance has been scrutinized (Bickenbach, 1998, p.164). Countries spend significant financial resources to return individuals to work but the results have been far from satisfactory.

While many programs exist providing benefits and services to individuals with disabilities, "too many remain outside the labor force and economically dependent on cash benefits."[33] Simple handout solutions are not effective mechanisms for fostering economic sustainability and long-term well-being of individuals with disabilities.[34] These programs are becoming increasingly more expensive in conjunction with the growing numbers of individuals with disabilities and those eligible for such benefit programs (O'Day & Berkowitz, 2001, p.633).

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[33] Rogers (1987, p.117) discusses the employment dilemma for individuals with disability.
[34] As discussed in the Nepal Human Development Report, UNDP (1998: 77).

With more demand for financial support, alternative approaches are needed to meet the needs of individuals with disabilities in a more sustainable way. An alternative to such a failing safety net approach is one that systematically supports an enabling and empowering platform, providing a mechanism for those to escape their vulnerability and poverty (Asian Development Bank, 1999, p.15). The capability approach facilitates the identification of gaps between an individual's capabilities and his/her functionings, which facilitates determining interventions. By recognizing the potential of individuals with disabilities, the capability approach provides a more positive perspective on disability than many traditional models of disability (Welch Saleeby, 2003).

According to Sen (1987, p.25), "the value of the living standard lies in the living, and not in the possessing of commodities." Capabilities rather than commodities are considered intrinsically important to individuals since commodities, like goods and services, are considered merely means to an end. All individuals, including those with and without disabilities, differ in their ability to convert resources into functionings. The capability approach recognizes that differences exist in the conversion process and considers human diversity as an integral component in its framework.

Consequently, each individual's respective life circumstances are considered in the capability approach to determine what is affecting the development of their respective capabilities. A more individualized approach supports the growing movement among individuals with disabilities who desire not to be grouped and labeled together under the heading "disability", but rather be considered an individual first and then someone who has a disability second.

Additionally, a more individualized approach is necessary since individuals with disabilities differ significantly depending on their type of disability and even within the same disability type. Thus, a person who has spina bifida will function very differently than a person who is blind. A person who has Parkinson's Disease may differ in his/her symptoms and functionings from another person with Parkinson's Disease despite some general similarities in characteristics and behaviors (shaking, gait problems, etc.).

Furthermore, the capability approach emphasizes the need to move beyond actual functionings (outcomes or achievements) to promoting capabilities (opportunities or one's potential) among all individuals. This is certainly important for individuals with disabilities whose functionings (what they are actually doing) may be affected significantly by their lack of opportunities and choice (what they are potentially capable of doing within the context of their own environment).

An example would be a file clerk with a disability at a marketing office who desires to work as a marketing assistant in that office. The employer observes that the file clerk is able to do her job, and that she is gainfully employed. Functioning is the focus of the employer. Meanwhile, the employee with a disability is aware of having competencies and skills that remain untapped by the file clerk position, but could be used in the marketing assistant position if certain structural and perceptual barriers were to be removed. Capabilities are the focus of the employee with a disability.

The gap between functionings and capabilities that keeps the file clerk in a job beneath her productive potential may be the result of workplace barriers, stereotype thinking, negative attitudes, stigma, or some combination thereof. Were the employer and vocational service provider to promote the capabilities of the employee by structuring

accommodations into the built environment, educating managers on making work process accommodations, and training the employee in self-advocacy, thereby unlocking employee and workplace capacity, the gap could be bridged and the possibility of career advancement greatly enhanced.

As mentioned in the previous section, traditional disability research and clinical practice originates from the medical model and concentrates primarily on the functioning of the individual via various functional assessments and outcome measures. However, disability research and clinical practice have shifted away from focusing merely on the individual at the body level or an individual's impairment as well as conducting assessments exclusively in a clinical setting.

Alternatives include conducting such assessments in more practical settings, such as an individual's home, school, workplace, or community. By situating the assessments in real-life settings, specific factors in that individual's environment may be considered in conjunction with the determination of their functional abilities.

Certainly, clinical practice and research is moving towards understanding the contextual situation of the individual in his/her environment[35]. The capability approach allows the examination of personal and environmental factors that affect converting commodities into functionings and that influence developing one's capability set. In recognizing the importance of human diversity in the conversion process, the capability approach is appropriate for dealing with issues related to the wide range of impairments, health conditions, and disability.

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[35] The role of the environment has been increasingly recognized by organizations including the Centers for Disease Control and Prevention (CDC) as evidenced in Healthy People 2010 (U.S. Department of Health and Human Services, 2000) and the World Health Organization (WHO) as incorporated in its revised disability-related classification system (WHO, 2001).

A capability set, including personal characteristics and social arrangements, affects an individual's freedom to lead different types of lives. For all individuals a health condition or impairment may be considered a personal characteristic that most likely will affect his/her freedom to live a certain way. For example, an older woman with severe rheumatoid arthritis may not be able to prepare meals any longer for her family due to the inability to manipulate with her fingers and wrist.

Capabilities should serve as the information base for evaluating individual social advantage.[36] Intrinsically, individual advantage is assessed and valued in terms of the capabilities possessed by that individual. By evaluating an individual's capabilities, one can determine if the individual requires assistance in developing certain capabilities and even identify starting points for intervention strategies.

Sen argues in support of a capability approach to poverty, which focuses on capabilities and deprivations rather than factors considered instrumentally significant, such as low income. There are other influences on capability deprivation besides low income; that is, income is not the only instrument in generating capabilities. Hence, the instrumental relationship between low income and low capabilities varies between individuals, and the impact of income on capabilities is conditional and contingent upon factors such as age, gender, disability, and social roles, etc.

Essentially, poverty is considered the deprivation of basic capabilities (ability to be educated, ability to work, and so forth). Likewise, disability may be considered the deprivation of basic capabilities since individuals with disabilities are marginalized by consequences of their impairment/health condition in their environment. Similar to

[36] Nussbaum & Sen (1993: 30) discuss how capabilities differ from other approaches, which focus on personal utility, opulence, negative freedoms, and resource holdings.

poverty, disability may be considered a deprivation in capability where individuals with disabilities may be seen as less capable than individuals without disabilities (Goffman, 1965). This is not necessarily the result of the individual and his/her impairment but rather the influence of societal barriers and constraints on that individual.

As supported in the following quotation, disability is considered "the expression of a physical or mental limitation in a social context – the gap between a person's capabilities and the demands of the environment" (Pope & Tarlov, 1991, p.1). Therefore, the role of the environment on the individual is given importance. Although low income levels and low employment rates of individuals with disabilities have been attributed to such individuals as having less capability than those without disabilities, much of their lack of employment is attributed rather to discrimination and denied opportunities in employment (Mackelprang & Salsgiver, 1999, p.223).

THE CAPABILITY APPROACH, HUMAN DEVELOPMENT, AND DISABILITY

The capability approach has established the basis for the human development paradigm (Fukuda-Parr, 2003; Fukuda-Parr & Kumar, 2003). Enhancing human capability of all individuals is the primary objective of human development. By promoting less social exclusion and a more equitable distribution of capabilities, human development involves expanding choices and opportunities. As a result, human development enables and empowers individuals to lead valued and respectful lives. Therefore, it is an appropriate framework for examining marginalized populations like women, the poor, and individuals with disabilities.

Furthermore, human development involves increasing choices in highly valued areas by all individuals including "participation, security, sustainability, guaranteed human rights – all needed for being creative and productive and for enjoying self-respect, empowerment and a sense of belonging to a community (UNDP, 2000a, p.17). Since these same areas parallel those emphasized by the disability rights and independent living movements, it seems fitting to use a capability approach in addressing disability.

Human development focuses ultimately on the improvement of individuals and their well-being by raising their capabilities. As emphasized by Sen (1999), well-being involves life with basic freedoms, such as the freedom to live a healthy life and the freedom to work. The focus of human development is to enhance those capabilities of individuals (e.g. the capability of being healthy or the capability of being able to work) in order to secure and expand those freedoms enjoyed by individuals and to enhance the lives and well-being of individuals.

Accordingly, the capability approach is concerned with the availability of necessary resources and access for developing one's capabilities. For example, the capability of being healthy requires having adequate health insurance coverage and access to adequate medical care and treatment. Access includes the availability of health clinics and health care practitioners as well as appropriate immunizations and medication. In the situation of an individual with a physical disability, access may require accessible hospitals, health facilities, clinics, and pharmacies to accommodate the individual's disability. The capability approach considers such environmental aspects in determining the effects on the individual's overall capabilities unlike traditional disability models.

Available commodities and services are not necessarily sufficient to increasing capabilities since other factors may interfere with accessing these benefits, such as not being able to afford them, living too far from the service providers without adequate transportation, and discriminatory practices preventing certain individuals from getting them. The capability approach emphasizes the importance of examining multiple factors that may affect not only the availability of these resources, but also the access to them.

Development involves expanding the freedoms enjoyed by individuals and removing the sources of "unfreedoms" including poverty (Sen, 1999, p.3). Similarly, disability itself may be seen as a source of "unfreedom" due to its restrictive nature on individual functioning. Individuals may not be able to access goods and services due to their impairment, or society's negative response to impairments. In essence, this becomes the disabling aspect for those individuals.

Specifically, a building may be inaccessible for wheelchairs and other types of adaptive mobility equipment that prevents access and use of the building. There may be

a lack of supports such as the unavailability of materials written in Braille or larger print for those who cannot see or those who have low vision. Moreover, non-physical factors such as discrimination and stigma may hinder individuals with disabilities from accessing these benefits. Development in this context involves "removing the disability" along with promoting the building of individual capabilities.

While human development can enhance capabilities via appropriate cultural, economic, political, and social orientations, certain groups remain "structurally excluded from using and enhancing their capabilities."[37] Individuals with disabilities, women, and poor individuals have been denied capability-enabling opportunities, such as education and work. As indicated by the Asian Development Bank (1999, p.13-14) individuals with disabilities "lack access to vocational training and are often trained into trades for which there is no demand or that do not provide decent livelihoods." Rehabilitation and assistive technology are either unavailable or unaffordable for many individuals with disabilities and their families, especially in developing countries. Lack of such resources stresses the importance of promoting capability development among these groups.

Contrary to many other approaches, the capability framework draws attention to both opportunities and distribution of resources among all individuals as it "asks how all the groups in the population are doing, and insists on comparing the functioning of one group to that of another" (Nussbaum & Glover, 1995, p.5). One of the most widely known applications is that of the philosopher, Martha Nussbaum who has expanded the application of the capability approach to issues related to women, capabilities, and human development (Nussbaum, 1995, 2000).

[37] Discussed in the Nepal Human Development Report (UNDP, 1998: 1).

As Nussbaum states, "international political and economic thought should be feminist, attentive (among other things) to the special problems women face because of sex in more or less every nation in the world, problems without an understanding of which general issues of poverty and development cannot be well confronted" (Nussbaum, 2000 p.4). Similarly, the unique problems experienced by individuals with disabilities, a growing segment of the world's population, must be addressed as well.

Unequal economic, political, and social circumstances generally result in unequal capabilities for many individuals, including individuals with disabilities. In instances where both poverty and disability are experienced simultaneously, the consequence is a significant failure of capabilities. Moreover, if gender inequality is combined with poverty and disability, then an even greater deficit of capabilities results for individuals.

According to Nussbaum (2000), "In certain core areas of human functioning, a necessary condition of justice for a public political arrangement is that it deliver to citizens a certain basic level of capabilities. If people are systematically falling below the threshold in any of these core areas this should be seen as a situation both unjust and tragic, in need of urgent attention" (p.71).

Consequently, mechanisms addressing capability development should be implemented for all individuals regardless of whether they are disabled or non-disabled, poor or not poor, men and women, and so forth. However, specialized efforts should be made to address the needs of marginalized populations (individuals with disabilities, the poor, women and children) and to increase their respective capability development due to their frequent lack of power, resources, and access to services.

BRIDGING THE CAPABILITY APPROACH AND THE ICF FRAMEWORK

Bridging the capability approach with the International Classification of Functioning, Disability and Health (WHO, 2001) is an important step in further operationalizing the capability approach and in promoting the use of both frameworks among professionals from different disciplines (Welch Saleeby, 2004). The ICF is considered by many entities as the international standard framework in describing health and health-related states. It provides a standard and unified framework to describe not only health conditions, but also to identify ways of alleviating and/or removing disability in conjunction with human development efforts.

The ICF has become increasingly supported in countries throughout the world as it has been translated into numerous languages, including Spanish, French, Dutch, Japanese, and Arabic. It has multiple uses across sectors, including "insurance, social security, labour, education, economics, social policy and general legislation development, and environmental modification" (WHO, 2001, p.5). To enable clinical practitioners to use the ICF, an ICF clinical manual is being developed by the American Psychological Association in conjunction with the World Health Organization.

Since its publication, the ICF has become more widely recognized by individuals and organizations in disability-related fields. The ICF classification has been accepted officially by the United Nations. The ICF terminology has been incorporated in The Standard Rules on the Equalization of Opportunities for Persons with Disabilities. The ICF conceptual framework has been recommended as the basis for measuring disability in the United Nations Statistics Division's publication, entitled "Guidelines and Principles for the Development of Disability Statistics" (United Nations, 2002).

In fact, one of the leading international disability organizations, Disabled Peoples' International (DPI)[38] in a recent position paper addresses the definition of disability and proposes using the ICF as its preferred definition until its World Council develops an alternative definition. DPI states "The International Classification of Functioning (ICF) defines disability as the outcome of the interaction between a person with an impairment and the environmental and attitudinal barriers he/she may face." (DPI, 2003, p.1)[39]

Additionally, the World Bank's Office of Disability and Development refers to the ICF as the current international guide in defining what is meant by disability. As indicated by the World Bank, the ICF provides "a framework which encompasses the complex multifaceted interaction between health conditions and personal and environmental factors that determine the extent of disablement in any given situation" (World Bank, 2004, p.1).

Interestingly, the framework and terminology reflected in the ICF is fairly consistent with the capability approach. There are a few minor differences, but the main constructs are quite similar (see Table 2). Creating parallels between the capability approach and the ICF classification will facilitate use of these frameworks in conjunction with one another – certainly in working with individuals with impairments or health conditions that create disabilities as a result of the interaction or lack thereof in their own environments (environmental factors, especially those considered barriers).

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[38] DPI is a network of national organizations of disabled people, which was established to promote human rights of disabled people through full participation, equalization of opportunity, and development efforts.
[39] Note: DPI in its Position Paper on Definition of Disability (DPI, 2003, p.1) inaccurately refers to the ICF, as the International Classification of Functioning, rather than the correct classification title, the International Classification of Functioning, Disability and Health (WHO, 2001).

The ICF is classified into three main components, which consist of Body Functions and Structures, Activities and Participation, and Environmental Factors. Domains for the first component include the full range of physiological functions and structures. The second component of activities (execution of a task or action by an individual) and participation (involvement in a life situation) includes the full range of actions and life areas such as eating, moving around, school education, and employment. Activities relate more to the individual and participation relates more to society.

As the third component, environmental factors are the external influences on the individual with a health condition or the physical, social, and attitudinal factors that interact with the other ICF domains. Environmental factors differ from personal factors, which are also considered contextual aspects but more related to the individual's background such as age, gender, race, ethnicity, religion, social status, habits, and lifestyle. Personal factors affect an individual activities and participation, and so their contribution is recognized in the ICF framework. However, personal factors have been excluded purposefully from the classification due to their social and cultural variability.

This conceptualization of the dynamic interaction between health conditions (diseases, disorders, injuries, etc.) and contextual components (environmental and personal factors) parallels the capability approach, which itself recognizes the role of contextual factors in the development of capabilities (specifically in the conversion process from income, commodities, and assets into capabilities and functionings).

Table 2

Comparison of Capability and ICF Terms and Definitions

	CA, Capability Approach	ICF, International Classification of Functioning, Disability and Health
Term	Disability	Disability
Definition	Deprivation of capability resulting from individual and societal factors	Restriction in participation resulting from individual and societal factors
Term	Capability	Participation
Definition	Ability to achieve in life	Involvement in life situations
Term	Functionings	Activities
Definition	An individual's doings and beings	An individual's execution of tasks or actions

In comparing the ICF terms to those in the capability approach (see Table 2), the ICF term participation, described as involvement in a life situation, is most comparable to the term capability, considered the ability to achieve in life. Just as capability represents the set of potential doings and beings of the individual or functioning, participation consists of the potential tasks or actions or activities executed by an individual within his/her life context. Essentially, capability and participation both reflect the "lived experience" of individuals. Therefore, while it may be possible to assess an individual's activities and functionings in a standard environment to determine his/her capacity, it is equally if not more important to assess an individual's performance of these activities and functionings within his/her real-life environment.

Qualifiers, such as performance and capacity, are used to qualify the ICF constructs of activities and participation. According to the ICF, capacity is used to describe an individual's ability to execute a task or action whereas performance describes what an individual does in his/her current environment. Capacity requires a standardized environment to assess the highest probable functioning level of an individual without the impact of the environment. Hence, performance is the more appropriate qualifier in determining what activities and participation are realistically possible for individuals taking account of their real life situations and environmental influences.

Consider the activity of walking as classified in the mobility domain (Chapter 4) in the ICF (code d450). This activity is equivalent to the functioning of walking in the capability approach. It is important to determine whether an individual has the capacity or the ability to walk in the truest sense – as in a standardized testing setting such as a clinical laboratory with ideal conditions. However, it is even more important to compare

this information with a determination of whether that same individual is able to walk in his/her community in real-life conditions, which may differ significantly from a standardized environment and consequently impact the individual's ability.

For example, a woman who has developed arthritis in the wrist and knee is able to walk short distances in the clinic but unable to walk in her own community due to the unleveled surfaces and unpaved roads. Consequently, she is not able to walk the five blocks to the bus stop, which is her only transportation to work. Her inability to walk eventually impacts her ability to work in an office as an administrative clerk, although her typing and filing skills are unaffected by the minor arthritis in her wrist. She is forced to quit her job and remain at home drawing benefits from the welfare system.

Although a typical clinical assessment of capacity would not demonstrate any difficulties in walking or completing work-related tasks such as typing or filing, an assessment of performance would reveal her problems in walking in the community and most likely its effect on her opportunities for employment. These barriers would be identified in the performance test, but not in the capacity test.

Using the same example in an application of the capability approach, an assessment of the woman's functionings would demonstrate the lack of achieved functioning of walking and the lack of achieved functioning of working or being employed. An outsider might conclude that she lacks the ability to work due to her chronic condition of arthritis. However, this would be inaccurate.

As emphasized by Sen it is imperative to look beyond an individual's functioning to his/her capability, those functionings he/she could have achieved. In doing so, one

would determine the woman possesses the capability to achieve the functioning of working due to her unaffected typing and filing skills.

Moreover, it is crucial to determine the reason for the gap between her achieved functioning and capability. In this case, her ability to get to work is the key element. In developing interventions to increase her participation and promote her capability, one would start by addressing her problems with transportation to work.

As described, the constructs of capability and functionings are closely related. As indicated by Sen (1987), functionings are more directly related to living conditions whereas capabilities are the real opportunities an individual possesses regarding the life he/she may lead. Likewise, the ICF constructs of participation and activities are closely related. Similarly, the distinction between these two constructs may be drawn along the same lines as capability and functioning.[40]

Activities may be considered more directly related to what an individual actually does in the context of his/her environment influenced by living conditions (e.g. working versus not working). Participation may be considered more related to his/her true potential or opportunities in life (e.g. not working due to a chronic condition such as arthritis versus not working due to the lack of transportation). In most cases, an observer would contribute the woman's unemployment to her impairment or chronic health condition (arthritis), but in actuality it is the environment that creates the disability preventing her to earn an income despite her skills and abilities.

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[40] The WHO (2001) recognizes the difficulty in distinguishing between activities and participation based on their domains as well as by identifying individual versus societal perspectives on the basis of domains (e.g. the domain of mobility versus the domain of interpersonal interactions). Consequently, Annex 3 of the ICF lists four possible ways to operationalize these differences. These include (1) designating some domains as activities and others as participation with no overlap; (2) designating some domains as activities and others as participation with partial overlap; (3) designating all detailed domains as activities and broad category headings as participation; (4) using all domains as both activities and participation.

It is important to note that opportunity or freedom to avoid unemployment is very different for the woman with arthritis as compared to another woman who terminates her job post-pregnancy after choosing to take care of her newborn baby at home. Here the construct of capability is necessary to make the distinction since both women lack the same functioning of being employed or working.

The functionings of both women are identical but their reasons and life situations are very different. Specifically, the first woman does not have a choice while the second woman does have a choice in working or not working. The capability approach, like ICF participation, emphasizes these distinctions and highlights their importance for understanding the real life situations of individuals, especially marginalized populations.

As indicated in the previous example, choice enters the capability framework at the stage of converting capability into functioning. Despite not being specifically mentioned in the ICF framework, choice is inherently a factor in what an individual actually does in conjunction with his/her ability and environment circumstances.

In certain cases, an individual may choose among all his/her potential functionings and in other instances, an individual may experience constrained choice. Constrained choice is certainly an issue with individuals who are poor or who experience disabilities due to their limited choices as well as their likelihood of perceiving themselves as incapable of doing certain things (such as working, attending college, etc.).

Although disability is generally considered a term for impairments, the ICF recognizes that disability has both an individual and societal dimension. Consequently, the ICF considers disability an umbrella term for impairments (the loss or abnormality of bodily function and structure), activity limitations (difficulties individuals may have in

executing activities), and participation restrictions (problems individuals may experience in involvement in life situations). In these cases, societal structures, social relations, and social institutions create constraints that prevent individuals from completing daily their activities and participating in society.[41]

Addressing disability means intervening at an individual, organizational, or system level in order to address these social constraints. Appropriate intervening tasks include removing social norms and discriminatory practices that hinder individuals with disabilities, promoting policies and legislation that address the rights of individuals with disabilities, and increasing social supports for individuals with disabilities.

At the ICF level known as activity limitation, addressing disability involves several possible interventions to assist the individuals in overcoming their difficulties in executing activities. One mechanism uses assistive technology to compensate for activity limitations. Although assistive technology range from high-tech (electric powered wheelchairs, computer-assisted software, etc.) to low-tech devices (manual wheelchairs, adapted eating utensils, etc.), the crucial element is making assistive technology available, affordable, and accessible to individuals with activity limitations.

Another method to address activity limitations involves rehabilitation, which attempts to correct or extend the range of individual capacities. Similarly, the important aspect involves making rehabilitation available, affordable, and accessible to individuals who need such devices. In many developing countries, CBR or community-based rehabilitation has become an effective means in providing such services.

[41] This is known as the social construct of disability.

The ICF level, participation restriction, includes interventions that change life situations. This involves removing barriers and establishing facilitators in the environment, including physical and non-physical factors. Interventions include addressing those social and political elements necessary to facilitate environmental modification such as research, advocacy, and policy development. The availability of funding, training, and support groups are important to families of individuals with disabilities who generally serve as caregivers for those who require assistance. Additionally, education and knowledge dissemination are needed to raise awareness and change attitudes positively in communities.

Overall, the ICF presents a conceptual framework for understanding both the causes and consequences of disability. Additionally, it provides clinical information for developing appropriate mechanisms to reduce or alleviate disability, which may be considered a source of unfreedom for numerous individuals. As indicated in its introduction (WHO, 2001, p.6), the ICF provides information related to "prevention, health promotion, and the improvement of participation by removing or mitigating societal hindrances and encouraging the provision of social supports and facilitators." Accordingly, the ICF classification provides a mechanism to operationalize the capability approach, which will facilitate greater implementation of the capability theoretical framework and the ICF among those working in disability-related fields.

DETERMINING CAPABILITIES AND FUNCTIONINGS

Functionings may be very elementary and valued strongly by all individuals (such as being healthy, being able to work) or they may be more complex but still highly valued by many (such as being socially integrated, being able to engage in the political process). Since individuals attach relative weights to these functionings including choice, importance, and satisfaction evaluations should consider variations among individuals. This is true in the lives of individuals with disabilities, who may consider moving around in his/her wheelchair more important than riding a bicycle. For the poor, necessities for survival such as food and drinking water are high priority rather than other functionings.

However, "preferences are not always reliable indicators of life quality, since they may be deformed in various ways by oppression and deprivation" (Nussbaum & Glover, 1995, p.5). Certainly this is evident with marginalized populations, who are not only constrained by limited opportunities and choices but also by societal forces (social policies, family, friends, and community members) who influence their preferences.

For example, the teenager with a mild developmental disability might believe himself to be incapable of working since his parents have reinforced this belief since he was a young child. Or, the individual with a spinal cord injury who is not encouraged by his spouse to return to his office position which he held prior to the accident. Hence, the functioning of working or being employed may not appear as one of their preferences due to the influence of family members that have affected their life choices.

