

Prevalence of Locomotor Disability amongst the Physically Challenged population of Ahmednagar District - A Retrospective Study

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Abstract

Background: Locomotor Disability is one of the major public health problems in the developing countries. Eighty percent of the physically challenged population reside in rural areas. Therefore, this study was carried out in the rural population of Ahmednagar as it will be a useful contribution in proper health care planning for the people with locomotor disability.

Method: It was a retrospective study carried out in the population of Ahmednagar with a convenient sampling method. Inclusion Criteria for the study was, both Gender and the physically challenged people who were assessed during the 'Assistance to Disabled Persons' camp. Screening was started in January 2022 and ended in December 2022

Result: The total prevalence of Locomotor Disability in Ahmednagar District was 448 out of total 925 physically challenged population (48.4%). Prevalence of Males affected (74.3%) is more as compared to the females (25.7%). Various causes of locomotor disability were Post-Polio Residual Palsy (48%), Amputation (15%), Stroke (14%), Cerebral Palsy (10%) and Trauma (3%) etc.

Conclusion: It was observed that the prevalence of Locomotor Disability is more than that of the other disabilities in the physically challenged population of Ahmednagar. Amongst them post-polio residual palsy was the most common cause of Locomotor Disability.

Keywords: Disabled, Locomotor Disability, Physically challenged, Prevalence.

Introduction or back ground

Disability has been defined by World Health Organization (WHO) as impairment, limitation, or restriction in activity caused mainly by health issues and environmental factors. ¹ According to WHO

estimates, 10% of the world's population has some kind of disability and around 80% of the disabled population resides in rural areas.² The prevalent disability rates vary vividly due to differing definitions of disability, different methodologies of data collection, and variation in the quality of study design.³

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Globally, about one billion (15%) individuals face some form of disability, and 20% have severe functional limitations.¹ Over 1 billion people i.e. about 15% of the global population is estimated to be living with disability. Around 975 million (19.4%) persons live with disability and around 190 million (3.8%) have severe forms of disability namely blindness, quadriplegia & severe depression, according to Global Burden of Disease.²

As per Census 2011, in India, out of the 121 Crore population, about 2.21% of the total population is Disabled. Among the total disabled in India, 12.6 million and 9.3 million are males and females, respectively.⁴ As per 2011 census, around 1.46 Lakh people In Ahmednagar District around are reported as physically challenged in Ahmednagar District.

The most common form of disability is Locomotor Disability.¹ Definition of Locomotor Disability is, a person's inability to execute distinctive activities associated with movements of self and objects resulting from affliction of musculoskeletal or nervous system or both.⁵ Locomotor disability is considered to be the most important single physical disability because of its dramatic effects on the activities of daily life. ⁵ Locomotor disabilities accounted for 44.70%. ¹ Locomotor disability is significantly more common in Indian men than in Indian women.¹

The people with disability suffer from poverty, low literacy and unemployment more than the general population.⁶

Various causes of traumatic Locomotor Disability include - road traffic accidents, railway accidents, falls, bullet injuries, machine injuries. ⁷It is observed that of all, persons having Locomotor Disability, the proportion (per 1000) of them with deformity of limb is the maximum among the different types of Locomotor Disability.⁷

National Sample Survey Organization (NSSO) did a survey, which showed that 15% of the elderly population in Rural Uttar Pradesh suffered from Locomotor Disability.⁷ A large scale sample survey reported that 63.70% elderly suffered from Locomotor Disability.⁷ A study done in New Delhi showed

that 4.80% of the elderly suffered from Locomotor Disability.

There are various factors like economic status, literacy, age group and the geographical area due to which there are difference in the prevalence of locomotor disability in the literature. There is lack of literature on prevalence of Locomotor Disability in Maharashtra and Ahmednagar District. So this retrospective study aimed at determining the prevalence of Locomotor disability in physically challenged population of Ahmednagar City.

