

## Prevalence of Chronic Diseases among the Elderly Gond Tribal Population of Sagar District, M.P., India

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### ABSTRACT

**Introduction:** Ageing is characterized as an accumulation of knowledge, wisdom and experience but at the same time, it holds a dark side which leads them to overall dependency on the society, deterioration of health and morbidity. The aim of this study was to assess the prevalence of chronic diseases among elderly Gond tribal population. **Material Methods:** This study was conducted among the Gond elderly population of Kesli block of Sagar district and the data was collected from 407 individuals (207 male and 205 female) of more than 70 years aged individuals of Gond tribe. The purposive sampling method and the semi-structured interview schedule used for data collection. **Result:** The percentage of chronic diseases found higher among female (57.4%) as compare to male Gond individuals(53.7%). It was also observed that the level of education have significant association with the prevalence of chronic diseases and it was revealed that the literate population of Gond tribe (60.7%) was most affected with chronic diseases as compare to illiterates individuals (50.7%). Simultaneously, the more than half farmer (54.5%) and agriculture labourer (58.5%) of Gond community were more affected with chronic diseases as compare to others. Where, 70-79 age group (Wald  $\chi^2 = 4.570$ ,  $P < 0.05$ ) and low-income group level (Wald  $\chi^2 = 4.591$ ,  $P < 0.05$ ) of elderly were less likely than another income group level to be diagnosed with chronic diseases.

**Conclusion:** It was concluded that there is a slight difference was observed in prevalence of chronic diseases among male and female Gond tribe.

**Keywords:** Chronic diseases, Elderly, Logistic Regression, Gond tribe

## INTRODUCTION

Chronic diseases are those health problems in which a person suffers more than three months (WHO, 2013). Their prevalence has steadily increased in many countries almost in parallel with the increase of industrialization and life expectancy. Worldwide, the chronically disease also affected the health status and quality of life among individuals who suffered with these diseases (WHO, 2005; O'Grady & Capretta, 2009). The commonly chronic diseases reported in India primarily including hypertension, arthritis, cancer, angina, stroke and diabetes, (WHO, 2013).The elderly population becoming a major concern for the policy makers all over the world during the last two decades. Elderly people experience a highest burden of chronic illness, disability and comorbidity (Global Health and Aging- WHO, 2011 accessed on 20 February, 2021; Suzman and Beard 2015; LASI, 2017-18).

The ageing characterize as an accumulation of knowledge (Rowe and Kahn, 1987; Rowe and Kahn, 1998), wisdom and experience, whereas on the other side, lead them to overall dependency on the society (Kowald and Kirkwood 1996; Harman, 2003; Tosato et al., 2007), deterioration of health and mortality (World report on Ageing and Health- WHO, 2015 accessed on 20 February, 2021). Elderly have limited regenerative ability and are more prone to diseases as compared to adults (Hayflick 2000b; Sonwane, 2015).

According to the Center for Disease Control and Prevention (CDC, 2009), the chronic diseases are defined generally as the conditions that lasts for one year or more and requires ongoing medical attention or limited activities of daily living. Chronic diseases such as diabetes, arthritis, hypertension, stroke, heart disease, respiratory diseases, obesity, and cancer can lead to hospitalization, long-term disability reduced quality of life and often death (Kumar & Shankar, 2018; Raghupathi, 2018).

According to WHO, chronic diseases are the major cause of deaths globally and a total number of people dying from chronic diseases is double that of maternal, prenatal conditions and all infectious diseases (including HIV/AIDS, tuberculosis and malaria), and 80% of deaths occur due to chronic diseases in low and middle-income countries (WHO, 2005; Centers for Medicare & Medicaid Services, 2017). Unhealthy diet, physical inactivity, tobacco use and others factors are responsible for onset of chronic diseases in human being (Non-communicable diseases key facts, WHO accessed on 21 February, 2021). Age, gender and socio-economic status are

influenced the occurrence of chronic diseases in the elderly population ((Sarasakumari, 2001; Marengoni et al, 2008; Schäfe, 2012 and Singh et al., 2019).

The objective this study is to assess the prevalence of chronic diseases among elderly Gond tribal population of above cited study area.

