



Prevalence of Non-communicable Diseases among Elderly Women

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ABSTRACT

Introduction: NCDs are one of the major challenges for public health in the 21st century, not only in terms of human suffering but also the harm to the socio-economic development of the country. As the elderly population is likely to increase in the future, and there is a definite shift in the disease pattern i.e., from communicable to non-communicable, it is high time that the health care system gears itself to growing health needs of the elderly in an optimal and comprehensive manner. To provide aid for effective implementation of NCD program by measuring the prevalence of NCD among elderly women with an objective to assess the prevalence of Non-communicable diseases (cardiovascular disease, stroke, cancer, and diabetes) among elderly women has been conducted.

Material and Methods: Community-based cross-sectional study was carried out in the RHTC, Seloo All women (n=260) aged 60 years and above of six Anganwadi areas were interviewed by the house-to-house survey. Statistical analysis was done by SPSS.17.

Results: 33.46% of elderly women belonged to the age group of 60-64 years, 78.85% of the elderly were illiterate. Among all elderly women, 30.38% had hypertension, 7.30% had diabetes, and Ischemic heart disease 1.15% and cancer 0.38% were found in study participants.

Conclusion: Our study shows that diabetes and hypertension are more common among elderly women. The occupation had a significant association with diabetes.

Keywords: Non-communicable diseases, Elderly women, Diabetes, Hypertension

INTRODUCTION

Non-communicable diseases are one of the major challenges for public health in the 21st century, they not only cause harm in terms of human suffering but also inflict on the socio-economic development of the country. Each year non-communicable diseases (NCDs) kill about 41 million people (71% of global deaths) worldwide, which includes 14 millions of people who die between the age of 30 and 70.¹

According to World Health Organization (WHO) projections, if timely interventions are not done for the prevention and control of NCDs, the total annual

number of deaths from NCDs will increase to 55 million by 2030.¹

Nearly 5.8 million people (WHO report, 2015) die from NCDs (heart and lung diseases, stroke, cancer, and diabetes) every year in India.¹

Still, India is poised to become home to the second largest number of older persons in the world. The projection studies indicate that the number of 60 plus in India will increase to 198 million in 2030.²

In the future as the elderly population is likely to increase, and there is a definite shift in the disease pattern i.e., from communicable to non-communicable,

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it is high time that the health care system gears itself to growing health needs of the elderly in an optimal and comprehensive manner. There is a need to emphasize the fact that disease and disability are not part of old age and help must be sought to address the health problems.² Along with income insecurity, illiteracy, age-related morbidity, physical and economic dependency, experience domestic violence, discrimination, and their second-class status, the health of older women is often neglected or ignored. Women are also more likely than men to live to very old age when disabilities and multiple health problems are more common. Elderly women, especially in rural areas, are unaware of their NCD morbidities and their long-term effect as well as they are engaged in household chores and do not give attention to their health.

Therefore, this study will provide aid in the effective implementation of the NCD program by measuring the prevalence of Non-communicable diseases among elderly women.

OBJECTIVE

The study was conducted to assess the prevalence of non-communicable diseases (cardiovascular disease, stroke, cancer, and diabetes) among elderly women

MATERIAL & METHODS

Study area and design: This community-based cross-sectional study was carried out in the field practice area of Rural Health and Training Centre (RHTC), Seloo which comes under the Department of Community Medicine of Private Medical College, Wardha in 2015. All women aged 60 years and above in the study area formed the study population.

Sampling method: Wardha district was the selected study area which consists of 8 blocks. Total 9 Anganwadi were registered in the Gram Panchayat record of Seloo, which were approached for the purpose of acquiring the family baseline data so as to get information about the elderly women residing around those Anganwadi.

Among available nine Anganwadi, six Anganwadi were selected which comes in RHTC Seloo which is our field practice area. Out of these six Anganwadi areas, we selected all geriatric women by the house-to-house survey. Altogether 298 elderly women were enlisted to be surveyed but only 260 elderly could be taken into study. Women (38) who were temporary or permanent migrated, dead, unavailable for continuous three visits, or unwilling to participate and thus were excluded from the study.

