"DISABILITY IN RURAL POPULATION – A COMMUNITY BASED CROSS SECTIONAL STUDY"

By

(REG. NO.BD0111005)

Dissertation

Submitted to the
KLE University, Belgaum, Karnataka

In Partial Fulfilment of
the requirements for the degree of

M. D.
in
COMMUNITY MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE,
JAWAHARLAL NEHRU MEDICAL COLLEGE,
BELGAUM, KARNATAKA

MAY - 2014

KLE UNIVERSITY, BELGAUM,

KARNATAKA

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LIST OF ABBREVIATIONS USED

ANM	–	Auxiliary Nurse Midwife
ASHA	–	Accreditede Social Health Activist
AWW	–	Angawadi Worker
CF	–	Correction Factor
CHD	–	Coronary Heart Disease
CI	–	Confidence interval
CNAA	–	Community Need Assessment Approach
CPI	–	Consumer Price Index
CSOM	–	Chronic Suppurative Otitis Media
NSSO	–	National Sample Survey Organization
PHC	–	Primary Health Centre
PR	–	Prevalence Rate
PWD	–	Persons With Disability
WHO	–	World Health Organization
UN	–	United Nations

ABSTRACT

Introduction

Disability is part of the human condition. Almost everyone will be temporarily or permanently impaired at some point in life. Over a billion people live with some form of disability; this corresponds to about 15% of the world's population**.** This number is growing by about 10 million a year, or over 25,000 a day. By the year 2035, the global prevalence is estimated at 667 million. Little is done today to provide any meaningful level of services needed by disabled people in the developing countries.

Research Question

What is the prevalence of disability in the rural community?

Objectives

1) To study the prevalence of disability in the rural population

2) To study the rehabilitative services used by the persons with disability

Materials and method

A community based cross sectional study was done in 2012 among 1,270 households of Vantamuri Sub-Centre (Vantamuri Primary Health Centre), Belgaum District using predesigned and pretested questionnaire. Statistical analysis was done by using percentages and chi square test.

Results

Over all prevalence of disability was 2.2%. Among persons with disability visual disability (40.13%) was maximum, next highest was locomotor disability (23.02%), followed by hearing disability (7.24%), mental disability (5.92%) and speech disability (5.26%). About 1/5th had multiple disabilities (18.43%). Prevalence of disability was significantly more in males and in illiterates. Skilled workers were more disabled compared to other occupational groups.

Only 49.3% of persons with disability had taken services/intervention for disability. Out of those who received services/intervention, 60% had taken services / intervention from the private sector. 15% of persons with disability had taken benefit of disability pension; none had taken benefit of concessional bus/train pass.

Conclusion

Two out of 100 persons were disabled and visual disability was most common type of disability. Only half of the persons with disability had received any services or intervention for disability.

Keywords

Disability, Rural community

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INTRODUCTION

Disability is part of the human condition. Almost everyone will be temporarily or permanently impaired at some point in life, and those who survive to old age will experience increasing difficulties in functioning. Most extended families have a disabled member, and many non-disabled people take responsibility for supporting and caring for their relatives and friends with disabilities.[1] This issue will become more acute as the demographics of societies change and more people live to an old age.[2]

Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. 'Impairment' is a problem in body function or structure; an 'activity limitation' is a difficulty encountered by an individual in executing a task or action; while a 'participation restriction' is a problem experienced by an individual in involvement in life situations.[3] Disability is complex, dynamic, multidimensional, and contested. Over recent decade numerous researchers from the social and health sciences have identified the role of social and physical barriers in disability. The transition from an individual, medical perspective to a structural, social perspective has been described as the shift from a "medical model" to a "social model" in which people are viewed as being disabled by society rather than by their bodies.[1]

The medical model and the social model are often presented as dichotomous, but disability should be viewed neither as purely medical nor as purely social: persons with disabilities can often experience problems arising from their health condition. A balanced approach is needed, giving appropriate

weight to the different aspects of disability. W.H.O.'s International Classification of Functioning, Disability and Health, understands functioning and disability as a dynamic interaction between health conditions and contextual factors, both personal and environmental. Promoted as a "bio-psycho-social model", it represents a workable compromise between medical and social models.[1]

Man is predominantly a visual animal. Our language reflects this primacy of vision in our life. Therefore, it is no surprise that loss of vision has a devastating effect on man. Hearing is one of our most precious senses. Spoken words are the universal means of communication. The loss of this sense excludes the individual from much of what is going on around him and adjustment to this deprivation imposes a profound reorientation. Musculoskeletal conditions are prevalent and their impact is pervasive. They are the most common cause of severe long-term pain and physical disability, and they affect hundreds of millions of people around the world. Mental disability is among the most distressing and incapacitating conditions. Many of them tend to run a chronic or recurrent course, thereby impose a severe burden on the affected individual, family and the community. The stigma associated with mental illnesses further aggravates the social burden and interferes with effective treatment. Disability associated with mental illnesses rank among the most widespread and severe public health problems.[4]

Disability is one among many socio-medical problems.[5] When global assessment is made for burden of disease; more than half of the burden of premature mortality is due to overall disability. People generally seek health services because a disease makes it difficult for them to do what they used to do

beforehand, (i.e. because they are disabled) rather than because they have a disease. Health-care providers consider a case to be clinically significant, when it limits a person's daily activities, and they use disability information as the basis of their evaluation and planning. For public health purposes, disability has become as important as mortality.[1]

It is difficult to define and measure disability, because disability is related to many life areas, and involves interactions between the person and his or her environment. Over a billion people live with some form of disability; this corresponds to about 15% of the world's population. Between 110-190 million people have very significant difficulties in functioning.[6] This number is growing by about 10 million a year, or over 25,000 a day. By the year 2035, the global prevalence is estimated at 667 million. Little is done today to provide any meaningful level of services needed by disabled people in the developing countries.[7]

In the Census of India 2001, prevalence of disability was 2.13%[8], the data was collected rapidly by the census workers, who did not have any precise instruments for classifying the person as disabled or nondisabled.[4] Very few studies have been conducted in India with regards to the magnitude of the prevalence of disability.[5]

Men, women and children with disabilities are too often marginalized in all societies and face unique challenges and are perceived only in the light of their infirmities.[9] Many of the disabilities tend to run a chronic or recurrent course, thereby impose a severe burden on the affected individual, family and the community.

This study is undertaken to help the people with disability, so as to bring more public health benefit to the disabled population and studies of this nature will be useful in developing appropriate intervention programmes in future.

OBJECTIVES

The objectives of the present study were;

1) To study the prevalence of disability in the rural population

2) To study the rehabilitative services used by the persons with disability

REVIEW OF LITERATURE

Concept of Disability: Through History[10]

In early ages, persons with disabilities have been looked upon as less worthy, with low productivity; they were represented as an object of other persons' care and charity, always a burden for the society. Attitudes towards disability and the relationship of society versus disability have changed through history.

For an easier and better understanding of the societal response to this issue, the evolution of societal attitudes to disability can be seen from two viewpoints:

1) The traditional concept
2) The modern concept

The traditional concept covers the period from the primordial community, the Antiquity, the Middle Ages, the Renaissance, the 18th and 19th centuries, and the period up to Second World War with the arrival of Nazism and Hitler's rise to power.

Historical data on the primordial communities show there was a twofold view of disability. According to one type of sources, persons with disabilities were seen as “ballast”, as “a mouth that needs to be fed“, and in exchange nothing is obtained in return. Some authors notice that treatment of persons with disabilities was more humane in the prehistoric times than in the Antiquity, when persons with disabilities were deprived of life. Some anthropological studies point to the fact that people in prehistoric times believed that at their very birth, God had

marked some persons with physical impairments and that such people have magical or psychic powers in contacting the otherworld.

In the ancient communities of Greece and Rome, where the cult of beauty and healthy body was particularly developed, persons with disabilities were publicly ridiculed and mocked. During the ancient times in Greece, children born with some bodily impairment were taken to cliffs outside populated areas and left there. During Roman times, persons with mental retardation were deprived of legal capacity.

Such a reaction persisted in the Middle Ages, and partly, unfortunately even in Renaissance, in the period from the 14th to the 16th century. Nevertheless, not all categories of disability were subject to ridicule and rejection. War veterans, who acquired their disabilities due to wounds, as well as blind and visually impaired persons who created epic poetry, enjoyed a particular social status in this era.

In the era of humanism and renaissance first attempts are made to educate, train and habilitate for social community some categories of persons with disabilities. However, that privilege was reserved only for higher classes.

With the development of Christianity a caritative, charitable, generous, kind-hearted approach was being developed towards persons with disabilities. The beginnings of such samaritan organising were seen in the 18th and 19th centuries, particularly within the Church, and they lasted well into the 20th century. Such an approach was in accordance with the Christian quality of compassion, which was held in particularly high esteem.

In Medieval Serbia, there was an obligation for church patrons to provide food for the “helpless” and “pitiable”, and judges had to visit the regions under their authority and ensure that the elementary rights of those “helpless” and “infirm” were not violated.

At the beginning of the 20th century, during Hitler's rise to power, ideas of inferiority and unproductivity of persons with disabilities were inflated to absurd paroxysm, with tragic consequences. In that period, over 300,000 Germans with any kind of impairment were sterilised, and about 3,000 of them died due to consequences of the procedure. In Hitler's Germany, persons with disabilities were considered dangerous social ballast, which spoils the purity of the Aryan race.

Exception made of the Nazi period, one can say that all through a long historical period the societal response to disability had at first the character of exclusion from the society, going all the way to charity, and that, both at the individual level, as well as at the organised, state level. The development of specialised institutions for the placement of persons with disabilities (at first within the Church and later - outside) resulted in keeping these persons isolated, far from the mainstream society and no matter how much in certain historical periods and particular socio-cultural environments such solutions had been acceptable, and no matter how well-intentioned the initiatives, they only inflated the problem of isolation and insufficient inclusion of persons with disabilities into society.

Disability had been for long periods of time fully neglected, at first occulted by a high wall of stigmatisation, then blurred by a samaritan approach,

then reduced to an individual problem of the person with disability – but always pushed onto the margins of society, away from the main streams of action, power and decision making.

Several important changes happening at various periods of time, caused gradual move from this, traditional concept to a so-called modern concept of attitude towards disability. On the one hand there were the development of industry and mechanisation, as well as development of the medical science, and on the other the consequences of modern wars, and finally, substantial development of the human rights' movement and the creation of equal opportunities. A significant role in this last segment – a turning point from the traditional to the modern concept of disability under the influence of the human rights' movement was played by the United Nations' Universal Declaration of Human Rights[11] in 1948.

An overview of the U.N. activities points to a long and slow path that had to be followed, in order to arrive at the current modern disability concept.

The 1940s' and 1950s' period was characterised by the active U.N. role in promoting the rights of persons with disabilities through social protection programmes, as well through aid provided to governments and developing countries to develop their own rehabilitation programmes.

A highlight on the rehabilitation services represented the core of care about persons with disabilities until the 1960s, when a new approach appears initiated within the movement of persons with disabilities, by the persons with disabilities themselves: this new approach stresses that rehabilitation is important, but it is in no way the answer to all the problems. Solutions must be sought by

creating conditions for integrating persons with disabilities into all social activities. Radical changes occurred in the 1970s with a powerful internationalisation of the human rights concept and the creation of equal opportunities for all.

Two U.N. Declarations are significant for this concept:

1) The Declaration on the Rights of Mentally Retarded Persons, 1971
2) The Declaration on the Rights of Disabled Persons, 1975.

Second Declaration proclaimed political rights of persons with disabilities and stresses the rights to: health protection, education, employment, social and economic security as basic rights. The Declaration also highlights the right of persons with disabilities to live with their own families, to participate in social events, to express their creativity, to be protected from exploitation and abuse, and to be granted legal protection.

1981 was proclaimed as the 'Year of Disabled Persons' by the UN and the most significant effect of the activities carried out that year was the adoption of the 'World Programme of Action concerning Disabled Persons'.

The period 1983-1992 was proclaimed as the 'UN Decade of Disabled Persons', and one of the greatest achievements of that decade is considered to be the adoption of the UN Standard Rules by the General Assembly in 1993 – that year is considered as marking the milestone of social response to disability, because then the focus definitely moved from considering 'disability as a medical problem' to understanding 'disability as a human rights issue'.

The most significant step forward in that respect was the adoption of the 'U.N. Convention on the Rights of Persons with Disabilities, 2006'[12]. That is the

most significant document in the area of human rights of persons with disabilities; it is the result of several years of negotiations between the civil society, the governments, national human rights institutions, and international organisations.

Disability models: [13]

A disability model is an approach or attitude towards disability that serves as the basis for defining concrete policies and measures towards persons with disabilities. At the same time, it serves as the basis for legislation that regulates the position of persons with disabilities.

Dominant societal attitudes towards persons with disabilities are based upon the prevailing disability model. They are directly related to the position and the role in the society these persons are living in. In theory and practice there are various models/attitudes towards disability – the medical, the social, the Nagy model, the bio-psycho-social model, etc.

The medical model of disability: [13]

This model of disability was prevailing during most of the 20th century. The model looks upon a person with disability through a prism of deficiency that marks that person with certain impairment (physical, mental or sensory), which determines a certain diagnosis. Therefore, it views disability as an individual problem, directly caused by disease, injury or some other impairment. The essential way of solving the problems of disability following this model is treatment, rehabilitation and adaptation of the individual to the existing situation.

Consequently, the society is organised in such a way that it strives to "fix" or rehabilitate the person with disability, in order for her / him to function as the others who are not part of this marginalised group.

In this model, the dominant role is played by doctors, nurses, special educators, psychologists, social and humanitarian workers, who "care" about the persons with disabilities. They rehabilitate a person with disability in such a way that he / she functions according to the measures of the “healthy” ones. Nevertheless, in some cases it is not possible to return the health status into regular parameters. Then special institutions are organised for these persons, where they will be cared for by professionals, following the charity approach.

PWD is reduced to a passive recipient of other persons' help. He / she cannot affect his / her decisions in a substantial way, he / she is isolated, has no opportunity to attend regular schools, to be employed and become economically independent, who cannot move independently, use public transportation, start a family, who lives with a series of unsatisfied needs, and who – in a word - has been deprived the basic human rights. All this derives from the belief that "disease" and "helplessness" are the fundamental, immanent characteristic of persons with disabilities.

According to this concept, the basic problem lies within the individual, not in the environment. It also points to the necessity of special institutions, special schools, special transportation, and professional workers, experts. The medical approach to disability is restrictive, because it focuses all of its attention onto the physical deficiency, completely disregarding the environment in which a person with disabilities lives.

We may freely say that the medical model is one of the factors that contributed to the isolation of persons with disabilities. Conceived in such a way, disability indicates helplessness, disease, dependence from the others and existence of the so-called “special needs” of persons with disabilities.

Such an attitude is essentially discriminatory because persons with disabilities have various capacities, potentials and qualities, and not only their disability. Persons with disabilities are not helpless; on the contrary, they could do a lot, both for themselves and for their community, if the society had created for them equal opportunities for participation in social life. They also don't have any special needs; compared to the others, they just satisfy their needs in another way.