Material and Methods

It was a retrospective observational study conducted at District Disability Rehabilitation Centre (DDRC), Ahmednagar. A total of 925 physically challenged patients who visited the assessment camps, which was arranged by DDRC Ahmednagar and ALIMCO Kanpur in the year 2022, were conveniently sampled with Locomotor Disabilities and the data was analyzed in the study.

The data was derived from the statistics of assessment camps of the DDRC, Ahmednagar. Study population comprised of both male and female, with age ranging from 1-80 years and already diagnosed with a specific disability by Civil Hospital, Ahmednagar. Data was collected from statistics of the assessment camp and total prevalence of Locomotor Disability was calculated.

Table no.1 and Fig no. 1 shows the prevalence of Locomotor Disability from Total number of physically challenged population. Total number of people with Locomotor Disability were 448/925 with a percentage prevalence of 48.40%.

Table 1. Total number of physically challenged individuals with locomotor disability:

| Total no. of physically challenged people | Total no. of physically challenged with Locomotor Disability | Prevalence of Locomotor Disability |
|---|--|------------------------------------|
| 925 | 448 | 48.4% |

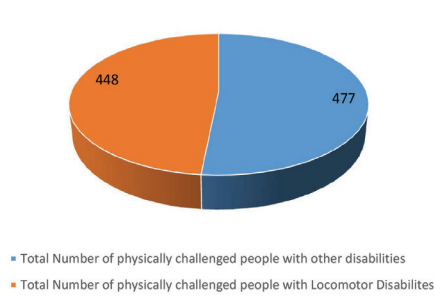


Figure 1: prevalence of locomotor disability

Table no.2 and Fig no. 2 shows the Gender-wise prevalence of Locomotor Disability among the people affected with Locomotor Disability. Number of affected males were 333 and females were 115 with percentage prevalence of 74.3% and 25.7% respectively.

Table 2. Gender-wise prevalence of locomotor disability:

| No. with Locomotor Disability | Gender | No. affected | Prevalence |
|-------------------------------|--------|--------------|------------|
| 448 | Male | 333 | 74.3% |
| 448 | Female | 115 | 25.7% |

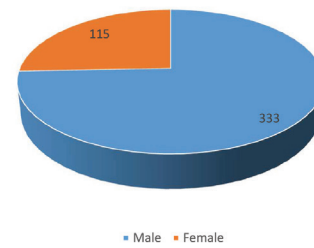


Figure 2: Gender-Wise prevalence

Table no.3 and Fig no. 3 shows the age wise prevalence of Locomotor Disability. The number of people affected with Locomotor Disability were more in the age groups of 31-40 years and 41-50 years with percentage prevalence of 20.76% and 21.88% respectively.

Table 3. Age-wise prevalence of locomotor disability:

| Age Group | No. affected | Prevalence |
|-----------|--------------|------------|
| 1-10 | 18 | 4.02% |
| 11-20 | 66 | 14.73% |
| 21-30 | 60 | 13.39% |
| 31-40 | 93 | 20.76% |
| 41-50 | 98 | 21.88% |
| 51-60 | 64 | 14.29% |
| 61-70 | 27 | 6.03% |
| 71-80 | 18 | 4.02% |

