

## Profile of patients availing neurological rehabilitation services in a Super speciality Tertiary Care Hospital

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### Abstract

**Introduction:** Neurological conditions are the one where rehabilitation plays a major role, because of its magnitude manifestation and long term impact it causes on the individual and his family as a whole. Neurological conditions pose a great threat to public health and their proportions are increasing.

**Objective:** To assess the socio-demographic characteristics of patients availing services in Neurological Rehabilitation.

**Materials and Methods:** A retrospective file review was done over a period of 1 year from 1<sup>st</sup> Jan 2015 to 31<sup>st</sup> Dec 2016 to study patients who were admitted in Neurological Rehabilitation ward.

**Results:** The socio-demographic data reveals that among 204 patients who availed rehabilitation services, the most common diagnosis was Spinal cord Injury (39.2%), Guillian Barre Syndrome (26.5%), and stroke (10.78%) and other clinical conditions. Most of them belong to 30-40 Age group hailing from nuclear family, overall 66% were unemployed and had lost job, 59% of the population were from Karnataka.

**Keywords:** Major Neurological disorders, Socio demographic Profile, Neurological Rehabilitation.

### Introduction

Neurological disorder is recognized as disorders of the brain and nervous system. These disorders are of different origin e.g. Toxic metabolic, vascular infection, immunologic or traumatic. (Leonard & Ustun 1997) the census of 2011 has made a specified category of movement disorders implying the high risk of death, long term disability and recurrence of Neurological disorder.

Neurological disorders pose a great public health challenge. The health of people is affected by many elements ranging from genetics to socioeconomic factors such as where they live, their income, education and social relationships. Epidemiological studies indicate not just mortality and morbidity but also enormous socio-economic and psychological impact on the patient and his family. Expansion of knowledge of the social determinants of health can enhance the quality of life and standard of care for people who are marginalized, or poor, living in developing countries. Reflecting on these help us to shape effective policy response formulate long term treatment planning and inform us about advocacy gaps. Hence the present study aims to address these issues.

Rehabilitation is an integral part of treatment of neurological disorders In-patient rehabilitation facility provides comprehensive multidisciplinary programmes augmented to achieve a high degree of excellence. This speciality takes all steps and measures to rehabilitate a person with disability to restore the lost functions. Psychiatrists need to interact meaningfully with colleagues of other specialties like neurology, orthopaedics, urology, general medicine and so on. Also they need to work closely with physiotherapists,

occupational therapists, speech therapist prosthetists and orthotists, social workers, nurses, psychologists and other professionals, to achieve this goal of rehabilitation.

### Methodology

Current study aims at understanding clinical and socio demographic profile of patients admitted to Neuro-Rehabilitation ward, NIMHANS Bengaluru, a file review was conducted from 1<sup>st</sup> Jan 2015 to 31<sup>st</sup> Dec 2016 to obtain secondary source of data. Apart from this a semi structured intake proforma was also used to study clinical variables such as age, gender, socio-economic status, occupational status, marital status and social support with details related to the source of social support available and accessible in times of need to seek medical care. This is a cross sectional exploratory hospital based study.

For the current study 204 patients were assessed. The authors are the part of treating team of Neuro-Rehabilitation NIMHANS. The treating team comprises of Psychiatrist, Psychiatric social workers, clinical Psychologist, Physiotherapist, and Occupational therapist Neuro Nursing etc. These patients were referred from Neurology and Neuro-Surgery units and sometimes people approach directly to Neuro-Rehabilitation OPD. The duration of hospitalization will be 2-3 months depending upon the need. The Neuro-Rehabilitation OPD run every day of the week in the Ground floor of Rehabilitation Department, here fresh referrals as well as follow up patients will be reviewed the patients from all parts of India and abroad are coming for availing Neuro Rehabilitation services.

The neurological rehabilitation ward is a 22-bed facility with 12 male and 10 female. The diagnosis were made by the Residents and confirmed by the qualified physiatrist’s consultant, specialized in physical medicine and rehabilitation.