In being able to compare and to discern differences in capabilities among individuals (for instance, disabled versus non-disabled, poor versus non-poor, women versus men), an overall list of potential capabilities is useful. Sen deliberately does not

specify a list of capabilities or rank capabilities due to high variability in any given list. Consequently, he avoids the typical criticism associated with many lists such as being overly specific, being overly prescriptive, and being viewed in a single metaphysical perspective (Alkire, 2002).

Unlike Sen, Martha Nussbaum (2000, p.77-80) has defined specific capabilities for functioning within her version of the capabilities approach, which is considered both highly normative and evaluative. The principle objective of Nussbaum's capabilities approach is to ensure that every individual has the capability to function and flourish but yet only certain human abilities should be developed. She differentiates between those capabilities that should and should not be promoted. As organized and presented in Table 3, her list of capabilities is considered a listing of the central dimensions for human development.

Inspired by the Aristotelian account of human flourishing, Nussbaum has developed this extensive list of capabilities[42], "introducing an objective evaluation by which functionings can be assessed for their contribution to the good human life" (Nussbaum, 1988, p.176). Raising all individuals above the minimal thresholds of these basic human capabilities reflects a commitment to equality and the ultimate objective of human development efforts. Nussbaum's capabilities approach is intended to be a universal framework, and she contends that all governments should endorse these central capabilities of their citizens.

[42] The current version represents the outcome of several revisions influenced by cross-cultural factors and Nussbaum's discussions with individuals in India (Nussbaum, 2000, p.78).

Table 3

Nussbaum's Central Human Functioning Capabilities

Type of Capabilities	Description of Capabilities
Life	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
Bodily Health	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
Bodily Integrity	Being able to move freely from place to place; having one's bodily boundaries treated as sovereign, i.e. being able to be secure against assault, including sexual assault, child sexual abuse, and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
Senses, Imagination, and Thought	Being able to use the senses, to imagine, think, and reason – and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing self-expressive works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to search for the ultimate meaning of life in one's own way. Being able to have pleasurable experiences, and to avoid non-necessary pain.
Emotions	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by overwhelming fear and anxiety, or by traumatic events of abuse or neglect. *Supporting this capabilities means supporting forms of human association that can be shown to be crucial in their development.

Table 3

Nussbaum's Central Human Functioning Capabilities (continued)

Type of Capabilities	Description of Capabilities
Practical Reason	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. *This entails protection for the liberty of conscience.
Affiliation	A. Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another and to have compassion for that situation; to have the capabilities for both justice and friendship. *Protecting this capabilities means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech. B. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails, at a minimum, protections against discrimination on the bases of race, sex, sexual orientation, religion, caste, ethnicity, or national origin. In work, being able to work as a human being exercising practical reason and entering into meaningful relationships of mutual recognition with other workers.
Other Species, Plants, and the World of Nature.	Being able to live with concern for and in relation to animals,
Play	Being able to laugh, to play, to enjoy recreational activities.
Control Over One's Environment	A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association. B. Material. Being able to hold property (both land and movable goods), not just formally but in terms of real opportunity; and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure.

Although highly supported, Nussbaum's approach has been criticized for being excessively specific in its normative viewpoint and for giving insufficient weight to culture and the process by which normative judgments are made (Alkire & Black, 1997). Unlike Nussbaum who makes certain moral judgments requiring institutional action, other approaches have taken a different approach.

One alternative approach is that of John Finnis (see Table 4) whose list is considered more restrained due to its basis on practical reasoning. Resulting from a collaborative effort between John Finnis, Germain Grisez, and others who have refined a form of Aristotelian ethics and have applied it to various social, political, and legal issues (Finnis, 1980; Finnis, 1983; Grisez, 1987), it is based on reasons that individuals act either morally or amorally as opposed to virtues. His list involves seven basic reasons for action, or "dimensions of human flourishing" that "constitute a list of basic functionings which is matched by a list of basic capabilities" (Alkire and Black, 1997, p.268).

Despite apparent differences between the two approaches, there are certain elements addressed by both lists. Health is included as a separate type of capabilities called "bodily health" in Nussbaum's list but deemed a component of Finnis' "life" capabilities dimension along with the maintenance and transmission of safety. Knowledge is addressed in Nussbaum's capabilities of "senses, imagination, and thought" including adequate education and literacy but is combined with the appreciation of beauty in Finnis' list, emphasizing the importance of a rational state. Affiliation including friendship is considered another type of capabilities by Nussbaum whereas friendship is considered a separate dimension by Finnis.

Table 4

Finnis' Dimensions of Human Capabilities

Dimension of Human Capabilities Capabilities	Description of the Dimension of Human
Life	Its maintenance and transmission – health and safety
Knowledge and Appreciation of Beauty	This good is correlative to human being rational and their resultant capacity to know reality and appreciative beauty
Work and Play	This good is correlative to human being simultaneously rational and animal and their resultant capacity to transform the natural world by using realities, beginning with their own bodily selves, to express meanings and serve purposes.
Friendship	Harmony between and among individuals and groups of persons – living at peace with others, neighbourliness, friendship.
Self-Integration	Harmony between the different dimensions of the person, that is, inner peace.
Coherent Self-Determination, or, Practical Reasonableness	Harmony among one's judgments, choices, and performances – peace of conscience and consistency between one's self and its expression. When exercised by a community, may be better described as participation.
Transcedence, or Religion	'Harmony with some more-than-human source of meaning and value.'

In reviewing Nussbaum's list of central human functioning capabilities and Finnis' list of dimensions of human capabilities, similarities emerge to the activities and participation domains of the ICF (see Table 5). There are certain aspects addressed in all three lists such as health. Despite its central focus in the ICF as detailed in the body functions and structures component, "looking after one's health" is included under the domain of self-care similar to how it is treated in Nussbaum's and Finnis' lists.

Additionally, there are certain elements in the ICF that appear in Nussbaum's list but are not explicitly addressed in Finnis's list. Nussbaum's inclusion of "being able to be treated as a dignified being whose worth is equal to that of others" is similar to the inclusion of human rights, political life, and citizenship in the ICF. Interestingly, in addressing protection against discrimination Nussbaum fails to mention disability along with race, sex, sexual orientation, religion, caste, ethnicity, or national origin.

Overall, the ICF provides the most comprehensive listing of capabilities (potential functionings) despite being developed specifically as a classification of functioning, disability and health. The full version of the ICF contains four levels of detail that can be aggregated into a higher-level classification. Alternatively, the short version can be used, which includes all domains at the second level. This option enhances the usefulness of the ICF where the short two-level version can be used in surveys and clinical outcome evaluations and the full four-level version can be used for specialist services such as rehabilitation outcomes and geriatrics (WHO, 2001, p.23).

Table 5

ICF Domains of Activities and Participation

ICF Domains	Description of Activities and Participation
Learning and Applying Knowledge	Purposeful sensory experiences; basic learning; applying knowledge
General Tasks and Demands	Single and multiple tasks; carrying out daily routine; handling stress and psychological demand
Communication	Communicating receiving and producing; conversation; use of communication devices and techniques
Mobility	Changing and maintaining body position; carrying, moving, and handling objects; walking and moving; and moving around using transportation
Self-Care	Washing oneself; caring for body parts; toileting; dressing; eating; drinking; looking after one's health
Interpersonal Interactions & Relationships	General interactions; and particular interpersonal relationships
Major Life Areas	Education; work and employment; economic life
Community, Social & Civic Life	Community life; recreation and leisure; religion and spirituality; human rights; political life and citizenship

At the one-level classification, the ICF contains 8 domains of body functions, 8 domains of body structures, and 9 domains of activities and participation with 5 additional domains related to environmental factors that are useful in identifying barriers and facilitators to individual's participation and capability development. At the two-level classification the ICF contains 115 items for body functions, 56 items for body structures, 118 items for activities and participation, and 74 items for environmental factors. At the most detailed level of the four-level classification, there are 495 items for body functions, 302 items for body structures, 384 items for activities and participation.

As indicated by Alkire (2002), a list of dimensions must be complete, clear yet vague to permit cultural adaptation, and non-conforming to a single view of the "good life." The ICF adheres to all such requirements with its hierarchal listing of a full range of functionings that has been translated into multiple languages and empirically tested for cultural applicability in multiple countries. Due to the comprehensive nature of the ICF and its extensive list of domains related to activities and participation, it should be considered as an alternative list of capabilities.

OPERATIONALIZING CAPABILITIES: EMPIRICAL EVIDENCE

The first empirical application of the capability approach was conducted by Sen followed by other individuals who have operationalized the capability approach in the literature. Although these examples have inevitably incorporated various components described in either Nussbaum's and/or Finnis' lists, most examples have used Sen's theoretical framework as their foundation and guidance in operationalizing capabilities and functionings.

To date, there has been no empirical research examining the capability approach from the perspective of individuals with disabilities. In fact, most studies applying the capability approach either exclude disability totally or treat disability as a deprivation indicator rather than a means of comparing a sub-set of the population. Inclusion is generally dependent upon the availability of disability data in the particular dataset.

For example, the study conducted by Brandolini and D'Alessio (1998) explored the use of a multidimensional analysis of deprivation and inequality with the capability approach. Using data from the Bank of Italy's Survey of Household Income and Wealth (SHIW) for 1995, the researchers selected a small number of indicators and classified them into six categories representing functionings: health, education, social relations, labor market, housing, and economic resources.

There were three measures for deprivation of health functioning including "bad or very bad" self-assessed general health condition with a scale ranging from very bad to very good (categorical indicator), the presence of chronic illnesses (binary indicator), and the presence of any form of disabilities (binary indicator). Although disability could have

been treated as an independent grouping variable (disabled versus non-disabled) and used for data comparison of capability deprivation, disability was used a deprivation indicator.

An interesting finding from this study is that "affection from a chronic illness or a disability does not necessarily entail a bad health status" (Brandolini and D'Alessio, 1998, p.27). This statement supports the fact that disability and poor health are not one in the same, as often propagated in the literature. Since individuals with disabilities may vary in their health status, which may or may not be affected by their disability, it is important to conduct comparative analysis to determine how disability affects not only health status but also other capabilities and overall life situations.

Another example of a study applying the capability approach that uses disability as a deprivation indicator was conducted by Pant (2001). In this study the researcher conducted a poverty assessment, where poverty was considered as capability deprivation. He used data from two districts in East Nepal (the more accessible Dhankuta and the more remote Bhojpur) to illustrate how income-consumption measures have overlooked important aspects related to deprivation and its underlying causes.

As stated by Pant (2001, p.3), "defining poverty in terms of a binary category using household income, on the one hand undermines caste, gender, age and location-related differences between the poor, and on the other hand ignores those who may fall above the poverty line but are still deprived in so many respects." Although not indicated in his work, such a poverty definition undermines differences based on disability, as well.

Pant used indicators based on practicality and relevance, and mentioned these indicators represented a combination of input, output, and process indicators due to data

problems. These capability indicators included: the ability to get enough to eat, ability to have a proper shelter, ability to get education, and the ability to get proper health care. Specifically, the ability to get proper health care "reflects an individual's chance of being in good health, which in turn is determined by the status of public health services, the ability of individuals and households to pay for medical expenses and personal freedom, both in terms of access to health services as well as ability to utilise the services available" (Pant, 2001, p.24).

There were three outcome measures for deprivation of this functioning, ability to get proper health care, including morbidity, chronic illness, and disability. The mortality measure used deaths under the age as five while the presence of a chronic illness and/or disability indicated these deprivations respectively. Pant's findings reported a disability prevalence rate of 2% with slightly higher rates for men than women and higher rates for the older population. These were comparable to previous studies (Richardson, 1983).

As supported by these two studies, disability like poverty may be considered the lack of capability since it frequently marginalizes individuals. However, disability may also be a useful grouping variable to compare individuals across various capabilities and deprivation indicators similarly to comparing those who are poor and non-poor. By comparing individuals with and without disability, a greater understanding of the effects of disability on the lives of individuals may be achieved.

Two potential measures for such a comparison are the human development index and the capability poverty measure. The human development index (HDI) measures the average level of three essential capabilities among countries as the unit of analysis. These capabilities include access to resources, education, and life expectancy represented

by these three respective indicators - personal purchasing power, literacy rates, and life expectancy at birth. Chances of income, life expectancy, nutrition, and schooling are much more informative than straight income comparisons since "it is a highly sophisticated attempt to assess the infrastructure of an individual's life" (Douglas and Ney, 1998, pp.68-69). However, access to resources is an indirect measure of capabilities since purchasing power represents the means to capabilities.

The capability poverty measure (CPM) is an index developed by the United Nations Development Program (UNDP). Like the HDI, it focuses on three essential capabilities – to live a healthy and well-nourished life, to have access to safe and healthy reproduction, and to be literate and knowledgeable. Specific indicators for these capabilities include the proportion of children under five years old who are underweight, the proportion of births unattended by trained personnel, and the percentage of women who are illiterate. Unlike the HDI, which examines the average state of individual capabilities, the CPM measures the percentage of the population who lack those capabilities (May, 2001, p.53). These capabilities shortfalls are known as deprivations.

Indices such as the CPM and HDI have been used to compare the inequality experienced by gender sub-groups of the population in many developing countries. This is important since inequality retards growth. For instance, the CPM composite index actually emphasizes the deprivation of women. In addition, comparisons have been conducted between men and women to describe gender differences on the HDI. Similarly, comparing individuals with and without disabilities on the HDI and CPM would provide valuable insight into the life situations of individuals with disabilities and how disability affects the capabilities of such individuals.

CONTEXT OF DISABILITY AND POVERTY IN NEPAL

The capability approach is especially instrumental in developing countries, which have the world's majority of individuals with disabilities and the poor but currently have limited resources and opportunities for developing capabilities.[43] In fact, an estimated 80% of the world's disability population (approximately 600 million) lives in developing countries (National Council on Disability, 2002). The growing prioritization for analysis in developing countries results not only from these significant numbers of individuals with disabilities and those who are poor, but also due to limited resources that characterize developing countries.

In most developing countries, disability is not considered a critical issue fueled by an underlying attitude that individuals with disabilities inherently have less value. Disability is not part of the main agenda of many governments whose laws barely exist to provide for individuals with disabilities and are rarely enforced to support this segment of the general population. This situation depicts the lack of political involvement as well as the lack of voice in policymaking to provide a positive environment for individuals with disabilities. For a capability approach to be adopted in addressing disability and poverty, we need to identify the needs of individuals with disabilities in developing countries and understand how they meet their needs in this context of limited resources and support.

Nepal, as a case study of a developing country, has been selected for various reasons including the availability of recently collected national data sources addressing disability, poverty, and other related indicators. The fact that Nepal has no policy regime and no infrastructure in place to address the prevalence of disability also contributed to

[43] It may be more appropriate to state that these individuals live in the "majority world" rather than merely developing countries (Stone, 1999).

the decision. While disability is becoming an important issue, poverty and human development has been a primary focus in Nepal for many years. In fact, Nepal has embraced human development as a primary objective, "defining people all the country's citizens as both the means and end of development efforts" (UNDP, 2002, p.1). Terms such as human capability and capabilities have been integrated in its development efforts. Therefore, it seems appropriate that Nepal has been the focus of this dissertation research.

Nepal, a small landlocked country with an estimated population of 25.9 million, ranks as one of the poorest and least developed countries in the world (Central Intelligence Agency, 2002). With an average per capita annual income of $220 USD, it is considered the poorest country in South Asia (World Bank, 2002). Over 50% of its people are considered income-poor based on using the $1 a day international poverty line (UNDP, 2000b). Nepal's population is growing rapidly at 2.5% per year, affecting both its economy and development (World Bank, 1999). Nearly four-fifths of the total population relies upon agriculture for subsistence (Nepal South Asia Centre, 1998) as the majority resides in rural areas (CIA, 2002; Save the Children, 1996).

Nepal has numerous problems involving the economy, education, and health care. Its poor economic situation results from multiple factors, including "the small amount of arable land (17%), poor transportation networks due to the inaccessible terrain, an uneducated and unskilled work force, economic exploitation and corruption, and political instability" (Boyce & Paterson, 2002, p.67). The Nepalese unemployment rate was estimated at 47% in 2001 (CIA, 2002). Low literacy rates and poor health conditions persist for both men and women in Nepal. Shortened life expectancy at 59 years in Nepal

is lower than other South Asian countries (World Bank, 2002). Health services are accessible to only 15% of the overall population (Save the Children, 1996, p.3).

Nepal has experienced transitions in its governing bodies. In 1951, it changed from an absolute monarchy to a cabinet system of government. In 1990 reforms created a multiparty democracy within the framework of a constitutional monarchy. In 1996 a Maoist uprising threatened to overthrow the regime. Then in 2001 multiple members of the royal family were massacred in a family dispute. In 2002 the new king dismissed the Prime Minister and appointed a new cabinet currently governing Nepal.

The Government of Nepal has supported international efforts related to disability including the International Year of Disabled Persons in 1981, the United Nations Decade of Disabled Persons 1983-1992, and the Asian and Pacific Decade of Disabled Persons 1993-2002. It has addressed disability through policies and strategies under the Ministry of Women and Social Welfare, the Ministry of Education, and the Social Welfare Council.[44] The Ministry of Women and Social Welfare has been instrumental in protecting the welfare of individuals with disabilities with its development of two national policies in Nepal – the National Disabled Policy Plan of Action and the disabled persons Service National Policy in 1996.

The first landmark disability legislation was the Disabled Persons' Protection and Welfare Act of 1982. This Act originated from the idea "that if persons with disabilities were provided with the right education, proper health care, and equal opportunities in employment, they would be capable members of society and dynamic, productive citizens" (Economic and Social Commission for Asia and the Pacific, or ESCAP, 1999,

[44] The first disability initiative in Nepal was the establishment of the Social Services National Coordination Council in 1977, which was renamed the Social Welfare Council in 1992.

p.219). Further legislative efforts resulted in special provisions for individuals with disabilities within the Constitution of Nepal in 1990 as well as the Protection and Welfare of the Disabled Rules and Regulations in 1992.

The prevalence of disability in Nepal ranges from 1.5% to 20% depending on the source (National CBR Network, 1998 as cited in Gurung, 1999, p.75). As in other countries, the estimates are influenced by the various definitions of disability and compounded by cultural issues. While impairments are recognized virtually everywhere, the concepts of disability and handicap are relative" (Boyce et al., 1999, p.25). It is difficult to ascertain the causes of disability in Nepal since "they may be multi-factorial, including poverty, the influence of poor antenatal, postnatal and general health care, malnutrition, accidents, and other social factors such as the low status of women" (Gurung, 1999, p.75).

As in most countries, social stigma is widespread toward individuals with disabilities, especially girls and women who suffer a lower status in Nepalese society. Gender disparity is prevalent in areas such as income distribution and property rights, which in turn affect capabilities specifically access to education, employment, health, and nutrition (Nepal South Asia Centre, 1998). Negative attitudes toward individuals with disabilities, particularly women and girls, make them susceptible to abuse, exploitation, and neglect (Sungava, 1999, p.2).

Families are often stigmatized by and ashamed of family members with disabilities, who may be neglected and hidden from others. Children with disabilities are considered an imperfection on family status, an omen of bad luck, punishment for misdeeds in a previous life. They are considered a burden to their families since they will

have difficulty in contributing to the household income or getting married (Boyce & Paterson, 2002, p.68). "Overall, disability affects the livelihood potential of a person and his/her dependants" (Pant, 2001, p.26).

In Nepal disability programs and services are provided by various sources, including the government, non-government organizations (NGOs), national and international organizations, and local community groups. However, access to services is very limited due to barriers such as "restrictions of their own physical or mental impairments, poverty, the mountainous terrain and social stigma" (Boyce & Paterson, 2002, p.68). The problem is complicated further by the fact that the needs of individuals with disabilities are considered a local issue, while economic assistance focuses upon large-scale projects (Schriner, 2001, p.651).

As in other developing countries, individuals with disabilities in Nepal have virtually no access to traditional rehabilitation due to limited resources. Alternatively, community-based rehabilitation (CBR)[45] has proven to be a successful and effective model in providing services in Nepal and in other developing countries although not as successful in some others. Community-based rehabilitation is a low-cost mechanism that integrates rehabilitation into existing infrastructures by emphasizing "essential services, economic development, and the importance of training disabled people, family members, and local health personnel in rehabilitation techniques that make a difference in an individual's ability to do everyday tasks" (Seelman, 2001, p.676).

[45] A formalized community based rehabilitation program was introduced in 1976 by the World Health Organization in addressing the recognized need for decentralized rehabilitation measures that used local resources. For detailed information on the origin of CBR and its use in various developing countries, see Ingstad (2001, p. 779-787).

Community-based rehabilitation is preferred in Nepal for its rehabilitation techniques using local resources and involving the family and community (Boyce et al., 1999, p.20). Numerous organizations attempt to foster empowerment via community-based rehabilitation. Actually, these organizations have addressed wider issues and have created "a change in disability services to bring it out of a narrow and often medical context, to emphasize the social and development aspects" (Gurung, 1999, p.76). Similar to that of community-based rehabilitative objectives for individuals with disabilities, the capability approach emphasizes mechanisms to empower individuals who have been traditionally and continually marginalized.

As indicated by the United Nations Development Programme's Poverty Report 2000 entitled "Overcoming Human Poverty" (UNDP, 2000b) "a new global strategy against poverty needs to be mounted – with more resources, a shaper focus and a stronger commitment" (p.8). It is the intention of this dissertation research to represent a step forward toward such objectives by specifically addressing the needs of those with disabilities who have been too frequently excluded from poverty alleviation strategies.

CHAPTER 3: RESEARCH METHODOLOGY

Systematic research addressing the relationships between poverty and disability has been lacking in the fields of disability, poverty, and development. Contributing to the deficit has been a lack of interest and consideration among researchers as well as a lack of funding to conduct such investigations. While more work has been conducted in the disability field as compared to the poverty and development fields, there have been several basic limitations.

First, most studies are limited to developed countries rather than developing countries due to the availability of data if conducting secondary analysis or access to necessary funding and other resources if collecting actual field data. Second, the majority of research has included disability as an outcome indicator rather than as a means of comparing one population group to another – specifically, individuals with and without disabilities. Finally, in studies that have used disability as a group for the purpose of comparison, data analysis is frequently limited to certain variables, particularly educational attainment and labor force participation or employment.

This dissertation research supplements the existing literature addressing disability, poverty, and development issues, and draws upon all these literature bases in a collective analysis. Additionally, it provides a greater understanding of the life situations of individuals with disabilities in Nepal as well as Nepalese families who have a disabled member in their household. Although the focus for this dissertation is Nepal, the findings have widespread application to individuals with disabilities and their families in other developing countries as well as developed countries.

RESEARCH QUESTIONS, HYPOTHESES, AND CONCEPTUAL MODEL

Drawing upon the literature, the following research questions have been addressed in this dissertation. Each will be justified and its hypotheses presented.

1. What are the ways in which disability contributes to individual deprivations?

Hypothesis 1: Disability will contribute directly to individual deprivations.

Literature has indicated that individuals with disabilities are more likely to be poor, to be less educated, to be unemployed, and to have poorer health than individuals without disabilities. While these studies exist, most have focused on one of these specific areas. Few studies have broadened their scope beyond these key areas or have systematically examined multiple variables at an individual and household level. This dissertation expands traditional poverty and disability analysis to examine the multiple ways in which disability contributes to individual deprivations.

2. Is there a correlation between household poverty and the likelihood of having a family member with some type of disability?

Hypothesis 2: There will be a positive correlation between household poverty and the likelihood of having a family member with some type of disability.

Literature has indicated that poverty contributes to risk factors that increase the likelihood of an individual developing a disability in his/her lifetime. The majority of these studies have been conducted at the individual level, and many have either focused

on disability in general (due to the lack of more detailed data) or a specific type of disability (due to interest in a particular type of disability). This dissertation builds upon these previous studies and expands the analysis to the household level to determine if there is a correlation between household poverty and the likelihood of any family member in the household having any type of disability.

3. Do households with a disabled family member experience greater deprivation than households without exposure to disability?

Hypothesis 3: Households with a disabled family member will experience greater deprivation than households, which do not have a family member with disability.

Literature has indicated that an individual's disability contributes to not only an increase in deprivation levels at the individual level, but also increased deprivation among family members in certain areas. The majority of studies have focused more on the individual rather than household level. For those household level studies, the focus has been on either the psychosocial impact on the family (e.g. stress of parents) or the economic impact of disability on the family (e.g. how primary caregivers often experience decreased productivity and income as a result of providing personal care assistance for the disabled family member). This dissertation builds upon these previous studies, expanding analysis at the household level to determine if having a disabled family member contributes to that household experiencing greater deprivation.