The social model of disability: [13]

This model appeared in the 70’s and 80’s of the 20th century & it sees disability as a socially defined problem. The basis of this model is that a disease or an impairment as a state must be differentiated from disability. Although disease per se may lead to disability, there are other factors that are not related to the impairment, yet lead to discrimination and unequal opportunities. These factors come from the environment.

The social model focuses on the society that did not enable persons with disabilities to function autonomously and without hindrances. Thus the problem is positioned in the environment in which persons with disabilities live. Accordingly, what needs to be repaired, changed, the society that discriminates him / her. This model limits the role of the doctors to meet the medical needs, but

persons with disabilities themselves can assess their own needs. Thus, this model gives priority to the personality, while disability comes second.

According to this model, persons with disabilities must have a say on politics, on development and provision of services that affect them. Such an approach will help remove discriminatory attitudes of society towards disabled and raise the awareness on their problems. The social concept of disability is more appropriate to the needs of all, helps to create conditions, for an equal position of persons with disabilities in the society.

The Nagi's model of disability: [13]

Professor Saad Nagi, an Egyptian sociologist proposed this model in 1961 and it contains four phases:

1) Active pathology
2) Impairment
3) Functional limitation
4) Disability (according to Nagy, it represents the limitation of a person in performing socially defined roles and tasks)

Nagy's model put 'physical impairment into a social context' and leads the way to a new model – the bio psychosocial model.

The bio-psychosocial model of disability: [13]

This model reflects the negative aspect of the interaction between the individual, his / her health status, and the related factors. That process of interaction is characterised: "An impaired health status (as a result of disease or injury trauma) causes consequences in the form of impairments, leads to change in activities and participation"

The degree and character of these consequences of an impaired health status are influenced by various related factors, both personal and environmental.

Personal factors include: gender, age, ways of coping with stress, social background, education, profession, past and present experience, the overall behaviour pattern, the character, and a series of other factors.

Environmental factors include: social attitudes, civil society, legal and social structure, support services, architectural barriers, climate, as well as numerous other factors.

Social exclusion and marginalisation of persons with disabilities are the result of complex interaction of all the above mentioned factors.

Barriers encountered by persons with disabilities: [14]

Built environment, transportation, information and communications, make it impossible for persons with disabilities to take part in the life of a community. It is erroneously considered that the persons with disability are the cause of the problem themselves, due to their diminished physical faculties and specific demands regarding mobility or giving and receiving information and services. The issue of accessibility and abolishing all types of barriers should be viewed as an issue related to human rights of persons with disabilities and society as a whole.

Barriers in society that make it impossible for persons with disabilities to have equal opportunities are classified into the following groups of barriers:

I) Environment (physical / architectural barriers):[14]

The major physical / architectural barriers experienced by the persons with disability include barriers in transportation, housing, utilization of roads and work space.

Physical inaccessibility and the inability to use the built environment is most evident and most difficult problem for many persons with disabilities. A barrier-free environment entails that any person, regardless of their age or ability, can move everywhere in the environment without facing any barriers whatsoever. A barrier-free environment can be realised through implementation of the 'Universal Planning' or 'Design for All' concepts. Universal planning is planning products and environment in such a way as to make them usable by all people, to a highest possible extent, with no need for adjustments or specialised planning. Similarly, Universal Design (Design for All) includes planning, development and marketing of everyday products, services, systems and environment so as to make them accessible and usable to and by all, regardless of differences in age, abilities or situations.

The list of architectural barriers is infinitely long, and it most often includes: staircases, narrow doors, non-existence of elevators, inaccessible public transportation, inadequate signalisation for persons with impaired sight and hearing, lack of accessible public toilets, parking spots, adequate information etc.

Unimpeded mobility of persons with disabilities is one of the priorities and prerequisites for full participation and equal opportunities for persons with disabilities. The fact that is the most concerning is that a large number of persons with disabilities are isolated within their homes.

II) Information and Communication: [14]

Access to communication and information is very much limited to PWD. These barriers are least visible, but are present for those with sensory disabilities. In modern societies with developed technologies, access to information and communication is a basic prerequisite. But many tools of communication, such as telephone, radio and television are not accessible for persons with impaired hearing, just as many information and services are not accessible for persons of impaired sight. Due to this, a vast number of disabled persons suffer from discrimination in the field of communication and access to information. These two groups of barriers lead to a wider discrimination and marginalisation.

III) Psychological: [14]

Important psychological barriers experienced by persons with disability (PWD) are decreased capablility to work, requiring 'special care' from others for daily chores. Attitude towards persons with disabilities are beginning to change and be questioned, they are still, unfortunately, one of the major obstacles to their participation. Very often people with no disabilities feel pity, fear, curiosity, discomfort etc. for people with disabilities. Sometimes they experience them as tragic persons, sometimes they admire their courage to 'face their disability', perceiving them as superhuman. One of the most frequent prejudices about PWD is that they are less capable and that due to their disability, they cannot be educated, employed, live and move independently, travel, have their own families, children.

IV) Institutional [14]

Institutional barriers are family, legal system, political system, education, employment, social services and healthcare services. These barriers, are often combined with other sorts of barriers, most often psycho-social and architectural ones. These barriers can amount to an extreme denial of equal access and opportunities for persons with disabilities to realise their human rights.

Some practical examples of these barriers include the following:

Our education system is still such that it excludes persons with disabilities from mainstream education and most often offers special schools in its stead, i.e. non-inclusive education.

The field of employment is still an enormous barrier for over 80% of persons with disabilities, because it represents the 'tip of the iceberg'; in order to speak of equal opportunities in employment, it is necessary to remove many other barriers from physical, educational to psychological barriers.

Persons with disabilities are seldom representatives in system institutions and therefore have much less opportunities to influence policies or services; a negligibly small number of persons with disabilities have an opportunity to actively participate in political and public life of our society.

The right to family life is very often denied to many persons with disabilities due to the existence of the notion that they are asexual beings, that they need assistance and caring, but even more due to their economic and other dependence, they remain enclosed within their biological families, and after the death of their parents, they often end up at residential care institutions.

A study was carried out to know the Burden of Disability in a Chandigarh Village, [15] India during 2004 - 05. This study showed that of the total population (1,210 aged more than 5 years) surveyed, 4.8% (58) were found to have some disability. Disability rate was significantly more in people aged 55 years or more (31%) as compared to 5.4% in 25-54 years and 0.1% in <25-year age group. Of the 58 PWD, 25 had two disabilities (one had three and one had four). Disability rate was significantly more in females as compared to males. Maximum (39.65%) cases of disability were visual. Locomotion disability was seen in 12 cases. Psychiatric / neurological disability was noted in eight cases and two deaf cases were also seen. In only one of the cases, benefit of government schemes was availed. In five cases, some monetary compensation was given by the employers as these were occupational injuries. In 35 cases, the disabled persons used some appliances to overcome the disability. Literacy rate was 68%. Very few respondents had consulted Government Medical College (13.8%). Fourteen (24.14%) had consulted private doctors. No insurance claim was reported in any case. More than Rs. 5,000 was spent in seven cases for appliance / treatment and Rs. 1000 - 5000 was spent in 12 cases.

Another study done in 2004 to know the epidemiology of disability in a rural community of Karnataka,[16] showed the overall prevalence of disability was 6.3% (60/954). The most common type of disability among the disabled was mental disability (36.67%) followed by locomotor (28.33%), hearing (21.67%), speech (20%) and visual (16.67%) disability. 80% (48) of the disabled had single disability and the rest 20% had multiple disabilities. The prevalence of disability among the elderly group (> 60 years) was very high (21.5%). As the age

advances, the prevalence increased significantly. In this study, 40% (24) of the disabled were males and 60% (36) were females. The prevalence of disability was marginally higher among low socioeconomic and nuclear family group. Nearly one quarter of illiterates (22.6%) were disabled and those with education level of above 10^{th} standard had very low prevalence. As literacy level increased, the prevalence declined significantly. Also, the prevalence of disability among the unemployed was very high (28.8%). The difference in prevalence of disability between different occupation groups was found to be statistically significant. The study revealed that half of the disabled were unemployed, 28.3% were housewives and 16.7% were unskilled workers, farmers and people with petty business.

In a study from Mandur, Goa,[17] India, prevalence of locomotor disability was 0.92% (n=4,868). There was a statistically significant association between age, educational status, socio-economic class and locomotor disability prevalence. Maximum prevalence of 1.58% was found in the socio-economic class IV.

According to a study done in Kadekai and Udyavava villages of Mangalore,[5] India, the overall prevalence of disability (aged between 5-60 yrs) was 2.02% (n=6,708). The prevalence of disability was highest in the 45-59 years age group. Total number of persons with disability was 136, of whom 62 were males and 74 were females. The difference in prevalence of disability was seen in males (1.89%) and in females (2.14%), which was not statistically significant. Locomotor disabilities were the commonest, followed by visual

disability. The prevalence of disability was lowest among high socio-economic group. More females (60%) had visual disabilities compared to males.

According to a study of prevalence and types of disabilities at Mandur[4], in rural Goa, the overall prevalence of disabilities was 3.90% (n=4,868). There was a statistically significant association between age, education, occupation, per-capita income and prevalence of disability. The main types of disabilities were visual disability (41.8%), hearing and speech disability (22.41%), locomotor disability (19.39) and mental retardation and mental illness (16.4%). Most common causes of disabilities were cataract, presbyacusis, fracture and moderate mental retardation.

Another study done to know knowledge, accessibility and utilization of rehabilitation services by persons with disability in a rural Goa[18], showed only 24.2% (n=190) persons with disability (PWD) utilized the rehabilitative services. Most (42.6%) of persons with disability approached specialists for medical rehabilitation services and only 2.1% of persons with disability approached quacks for rehabilitation purposes. Only 9.5% had not availed any service previously.

According to a review of recent literature done for the period 1990-1998, on prevalence of impairments, disabilities, handicaps and quality of life in the general population,[19] prevalence rates of impairment, disability, handicap and low quality of life were 0.1–92%, 3.6–66%, 0.6–56% and 1.8–26% respectively.

A study done in Nigeria[20] in 2010, among 1,824 elderly rural population for physical disability and functional limitation showed the prevalence ratios (PRs) of physical disability using the ten, six and five basic 'Activities of Daily

Life' items were 28.3 (95% CI 25.2–31.5), 15.7 (95% CI 13.4–19.8), and 12.1 (95% CI 9.8–15.3) respectively. While functional limitation was 22.5 (95% CI 18.1–24.4), increased risk of disability was independently associated with female gender PR 3.6 (95% CI 1.5–7.4), advanced age ≥ 75 years; PR 22.2 (95% CI 14.5, 36.8), arthritis PR 3.7 (95% CI 2.6–4.6), stroke PR 4.8 (95% CI 3.7–7.9) and diabetes PR 6.1 (95% CI 4.3–7.1)

Another study done in Mangalore city[21] (n=120), in 2006 on geriatric population showed prevalence of disability was found to be 65.8%. Speech and locomotor disability were more common. Prevalence of disability was found to be 90.9% among 80 years and above age group. Around one third of the disabled had chronic co-morbid conditions. None of the disabled had received any speech therapy, vocational training or job placement.

A study done in Uttar Pradesh[22], in 2007 (n=2107), reported overall prevalence of physical disability was 1.94%. Locomotor disabilities were most prevalent (1.04%). Prevalence of physical disabilities among the ≥ 60 years age group was highest (9.03%). Prevalence was higher in males (2.04%) as compared to females (1.85%). Physical disability was found to be higher in illiterates (4.72%) and community having low and medium standard of living.

In National Sample Survey Organization's (NSSO) 58th report, India, in 2003,[23] about 8.4% and 6.1% of the total estimated households in rural and urban India, respectively reported to have at least one disabled person. The number of disabled persons in the country was 1.8% of the total population. About 10.63% of the disabled persons suffered from more than one type of disabilities. Among the rural residents, the prevalence of disability was 1.85% and that among the

urban, it was 1.5%. The rate for males was 2.12% and 1.67% while that for females was 1.56% and 1.31% in rural and urban India, respectively. Among the different types of disabilities, the prevalence of locomotor disability was highest in the country. This was followed by visual disability and hearing disability. About 55% of the disabled were illiterate and about nine percent completed 'secondary and above' level of education. About 11 percent of disabled persons of age 5 - 18 years were enrolled in the special schools in the urban as compared to even less than one percent in the rural area.

A study done in Chandigarh, in July 2000[24] on 200 subjects over 60 years old, reported that 87.5% of elderly people had minimal to severe disabilities. Disability was higher in 73-84 years age group, in women and in skilled workers.

Another study in Gorakhpur[25], in 1985, found that prevalence of disability in children below the age of 6 years (n=1,545) was 7.64%. There were 64 (54.2%) boys and 54 (45.8%) girls. The disability was higher in children between 3-6 years of age group constituting 65.5% of total cases. Visual, mental, orthopaedic, speech and hearing disabilities were 53.2%, 29.5%, 6.9%, 5.8% and 5.5% of all disabilities respectively.

A study done in Mangalore[26], in 2011-12 to know the prevalence of disability in school going children (5-17 years, 639 schools surveyed, n=1,37,367) reported 2.06% of disability; of this 0.69% had vision disability, 0.45% had mental disability, 0.12% had hearing disability and 0.09% had speech disability.

METHODOLOGY

The present study was conducted in the rural field practice area of Primary Health Center (PHC), Vantamuri, Belgaum. The Vantamuri PHC has five sub-centers Kakati A, Kakati B, Honaga, Bhutramatti and Vantamuri catering 17 villages having total population of 34,512 as per the community need assessment approach survey (CNAA) done in 2011. It is situated by the side of Pune-Bangalore National Highway and is 20 Kms. from Belgaum towards North (Figure 1).

Chief languages spoken in this area are Kannada and Marathi. The educational facilities available in the villages are up to secondary level. The Anganwadi Workers, Health Assistants, Private Practitioners and Medical Officer of PHC Vantamuri and the interns under Reorientation of Medical Education Programme of Community Medicine, Department of Jawaharlal Nehru Medical College, Belgaum provide the health care facilities.

Design

The study design was community based cross-sectional study.

Duration

This one year study was conducted from January 2012 to December 2012.

Participants

Households in rural field practice area under Vantamuri sub-centre in Vantamuri Primary Health Centre of Belgaum District.