## **MATERIAL AND METHODS**

The study was conducted among the Gonds of Kesli block, a tribe dominated region of Sagar district of Madhya Pradesh, India. It is also known as Tribal block in the north-east of Sagar district. Sagar district is situated at the north-central area of Madhya Pradesh and lies between 23° 08' and 24° 27' north latitudes and 78° 04' and 78° 20' east longitudes, where Kesli block spread over an area of 696.39 sq. km, the Tropic of Cancer passes through the southern part of the district. It is situated in a wide plain and surrounded by low forested hills and the Sonar River. Gond tribe depends on natural resources for their survival; Most of their economy is forest and agriculture based. The data was collected from 407 individuals (207 male and 205 female) of Gond tribe who were more than 70 years old. The purposive sampling method was used and semi-structured interview schedule tool used for data collection. Ethical guideline was followed as per Helsinki Declaration (2008), the participants were told about the objectives of the study, written consent was taken from the literate aged participants, whereas verbal consent were obtained from illiterate aged participants.

The semi-structure interview schedule was used for collation of demographical information like sex (male and female), age group (70-79, 80-89 and >90 years), literacy rate (Illiterate and Literate), annual income (<30000, 30000-60000 and >61000) and current working status (Agriculture, Agriculture Labour, Wage Labour and Bidi Labour) collected as independent variables and associated chronic diseases were consider as dependent variables. The presence of chronic disease was assessed in terms of Hypertension, Heart attack, Asthma, Arthritis, Diabetes, and Cancer etc.

**Statistical analysis:** MS Excel and SPSS-22 version (statistics package for social sciences) used for descriptive statistics to identify the various characteristics and association with other factors among the studied population. The 2-point scale (illiterate and literate) was used to define the literacy status. To find out the determinants of chronic diseases among them cross tabulation, Logistic regression models and other statistical analysis were done.

## RESULTS

The observations related to chronic diseases are presented in the following manner and it was elaborated in the following tables and figures:

**Table 1: Socio-demographic characteristics of the Gond elderly with and without Chronic diseases**

| Socio-demographic characteristics | With Chronic Diseases |      | Without Chronic Disease |      |
|-----------------------------------|-----------------------|------|-------------------------|------|
|                                   | N                     | %    | N                       | %    |
| <b>Sex</b>                        |                       |      |                         |      |
| Male                              | 110                   | 53.7 | 95                      | 46.3 |
| Female                            | 116                   | 57.4 | 86                      | 42.6 |
| <b>Age group</b>                  |                       |      |                         |      |
| 70-79                             | 99                    | 58.3 | 71                      | 41.7 |
| 80-89                             | 106                   | 55.8 | 84                      | 44.2 |
| >90                               | 21                    | 44.7 | 26                      | 55.3 |
| <b>Annual Income (INR)</b>        |                       |      |                         |      |
| <30000                            | 24                    | 68.6 | 11                      | 31.4 |
| 30000-60000                       | 174                   | 55.1 | 142                     | 44.9 |
| >60000                            | 28                    | 50   | 28                      | 50   |
| <b>Literacy rate</b>              |                       |      |                         |      |
| Illiterate                        | 192                   | 54.7 | 159                     | 45.3 |
| Literate                          | 34                    | 60.7 | 22                      | 39.3 |
| <b>Occupation</b>                 |                       |      |                         |      |
| Farmer                            | 128                   | 54.5 | 109                     | 46.5 |
| Agriculture Labour                | 83                    | 58.5 | 59                      | 41.5 |
| Wage Labour                       | 6                     | 66.7 | 3                       | 33.3 |
| Bidi worker                       | 10                    | 52.6 | 9                       | 47.4 |

Table 1 is represents the cross tabulation for the socio-demographic characteristics and chronic diseases of the studied population. It apparent from the table the statistical difference was observed for all socio-demographic characteristics for both chronicle diseased and healthy individuals. Among them, the prevalence of chronic disease was higher among female (57.4%) as compare to male (53.7%) Gond tribe. Similarly, the age wise distribution of the prevalence of chronicle diseases were reveals that the individuals of aged between 70-79 years of age were more affected as compare to other aged population. Like sex and age cohorts, the prevalence of chronic diseases was found higher in low-income group (68.4%) followed by middle (55.1%) and high-

income group (50.0%) respectively. simultaneously this cross tabulation also reveals that literate individuals are more suffered with chronic disease (60.7%) than the illiterate (50.7%). The Farmer (54.5%) and the labors related to agriculture (58.5%) were suffering more from the chronic diseases

In duration of field work, the multiple chronic diseases infection were also reported among them and the chronic diseases wise distribution of socio-demographic characteristics elderly population of Gond tribe is elobrated in Table 2.