The following conceptual model indicates how disability affects income poverty, asset poverty, and capability deprivation at either individual and/or household levels.

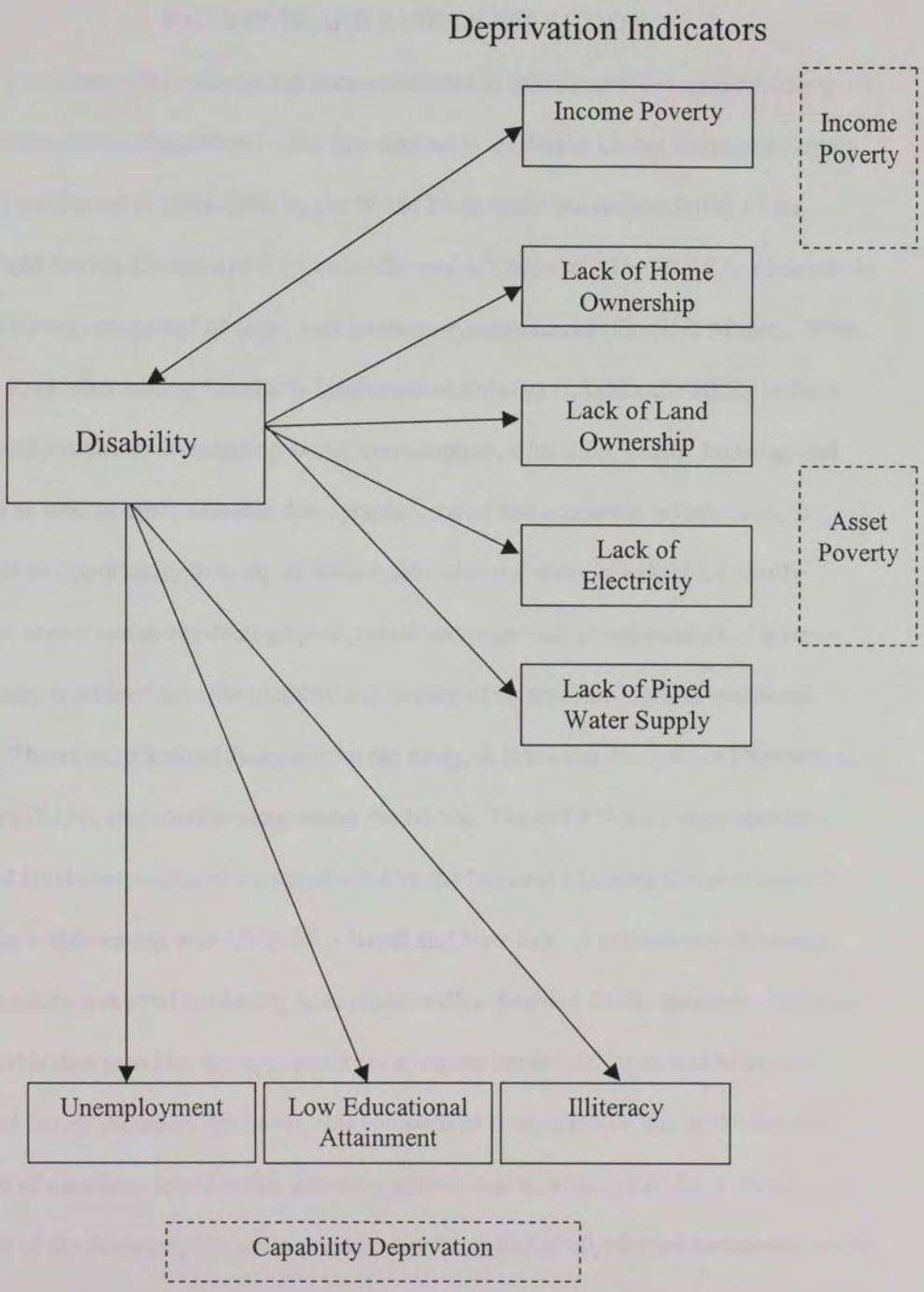

Figure 2. Relationships of disability, poverty, and capability deprivation.

DATA SETS AND SAMPLE SELECTION

Secondary data analysis has been conducted in this dissertation research using two sources of data from Nepal. The first data set is the Nepal Living Standards Survey (NLSS) conducted in 1995-1996 by the World Bank under the responsibility of the Household Survey Division of the Central Bureau of Statistics. The NLSS is a household sample survey comprised of large, multipurpose questionnaires (Grosh & Munoz, 1996).

Like other Living Standards Measurement Surveys (LSMS), the NLSS collects household welfare data including assets, consumption, education, health, housing, and income as well as other valuable demographic, social and economic information. It provides an opportunity to compare households with and without a disabled family member across numerous demographic, social and economic characteristics. However, its primary weakness is in the quantity and quality of its disability-related questions.

Therefore, a second data set from the study, A Situation Analysis of Disability in Nepal (SITAN), was used to supplement the NLSS. The SITAN is a comprehensive, national level study initiated and conducted by the National Planning Commission of Nepal in collaboration with UNICEF – Nepal and New Era. A preliminary screening questionnaire was used to identify households with a disabled family member. Like the NLSS, this data provides the opportunity to compare households with and without a disabled family member. However, this comparison is constrained due to the limited number of questions asked in the screening questionnaire, which provides a "brief account of the demographic and economic characteristics of all selected households in the cluster" (UNICEF, 2001, p.14).

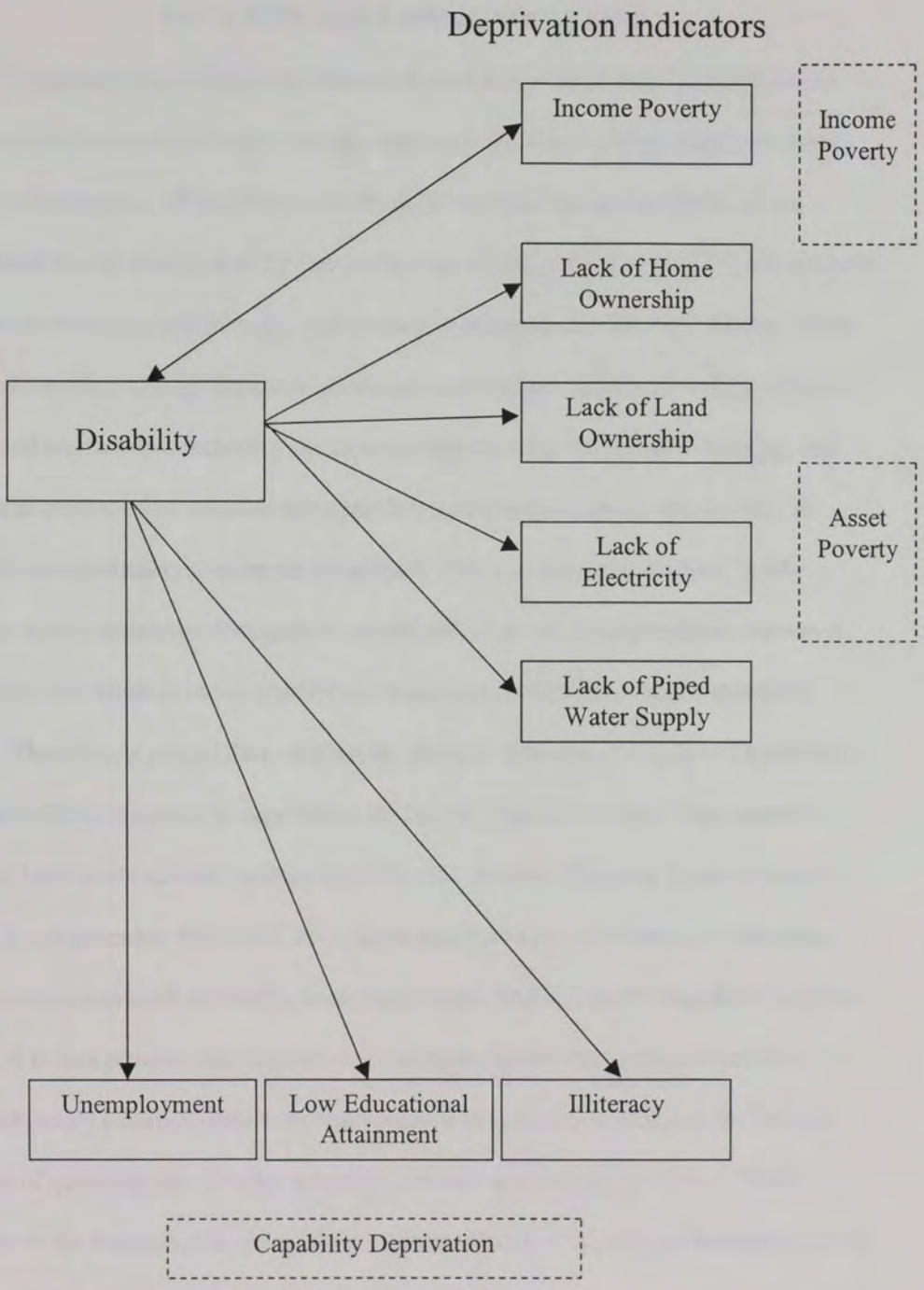

Figure 2. Relationships of disability, poverty, and capability deprivation.

Aside from the SITAN screening questionnaire, the majority of questions were asked in two specialized surveys, a household and a disabled questionnaire, administered only to households with disabled family members. The household questionnaire was given to the heads of these households while the disabled questionnaire was administered to individuals with disabilities themselves or a proxy (caretaker) in cases where the individuals were below 12 years in age or unable to respond to the questionnaire.

Although these data provide valuable information and permit the comparison between various respondents (head of household, individuals with disabilities, and caretakers), they do not permit comparison between either individuals or households with and without disability. Building on the respective strengths, the NLSS and SITAN data sets were used together to facilitate an improved examination of disability and poverty.

Nepal Living Standards Survey. Following methodology developed by the World Bank for the LSMS, the NLSS is characterized by innovative data management techniques. These include "a pre-coded questionnaire, decentralized data entry, data verification in the field, and extensive training and supervision of field workers" (World Bank, 1998, p.1). The NLSS is comprised of three separate questionnaires.

The first is the household questionnaire that contains information on assets, consumption, education, fertility, health, housing, income, and migration. The second is the community questionnaire that collects information from community leaders on aspects in the entire community such as the number of health clinics or access to schools. Finally, the price questionnaire asks information on commodity prices in communities.

Secondary data analysis was conducted using the NLSS data generated from the household and community questionnaires. Nepal's Central Bureau of Statistics (1996

and 1997) has published initial findings from this data. However, these findings are descriptive within singular content areas such as health or employment allowing for additional analyses. As stated in the report (CBS, 1996, preface), "the survey offers unique opportunities to assess the poverty situation in the country and carry out many other research works by providing a large data base for a single reference period on a wide range of topics."

The sample design of the NLSS is a two-stage, stratified sampling procedure. To ensure a nationally representative sample, Nepal was divided into four strata based on geographic and ecological regions (mountains, hills – urban, hills – rural, and terai). Wards or sub-wards were selected with probability proportional to size (PPS) from each of the four ecological strata. Out of 454 urban wards and 126 rural wards, a proposed total of 275 wards or sub-wards resulted. Households were selected from a complete enumeration of households in each sampled ward. A total of 12 households were selected from each ward with over sampling of households (N=16) in the Far-Western Development region.

The overall NLSS data set sample includes 3,373 households from 274 wards since one ward could not be reached (N=12) and another ward had only nine households. Additionally, the sample frame considered all 75 districts resulting from stratification of the sample into Development Regions. The sample includes 73 proposed districts with the omission of Rasuwa and Mustang due to low population in these districts.

Table 6 provides an overview of the NLSS sample by these development regions as well as ecological stratum and geographical area (urban versus rural).

Table 6

NLSS Sample by Development, Ecological, and Geographical Areas

	Number of Wards	Number of Households
Development Region		
Eastern	60	717
Central	110	1,320
Western	52	624
Midwest	30	360
Farwest	22	352
	274	3,373
Ecological Stratum		
Mountains	32	409
Hills	142	1,740
Terai	100	1,224
	274	3,373
Geographical Area		
Urban		
Kathmandu	33	396
Other Urban	26	320
Rural		
Eastern Hills/Mountains	60	717
Western Hills/Mountains	64	828
Eastern Terai	62	744
Western Terai	29	368
	274	3,373

The NLSS sampling procedure has its advantages. Sampling weights were devised to correct for different selection probabilities across households. Applying these weights enabled unbiased estimates of the population means generated from the raw data. Hence, it provided a self-weighted sample within each stratum and thereby, simplified analysis. It reduced travel costs and time as minimal households were interviewed in each ward. Finally, the number of households was known in advance, facilitating field team scheduling and respective workloads.

A Situation Analysis of Disability in Nepal. The SITAN study responded to the need for nationwide information about the situation of disability and individuals with disabilities. The first phase was an exploratory study completed in 1996, which analyzed secondary data related to disability, reviewed the disability literature, and administered interviews to multiple disability organizations in Nepal. The second phase conducted in 1999-2000 involved several quantitative and qualitative methods including structured questionnaires, focus groups, key informant interviews, and case studies. Due to the nature of the research questions, this dissertation uses only the structured questionnaires for secondary data analysis.

Several questionnaires were pre-tested and finalized for use in the SITAN study. First, an initial screening instrument was used to collect basic demographic and economic data of all these households and to identify households with a disabled member. For households with someone with a disability, questionnaires were administered to the household head to obtain additional information such as living conditions as well as attitudes and opinions toward disability. Another questionnaire was given to either individuals with a disability or their caretaker to gain an alternative perspective.

Secondary data analysis was conducted using the SITAN data generated from the questionnaires. Preference in using this part is due to the availability of quantitative data and the lack of availability of qualitative data, which has not been translated into English. Although the SITAN data has been analyzed initially and these results have been published (UNICEF, 2001), the analysis consisted primarily of descriptive statistics with some comparative statistics, thereby allowing additional probing for this study.

Similar to the sampling method used in the NLSS, the sample design of the SITAN is a multi-stage, stratified sample with the first and second stage-sampling units selected with probability proportional to size (PPS). The measure of size used was the number of individuals reporting physical and mental disabilities as reasons for not being economically active in the 1991 Census of Nepal. The third stage sampling units (households) were selected systematically with random units.

To ensure a nationally representative sample, districts were grouped into 15 strata or 15 eco-development regions in the SITAN (see Table 7). Two districts from each region (stratum) were selected for a total of 30. From these districts, rural and urban clusters were selected independently resulting in 89.4% rural areas and 10.6% urban areas. A cluster (minimum size fixed at 60 households) was a ward, a combination of wards (if particularly smaller than 60 households), or a sub-ward (if particularly larger than 60 households), depending on the number of households. A list was developed of all Village Development Committees (VDCs) with respective wards and population. Selection was completed according to PPS where size was the population in each cluster.

From each rural stratum, 13 rural clusters were selected for an intended total of 195. However, the total rural clusters decreased by one (N=194) in replacing the rural

cluster Surkhet for the urban cluster Salyan. Regarding urban clusters, one from each municipality in the sample district was considered. Since urban wards are large, sub-wards were used for urban clusters. A total of 23 urban clusters resulted in the survey, making the total clusters 217 in the sample.

Table 7

SITAN Districts by Development Regions and Ecological Areas

Development Regions	Terai	Hills	Mountains
Eastern	Morang	Terhathum	Taplejung
Eastern	Siraha	Udaypur	Sankhuwasabha
Central	Dhanusha	Makwanpur*	Dolakha
Central	Bara	Kathmandu	Sindhupalchowk
Western	Nawalparasi	Syangja	Manang
Western	Kapilbastu	Gulmi	Mustang
Mid-Western	Dang	Pyuthan	Jumla
Mid-Western	Bardiya	Surkhet*	Kalikot
Far-Western	Kailali	Achham	Bajura
Far-Western	Kanchanpur	Baitadi	Bajhang

* Districts replaced in fieldwork-Makwanpur replaced Sindhuli, Surkhet replaced Salyan.

From each of the 217 clusters, 60 households were selected systematically with random start from a list of all households. Additional households (5 extras) were pre-sampled to compensate for any non-responses. The varied sampling techniques resulted in 13,005 households covering a population of 75,944 in the full SITAN data set sample. Like the NLSS, sample weighting was implemented at the cluster level for each stratum in the SITAN. This enabled determining the relative contribution of individual records to national figures, or national estimates.

Strengths and weaknesses of the data sets. The NLSS and SITAN data sets are appropriate for meeting objectives associated with this dissertation for multiple reasons. Detailed questioning characterizing both the NLSS and the SITAN facilitates assessments beyond the prevalence and magnitude of poverty and/or disability in Nepal. These data sets permit the examination across numerous social and economic factors as well as general living standards of individuals who are poor and/or those with disabilities. Additionally, both data sets are statistical landmarks in Nepal. The NLSS marks completion of the first integrated household survey after an interim exceeding ten years and the SITAN represents the first ever in-depth analysis on disability in Nepal.

Another advantage is the use of pre-determined, concise definitions of disability in the SITAN data set since the lack of such a definition in previous surveys has resulted in incorrect estimates of disability, especially due to the inclusion of impairment in deriving disability estimates. The SITAN data attempted to "provide a standard definition in the national context that could be used for the present study as well as future studies so that a comparable analysis of disability can be made" (UNICEF, 2001, p.3).

This differs from the NLSS, which fails to use a standard definition of disability. In fact, disability is not used at all in its questioning but rather the term chronic illness. However, a proxy for disability (chronic illness) is possible for data analysis, and NLSS data comparison with the SITAN is possible despite time differences in data collection. The lack of definition consistency is a weakness.

A potential weakness in the SITAN involves the fixed age limitation to 70 years of age in their preliminary analysis. This was intentionally done to avoid over representation of disability among older adults since aging contributes to disability. However, disability prevalence might be underestimated due to this fixed age limitation.

Data management. The SITAN data set was obtained with permission from the National Planning Commission in Nepal, UNICEF-Nepal, and New Era, which was the organization responsible for conducting data collection, data entry, data management, and preliminary data analyses. The SITAN data had been entered into Statistical Package for the Social Sciences (SPSS) files, edited, and cleaned by New Era to enable preliminary analysis of the data. The data was provided electronically in these SPSS files and downloaded for additional analyses. Additional construction of variables and analyses for this dissertation were conducted in SPSS Version 12.0.

The NLSS data set was obtained with permission from the Central Bureau of Statistics in Nepal and the Poverty Team, Development Research Group of the World Bank. The data was provided on a CD-ROM in several formats including ASCII, SAS and STATA formats. Waterman Research Solutions in St. Louis, Missouri converted the data to SPSS files. Additional construction of variables and analyses for this dissertation were conducted in SPSS Version 12.0.

DESCRIPTION OF VARIABLES

Disability Indicators. Disability can be defined in multiple ways as evidenced by the numerous variations used worldwide. Disability is generally defined in terms of impairment, activity limitations, functional limitations, or even as a "handicap" in certain countries. Table 8 summarizes the multiple variables available in either the SITAN and/or NLSS data sets that have been used as disability indicators or a proxy for disability for this dissertation research.

Table 8

Description of Disability Indicators

Indicators / Variables	Survey	Level of Measurement
Presence of Disability	SITAN	Dichotomous (yes/no)
Type of Disability	SITAN	Categorical (by type)
Presence of Chronic Illness	NLSS	Dichotomous (yes/no)
Type of Chronic Illness	NLSS	Categorical (by type)
Presence of Activity Limitation	NLSS	Dichotomous (yes/no)
Days of Activity Limitation	NLSS	Continuous (# days limited)

Table 9

Disability Definitions Used in the SITAN

Seeing	A person who, even after treatment, could not count fingers with improved eyesight (both) from a distance of ten feet (considered functionally blind).
Hearing	A person who could not hear ordinary voices with both ears from a distance of one meter.
Speaking	A person who could not speak at all or a person who could not be understood outside the family.
Mobility	A person who was unable to perform the daily activities of life due to a physical deficiency, defect or deformity in the lower limbs.
Manipulation	A person who was unable to perform the daily activities of life due to a physical deficiency, defect or deformity in the upper limbs.
Mental Retardation	A person who was unable to perform activities or to learn new tasks per the age and environment due to delayed mental development prior to the age of 18 years. Under this classification, two categories were included: a) persons who could manage the daily activities of life with the help of training and b) persons who could not manage daily activities like eating, dressing, speaking and going to the toilet even with training.
Epilepsy	A person who had frequent attacks of unconsciousness and showed symptoms of tongue biting, frothing from the mouth, shivering and incontinence.
Chronic Mental Illness	A person who, after 18 years of age, has some kind of mental instability with symptoms of unprovoked anger or elation, crying without reason and seeking isolation.
Multiple Disabilities	A person having more than one type of disability.
Cerebral Palsy	A person who has some damage in the immature brain leading to physical incapacity. Some cases could have mental retardation.

The SITAN incorporates disability definitions used by the United Nations and the World Health Organization (see Table 9). An individual was considered having a disability if he/she "could not perform the daily activities of life considered normal for a human being within the specified age and where the person needed special care, support and some sort of rehabilitation services" (UNICEF, 2001, p.xxii).

The SITAN also classifies disability into four categories included communication (seeing, hearing, and speaking disabilities), locomotion (mobility and manipulation disabilities), mentally related (mental retardation, chronic mental illness, and epilepsy), and multiple/complex disabilities (having more than one disability or cerebral palsy).

Presence of Disability is a dichotomous variable that indicates the disability status of an individual or whether an individual has a disability or not. Additionally, it has been used to determine the disability status of the household or whether there is an individual in the household with a disability or not. It is coded 1 for a yes response on the SITAN Form 1, Household Roster.

Type of Disability is a categorical variable that identifies the specific type of disability of the individual in the Screening Questionnaire. Responses are coded as difficulties in the following: 1=Seeing, 2=Hearing, 3=Speaking, 4=Mental, 5=Working or Manipulation, 6=Walking or Moving, 7=Multiple] on the Screening Questionnaire. Respondents were permitted to list more than one type of disability in the SITAN.

Presence of Chronic Illness is a dichotomous variable indicating the presence of a chronic illness where chronic illness is defined as an illness suffered for a long time or as a result of long-term damage to the body. It is coded 1 for a yes response in the NLSS Household Questionnaire, Section 8 on Health.

Unlike the SITAN, the NLSS does not ask respondents if they have a "disability" but rather asks a series of questions around the issue of chronic illness to all household members that can be used as a disability indicator (proxy for disability). In cases where respondents stated more than one chronic illness, only the one that the respondent felt was most debilitating illness was recorded. Like the disability question in the SITAN, this variable indicates whether chronic illness at the individual and household levels.

Type of Chronic Illness is a categorical variable that identifies the type of chronic illness of the individual identified in the initial chronic illness-screening question as follow: [1=Heart Conditions, 2=Asthma, 3=Epilepsy, 4=Cancer, 5=Diabetes, 6=Cirrhosis of Liver, 7=Occupational Illnesses, 8=Other]. The NLSS includes disability to do any kind of work caused by spine fracture or leg fracture as a chronic illness and lists arthritis as an example of "other" chronic illness. These responses are a mix of health conditions that may or may not be considered a disability so the NLSS chronic illness question is not the best disability indicator but it has been used as a proxy in the absence of better data.

Presence of Activity Limitation is a dichotomous variable that indicates whether there is an individual in the household with an activity limitation. The continuous variable, days of activity limitation variable has been recoded into this dichotomous variable for additional analyses where 1=Activity Limited, 0=Activity Not Limited.

Days of Activity Limitation is a continuous variable that indicates the number of days the individual had to stop doing his/her usual activity due to this chronic illness during the past 12 months. Since activity limitation is a common method of defining disability in data collection instruments, the NLSS question asking about activity limitation has been used as an additional disability indicator.

Poverty and Deprivation Indicators. Like disability, the definition of poverty varies by use and users. This dissertation uses a multi-dimensional approach to explore the concept of human poverty or deprivation among individuals with and without a disability as well as households with and without a disabled family member. Table 10 summarizes income poverty and other deprivation variables (asset and capability) available in the SITAN and/or NLSS data sets that have been used in this dissertation.

Lack of Income (Income Deprivation). Traditionally, the lack of income or the failure to achieve a certain income level has been the most recognized and used measure for poverty. Consequently, income poverty at an individual and household level was included as one indicator of poverty along with asset and capability poverty. Both SITAN and NLSS data sets contained income information for analysis.

However, each data set asked about income differently. The SITAN asked about income in both the specialized disability questionnaire and the screening questionnaire. In the more specialized questionnaire only individuals with a disability were asked about their income. Since all individuals on the household roster were not asked about their income, the SITAN income data could not be compared between individuals with and without disability to determine the effects of disability on individual income poverty. Also, the SITAN and the NLSS could not be compared in terms of individual income.