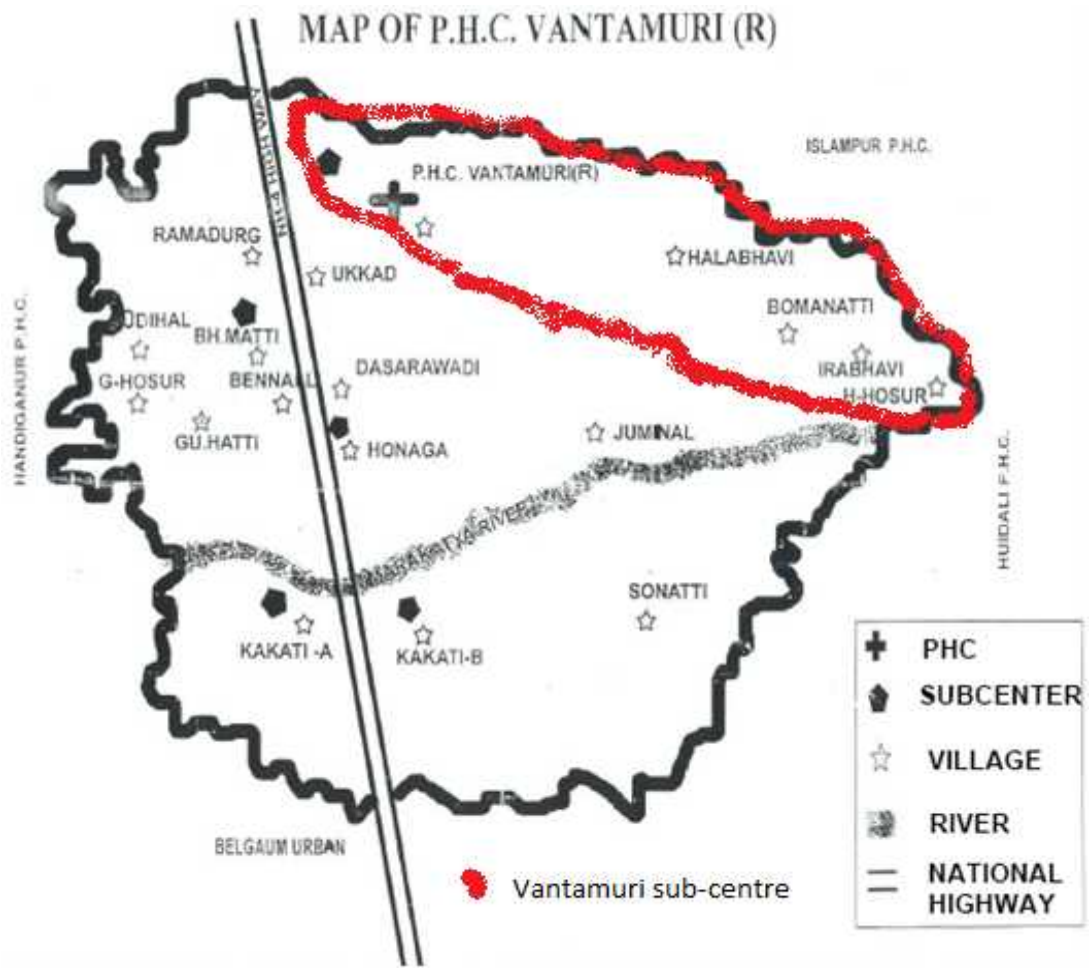

Figure 1: Map of Vantamuri Primary Health Centre

Sample size

Vantamuri sub-centre from Vantamuri Primary Health Centre. Total population estimated in 2011 by community need assessment approach survey was 7,019 (1,270 households)

Sampling procedure

Vantamuri sub-centre was chosen by lottery method, out of five sub-centers under Vantamuri Primary Health Centre.

Selection criteria

Inclusion

- All the families residing in the study area for more than one year preceding the date of survey
- People of all age groups in those households

Exclusion

- Recently migrated families
- Families who were not available even after three home visits by the investigator, were treated as permanently locked houses

Procedure

Questionnaire was prepared based on the text book, 'Community Based Rehabilitation of the persons with disabilities.'[27] Before starting the study, pilot study was carried out in 20 households using a predesigned and structured questionnaire. Appropriate changes were made to the questionnaire based on the pilot study results.

In the WHO International Classification of Functioning, Disability and Health,[28] 2001; problems with human functioning are categorized in three inter-connected areas:

Impairments are problems in body function or alterations in body structure – for example, paralysis or blindness;

Activity limitations are difficulties in executing activities – for example, walking or eating;

Participation restrictions are problems with involvement in any area of life – for example, facing discrimination in employment or transportation.

Disability refers to difficulties encountered in any or all three areas of functioning. **Therefore in this study, disability was considered when difficulties were encountered in any or all three areas of functioning were reported by the respondents.**

The study was approved from Institutional Ethics Committee for Human Subjects' Research of Jawaharlal Nehru Medical College, Belgaum (Annexure I). The study participants were interviewed in their households by the investigator. Based on the selection criteria, the study participants were selected and written informed consent (Annexure II) was obtained from all the participants. In case of children < 18 years assent from the participant and written informed consent from the parent / legal guardian was obtained. The data was collected using predesigned and pretested proforma (Annexure III).

Data regarding demographic variable like age, sex, education status, religion, socio-economic status and type of family, type of housing and occupation of members of family were recorded and were asked for presence of disability in any member of family using Proforma-A.

If any member in family had disability, he / she was interviewed in detail using Proforma-B to know type of disability, age at onset of disability, duration of disability, immunization status, past history, birth history, probable cause of

disability and rehabilitation services & benefits availed by persons with disability. In case of children, adult care giver was interviewed. Separate proforma-B was used for each disabled person in case of more than one PWD in the same household. Two more subsequent visits were made by the investigator to collect data from those who were absent on the first visit.

Statistical analysis

The data was coded and tabulated and master chart was prepared in Excel Sheet (Annexure IV). Analysis was done using percentages, rates and ratios. Chi square test was used to find the association between attributes. Analysis was done using Epi Info 7 software, p value < 0.05 was considered statistically significant.

Definition of study variables

Age: Age was recorded to the nearest completed year as per information given by the subject.

Religion: The subject's religion was noted and was grouped as "Hindu", "Muslim", and "Others" (Jain, Boudh, Parsi, Christian etc).

Type of family[29]

Nuclear family: Married couples, along with their dependent children living in the same house.

Joint family: Many married couples and their children who are living in the same household. All males are blood relatives and all females of the family are related by either marriage or blood relation.

Three generation family: Married couple with married children and their kids (three generations) related to each other by direct descent and living together.

Broken family: One where, the couple have separated, or where death has occurred for one or both the spouses.

Socioeconomic status: Information of total monthly income of the family in Rupees was obtained as well as the family size. Per capita monthly income in rupees was calculated, and then the family was classified using modified B. G. Prasad's classification for the study period (2012) and it was calculated by Multiplication factor with 1961 Prasad's classification values.[30]

Modified B. G. Prasad's Classification

Socioeconomic class	Prasad's classification (1961) per capita income in Rs/ month[30]	Modified Prasad's classification in the study period (2012) Per capita income in Rs/month
I	100 & above	4,800 and above
II	50 to 99	2,400 to 4,799
III	30 to 49	1,440 to 2,399
IV	15 to 29	720 to 1,439
V	below 15	below 720

Average Consumer Price Index (CPI) for the year 2012 = 969.21 [31]

Modification was done with the aid of Correction Factor (C.F), which was obtained as below:

$$\text{C. F.} = \frac{\text{Average Consumer Price Index for study period}}{100} \text{ X } 4.93$$

$$C.F. = \frac{969.41}{100} X\ 4.93 = 47.73 \approx 48.$$

Educational status:

The subjects were asked about their educational qualifications and were grouped into following categories.

Illiterate: A person who could not read and write with understanding in any language.

First to fifth standard: A person who had studied up to fifth standard or a person who can read and write with understanding in any language (without attending the school).

Sixth to Tenth standard: A person who had studied between sixth to tenth standard.

Tenth plus: A person who had studied above 10^{th} standard and attended college.

Occupation:

- Homemaker – A woman who takes care of the household day to day duties.
- Agriculturist – A person who works in farm field.
- Coolie – A person who makes living on daily wage basis
- Business – A person who had a shop or hotel (self employed)
- Skilled – A person who has acquired special skills like carpentery

Consanguineous Marriage*:*

A consanguineous marriage is defined as a marriage between people who are second cousins or more related.[32] Consanguinity was assessed in the parents of PWD < 15 by based on the history provided by the parents.

Type of housing:

Pucca House[33]: A pucca house is one, which has walls and roof made of the following material.

Wall material: Burnt bricks, stones (packed with lime or cement), cement concrete, timber

Roof material: Tiles, GCI (Galvanised Corrugated Iron) sheets, asbestos cement sheet, RBC (Reinforced Brick Concrete), RCC (Reinforced Cement Concrete) and timber etc.

Houses not fulfilling the above criteria were taken as *kutcha house* in this study.

Types of disability: Difficulties encountered in any or all three areas of functioning (impairment, activity limitation and participation restriction) to see, to hear, to talk, to walk/to stand or to respond/to understand what happens in the surroundings or has history of strange behaviour reported by the respondents were classified as visual disability, hearing disability, speech disability, locomotor disability and mental disability respectively. Respondents having two or more disabilities were considered as having multiple disabilities.

Birth history was recorded for PWD below 15 years from their parents. Delivery was noted as full term if birth occurred between 37 and 42 weeks of gestation and was recorded as pre term if birth occurred before 37 weeks. [34] Birth weight was recorded as normal if the weight was ≥ 2.5 kgs and as low birth if weight was < 2.5 kgs.[35]

Immunization status was assessed for PWD below five years by history given by the mother. If the person had received all vaccines for appropriate age he / she was considered as fully immunized. If he /she had some vaccines but not all vaccines for appropriate age he / she was considered as partially immunized. If the person had not received he / she was considered as non-immunised.

Probable cause of disability was based on history. Services / interventions received by PWD one year preceding the survey were noted. Overall need for the health services / intervention required was recorded by the investigator at the end of survey.

RESULTS

This one year community based cross-sectional study was conducted in 2012 in the rural field practice area of Primary Health Center (PHC), Vantamuri, Belgaum. The Vantamuri PHC has five sub-centers catering to 17 villages, having total population of 34,512. It is situated by the side of Pune-Bangalore National Highway and is 20 Kms. from Belgaum towards north.

1,270 households of Vantamuri sub-centre from Vantamuri Primary Health Centre were surveyed during study. 23 households were found to be locked after three consecutive visits during the study period. Therefore 1,247 (n=6,905) households were included for the analysis.

Data collected in the questionnaire was coded, entered in Microsoft excel sheet and master chart was prepared (Annexure IV). Data was analyzed and tabulated as below:

Table 1: Distribution of study population according to gender

Gender	Study population (n=6,905)	
	Number	**Percent**
Male	3482	50.43
Female	3423	49.57
Total	**6905**	**100**

Among the study population, 50.43% were males and 49.57% were females with male to female ratio of 1.02:1

Table 2: Distribution of study population according to age

Age group (Years)	Study population (n=6,905)	
	Number	**Percent**
< 5	804	11.64
5 – 15	1167	16.9
15 – 30	1751	25.36
30 – 45	1691	24.49
45 – 60	1019	14.76
> 60	473	6.85
Total	**6905**	**100**

Among the study population, 11.64% belonged to the age group of < 5 years, 16.90% in 5 – 15 years, 25.36% in 15 – 30 years, 24.49% in 30 – 45 years, 14.76% in 45 – 60 years and 6.85% belonged to the age group > 60 years.

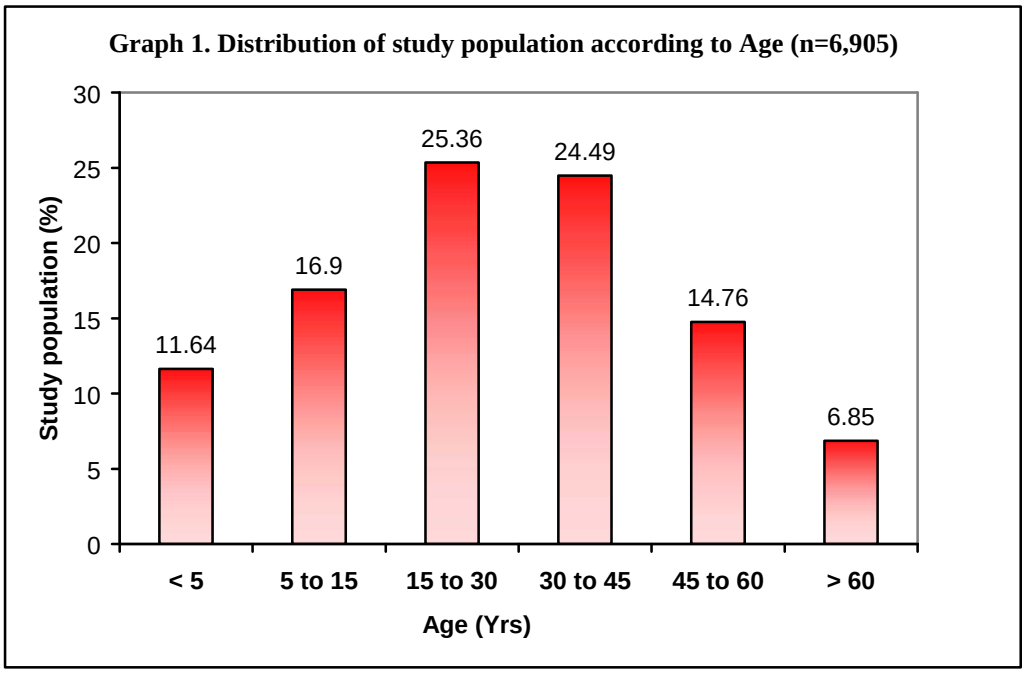

Table 3: Distribution of study population according to religion

Religion	Number of households (%) n= 1,247	Number of participants (%) n= 6,905
Hindu	1160 (93.02)	6293 (91.14)
Muslim	87 (6.98)	612 (8.86)
Total	**1,247**	**6,905**

In this study, most of the households were Hindus (93.02%) and remaining were Muslims (6.98%).

Table 4: Distribution of study population according to educational status

Education	Study population (n=5,921)*	
	Number	**Percent**
Illiterate	2073	35.01
1^{st}-5^{th} std	1784	30.13
6^{th}-10^{th} std	1473	24.88
Above 10^{th} std	591	9.98
Total	**5921**	**100**

In the present study, 35.01% were illiterates, whereas 30.13% had studied first to fifth standard, 24.88% had studied sixth to tenth standard and 9.98% had studied above tenth standard.

Note: * Educational status for 984 study participants aged less than seven years was not assessed (as per Census India 2011 criteria)

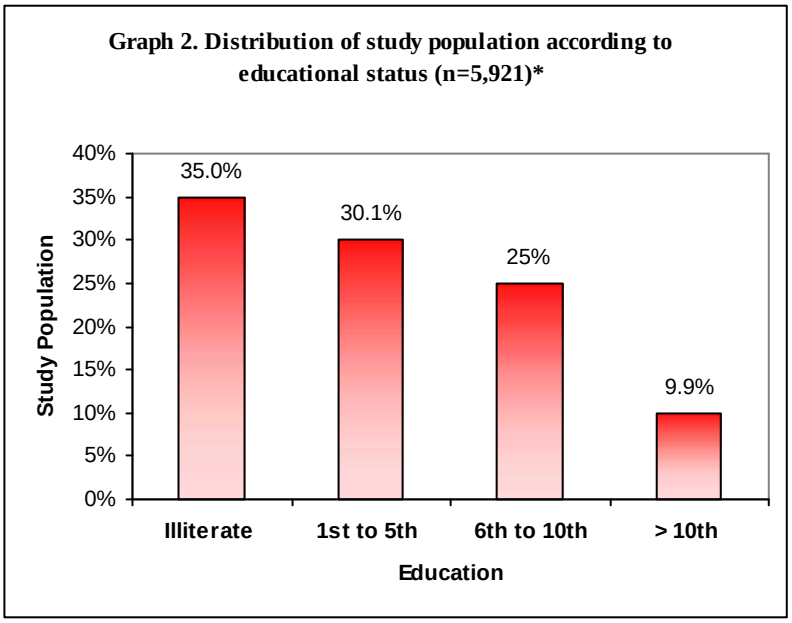

Table 5: Distribution of study population according to socio-economic status

Socio economic status	Number of households (%) n= 1,247	Number of participants (%) n= 6,905
Class I	4 (0.32)	16 (0.23)
Class II	11 (0.89)	81 (1.17)
Class III	87 (7.0)	447 (6.47)
Class IV	724 (58.05)	4067 (58.91)
Class V	421 (33.74)	2294 (33.22)
Total	**1,247**	**6,905**

In this study, majority of study participants (58.91%) belonged to Class IV, 33.22% belonged to class V, 6.47% belonged to class III, 1.17% belonged class II and 0.23% belonged to class I as per modified B. G. Prasad's.

