Disability Prevalence Pattern among Tribal Population of Wayanad in Kerala
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ABSTRACT

BACKGROUND
The prevalence of disability among tribal population of Wayanad in Kerala is high as per Indian census 2011. The pattern of disability rate has not determined so far.

MATERIALS AND METHODS
Secondary data from Census of India 2011 containing disability. Disability rates of tribal in various age and social groups calculated in percentage.

RESULTS
The tribal of Wayanad has higher disability rate of 2.46% compared to India and Kerala. Males outnumbered females in disability rates among all social groups. Age group of 60 years and above has high disability rate of 8.26% among tribal. Working tribal in the age group 20-59 has disability rate of 2.4%. Visual disability is 19.5% and mental illness accounts for 8.92% among tribal of Wayanad as against 2.7% in the tribal population of India. Multiple disabilities are significantly high among tribal (12.4%) than other social groups of India.

CONCLUSION
Detailed study needed to identify the causative factors of high disability rate among tribal population of Wayanad and suggest methods for early detection and care.

KEYWORDS
Advasi, Disability Rate, Prevalence, Social Groups, Tribal.

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BACKGROUND
The first ever WHO/World Bank World report on disability reviews evidence about the situation of people with disabilities around the world. Understanding the number of people with disabilities and their circumstances can improve efforts to remove disabling barriers and provide services to allow people with disabilities to participate, collecting appropriate statistical and research data at national and international levels will help parties of the United Nation’s Convention on the Rights of Persons with Disabilities (CRPD) to formulate and implement policies to achieve internationally agreed development goals. In 2004, the World Health Survey and Global Burden of Disease results based on very different measurement approaches and assumptions give global prevalence estimates among the adult population of 15.6% and 19.4%, respectively. The prevalence of disability in lower income countries among people aged 60 years and above was 9.1% as against 4.1% in higher income countries based on threshold of 50 derived from 59 countries. About 15% of the world's population lives with some form of disability of whom 2 to 4% experience significant difficulties in functioning. Disability affects millions of families in developing countries. Currently, around 10% of total world's population lives with a disability. In most of the countries of Organisation for Economic Cooperation and Development, females have higher rates of disability than males. Eighty per cent of the persons with disabilities live in developing countries according to the United Nations Development Program. The reasons suggested for the increase of disabilities are emergence of new diseases and other causes of impairment such as HIV/AIDS, stress, alcohol and drug abuse. Increase in the life span and numbers of elderly persons, most of them with impairments have attributed for the higher disability rates. WHO projected increase in the number of disabled children in the developing world due to malnutrition, diseases, child labour and other causes. Poor people are at a higher risk of acquiring disability due to lack of access to good nutrition, healthcare, sanitation as well as safe living and working condition. Census data on disability has indicated that there are variations in the prevalence of disability between geographic regions and social groups of the population of India. The prevalence rate of disability in various age, sex...
and social sections of Indian population has not estimated. Moreover, it has not identified the causative factors of disability among the tribal population of Wayanad district, which accounts for 37.36% of the total population of Kerala state. Nearly, 8% of tribal population in Wayanad engaged in forest labour and 75% in agriculture. A significant portion of income they spent on tobacco and alcohol. The degradation of ecology has severely affected the livelihood of tribal in Wayanad. The shift from food to cash crops and from indigenous to hybrid seeds also undermined the livelihood of these people. ‘Wayanad Initiative’, a situational study undertaken by the Centre of Excellence under the Indian Institute of Management, Kozhikode, cited absence of regular income, poor health conditions and educational disadvantages as the key issues confronting the adivasi population. The actual living condition of the tribal of Wayanad reveals that majority of them is below 40 years of age. Though, it generally assumed that non-timber produce collection as a major economic activity of the tribal of Wayanad, the baseline survey has shown that this economic activity accounted only for 5.63% of the tribal population—a data that sends alarm signals. Unfortunately, a significant portion of their income spent on tobacco and alcohol. For almost seven months a year, most of the tribal do not have any significant source of income. Landless families hardly have two meals a day during these lean months. With this deprived scenario of tribal in mind, this study attempted to estimate the intensity of the problem of disability among the tribal population of Wayanad. The research questions of primary and secondary interests are:

1. Are living conditions of the tribal leads to higher disability among them?
2. To what extent the disability rates of tribal is higher than other social groups of population of Kerala and India?
3. Is the disability rate of tribal population of Wayanad uniform in the younger as well as older age groups?