Alternatively, the screening questionnaire included a question about the income level of the "main earning member" in the household rather than every individual within the household of working age or the annual income of the entire household. Data on the main earning household member was included on Form 1, or the Household Roster. This differed from traditional income indicators at either the individual or household level.

Table 10

Description of Human Poverty and Deprivation Indicators

Indicators / Variables	Survey	Level of Measurement
Lack of Income (Income Deprivation)		
Individual Income	NLSS	Continuous
IND Income Poverty-1 and Poverty-2	NLSS	Dichotomous
Main Earner Income	NLSS & SITAN	Continuous
ME Income Poverty-1 and Poverty-2	NLSS & SITAN	Dichotomous
Household Income	NLSS & SITAN	Continuous
HH Income Poverty-1 and Poverty-2	NLSS & SITAN	Dichotomous
Lack of Assets (Asset Deprivation)		
Lack of Home Ownership	NLSS	Dichotomous
Lack of Land Ownership	NLSS & SITAN	Dichotomous
Lack of Electricity	NLSS	Dichotomous
Lack of Piped Water Supply	NLSS	Dichotomous
Lack of Capabilities (Capability Deprivation)		
Unemployment	NLSS	Dichotomous
Low Educational Attainment	NLSS & SITAN	Dichotomous
Illiteracy	NLSS & SITAN	Dichotomous

Consequently, "main earner income" was treated as a separate variable than individual and household income in certain analyses and as a proxy for the economic status of either the individual or household in other analyses. It was recognized that other members may be contributing to the household income. Gross annual income rather than net annual income was assessed since the purpose was to identify the annual earning pattern for the household and individuals frequently cannot account accurately for all expenditures to enable a precise net annual income to be determined. Annual income was not specified into sub-categories such as wage income versus in-kind payments or agricultural versus non-agricultural employment or piece rate versus daily wages.

Unlike the SITAN, the NLSS provides data on the annual income of the entire household in an aggregate form. In fact, the NLSS provides several aggregated data files such as consumption, prices, and land area compiled by the World Bank to facilitate data analysis. The aggregated income file provides data compiled from all members within a household on their total household income as well as income sub-sets including income from wage labor, other work, farm activities, non-farm activities, and other sources.

According to the World Bank, its definition of income is intended to capture the flow of resources that enable a household to achieve its living standard. The NLSS includes all possible revenues and costs so a negative annual income for households was possible due to larger amounts of deductions (e.g. cultivation costs, maintenance costs for farm machinery, wages paid if engaged in non-farm enterprise, and so forth). Annual refers to the twelve months prior to the interview date or the last completed agricultural year if the interview occurred in the middle of a cropping cycle.

Additionally, the NLSS asked questions about income to all household members aged 10 years and older in Section 11, Wage Employment. In fact, the NLSS data set distinguishes between wages earned in agricultural and non-agricultural jobs and wages earned on a piece-rate basis, daily basis, or longer basis. Additionally, information was collected about the type and value of any in-kind payments received on a daily basis and at the end of an entire period worked (if not provided every day).

For those working on a daily basis rather than a longer basis or at a piece rate the NLSS asks the same question "How much did you get in cash per day for this job?" for both agricultural and non-agricultural employment. Since the NLSS asked about the number of days worked per month and the number of months worked per year in Section 1, Part C Household Information, it was possible to calculate the annual income.

For those in agricultural jobs either paid on a longer basis or piece rate basis, the NLSS asks "how much did you get in cash for this job over the past 12 months?" However, for those individuals working on a longer than daily basis in non-agricultural jobs the NLSS asks a separate question "how much did you get for this job?" and specifies "take-home pay per month in rupees." Since the NLSS asks about the number of months worked for any type of job during the past twelve months in Section 1, Part C Household Information, it was possible to calculate an annual income amount for work.

Unlike the other wage income questions, a different question was asked only for non-agricultural jobs paid on a piece rate basis "during the past 12 months, how much did you receive from piece rate work (cash + in-kind payments)?" Since this question combined cash and in-kind payments, it was not possible to determine the amount in cash wages or the amount in in-kind payments for those who worked on a piece rate basis.

Consequently, the total value for in-kind payments were calculated for all other workers (agricultural piece rate as well as agricultural and non-agricultural daily basis and longer basis) and then added to their wage income for an overall individual income total amount that was comparable to the non-agricultural piece rate workers. In-kind payments included free food, clothing, other goods, and transportation as well as bonuses, tips, and allowances or subsidies for food, housing, and/or transportation.

In multiple cases, individuals worked in more than one type of job, either within the agricultural or non-agricultural field respectively (e.g. self-employed as a farmer and wage-earner as an agricultural worker) or in both fields (e.g. farmer in agriculture and spinner or weaver outside agriculture). Thus, wage income from multiple work activities were calculated and combined with the in-kind income earned from these activities into an overall indicator of annual total income for each individual (wage and in-kind).

Individual Income is a continuous variable that represents the total annual income in rupees of the individual from various income sources including wages and in-kind payments. Since the SITAN did not ask about the income of each individual member within a household, only the individual income data from the NLSS was used in this analysis. This continuous variable was dichotomized for purposes of further analysis.

Main Earner Income is a continuous variable that represents the total annual income in rupees of the main earning member within a household. Although the NLSS did not specifically ask this question, it was constructed from individual income to enable a more accurate comparison of income with the SITAN. The highest earner within a given household was retained and additional earners in that household were eliminated to create this variable. Like individual income, it was dichotomized for additional analyses.

Household Income is a continuous variable that represents the total annual income in rupees of the household from various income sources as described earlier. The NLSS represents the aggregated household income calculated from individual income responses within a household. However, the SITAN represents the income of the main household earner only as a proxy for the household's overall economic status. This difference will be considered in interpreting empirical findings from comparative analyses between the two data sets. Like individual and main earner income variables, this continuous variable was dichotomized to conduct further analysis.

IND Income Poverty-1 is a dichotomous variable indicating whether the annual income places that individual at or below the international standard poverty line of $1.00/day [1=Yes, 0=No]. Despite issues related to absolute versus relative poverty lines, there is a need for a common poverty line to measure absolute poverty consistently across all countries. The World Bank measures international poverty by the standards of what poverty means in poor countries. Since 1990 the poverty line has been designated at the $1.00/day amount considered "extreme poverty" rather than merely poverty.

To determine the exact amount or level for the income poverty indicator, several steps were completed. First, the poverty line of $1.00/day became an annual income of $365 per year. This amount was converted into equivalent rupees (Nepalese currency) using the average 1995-1996 historical currency exchange rates to coincide with the NLSS and the average 1999-2000 historical currency rates to coincide with the SITAN data collection timeframes. These amounts equaled 19,453 rupees and 25,447 rupees respectively, and the amounts were used to recode the continuous individual income variable into two groups for additional analysis, extreme poor and non-extreme poor.

ME Income Poverty-1 is a dichotomous variable indicating whether the income of the main household earner places that individual at or below the international standard poverty line of $1.00/day [1=Yes, 0=No]. Using the same conversion rates as in individual poverty, the continuous main earner income variable was recoded into two groups, extreme poor main earners and non-extreme poor main earners.

HH Income Poverty-1 is a dichotomous variable indicating whether the income of the household places that household at or below the international standard poverty line of $1.00/day [1=Yes, 0=No]. Again the same conversion process was used to recode the continuous household income variable into two groups for analysis, extreme poor households and non-extreme poor households.

IND Income Poverty-2 is a dichotomous variable indicating whether individual income falls at or below the poverty line of $2.00/day [1=Yes, 0=No]. The World Bank has used the $2.00/day poverty line as an alternative for international comparisons. Both the $1.00/day and $2.00/day poverty estimates are published side-by-side in the World Bank's World Development Reports (WDR) for comparison. To facilitate a greater understanding of the situation of those affected by disability and/or poverty, the $2.00/day poverty line was used for data analysis, as well.

Adhering to the same conversion methodology for the $1.00/day level, the poverty line of $2.00/day became an annual income of $730 per year. This amount was converted then into equivalent rupees using the average historical currency exchange rates to coincide with the NLSS (1995-1996) and SITAN (1999-2000) data collection timeframes. These amounts equaled 38,906 rupees and 50,893 rupees respectively, and

they were used to recode the continuous income variable into two groups for additional analyses, poor and non-poor individuals.

ME Income Poverty-2 is a dichotomous variable indicating whether the income of the main earner in the household places that individual at or below the international standard poverty line of $2.00/day [1=Yes, 0=No]. The same conversion process was used to recode the continuous main earner income variable into two groups for analysis, poor main earners and non-poor main earners.

HH Income Poverty-2 is a dichotomous variable indicating whether the income of the household places it at or below the international standard poverty line of $2.00/day [1=Yes, 0=No]. The same conversion process was used to recode the continuous household income variable into two groups, poor households and non-poor households.

Lack of Assets (Asset Deprivation). In addition to income poverty, the lack of assets was used as an alternative measure of human poverty or deprivation at the household level. Common assets include home ownership, land ownership, and basic household amenities such as having electricity in the household, having a regular piped water supply in the household, and owning a telephone in the household. Lacking any such assets was considered an indicator of asset deprivation.

All of these variables have been included in various deprivation indices available in the literature such as the hardship index developed by Mayer and Jencks (1989, p.92-94). Inadequate housing has been documented in the literature as having a negative effect on individual health due to increased risk of injury and disease. For coding purposes a "yes" response indicated the lack of the asset while a "no" response indicated ownership or possession of the asset.

Lack of Home Ownership is a dichotomous variable that indicates whether the household does not own its dwelling unit [1=Yes, lacks asset, 0=No, owns asset]. In the SITAN home ownership is asked in the Household Questionnaire administered only to households with disabled members. Thus, comparative analysis between households with and without a disabled family member was not possible using SITAN data.

However, the NLSS specifically asks the question, "Is this dwelling yours?" to all households in its Household Questionnaire Section 2 on Housing, Part B Housing Expenses. Responses were recoded to indicate lack of a home rather than ownership of a home where 1=Yes, lacks home and 0=No, owns home. The NLSS defines dwelling as "the building, or group of buildings, in which the household lives. The dwelling may be a hut, a group of hut, a single house, a group of houses, a villa, an apartment, several one-room apartments on a courtyard, or any other type of residential unit."

Lack of Land Ownership is a dichotomous variable that indicates whether the household does not own land [1=Yes, lacks asset, 0=No, owns asset]. Land ownership is important for an agrarian society such as Nepal since net income from farming is affected by whether the land is owned or rented. The SITAN asks questions regarding land ownership in its Screening Questionnaire administered to all households. Owning and renting as well as productive and unproductive land are differentiated. Additionally, it asks about renting out either productive and/or unproductive land to others.

In the NLSS the question specifically asks, "Does your household own any agricultural land?" in the Household Questionnaire Section 12 on Farming and Livestock, Part A1 Landholding – Land Owned. Responses were recoded to indicate lack of an asset rather than ownership of asset where 1=Yes, lacks land and 0=No, owns land.

Lack of Electricity is a dichotomous variable that indicates the lack of electricity in the dwelling unit [1=Yes, lacks asset, 0=No, has asset]. In the SITAN electricity is asked in the Household Questionnaire administered only to households with disabled members. Thus, comparative analysis between households with and without a disabled family member was not possible.

In the NLSS the question specifically asks, "What is the main source of lighting for your dwelling?" in the Household Questionnaire Section 2 on Housing, Part C Utilities and Amenities. Categorical responses include [1=Electricity, 2=Gas, Oil, Kerosene, 3=Generator, 4=Bio-Gas, and 5=Other]. For analysis purposes, this categorical variable has been recoded and dummy coded into a dichotomous variable where 1=Yes, lacks electricity and 0=No, has electricity.

Lack of Piped Water Supply is a dichotomous variable that indicates whether the household does not have piped water supply into the home [1=Yes, lacks asset, 0=No, has asset]. Alternatives to piped water supply include covered well or hand pump, open well, and other water sources. In the SITAN only the source of drinking water is asked in the Household Questionnaire administered only to households with disabled members. Thus, comparative analysis between households with and without a disabled family member was not possible.

In the NLSS the question specifically asks, "Do you have water piped into your house?" in the Household Questionnaire Section 2 on Housing, Part C Utilities and Amenities. Responses were recoded to indicate lack of an asset rather than ownership of asset where 1=Yes, lacks piped water supply and 0=No, has piped water supply.

Lack of Capabilities (Capability Deprivation). Observing capability deprivation among individuals permits a direct focus on achievements, a primary advantage of these measures. In addition, a capability measure avoids many problems related to aggregation and equivalence scales. "By observing capabilities directly (some at the individual level such as education and health; others are the household level such as shelter and access to services), it does not need to make assumptions about adult equivalence and household-specific economies of scale" (Klasen, 2000, p.35).

Low Educational Attainment is a dichotomous variable that indicates the low educational attainment level of the individual [1=Yes, Low Educational Attainment, 0=No, High Educational Attainment]. Both the SITAN and the NLSS ask about the educational attainment of individuals as a continuous level variable, which was recoded into two distinct levels to differentiate between low versus high educational attainment and therefore, treated as a dichotomous variable for analysis.

The SITAN asks about the "level of education" to all household members ages six years and older on Form 1, Household Roster. Responses range from 0=Less than 1, 1=Grade 1, 2=Grade 2, 3=Grade 3, 4=Grade 4, 5=Grade 5, 6=Grade 6, 7=Grade 7, 8=Grade 8, 9=Grade 9, 10=Completed SLC, 11=Intermediate 1st year, 12=Intermediate 2nd year, 13= B.A. not complete, 14=B.A. and above, 94=Madarsa/Urdu, 95=Non-formal.

In the NLSS the question specifically asks, "What was the highest class that you completed?" in the Household Questionnaire Section 7 on Education, Part B Past Enrollment to all individuals five years and older. Responses range from 0=nursery school, 1=Class 1 through 12=Class 12, 13=BSc or BA, 14=MSc or MA, 15=Professional Degree, and 16=Other.

To allow comparison between both data sets, only the responses for individuals age six and older in the NLSS were selected and used for analysis to parallel the SITAN responses. Thus, responses for age five were not included in the analysis since they were available only for the NLSS and not for the SITAN data set. For both data sets, low educational attainment was considered grades nine and lower while high educational attainment was considered grades ten and higher. This cut-off point was used since the NLSS states that grades ten and higher indicates secondary educational attainment while grades nine and lower indicates primary or lower secondary educational attainment.

Illiteracy is a dichotomous variable that indicates the illiteracy status of the individual [1=Yes, Illiterate, 0=No, Literate]. Both the SITAN and the NLSS ask about literacy status. Responses were recoded into two distinct levels to differentiate between illiteracy and literacy and to create a dichotomous variable for analysis.

The SITAN asks about the literacy status of all household members on Form 1, Household Roster. Responses differentiate between being literate or illiterate, formal schooling or non-formal schooling, and those who have never attended any type of schooling as follow: [1=Literate and Ever Schooling/Non-Formal, 2=Illiterate and Never Schooling, 3= Literate and Never Schooling, and 4=Illiterate and Ever Schooling]. For analysis purposes, the two responses indicating literacy [responses 1 and 3] were collapsed and recoded as 0=Literate while the two responses indicating illiteracy [responses 2 and 4] were collapsed and recoded as 1=Illiterate.

In the NLSS two related questions ask all household members age five years and older, "Can you read a letter?" and "Can you write a letter?" in the Household Questionnaire Section 7 on Education, Part A Literacy. Both are dichotomous questions

that indicate the two primary components of literacy. Since the SITAN refers to illiteracy as including "those who had been to school but cannot read or write...and children who are in school in the lower grades and have not yet picked up reading and writing skills and therefore not literate" (UNICEF-Nepal, p.29), illiteracy was considered the inability to either read or write for purposes of data analysis. Therefore, a new variable was created to combine NLSS responses to either being ability to read or write a letter where 1=Illiterate, not being ability to read or write, 0=Literate, being able to read or write.

To allow comparison between both data sets, only the responses for individuals age five and older in the SITAN were selected and used for analysis to parallel the NLSS responses. Therefore, responses for individuals under age five were not included in the analysis since they were available only for the SITAN and not for the NLSS data set.

Unemployment is a dichotomous variable that indicates unemployment of the individual [1=Yes, Unemployed, 0=No, Employed]. The SITAN asks about the main occupation of only the household head rather than all household members on Form 1, Household Roster. Thus, comparative analysis between individuals with and without a disability was not possible for unemployment using SITAN data.

The NLSS specifically asks every household member 10 years and older, "During the past 12 months what work did [NAME] do?" in the Household Questionnaire Section 1 on Household Information, Part C Activities. Categorical responses for this question include 1-93=Various Occupation Codes, 96=Other Not Classified, 97=Student, 98=Not Working, 99=Military. For data analysis purposes, this categorical variable has been recoded into a dichotomous variable where 1 equals unemployed and 0 equals working in any occupation including "other not classified, student, and military status."

Demographic Variables. Certain demographic variables including age, gender, ethnicity, marital status, and geographical area (urban and rural areas; mountains, hills, and terai areas) have been analyzed in this dissertation to provide characteristics of the sample (see Table 11). These variables were available in both the NLSS and the SITAN data sets. The following section explains how each variable potentially influences the relationships between disability and poverty.

Table 11

Description of Demographic Variables

Variables	Data Set	Level of Measurement
Age	Both	Continuous
Gender	Both	Dichotomous
Ethnicity or Caste	Both	Categorical
Geographical Region	Both	Categorical
Marital Status	Both	Categorical

Age is an important issue since the likelihood of disability increases with age. Older adults experience greater impairments and chronic conditions that limit their daily activities (Waldrop & Stern, 2003). Old age poverty has become a significant issue in both developed and developing countries (Barrientos, Gorman, & Heslop, 2003). Age itself has a gender dimension since older women are more likely to have a higher poverty rate than men (Choudhury & Leonesio, 1997; U.S. Census Bureau, 2003).

Gender inequality affects participation and opportunities especially for women in developing countries. Women continue to earn less than their male counterparts and have higher unemployment rates (Blau & Kahn, 1992, 1995). Since women have greater longevity and disability/activity limitation increases with age, there is a higher percentage of disability among women than men (Jans & Stoddard, 1999). Furthermore, women with a disability frequently experience a double barrier and additional discrimination in areas such as education, employment, and health care (Abu Habib, 1995).

Ethnicity and/or caste negatively affect the opportunities of individuals in developing countries that recognize such systems. A caste system is a multifaceted status hierarchy composed of all members of society. It plays an important role in resource allocation based on status where wealth and resources are disproportionately distributed in favor of higher castes. According to the Nepal Human Development Report (Nepal South Asia Centre, 1998)), individuals from the lowest caste groups experience lower longevity, higher infant mortality, and lower literacy rates than those in higher caste groups. Historically, lower caste groups have been subject to much discrimination and oppression especially in Nepal.

In fact, Nepalese individuals are "categorically relegated to subordinate social positions, and are denied equal access to social, economic, political and legal resources" (Asia-Pacific Human Rights Network, 2001, p.1). Ethnic minorities are treated in a similarly negative manner as those in lower caste groups. In Nepal any non-Hindu group is considered an ethnic minority, and there are over sixty different ethnic groups including indigenous peoples, which are distinct from other minorities.

Geographical differences influence disability and poverty rates. Individuals from rural areas are not able to access medical services as those in urban areas contributing to higher disability prevalence rates. Lack of opportunities in rural communities leads to lower educational attainment, higher poverty, and greater unemployment. In fact, rural individuals with disabilities have an even higher rate of unemployment than their urban counterparts (Seekins, Innes, & Maxson, 1998). In the rural areas of Nepal, problems are characterized by poverty, lack of water and sanitation resource infrastructure, and lack of social services (Asia-Pacific Human Rights Network, 2001, p.1).

Marital status is an important factor for several reasons. Married people have lower rates of mortality, morbidity, and mental disorders than those who are not married (Gore, 1973; Prior and Hayes, 2001). Spouses are generally the primary caregivers of individuals with a disability (Walker, 1993). Additionally, the presence of a spouse in the household is a potential source of additional income, financial support, social support, and emotional support. In fact, marital status has been demonstrated to affect earnings and economic well-being of the household (Cancian & Meter, 2000).

METHOD OF ANALYSES

SPSS 12.0 statistical software was used to manage and analyze the data. First, data entries were screened preliminarily for accuracy. Data entries were checked to see if data values fell within correct theoretical ranges, data entries were missing, and whether missing values were coded in proper format. Initial analyses involved exploration of the data including descriptive statistics, univariate analyses, and bivariate analyses. Testing for outliers, normality of the data, and homoscedasticity of residuals was conducted.

Since the two data sets, NLSS and SITAN, differ in their respective sampling techniques, data collection methods, definitions of disability indicator variables, and timeframes of data collection, it was not possible to merge or concatenate these data sets. Instead, each data set was analyzed independently and their respective results were compared in an effort to strengthen the data analyses. Consequently, decisions were made to enable such comparisons such as ensuring consistency with variables in terms of similar concepts and definitions in both data sets (e.g. illiteracy defined as the inability to read and write) as well as the same data ranges (e.g. educational attainment responses starting as age five in both data sets and not age five in one and age six in the other).

Demographic characteristics of the sample were examined including age, gender, ethnicity or caste, geographical region, and marital status. At the univariate level the frequency distributions and percentages were provided for categorical demographic variables. For continuous demographic variables such as age, measures of central tendency and dispersion were provided (range, median, mean, mode and standard deviation). Univariate outliers were examined. Missing data was not problematic.

Descriptive statistics on each of the demographic variables were provided by each of the disability indicator variables. Using either t-tests or chi-squares, bivariate analyses between the demographic variables and disability indicator variables were conducted. Results of these analyses were compared between NLSS and SITAN data sets to ascertain similarities in findings and in the case of differences and also to explain the potential effect of different disability definitions and timeframes of data collection.

Descriptive statistics on demographic variables were examined by income deprivation (income poverty) and by the other deprivation indicators (lack of assets, lack of access, and lack of capabilities). Using chi-squares and t-tests, bivariate analyses between the demographic variables and deprivation indicators were conducted. Findings from analyses were compared between NLSS and SITAN data sets.

Descriptive statistics were provided for all independent and dependent variables. Frequencies and percentages were provided for both the categorical independent disability variables and the categorical dependent deprivation variables. Finally, the range, median, mean, mode and standard deviation were provided for continuous dependent deprivation variables such as income and educational attainment.

Bivariate analyses were conducted to test if any of the deprivation variables vary by any of the disability indicator variables in the NLSS and SITAN sample. Specifically, t-tests were used to determine whether deprivation variables were statistically different between those who have or do not have a disability at the individual level or between those who have or do not have a disabled family member at the household level. Depending on the nature of the variables (dichotomous), chi-squares were used to test for associations between the deprivation and disability indicator variables.

Q 1: What are the ways in which disability contributes to individual deprivations?

This research question was assessed initially by exploring differences by disability on deprivation indicators at the individual level, including income poverty and lack of capabilities. Descriptive statistics were used to indicate differences in individual deprivation indicators based on the various disability indicator variables.

A series of t-tests were used to test for differences between dichotomous independent disability variables (presence of chronic illness and presence of activity limitation) and the continuous dependent deprivation variable, individual income. Individual income was not available in the SITAN except for the main earner's individual income of the household.

Chi-squares were used to test the relationships between dichotomous independent disability variables (presence of chronic illness and presence of activity limitation) and the dichotomous dependent deprivation variables, income poverty-1 (extreme poverty at $1/day level) and income poverty-2 (poverty at $2/day level). To identify an association between the continuous independent disability variable of activity limitation and the continuous dependent variable of individual income, a correlation was conducted.

The relationships between categorical independent disability variables (type of disability in the SITAN and type of chronic illness in the NLSS) and dichotomized income poverty variables (income poverty-1 and income poverty-2) were examined by chi-square. A one-way analysis of variance (ANOVA) was used to test for differences between these categorical independent disability variables from the NLSS data set and the continuous dependent variable, individual income.

Using the dichotomous income poverty variable as the dependent variable (type of disability and type of chronic illness), simple logistic regression was used to determine if disability or chronic illness of the individual can predict the incidence of an individual being deprived in terms of income poverty and capability poverty.

Odds ratios in regressions were used to determine how much more likely it is to become poor at $1/day and $2/day income poverty levels if the individual has a chronic illness or activity limitation. Individual income poverty-1 and income poverty-2 were examined separately using the dichotomous independent disability variables (presence of chronic illness and activity limitation in the NLSS), and their odds ratios were compared.

Q 2: Is there a correlation between household poverty and the likelihood of having a family member with some type of disability?