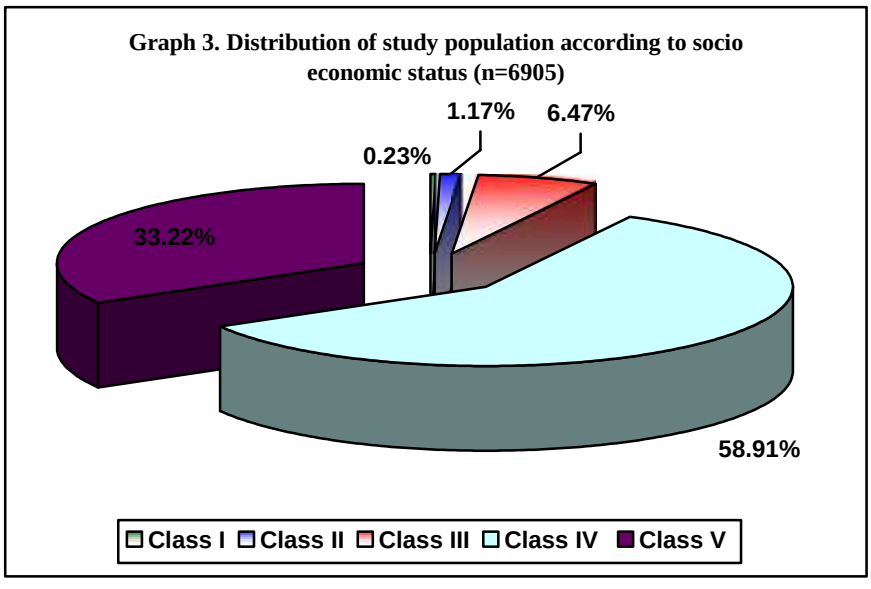

Table 6: Distribution of study population according to type of family

Type of family	Number of households (%) n= 1,247	Number of participants (%) n= 6,905
Nuclear	834 (66.88)	3936 (57)
Joint	317 (29.75)	2866(41.5)
Broken	42 (3.37)	103(1.5)
Total	**1,247**	**6,905**

In this study, 57% of the study participants belonged to nuclear family, 41.5% belonged to joint family and 1.5% belonged to broken family.

Graph 4. Distribution of study population according to type of family (n=6,905)

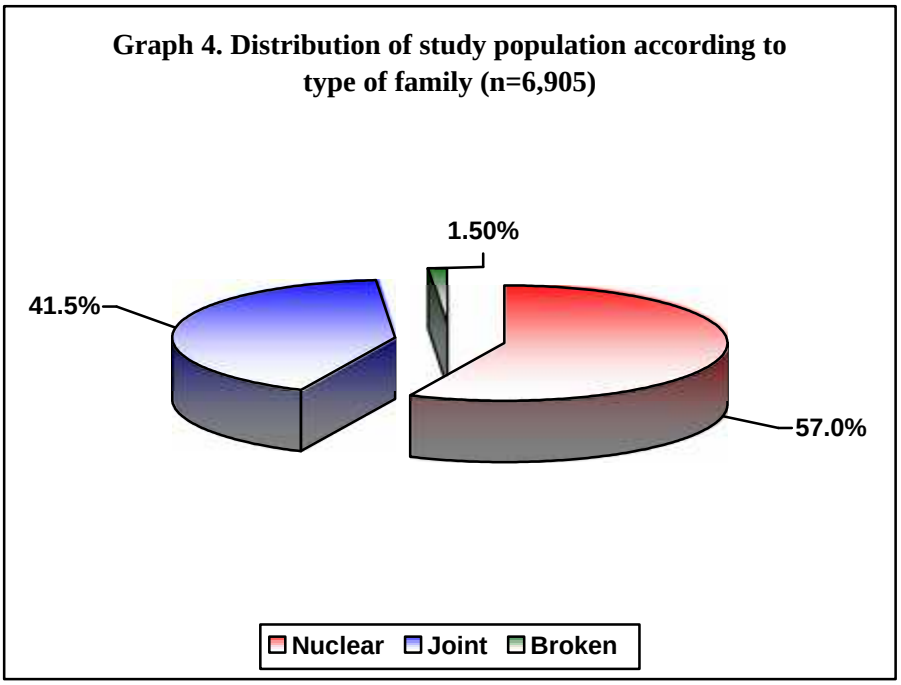

Table 7: Distribution of study population according to type of housing

Type of housing	Number of households (%) n= 1,247	Number of participants (%) n= 6,905
Pucca	498 (39.93)	2913 (42.19)
Kutcha	749 (60.07)	3992 (57.81)
Total	**1,247**	**6,905**

In this study, 42.19% people lived in pucca houses, whereas remaining 57.81% lived in kutcha houses.

Table 8: Distribution of study population according to toilet facility

Toilet facility	Number of households (%) n= 1,247	Number of participants (%) n= 6,905
Toilet available	85 (6.89)	483 (6.99)
Open field defecation	1162 (93.18)	6422 (93.01)
Total	**1,247**	**6,905**

In this study, 93.18 % of the households did not have a toilet facility, hence practiced open field defecation.

Table 9: Distribution of study population according to occupation

Occupation	Study Population (n=4,934)*	
	Number	**Percent**
Unemployed	1055	21.38
Coolie	1604	32.51
Agriculture	1343	27.22
Business	107	2.17
Home maker	781	15.83
Skilled	44	0.89
Total	**4,934**	**100**

In this study, 21.38% were unemployed, 32.51% were coolie, 27.22% were farmers, 2.17% had business, only 0.89% were skilled workers and rest (15.83%) were homemakers.

Note: * Occupational status was not assessed for study participants aged less than 15 years.

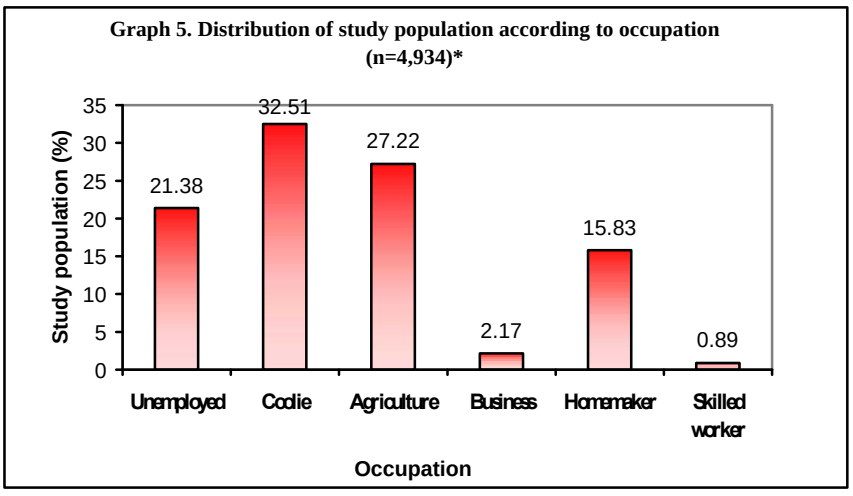

Table 10: Prevalence of disability according to gender

Gender	Study population (n=6,905)		
	Number	**PWD**	**Prevalence**
Male	3482	103	2.96
Female	3423	49	1.43
Total	**6905**	**152**	**2.2**

χ^2=18.691 d.f. =1 p= < 0.001

In this study prevalence of disability was found to be 2.96% among males and 1.43% among females and this difference was statistically significant.

Graph 6. Prevalence of disability according to gender (n=6,905)

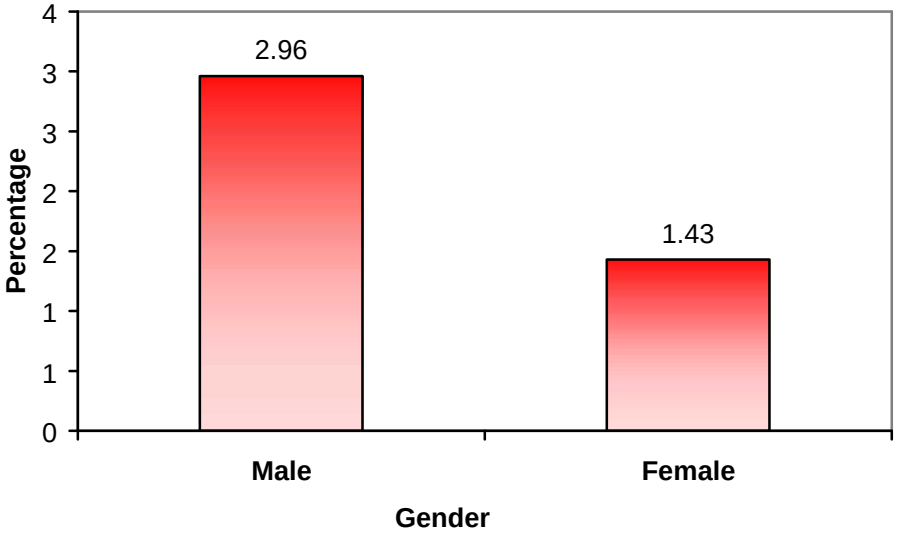

Table 11: Prevalence of disability according to age

	Study population (n=6,905)		
Age group (Years)	**Number**	**PWD**	**Prevalence**
< 5	804	16	1.99
5 – 15	1167	13	1.11
15 – 30	1751	20	1.14
30 – 45	1691	24	1.42
45 – 60	1019	30	2.94
> 60	473	49	10.36
Total	**6905**	**152**	**2.2**

χ^2=169.34 d.f.=5 p= < 0.001

This study showed that prevalence of disability among the different age groups were- 1.99% among children aged < 5 years, 1.11 % in 5 – 15 years, 1.14% in 15 – 30 years, 1.42% in 30 – 45 years, 2.94% in 45 – 60 years and 10.36% in > 60 years. Over all disability prevalence was 2.2%. This difference in prevalence among the age groups were statistically significant.

Graph 7. Prevalence of disability according to age (n=6905)

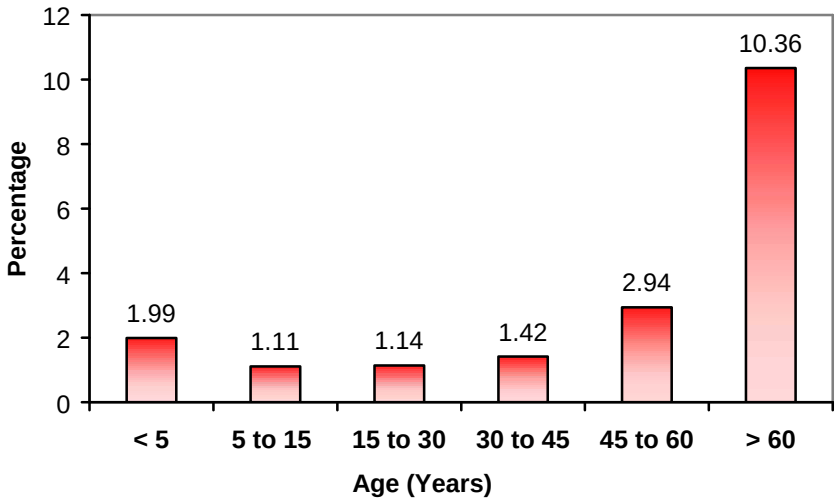

Table 12: Prevalence of disability according to religion

Religion	Study population (n=6,905)		
	Number	PWD	Prevalence
Hindu	6293	141	2.24
Muslim	612	11	1.79
Total	**6905**	**152**	**2.20**

$\chi^2 = 0.512$ d.f. = 1 p = 0.475

In this study, prevalence of disability was more among Hindus (2.24%) than in Muslims (1.79%) and this difference was statistically not significant.

Table 13: Prevalence of disability according to educational status

Education	Study population (n=5,921)*		
	Number	**PWD**	**Prevalence**
Illiterate	2073	92	4.43
1st-5th std	1784	25	1.40
6th-10th std	1473	13	0.88
Above 10th std	591	2	0.34
Total	**5921**	**132**	**2.20**

χ^2 = 73.961 d.f. = 3 p = < 0.001

In the present study, prevalence of disability in illiterates was 4.43%, in first to fifth standard 1.40%, sixth to tenth standard was 0.88% and in tenth plus studied prevalence of disability was 0.34%. This difference was statistically significant.

Note: * Educational status for 984 study participants aged less than seven years was not assessed (as per Census 2011 criteria)

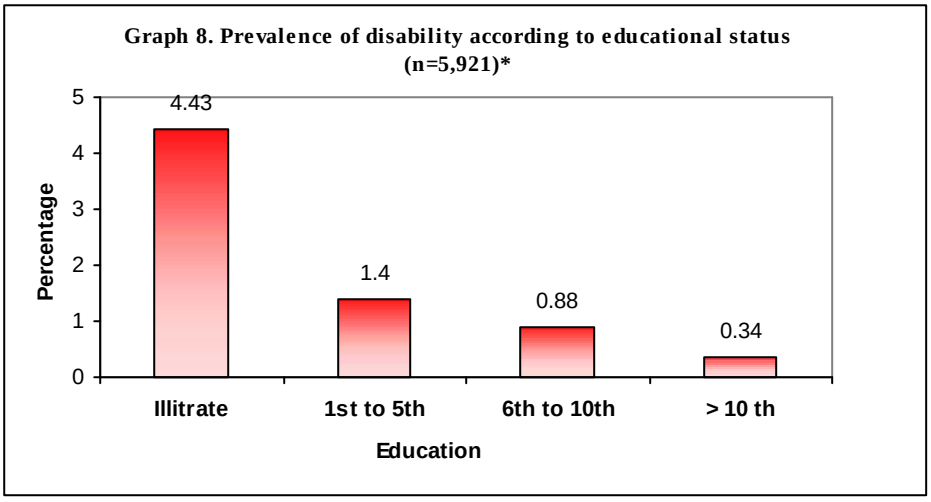

Table 14: Prevalence of disability according to socio-economic status

Socio-economic status	Study population (n=6,905)		
	Number	**PWD**	**Prevalence**
Class I	16	0	0
Class II	81	2	2.47
Class III	447	10	2.24
Class IV	4067	98	2.41
Class V	2294	42	1.83
Total	**6905**	**152**	**2.2**

$\chi^2 = 2.672$ d.f. = 4 p = 0.614

In the present study, prevalence of disability in class I was 0%, in class II 2.47%, in Class III 2.24%, class IV 2.41% and in class V was 1.83%. this difference was statistically not significant.