**Results**

**Table 1: Illness details of the Patients**

| Diagnosis                      | Frequency  | Percentage |
|--------------------------------|------------|------------|
| Guillian-Barre Syndrome        | 54         | 26.5%      |
| Spinal Cord Injury             | 80         | 39.2%      |
| Stroke/CerebralVascular Attack | 22         | 10.78%     |
| Spinal Cord Infections         | 6          | 2.94%      |
| Traumatic Brain Injury         | 6          | 2.94%      |
| Neuro Myelitis Optica          | 4          | 1.96%      |
| Transverse Myelitis            | 6          | 2.94%      |
| Post-Surgical conditions       | 2          | 0.98%      |
| Myelopathy                     | 3          | 1.47%      |
| Others                         | 21         | 10.29%     |
| <b>Total</b>                   | <b>204</b> |            |

Table 1 explains the diagnostic detail of the patients. Majority of the patients had spinal cord injury (39.2%) followed by guillian barre syndrome (26.5%) and stroke (10.78%). The other diagnosis were spinal cord infections (2.94%), traumatic brain injury (2.94%), neuromyelitis optica (1.96%), transverse myelitis (2.94%), post-surgical conditions (0.98%) myelopathy (1.47%), other conditions (10.29%). Other conditions were Scwannoma 24%, Meningioma 24%, Post encephalitis sequelae 19%, Meningitis 14.3%, Duchenne muscular dystrophy 9.52%, Amyotrophic Lateral Sclerosis 9.52%

**Table 2: Domiciliary status of the patients**

| Variable       | Frequency | Percentage |
|----------------|-----------|------------|
| Karnataka      | 121       | 59%        |
| Andhra Pradesh | 22        | 11%        |
| Tamil Nadu     | 10        | 5%         |
| Other states   | 51        | 25%        |
| Total          | 204       | 100%       |

Table 2 shows that (59%) of our patients are hailing from Karnataka followed by other states, (25%). It highlights that treatment services are availed by patients throughout India.

**Table 3: Common disorders in Neurological Rehabilitation patient ward**

| Particulars     | GBS         | SCI         | Stroke      | Total |
|-----------------|-------------|-------------|-------------|-------|
| <b>Age</b>      |             |             |             |       |
| 40>             | 18 (11.53%) | 32 (20.5%)  | 12(7.69%)   | 156   |
| 40<             | 36 (23.07%) | 48 (30.76%) | 10(6.41%)   |       |
| <b>Gender</b>   |             |             |             |       |
| Male            | 29 (18.58%) | 70 (44.9%)  | 20 (12.82%) | 156   |
| Female          | 25 (16.02%) | 10 (6.41%)  | 2 (1.28%)   |       |
| <b>Religion</b> |             |             |             |       |
| Hindu           | 51 (32.7%)  | 72 (46.15%) | 20 (12.82%) | 156   |
| Muslim          | 3 (1.92%)   | 8 (5.12%)   | 2 (1.28%)   |       |
| Christian       | -           | -           | -           |       |
| <b>Family</b>   |             |             |             |       |
| Joint           | 20 (12.82%) | 33 (21.15%) | 11 (7.05%)  | 156   |
| Nuclear         | 33 (21.15%) | 44 (28.20%) | 11 (7.05%)  |       |
| Extended        | 1 (0.64%)   | 3(1.92%)    | -           |       |

Table 3 highlights the common disorders in Neurological Rehabilitation Ward. Majority of patients are suffering from spinal cord injury and they all belong to < 40 age group (30.76%), (44.9%) are male, and (46.15%) are from Hindu Religion, (28.20%) are from Nuclear family.

**Table 4: Socio-Demographic details**

| Particulars        | GBS        | SCI        | Stroke    | Total      |
|--------------------|------------|------------|-----------|------------|
| <b>Education</b>   |            |            |           |            |
| Illiterate         | 28 (17.9%) | 27 (17.3%) | 5 (3.2%)  | <b>156</b> |
| Primary            | 12 (7.69%) | 18(11.53%) | 7 (4.48%) |            |
| High school        | 10 (6.41%) | 10 (6.41%) | 5 (3.2%)  |            |
| +2/ Pre degree     | -          | 10 (6.41%) | 3 (1.92%) |            |
| Graduation         | 1 (0.64%)  | 13 (8.33%) | 1 (0.64%) |            |
| Post Graduation    | 3 (1.92%)  | 2 (1.28%)  | 1 (0.64%) |            |
| <b>Occupation</b>  |            |            |           |            |
| Unemployed         | 39 (25%)   | 52 (33.3%) | 10        | <b>156</b> |
| Unskilled labourer | 10 (6.41%) | 7 (4.48%)  | (6.41%)   |            |
| Skilled            | 3 (1.92%)  | 8 (5.12%)  | 4 (2.56%) |            |
| Salaried job       | 2 (1.28%)  | 5 (3.2%)   | 6 (3.84%) |            |
| Others             | -          | 8 (5.12%)  | 1 (0.64%) |            |
|                    |            |            | 1 (0.64%) |            |