AIMS
To estimate the disability rates of tribal population and compare their pattern in various age and social groups with national and international statistics.

MATERIALS AND METHODS
Methodology
This is an original article providing systemic critical assessment of literature and data sources on disability.

Design
Both comparative and subjective data were collected. The study contained three discrete elements.

1. Information on disability of individuals collected during the population enumeration phase of Census of India 2011 through household schedule.
2. Detailed data on disability was reviewed from the web portal Punarbhava set up by the Rehabilitation Council of India in collaboration with Media Lab Asia on Disability and Rehabilitation.
3. Disability rates calculated for tribal of Wayanad and compared with the disability rates of Kerala state and India. Disability rates in various age and social groups of Wayanad calculated and compared with similar groups of Kerala and India. An attempt was made in the study to identify susceptible risk factors for disability among the tribal of Wayanad by the analysis of secondary data of Census of India 2011.

Calculation of Disability Rate-
Disability rate calculated in percentage by dividing the number of disabled persons by the total population.

World Health Organization (WHO) provided the following definitions in their International Classification of Impairment, Disability and Handicap (1980).

Disability- “any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.”

Impairment- “any loss or abnormality of psychological, physiological or anatomical structure or function.”

Handicap- “the result when an individual with an impairment cannot fulfil a normal role.”

A disabled Person has been defined as one “who is unable to ensure by himself, wholly or partly, the necessities of a normal individual or social life including work as a result of deficiency whether congenital or not in his physical or mental capabilities.”

Inclusion Criteria
Data on disability of Wayanad tribal population obtained from the Census of India 2011 was included for estimating the risk of disability among them.

Exclusion Criteria
Disability data of Wayanad tribal population collected by non-government organisations from sample regions and districts was excluded for estimating disability rates and social group comparisons.

RESULTS
Table 1 shows the prevalence rate of disability among tribal of Wayanad as 2.46% (CI- 2.38-2.54), which is significantly higher (P<.05) than the disability rate of Indian tribal population (2.05%). Disability rate of males (2.61%) (CI-2.49-2.73) of the present study is significantly higher than that of females (2.301%) (CI- 2.2-2.4) (P<0.05). The disability rates of Wayanad tribal in the age group of 0-4 and 5-9 are significantly higher than the similar rates of India and Kerala. It is also noted that disability rate of Wayanad district 2.53% (CI- 2.49-2.56) is significantly higher than that of India (2.2%) as well as Kerala (2.3%). Disability rates are uniform among males as well as females of all social groups of Wayanad (Table 2), which contradicts the results from other countries where females outnumbered males in
and multiple disabilities are significantly higher among tribal population than the general population (19.33%), which is similar to other social groups of Kerala and India (20%). Though disability of seeing, hearing, speech, movement, mental retardation, mental illness, and any other disability are more among females of tribal population of Wayanad as well as Indian population (Table 3).

The estimates of prevalence of disability in various social classes and regions of India are uniform in all regions of India (Table 2). Type of disability in various social classes and regions of India are also uniform in all regions of India (Table 2).

The disability rates among tribal population of Wayanad (19.5%) is significantly higher than Kerala (15.51%) and India (20%) (P<.001).