(Socio-economic class as per modified B. G. Prasad's classification)

Table 15: Prevalence of disability according to type of family

Type of family	Study population (n=6,905)		
	Number	**PWD**	**Prevalence**
Nuclear	3936	84	2.13
Joint	2866	61	2.13
Broken	103	7	6.79
Total	**6905**	**152**	**2.20**

χ^2 = 10.252 d.f.=2 p = 0.006

In this study, prevalence of disability was same (2.13%) in both nuclear & joint families and 6.79% in broken families. This difference was found to be statistically significant.

Table 16: Prevalence of disability according to occupation

Occupation	Study Population (n=4,934)*		
	Number	**PWD**	**Prevalence**
Unemployed	1055	17	1.61
Coolie	1604	41	2.55
Agriculture	1343	37	2.75
Business	107	4	3.74
Homemaker	781	20	2.56
Skilled worker	44	4	9.09
Total	**4934**	**123**	**2.20**

χ^2 = 12.361 d.f. = 5 p = 0.03

In this study, prevalence of disability in unemployed was 1.61%, in coolies it was 2.55%, in farmers 2.75%, in those doing business it was 3.74%, in homemakers 2.56%, and in skilled workers it was 9.09%. This difference was statistically significant.

Note: * Occupational status was not assessed for 29 study participants aged less than 15 years.

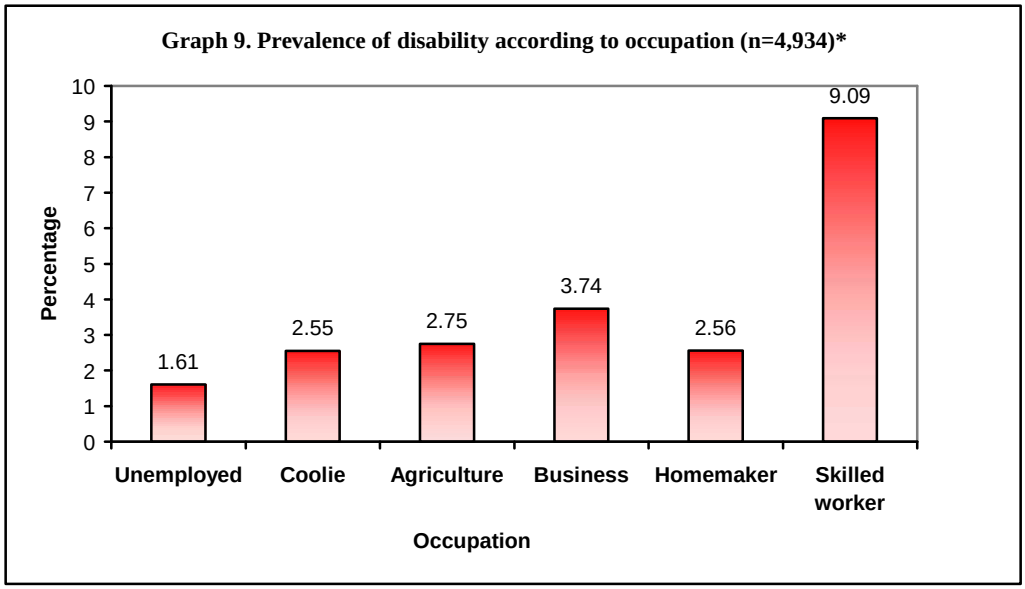

Table 17: Distribution of persons with disability according to types of disability

Disability type	Persons with disability (n=152)	
	Number	Percent
Locomotor	35	23.02
Visual	61	40.13
Hearing	11	7.24
Speech	8	5.26
Mental illness/retardation	9	5.92
Multiple	28	18.43
Total	**152**	**100**

In this study, among 152 persons with disability, 23.02% had locomotor disability, 40.13% had visual disability, 7.24% had hearing disability, 5.26% had speech disability, 5.92% had mental disability and 18.43% had multiple disabilities.

Graph 10. Distribution of persons with disability according to disability type (n=152)

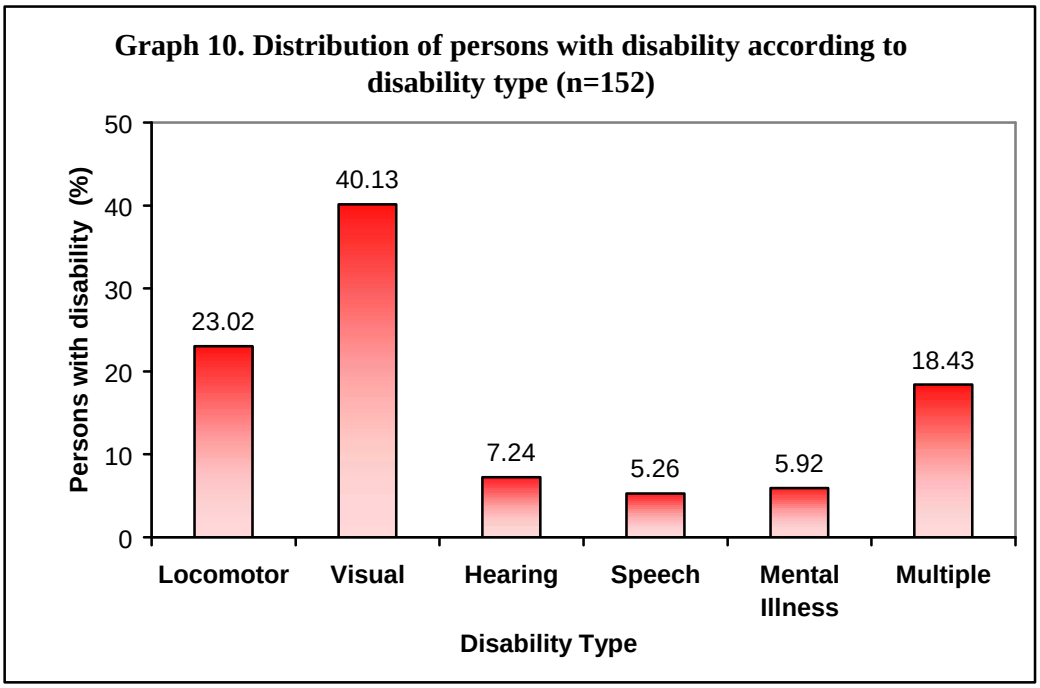

Table 18: Distribution of persons with disability according to age at onset of disability

Age at onset of disability (Yrs)	Persons with disability (n=152)	
	Number	**Percents**
< 5	52	34.2
5 – 15	5	3.3
15 – 30	4	2.6
30 – 45	14	9.2
45 – 60	52	34.2
> 60	25	16.5
Total	**152**	**100**

In this study with 152 persons with disability, the percentage of persons with disability with age at onset of disability < 5 years was 34.2% , 5-15 years was 3.3%, 15-30 years was 2.6%, 30-45 years was 9.2%, 45-60 years was 34.2%, >60 years was 16.5%.

Table 19: Distribution of persons with disability by Immunization Status

Immunization (< 5yrs)	Persons with disability (n=16)*	
	Number	**Percent**
Fully immunized for age	12	75.0
Partially immunized for age	2	12.5
Not immunized for age	2	12.5
Total	**16**	**100**

Note: ***** Immunization status was assessed only for persons with disability < 5 yrs

In this study, 75% of under-five children with disability were fully immunized for age, 12.5% were partially immunized for age and 12.5% were not immunized for age.

Table 20: Distribution of persons with disability according to consanguineous marriage in parents

Consanguineous marriage in parents of PWD	Persons with disability (n=29)*	
	Number	**Percent**
Present	9	31.03
Absent	20	68.97
Total	**29**	**100**

Note: *****History of consanguineous marriage in parents was assessed only for PWD below 15 years.

In this study, the percentage of persons with disability with consanguineous marriage in parents was 31.03%, and in 68.97% it was absent.

Table 21: Distribution of persons with disability according to past history

Past History	Persons with disability (n=152)	
	Number	**Percent**
No significant past history	134	88.2
Convulsions	2	1.3
Injuries	3	2.0
Ear Discharge	7	4.6
Diabetes Mellitus	6	3.9
Total	**152**	**100**

In this study, 88.2% of persons with disability had no significant past history, 1.3% had past history of convulsions, 2.0% had past history of injuries, 4.6% had past history of ear discharge, 3.9% had a past history of diabetes mellitus.

Table 22: Distribution of persons with disability according to place of delivery

Place of delivery	Persons with disability (n=29)*	
	Number	**Percent**
Hospital	27	93.1
Home	2	2.9
Total	**29**	**100**

Note: ***** History of place of delivery was assessed only for persons with disability <15 years

In this study, among the participants who were aged less than 15 years, 29 persons were with disability. Out of them, 93.1% had birth in a hospital and remaining 2.9% were born by home delivery.

Table 23: Distribution of persons with disability according to person who conducted the Delivery

Person who conducted the Delivery	Persons with disability (n=29)*	
	Number	**Percent**
Trained Dai	2	6.9
Health worker	11	37.9
Doctor	16	55.2
Total	**29**	**100**

Note: ***** Person who conducted the delivery of persons with disability was assessed only for persons with disability <15yrs

In this study, with 29 persons with disability aged less than 15 years, delivery of 6.9% of persons with disability was conducted by trained dais, 37.9% by health workers and remaining 55.2% by doctors.

Table 24: Distribution of persons with disability according to gestational age

Gestational age	Persons with disability (n=29)*	
	Number	**Percent**
Full term	26	89.7
Pre term	3	10.3
Total	**29**	**100**

***** Gestational age of persons with disability was assessed only for persons with disability < 15yrs

In this study, with 29 persons with disability aged less than 15 years, the gestational age of 89.7% of persons with disability was full term, and 10.3% were pre-term as mentioned by their parents.

Table 25: Distribution of persons with disability according to cry immediately after birth

Cried immediately after birth	Persons with disability (n=29)*	
	Number	**Percent**
Yes	25	86.2
No	4	13.8
Total	**29**	**100**

Note: ***** **'**Cried immediately after birth' of persons with disability was assessed only for persons with disability < 15yrs

In this study, 86.2% of persons with disability cried immediately after birth, and 13.8% didn't cry immediately after birth, as mentioned by their parents.

Table 26: Distribution of persons with disability according to skin colour at birth

Skin colour at birth	Persons with disability (n=29)*	
	Number	**Percent**
Blue	2	6.9
Pink	27	93.1
Total	**29**	**100**

Note: ***** Skin colour at birth of persons with disability was assessed only for persons with disability < 15yrs

In this study, the skin colour at birth of 6.9% persons with disability was blue, and 93.1% was pink as told by their parents.

Table 27: Distribution of persons with disability according to birth weight

Birth weight (Kgs)	Persons with disability (n=29)*	
	Number	**Percent**
≥ 2.5 (Normal)	24	82.7
< 2.5 (Low Birth Weight)	3	10.4
Don't know	2	6.9
Total	**29**	**100**

Note: ***** Birth weight of persons with disability was assessed only for persons with disability <15yrs

In this study, the birth weight of 82.7% of persons with disability was ≥ 2.5kgs, 10.4% of persons with disability were < 2.5kgs and 6.9% didn't know the birth weight as mentioned by their parents.

Table 28: Distribution of persons with disability according to progression of disability

Progression of disability	Persons with disability (n=152)	
	Number	**Percent**
Increasing	77	50.7
Decreasing	0	0
Remaining static	75	49.3
Total	**152**	**100**

In this study, in 50.7% of PWD, disability was increasing and in 49.3% it was remaining static.

Table 29: Distribution of persons with disability according to probable cause of disability

Probable cause of disability	Persons with disability (n=152)	
	Number	**Percent**
Twin pregnancy	2	1.3
Cataract	61	40.2
Birth injury	4	2.6
Arthritis	16	10.6
Road traffic accident	4	2.6
Congenital abonrmality	2	1.3
Disuse Atrophy	2	1.3
Cerebral palsy	6	3.9
CSOM	9	5.9
Cataract & Arthritis	6	3.9
Trauma	3	2.0
Cataract & presbyacusis	4	2.6
Don’t know	33	21.8
Total	**152**	**100**

In this study, twin pregnancy was probable cause of disability in 1.3%, cataract in 40.2%, birth injury in 2.6%, arthritis in 10.6%, road traffic accidents in 2.6%, congenital abnormality in 1.3%, disuse atrophy in 1.3%, cerebral palsy in

3.9%, chronic suppurative otitis media in 5.9%, cataract and arthritis in 3.9%, trauma in 2.0%, cataract & prebyacusis in 2.6% of persons with disability, 21.8% of persons with disability didn't know the probable cause of their disability.

Table 30: Distribution of persons with disability according to services / intervention received for disability

Services / intervention received	Persons with disability (n=152)	
	Number	**Percent**
Yes	75	49.3
No	77	50.7
Total	**152**	**100**

In this study, 49.3% of persons with disability received services / intervention and 50.7% didn't receive any services/intervention for disability

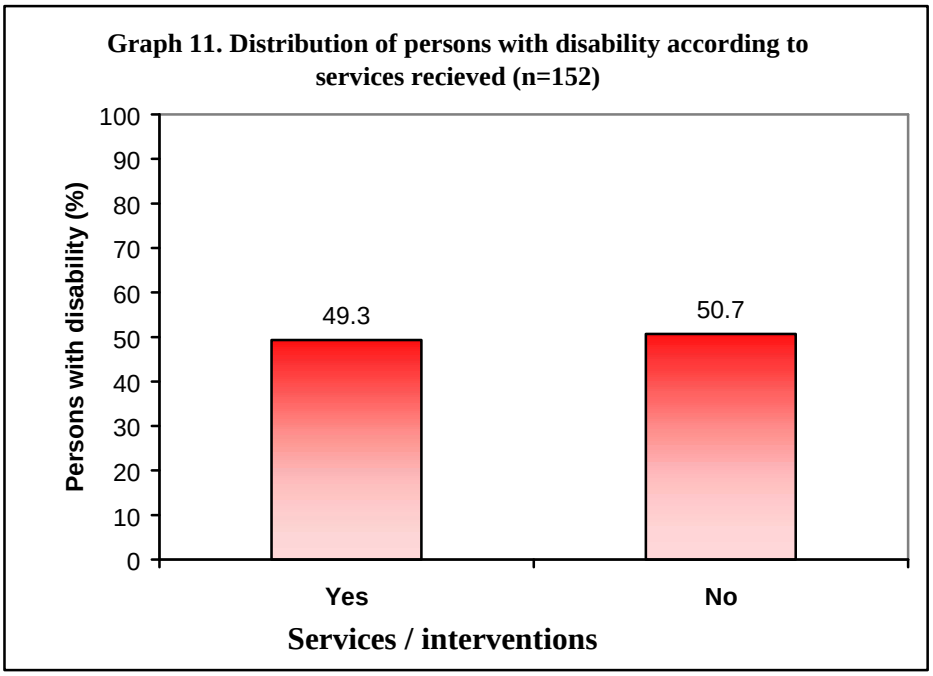

Table 31: Distribution of persons with disability according to place of services / intervention received

Place of service / intervention	Persons with disability (n=75)*	
Received	**Number**	**Percent**
Private facility	45	60
Govt. facility	30	40
Total	**75**	**100**

Note: * Only 75 out of 152 persons with disability opted for treatment / intervention.