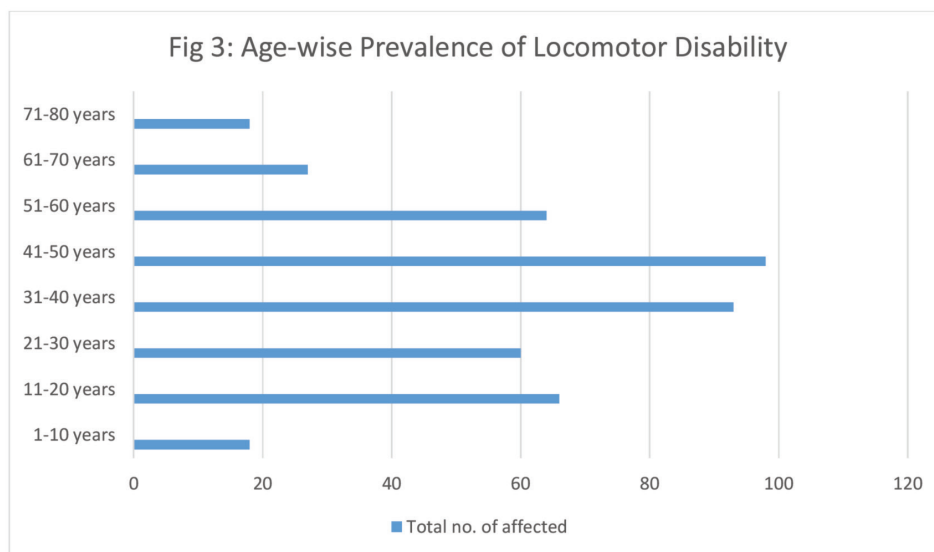


Figure 3: Age-Wise prevalence of locomotor disability

Table no. 4 and Fig no. 4 shows the percentage-wise prevalence of locomotor Disability. The number of affected people with Locomotor Disability were more in the interval of 71-80% (severe disability) with percentage prevalence of 24.8%.

Table 4. Percentage-wise prevalence of locomotor disability

| Percentage of disability | No. affected | Percentage |
|--------------------------|--------------|------------|
| 40-50% | 87 | 19.4% |
| 51-60% | 97 | 21.8% |
| 61-70% | 42 | 9.29% |
| 71-80% | 111 | 24.8% |
| 81-90% | 43 | 9.7% |
| 91-100% | 67 | 15% |

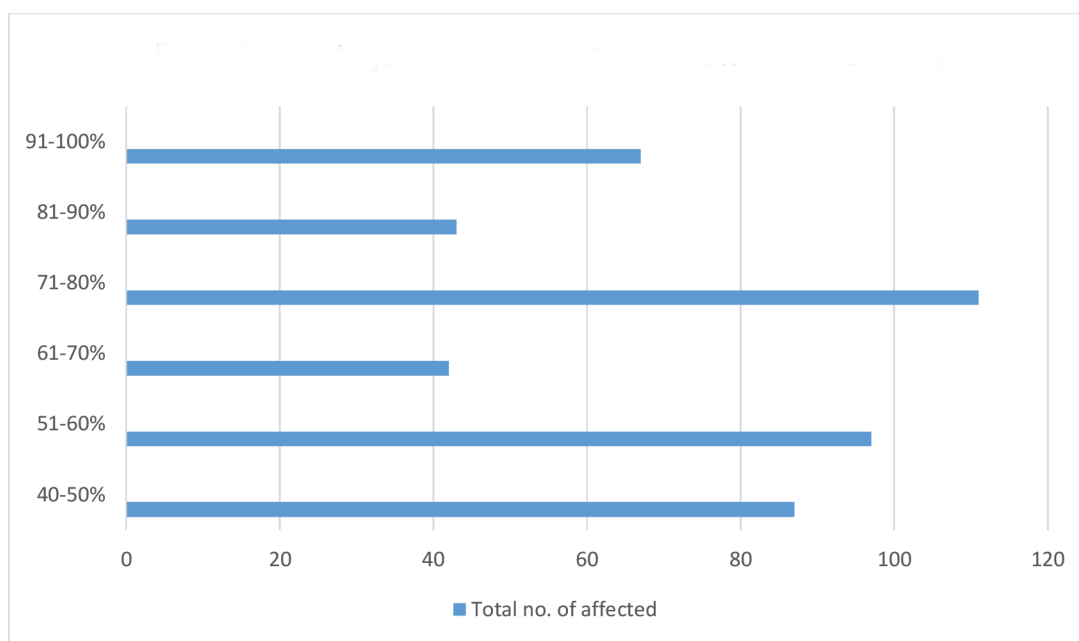


Figure 4: Percentage-Wise prevalence: locomotor disability

Table no.5 and Fig no. 5 shows the prevalence of Diagnosis in Locomotor Disability. The Post-Polio Residual Paralysis (PPRP) was the most common cause for the Locomotor Disability (48%) followed by Amputation, Stroke, Cerebral Palsy (CP), Trauma, Ankylosing Spondylitis and other congenital causes.