Table 1. Proportion of Disabled in Various Age Groups and Social Groups

<table>
<thead>
<tr>
<th>Social Groups</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>2.21</td>
<td>2.45</td>
<td>2.05</td>
<td>2.18</td>
<td>2.3</td>
<td>2.65</td>
<td>2.25</td>
<td>2.53</td>
<td>2.65</td>
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</tr>
<tr>
<td>SC</td>
<td>2.83</td>
<td>3.00</td>
<td>2.95</td>
<td>2.72</td>
<td>2.43</td>
<td>3.00</td>
<td>2.43</td>
<td>2.15</td>
<td>2.72</td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>2.83</td>
<td>3.00</td>
<td>2.95</td>
<td>2.72</td>
<td>2.43</td>
<td>3.00</td>
<td>2.43</td>
<td>2.15</td>
<td>2.72</td>
<td></td>
</tr>
<tr>
<td>SC &amp; ST</td>
<td>2.83</td>
<td>3.00</td>
<td>2.95</td>
<td>2.72</td>
<td>2.43</td>
<td>3.00</td>
<td>2.43</td>
<td>2.15</td>
<td>2.72</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Disability Rate According to Gender and Social Class

<table>
<thead>
<tr>
<th>Type of Disability</th>
<th>Total</th>
<th>SC</th>
<th>ST</th>
<th>Others</th>
<th>Total</th>
<th>SC</th>
<th>ST</th>
<th>Others</th>
<th>Total</th>
<th>SC</th>
<th>ST</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeing</td>
<td>18.77</td>
<td>19.1</td>
<td>20</td>
<td>18.6</td>
<td>15.2</td>
<td>15.6</td>
<td>16</td>
<td>15.1</td>
<td>20.8</td>
<td>22.2</td>
<td>19.5</td>
<td>[18.2-20.8]</td>
</tr>
<tr>
<td>Hearing</td>
<td>18.91</td>
<td>17.4</td>
<td>19</td>
<td>19.2</td>
<td>13.8</td>
<td>14.7</td>
<td>16</td>
<td>13.69</td>
<td>14.5</td>
<td>18.1</td>
<td>16.2</td>
<td>[15.0-17.4]</td>
</tr>
<tr>
<td>Speech</td>
<td>7.45</td>
<td>5.25</td>
<td>5.3</td>
<td>8.3</td>
<td>5.43</td>
<td>6.14</td>
<td>9.8</td>
<td>5.26</td>
<td>5.43</td>
<td>5.53</td>
<td>6.61</td>
<td>[5.8-7.5]</td>
</tr>
<tr>
<td>Movement</td>
<td>20.28</td>
<td>20.5</td>
<td>23</td>
<td>20</td>
<td>22.5</td>
<td>23.5</td>
<td>20</td>
<td>22.46</td>
<td>20.4</td>
<td>20</td>
<td>19.3</td>
<td>[18.1-20.6]</td>
</tr>
<tr>
<td>Mental retardation</td>
<td>5.62</td>
<td>5.1</td>
<td>4.9</td>
<td>5.8</td>
<td>8.63</td>
<td>6.67</td>
<td>5.1</td>
<td>8.92</td>
<td>6.7</td>
<td>6.99</td>
<td>3.95</td>
<td>[3.34-4.6]</td>
</tr>
<tr>
<td>Mental illness</td>
<td>2.7</td>
<td>2.4</td>
<td>2.6</td>
<td>2.8</td>
<td>8.78</td>
<td>8.05</td>
<td>8.8</td>
<td>8.87</td>
<td>7.59</td>
<td>5.32</td>
<td>8.92</td>
<td>[8.02-9.87]</td>
</tr>
<tr>
<td>Any other</td>
<td>18.38</td>
<td>22.9</td>
<td>17</td>
<td>17.4</td>
<td>12.6</td>
<td>13.6</td>
<td>14</td>
<td>12.48</td>
<td>12.1</td>
<td>12.4</td>
<td>13.2</td>
<td>[12.1-14.3]</td>
</tr>
<tr>
<td>Multiple disabilities</td>
<td>7.89</td>
<td>7.3</td>
<td>8.9</td>
<td>7.9</td>
<td>13.1</td>
<td>11.7</td>
<td>11</td>
<td>13.21</td>
<td>13.9</td>
<td>9.38</td>
<td>12.4</td>
<td>[11.3-13.5]</td>
</tr>
</tbody>
</table>