Households across household income levels and income poverty levels were compared on the prevalence of disability for both the NLSS and SITAN data sets. Differences between different types of disabilities and the continuous variable, household income were tested using one-way analysis of variance (ANOVA).

Using the categorical disability variable as the dependent variable (disability and chronic illness), simple logistic regression was used to determine if income poverty of the household can predict the incidence of a member in that household becoming disabled. Logistic regression has many analogies to OLS regression but unlike OLS regression, logistic regression does not assume linearity of relationship between the independent variables and the dependent, does not require normally distributed variables, does not assume homoscedasticity, and in general has less stringent requirements.

Q 3: Do households with a disabled family member experience higher levels of deprivation than households without exposure to disability?

This research question was assessed initially by exploring differences by the presence or absence of a disabled family member in the household on deprivation indicators at the household level, including income poverty and lack of assets. Descriptive statistics were used to determine differences between households across income poverty and deprivation variables.

Households with and without a disabled family member were compared across dichotomous deprivation variables, household income poverty and lack of assets, using chi-square analysis. Student t-tests were used to test the relationships of households with and without a disabled family member and the continuous dependent deprivation variable, household income.

Using the dichotomous income poverty variable as the dependent variable (type of disability and type of chronic illness), simple logistic regression was used to determine if disability or chronic illness of a family member can predict the incidence of that household being deprived in terms of income poverty and asset poverty.

Odds ratios in regressions were used to determine how much more likely it is to become poor at $1/day and $2/day income poverty levels if the household has a family member with a disability, chronic illness or activity limitation. Household income poverty-1 and income poverty-2 were examined separately using the dichotomous independent disability variables for households and these results were compared.

CHAPTER 4: EMPIRICAL FINDINGS

Before proceeding with the empirical findings, it is important to provide the definition of the household as used in both the NLSS and SITAN data sets.

In the NLSS a household is defined as a group of people who normally live and eat their meals together. Normally is defined as "at least six of the past twelve months." For those individuals living in the same dwelling, but not sharing food expenses or eating their meals together they are not considered members of the same household. Likewise, individuals who eat together but do not sleep in the same dwelling are not considered members of the same household. Similarly, the SITAN defines a household as a "cooking pot unit" where all household members live together and share the same cooking unit or kitchen (UNICEF-Nepal, 2001).

Univariate Data Analyses of Demographic, Disability, and Deprivation Variables

Description of the sample. The initial SITAN data set contained 13,035 households. Seven households were eliminated from analysis due to missing data. Therefore, the final SITAN sample consisted of 13,028 households with 76,752 individuals who were included on the final household roster as a result of the initial screening questionnaire. Similarly, the NLSS data set contained 3,373 households with 18,962 individuals initially. Twenty-six households were eliminated from analysis due to missing data, and seventy-seven individual cases were excluded due to missing responses for the question confirming household member status in the screening questionnaire. Therefore, the final NLSS sample consisted of 3,347 households with 18,885 individuals on the final household roster.

Demographic variables. Table 12 presents the univariate statistics on categorical demographic variables (gender, marital status, geographical region, ecological strata, and ethnicity) for the SITAN sample. There were 50.2% males and 49.8% females. Most individuals were married (58.6%) while the remaining 41.4% were not married. For the marital question, a significant part of the sample (n=21,730) was coded "not applicable" due to young age and two cases were missing. The total number of 21,732 cases was excluded. The majority of respondents lived in rural (89%) rather than urban areas (11%). There were slight differences by ecological strata with 39% of individuals living in the Terai, 32% living in the hills, and 29% living in the mountains. The largest ethnic groups were the Chhetry at 19.5%, Brahmin at 10.5%, and Tharu 9.7%.

Table 13 presents the univariate statistics on the various demographic categorical variables (gender, marital status, geographical region, ecological strata, and ethnicity) for the NLSS. There were 49.1% (n=9,263) males and 50.9% females (n=9,592) in the NLSS. The majority of the sample was married (58.3%, or n=7,929) while the remaining 41.7% (n=5,668) were not married due to being single and never married, separated, divorced or widowed. Like the SITAN, a significant part of the overall NLSS sample (n=5,306) was coded as missing for the marital status question largely due to the question being not applicable to children and these cases were excluded from the analysis. The majority (80%) lived in rural areas rather than urban areas (20%). Likewise, there were slight geographical differences based on ecological strata. Approximately 49% of the individual respondents lived in the hills followed by the terai at 39% and the mountains at 12%. For the ethnicity question, the highest number of responses were Chhetry at 19.6%, Other at 16.3%, and Brahmin at 15.4%.

Table 12

Univariate Statistics of Categorical Demographic Variables - SITAN

Demographic Variable	Label	N	%
Gender	Male	38,501	50.2
(N=76,752)	Female	38,251	49.8
Marital Status	Unmarried	18,894	34.3
(N=55,020)	Married	32,262	58.6
	Separated	419	0.8
	Divorced	161	0.3
	Widowed	3,284	6.0
Geographical Region	Urban	8,148	10.6
(N=76,752)	Rural	68,604	89.4
Ecological Strata	Terai	30,110	39.2
(N=76,752)	Hills	24,817	32.3
	Mountains	21,825	28.5
Ethnicity	Yadav Ahir	1,934	2.5
(N=76,752)	Kayastha	167	0.2
	Kumhar	209	0.3
	Baniya	276	0.4
	Dhobi	100	0.1
	Sundhi Kalwar	418	0.5
	Kurmi	127	0.2
	Brahmin	360	0.5
	Rajput	192	0.3
	Tharu	7,417	9.7
	Teli	582	0.8
	Kushwaha	366	0.5
	Musalman	1,428	1.9
	Haluwai	202	0.3
	Malaha	499	0.7
	Rajbanshi	6	0.0
	Dhimal	13	0.0
	Marwadi	35	0.0
	Bangali	12	0.0
	Dhanuk	657	0.9
	Shikha	5	0.0

Table 12

Univariate Statistics of Categorical Demographic Variables - SITAN (continued)

Demographic Variable	Label	N	%
Ethnicity (N=76,752)	Dushad	156	0.2
	Chamar	748	1.0
	Khatwe	144	0.2
	Bhumihar	68	0.1
	Kewat	196	0.3
	Rajbhar	17	0.0
	Kanu	129	0.2
	Tarai Others	2,901	3.8
	Brahmin	8,021	10.5
	Chhetry	14,973	19.5
	Thakuri	3,137	4.1
	Sanyashi	1,169	1.5
	Newar	2,819	3.7
	Limbu	1,333	1.7
	Rai	1,951	2.5
	Gurung	3,857	5.0
	Thakali	390	0.5
	Tamang	4,197	5.5
	Magar	4,703	6.1
	Danuwar	231	0.3
	Jirel	240	0.3
	Majhi	108	0.1
	Sunuwar	58	0.1
	Gaine	39	0.1
	Chepang	85	0.1
	Kumhal	153	0.2
	Lepcha	9	0.0
	Raute	8	0.0
	Darai	13	0.0
	Raji	10	0.0
	Thami	409	0.5
	Damai	1,572	2.0
	Kami	4,992	6.5
	Sharki	1,598	2.1
	Badi	5	0.0
	Sherpa	1,087	1.4
	Mugrali/Humli/Kar bhote	96	0.1
	Bhujel	106	0.1
	Do Not Know	19	0.0

Table 13

Univariate Statistics of Categorical Demographic Variables - NLSS

Demographic Variable	Label	N	%
Gender	Male	9,263	49.1
(N=18,855)	Female	9,592	50.9
Marital Status	Never Married	4,606	33.9
(N=13,597)	Married	7,929	58.3
	Separated	69	0.5
	Divorced	41	0.3
	Widowed	952	7.0
Geographical Region	Urban	3,760	19.9
(N=18,855)	Rural	15,095	80.1
Ecological Strata	Terai	7,423	39.4
(N=18,839)	Hills	9,177	48.7
	Mountains	2,239	11.9
Ethnicity	Chhetry	3,688	19.6
(N=18,853)	Brahmin	2,907	15.4
	Magar	1,007	5.3
	Tharu	1,278	6.8
	Newar	1,931	10.2
	Tamang	788	4.2
	Kami	809	4.3
	Yadav Ahir	631	3.3
	Muslim	904	4.8
	Rai	253	1.3
	Gurung	603	3.2
	Damai	318	1.7
	Limbu	373	2.0
	Sarki	296	1.6
	Other	3,067	16.3

Table 14

Univariate Statistics of Continuous Demographic Variable, Age – SITAN and NLSS

Variable	N	Mean	Median	Mode	SD	Skewness	Kurtosis	Range
SITAN								
Age	76,752	23.63	18.00	5.00	19.07	0.91	0.08	0-102
NLSS								
Age	18,855	24.04	19.00	4.00	19.31	0.90	0.03	0-99

Table 14 presents the univariate statistics on the continuous variable age, which indicates that the average age for both samples was twenty-four. This continuous variable appears normally distributed in both data sets. There are slight differences between the mean, median, and mode. The standard deviation was less than the mean. The kurtosis value was close to 0, and the skewness value was less than one. The stem and leaf plot for age indicates a slightly skewed distribution. The normal probability plot (Q-Q plot) indicates normality with the majority of the observations closely distributed around the straight line and a slight deviation from normality toward the low end. The sample size for both the NLSS and SITAN appear large enough so that the distribution of the sample mean differences is approximately normal. Additionally, it is difficult to rely upon a normality test for confirmation since even minimal differences from normality in large samples may influence the results causing a small, observed significance level.

Disability variables. Univariate statistics on the disability variables or indicators are presented in Tables 15 and 16 for the SITAN and NLSS sample respectively. Approximately 1.6% individuals with a disability (n=1,250) and 96.3% (n=73,904) individuals without a disability were identified in the SITAN total sample.

Since individuals are more prone to disability at an older age, the SITAN placed a fixed age limitation of 70 for the disability status and disability related questions to avoid over-representation of disability. After adjusting for the 2.1% (n=1,598) individuals aged 71 and above, which were coded as "not applicable" for this question, the total number of respondents was reduced to 76,752 individuals. Therefore, the valid percentage of individuals with a disability increased to 1.7% while individuals without a disability increased to 98.3% of the adjusted sample.

Types of disability varied with approximately 20% of individuals responding with a hearing disability or speaking disability, mobility disability at 19%, manipulation disability at 14%, and epilepsy at 11%. The remaining 16% were divided among the remaining four disability categories. Individuals with a disability (n=1,250) identified a total of 1,812 different types of disabilities. Approximately 67.5% of the sample stated that they had only one disability and 22.5% of the sample stated two or more disabilities.

The number of SITAN households having a family member with any type of disability was only 8.9% (n=1,161) while the majority of households or 87% (n=11,338) did not have a family member with a disability. Additionally 4.1% of the households had household heads aged 71 and above who did not respond to the disability question. In these households there was no other family member with a disability.

Table 15

Univariate Descriptive Statistics of Disability Variables - SITAN

Disability Variable	Label	N	%
Individual Level			
Presence of Disability (N=76,752)	Disabled	1,250	1.6
	Non-Disabled	73,904	96.3
	Not Applicable (71+)	1,598	2.1
Type of Disability (N=1,812)	Seeing	105	5.8
	Hearing	359	19.8
	Speaking	358	19.8
	Mobility	336	18.5
	Manipulation	247	13.6
	Learning Difficulty	100	5.5
	Strange Behavior	93	5.1
	Epilepsy	199	11.0
	Other	15	0.9
#Disability per Individual (N=1,250)	Individuals with 1 Disability	844	67.5
	Individuals with 2+ Disabilities	406	22.5
Household Level			
Presence of Disability (N=13,028)	HH with Disability	1,161	8.9
	HH without Disability	11,338	87.0
	Not Applicable (HHH 71+)	529	4.1
#HH Members w/Disability (N=1,161)	HH with 1 Member Only	1,083	93.2
	HH with 2 Members	67	5.8
	HH with 3 Members	9	0.8
	HH with 4 Members	2	0.2

These cases were coded as "not applicable" for this question so the total number of valid respondents was reduced to 12,499 households. Thus, the valid percentage of households with a disability member increased to 9.3% while households without a disability member increased to 90.7% of the adjusted sample.

Of those households with a disabled family member (n=1,161), the majority or 93.2% (n=1,083) had only one member with a disability. There were 5.8% (n=67) of households with two disabled family members, and only a minimal number of households at 1.0% (n=11) with either three or four family members with a disability.

The NLSS sample consisted of approximately 6.4% (n=1,208) individuals with a chronic illness and 93.6% individuals without a chronic illness. Of this sample, the majority (n=1,207) provided responses to the activity limitation question with one case missing and excluded from the analysis. The percentage of individuals reporting activity limitations of one day or more was about 69% (n= 837) with only 31% indicating no activity limitations (n=370) as a result of their respective chronic illness.

Types of chronic illnesses varied with approximately 47% (n=565) of individuals identifying "other" as their most debilitating chronic illness followed by 26% (n=317) asthma, and 11% (n=134) heart conditions. The remaining 16% (n=192) were divided among the remaining five chronic illness categories. Note: Multiple chronic illnesses were not possible to determine since the NLSS allowed only one response.

The number of NLSS households with a chronic illness equaled approximately 30% (n=992) while the majority of households or 70% (n=2,355) did not have a family member with a chronic illness. Of those households with a chronically ill family member (n=992), the majority or about 82% (n=811) had only one member with a chronic illness.

There were about 15% (n=150) of households with two chronically ill family members, and 3.0% (n=31) of households with either three or four chronically ill family members. Finally, of those households responding that they had a family member with a chronic illness (n=991), the majority of those individuals (71%, or n=708) had an activity limitation of at least one day (range from 0 to 365). The remaining 29% households (n=283) had a chronically ill family member without any activity limitation.

Table 17 presents the univariate statistics for the continuous variable, activity limitation, at the individual level for the NLSS sample. The mean ($\underline{M}$ = 47.71) indicates that chronically ill individuals were limited an average of 48 days. This continuous variable, activity limitation, does not appear normally distributed. There are significant differences between the mean, median, and mode. The standard deviation was almost two times the value of the mean. There is a positive skewness with the mean value significantly higher than the median. The visual inspection of the stem and leaf plot for activity limitation indicates a positively skewed distribution, and the normal probability plot (Q-Q plot) indicates non-normality with deviation at both low and high ends.

Table 17

Univariate Statistics of Continuous Variable, Activity Limitation - NLSS

Variable	N	Mean	Median	Mode	SD	Skewness	Kurtosis	Range
Activity Limitation	1,207	47.71	12.00	0.00	90.04	2.65	6.18	0-365

Table 16

Univariate Descriptive Statistics of Disability Variables - NLSS

Disability Variable	Label	N	%
Individual Level			
Presence of Chronic Illness (N=18,855)	Chronically Ill	1,208	6.4
	Not Chronically Ill	17,647	93.6
Type of Chronic Illness (N=1,208)	Heart Conditions	134	11.1
	Asthma	317	26.2
	Epilepsy	25	2.1
	Cancer	9	0.7
	Diabetes	28	2.3
	Cirrhosis of Liver	87	7.2
	Occupational Illnesses	43	3.6
	Other	565	46.8
Presence of Activity Limitation (N=1,207)	Activity Limited	837	69.3
	Activity Not Limited	370	30.7
Household Level			
Presence of Chronic Illness (N=3,347)	HH with Chronic Illness	992	29.6
	HH without Chronic Illness	2,355	70.4
#HH Members w/Chronic Illness (N=992)	HH with 1 Member Only	811	81.8
	HH with 2 Members Only	150	15.1
	HH with 3 Members Only	27	2.7
	HH with 4 Members Only	4	0.4
Presence of Activity Limitation (N=991)	HH with Activity Limitation	708	71.4
	HH without Activity Limitation	283	28.6

Income deprivation variables. Univariate statistics on the continuous variable, income, for the SITAN and NLSS are presented in Table 18. NLSS individual, main earner and household income are presented. Only the main earner income data for the SITAN is presented due to the unavailability of individual and household level data. Since income poverty at all levels was dichotomized (poor and non-poor) to adjust for zero income or food-only responses as well as the higher income responses at the other end of the range, data transformation was not necessary.

Of the 13,028 individuals in the SITAN sample there were 115 missing cases or 0.9% of the sample that did not respond to the income question. These cases were excluded from analysis. Several factors indicate that main earner income poverty is not normally distributed. The mean, median, and mode are different. There is a positively skewed distribution with a large number of observations at the lower income end. In fact, there were 29.7% of individuals reporting either no income at all or only food as income. The positive kurtosis results from these extreme values, also.

Although individual, main earner and household level data were available for the NLSS, the majority of respondents did not complete the wage and income sections causing a high number of missing values. Individual income data from agricultural and non-agricultural wage employment as well as from a piece rate basis, daily basis, and longer basis were aggregated into an overall annual income variable. Main earner income data was derived from individual income data. Finally, household income data was provided in aggregated form including all income sources such as wage and non-wage income activities as well as in-kind payments.

Table 18

Univariate Statistics of Continuous Variable, Income

Variable	N	Mean	Median	Mode	SD	Skewness	Kurtosis	Range
Individual Level - NLSS								
Income	3,696	12,137	6,200	6,000	16,836	3.93	26	0-245,000
Main Earner Level - NLSS								
Income	2,069	16,542	9,900	6,000	19,840	3.43	19	0-245,000
Household Level - NLSS								
Income	3,347	61,502	33,184	12,000	184,206	2.32	232	-4,500,000 – 3,115,199
Main Earner Level - SITAN								
Income	12,913	16,430	7,200	0.00	40,679	24.37	1,104	0-2,400,000

Individual, main earner and household income poverty do not appear normally distributed. There are significant differences between the mean, median, and mode for household poverty. Although these values were closer for individual income and main earner income, the mean for individual income was almost twice the value of the median supporting a non-normal distribution. The standard deviation was higher in value than the mean for individual and main earner income data, and even three times the value of the mean for household data, indicating an asymmetric distribution.

Distributions for individual, main earner and household income poverty were slightly positive skewed with large kurtosis values. Visual inspection of the stem and leaf plots indicate positively skewed distributions. Additionally, normal probability plots (Q-Q plot) indicate non-normality for the data. There was slight deviation at the low end and significant deviation at the high end for household data.

Univariate statistics for the dichotomized categorical variables, poverty and extreme poverty, are presented in Table 19. Individual, main earner and household levels are included for the NLSS but only the main earner level is reported for the SITAN.

Frequency distributions and percentages were used to examine the distribution of the two dichotomous measures of income poverty, designated poverty (Poverty-2 using the $2/day benchmark) and extreme poverty (Poverty-1 using the $1/day benchmark). The distribution of both variables is uneven with the majority of main earners indicating that they were poor (94%) or extremely poor (80.4%) in the SITAN.

Frequency distributions and percentages were used to examine the distribution of income poverty and extreme poverty for individual, main earner, and household income data in the NLSS. The majority of respondents were poor individuals and main earners in poor households. Approximately 94% of individuals were poor based on the $2/day benchmark and 81% were extremely poor based on the $1/day benchmark. Likewise, the majority of main earners were poor (90%) and extremely poor (72%). Finally, most of the households (57%) were poor but only 25% were extremely poor at the $1/day level.

Table 19

Univariate Descriptive Statistics of Categorical Deprivation Variables

Deprivation Variable	Label	N	%
Main Earner Level - SITAN			
Presence of Poverty (N=12,913)	Poor	12,144	94.0
	Non-Poor	769	6.0
Presence of Extreme Poverty (N=12,913)	Poor	10,376	80.4
	Non-Poor	2,537	19.6
Individual Level - NLSS			
Presence of Poverty (N=3,696)	Poor	3,473	94.0
	Non-Poor	223	6.0
Presence of Extreme Poverty (N=3,696)	Poor	2,995	81.0
	Non-Poor	701	19.0
Main Earner Level - NLSS			
Presence of Poverty (N=2,069)	Poor	1,871	90.4
	Non-Poor	198	9.6
Presence of Extreme Poverty (N=2,069)	Poor	1,487	71.9
	Non-Poor	582	28.1
Household Level - NLSS			
Presence of Poverty (N=3,347)	Poor	1,915	57.2
	Non-Poor	1,432	42.8
Presence of Extreme Poverty (N=3,347)	Poor	837	25.0
	Non-Poor	2,510	75.0

Asset deprivation variables. Univariate statistics on asset deprivation variables or indicators are presented in Table 20 for both data sets. Lack of land ownership was the only asset deprivation variable available in both the SITAN and the NLSS samples. The remaining asset deprivation variables were only available in the NLSS sample, and therefore a comparison cannot be made between the data sets across these variables. Overall, the majority of households were not deprived of key assets such as home or land.

Land deprivation was relatively low at 15.8% and 23.9% in the SITAN and NLSS respectively. Although the SITAN data set differentiates between productive and unproductive land, both variables were combined into one overall land ownership deprivation variable. If a household owned either productive or unproductive land, it was not considered deprivation. It is important to note that the majority of responses involved productive land (98% or n=10,756) out of the total number of households that owned land (n=10,970).

Similarly to land deprivation, home deprivation was low at 9.3% with the majority of homes or 90.7% owned in the NLSS sample. There were additional questions asked about the type of dwelling such as the size of the housing plot, the size of the dwelling's inside, and the number of rooms occupied by the household. However, these were not included in the analyses due to the nature of the research questions.

Unlike the lack of home and land ownership, the majority of households were deprived of one or more utility-based assets. Approximately three-quarters of the sample (74%, n=2,483) lacked electricity in their home. More than half of the NLSS households lacked a piped water supply into their home (57.8%, n=821).

Table 20

Univariate Descriptive Statistics of Asset Deprivation Variables

Deprivation Variable	Label	N	%
Household Level - SITAN			
Lack of Land Ownership (N=13,028)	Lacks Land	2,058	15.8
	Owns Land	10,970	84.2
Household Level - NLSS			
Lack of Home Ownership (N=3,347)	Lacks Home	312	9.3
	Owns Home	3,035	90.7
Lack of Land Ownership (N=3,347)	Lacks Land	800	23.9
	Owns Land	2,547	76.1
Lack of Electricity (N=3,346)	Lacks Electricity	2,483	74.2
	Has Electricity	863	25.8
Lack of Piped Water Supply (N=1,421)	Lacks Piped Water	821	57.8
	Has Piped Water	600	42.2

Capability deprivation variables. Univariate statistics on capability deprivation variables are presented in Table 21. Low educational attainment was available in both the SITAN and the NLSS data sets. Individuals who had completed only primary or lower secondary levels (specifically, the ninth grade or lower) were considered to have low educational attainment whereas those individuals who had completed the secondary level or above (specifically, the tenth grade and higher) were considered to have achieved high educational attainment. In both data sets, the majority of individuals had low educational attainment at 90% in the SITAN and at 80% in the NLSS.

Likewise, illiteracy was available in both the SITAN and the NLSS data sets. Individuals who could not read or write a letter were considered illiterate even though they may have attended school or some type of non-formal schooling. Despite the significantly greater percentages of low educational attainment levels, percentages for illiteracy were not as high. Approximately 59% of the NLSS sample was illiterate and only 47% of the SITAN sample with slightly more individuals literate at 53%.

Since unemployment was only available in the NLSS, the data sets could not be compared in terms of the unemployment variable. The SITAN asks the employment question only to individuals with disabilities in the specialized disability questionnaire rather than in the screening questionnaire administered to the entire sample. It was not possible to use income as a proxy for employment due to the fact that certain individuals received income from sources other than employment. Of all three capability deprivation indicators, unemployment had the lowest percentage at 32% with the majority of the sample employed and not deprived of some type of work at 69%.

Table 21

Univariate Descriptive Statistics of Capability Deprivation Variables

Deprivation Variable	Label	N	%
Individual Level - SITAN			
Low Educational Attainment (N=35,873)	Low Attainment	32,280	90.0
	High Attainment	3,593	10.0
Illiteracy (N=63,580)	Illiterate	30,013	47.2
	Literate	33,567	52.8
Individual Level - NLSS			
Low Educational Attainment (N=7,690)	Low Attainment	6,151	80.0
	High Attainment	1,539	20.0
Illiteracy (N=16,299)	Illiterate	9,611	59.0
	Literate	6,688	41.0
Unemployment (N=13,497)	Unemployed	4,257	31.5
	Employed	9,240	68.5

Bivariate Data Analyses of Demographic, Disability, and Deprivation Variables

Bivariate relationships were examined by conducting chi-squares due to the categorical nature of most variables. Student t-tests and ANOVAs were used to test continuous variables for statistical differences between individuals with and without disability and those who were poor and non-poor as well as households with and without a disabled family member and households which were poor and non-poor.

Demographic variables and disability. First, chi-square tests were used to determine if there were significant relationships between demographic variables and various types of disability indicators. Results of the chi-square analyses along with frequencies and percentages are presented in Table 22 for variables, presence of disability in the SITAN and presence of chronic illness in the NLSS.