Table 4 shows that (17.3%) of spinal cord injury are illiterate whereas (1.92%) of patients with GBS are post graduates. Among stroke the majority of patients (4.48%) are having primary education. Majority of the spinal cord injury patients (33.3%) are unemployed subsequent to their disability of whom (3.2%) are from salaried job. Unskilled labourers are more from GBS (6.41%), whereas (5.12%) of spinal cord injury patients had perused skilled occupations.

**Table 5: Marital and socio-economic details**

| Particulars                  | GBS         | SCI        | Stroke     | Total |
|------------------------------|-------------|------------|------------|-------|
| <b>Marital Status</b>        |             |            |            | 156   |
| Married                      | 36 (23.07%) | 58 (37.1%) | 22 (14.1%) |       |
| Unmarried                    | 18 (11.53%) | 22 (14.1%) |            |       |
| <b>Socio Economic Status</b> |             |            |            | 156   |
| BPL                          | 50 (32.05%) | 54 (34.6%) | 13 (8.33%) |       |
| APL                          | 4 (2.56%)   | 26(16.6%)  | 9 (5.76%)  |       |
| <b>Social Support</b>        |             |            |            | 156   |
| Poor                         | 36 (23.0%)  | 37 (23.7%) | 17         |       |
| Average                      | 14 (8.97%)  | 39 (25%)   | (10.89%)   |       |
| Good                         | 4 (2.56%)   | 4 (2.56%)  | 13 (8.33%) |       |
|                              |             |            | 2 (1.28%)  |       |

Table 5 shows that majority (37.1%) of spinal cord injury patients were married and (14.1%) were unmarried this was followed by GBS where (11.53%) were unmarried, majority of the patients (34.6%) were below poverty line, only (16.6%) were above poverty line, both GBS and SCI had good social support. Whereas (10.89%) of stroke patients had poor social support.

**Table 6: Occupational status of the patients following disability**

| Variable                           | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Unemployed/ lost job               | 135       | 66%        |
| Employed but unable to go for work | 69        | 34%        |
| Total                              | 204       | 100%       |

Table 6 shows that overall occupational status of the patients, 66% had to lose their jobs due to disability , 34% were still holding jobs but they were not fit enough to go for work.

## **Discussion**

Guillain Barre Syndrome or GBS is a Neurological disorder which is characterized by the very rapid progress of limb weakness and loss of tender reflexes (Kuwabara 2004). GBS once upon a time could rival polio for being one of the primary causes for paralysis (Mohammed et al 2015) the prevalence rate of GBS is reported to be 0.6-2.4 per 100,000 per year and commonly men are effected 1.5 times more than women globally which is in line with our study. The present study was conducted to assess the socio demographic characteristics of 204 patients who were admitted in Neuro Rehabilitation ward. We found 54 (26.5%) of patients suffering from GBS.

Spinal cord injury is another commonest illness seen in the neuro rehabilitation (39.2%). This may be because of the motor vehicle accidents, falls from height, trees etc. Mathur and colleagues (2015) have reported that major cause for the spinal cord injury being fall from heights (53%), road traffic accidents (23%), fall of heavy object over head and back (10.7%), fall with heavy object over head (3.0%) and fall following electric shock (4.0%), the present study confirms the findings of the present study. It is also seen that males are more in number, more accidents are related to occupational hazards associated with their professions. Similar findings been reported by Mathur and his colleagues (2015) at Sawai Man Singh Medical College and Hospital, Jaipur, India. Have identified 2716 cases of SCI, 1400 were cervical and 1316 thoracolumbar patients in last 8 years. They also reported that male to female ratio of 4.2:1, confirming the present findings This injuries do not only have profound impact on independence and lifestyle, but also related to loss of motor and sensory ailments with associated problems such as bladder, bowel, sexual dysfunction, chronic pain, increased risk of mental health problems, increased risk of re-hospitalization, relationship and marital difficulties and poor vocational scope (Halvorsen, Metz (1992), Chandler, Brown (1998), Craig, Hancock and Dickson(1998), Widerstrom-Noga, et al, 2001). The low socio-economic status and younger age group had a major financial, social and psychological impact as majority of the patients were the primary earning members of the family hence early intervention is very much emphasized to reduce the incidence of spinal cord injury