In this study, 60% of persons with disability received service / intervention in private health centres and 40% received service / intervention in government health centres.

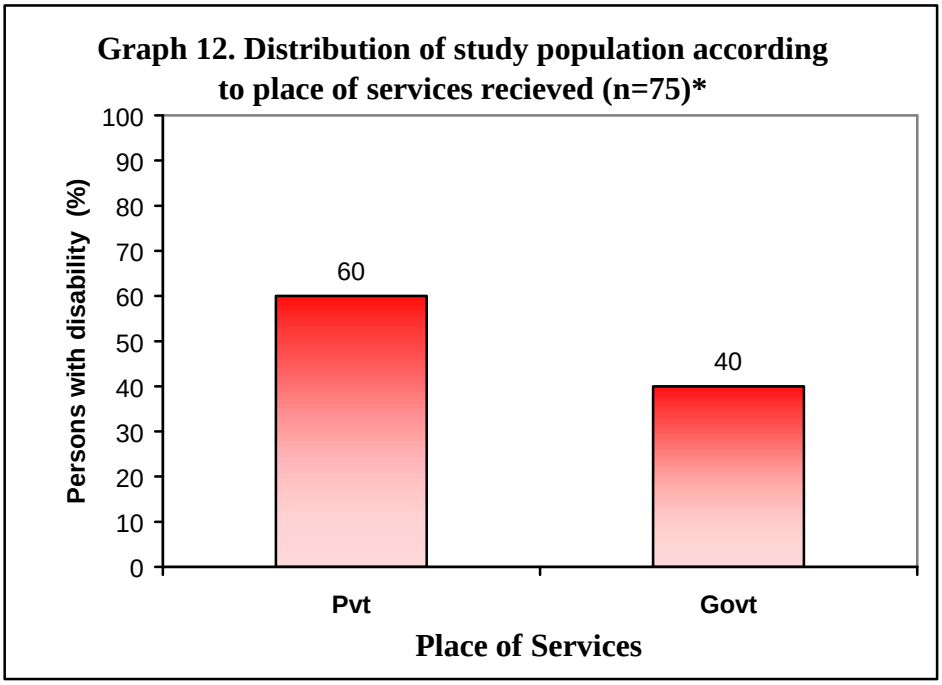

Table 32: Distribution of persons with disability according to services / intervention received for disability

Services / intervention received	Persons with disability (n=75)*	
	Number	**Percent**
Assessment of disability	17	22.7
Medical treatment	44	58.7
Surgical treatment	2	2.6
Physiotherapy	2	2.6
Medical treatment & Physiotherapy	2	2.6
Surgical treatment & Aids	4	5.4
Medical treatment, Physiotherapy & Assessment of disability	4	5.4
Total	**75**	**100**

Note: * Only 75 out of 152 persons with disability opted for treatment / intervention

In this study, assessment of disability was done in 22.7% of persons with disability, 58.7% received medical treatment, 2.6% received surgical treatment, 2.6% received physiotherapy, 2.6% received medical treatment & physiotherapy, 5.4% received surgical treatment & aids, 5.4% received medical treatment, physiotherapy & assessment of disability.

Table 33: Distribution of persons with disability according to disability benefits received

Disability Benefits	Persons with disability (n=152)	
	Number	**Percent**
No benefits	129	84.9
Disability pension	23	15.1
Concessional bus / train pass	0	0
Total	**152**	**100**

In this study, 84.9% of persons with disability received no benefits, 15.1% received disability pension, and nobody received concessional bus / train pass.

Table 34: Distribution of PWD according to whether PWD earning or not

Earning of PWD	Persons with disability (n=103)*	
	Number	**Percent**
Yes	86	83.5
No	17	16.5
Total	**103**	**100**

Note: ***** 29 persons with disability were excluded aged less than 15 years & 20 persons with disability were homemakers.

In this study, 83.5% of persons with disability were earning and remaining 16.5% were not earning.

Table 35: Distribution of PWD according to the requirement of services / intervention

Requirement of intervention	Persons with disability (n=152)	
	Number	**Percent**
Yes	143	94.1
No	9	5.9
Total	**152**	**100**

In this study, requirement of intervention was in 94.1% of persons with disability, and in 5.9% there was no requirement of any intervention as assessed by the investigator.

Table 36: Distribution of persons with disability according to type of services / intervention required

Services / intervention required	Persons with disability (n=143)*	
	Number	**Percent**
Assessment of disability	16	11.2
Medical & Surgical treatment	88	61.5
Physiotherapy	5	3.5
Speech therapy	6	4.2
Admission to special school	15	10.5
Disability pension	2	1.4
Physiotherapy & Aids	2	1.4
Assessment & Aids	2	1.4
Physiotherapy, Speech therapy & Admission to special school	2	1.4
Assessment & Speech therapy	2	1.4
Physiotherapy & Disability pension	3	2.1
Total	**143**	**100**

Note: * Nine persons with disability who did not require intervention were

In this study, 11.2% of persons with disability required assessment of disability, 61.5% required physiotherapy, 4.2% required speech therapy, 10.5% required admission to special school, 1.4% required disability pension, 1.4% required physiotherapy & aids, 1.4% required assessment & aids, 1.4% required

physiotherapy, speech therapy and admission to special school, 1.4% required assessment & speech therapy, 2.1% required physiotherapy & disability pension.

DISCUSSION

The present study was conducted in 1,247 households with 6905 people from Vantamuri sub-centre in rural field practice area under PHC, Vantamuri, of the Department of Community Medicine, J. N. Medical College, K.L.E. University, Belgaum during the period January 2012 to December 2012.

Socio-Demographic characteristics of study population (Tables 1-6)

In the present study, 50.43% of study participants were males and 49.57% were females.

A study done in Karnataka in 2004[16] (n=954), reported that 49.5% respondents were males and 50.5% were females and in another study done in Kadekai and Udyavava villages of Mangalore, Karnataka,[5] India (n=6708), 48.7% respondents were males compared to 51.3% females (aged between 5 - 60 yrs).

In the present study, 28.54% of participants were in the age group 0 - 15 years, 25.36% of persons in the age group 15-30 years, 24.49% of persons in age group of 30 - 45 years, 14.76% of persons in the age group of 45 - 60 years and 6.85% of persons were aged more than 60 years.

A study done in Mandur, Goa[4] (n=4,868), reported, 21.2% of persons in the age group 0-15 years, 26.8% of persons in the age group 16-30 years, 26.1% of persons in the age group 31-45 years, 15.8% of persons in the age group 46-60 years and 10.1% of persons in the age group above 60 years.

In the present study, 0.23% of the study participants belonged to SES Class I, 1.17% to Class II, 6.47% to Class III, 58.91% to Class IV and 33.22% belonged to Class V as per modified B.G. Prasad's classification.

In this study, most participants (91.14%) were Hindus, 8.86% were Muslims & none belonged to other religions. Among study participants, 35.01% were illiterates, 30.13% had studied first to fifth standard and 24.88% completed sixth to tenth standard and 9.98% studied more than tenth standard.

57% of study participants belonged to nuclear family, 41.5% belonged to joint family & 1.5% belonged to broken family.

Environmental history (Tables 7 & 8)

In the present study, 42.19% stayed in pucca houses, 57.81% of participants stayed in kutcha houses. Most (93.01%) of the participants practiced open field defecation, remaining (6.99%) participants had toilet facility.

Occupation of the study participants (Table 9)

In this study, 21.38% were unemployed, 32.51% were coolies, 27.22% were farmers, 2.17% had business, only 0.89% were skilled workers and the rest (15.83%) were home makers.

A study done in Karnataka in 2004[16] (n=954), reported that, 32.6% were unskilled workers / farmers / petty business people; only 4.2% were skilled workers and 2.2% were professionals. Others were homemakers (24.2%) and unemployed (10.9%).

Associations of demographic variables with prevalence of disability

(Tables 10 - 16)

Present study showed prevalence of disability was more in males (2.96%) than in females (1.43%), which was statistically significant.

A study done in Kadekai and Udyavava villages of Mangalore,[5] Karnataka, India (n=6,708), reported the prevalence of disability seen in males (1.89%) and in females (2.14%), which was statistically not significant. In another study done in Mandur, Goa[4] (n=4,868), reported the prevalence of disability in males (4.2%) was higher than in females (3.6%). According to India census 2001,[36] in Belgaum district and in Karnataka state, prevalence of disability was higher in males than in females.

In this study, 1.47% of children in 0 – 15 years age group had disability, 1.14% in 15 – 30 years, 1.42% in 30 – 45 years, 2.94% in 45 – 60 years and 10.36% in > 60 years. As the age increased, the prevalence increased significantly, but not in a fully linear manner (except for 0 – 15 years age group). The maximum prevalence was found in the age group of 60 years and above. Over all disability prevalence was 2.2%.

A study done in Mandur, Goa[4] (n=4,868), reported 0.96% of children in 0– 15 years age group had disability, 1.91% in 15 – 30 years, 1.10% in 30 – 45 years, 3.77% in 45 – 60 years and 21.71% in > 60 years was prevalence of disability. Over all disability prevalence was 3.9%.

According to 2001 census,[36] India, in Belgaum district overall prevalence of disability was 1.4% and for Karnataka state, it was 1.78%.

Present study showed that prevalence of disability was more in Hindus (2.24%), than in Muslims (1.79%), which was statistically not significant.

A study done in Mandur, Goa[4] (n=4868), reported disability prevalence in Muslims (4.1%) was higher than in Hindus (3.9%) and was statistically not significant.

In the present study, prevalence of disability in illiterates was 4.43%, in first to fifth standard educated persons 1.4%, sixth to tenth standard 0.88% and in persons studied more than tenth standard was 0.34%. As literacy level increased, the prevalence of disability declined, which was statistically significant.

A study done in Karnataka in 2004[16] (n=954), reported 22.6% of illiterates were disabled and those with education level of above tenth standard had very low prevalence. As literacy level increased, the prevalence declined significantly. Another study done in Mandur, Goa[4] (n=4,868), showed maximum prevalence was found in the uneducated group (9.56%). The prevalence among educated was 2.6%.

In present study, there were no people with disability in high socio-economic class; in the middle and low socio-economic classes' prevalence was same, which was statistically not significant.

Only 0.23 % of the study population belonged to the high socio-economic class in present study. This may be the probable cause for not finding disability in high socioeconomic class.

A study done in Karnataka, in 2004[16] (n=954), showed that the prevalence of disability was marginally higher among low socio-economic and there were no people with disability in high socio-economic group.

In the present study, prevalence of disability was the same in both nuclear & joint families and was more in broken family, which was statistically significant.

Present study showed that maximum prevalence of disability was in skilled workers, next highest was in those doing business. Least prevalence of disability was noticed in unemployed group and next least in those doing coolie work and in farmers. This finding is contrary to the earlier studies done in Karnataka, in 2004[16] (n=954) and in Mandur, Goa[4] (n=4,868). These studies showed maximum prevalence of disability in unemployed group.

Probable cause may be, in this study disability was self reported by study participants, skilled workers and those doing business might have reported disability early compared to other groups as they need skills to perform their work.

Types of disability in Persons with disability (Table 17)

In this study majority of PWD had single disability (81.57%) and one fifth (18.43%) of PWD had multiple disabilities. Among PWD, majority (40.13%) had visual disability, 23.02% had locomotor disability, 7.24% had hearing disability, 5.92% had mental disability and 5.26% had speech disability. Out of the total 1,247 households; 12.7% had atleast one PWD.

As per the National Sample Survey Organization's (NSSO) 58th report, India, in 2003,[23] 10.63% of the PWD persons suffered from more than one type of disabilities and 8.4% of the rural households had atleast one PWD.

As per the Census India 2001 report,[36] in Belgaum district among the persons with disability, locomotor disability (40.15%) was most common, 30.45% had visual disability, 6.13% had hearing disability, 12.29% had mental disability and 10.98% had speech disability.

As per the Census India 2001 report,[36] in Karnataka state, among the persons with disability, 46.13% had visual disability, 28.34% had locomotor disability, 5.3% had hearing disability, 9.85% had mental disability and 9.64% had speech disability.

A study done in Mandur, Goa[4] (n=4,868) reported 41.8% visual disability, 19.4% locomotor disability, 22.4% hearing disability and speech disability, 16.4% mental disability.

Age at onset of Disability (Table 18)

In this study, 34.2% of people with disability age at onset of disability was less than years. The same percentage of PWD age at onset of disability was 45 - 60 yrs. It was 3.3% for 5-15 years, 2.6% for 15-30 years, 9.2% for 30-45 years and 16.5% for more than 60 years.

Immunization status of persons with disability (Table 19)

Among persons with disability aged less than 5 years, 75% of children were fully immunized for the age, 12.5% of children were partially immunized and remaining 12.5% children were unimmunized for the age**.**

Consanguineous marriage in parents of persons with disability (Table 20)

History of consanguineous marriage was present in one third of parents of persons with disability in the age group of 0 - 15 years.

Past history of illness in persons with disability (Table 21)

90% of persons with disability did not have any significant past history. In remaining 10% of persons with disability, history of diabetes mellitus, ear discharge, injury and convulsions were common illnesses.

Birth history of persons with disability as mentioned by their parents (Tables 22 – 27)

Birth history was assessed for persons with disability only in the age group of 0 - 15 years (to minimize the recall bias). In 93% of PWD, place of delivery was hospital and for remaining, it was home delivery. 55% of deliveries of PWD were conducted by doctors, 38% by health workers and remaining (7%) were conducted by trained dais. 90% of persons with disability were born after 37 weeks of gestational age. 86% PWD cried immediately after birth and for 93% of PWD skin colour at birth was pink. 83% of PWD had birth weight ≥ 2.5 kgs, 7 % of PWD were not aware of their birth weight and remaining (10%) had birth weight < 2.5 kgs.

Progression of disability (Table 28)

In half of persons (50%) with disability, disability was progressive and in the rest, it was remaining static. This may be due to cataract and arthritis which are progressive non communicable diseases.

Probable cause of disability (Table 29)

In the present study, cataract was the leading cause of visual disability, arthritis for locomotor disability and chronic suppurative otitis media (CSOM) for the hearing disability. In one fifth of cases, definite cause could not be identified.

A study done in Mandur, Goa[4] (n=4,868), reported that cataract was the most common cause of disability. Another study done in Chandigarh[15] (n=1,210), reported that arthritis was leading cause for locomotor disability. A study done in Mangalore, Karnataka, India[5] (n=6,708), reported that CSOM was the leading cause of hearing disability.

Services and interventions for disability (Tables 30 – 34)

Only 50% of persons with disability had taken services / intervention for disability. Out of those who received services / intervention, 60% had taken services / intervention from the private sector. Among those who had received services, 59% had taken medical services, only 5% were using some aids and 8% had taken surgical services, 5% had taken physiotherapy services.

15% of persons with disability had taken benefits of disability pension; none had taken benefit of concessional bus / train pass. 16.5% of PWD were unemployed and 83.5% of PWD were employed among aged above 15 years.