Inclusion Criteria: All women were aged over 60 years and above who been residing in the study setting for at least 1 year and willing to give informed written consent were included in the study.

Exclusion Criteria: A terminally ill or critically ill patient or patient with severe cognitive impairment were excluded.

Data collection: Data was collected by the investigator using the interview method through household visits using a pre-structured & pre-tested questionnaire.

Written informed consent was obtained from the respondents for participation in the study. Elderly women of 60 years and above were interviewed to collect information regarding socio-demographic characteristics and their health problems. This was followed by on-the-spot clinical examination and blood investigation in order to find Noncommunicable diseases among them.

Also, we have considered known cases of NCD who are already diagnosed and on treatment.

Statistical Analysis: Descriptive statistics were used to display the Sociodemographic profile of the participant. Data were entered in Microsoft Office Excel and Statistical analysis was done by using descriptive and inferential statics using chi-square test and software used in the analysis was Statistical Package for Social Science (SPSS) 17.0.

OPERATIONAL DEFINITIONS USED IN THE STUDY

Morbidity Assessment: Already diagnosed diseases like diabetes, ischemic heart diseases, hypertension, and cancer were noted. After interviewing, a clinical examination of the participant was done.

Systemic examination: Clinical examination of the cardiovascular system was done according to standard methods.³

Diagnosis of diseases was made on the basis of clinical presentation, specific investigations, and laboratory findings consistent with the specific disease, treatment documents by a physician. The diagnostic criteria used for defining some health conditions frequently encountered among elderly persons are as follows:

Blood pressure measurement: Blood pressure was measured indirectly using a mercury sphygmomanometer and the auscultator method. Before the BP measurement, the elderly were made to seat (3 to 5 minutes) quietly in their home preferably in the chair that supports the back comfortably. The arm muscles were relaxed and the forearm was supported with the cubital Fossa at heart level. A cuff was applied evenly to the exposed upper arm. The cuff was rapidly inflated until the manometer reading will about 30 mm above the level at which the pulse disappears, and then slowly deflated at approximately 2mm Hg per second. During this time the Korotkoff sounds were monitored using a stethoscope placed over the brachial artery. Systolic B.P. - The pressure at which the Korotkoff sounds first heard Diastolic B.P. - The pressure at which the Korotkoff sounds first disappear Systolic B.P. & diastolic B.P. were measured thrice over a period of 10 minutes and the average reading was recorded. The B.P. was measured in the right arm using an appro-

ropriate size cuff (covering at least 40% of arm circumference).³ Hypertension was classified using JNC VII criteria as shown in the table.⁴

Classification of blood pressure (JNC VII)⁴

Systolic BP/ Diastolic BP	JNC VII Category
<120/80	Normal
120-139/80-89	Pre-hypertension
≥ 140/90	Hypertension
140-159/90-99	Stage 1 hypertension
≥160/100	Stage 2 hypertension

JNC VII - The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure

Diabetes mellitus^{5,6} All study subjects were screened by estimating random blood sugar (RBS) values from capillary blood using a portable glucometer. Any elderly who had a reading greater than 110 mg/dl were assessed after an overnight fast on another appointed day for fasting (8 hours of overnight fast) and postprandial (2 hours) blood test.

Results were interpreted as follows^{6,7}

Diabetes: When fasting plasma glucose ≥7.0mmol/l (126mg/dl) or 2-hour plasma glucose ≥11.1mmol/l (200mg/dl) or both.

Impaired Glucose Tolerance (IGT): When fasting plasma glucose <7.0mmol/l (126mg/dl) and 2-h plasma glucose* ≥7.8 and <11.1mmol/l (140mg/dl and 200mg/dl).

*Venous plasma glucose 2-h after ingestion of 75g oral glucose load

*If 2-h plasma glucose is not measured, status is uncertain as diabetes or IGT cannot be excluded

The economic independence of elderly women was assessed.^{19, 20} The elderly were classified as independent and dependent. An elderly was considered economically independent if she had not required taking financial help from others in order to live a normal life.^{18,20,21}

RESULTS

This community-based cross-sectional study was carried out in the rural area of Wardha with 260 elderly women participants.