Table 3. Proportion of Type of Disability

CI - Confidence interval, *P<.001

High proportion (12.4%) of multiple disabilities exit among tribal population of Wayanad compared to Indian tribal population (7.9%) (P<.001) (Table 4). Speech disability of tribal is significantly higher (6.61%) than other social groups of India as majority of males are addicted to various kinds of local drugs and alcohol. Moving disability among the study tribal population is 19.33%, which is similar to other social groups of Kerala and India (20%). Though disability of seeing, hearing and movement and multiple disabilities are significantly higher among tribal population than the scheduled caste and others (P<.05) (Table 3). disability in seeing and hearing are more among females of tribal of Wayanad as well as Indian population (Table 4).
Table 5 shows that disability rate among the population of 60 years and above is significantly higher in tribal of Wayanad (8.26%) (CI- 7.78-8.76) compared to 5.36% in Kerala and 7.19% in India (P<.05). Among the working tribal population of age group 20-59, the disability rate in Wayanad is 2.4% (CI- 2.31-2.52), which is significantly high (P<.05) when compared to 1.69% in Kerala and 3.18% in India.

**Table 4. Type of Disability Proportions According to Gender**

<table>
<thead>
<tr>
<th>Type of Disability</th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>SC</th>
<th>ST</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeing</td>
<td>17.6</td>
<td>20.2</td>
<td>13.47</td>
<td>16.98</td>
<td>18.16</td>
<td>22.62</td>
<td>11.78</td>
<td>23.42</td>
</tr>
<tr>
<td>Hearing</td>
<td>17.9</td>
<td>20.2</td>
<td>12.18</td>
<td>15.60</td>
<td>13.33</td>
<td>15.72</td>
<td>7.72</td>
<td>23.42</td>
</tr>
<tr>
<td>Speech</td>
<td>7.5</td>
<td>7.4</td>
<td>5.6</td>
<td>5.18</td>
<td>5.70</td>
<td>5.13</td>
<td>3.44</td>
<td>4.68</td>
</tr>
<tr>
<td>Movement</td>
<td>22.5</td>
<td>17.5</td>
<td>25.56</td>
<td>19.27</td>
<td>23.86</td>
<td>16.75</td>
<td>12.62</td>
<td>16.63</td>
</tr>
<tr>
<td>Mental retardation</td>
<td>5.8</td>
<td>5.4</td>
<td>9.02</td>
<td>8.20</td>
<td>7.02</td>
<td>6.36</td>
<td>4.38</td>
<td>5.85</td>
</tr>
<tr>
<td>Mental illness</td>
<td>2.8</td>
<td>2.6</td>
<td>8.57</td>
<td>9.01</td>
<td>6.80</td>
<td>8.44</td>
<td>2.61</td>
<td>6.09</td>
</tr>
<tr>
<td>Any other</td>
<td>18.2</td>
<td>18.6</td>
<td>12.54</td>
<td>12.70</td>
<td>11.71</td>
<td>12.51</td>
<td>7.4</td>
<td>11.24</td>
</tr>
<tr>
<td>Multiple disabilities</td>
<td>7.8</td>
<td>8.1</td>
<td>13.00</td>
<td>13.05</td>
<td>13.42</td>
<td>12.46</td>
<td>5.53</td>
<td>8.67</td>
</tr>
</tbody>
</table>

**Table 5. Disability Rate in Various Age and Gender Groups**

<table>
<thead>
<tr>
<th>Age</th>
<th>All</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>(95% CI)</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>0.65</td>
<td>0.7</td>
<td>0.61</td>
<td>0.65</td>
<td>(0.52-0.79)</td>
<td>0.71</td>
<td>0.6</td>
<td>1.14</td>
<td>1.18</td>
<td>1.11</td>
</tr>
<tr>
<td>0-19</td>
<td>1.15</td>
<td>1.28</td>
<td>1.02</td>
<td>1.26</td>
<td>(1.17-1.36)</td>
<td>1.31</td>
<td>1.2</td>
<td>2.11</td>
<td>2.25</td>
<td>1.95</td>
</tr>
<tr>
<td>20-59</td>
<td>1.69</td>
<td>2.55</td>
<td>1.92</td>
<td>2.41</td>
<td>(2.31-2.52)</td>
<td>2.6</td>
<td>2.2</td>
<td>3.18</td>
<td>3.59</td>
<td>2.75</td>
</tr>
<tr>
<td>60+</td>
<td>5.36</td>
<td>5.37</td>
<td>5.35</td>
<td>8.26</td>
<td>(7.78-8.76)</td>
<td>9.08</td>
<td>7.5</td>
<td>5.18</td>
<td>5.31</td>
<td>5.04</td>
</tr>
</tbody>
</table>