This may be due to the fact that disability pension is restricted to persons suffering from multiple or severe disabilities.[37]

Government transport facility to the study area is limited and villagers are often depending on private transport facility. Train facility is not available in this

area and the nearest railway station is 25 Kms away This might be the reason for not taking benefit of concessional bus / train pass facility.

A study done in Chandigarh[15] (n=6,708), reported that 60% of PWD persons used some aids and 2% of PWD had taken benefits of government schemes.

No PWD had enrolled to special schools in present study.

As per the National Sample Survey Organization's (NSSO) 58th report, India, in 2003,[23] less than one percent of PWD had had enrolled to special schools.

Perceptions by the investigator about need for disability services for persons with disability (Tables 35 & 36)

The investigator felt that the 94% of persons with disability needed some intervention. The 60% of PWDs needed surgical and medical treatment, 10% of PWDs needed admission to the special school (especially children < 15 years). Remaining PWD needed one or the other services like physiotherapy, speech therapy and aids.

Six percent of persons with disability had received adequate health services / interventions for disability as perceived by the investigator.

CONCLUSION

This community based cross-sectional study revealed that for every 100 persons, two were disabled. Prevalence was more among persons aged more than 60 years and was least among 5-15 years age group. As the age advanced, prevalence of disability increased significantly.

Prevalence of disability was more in illiterates than in literates and as the literacy level increased the prevalence of disability decreased significantly.

Disability was more prevalent in broken families than in nuclear and joint families. Skilled workers reported more disability than other occupational groups.

One fifth of the PWD had multiple disabilities and among those PWD who had single disability, half of them had visual disability and one forth had locomotor disability.

Only half of persons with disability had received some services or intervention for disability. Among them three fifth had received services / intervention from the private sector. Only one in seven persons with disability had received disability pension and none had received concessional bus / train pass. Hence there is a need to create awareness about disability services as well as provision of services.

LIMITATIONS

The limitation of the study was:

1. No clinical examination of the study population was done. So subclinical cases of disability might have missed in this study.

2. Reasons for not using the disability rehabilitation services were not enquired in detail.

RECOMMENDATIONS

Based on the findings of the present study, following recommendations are being suggested for improving health and quality of life of persons with disability:

1) IEC activities should be carried out by the PHC medical officer to popularise various government schemes available for persons with disability. For this purpose self help groups, women's group and local non -governmental organisations can be involved.

2) Qualitative research (Focus group discussion / in-depth interview of PWD) should be done to know the reasons for not utilization of services or interventions for disability.

3) Many of the disabilities in rural people are correctable, viz. cataract. So measures should be taken to identify and treat correctable disabilities early, through camp approach.

4) Government should take steps to improve the literacy in persons with disability

5) Skilled workers should use personal protective measures during work and undergo periodic health checkups.

6) Primary Health centre medical officer and health workers (ASHA / ANM / AWW) should be trained to detect disabilities early especially in elderly population and children below five years.

SUMMARY

The present study was a community based cross sectional study conducted in rural field practice area of Primary Health Centre Vantamuri, Belgaum using pre-designed and pre-tested questionnaire to know prevalence of disability in rural population.

The study consisted of 1,270 households, with 7019 people in Vantamuri sub-centre area, in Vantamuri Primary Health Centre, Belgaum and the duration of study was one year from 1st January 2012 to 31st December 2012.

Socio-Demographic characteristics

The socio-demographic characteristics of study population showed that 50.43% were males and 49.57% were females. Among the study population, 11.64% was seen in the age group of < 5 years, 16.90% in 5 – 15 years, 25.36% in 15 – 30 years, 24.49% in 30 – 45 years, 14.76% in 45 – 60 years and 6.85% in > 60 years.

Most of them were Hindus (91.14%), followed by Muslims (8.86%). According to family type, 57% belonged to nuclear family, 41.5% belonged to joint family and 1.5% belonged to broken family.

Majority of the study subjects were either illiterate (35.01%) or had education up to fifth standard (30.13%). Majority of them belonged to class IV (58.91%), followed by class V (33.22%) socio-economic status as per modified B.G. Prasad's classification.

Majority of the study participants were coolies (32.51%) or farmers (27.22%) by occupation and 21.38% were unemployed.

Environmental history

Majority of study population (57.81%) used to stay in kutcha house and remaining (42.19%) in pucca house. Most (93.01%) had no access to toilet facility.

Prevalence of disability

Prevalence of disability was more in males (2.96%) than in females (1.43%), which was statistically significant. The maximum prevalence was found in the age group of > 60 years (10.36%) and was least among 5-15 years age group (1.11%). Over all disability prevalence was 2.2%.

Prevalence of disability was more in Hindus (2.24%), than in Muslims (1.79%). Prevalence of disability in illiterates (4.43%) was maximum and as literacy level increased, the prevalence of disability declined significantly. There were no persons with disability in high socioeconomic class; in the middle and low socio economic classes, prevalence was same.

Prevalence of disability was the same in both nuclear & joint families and was more in broken family. Maximum prevalence of disability was seen in skilled workers, next highest was in those doing business and 16.5% of PWD were unemployed.

Types of disability

Among persons with disability, 40.13% had visual disability, 23.02% had locomotor disability, 7.24% had hearing disability, 5.92% had mental disability, 5.26% had speech disability and 18.43% people had multiple disabilities.

Services and interventions for disability

Only 50% of PWD had received services / intervention for disability. Among them 60% had received services / intervention from the private sector.

BIBLIOGRAPHY

1. World Health Organization. World Report on Disability. Geneva; WHO; 2011; [Internet] http://whqlibdoc.who.int/publications/2011/9789240685215_eng.pdf [Accessed on 02-09-2012]
2. Lee R. The Demographic Transition: Three Centuries of Fundamental Change. The Journal of Economic Perspectives 2003; 17: 167-190.
3. World Health Organization. Disabilities; WHO Geneva [Internet] http://www.who.int/topics/disabilities/en [Accessed on 23-08-2011]
4. Borker S, Motghare D, Venugopalan P & Kulkarni MS. Study of Prevalence and Types of Disabilities at Rural Health Centre Mandur – A Community Based Cross Sectional House to House Study in Rural Goa, IJPMR 2008; 19 (2): 56-60
5. Pati RR. Prevalence and Pattern of Disability in a Rural Community in Karnataka. Ind J Comm Med. 2004; 29(4):186-187.
6. World Health Organization. Disability - Fact Sheet; WHO Geneva;2012 [Internet] http://www.who.int/features/factfiles/disability/en/index.html [Accessed on 25.07.2013]
7. Helander E. A Service Delivery System for Community-Based Rehabilitation Programmes: Guidelines for the Design and Organization of Services and of Training Programmes for the Personnel. [Internet] http://www.einarhelander.com/management-series-2.pdf [Accessed on 27.07.2013]

8. India Census Report – 2001. [Internet] http://censusindia.gov.in/Census_And_You/disabled_population.aspx [Accessed on 02-08-2011]
9. Monitoring the Convention on the Rights of Persons with Disabilities - Guidance for Human Rights Monitors - United Nations, New York, 2010 [Internet] http://www.ohchr.org/Documents/Publications/Disabilities_training_17EN.pdf [Accessed on 02-08-2011]
10. UNDP. Disability Awareness Training. Evolution of the Societal Attitude towards Disability through History; 2009. United Nations Development Program. [Internet] http://www.treningosi.org/Eng/Courseview.asp?ID=2 [Accessed on 10-08-2012]
11. UN. Universal Declaration of Human Rights. 1948 [Internet] http://www.unic.org.in/items/Other_UniversalDeclarationOfHumanRights.pdf [Accessed on 15-08-2012]
12. UN. UN Convention on the Rights of Persons with Disabilities, 2006 http://www.un.org/disabilities/convention/conventionfull.shtml [Accessed on 15-08-2012]
13. UNDP. Disability Awareness Training. Disability Models. United Nations Development Program. 2009 [Internet] http://www.treningosi.org/Eng/Courseview.asp?ID=3 [Accessed on 10-08-2012]

14. UNDP. Disability Awareness Training. Barriers Encountered by Persons with Disabilities. United Nations Development Program. 2009 [Internet] http://www.treningosi.org/Eng/Courseview.asp?ID=11 [Accessed on 10-08 2012]

15. Singh A. Burden of Disability in a Chandigarh Village. Ind J Comm Med 2008; 33(2):113-115.

16. Ganesh KS, Das A & Shashi JS. Epidemiology of Disability in a Rural Community of Karnataka. Ind J Pub Health 2008; 52(3): 125-129.

17. Borker S, Motghare DD, Kulkarni MS & Venugopalan PP. Prevalence and Causes of Locomotor Disability in the Community Staying near the Rural Health Centre in Goa: A Community-Based Study. Ind J Comm Med 2010; 35(3): 448–449.

18. Borker S, Motghare D, Kulkarni MS & Bhat S. Study of Knowledge, Accessibility and Utilization of the Existing Rehabilitation Services by Disabled in a Rural Goan Community. Ann Trop Med Public Health 2012;5:581-586

19. Barbotte A, Guillemin A & Chau N. Prevalence of Impairments, Disabilities, Handicaps and Quality of Life in the General Population: A Review of Recent Literature. Bulletin of the World Health Organization, 2001; 79: 1047–1055.

20. Abdulraheem IS, Oladipo AR & Amodu MO. Prevalence and Correlates of Physical Disability and Functional Limitation among Elderly Rural Population in Nigeria. Journal of Aging Research; 2011:1-13

21. Ganesh KS, Yadav A, Sajjan BS & Kotian MS. Epidemiology of Disability Among Geriatric Population in the Semi Urban Area of Mangalore City, Karnataka. Ind J of Gerontology 2008; 22(1):35-42.

22. Srivastava DK, Khan JA, Pandey S, Pandey R & Shah H. Prevalence of Physical Disability in Rural Population of District Mau of Uttar Pradesh, India During May 2007. GJMEDPH 2012; 1(6):1-9.

23. Disabled Persons in India, Report No. 485 (58/26/1). National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India, 2003 [Internet] http://mospi.nic.in/rept%20_%20pubn/485_final.pdf [Accessed on 20-02-2013]

24. Joshi K, Kumar R & Avasthi A. Morbidity Profile and its Relationship with Disability and Psychological Distress among Elderly People in Northern India. Int J of Epidemiology, 2003;32:978–987

25. Mathur GP, Mathur S, Singh YD, Kushwaha KP & Lele SN. Detection and Prevention of Childhood Disability with the Help of Anganwadi Workers. Indian Pediatrics, 1995; 32:773-777.

26. Bhaskar B. An Empirical Study on the Prevalence of Children with Disability in Mangalore. J of Biomedical and Pharmaceutical Research, 2013; 2 (4): 01-06

27. Pruthvish S. Community Based Rehabilitation of Persons with Disabilities 1st Ed., Jaypee Brothers, New Delhi, India; 2006:187 - 195

28. International Classification of Functioning, Disability And Health. World Health Organization, Geneva, 2001. [Internet] http://www.disabilitaincifre.it/documenti/ICF_18.pdf [Accessed on 06-02-2013]

29. Park K. Park's Textbook of Preventive and Social Medicine. 21st Ed., Banarasidas Bhanot Publishers, Jabalpur, India; 2011: 489

30. Sunder Lal, Adarsh & Pankaj. Textbook of Community Medicine. 3rd Ed., CBS Publishers, New Delhi, India; 2011: 17–18.

31. All India Consumer Price Index. 2012 [Internet] Available at: http://cyberjournalist.org.in/manisana/aicpinew.html. [Accessed on 12.05.2013].

32. Hamamy H. Consanguineous Marriages - Preconception Consultation in Primary Health Care Settings. J Community Genetics, 2012;3:185–192

33. Ministry of Statistics and Programme Implementation. Govt. of India, New Delhi. Urban Frame Survey, NSSO. House list. [Internet] http://www.mospi.gov.in/ecs_Ins_Manual_part_I_two.htm [Accessed on 21-04-2013]

34. Dutta DC. Textbook of Obstetrics. 6th Ed., New Central Book Agency, Kolkata, India; 2004: 531.

35. Ghai OP, Gupta P, Paul VK. Essential Pediatrics. 6th Ed., CBS Publishers, Kolkata, India; 2005: 97, 100, 148–149.

36. Kulkarni AS & Rajeswari NV. Magnitude of Disabled Persons in Karnataka – A Census 2001 Analysis: 1 – 36 [Internet] http://paa2006.princeton.edu/papers/60554 [Accessed on 25-04-2013]

37. Directorate of Social Security and Disability: Govt. of India ,Schemes And Programmes: Persons with Disability. [Internet] http://socialwelfare.icdsbih.gov.in/Schemes_Programmes/Schemes_Programmes_details.php?SPID=24&SubGroupID=2 [Accessed on 26-09-2013]

ANNEXURE I - ETHICAL CLEARANCE CERTIFICATE

K.L.E.SOCIETY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELGAUM-590010 (KARNATAKA-INDIA)
(Affiliated to KLE University, Belgaum)

Website: http/www.jnmc.edu
E-Mail : domejnmc@sancharnet.in
: jnmc@sancharnet.in

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/PG/ **Date: 21/10/2011**

To,

REG. NO.BD0111005
Postgraduate Student,
Department of Community Medicine,
J.N.Medical College,
BELGAUM.

Sub: Institutional Ethical Clearance for the study.

REG. NO.BD0111005

With reference to the above, I wish to inform you that the research project "**DISABILITY IN RURAL POPULATION – A COMMUNITY BASED CROSS SECTIONAL STUDY**", is Ethical and justifiable and has been cleared by the departmental Ethical Committee and College Dissertation and Research Committee.

(Dr. P.V. Patil),
Chairman
College Ethical Dissertation
And Research Committee,
J.N.Medical College, Belgaum.

ANNEXURE II

INFORMED CONSENT

"DISABILITY IN RURAL POPULATION –

A COMMUNITY BASED CROSS SECTIONAL STUDY."

Investigator: _____ Guide: _____

Introduction:

You are being invited to participate in this study to find out prevalence of physical disability, and knowledge and attitude about physical disability in rural field practice areas of Belgaum.

Methodology:

I will be interviewing eligible population to know about their disability. No laboratory investigations will be done. No treatment will be provided if any illness is found during the study. You will be referred to Vantamuri Primary Health centre and if necessary, to KLES Dr. Prabhakar Kore Charitable Hospital attached to J.N. Medical College, Belgaum for further management.

Possible benefits:

You will not be eligible for any kind of monetary benefits or free services by virtue of your participation in the study.

Possible risks:

Methods applied to do the study are safe. No risk is involved in the study.

Cost of participation:

The entire cost of the study will be borne by the researcher. You will not have any costs attached to your participation.

Legal rights:

By signing this consent form, you are not waiving off any of your legal rights.

Privacy and Confidentiality:

The results of the study may be published for scientific purposes. However your personal identity will not be revealed. All information collected will be coded so that no one, other than the investigator, will know your identity.

Withdrawal from the study:

You can withdraw from the study at any time, if you wish to do so, even without assigning any reason.

Authorization to publish the results:

The researcher may use the information gathered from this study for presentation / publication in scientific journals. However your personal identity will not be revealed.