Results indicated significant relationships between the presence of chronic illness and all demographic variables. Females were significantly more likely to be chronically ill than males (Chi-Square=9.740, p=.002). Individuals living in rural areas had more chronic illness than those in urban areas (Chi-Square=7.14, p=.008). Individuals in the mountains and hills were more likely to be chronically ill (Chi-Square=42.88, p=.000) than in the terai. Individuals who were previously married or married were more likely to be chronically ill than those who were never married (Chi-Square=536.621, p.000).

Note: Ethnicity and marital status had a considerable percentage of cells with expected counts less than five when all possible categories were included. Hence, marital status was collapsed into three groups – married, never married or single, and previously married. Ethnicity was not included in the analyses since it is not possible to collapse the numerous ethnic groups due to much variability between one ethnic group and another.

Table 22

Chi-Squares of Disability Indicators by Demographic Variables

Demographic Variable	Presence of Disability	Absence of Disability	Presence of Chronic Illness	Absence of Chronic Illness
Gender	N=1,250*	N=73,904*	N=1,208*	N=17,647*
Male	670 (53.6%)	37,062 (50.1%)	541 (44.7%)	8,722 (49.4%)
Female	580 (46.4%)	36,842 (49.9%)	667 (55.3%)	8,925 (50.6%)
Marital Status	N=1,047***	N=52,375***	N=1,175***	N=12,422***
Married	448 (42.8%)	31,128 (59.4%)	849 (72.3%)	7,080 (57.0%)
Never Married	464 (44.3%)	18,409 (35.2%)	93 (7.9%)	4,513 (36.3%)
Previously Married	135 (12.9%)	2,838 (5.4%)	233 (19.8%)	829 (6.7%)
Geographical Region	N=1,250*	N=73,904*	N=1,208**	N=17,647**
Urban	109 (8.7%)	7,868 (10.6%)	205 (17.0%)	3,555 (20.1%)
Rural	1,141 (91.3%)	66,036 (89.4%)	1,003 (83.0%)	14,092 (79.9%)
Ecological Strata	N=1,250**	N=73,904**	N=1,206***	N=17,633***
Mountains	396 (31.7%)	20,926 (28.3%)	189 (15.6%)	2,050 (11.6%)
Hills	412 (33.0%)	23,867 (32.3%)	641 (53.2%)	8,536 (48.4%)
Terai	442 (35.3%)	29,111 (39.4%)	376 (31.2%)	7,047 (40.0%)

*p<.05. **p<.01. ***p<.000.

Similarly, results indicated significant relationships between the presence of disability and most demographic variables. Males were significantly more likely to be disabled than females (Chi-Square=5.86, p=.016). Individuals living in rural areas had disabilities more than those in urban areas (Chi-Square=4.81, p=.028). Individuals in the mountains and hills were more likely to be disabled than in the terai (Chi-Square=10.15, p=.006). Individuals who were previously married or unmarried were significantly more likely to have a disability than those who were married (Chi-Square=175.607, p.000).

Type of disability was significant for gender (Chi-Square=23.41, p=.016) and ecological strata (Chi-Square=53.46, p=.000). Females were more likely to have seeing, hearing, and learning disabilities while males were more likely to have disabilities related to speaking, mobility, manipulation, strange behavior, epilepsy, and multiple disabilities. Those in the mountains were more likely to have seeing, hearing, speaking, mobility, and multiple disabilities while those in the hills were more likely to have mobility, learning, and manipulation disabilities, strange behavior, and epilepsy.

Unlike type of disability, results for type of chronic illness indicated significant relationships for geographical region (Chi-Square=51.16, p=.000). Specific types of chronic illness such as asthma, epilepsy, and diabetes were more related to urban areas while others including cirrhosis of liver, occupational illnesses, and other chronic illnesses were more related to rural areas (Chi-Square=51.16, p=.000).

Student t-tests were used to determine differences in activity limitation based on demographic variables, gender and geographical region. Results in Table 23 indicated that there were no significant differences in activity limitation between males and females as well as between urban and rural geographical areas. To test for differences in activity

limitation based on the multiple level categorical control variables, ecological strata and marital status, ANOVAs were conducted. The overall ANOVA for ecological strata was insignificant. There were no differences in activity limitation based on ecological strata. However, the overall ANOVA for marital status was significant (F= 11.678, p=.000). Post-hoc t-tests revealed significant differences between married and never married individuals as well as between married and previously married individuals.

Table 23

t-tests of Activity Limitation by Gender and Geographical Region - NLSS

Variable		N	MEAN	t
Gender	Males	540	52.00	1.472
	Females	667	44.23	
Geographical Region	Urban	205	52.39	.817
	Rural	1002	46.75	

Demographic variables and deprivation indicators. Chi-square tests were conducted to determine if differences exist between demographic variables and deprivation indicators at the individual level. Results are presented in Table 24 for NLSS income poverty as well as in Tables 25 and 26 for capability poverty using NLSS data and SITAN data respectively.

Results showed that females were more likely to be poor (Chi-Square=59.88, p=.000), extremely poor (Chi-Square=160.23, p=.000), unemployed (Chi-Square=192.79, p=.000), illiterate (Chi-Square=1188.30, p=.000), and less educated (Chi-Square=23.96, p=.000) than their male counterparts. Individuals who were never married or previously married were more likely to be poor (Chi-Square=12.26, p=.002) and extremely poor (Chi-Square=37.70, p=.000) than those who were married.

Individuals who were never married or previously married had lower education attainment than those who were married in the NLSS (Chi-Square=182.48, p=.000) and in the SITAN (Chi-Square=398.69, p=.000). Similarly, those who were never married or previously married had more unemployment than those who were married in the NLSS (Chi-Square=2256.27, p=.000). Individuals who were married and previously married had significantly higher illiteracy rates than those who were never married in the NLSS (Chi-Square=1731.51, p=.000) as well as the SITAN (Chi-Square=8366.43, p=.000).

Furthermore, individuals living in rural areas were more likely to experience poverty (Chi-Square=531.66, p=.000), extreme poverty (Chi-Square=818.83, p=.000), lower education (Chi-Square=739.00, p=.000), and illiteracy (Chi-Square=1260.71, p=.000) than those in urban areas. However, those in urban areas were more likely to be unemployed (Chi-Square=602.23, p=.000). Individuals in the mountains and terai had greater poverty deprivation (Chi-Square=163.35, p=.000 and extreme poverty deprivation (Chi-Square=365.45, p=.000)) as well as illiteracy (Chi-Square=769.22, p=.000) and lower education (Chi-Square=156.88, p=.000) than those in the hills.

Table 24

Chi-Squares of Income Deprivation Indicators by Demographic Variables - NLSS

Demographic Variable	Extremely Poor $1/day	Not Extremely Poor $1/day	Poor $2/day	Not Poor $2/day
Gender	N=2,983**	N=700**	N=3,460**	N=223**
Male	1,822 (61.1%)	604 (86.3%)	2,226 (64.3%)	200 (89.7%)
Female	1,161 (38.9%)	96 (13.7%)	1,234 (35.7%)	23 (10.3%)
Marital Status	N=2,982**	N=700**	N=3,459*	N=223*
Married	2,241 (75.2%)	598 (85.4%)	2,649 (76.7%)	190 (85.2%)
Never Married	537 (18.0%)	85 (12.2%)	592 (17.1%)	30 (13.5%)
Previously Married	204 (6.8%)	17 (2.4%)	218 (6.2%)	3 (1.3%)
Geographical Region	N=2,983**	N=700**	N=3,460**	N=223**
Urban	293 (9.8%)	397 (56.7%)	518 (15.0%)	172 (77.1%)
Rural	2,690 (90.2%)	303 (43.3%)	2,942 (85.0%)	51 (22.9%)
Ecological Strata	N=2,983**	N=700**	N=3,460**	N=223**
Mountains	437 (14.6%)	37 (5.3%)	468 (13.5%)	6 (2.7%)
Hills	1,041 (34.9%)	522 (74.6%)	1,377 (39.8%)	186 (83.4%)
Terai	1,505 (50.5%)	141 (20.1%)	1,615 (46.7%)	31 (13.9%)

*p<.05. **p<.000.

Table 25

Chi-Squares of Capability Deprivation Indicators by Demographic Variables - NLSS

Demographic Variable	Unemployment	Low Educational Attainment	Illiteracy
Gender	N=4,257*	N=6,151*	N=9,611*
Male	1,685 (39.6%)	3,811 (62.0%)	3,597 (37.4%)
Female	2,572 (60.4%)	2,340 (38.0%)	6,014 (62.6%)
Marital Status	N=4,248*	N=4,566*	N=7,538*
Married	1,226 (28.8%)	1,682 (36.8%)	5,126 (68.0%)
Never Married	2,548 (60.0%)	2,816 (61.7%)	1,481 (19.6%)
Previously Married	474 (11.2%)	68 (1.5%)	931 (12.4%)
Geographical Region	N=4,257*	N=6,151*	N=9,611*
Urban	1,468 (34.5%)	1,486 (24.2%)	1,093 (11.4%)
Rural	2,789 (65.5%)	4,665 (75.8%)	8,518 (88.6%)
Ecological Strata	N= 4,252*	N=6,144*	N=9,603*
Mountains	293 (6.9%)	528 (8.6%)	1,392 (14.5%)
Hills	2,432 (57.2%)	3,383 (55.1%)	3,874 (40.3%)
Terai	1,529 (35.9%)	2,233 (36.3%)	4,336 (45.2%)

*p<.000.

Table 26

Chi-Squares of Capability Deprivation Indicators by Demographic Variables - SITAN

Demographic Variable	Low Educational Attainment	Illiteracy
Gender	N=32,280*	N=30,013*
Male	19,583 (60.7%)	10,388 (34.6%)
Female	12,697 (39.3%)	19,625 (65.4%)
Marital Status	N=26,019*	N=25,675*
Married	11,589 (44.5%)	18,280 (71.2%)
Never Married	13,936 (53.6%)	4,095 (15.9%)
Previously Married	494 (1.9%)	3,300 (12.9%)
Geographical Region	N=32,280*	N=30,013*
Urban	3,830 (11.9%)	2,249 (7.5%)
Rural	28,450 (88.1%)	27,764 (92.5%)
Ecological Strata	N=32,280*	N=30,013*
Mountains	8,444 (26.2%)	9,665 (32.2%)
Hills	11,945 (37.0%)	8,150 (27.2%)
Terai	11,891 (36.8%)	12,198 (40.6%)

*p<.000.

Student t-tests were used to determine differences in the continuous variable, income, based on gender and geographical region for the NLSS. Results in Table 27 indicate significant income differences between males and females and between urban and rural areas. Male participants had significantly higher income than did females. Individuals in urban areas had significantly higher income than those in rural areas.

Table 27

t-tests of Income by Gender and Geographical Region - NLSS

Variable		N	MEAN	t
Gender	Males	2,426	15131.93	18.39*
	Females	1,257	6415.22	
Geographical Region	Urban	690	29494.65	20.09*
	Rural	2,993	8159.94	

*$p \leq .000$

To test for differences in income based on categorical demographic variables, ecological strata and marital status, ANOVAs were conducted. The overall ANOVA for marital status was significant ($F = 8.567$, $p = .000$). Post-hoc t-tests revealed significant differences between married individuals and those never married and widowed. The ANOVA for ecological strata was significant ($F = 174.298$, $p = .000$). Post-hoc t-tests revealed significant differences between the mountains and hills as well as the terai and hills, but no significant differences between the mountains and terai.

Chi-square tests were conducted to determine if differences exist between the demographic variables and deprivation indicators (income deprivation) at the household level. Chi-square results along with frequencies and percentages for household poverty are presented in Table 28 for the NLSS and Table 29 for the SITAN data. Gender and marital status regard those characteristics of the household head. Geographical area and ecological strata refer to the location of the household.

For households in the NLSS sample, it was more likely that women were the heads of poor households at both the poverty-1 level (Chi-Square=61.39, p=.000) as well as the poverty-2 level (Chi-Square=24.76, p=.000). Households in the SITAN sample followed a similar pattern across gender with women being more likely to head households that were poor at the extreme poverty level only (Chi-Square=32.19, p=.000).

Household heads who were never married or previously married were more likely to be extremely poor than those who were married in the NLSS (Chi-Square=36.21, p=.000) and SITAN (Chi-Square=77.23, p=.000). Only household heads who were previously married were more likely to be poor than those married and never married in the NLSS (Chi-Square=18.74, p=.000) and SITAN (Chi-Square=20.90, p=.000).

NLSS households located in rural geographical areas were more likely to be poor at the poverty-1 (Chi-Square=138.53, p=.000) and poverty-2 levels (Chi-Square=442.76, p=.000). Likewise, SITAN households in rural areas were more likely to be poor at the income poverty-1 level (Chi-Square=561.37, p=.000) and the income poverty-2 level (Chi-Square=348.62, p=.000). Finally, NLSS households in the mountains were more likely to be poor at the income poverty-2 level (Chi-Square=105.09, p=.000) and extreme poor at the income poverty-1 level (Chi-Square=25.01, p=.000).

Table 28

Chi-Squares of HH Income Deprivation Indicators by Demographic Variables - NLSS

Demographic Variable	Extremely Poor $1/day	Not Extremely Poor $1/day	Poor $2/day	Not Poor $2/day
HH Head Gender	N=837*	N=2,510*	N=1,915*	N=1,432*
Male	655 (78.3%)	2,234 (89.0%)	1,604 (83.8%)	1,285 (89.7%)
Female	182 (21.7%)	276 (11.0%)	311 (16.2%)	147 (10.3%)
HH Head Marital Status	N=836*	N=2,510*	N=1,914*	N=1,432*
	657 (78.6%)	2,185 (87.0%)	1,589 (83.0%)	1,253 (87.5%)
Married	22 (2.6%)	50 (2.0%)	37 (2.0%)	35 (2.4%)
Never Married	157 (18.8%)	275 (11.0%)	288 (15.0%)	144 (10.1%)
Previously Married				
Geographical Region	N=837*	N=2,510*	N=1,915*	N=1,432*
Urban	57 (6.8%)	653 (26.0%)	160 (8.4%)	550 (38.4%)
Rural	780 (93.2%)	1,857 (74.0%)	1,755 (91.6%)	882 (61.6%)
Ecological Strata	N=836*	N=2,510*	N=1,913*	N=1,432*
Mountains	142 (17.0%)	268 (10.7%)	311 (16.3%)	99 (6.9%)
Hills	392 (46.9%)	1,332 (53.1%)	859 (44.9%)	865 (60.4%)
Terai	302 (36.1%)	909 (36.2%)	743 (38.8%)	468 (32.7%)

*p<.000.

Table 29

Chi-Squares of HH Income Deprivation Indicators by Demographic Variables - SITAN

Demographic Variable	Extremely Poor $1/day	Not Extremely Poor $1/day	Poor $2/day	Not Poor $2/day
Gender	N=10,376*	N=2,537*	N=12,144	N=769
Male	9,364 (90.2%)	2,381 (93.9%)	11,031 (90.8%)	714 (92.8%)
Female	1,012 (9.8%)	156 (6.1%)	1,113 (9.2%)	55 (7.2%)
Marital Status	N=10,376*	N=2,537*	N=12,144*	N=769*
Married	8,829 (85.1%)	2,328 (91.8%)	10,451 (86.2%)	706 (91.8%)
Never Married	209 (2.1%)	29 (1.1%)	232 (1.8%)	6 (0.8%)
Previously Married	1,338 (12.8%)	180 (7.1%)	1,461 (12.0%)	57 (7.4%)
Geographical Region	N=10,376*	N=2,537*	N=12,144*	N=769 (6.0%)
Urban	770 (7.4%)	598 (23.6%)	1,132 (9.3%)	236 (30.7%)
Rural	9,606 (92.6%)	1,939 (76.4%)	11,012 (90.7%)	533 (69.3%)
Ecological Strata	N=10,376*	N=2,537*	N=12,144	N=769
Mountains				
Hills	3,369 (32.5%)	599 (23.6%)	3,753 (30.9%)	215 (28.0%)
Terai	3,337 (32.2%)	972 (38.3%)	4,034 (33.2%)	275 (35.8%)
	3,670 (35.3%)	966 (38.1%)	4,357 (35.9%)	279 (36.2%)

*p<.000.

Additionally, chi-square tests were conducted to determine if differences exist between the demographic variables and deprivation indicators (asset deprivation) at the household level. Chi-square results along with frequencies and percentages for land deprivation are presented in Table 30 for both data sets and in Table 31 for other deprivation variables for the NLSS data set only.

Gender had a significant relationship with land deprivation. Women were more likely to lack land ownership than men (Chi-Square=5.30, p=.021) in both the NLSS and SITAN households (Chi-Square=23.91, p=.000). However, men were more likely to head households where there was no electricity (Chi-Square=4.22, p=.040).

Although NLSS households in rural areas were more likely to own their land (Chi-Square=822.55, p=.000), households in urban areas were more likely to own their homes (Chi-Square=298.56, p=.000) and have electricity (Chi-Square=1873.72, p=.000), piped water (Chi-Square=557.10, p=.000).

Households across ecological strata differed in significant relationships across asset deprivation variables. Although NLSS households in the mountains were owned (Chi-Square=47.19, p=.000) as well as their land (Chi-Square=110.07, p=.000). These results differed from households in the hills, which were more likely to have electricity (Chi-Square=336.43, p=.000) and piped water (Chi-Square=88.81, p=.000).

Table 30

Chi-Squares of Asset Deprivation Indicators by Demographic Variables

Demographic Variable	Lack of Land - SITAN	Own Land - SITAN	Lack of Land - NLSS	Own Land - NLSS
HH Head Gender	N=10,970***	N=2,058***	N=800*	N=2,547*
Male	10,034 (91.5%)	1,813 (88.1%)	671 (83.9%)	2,218 (76.8%)
Female	936 (8.5%)	245 (11.9%)	129 (16.1%)	329 (23.2%)
HH Head Marital Status	N=10,970***	N=2,058***	N=800**	N=2,546**
	9,536 (86.9%)	1,715 (83.3%)	668 (83.5%)	2,174 (85.4%)
Married	187 (1.7%)	55 (2.7%)	33 (4.1%)	39 (1.6%)
Never Married	1,247 (11.4%)	288 (14.0%)	99 (12.4%)	333 (13.2%)
Previously Married				
Geographical Region	N=10,970***	N=2,058***	N=800***	N=2,547***
Urban	819 (7.5%)	566 (27.5%)	459 (57.4%)	251 (35.4%)
Rural	10,151 (92.5%)	1,492 (72.5%)	341 (42.6%)	2,296 (87.1%)
Ecological Strata	N=10,970***	N=2,058***	N=798***	N=2,547***
Mountains	3,677 (33.6%)	342 (16.6%)	13 (12.3%)	397 (15.6%)
Hills	3,812 (34.7%)	510 (24.8%)	1,724 (51.5%)	1,263 (49.6%)
Terai	3,481 (31.7%)	1,206 (58.6%)	1,211 (36.2%)	887 (34.8%)

*p<.05. **p<.01. ***p<.000.

Table 31

Chi-Squares of Asset Deprivation Indicators by Demographic Variables - NLSS

Demographic Variable	Lack of Home	Lack of Electric	Lack of Piped Water
HH Head Gender	N=312	N=2,483*	N=821
Male	265 (84.9%)	2,161 (87.0%)	687 (83.7%)
Female	47 (15.1%)	322 (13.0%)	134 (16.3%)
HH Head Marital Status	N=312***	N=2,482***	N=820**
	264 (84.7%)	2,127 (85.7%)	693 (84.5%)
Married	20 (6.4%)	32 (1.3%)	14 (1.7%)
Never Married	284 (9.0%)	323 (13.0%)	113 (13.8%)
Previously Married			
Geographical Region	N=312***	N=2,483***	N=821***
Urban	185 (59.3%)	79 (3.2%)	116 (14.1%)
Rural	127 (40.7%)	2,404 (96.8%)	705 (85.9%)
Ecological Strata	N=312***	N=2,481***	N=820***
Mountains	14 (4.5%)	379 (15.3%)	161 (19.7%)
Hills	216 (69.2%)	1,048 (42.2%)	625 (76.2%)
Terai	82 (26.3%)	1,054 (42.5%)	34 (4.1%)

*p<.05. **p<.01. ***p<.000.

Student's t-tests were used to determine differences in the continuous variable, household income, based on gender and geographical region. For the SITAN, income of the main earner was used as a proxy for the household income. Results in Table 32 indicate significant differences in income between males and female household heads and between urban and rural households for both data sets. Households with a male head had significantly higher income than did female-headed households. Likewise, individuals in urban areas had significantly higher income than those in rural areas.

Table 32

t-tests of Household Income by Gender and Geographical Region

Variable		N	MEAN	t
NLSS				
Gender of HH Head	Males	2,889	63970.02	3.24*
	Females	458	45935.51	
Geographical Region	Urban	710	120296.50	5.933**
	Rural	2,637	45672.11	
SITAN				
Gender of HH Head	Males	11,745	16956.02	8.096**
	Females	1,168	11138.80	
Geographical Region	Urban	11,545	14169.78	-11.134**
	Rural	1,368	35503.26	

*p<.001. **p<.000.

To test for differences in household income based on the multiple level categorical demographic variables, ecological strata and marital status, ANOVAs were conducted. While the overall ANOVA for marital status was significant in the SITAN (F= 10.672 p=.000), it was not significant for the NLSS. For the SITAN, post-hoc t-tests revealed significant differences between those who were currently married and those who were widowed. Additionally, the ANOVA for ecological strata was significant in both the SITAN (F= 8.293, p=.000) and the NLSS (F=7.230, p=.001). Post-hoc t-tests for both indicated significant differences between the mountains and hills as well as the mountains and terai with no significant differences between the hills and terai.

Finally, t-tests were used to determine differences in the continuous variable, main earner income, based on gender and geographical region. Results are presented in Table 33, which indicate significant income differences between male and female household heads and between urban and rural households for both data sets. Households with a male head had significantly higher income than did female-headed households. Individuals in urban areas had significantly higher income than those in rural areas.

To test for differences in main earner income based on categorical demographic variables, ecological strata and marital status, ANOVAs were conducted. The ANOVA for marital status was significant in the SITAN (F= 10.672 p=.000), but it was not significant for the NLSS. For the SITAN, post-hoc t-tests revealed significant differences between those who were currently married and those who were widowed.

Likewise, the overall ANOVA for ecological strata was significant in the SITAN (F= 8.293, p=.000) but not in the NLSS data set (F=0.842, p=.997). Post-hoc t-tests for

the SITAN data indicated significant differences between the mountains and hills as well as the mountains and terai with no significant differences between the hills and terai.

Table 33

t-tests of Main Earner Income by Gender and Geographical Region

Variable		N	MEAN	t
NLSS				
Gender of HH Head	Males	1,754	17705.88	7.896*
	Females	308	10086.76	
Geographical Region	Urban	438	36265.83	17.071*
	Rural	1,624	11255.17	
SITAN				
Gender of HH Head	Males	11,745	16956.02	8.096*
	Females	1,168	11138.80	
Geographical Region	Urban	11,545	14169.78	-11.134*
	Rural	1,368	35503.26	

*p<.000.

Additional data analyses - Disability and individual income poverty. Analyses of the relationship between disability and income poverty at the individual level was conducted using different disability definitions and the continuous income measure as well as the dichotomous variables, income poverty-1 and income poverty-2. Analyses were conducted using the NLSS data set since individual income was not available for the SITAN data set.

Student's t-tests were used to determine if there were significant differences in the annual income of individuals with and without a disability (as measured by the presence of a chronic illness or the presence of an activity limitation).

Table 34

t-tests of Individual Income by Chronic Illness & Activity Limitation - NLSS

Variable		N	MEAN	t
Chronic Illness	Chronically Ill	278	9579.35	-2.868*
	Not Chronically Ill	3,405	12367.38	
Activity Limitation	Activity Limited	194	8704.29	-1.436
	Not Activity Limited	84	11600.33	

*p<.01.

Table 34 presents t-test results. Individuals with a chronic illness had lower annual incomes than those without chronic illness (t= -2.868, p=.004). However, individuals with activity limitations were not significantly different in their annual incomes than those without activity limitations.

To test for differences in individual income based on the categorical independent disability variable, type of chronic illness, an ANOVA was conducted. The overall ANOVA for chronic illness type was not significant in the NLSS. It is unlikely that individual income is the same for all chronic illnesses (asthma, cancer, cirrhosis of liver, diabetes, epilepsy, heart conditions, occupational illnesses, and other chronic illnesses).