Table 5. Prevalence of diagnosis in locomotor disability:

| Diagnosis | No. affected | Prevalence |
|--------------------------------------|--------------|------------|
| Post-Polio Residual Paralysis (PPRP) | 215 | 48% |
| Amputation | 67 | 15% |
| Stroke | 63 | 14% |
| Cerebral Palsy (CP) | 45 | 10% |
| Trauma | 13 | 3% |
| Ankylosing spondylitis | 9 | 2% |
| Congenital | 9 | 2% |

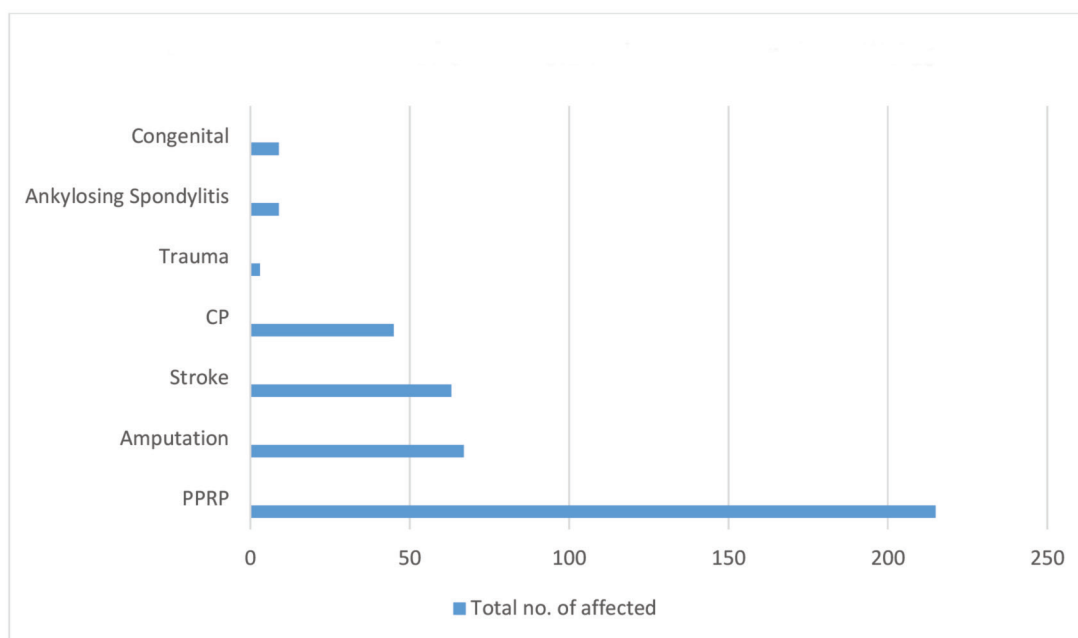


Figure 5: Prevalence of diagnosis In Locomotor Disabilities

Results

The study was conducted in Ahmednagar District to determine the prevalence of Locomotor Disability among the physically challenged population. A total of 925 individuals who attended the Assistance to Disabled Persons (ADIP) camp were included in the study. The analysis focused on the prevalence of locomotor disability and its distribution by gender, age, percentage of disability and causes. The data on individuals with locomotor disability were categorized by gender, age, percentage of disability, and diagnosis, followed by an analysis to calculate the prevalence percentages for each category.

Discussion

The overall prevalence of locomotor disability in Ahmednagar, based on data from the District Disability Rehabilitation Centre (DDRC), was found to be 48.40%. The prevalence was significantly higher in males (74.3%) compared to females (25.7%). The highest rates of locomotor disability were observed in the 31-40 and 41-50 age groups, with prevalence rates of 20.76% and 21.88%, respectively. The most common cause of locomotor disability was Post-Polio

Residual Paralysis (PPRP), followed by amputation, stroke, cerebral palsy, trauma, ankylosing spondylitis, and congenital disorders.