**Table 2: Chronic diseases wise distribution of Socio-demographic characteristics of Gond elderly population.**

| Socio-demographic characteristics | Chronic Diseases |      |               |     |              |     |        |      |           |      |
|-----------------------------------|------------------|------|---------------|-----|--------------|-----|--------|------|-----------|------|
|                                   | Normal           |      | Hyperten sion |     | Heart attack |     | Asthma |      | Arthritis |      |
|                                   | N                | %    | N             | %   | N            | %   | N      | %    | N         | %    |
| <b>Sex</b>                        |                  |      |               |     |              |     |        |      |           |      |
| Male                              | 95               | 46.3 | 8             | 3.9 | 1            | 0.5 | 6      | 2.9  | 95        | 46.3 |
| Female                            | 86               | 42.6 | 5             | 2.5 | 1            | 0.5 | 0      | 0.0  | 110       | 54.5 |
| <b>Age group (in yrs)</b>         |                  |      |               |     |              |     |        |      |           |      |
| 70-79                             | 71               | 41.8 | 5             | 2.9 | 2            | 1.2 | 4      | 2.4  | 88        | 51.8 |
| 80-89                             | 84               | 44.2 | 8             | 4.2 | 0            | 0.0 | 2      | 1.1  | 96        | 50.5 |
| >90                               | 26               | 55.3 | 0             | 0.0 | 0            | 0.0 | 0      | 0.0  | 21        | 44.7 |
| <b>Annual Income (INR)</b>        |                  |      |               |     |              |     |        |      |           |      |
| <30000                            | 11               | 31.4 | 0             | 0.0 | 0            | 0.0 | 2      | 5.7  | 22        | 62.9 |
| 30000-60000                       | 142              | 44.9 | 11            | 3.5 | 2            | 0.6 | 4      | 1.3  | 157       | 49.7 |
| >61000                            | 28               | 50.0 | 2             | 3.6 | 0            | 0.0 | 0      | 0.0  | 26        | 46.4 |
| <b>Literacy rate</b>              |                  |      |               |     |              |     |        |      |           |      |
| Illiterate                        | 159              | 45.3 | 12            | 3.4 | 1            | 0.3 | 5      | 1.4  | 174       | 49.6 |
| Literate                          | 22               | 39.9 | 1             | 1.8 | 1            | 1.8 | 1      | 1.8  | 31        | 55.4 |
| <b>Occupation</b>                 |                  |      |               |     |              |     |        |      |           |      |
| Farmer                            | 114              | 45.8 | 7             | 2.8 | 1            | 0.4 | 3      | 1.2  | 124       | 49.8 |
| Agriculture Labour                | 60               | 42.0 | 6             | 4.2 | 1            | 0.7 | 2      | 1.4  | 74        | 51.7 |
| Wage Labour                       | 4                | 40.0 | 0             | 0.0 | 0            | 0.0 | 1      | 10.0 | 5         | 50.0 |
| Bidi Worker                       | 3                | 60.0 | 0             | 0.0 | 0            | 0.0 | 0      | 0.0  | 2         | 40.0 |

Table 2 shows that individuals reported at least one of the four chronic diseases. Among them more than half of male and female Gond tribe was suffered with multiple chronic diseases. Out of

them the large proportion of female Gond's (57.4%) were infected with these multiple chronic diseases (Hypertension, Heart attack, Asthma and Arthritis) as compare to Gond's male (53.7%). Out of them the percentage of Arthritis patients is higher among female (54.5%) as compare to male (46.3%) and rest of multiple chronic diseases excepts heart attacks found higher among male than females like Hypertension and Asthma. Further age wise difference also observed in between person who was affected with chronic disease person and non infected Gond individuals. The prevalence of hypertension found highest among elderly population aged 80+years as compare to individuals of 70-79 years. While the prevalence of rest chronic diseases highest in individuals of 70-79 years aged as compare to >80 years of aged Gond populations. Likely sex and age cohort, the prevalence of these chronic diseases the prevalence of Hypertension 3.5%, Asthma 1.3% and Arthritis 49.7% were the highest in the low-income group, whereas Arthritis was most prevalent in the middle-income group. It was also observed that among them the education play adverse role and the proportion of chronic diseases Gond population was highest among literate as compare to Illiterate elderly participants. It was found that the among literate Gond's the highest prevalence of Hypertension, Asthma and Arthritis 1.8%, 1.8% and 55.4% respectively. Similarly, Agriculture labourer occupation had the higher prevalence of Hypertension, Asthma and Arthritis (4.2%, 1.4% and 51.7%) respectively.