To determine if there is an association between the continuous independent disability variable, activity limitation, and the continuous dependent variable, individual income, a Pearson product moment correlation coefficient was calculated. Results indicated that an individual's number of days of activity limitation was not significantly correlated with that individual's income (r = -.079, p=.187). Furthermore, simple OLS regression was used to examine the relationship between activity limitation and income at the individual level. Results indicated that there were no significant differences in annual income based on the number of days of activity limitation.

Additional analyses were conducted to test for differences in the dichotomized income variables, individual income poverty-1 and income poverty-2 across NLSS disability indicators. Table 35 reports the findings of the chi-square analyses, which indicated that individuals with a chronic illness are more likely to be extremely poor at the poverty-1 level (Chi-Square=8.042, p=.005) than their non-disabled counterparts, but not poor at the poverty-2 level.

Table 35

Chi-squares of Individual Income Poverty by Disability Variables - NLSS

NLSS Disability Variable	Extremely Poor	Not Extremely Poor	Poor	Not Poor
Chronic Illness	N=2,983*	N=700*	N=3,460	N=223
Chronically Ill	243 (8.1%)	35 (5.0%)	267 (7.7%)	11 (4.9%)
Not Chronically Ill	2,740 (91.9%)	665 (95.0%)	3,193 (92.3%)	212 (95.1%)
Activity Limitation	N=243	N=35	N=267	N=11
Activity Limited	172 (70.8%)	22 (62.9%)	188 (70.4%)	6 (54.5%)
Not Activity Limited	71 (29.2%)	13 (37.1%)	79 (29.6%)	5 (45.5%)

*p<.01.

Next, the relationships between the independent variable, disability, and the dichotomous dependent deprivation variables (individual income poverty-1 and income poverty-2) were examined by simple logistic regressions. Table 36 presents results when individual income deprivation was regressed on chronic illness and activity limitation.

Only one of association was statistically significant. Specifically, chronic illness was significantly associated with extreme poverty at the $1/day level (p<.01), but not with poverty at the $2/day level. Odds ratio indicate that individuals with chronic illness are 1.685 times more likely to be extremely poor than individuals without chronic illness. No other odds ratios were significant.

Table 36

Simple Logistic Regressions of Individual Income Poverty on Disability

Independent Variable	Dependent Variable	B	Wald $\chi 2$	Odds Ratio	95% C.I.	p-value
Chronic Illness	Income Poverty-1	0.522	7.879	1.685	1.171-2.426	0.005
Chronic Illness	Income Poverty-2	0.477	2.285	1.612	0.868-2.992	0.131
Activity Limitation	Income Poverty-1	0.359	0.904	1.431	0.683-2.998	0.342
Activity Limitation	Income Poverty-2	0.685	1.219	1.983	0.588-6.687	0.270

Notes: B = Unstandardized logistic regression coefficient.

Additional data analyses - Disability and household income poverty. Analyses of the relationship between disability and income poverty at the household level was conducted first using different definitions of disability and the continuous measures of household income in the NLSS and the main earner income in the SITAN as a proxy for household income.

Table 37 reports the findings of the t-tests at the household level of income across disability indicators. There were no significant differences in terms of annual household income between households with and without disability as defined by chronic illness (t=.312, p=.755) or by activity limitation (t=.621, p=.535). However, the SITAN households with a disabled family member had statistically lower annual incomes than those without someone with a disability in their household (t=-2.358, p=.018).

Table 37

t-tests of Household Income by Disability Indicators

Variable		N	MEAN	t
NLSS				
Presence of Chronic Illness	HH with Chronic Illness	992	63032.11	0.312
	HH without Chronic Illness	2,355	60857.75	
Presence of Activity Limitation	HH with Activity Limitation	708	65316.91	0.621
	HH without Activity Limitation	283	57431.88	
SITAN				
Presence of Disability	HH with Disability	1,142	32903.06	-2.358*
	HH without Disability	11,247	41970.14	

*p<.05

To test for differences in household income based on the categorical independent disability variables, type of disability in the SITAN and type of chronic illness in the NLSS, ANOVAs were conducted. The ANOVA for disability type (F= 0.605, p=.793) and chronic illness type was not significant (F= 1.849, p=.075).

Next, chi-square analyses were conducted to test for differences in the dichotomized household income variables, income poverty-1 and income poverty-2 across disability indicators. Table 38 reports the findings of chi-square analyses at the household level. Chi-square results indicated that SITAN households with a disabled family member were significantly more likely to be poor than households without a disabled member at the income poverty-2 level (Chi-Square=7.350, p=.007). The same

households experienced greater extreme poverty (using income poverty-1) than those with no member with a disability (Chi-Square=5.292, p=.021). Note: Main earner income was dichotomized and used as a proxy for household income in the SITAN.

Table 38

Chi-Squares of Household Income Poverty by Disability Variables

NLSS Disability Variable	Extremely Poor	Not Extremely Poor	Poor	Not Poor
Chronic Illness	N=837**	N=2,510**	N=1,915	N=1,432
HH with Chronic Illness	278 (33.2%)	714 (28.4%)	582 (30.4%)	410 (28.6%)
HH without Chronic Illness	559 (66.8%)	1,796 (71.6%)	1,333 (69.6%)	1,022 (71.4%)
Activity Limitation	N=278	N=713	N=581	N=410
HH with Activity Limitation	200 (71.9%)	508 (71.2%)	414 (71.3%)	294 (71.7%)
HH without Activity Limitation	78 (28.1%)	205 (28.8%)	167 (28.7%)	116 (28.3%)
Disability	N=9,920*	N=2,469*	N=11,643**	N=746**
HH with Disability	944 (9.5%)	198 (8.0%)	1,094 (9.4%)	48 (6.4%)
HH without Disability	8,976 (90.5%)	2,271 (92.0%)	10,549 (90.6%)	698 (93.6%)

*p<.05. **p<.01.

For the NLSS there was no significant difference in household poverty at the $2/day level (income poverty-2) so households with and without a chronically ill family member have an equal chance to be poor (Chi-Square=1.217, p=.270). However, results at the $1/day level (income poverty-1) indicated that households with a chronically ill family member are more likely to be extremely poor than those households without a chronically ill family member (Chi-Square=6.842, p=.009). For activity limitation, there were no significant differences in household poverty (Chi-Square=0.024, p=.877) or household extreme poverty levels (Chi-Square=0.047, p=.828) in the NLSS.

Relationships between the independent variable, household income poverty at the $1.00/day and $2.00 day levels (household poverty-1 and poverty-2 respectively) and dichotomous dependent disability variables (disability, chronic illness, and activity limitation) were examined by simple logistic regressions. Table 39 indicates the results when these disability indicators were regressed on household income poverty.

Two of the associations between income poverty-1 and disability indicators were statistically significant while one of the associations between income poverty-2 and disability indicators was statistically significant. Specifically, income poverty-1 was significantly associated with disability ($p<.05$) and chronic illness ($p<.01$), but not with activity limitation. Odds ratio indicate that individuals who are extremely poor are 1.206 times more likely to be disabled and 1.251 times more likely to be chronically ill than individuals who are not extremely poor. Individuals who are poor are only 0.663 times more likely to be disabled.

Table 39

Simple Logistic Regressions of Disability on Household Income Poverty

Independent Variable	Dependent Variable	B	Wald $\chi 2$	Odds Ratio	95% C.I.	p-value
HH Poverty-1	Disability	0.188	5.279	1.206	1.028-1.416	0.022
HH Poverty-1	Chronic Illness	0.224	6.827	1.251	1.058-1.480	0.009
HH Poverty-1	Activity Limitation	0.034	0.047	1.035	0.761-1.408	0.828
HH Poverty-2	Disability	-0.411	7.252	0.663	0.492-0.894	0.007
HH Poverty-2	Chronic Illness	0.085	1.217	1.088	0.936-1.265	0.270
HH Poverty-2	Activity Limitation	-0.022	0.024	0.978	0.739-1.294	0.877

Notes: B = Unstandardized logistic regression coefficient.

Additional data analyses - Disability and capability deprivation. Analyses of the relationship between disability and capability deprivation (lack of capabilities) were conducted using different definitions of disability and different capabilities at the individual level. Analyses for low educational attainment and illiteracy were conducted using both data sets. Analyses for unemployment were conducted only for the NLSS data set since this variable was not available for the SITAN.

Chi-squares were used to determine if there were significant differences in capability deprivation between individuals with and without a disability. Table 40 reports these findings of individual capability deprivation variables.

For the NLSS individuals with a chronic illness were more likely to be illiterate (Chi-Square=148.81, p=.000) but have high educational attainment (Chi-Square=5.177, p=.023) while those with activity limitations were more likely to have low educational attainment (Chi-Square=6.002, p=.014). Likewise, individuals with a disability in the SITAN were more likely to have low educational attainment (Chi-Square=4.328, p=.037) as well as greater illiteracy than those without a disability (Chi-Square=286.569, p=.000).

There were no significant relationships between unemployment and chronic illness (Chi-Square=1.080, p=.299) as well as unemployment and activity limitation (Chi-Square=0.030, p=.862). In addition, the relationship between activity limitation and illiteracy was not significant (Chi-Square=0.860 p=.354).

Relationships between dichotomous independent disability variables, (disability, chronic illness, and activity limitation) and individual capability deprivation (unemployment, low educational attainment, and illiteracy) were examined by simple logistic regressions. Findings are presented in Table 41.

Table 40

Chi-Squares of Individual Deprivation Indicators by Disability Variables

Disability Variable	Unemployed	Low Educated	Illiterate
Chronic Illness	N=4,257	N=6,151*	N=9,611***
Chronically Ill	352 (8.3%)	175 (2.8%)	901 (9.4%)
Not Chronically Ill	3,905 (91.7%)	5,976 (97.2%)	8,710 (90.6%)
Activity Limitation	N=352	N=174**	N=901
Activity Limited	245 (69.6%)	124 (71.3%)	636 (70.6%)
Not Activity Limited	107 (30.4%)	50 (28.7%)	265 (29.4%)
Disability		N=32,101*	N=28,640***
Disabled	—	332 (1.0%)	805 (2.8%)
Not Disabled		31,769 (99%)	27,835 (97.2%)

*p<.05. **p<.01. ***<.000.

Table 41

Simple Logistic Regressions of Disability on Capability Deprivation

Independent Variable	Dependent Variable	B	Wald $\chi 2$	Odds Ratio	95% C.I.	p-value
Disability	Low Educational Attainment	0.438	4.26	1.549	1.022-2.348	0.039
Disability	Illiteracy	1.068	262.006	2.911	2.558-3.313	0.000
Chronic Illness	Unemployment	-0.069	1.080	0.933	0.819-1.063	0.299
Chronic Illness	Low Educational Attainment	-0.343	5.130	0.710	0.527-0.955	0.024
Chronic Illness	Illiteracy	0.829	141.871	2.290	1.998-2.625	0.000
Activity Limitation	Unemployment	-0.024	0.030	0.976	0.743-1.282	0.862
Activity Limitation	Low Educational Attainment	0.744	5.883	2.104	1.153-3.839	0.015
Activity Limitation	Illiteracy	0.135	0.859	1.145	0.860-1.523	0.354

Notes: B = Unstandardized logistic regression coefficient.

Table 41 indicates the results when capability deprivation was regressed on disability. Five of the associations between disability indicators and capability deprivation were statistically significant. Disability was significantly associated with lower educational attainment ($p<.05$) and higher illiteracy ($p<.000$). Likewise, chronic illness was significantly associated with lower educational attainment ($p<.05$) and illiteracy ($p<.000$). Finally, activity limitation was significantly associated with lower educational attainment ($p<.05$).

Odds ratios indicate that individuals with a disability were 1.549 times more likely to have lower educational attainment and 2.911 times more likely to be illiterate than individuals without a disability. Similarly, individuals with chronic illness were 2.290 times more likely to be illiterate and only 0.710 times more likely to have lower educational attainment than individuals without a chronic illness. Finally, individuals with activity limitations were 2.104 times more likely to have lower educational attainment than individuals than individuals without such activity limitations.

Additional data analyses - Disability and asset deprivation. Chi-square analyses of the relationships between disability and asset deprivation (lack of assets) were conducted using different definitions of disability and different assets at the household level (see Tables 42 and 43). Analysis for the lack of land ownership was conducted using both data sets due to data availability. Analyses for other asset deprivation variables (lack of home ownership, lack of electricity, and lack of piped water supply) were conducted only for the NLSS data set since these variables were not available for the SITAN.

Table 42

Chi-Squares of Household Deprivation Variables by Disability Variables

Control Variable	Lack of Land	Own Land
Chronic Illness	N=800***	N=2,547***
HH with Chronic Illness	177 (22.1%)	815 (32.0%)
HH without Chronic Illness	623 (77.9%)	1,732 (68.0%)
Activity Limitation	N=177	N=814
HH with Activity Limitation	117 (66.1%)	591 (72.6%)
HH without Activity Limitation	60 (33.9%)	223 (27.4%)
Disability	N=10,540**	N=1,959**
HH with Disability	1,020 (9.7%)	141 (7.2%)
HH without Disability	9,520 (90.3%)	1,818 (92.8%)

*p<.05. **p<.01. ***p<.000.

For the NLSS households with a chronically ill family member, these households were more likely to own their own land (Chi-Square=28.458, p=.000). Unlike the NLSS, households with a disabled family member in the SITAN were significantly more likely to lack land ownership than households not affected by disability (Chi-Square=12.057, p=.001). There was no significant relationship between households with an activity limited family member and lack of land ownership (Chi-Square=3.013, p=.083).

For the NLSS households with a chronically ill family member, they were more likely to own their own home (Chi-Square=14.722, p=.000). However, these households were less likely to have electricity (Chi-Square=11.160, p=.001) and piped water supply (Chi-Square=7.231, p=.007) in these homes. There were no significant relationships among households with activity limitation and lack of home ownership (Chi-Square=0.329, p=.566), electricity (Chi-Square=0.508, p=.476), and piped water (Chi-Square=2.401, p=.121).

Table 43

Chi-Squares of Household Deprivation Variables by Disability Variables

Control Variable	Lack of Home	Lack of Electric	Lack of Piped Water
Chronic Illness	N=312***	N=2,483**	N=821**
HH with Chronic Illness	63 (20.2%)	774 (31.2%)	256 (31.2%)
HH without Chronic Illness	249 (79.8%)	1,709 (68.8%)	565 (68.8%)
Activity Limitation	N=63	N=773	N=256
HH with Activity Limitation	47 (74.6%)	557 (72.1%)	186 (72.7%)
HH without Activity Limitation	16 (25.4%)	216 (27.9%)	70 (27.3%)

*p<.05. **p<.01. ***p<.000.

Simple logistic regressions were used to examine the relationships between the dichotomous independent disability variables (households with a disabled family member, households with a chronically ill family member, and households with an activity limited family member) and household asset deprivation (lack of land ownership, lack of home ownership, lack of electricity, and lack of piped water supply). Table 44 indicates the results when asset deprivation was regressed on disability at the household level (households with and without a disabled family member).

Households with a family member with disability were significantly associated with lack of land ownership in the SITAN data ($p<.001$). In fact, households with a disabled member were 1.381 times more likely to lack land ownership than households without a disabled member. For the NLSS data, households with a family member with chronic illness were significantly associated with lack of land ownership ($p<.000$), lack of home ownership ($p<.000$), lack of electricity ($p<0.01$), and lack of piped water supply ($p<0.01$). These households were 1.348 times more likely to lack electricity and 1.384 times more likely to lack piped water supply into their households. However, households with a chronically ill family member were only 0.604 and 0.574 times more likely to lack land ownership and lack home ownership respectively. Finally, households with a family member with an activity limitation were not significantly associated with any asset deprivation indicators.

Table 44

Simple Logistic Regressions of Disability on Asset Deprivation

Independent Variable	Dependent Variable	B	Wald $\chi 2$	Odds Ratio	95% C.I.	p-value
Households with Disability	Lack of Land Ownership	0.323	11.964	1.381	1.150-1.659	0.001
Households with Chronic Illness	Lack of Land Ownership	-0.505	28.101	0.604	0.501-0.728	0.000
Households with Chronic Illness	Lack of Home Ownership	-0.556	14.412	0.574	0.430-0.764	0.000
Households with Chronic Illness	Lack of Electricity	0.299	11.115	1.348	1.131-1.607	0.001
Households with Chronic Illness	Lack of Piped Water Supply	0.325	7.204	1.384	1.092-1.754	0.007
Households with Activity Limitation	Lack of Land Ownership	-0.307	2.999	0.736	0.520-1.041	0.083
Households with Activity Limitation	Lack of Home Ownership	0.171	0.329	1.187	0.661-2.129	0.566
Households with Activity Limitation	Lack of Electricity	0.120	0.508	1.127	0.811-1.566	0.476
Households with Activity Limitation	Lack of Piped Water Supply	0.345	2.392	1.412	0.912-2.185	0.122

Notes: B = Unstandardized logistic regression coefficient.

Additional data analyses – Sub-sample of NLSS and SITAN data samples.

Since the NLSS sample of individuals with chronic illness was significantly small compared to the individuals without chronic illness, the NLSS data set was retested using a sub-sample (N=500) which was randomly drawn from the non-chronically ill group. Similarly, the SITAN data set was retested using a sub-sample (N=500) which was randomly drawn from the non-disabled group.

Individual level analyses were conducted with both sub-samples to ascertain differences and similarities with findings from their respective overall samples. Because SITAN households with and without a disabled family member were closer in number in the original sample, household data was not retested using a sub-sample. Likewise, NLSS data was not retested due to closer group sizes between households with and without a chronically ill family member as well as households with and without an activity limited member in its original sample.

Selected univariate statistics were conducted initially with both sub-samples and compared to their original samples to determine similarities in representations. Selected categorical variables (gender, marital status, geographical region, ecological strata) are reported in Table 45 for the NLSS and Table 46 for the SITAN while the continuous variable, income, is reported in Table 47 for both datasets. Values remain fairly consistent between sub-samples and total samples in both the NLSS and SITAN.

Results from comparative statistical analyses varied between the total sample and the sub-sample in both the NLSS and SITAN data sets. The majority of chi-squares retained their significance level although the exact chi-square number changed slightly between variables. However, student t-tests of individual income by chronic illness

became insignificant for the NLSS sub-sample despite being significant at the p<.01 level with the original sample. Similarly, the chi-square of individual income poverty-1 became insignificant despite being significant at the p<.01 level with the original sample. In those instances where values were insignificant in the original sample, retesting using the sub-sample resulted in consistent findings of insignificance.

Table 45

Univariate Statistics of NLSS Sub-Sample

Demographic Variable	Label	N	%
Gender	Male	796	46.6
(N=1,708)	Female	912	53.4
Marital Status	Never Married	233	15.0
(N=1,550)	Married	1,061	68.5
	Separated	13	0.8
	Divorced	8	0.5
	Widowed	235	15.2
Geographical Region	Urban	298	17.4
(N=1,708)	Rural	1,410	82.6
Ecological Strata	Terai	602	35.3
(N=1,706)	Hills	860	50.4
	Mountains	244	14.3

Table 46

Univariate Statistics of SITAN Sub-Sample

Demographic Variable	Label	N	%
Gender	Male	922	52.7
(N=1,750)	Female	828	47.3
Marital Status	Unmarried	597	42.5
(N=1,405)	Married	659	46.9
	Separated	40	2.8
	Divorced	16	1.1
	Widowed	93	6.6
Geographical Region	Urban	169	9.7
(N=1,750)	Rural	1,581	90.3
Ecological Strata	Terai	626	35.8
(N=1,750)	Hills	596	34.1
	Mountains	528	30.2

Table 47

Univariate Statistics of Sub-Samples and Income

Variable	N	Mean	Median	Mode	SD	Skewness	Kurtosis	Range
Individual Level - NLSS								
Income	378	10,201	5,040	6,000	15,902	4.66	31	40-156,000
Main Earner Level - NLSS								
Income	219	13,013	7,000	6,000	18,549	4.29	25	240-156,000
Main Earner Level - SITAN								
Income	1,720	15,113	7,200	0.00	31,125	12.283	260	0-800,000

Finally, simple logistic regressions were used to determine the relationships between income poverty and disability at the individual level. Unlike the original sample, there was no significant association between the two variables. In fact, the significance level became insignificant when testing the sub-sample from the NLSS. Table 48 presents a comparison of logistic regression findings from both the NLSS original sample and sub-sample.

Table 48

Simple Logistic Regressions of Income Poverty on Chronic Illness

Independent Variable	Dependent Variable	B	Wald $\chi 2$	Odds Ratio	95% C.I.	p-value
ORIGINAL						
Chronic Illness	Income Poverty-1	0.522	7.879	1.685	1.171-2.426	0.005
Chronic Illness	Income Poverty-2	0.477	2.285	1.612	0.868-2.992	0.131
SUB-SAMPLE						
Chronic Illness	Income Poverty-1	0.352	1.197	1.422	0.757-2.672	0.274
Chronic Illness	Income Poverty-2	0.438	0.705	1.549	0.557-4.306	0.401

Notes: B = Unstandardized logistic regression coefficient.

CHAPTER 5: DISCUSSION OF EMPIRICAL FINDINGS

This section discusses key findings as presented in the previous empirical section. All three research questions and hypotheses are reviewed. Limitations to the research are discussed in detail as well as implications in terms of policy, practice, and research. Finally, concluding remarks are provided to summarize the dissertation research.

Q 1: What are the ways in which disability contributes to individual deprivations?

This dissertation supports the first hypothesis that disability contributes directly to individual deprivations. First, there was a significant relationship between presence of chronic illness at the individual level and the deprivation variable of income poverty in the NLSS. Additional data analyses reiterated the finding that individuals with a chronic illness had lower annual incomes than their peer counterparts.

This finding parallels the existing disability literature that has discussed the inequality experienced by individuals with disabilities in terms of their earnings and income (Gooding, 1994; McNeil, 1993, 1997; National Organization on Disability, 2001). Individuals with disabilities continue to face discrimination in the workplace and exclusion from labor force participation, which directly impact their employment and related earnings (Bruyere, 2000; International Labour Organization, 2001).

Although the majority of these studies have been conducted in developed countries, increasingly similar findings have emerged from developing countries. In Nepal discrimination against individuals with disabilities continues to be widespread and economic integration has been hindered by the general societal view that individuals with disabilities are unproductive (U.S. Department of State, 1998).

Additionally, Nepal is an agrarian based country where many individual respondents identified farming as their primary employment. Farming is an occupation that requires considerable physical effort. Chronic illnesses may interfere with many farming-related duties. Although specific conditions may only be triggered or aggravated during certain weather conditions, these times may render farming impossible and the timing may interrupt the farming occupation at key times such as harvesting the crops.

Further support is provided by the logistic regressions and odds ratios, which indicated that the odds of being extremely poor for individuals who are chronically ill are 1.685 times that of individuals without chronic illness. Again, these findings coincide with the literature that has demonstrated that older individuals with chronic conditions and individuals with a disability are at greater risk of falling into poverty. Individuals who cannot work due to their chronic illness may earn less due to missed work time or may not earn an income at all. Consequently, they face an ongoing poverty situation.

To understand more fully the impact of disability on income poverty in Nepal, the relationships between disability and poverty at two international standard poverty levels were tested. Chi-square analyses indicated that individuals with chronic illness are significantly more likely to be extremely poor at the $1/day level but not at the $2/day level. These findings may be explained by the general poverty that characterizes Nepal where the majority of citizens are poor (World Bank, 2002).

In fact the majority of individuals in Nepal (94%), including both the chronically ill and non-chronically ill, were considered poor but only 81% were considered extremely poor. Hence, a more extreme level such as $1/day is needed to separate those who are generally poor from those who are significantly poorer than the norm.

In examining whether income varied by specific types of chronic illnesses, there were no significant relationships. This finding can be explained potentially by several factors. First, the actual numbers indicating specific types of chronic illnesses were not high, which may have affected analysis. Also, there is the unlikelihood that a specific type of chronic illness impacts all individuals in the same way especially their income levels and related aspects such as employment.

For instance, an individual with arthritis may experience a greater lack of functioning in terms of employment than another individual with the same impairment. Therefore, the first individual may not be as productive and decreased productivity may affect his/her income whereas the second individual may be able to continue his/her employment without any decline in productivity and income. Such inconsistencies despite the same impairment contribute to the expected lack of significance.

Although data analyses indicated that chronic illness has a significant impact on income poverty, activity limitations were not significantly related to individual income. Chi-square analysis indicated that individuals with an activity limitation are just as likely to be poor than those without an activity limitation at either the $1/day or $2/day level. Additional examination indicated that the continuous variable activity limitation was not significantly associated with the continuous variable income as supported by correlation and simple regression analysis.