According to age, out of 260 elderly women, 87 (33.46%) of elderly women belonged to the age group of 60-64 years, followed by 73 (28.08%) in the age group of 65-69, 60 (23.08%) belonged to the age group of 70-74 years, 20 (7.69%) comes in the age group of 75-79 years, and 20 (7.69%) belonged to 80 years and above. The study also shows the distribution of the study population according to religion. 224 (86.15%) belonged to Hindu, followed by 27 (10.39%) Buddhist and 9 (3.46%) Muslims.

In our study 68.1% elderly belonged to other backward castes (OBC); followed by schedule tribes (14.61%), scheduled caste (11.54%), and other (5.75%).

In this study 57.7% of elderly women were married, whereas 40.77% of elderly women were widow, 1.15% was separated and 0.38% was unmarried. The above study also shows that 41.15% of elderly women were living in three-generation families. 36.93% lived in nuclear families whereas 20% were living alone. Only 1.92% of elderly women were living in joint or extended families.

Table 1 shows 78.85% of the elderly were illiterate, 11.2% were having Primary education, 6.5% were middle school, 1.92% elderly were having education up to high school. Only 1.53% elderly were above intermediate. The majority (53.85%) of the elderly were unemployed in this study. Others were indulged in labour or unskilled worker (37.3%), semi-skilled (1.54%) and shop owners and farmers were 7.31%. The majority of elderly women belonged to class III (36.15%) and class IV (31.15%) followed by class II (13.47%) and class V (12.31%) and then 6.92% class I according to modified BG Prasad classification.

Among the 260 elderly women 30.38% had hypertension, 7.30% had diabetes, 1.15% had Ischemic Heart Disease, and 0.38% had cancer.

Table 1: Socio-Economic Profile of elderly women (N = 260)

Characteristic	Women (%)
Education-wise profile	
Illiterate	205 (78.85)
Primary Education	29 (11.2)
Middle School	17 (6.5)
High School	5 (1.92)
Intermediate	4 (1.53)
Type of Occupation wise profile	
Unemployed	140 (53.85)
Unskilled worker	97 (37.3)
Semiskilled worker	4 (1.54)
Clerical, shop owner, farmer	19 (7.31)
Socio-economic status wise profile	
Class I	18 (6.92)
Class II	35 (13.47)
Class III	94 (36.15)
Class IV	81 (31.15)
Class V	32 (12.31)

Table 2: Intermediate hyperglycemia and diabetes in elderly women (n=181)

Blood glucose status	Elderly women
Normal	127 (70.17%)
Diabetic	19 (10.50%)
Impaired Glucose Tolerance (IGT)	35 (19.33%)

*Apart from this, 79 women were also found normal (≤110 mg/dl) in random blood sugar tests conducted.

Table 3: Relation between Diabetes and Hypertension

Diabetes	Hypertension				Total	χ^2/df	p-value
	Normal	Prehypertension	Stage 1HT	Stage 2HT			
No	115 (47.72)	73 (30.29)	43 (17.84)	10 (4.15)	241 (100)	0.923/1	0.337
Yes	6 (31.58)	7 (36.85)	5 (26.31)	1 (5.26)	19 (100)		
Total	121 (46.54)	80 (30.77)	48 (18.46)	11 (4.23)	260 (100)		