To determine the association between multiple chronic diseases and socio-demographical attributes among Gond tribe of the above cited study area logistic regression model used and the analysis findings represented in the Table-3. It is apparent from the table 3 that the literacy did not have a significant influence on the chronic disease, and it was revealed that elderly would be diagnosed with one or more than one chronic disease. Where, 70-79 age group (Wald  $\chi^2 = 4.570$ ,  $P < 0.05$ ) and low-income group level (Wald  $\chi^2 = 4.591$ ,  $P < 0.05$ ) of elderly were less likely than another income group level to be diagnosed with chronic diseases.

**Table 3: Binary Logistic Regression Models for presence of Chronic diseases among the Gond elderly tribal's by Age group, Income, literacy rate and Occupation.**

| Socio-demographic characteristics | B      | S.E.  | Wald $\chi^2$ | p value | Exp(B) |
|-----------------------------------|--------|-------|---------------|---------|--------|
| <b>Age Group (in yrs)</b>         |        |       |               |         |        |
| 70-79                             | 0.332  | 0.156 | 4.570         | 0.033   | 1.394  |
| 80-89                             | 0.233  | 0.146 | 2.536         | 0.111   | 1.262  |
| >90                               | -0.214 | 0.293 | 0.530         | 0.467   | 0.808  |
| <b>Annual Income (INR)</b>        |        |       |               |         |        |
| <30000                            | 0.780  | 0.364 | 4.591         | 0.032   | 2.182  |
| 30000-60000                       | 0.203  | 0.113 | 3.229         | 0.072   | 1.225  |
| >61000                            | 0.000  | 0.267 | 0.000         | 1.000   | 1.000  |
| <b>Literacy Rate</b>              |        |       |               |         |        |
| Illiterate                        | 0.189  | 0.107 | 3.093         | 0.079   | 1.208  |
| Literate                          | 0.435  | 0.274 | 2.531         | 0.112   | 1.545  |
| <b>Occupation</b>                 |        |       |               |         |        |
| Farmer                            | 0.169  | 0.127 | 1.767         | 0.184   | 1.184  |
| Agriculture Labour                | 0.324  | 0.169 | 3.667         | 0.055   | 1.383  |
| Wage Labour                       | 0.405  | 0.645 | 0.395         | 0.530   | 1.500  |
| Bidi Labour                       | -0.405 | 0.913 | 0.197         | 0.657   | 0.667  |

## DISCUSSION

The present study addressed how socio-demographic factors influenced the prevalence of chronic diseases among elderly people. Previous studies have also examined the primarily association between chronic diseases and health outcomes in developed nations (WHO, 2005; Adamsen et al., 2018; Shaw et al., 2013; WHO, 2013). Arthritis and Asthma were the most prevalent of chronic diseases and overall 55.5% of older participants exhibited at least four chronic diseases. It is observed that the prevalence of chronic diseases significantly ( $p < 0.05$ ) associated with the low-income group and occupation. These findings of present study also supported to previous studies done by Ganesh et al., 2008, Maikho & Goli, 2013; Tang & Jian 2013; Gupta et al., 2014; Adamsen et al., 2018; Zhao et al., 2018; Limbu et al., 2019). In this study, the Gond tribe population suffered with multiple chronic diseases at time of investigation and the rate of chronicity found higher among elder population. ~~Although,~~ the most common diseases among the

elderly population are arthritis and hypertension had also reported by Khanam et al. (2011) and Banjare and Pradhan (2014).- Various observed among the elder population of the Gond tribe.

Previously done researches also reveals that overall half (approximately 55.5%, or 226 people) of elderly participants were suffering from one or more than one chronic disease (AARP, 2008; Fried, 2017; Tinker, 2017), and the number is growing. Chronic diseases including, hypertension, arthritis, asthma, and heart attack can lead to hospitalization, long term disability, reduced quality of life, and death (Comlossy, 2013; CDC, 2009).

This study aims excepts to provide more comprehensive understanding of the conditions on which chronic diseases influence among elder population. Overall, findings indicate that chronic diseases such as diabetes and cancer were not observed among the Gond elderly population. The results exhibit that demographic characteristics independently predicted the higher prevalence of ageing and lower perceived health and morbidity risk.

#### **Conclusion:**

The present study concluded that there is less difference between male and female has been found in case of the prevalence of chronic disease. Health educational programme should strengthen among the people to increase awareness about chronic diseases and give more emphasize to reach proper medical facilities to unaided tribal population. This baseline evidence may be helpful for identifying the health priorities for people in Gond; this information could provide practical guidance for developing relevant health policies.

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