Significantly, high proportion of disability is noted in the lower age groups up to 20-59 years of tribal of Wayanad (32.92%) and Kerala (27.67%), whereas it is significantly low (5.69%) among the Indian tribal population. A higher rate of disability noted among males of the study population up to the age group 70-79 and among females this pattern seen thereafter. Proportion of disability among tribal population in lower age groups up to 40-49 years observed significantly low compared to other social groups (P<.05). In the higher age group, i.e. 60 onwards, disability is high among tribal, whereas in all other age groups, it is invariably higher among scheduled caste population than others are.9

**DISCUSSION**

High disability rate among the tribal population of Wayanad may be due to new diseases like Chikungunya and other causes such as lack of access to good nutrition, healthcare and sanitation as well as stress, alcoholism and drug addiction. The prevalence rate of the present study is in conformity with results from Zambia in 2006 and Global Burden of Disease in 2004 where prevalence rates are 2.4% and 2.9%, respectively.11,4 Significantly, high decadal growth (48.2%) of disabled population noted in urban area compared to 13.7% in rural area as per Indian census.9 The results of the present study reveal that disability rate of tribal of Wayanad is significantly higher as they reside in the rural forest area (P<.05) where problems exist like poverty and illiteracy, lack of occupation, health and hygiene.7,12 The observation of the present study contradicts the results of Indian population that the disability prevalence is more in urban area than the rural area.9 Though, the present study reveals that disability rates are higher among tribal males than females, higher disability rates of 3.3% and 1.8% among females were reported by WHO in low income as well as high-income countries.1 High proportion of seeing disability seen among tribal population could be due to the ethnic lifestyle of the tribal population with high level of consanguinity and overcrowding who lives in the huts without proper lighting and ventilation.7 The observation of significantly lower proportion of mental retardation among tribal population of Wayanad (3.95%) than other social groups of Wayanad (7.3%) and India (5.8%) (P<.001) maybe due to their practice of hereditary method of treatment with herbal products for the common ailments. Mental illness is significantly more among tribal of Wayanad (8.92%) compared to other social groups of Wayanad (7.4%) as well as tribal population of India (2.6%). This could be due to their worries about food and shelter and the absence of medical care facilities for the diagnosis and treatment of such ailments.

Further studies needed to identify the attributed factors for the higher prevalence of these disabilities among tribal women. However, disability in hearing and speech observed more in urban areas of India, higher prevalence of disability in movement and multiple disabilities exist in rural areas of various regions of India including the study population. This could be due to geriatric problem and malnutrition existing among them. The results of the present study reveals that
tribal rural population of Wayanad are prone to higher rate of moving disability and multiple disabilities as in the case of tribal population of India. In the 0-4 year age group, disability rate in Wayanad (0.65%) (CI 0.52-0.79) is significantly lower than India (1.14%) (P<.05) as the tribal population of this area is more concerned about the health and wellbeing of their children even with their meager income.

CONCLUSION
A relatively higher prevalence of poverty, low educational level and overcrowding, higher level of consanguinity, poor water resources and unhealthy lifestyles have produced an increased prevalence of disabilities among the tribal population of Wayanad. Facilitating early detection and care, and improving the living conditions and intensive health education for preventing consanguinity and drug addiction can reduce the disability rate of tribal population of Wayanad.

ACKNOWLEDGEMENTS
I would like to thank the web portal Punarbhava setup by Rehabilitation Council of India in collaboration with Media Lab Asia on Disability and Rehabilitation for providing data on disability as per Census of India 2011. I also thank Ms. Sindhu, Secretary of the Forensic Medicine Department of DM WIMS for helping me in the preparation of tables in the manuscript.

REFERENCES