Table 4: Correlation of variables with morbidity among elderly women

Variables	n	Hypertension	Diabetes	Ischemic Heart Disease	Cancer
Total	260	79 (30.38)	19 (7.30)	3 (1.15)	1 (0.38)
Age Group (Years)					
60-69	160	41(25.62)	10 (6.25)	2 (1.25)	0
70-79	80	29(36.25)	7 (8.75)	1 (1.25)	0
≥80	20	9 (45)	2 (10)	0	1 (5)
P-value		0.081, ns	0.407, ns	1.00, ns*	0.38, ns*
Type of family					
Singular	52	13 (25)	4 (7.69)	0	0
Nuclear	96	28 (29.16)	2 (2.08)	0	0
Three Generation/	112	38 (33.92)	13 (11.60)	3 (2.67)	1 (0.89)
P-value		0.486, ns	0.020, s	0.0787, ns*	0.4308, ns*
Type of occupation					
Unemployed	140	53 (37.85)	15 (10.71)	3 (2.14)	1 (0.71)
Employed	120	26 (21.66)	4 (3.33)	0	0
P-value		0.005, s	0.0299, s	0.2516, ns*	1.00, ns*
Economic Dependence					
Dependent	100	37 (37)	9 (9)	2 (2)	1 (1)
Independent	160	42 (26.25)	10 (6.25)	1 (0.625)	0
P-value		0.067, ns	0.407, ns	0.5607, ns*	0.3846, ns*

Note-multiple response, (Figures in parentheses denote percentages); * Fisher's exact test; s=Significant; ns=not significant

Table 2 shows Intermediate hyperglycemia and diabetes in elderly women. Out of 181 elderly women, 70.17% were having normal blood glucose levels. 10.50% of elderly were found to have diabetes (including 14 previously diagnosed and newly diagnosed 5 diabetics), whereas 19.33% of elderly were having impaired glucose tolerance.

Table 3 shows the relation between diabetes and hypertension. Among diabetic (19), 26.31% were affected by stage1 hypertension and 5.26% stage 2 hypertension. 36.85% come under the prehypertension stage. No significant association was observed, but along with affected 31.58% hypertensive, 36.85% prehypertensive also need for lifestyle modification.

This study also shows (**Table 4**) an increasing pattern of disease with age, in diabetics and cancer cases. No significant association was found in this study between literacy status and NCD morbidity among elderly women although illiterate elderly women had more morbidity than literate. Except for diabetes (9.09%) and IHD (3.63%) were more common in literate elderly women. The above difference might be due to their lifestyle. Non-communicable morbidity was more common in the upper class like hypertension (35.84%), diabetes (16.98%), IHD (5.66%), cancer (1.88%) in the current study.

Hypertension (33.92%), diabetes (11.60%), IHD (2.67%), cancer (0.89%), were more in joint families. Diabetes had a significant association with the elderly belong to the type of family with p-value <0.05.

All the morbidities were more common in unemployed than employed. Even hypertension (37.85%) and diabetes (10.71%) were much higher in unemployed elderly women than employed. It was maybe due to the sedentary lifestyle in unemployed elderly women. Hypertension, Diabetes were showing a significant association with the type of occupation with a p-value <0.05.

No significant association of morbidities with economic dependence, although hypertension and diabetes were slightly higher in Economic Independent.

DISCUSSION

Socio-Demographic and Economic Profile

In the current study, 33.46% of elderly women belong to the age group of 60-64 years. 7.69% were 80 years and above. The present study showed decreasing proportion of elderly women with an increase in age. This was in accordance with the figures of census 2011⁸ which showed 35.92% elderly in the age group of 60-64 years; 25.59% elderly were in the age group of 65-69 years; 18.10% elderly were in the age group of 70-74 years; 8.98% elderly were in the age group of 75-79 years and 11.37% elderly were in the age group of 80 years and above. Similar findings were also shown by Lena et al (2009)⁹, Boralingaiiah et al (2012)¹⁰, S. K. Gupta et al (2012)¹¹

The study shows as per the marital status of elderly women, more than half were married (57.7%), fol-

lowed by the widow and very minimal were separated or unmarried. This data correlates with data of census 2011⁸, 49.57% of elderly women were married; 47.79% widowed; 0.44% separated, and 0.14% divorced. Similar results were in the study of Boralingaiah et al (2012)¹⁰, Singh R et al (2013)¹².

In the present study, 43.07% of elderly women were living in three-generation or joint families. 36.93% lived in nuclear families whereas 20% were living alone. Similarly, data of NSSO Survey on Condition of Aged (2004) shows 40% of elderly females live with their spouse (nuclear type); about half of aged women live with their children (joint type) and 7-8% live alone. Similarly, Boralingaiah, et al (2012)¹⁰, Sumanth S. Hiremath (2012)¹³ found 46.7%, 43.2% Nuclear family and 53.29%, 56.8% in joint family respectively.