Questions:

If you have any questions about rights as a research participant, you can contact Prof (**Dr.) P. V. Patil,** Chairman, Institutional Ethics Committee on Human Subjects' Research, J. N. Medical College, Belgaum – 590010, phone no: 0831-2471350 or Prof. (**Dr.) V. D. Patil,** Principal, J. N. Medical College, Nehru Nagar, Belgaum – 590010, Phone no: 0831- 2471350.

Consent summary:

"I have been explained all the contents of this consent form in my local language and having understood and clarified all my queries about the study to the best of my knowledge, I hereby give my voluntary consent for participation in the study. I do sign the informed consent form in front of an eyewitness whom I recognize."

Name and Signature / left thumb impression of the participant: _____
(Or Parent / Legal Guardian in case of children < 18 years)

Name and Signature of the interviewer: _____

Name and Signature of the eyewitness: _____

Date: _____ Place: _____

Signature of the Guide:_____

ANNEXURE III – PROFOMA

RESEARCH QUESTIONNAIRE

Investigator: _____ **Guide: _____**

"DISABILITY IN RURAL POPULATION-
A COMMUNITY BASED CROSS SECTIONAL STUDY"

[Note: All the personal information provided during this study will be kept confidential. Only aggregated data will be published / presented]

PROFORMA-A

(ONE PROFORMA FOR EACH HOUSEHOLD)

Sl. No. of Household _____ Village_____

1. Address/Landmark of house
   _____
2. Date of registration _____
3. Family profile

Sl. No.	Names of the persons in the household	Age	Gender	Relationship to the head of the family	Educational status*	Occupation**	Income per in Rs.month

Note: * Not applicable for children < 7 years

** Not applicable for children < 15 years

4. Total family Members
    a. Males _____
    b. Females _____
    c. Total No. _____
5. Total income of the family Rs. _____/ month,
6. Per Capita income _____Rs / month
7. Socio economic status : Class I / II / III / IV / V (As per modified B. G. Prasad's Classification)
8. Type of family Nuclear / Joint / Three Generation / Broken
9. Religion Hindu / Muslim / Others; specify _____
10. Nature of house in which family lives Pucca / Kutcha

    Is this house has?

    a. The bathroom Yes / No

    b. The toilet Yes / No

11. a. Does anybody in your house have difficulty / Inability

        To see Yes / No

        To hear Yes / No

        To talk Yes / No

        To stand Yes / No

        To walk Yes / No

        To kneel Yes / No

    b. Does anybody in your house have?

        - History of strange behaviour Yes / No

    c. Does anybody in your house?

    - Responds slowly to what others say Yes / No

    - Not Understands happens in their surroundings Yes / No

12. Do the disabled persons identified have more than one disability?

    Yes / No

13. If family has children under 5 years, following questions asked specifically to mother
    a. Compared with other children, does the child have any serious delay in sitting, standing or walking?

b. Does the child not speak at all/not speak properly?
c. Does child is unable to make himself/herself understand in words?
d. Does child is unable to say recognizable words?
e. Does the child have difficulty in seeing?
f. Does the child have any difficulty in hearing?
g. When you ask the child to do something, child does not do
h. Does the child is unable to understand what you are saying?
i. Does the child have any weakness and / or stiffness in the limbs and /or difficulty in walking or moving his arms?
j. Has the child often had fits, become rigid or lost consciousness in the last six months?
k. Has the child had any other serious accident or illness?
l. Compared with other children of his / her age, does the child appear in any way backward, slow or dull?

NOTE: If a disabled person is found in this house, please fill up proforma-B. If there are no disabled persons proceed to the next household.
One proforma-B is required for each disabled person. If more than one disable person is found, use another proforma-B.

Date: _____ Signature of the Interviewer

K.L.E. UNIVERSITY'S J.N.MEDICAL COLLEGE, BELGAUM

DEPARTMENT OF COMMUNITY MEDICINE

RESEARCH QUESTIONNAIRE

Investigator: _____ **Guide: _____**

"DISABILITY IN RURAL POPULATION-
A COMMUNITY BASED CROSS SECTIONAL STUDY"

[Note: All the personal information provided during this study will be kept confidential. Only aggregated data will be published / presented]

PROFORMA-B

(One for each disabled person)

1) Name of the disabled person _____
2) Name of the informant: _____
3) Relation to Disabled Person: Self / Mother / Father / Others
4) Age _____yrs / months
5) Gender: Male / Female
6) Occupation of disabled :_____
7) Education status of disabled: Illitrate / 1^{st} to 5^{th} std / 6^{th} to 10^{th} / > 10^{th}
8) Description of the disability in the disabled person
    a. Type of disability or disabilities_____
    b. Age of onset _____yrs / months
    c. Duration of disability_____yrs / months

9) Immunization status (<5 Years)

Vaccine	Dose / Age	Received	Not received	Don't know
Bacilli Calmette Guerin (BCG)	At birth			
Diphtheria Pertussis Tetanus (DPT)	1st Dose/6 wks			
	2nd Dose/10 wks			
	3rd Dose/14 wks			
	Booster dose / 15 – 18 months			
Oral polio vaccine (OPV)	1st dose/6 wks			
	2nd Dose/10 wks			
	3rd Dose/10 wks			
	Booster dose /15 – 18 months			
Measles	At 9 months			
Diphtheria & tetanus toxoids (DPT)	At 5 Years			

10) History of consanguinity in parents of PWD below 15 years? Yes / No

11) Any history of past illness?

(a) Measles (Y / N) (g) Poliomyelitis (Y / N)

(b) Whooping cough (Y / N) (h) Injuries (Y / N)

(c) Chicken pox (Y / N) (i) Brain fever (Y / N)

(d) Leprosy (Y / N) (j) Ear discharge (Y / N)

(e) Tuberculosis (Y / N) (k) Night blindness (Y / N)

(f) Convulsions (Y/ N) (g) Hypertension (Y / N)

(h) Diabetes Mellitus (Y / N) (h) Coronary Heart Disease (Y/ N)

12) Place of delivery of child (PWD below 15 years)

a. Home

b. Hospital

13) Personnel who conducted the delivery (PWD below 15 years)

a. Trained dai ( )
b. Untrained dai ( )
c. Family member ( )
d. Neighbour / Friend ( )
e. Health worker ( )
f. Doctor ( )

14) Gestational Age? (PWD below 15 years)

a. Term (≥ 37Weeks) ( )
b. Preterm (< 37Weeks) ( )

15) Did the baby cry immediately after birth? (PWD below 15 years)

Yes / No/Don't know

16) Was the baby blue at birth? (PWD below 15 years) Yes / No/Don't know

17) Birth weight of the baby(PWD below 15 years)_____Kgs

18) Event immediately preceding the onset of disability

_____

19) From the time that disability was identified, do you think it is

Increasing / Decreasing / Remaining same

20) Does any other person in the family / relatives have similar or other forms of disability? Yes / No

21) Probable cause of disability _____

22) Has the person received any services / intervention for disability?

Yes / No

23) If yes, please tick appropriate response

a) Assessment of disability ( )
b) Medical treatment ( )
c) Surgical treatment ( )
d) Physiotherapy ( )
e) Speech therapy ( )
f) Aids / appliances ( )
g) Counseling ( )
h) Admission to normal school ( )

i) Admission to special school ( )

j) Vocational training ( )

24) Place of services received

a) Govt. agency

b) Private agency

25) Has the PWD received benefits for disability? Yes / No

26) If yes, please tick appropriate

a) Disability pension

b) Concessonal bus / train Pass

27) Does the PWD earn any income? Yes / No

28) Having made an initial review of the persons with disability do you (investigator) feel interventions are required? Yes / No

29) If yes, what interventions do you (investigator) feel are required (please tick appropriate response)

a) Assessment of disability ( )

b) Medical/ Surgical treatment ( )

c) Physiotherapy ( )

d) Speech therapy ( )

e) Aids / appliances ( )

f) Counselling ( )

h) Admission to normal school ( )

i) Admission to special school ( )

j) Vocational training ( )

k) Disability Pension ( )

l) Concessional Bus / Train pass ( )

Date: _____ Signature of the Interviewer

ANNEXURE IV - KEY TO MASTER CHART

A. Sl. No. _____

B. Total No. of males in family _____

C. Total No. of females in family _____

D. Total No. of family Members _____

E. Socio economic status: (As per modified B G Prasad's Classification)

1 - Class I, 2 – Class II, 3 - Class III, 4 - Class IV, Class V – 5

F. Nature of family: 1 - Nuclear Family, 2 - Joint Family, 3 - Three Generation Family, 4 - Broken Family

G. Religion: 1 - Hindu, 2 - Muslim, 3- Others

H. Type of house: 1 - Pucca house, 2 - Kutcha house

I. Whether house has ?

1 - Bathroom, 2 - Toilet, 3 - Both bathroom & Toilet, 4 - None

J. Anybody in your house has Difficulty / Inability (For Adults)

0 - No disability / Inability, 1 - To See, 2 - To Hear ,3 - To talk, 4 - To Stand, 5 - To Walk , 6 - To Kneel, 7 - Responds Slowly, 8 - Not understands what happens surroundings, 9 - History of Strange Behaviour, 10 - To Hear and talk , 11- To see, To Hear, To Talk, Responds Slowly , 12 - To See, To talk, Responds Slowly, 13 - To see & to walk, 14 - to talk, to walk & responds slowly

K. If family has children less than 5 years, following questions asked specifically to mother - Compared with other children,

0 - No Disability, 1 - Not Applicable,

2. Child have any serious delay in sitting, standing or walking

3. Child does not speak at all / does not speak properly
4. Child is unable to make himself/herself understand in words
5. Unable to say recognizable words
6. Child has difficulty in seeing
7. Child has difficulty in hearing
8. When you ask the child to do something, child does not do.
9. Child is unable to understand what you are saying
10. Child has weakness and / or stiffness in the limbs and /or difficulty in walking or moving his arms
11. The child had fits, become rigid or lost consciousness in the last six months
12. Child has any other serious accident or illness
13. Compared with other children of his / her age, child appears in any way backward, slow or dull
14. Child has difficulty to speak & difficulty in seeing

If answer to J = 0 or answer to K = 0 or K = 1, do not proceed further

L Age of the person with disability _____years

M. Gender of the person with disability: 1 - Male, 2 - Female

N. Occupation of PWD:

0 - Unemployed, 1 - Not Applicable, 2 - Coolie, 3 - Agriculture,

4 - Business, 5 - Homemaker, 6 - Skilled Worker

O. Education Status of PWD:

0 - Illiterate, 1 - Not Applicable, 2 - 1^{st} to 5^{th} standard, 3 - 6^{th} to 10^{th} standard, 4 - PUC/Diploma

P. Type of disability (ies):

1 - Locomotor disability, 2 - Visual disability, 3 - Hearing disability, 4 - Speech disability, 5 - Mental Illness/Retardation, 6 - Hearing & Speech disability, 7 - Locomotor disability, Visual disability, Hearing disability, Speech disability and Mental Illness/Retardation, 8 – Visual disability, Speech disability & Mental Illness/Retardation, 9 - Visual & Hearing, 10 - Hearing disability & Speech disability, 11 – Visual disability & Speech disability, 12 – Locomotor disability, Hearing disability & Mental Illness

Q. Age of onset of disability _____yrs / months

R. Duration of disability _____yrs / months

S. Immunization status (<5 Years)

1 - Not Applicable, 2 - Immunized for age, 3 - Not Immunized for Age, 4 - Partially Immunized for Age

T. History of consanguinity in parents of PWD below 15 years?

0 - Not assessed for PWD > 15 yrs, 1 - Yes, 2 - No

U. Any history of past illness?

1 - No past history, 2 - Measles, 3 - Whooping cough, 4 - Chicken pox, 5 - Leprosy, 6 - Tuberculosis, 7 - Convulsions, 8 - Poliomyelitis, 9 - Injuries, 10 - Brain fever, 11 - Ear discharge, 12 - Night blindness, 13 - Hypertension, 14 – Diabetes mellitus, 15 – Coronary heart disease

V. Place of delivery of child: 1 - Home, 2 - Hospital

W. Person who conducted the delivery

1 - Trained dai, 2 - Untrained dai, 3- Family member, 4 - Neighbour,

5 - Health worker, 6 - Doctor

X. Gestational Age 1 - Full term baby, 2 - Preterm baby, 3 - Don't Know

Y. Did the baby cry immediately after birth?

1 - Yes, 2 - No, 3 - Don't Know

Z. Was the baby blue at birth? 1 - Yes, 2 - No, 3 - Don't Know

AA. Birth weight of the baby

1 - ≥ 2.5 Kgs., 2 - < 2.5 Kgs., 3 - Don't Know

AB. Describe event immediately preceding the onset of disability:

0 - Nothing Significant, 1 – Road traffic accident, 2 - Routine Immunization, 3 - Ear Infection, 4 - Injury 5- others

AC. From the time that disability was identified, do you think it is ____?

1 - Increasing, 2 - Decreasing, 3 – Remaining the same

AD. Does any other person in the family / relatives have similar or other forms of disability? 1 - Yes, 2 - No

AE. Probable cause of disability:

0 - Don't Know, 1 - Twin Pregnancy, 2 - Cataract, 3 - Birth Injury, 4 - Arthritis, 5 - RTA, 6 - Congenital, 7 - Disuse Atrophy,8 - Cerebral palsy, 9 – Chronic suppurative otitis media, 10 - Cataract & Arthritis, 11 - Trauma, 12 - Cataract & Presbyacosis

AF. Has the PWD received any services / intervention for disability?

1 - Yes, 2 – No

AG. Services for disability

0 - No services, 1- Assessment of disability, 2 - Medical Treatment, 3 - Surgical Treatment, 4 - Physiotherapy, 5 - Speech Therapy, 6 - Aids / Appliances, 7 - Counseling, 8 - Admission to Normal School, 9 -

Admission to Special School, 10 - Vocational Training, 11 - Medical Treatment & Physiotherapy, 12 - Surgical Treatment & Aids / Appliances,13 - Assessment of disability, Medical Treatment & Physiotherapy

AH. Benefits for Disability

0 - No Benefits, 1 - Disability Pension, 2 – concessional bus / train Pass

AI. Place of services

0 - Not received services / interventions, 1 - Govt. Agency, 2 - Private Agency

AJ. Does the PWD earn any income?

0 - Not assessed for PWD > 15 yrs and for homemakers, 1 - Yes, 2 - No

AK. Having made an initial review of the PWD, do you feel interventions are required? (Assessed By the investigator)

1 - Required, 2 - Not required

AL. If you feel interventions are required, which are required?

0 - Not Required, 1 - Assessment, 2 - Medical / Surgical treatment, 3 - Physiotherapy, 4 - Speech therapy, 5 - Aids / Appliances, 6 - Counseling, 7 - Admission to normal school, 8 - Admission to special school, 9 - Vocational training, 10 - Disability pension, 11 - Concessional Bus / Train pass, 12 - Physiotherapy & Aids / Appliances, 13 - Assessment & Aids / Appliances, 14 - Physiotherapy & Speech therapy, Admission to special school, 15 - Assessment & Speech Assessment, 16 - Physiotherapy & Physical / handicap pension