These findings may be explained by the fact that individuals who have activity limitations are limited in only certain activities but not necessarily all activities and certainly not major life areas including employment. Therefore, individuals with activity limitations may still be actively engaged in the labor market and be able to earn an

income. Agricultural jobs may not be restricted by an individual's particular activity limitation by the actual job tasks (certain skills that continue to be unaffected by certain conditions). Since the NLSS questionnaire did not define activity limitation in terms of specific activities (e.g. employment, walking, and so forth), it is difficult to determine the exact explanation behind these findings.

Closely related to income, employment was another indicator of capability deprivation that was examined in the dissertation. Findings indicated that disability does not contribute to capability deprivation in terms of being unemployed. Unemployment was not affected by disability as in the SITAN or chronic illness as in the NLSS. Since the agrarian nature of Nepal may be the major contributing factor to these findings, unemployment may not be the best indicator for capability deprivation in Nepal or other developing countries. Furthermore, individuals with disabilities are frequently marginalized in the labor force anyway so identifying an alternative indicator perhaps would be more appropriate.

To further test the impact of disability on individual deprivation, additional indicators were examined in both the NLSS and SITAN data sets. Lack of individual capabilities, such as educational attainment and literacy, are considered directly related to lower income and lack of earnings. Unlike unemployment, disability was significantly related to low educational attainment using all available disability indicators – disability in the SITAN as well as chronic illness and activity limitation in the NLSS. This relationship was strongest statistically with the activity limitation indicator.

Chi-square and logistic regression findings indicated significant relationships between chronic illness in the NLSS and these specific capability deprivation indicators,

low educational attainment and illiteracy. Similarly, the SITAN findings from both chi-squares and logistic regressions supported the NLSS findings that individuals with disabilities were more illiterate and less educated. These results again substantiate the literature that indicates how individuals with disabilities experience social exclusion from educational settings among others (Beresford & Croft, 1995; Coleridge, 1993; MS Nepal, 2003; National Organization on Disability, 2001; U.S. Department of State).

One of the primary documented reasons has been the inability for individuals with disabilities to attend school due to their impairment and the lack of accessible schools, adapted materials in the classroom, and specialized assistance by teachers. For a developing country like Nepal with limited resources, these barriers most likely exist and prevent individuals with disabilities to attend school and receive a formal education.

Furthermore, individuals with a chronic illness in the NLSS and individuals with a disability in the SITAN were more likely to be illiterate than their non-disabled counterparts. Since the previous finding indicated that these individuals are less likely to attend school, it makes sense that they would be less likely to be literate. There are growing accounts of stigma experienced by individuals with disabilities in Nepal (Sungava, 1999), which undoubtedly affect education and other life areas.

However, the same relationship was not established for individuals with activity limitations. A possible explanation is that individuals with activity limitations may be prevented from attending school but may receive non-formal schooling at home. This would explain their likelihood of being as literate as others without activity limitations. Furthermore, individuals with activity limitations may not identify themselves as disabled. Likewise, others including family and community members may not consider

them disabled, which may decrease the likelihood of them experiencing discrimination and stigma associated with the assumption that disability means incompetence.

Q 2: Is there a correlation between household poverty and the likelihood of having a family member with some type of disability?

This dissertation supports the second hypothesis that there is a positive correlation between poverty at the household level and the likelihood that someone in that household has a disability. Household poverty was significantly related to households with a disabled family member as defined in the SITAN data set. These households had statistically lower annual incomes than households unaffected by disability. Since this finding was not significant for households with a chronically ill family member or one with an activity limitation, there may be several factors explaining such results.

First, an individual who is identified as someone with a disability may be visibly recognized as such and consequently experiences discrimination on the basis of his/her disability. Discrimination may originate from his/her community or even within his/her household where family members may be ashamed and prevent him/her from participating outside of the family home (MS-Nepal, 2003). This differs from an individual who has a chronic illness or activity limitation that may not be visible to others in society and who may escape stigma and exclusion from employment and so forth.

Regardless for family households in Nepal, the lost of one family member's income may significantly affect that household due to the impoverished nature of the country (Pant, 2001). If that individual happens to be the head of the household or a male family member, that family may experience an even greater burden due to gender

inequality issues which may prevent a woman from the household participating in certain labor markets or specific types of occupation. In fact, gender disparity is quite prevalent in Nepal (Nepal South Asia Centre, 1998) affecting the capabilities of females.

To understand more fully the association of household income poverty on disability, these relationships were tested using income poverty-1 and income poverty-2 variables. Chi-square analyses indicated that households who are poor at the $2/day level and extremely poor at the $1/day level are more likely to have a family member with a disability. Additionally, extremely poor households at the $1/day level were statistically more likely to have a family member with a chronic illness in the household.

These findings are supported by simple logistic regressions, which tested the independent associations of household poverty on the various disability indicators. Such associations are further substantiated by the odds ratios, which indicated that households who are extremely poor are 1.206 times more likely to have a disabled family member and 1.251 times more likely to have a chronically ill family member.

These findings support the literature that has demonstrated that individuals from households experiencing poverty are more likely to develop a disability than individuals from households that are not poor. One of the major explanations is the fact that poverty increases risk factors for developing a disability during an individual's lifetime (Seelman & Sweeney, 1995). For instance, unsafe living conditions including the lack of any shelter for protection or the lack of electricity and piped water into an available shelter contribute to the higher risk. Additionally, the lack of safe drinking water, nutritious food, and necessary medical treatment are all contributing factors (Abberley, 1987).

Moreover, individuals who are poor cannot afford even basic life necessities and consequently, they cannot afford medical care and treatment for a disability or chronic condition (such as clinic visits, medicine, therapy, assistive technology). Access to services in Nepal including health and disability-related services are limited due to barriers such as poverty, the disability or chronic condition itself, social stigma, and certain terrain like the mountains (Boyce & Paterson, 2002).

Therefore, families must bear the burden themselves and provide necessary care to that family member with a disability or chronic condition (Panthi, 2003). In some cases, the care for a disabled or chronically ill family member may be ongoing and round-the-clock which may affect the participation of certain family members especially women. Without proper medical treatment, these conditions may continue or even worsen over time which perpetuates the poverty situation to an even great extent.

Q 3: Do households with a disabled family member experience higher levels of deprivation than households without exposure to disability?

The need to probe further issues related to poverty such as lack of shelter and electricity led to the examination of asset deprivation among households with and without disability. Unlike the previous two research questions, this dissertation only partially supports the third hypothesis that households with at least one family member with a disability experience greater levels of deprivation than those households without any disabled family member.

In fact, land deprivation was the only asset available in both the NLSS and SITAN data sets to enable some comparison. Interestingly, land deprivation differed

between households with a chronically ill family member as defined in the NLSS and those with a disabled family member as defined in the SITAN. For the households affected by chronic illness, there was a positive significant relationship in terms of land ownership. That is, those households were more likely to own land rather than be deprived of land. This differed from the households affected by disability where there was a significant relationship in terms of land deprivation. These households were more likely to not own their own land.

A possible explanation for such discrepancy may again rest in the inherent difference between a chronic illness and disability. Households experiencing disability may become overburdened financially due to the lack of income from that individual family member and the cost of disability-related care, which may impact land ownership whereas those households with a chronically ill family member may remain unaffected by the minimal cost of many types of chronic illness as compared to disabilities. Although disability may affect anyone across the lifespan, chronic illness seems to affect those of older age. Therefore, this older population may be more representative of land owners in Nepal.

Regarding other assets, only data from the NLSS was available to test the impact of disability on asset deprivation at the household level. The SITAN did not ask questions related to home ownership to all participants. Findings indicated that when a household had a chronically ill family member, the household was actually more likely to own their own home. However, these homes would not have electricity or piped water supply as compared to homes without a chronically ill family member in them.

Although home ownership is considered an important asset, owning a home in a poor country like Nepal may not be considered a distinguishable asset between the rich and the poor. In fact, the lack of electricity and piped water implies that these homes are quite basic in nature. Additional examination in terms of the type of dwelling (whether there was a roof or not) and specific characteristics of the dwelling (the number of rooms in the home) is needed to make a better comparison.

In summary, households with a family member who was chronically ill had significant relationships with asset deprivation while those households with a family member who was activity limited did not differ from others in terms of land ownership, home ownership, lack of electricity or lack of piped water supply into the home. These findings support similar findings related to activity limitation in the preceding questions.

LIMITATIONS

This dissertation research has limitations that may have affected the empirical findings. Several of the limitations are due to the use of secondary data, including the unavailability of longitudinal data and the unavailability of consistent data variables between data sets. A related limitation involves the lack of consistent definitions especially with disability and standardized data collections methodologies that affect data comparisons. Population under-coverage and participant non-response were other issues that potentially affected dissertation findings. Finally, the dissertation was limited to certain types of analyses by nature of the data available from these two data sets. These issues are explained in greater detail below.

First, cross-sectional data has been used due to its availability and the lack of longitudinal data addressing both disability and poverty in Nepal. Longitudinal information would have been extremely helpful in determining the causal ordering of variables, whether disability led to poverty or vice versa. Multiple time points would have enabled time series analysis and provided additional insight into the risk of developing a disability among the poor as well as the likelihood of entering poverty once an individual has a disability. When data from the next round of NLSS (conducted in 2001-2002) becomes available from the World Bank and the Central Bureau of Statistics in Nepal, it is anticipated that longitudinal analyses will be possible.

Since formal analysis in the area of disability and poverty is relatively new, there are limited measurement tools available specifically for conducting such research. Data instruments do exist that include questions regarding disability and poverty, but they either are broad data collection efforts covering breadth not depth of topics or extremely focused data instruments that emphasize only specific areas (either disability or poverty) and lack comprehensiveness of such issues. Both types have their respective limitations.

Furthermore, data collection efforts generally focus on functionings rather than capabilities in terms of the questions asked and the data generated. To truly test a capability approach, specific questions must be constructed that tap into the true meaning of capabilities. For instance, not only asking an individual if he or she is employed and what type of job he or she holds, but also if he or should would like another type of job, if he or she is qualified for other jobs, and so forth.

Additionally, specific questions on disability and/or poverty might not be asked as desired for a particular research purpose. Instead, proxy indicators are used such as

education, income, employment, and occupation as a proxy for poverty as well as status of health and chronic conditions, hospitalization, and access to medical services as a proxy for disability. However, there are liabilities in using these specific proxies since they generally fail to capture the real construct of disability and/or poverty respectively.

This dissertation uses a combination of typical data sources – the broad NLSS data questionnaire covering multiple aspects of living standards of the entire household and the more comprehensive, focused SITAN survey on individual disability situations. In doing so, different definitions of disability are used as specifically defined in the NLSS (chronic illness and activity limitation) and the SITAN (disability) surveys.

The use of varying definitions of disability and impairment are known to contribute to the inaccuracy of disability estimates. Certainly, the lack of standardization in defining disability and collecting data has hindered cross-national data comparison and developments in overall disability research. Any differences resulting in data analysis of these two data sets might be attributed to respective variations in disability definitions. In fact, finding from this dissertation varied between the two data sets so it is highly probable that different disability definitions may make a difference to participants.

Not only disability, but also differences in how other variables were defined may have contributed to the empirical findings of this dissertation. Income questions were not asked in the same way in the NLSS and the SITAN. Although the NLSS asked questions about individual income of every household member separating wage and in-kind payments, the SITAN did not differentiate between the two income sources and relied on the main earner's income as an indicator for the household. Certainly these differences may have contributed to the data findings and the conclusions of this dissertation.

Population under-coverage was another issue since the numbers of individuals with disabilities as well as the number of individuals with chronic illnesses were considerably lower than those without disabilities and without chronic illnesses. In fact, omission of individuals within interviewed households is more common than the omission of entire households (U.S.Census Bureau, 1998).

It is likely that household heads failed to disclose that there was a family member with a disability or chronic illness in their household. This may have resulted from the desire to avoid shame or embarrassment, or by the lack of understanding of what constitutes a disability or chronic illness. In certain cases, a family member may have been disabled or chronically ill by definition but not considered as such by their family.

Participant non-response was another issue especially in the NLSS data set where many individuals failed to complete all sections of the questionnaire. Non-response and the related issue of missing data are known problems characterizing many data sets. In fact, it is not considered random since individuals who are males, minorities, young adults, never-married, renters, poor, and those with no assets are less likely to complete all interviews (Citro & Michael, 1995).

Finally, simultaneous analysis of key variables, such as a canonical correlation, was not possible due to missing data in these variables. Consequently, the significance of certain analyses like multiple bivariate correlations may be affected by possible Type 1 error. By having to run independent bivariate correlations and simple logistic regressions there is a greater chance of experimental wise error in the dissertation analysis.

IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE

The limitations discussed in the previous section stress the need for additional research as well as policy and practice related to disability and poverty issues. Empirical findings of this dissertation indicate that disability and chronic illness affect both individuals and their households in terms of deprivation in varying ways. Overall, deprivation goes beyond the traditional sense of income poverty to include deprivation in terms of key household assets and basic individual capabilities.

For a developing country like Nepal where income poverty is prevalent throughout its geographical area, alternative indicators such as capabilities make more sense in assessing individual well-being. Furthermore, land ownership may be the most appropriate asset and capability indicator due to Nepal's agrarian nature.

Ideally, improved data related to capabilities is needed to describe not only differences in achieved functioning (e.g., whether he/she is actually working or not working), but whether individuals with disabilities experience less capability or potential functionings as compared to others (e.g. whether he/she is able to work). In conjunction with research, there is the need to address capability development as a mechanism to lessen constrained choices among individuals with disabilities and the need for specific interventions to facilitate capability development within the disability population. These are several implications resulting from this dissertation. Others are explained below.

Research implications. Although disability policy and practice rely upon research findings to guide decision-making, they in turn influence the agendas and priorities of future research efforts. As the disability and older adult population increase throughout the world, the need to understand issues related to disability and chronic

conditions will be heightened. Systematic research will be increasingly needed at various levels and units of analysis such as individuals and households affected by disability.

As indicated in the introduction of this dissertation, research on disability issues has already increased in recent decades, but there have been limited empirical studies exploring the in-depth relationship between disability and poverty especially in developing countries, such as Nepal. Of these studies, most have used non-experimental designs and they are generally descriptive studies examining the attitudes, characteristics, environments, and services of individuals with disabilities and/or those who are poor.

Therefore, more research is needed to shed additional light on the relationships between disability and poverty in developing countries where resources are scarce but also in developed countries where the capability levels would contrast more significantl. Both intervention and outcome oriented studies would be helpful in understanding not only the impact of certain interventions on individuals with disabilities but the process of dealing with disability along the way. Research is needed in both developed and developing countries, but especially developing countries with their disproportionately high levels of poverty and disability. Women and girls must be included in the research efforts since gender inequality prevents many females from accessing necessary services and opportunities that may affect their capabilities.

While this dissertation contributes information toward an improved understanding of disability and the effects of disability on individual lives and households, especially those who are poor, additional research is necessary to address the in-depth situations of individuals and households using longitudinal rather than cross-sectional data. Such research would build upon the work already started to address what happens to

individuals and families experiencing disability or chronic conditions over time. Hence, questions that permit the determination of the onset of disability onset in relation to the onset of poverty would enable improved understanding of the respective causal impact of disability on poverty and vice versa.

This dissertation initiated an exploration into using the capability approach as a better mechanism to understand and to address disability and poverty. However, as discussed in the previous section on limitations, the research was limited by available data sources and respective data variable and definitions. Therefore, availability of national level data sources that includes multiple questions related to disability and poverty in one data set is needed for appropriate data analyses.

Furthermore, data collection methods that probe whether an individual is doing what he/she desires and specific barriers/facilitators to his/her potential functionings is important. As illustrated in the literature section, comparing individual capabilities against his or her functionings provides even greater insight into their overall well-being and/or quality of life. With such data, it would be possible to determine whether an individual with a disability was completing a certain functioning by his/her personal decision as opposed to his/her lack of choice and opportunity. Essentially, this is the type of data necessary to test the capability approach – a data set with disability, income, assets, and capability-related questions.

In conjunction with the proposed research efforts, data collection is needed for evaluation purposes to monitor the effect on individuals with disabilities and their families. Large, national data sets have begun to include questions on disability, but one critical issue continues to be the lack of standard guidelines for collecting and analyzing

disability data.[46] Therefore, creating consistent definitions and data collection methods in the area of disability is important not only for research, but policy as supported by evidenced-based practice in the field.

Policy implications. In recent years, there has been a worldwide recognition of "the importance of addressing disability issues as an integral part of national development policies and programs" (United Nations, 1997). Despite variation in policies addressing disability and/or poverty, most countries have responded by using social welfare policies based on social altruism, essentially the collective effort of the majority to improve the minority. In this sense governments undertake the social responsibility for individuals who are not able to take care of themselves (Turnbull & Barber, 1986).

However, policies must transition from the traditional role as welfare provider to a more appropriate framework of promoting equality, participation, and community integration of individuals with disabilities. This is the basic dilemma of social dependency - the need to reconcile state responsibility to ensure equality with the needs and rights of those who are dependent (Rioux, 1994, p.67). More social policy is needed that emphasizes the basic capabilities of all individuals including the most marginalized within the population – namely, individuals who are poor and those who are disabled.

The utilization and integration of a capability approach would respond to these needs by encouraging policy-makers to initiate and implement policies that focus upon building capabilities. In the spirit of the independent living movement, it is imperative that individuals with disabilities are given control over their lives and their environments whether it be home, school, work, or community environments.

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[46] Chamie (1989) explores strategies of survey design for disability research.

Based on the findings of this dissertation it is recommended that specific policies focus on key capability areas such as education, literacy, and employment. As opposed to merely providing a monetary handout or basic social assistance, equipping individuals with the necessary knowledge and skills in these primary areas is a crucial step toward helping this population become self-sustaining. While the sustaining aspect is certainly important in a country like Nepal due to its extremely limited resources, an argument can be made against the need for education and literacy since Nepal is an agrarian society that may not value reading and writing as much as agricultural skills in the field.

Regardless the majority of individuals throughout the world would agree that being able to attend school and being literate is important in assisting individuals in securing and maintaining a job as well as participating in mainstream society. For individuals who are unable to participate in agricultural work due to physical disabilities or otherwise, possessing these skills necessary for alternative employment provides a means to contribute to one's household, family, and community.

Capability-building also involves identifying the factors that hinder the capability of individuals including various barriers in programs and services. These may include physical, economic, attitudinal, and social barriers. Policies that effectively identify and address the removal of barriers and enhance facilitators are recommended. These include protecting the rights and opportunities of individuals with disabilities, raising awareness of disability in Nepalese communities, providing opportunities for individuals with disabilities across all ages in all major life areas (e.g. education and employment), and increasing the number of community-based programs in Nepal.

"Policy is needed to address both the rights and needs of individuals with disabilities, and the social and economic creation of impairment to break the link between poverty and disability" (Beresford, 1996, p.564). A capability approach parallels the independent living movement by emphasizing opportunities and the need to remove barriers to participation. Social workers, as advocates of empowerment and rights, must play a role in promoting a policy shift that embraces a capability approach.

Practice implications. Like policies, planning and implementing programs must shift to focus upon raising the capability of individuals with disabilities and their families. The majority of programs that have been created to help individuals with disabilities consist of income maintenance and specialized services that are frequently segregated. Contrary to dependency-driven programs, independent living services do not assume that individuals with disabilities cannot work, but rather assist them in securing and maintaining gainful employment of their choice. Such self-directed options are an increasingly important aspect for service delivery among individuals with disabilities. Yet, most service providers and policy makers have yet to adopt such values.

The findings of this dissertation provide specific information on the type of deprivations experienced by individuals with disabilities and their families, which in turn informs specific interventions necessary to increase capability development among individuals with disabilities and to enhance service delivery systems. Furthermore, identification of environmental factors that affect individuals with disabilities in converting resources into capability and functionings provides potential areas to be addressed such as the need for assistive technology or adaptive modifications.

As proposed earlier in the dissertation, the International Classification of Functioning, Disability and Health (ICF) would be helpful to social workers and other professionals in determining an individual's current level of capabilities, identifying environmental barriers and facilitators to capability development, and developing appropriate interventions to improve the capabilities of individuals with varying types of disabilities. As a classification, the ICF provides an extensive listing of potential functionings (capabilities) which may be used instead of existing alternatives such as those promoted by Nussbaum and Finnis.

Disability and poverty services, which have proven to be less effective, are based upon traditional research methodologies that incorporate traditional disability definitions. Generally, disability and poverty related programs are welfare-oriented fostering dependency rather than independence. An alternative method is needed to generate a greater understanding of these complex issues, to promote positive perspectives on the issue of disability and poverty, to encourage interactions between individuals with and without disabilities across all socioeconomic groups, and to facilitate sustainable development of capabilities among marginalized individuals.

The capability approach is such a framework, one that is useful in examining the dynamics of disability and poverty since it is concerned with evaluating an individual's advantage in terms of "actual ability to achieve various valuable functionings as a part of living" (Nussbaum & Sen, 1993, p.30). In determining differences in capability among individuals with and without disabilities and those experiencing and not experiencing poverty, valuable empirical information is gained about the consequences of disability

and poverty on these individuals. Such information can be used to develop more effective policies, services, and programs to assist the disabled and the poor.

CONCLUSIONS

It is widely accepted that disability and poverty are related closely and these issues are both a cause and consequence to one another. Yet, the majority of disability studies have not focused on the multi-dimensional nature of poverty but rather they have concentrated upon the more traditional, singular dimension of income poverty or they have examined only certain areas such as employment and educational attainment.

Likewise, most poverty studies have failed to include individuals with disabilities as a comparative population group for analysis or to view disability like other common demographic characteristics (e.g. gender, age, race and ethnicity). Instead many have considered disability as merely a negative outcome measure, one that is frequently equated with poor health. Like poverty, disability is itself multi-dimensional.

Unlike most of these previously conducted studies, this dissertation research attempts to address the deficits in both the disability and poverty literature. A more comprehensive examination of the multi-dimensional relationships between disability and poverty has been conducted by analyzing various types of typical disability indicators such as disability, chronic illness, and activity limitation with various types of traditional and emerging deprivation indicators.

Not only traditional income poverty but also asset deprivation and capability deprivation have been examined using disability as a comparative group for analysis rather than treating disability merely as a negative indicator or outcome. Moreover,

analysis has been conducted at the individual and household levels to gain a better understanding of how disability affects both individuals and families.

This dissertation provides some information on how the life circumstances of individuals with disabilities compare to individuals without disabilities along different aspects of the capability framework, including basic capabilities such as employment, educational attainment, and literacy. Since it addresses the multi-dimensional issue of deprivation and poverty, the findings provide evidence supporting a capability approach that emphasizes the need to examine capability status along with income and assets and to consider the influence of various personal and environmental factors, which affect an individual's capability and their respective family household.

In doing so, this dissertation provides evidence to support an alternative perspective – namely, the capability approach – in addressing disability and poverty in Nepal. Collectively, the research findings indicate the need to facilitate the ongoing development of capabilities among individuals with a disability regardless of the type of disability as well as to provide much-needed assistance to families of individuals with disabilities. Furthermore, differences between the SITAN and NLSS data sets provide some evidence of how varying disability definitions, including chronic illness and activity limitation, influence the analysis of disability and poverty.

All individuals are born with entitlements to certain basic rights, including individuals with disabilities and those experiencing poverty. "If human development focuses on the enhancement of the capabilities and freedoms that members of a community enjoy, human rights represent the claims that individuals have on the conduct of individual and collective agents and on the design of social arrangements to facilitate

or secure these capabilities and freedoms" (UNDP, 2000a, p.23). Together human development and human rights are self-reinforcing, expanding individual capabilities as well as protecting individual rights and freedoms (UNDP, 2000a, p.2).

These are crucial elements since poverty can never be eradicated until those with disabilities have equal rights with those without disabilities (Lee, 1999). Equalization of opportunities, or the process of facilitating and increasing access to society, has been highlighted in various international policy documents, such as the World Programme of Action Concerning Disabled Persons (United Nations, 1983) and the Standard Rules on the Equalization of Opportunities for Persons with Disabilities (United Nations, 1993).[47]

In examining the capabilities of individuals, the proposed dissertation essentially determines the extent to which there is equality of opportunity among individuals with disabilities as compared to those without disabilities. This is the first step toward understanding more fully the life situations of these individuals and developing more effective policies and services to enhance their capabilities and assist them in breaking the cycle of disability and poverty. As appropriately described by Geertz (1993, 52),

> Man is to be defined neither by his innate capacities alone, as the Enlightenment sought to do, nor by his actual behaviours alone, as much of the contemporary social science seeks to do, but rather by the link between them, by the way in which the first is transformed into the second, his generic potentialities focused into his specific performances.

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[47] Adopted by the General Assembly at its 48th session on December 20, 1993 (Resolution 48/96)

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