The third common illness seen in the neuro rehabilitation ward being stroke, According to recently published Global Burden of Disease 2010 study (GBD 2010), Stroke is the second leading cause of death globally and the third leading cause of premature death and disability as mentioned in DALY. Recent advances in the neurological treatment has made rehabilitation more quicker and effective and it is best provided by well organized Multidisciplinary team (Great Britain Dept of Health 1992), improvement is more related to

early initiation then duration of (Ottenbacher and Jannell 1993).

In our study we have found that males are more in number in all the three conditions, which has been confirmed by other studies too (Kapoor, & Banerjee, 1989. Gourie-Devi 1987). It has been observed that males have been affected because of road accidents, climbing trees carrying heavy loads on their back etc. This could be because males were bread winner of the family and they receive immediate family attention as family sustenance depended on them 40 (23.5%) of the patients are less than 40 years. They are young and productive patients who had earlier worked as masons, painters, agri labourers, private companies and were main bread winners of the family, but after disability they have lost jobs as they no longer can carry loads on their heads, climb heights, drive vehicles. They have lost jobs either because of difficulties in transport, skill related or interpersonal issues.

Majority of our patients 5.88% are above 40 age group, this is in line with other studies which says over 40, male family history, are risk factors of stroke (Kapoor, Banerjee, 1989), our patients are seen by family physicians and general practitioners at first contact who have very little knowledge about neurological illness. Majority of the sample were illiterates which are in consistent with other studies (Kapoor, Banerjee, 1989).

Majority of them belong to low socio economic group. Most of the beneficiaries of the government hospitals being from the low socio economic status, as they are not able to afford the treatment cost in the private hospitals. The Government of India and state government do have a mandate that they should be given treatment without any discrimination in terms of caste/class/geography. NIMHANS being a tertiary care hospital do provide services for patients throughout country from Kashmir to Kanyakumari (north to south) Gujarath to West Bengal in (west to east). NIMHANS being a Government institution, the cost of treatment is less when compared to nursing homes and private hospital.

We found most of them belonged to Nuclear family which highlights the need for, paid care givers. Any service designed to address sexual problems should also address relationship issues. There are more nuclear families, families in Indian are in transition there are more nuclear than joint and extended families, this shows that there is no social support to help the patient in ADL.

Most of them are unemployed as they are not able to continue their previous jobs. Married people are more, they are pre-occupied with children education, household responsibilities, litigation etc. Families have high level of expectation of the person with neurological disability, families expect them to regain their premorbid level of functioning, he would return to normal life, earn a living, contribute to family income,

have children etc. So concern for rehabilitation causes great anxiety in the family.

Wehman (1989) found that the following programmes had to be addressed in helping people return to work.

1. Getting to work on time
2. Transport
3. Inappropriate ruble behavior in the work place
4. Planning and sequencing work activities
5. Remembering work task, inappropriate sexual behavior, cognitive deficits and personality problems hampers productivity in any occupation.
6. Families identify early signs and symptoms, relapse and deterioration help the patients in accessing service.

Subsequent to functional mobility and independence in ADLS intervention should focus primarily on vocation reintegration and community participation. Alternative models of supported employment like tailoring, cycle repair, toy making, greeting card making, cane handicraft etc. should be advocated with flexible working hours for income generation. Which become imperative as (7.35%) of them work as agricultural labourers, domestic workers, painters, construction workers. Since they work in unorganized sector without insurance or social security benefits, the psychiatric social worker intervenes to facilitate disability benefits or waiver of treatment charges based on income assessment.

### Limitations of the study

Small sample with heterogeneous groups of patients makes it difficult to generalize the results of the study. Longitudinal studies with big sample size will be useful for planning and policy making with regard to rehabilitation of persons with neurological disability.

### Conclusions

We found that most of our patients are male in productive age group. They are unemployed or lost job. Hence vocational Rehabilitation and community integration has to be taken up for the population. Further studies should focus on social support, financial stress, burden of care, and employment income generation avenues for the spouse, vocational rehabilitation screening of physical and mental health for care givers, so that their mental health is promoted.

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