This study shows that 78.85% of elderly women were illiterate and 21.15% literate. The disparity in literacy status may be attributed to the area being rural. Similar findings were found in the study of Boralingaiah et al (2012)¹⁰, S. K. Gupta et al (2012)¹¹, Srivastava AK et al (2013)¹⁴ illiteracy rate of 80%, 64.6%, 70.1% respectively. The present study shows 53.85% of the elderly were unemployed and 46.15% employed. (Table no-1). Both population census 2001 and NSSO survey on the employment-unemployment survey (2007-08) revealed that nearly 40% of people aged 60 years and above (60% of men and 19% of women) were working. In rural 66% of elderly men and 23% of elderly women still, participate in economic activity.¹⁸ In this study among singular family the maximum elderly (59.62%) were unskilled workers or laborers. Whereas 85.05% were unemployed belong to three-generation families. This indicates, in a joint family there was no need for elderly women to work for livelihood.

Magnitude of Morbidity

The current study shows 30.38% of elderly women had hypertension and 32.86% prehypertension. Among these hypertensives, nearly half (40.50%) were not aware of their hypertensive status. This shows that nearly half of the disease burden of hypertension is undiagnosed and is at risk of its complications. Similar findings were reported in Shrivastava RK, GOI & WHO multi-centric study (2007) in India were among total hypertensive (31.8%), nearly half (15.7% of total study subjects) were aware of their hypertensive status.¹⁵ Study in rural Wardha by Deshmukh et al (2005)¹⁶ reported 38.7% of elderly had hypertension. The percentages of elderly suffering from hypertension were nearly consistent with other studies as reported above. In contrast to the present study, some studies have a higher result. Lena et al (2009)⁹ reported 60.3% hypertension in elderly females. S.K. Gupta et al (2012)¹¹ observed 45.3% hypertension in elderly females. The differences in the prevalence of hypertension may be attributed to the different setting areas

and the change in the lifestyle of participants. Hypertension was more in illiterate (31.21%) than literate (27.27%). Women's education also affects attitudes towards health. The more highly educated are likely to better understand the importance of proper health care. Elderly women among joint family (33.92%) and upper class (35.84%) affected more than singular (25%) and lower class (30.97%). A significant correlation was found with unemployed elderly (37.85%) than employed (21.66%).

Among total participants, 7.30% were diabetes and 13.46% impaired glucose tolerance in elderly women (Table no-2). A study by GOI & WHO, a multi-centric study in India reported the prevalence of diabetes as 13.3% and 9.8% in urban and rural areas respectively.¹⁵ These findings were in near accordance with the current study. The percentages of elderly women who had diabetes were nearly consistent with studies of Lena et al (2009)⁹ S.K. Gupta et al (2012)¹¹ which report 9% and 11% respectively. A community-based (geriatric population in the urban area of Chandigarh) study by Sharma et al (2005)¹⁷ showed a prevalence of diabetes as high as 25.5%. These variations may be attributed to different settings and different methods for diagnosis. The present study revealed that aging increases diabetes prevalence. A joint family (11.60%) elderly woman was more prone to diabetes than nuclear (2.08%) or single (7.69%) elderly women. A participant belonging to classes I and II (16.98%) were more diabetic than class IV and V (6.19%). The above finding indicates that a sedentary lifestyle and dietary pattern may lead to diabetes.

CONCLUSION

The present study depicts a current picture of a society where there is a breakdown of family structure and the framework of family support is diminishing. Elderly females are most vulnerable to a lack of attention from family members due to the lower status of females and no representation in the property. Our study shows that diabetes and hypertension are more common among elderly women. Nearly half (40.50%) were not aware of their hypertensive status. Among total participants, 7.30% were diabetes and 13.46% impaired glucose tolerance in elderly women. The occupation had a significant association with diabetes.

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