In this study, the overall prevalence of locomotor disability was 48.40%. This result aligns with findings by Mohd Maroof et al., who reported a prevalence of 25.8% (sample size = 225), though this percentage is slightly lower than the one found in our study.⁸ Other studies conducted earlier revealed different prevalence rates: 10% in Bareilly (sample size = 900)⁹, 2.08% in Jodhpur District (sample size = 1,656)⁵, 1.8% in rural Karnataka (sample size = 100)¹⁰, 0.92% in rural Goa (sample size = 4,868), 5.57% in Mumbai slums (sample size = 3,665)¹², 0.91% in rural Puducherry (sample size = 4,040)¹³, and 3.7% in rural Uttar Pradesh (sample size = 2,107)⁷. The variation in prevalence rates may be due to differences in the age groups studied. Our study included individuals ranging from 1 to 80 years of age, whereas other studies focused on specific age groups, such as the elderly, as in Mahmood S. et al.'s study.⁹

Our findings suggest that males are more likely to experience locomotor disability than females, with a prevalence of 74.3% compared to 25.7%. This

contrasts with a study conducted in rural Haryana, where disability was found to be lower in men (35.9%) than in women (38.8%).¹⁴ This discrepancy may be attributed to factors such as males being more prone to accidents, injuries, and non-communicable diseases due to their participation in risky activities and physically demanding jobs, including mining, telecommunications, electrical work, and commercial driving.¹⁴

In terms of age, our data analysis showed that locomotor disability was more prevalent in adults aged 31-40 and 41-50, with rates of 20.76% and 21.88%, respectively. This is consistent with the findings of Yadav and Singh et al. (2020), who reported that adults have a higher prevalence of disability compared to children and older adults. This increased prevalence may be linked to a higher incidence of non-communicable diseases, road traffic accidents, and risky behaviors such as alcoholism, tobacco use, and drug abuse.¹⁵

This study is the first, to our knowledge, to analyze the relationship between the percentage of locomotor disability and its prevalence. Our results indicate that individuals with 71-80% disability made up the largest group of affected patients, accounting for 24.80%.¹⁶

There are various known causes of locomotor disability in the literature. In our study, Post-Polio Residual Paralysis (PPRP) was the most common cause, with a prevalence of 48%, followed by amputation (15%), stroke (14%), cerebral palsy (10%), trauma (3%), ankylosing spondylitis (2%), and other congenital causes (2%). Our findings are consistent with a study by Halder S. et al., which found polio to be the most common cause of locomotor disability, with a prevalence of 46%. Polio is a highly infectious viral disease that attacks the nervous system, often resulting in irreversible paralysis, particularly in the legs. The higher prevalence of PPRP in rural populations may be due to factors such as malnutrition, poor hygiene and sanitation, illiteracy, lack of disease awareness, and delayed or insufficient medical care. These conditions facilitate the spread of infectious diseases like polio and may contribute to the progression and severity of the disease.¹⁶

Physiotherapy rehabilitation can be highly beneficial for individuals with locomotor disabilities by addressing physical limitations and improving quality of life through pain management, enhanced mobility, balance and coordination, use of assistive devices, and customized treatment plans. Rehabilitation can help patients achieve functional independence and prevent complications.^{17, 18} Therefore, there is a need to raise awareness among rural populations about the benefits of physiotherapy to improve their quality of life.

Conclusion

The overall prevalence of locomotor disability in Ahmednagar District is 48.40%. To address this issue, intervention strategies should focus on education, health promotion, and awareness about rehabilitation services, ensuring that government-provided services are accessible to all who need them.

Limitations

This study focused on individuals who were already certified with locomotor disabilities. There may be undiagnosed secondary disabilities or musculoskeletal dysfunctions present, which would require further assessment.

Conflict of Interest

Nil

Sources of Funding

Self

Ethical Clearance

Ethical Clearance was obtained from Institutional Ethical committee on 3rd February 2023.

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