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*Original article*

# A Study of Stress In A Geriatric Urban Slum Community

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**ABSTRACT**

**Background:** Geriatric stress is an important public health problem. This study aimed to establish the nature, prevalence and factors associated with geriatric stress in an urban slum community of Nagpur. **Materials and Methods:** A community based cross sectional study was carried out in the field practice area of Urban health training center (UHTC), department of community medicine, NKP Salve Institute of Medical Sciences and Research Center, Nagpur. A total of 400 subjects, aged ≥ 60 years were screened for stress. Diagnosis of stress was based on the Holmes and Rahe stress inventory scale. The data analysis was done by using Epi Info software. **Results:** Authors observed that majority of the study subjects belongs to stressed group (60.25%). Males and Females were near equally stressed (M 61% & F 60% respectively). Association of stress with marital status & hypertension was highly significant ($p<0.001$). **Conclusions:** Geriatric stress is highly prevalent in this urban slum community. Marital status, type of family & hypertension etc were some of the factors that had an association with chances of stress.

**KEYWORDS:** Geriatric stress, Holmes and Rahe stress inventory scale, Urban slum community

## INTRODUCTION

Stress is a feeling that is created when we react to particular events. It is the body's, way of rising to a challenge and preparing to meet a tough situation with focus, strength, stamina, and heightened alertness. It is the wear & tears on the body caused by constant adjustment to an individual's changing environment. Anything that cause change in our life causes stress. There are many changes going on in lives of the elderly.

Stress can be short term (Acute) or long term (chronic). Acute stress is the reaction to an immediate theat. This is commonly known as the "Fight or flight" response. Under stress, a person's heart rate & breathing increase. His or her muscle becomes tense. A person's stress level increases when multiple stressors are present. A person's body needs relief from stress to reestablish balance. As age advances, the ability to achieve a relaxation response after a stressful event becomes more difficult [1]. Chronic stress has been shown to have a number of negative health impacts, from insomnia to weight gain to an increased risk for heart disease -- not to mention impairing the immune and digestive systems as well as the central nervous system [2].

The elderly face stress from the various situations, which are different from those that are faced by younger people. The various situations that can cause stress in older people can be related to ie changes of lifestyle and financial status after retirement, caring for grandchildren, deterioration of physical abilities and chronic illness, caring for a sick spouse, losing a spouse, death of other close relatives & friends, worries about finances, feeling alone and dejected [3]. Stress can be measured by Holmes and Rahe stress inventory scale. Very few studies on stress among elderly population have been carried out in India. With above background this study was conducted with following aims and objectives. **Aims and Objectives*:*** 1)To study the prevalence of stress among geriatric population. 2) To study the associated risk factors for stress among geriatric population.

## MATERIALS AND METHODS

The cross sectional study was conducted from Nov 2009 to March2011 in urban slum areas of UHTC, covering a population of 20342, which is an adopted area under the administrative control of department of community medicine, NKP Salve Institute of medical sciences & research centre, Nagpur. A minimum sample size of 400 elderly people (≥60 yrs) were selected for study by house to house visits. The sample size was worked out assuming 'p' of 50% and relative precision of 10% at 95% confidence interval. The first house was selected by lottery method and

then every 3rd house was selected by systematic random sampling method. Information about study was given to all study subjects, rapport was developed and then subjects were called at UHTC for detailed history and examination. Holmes and Rahe stress inventory scale was used as the screening instrument, which as a scale for assessing the severity of stress, was developed by Holmes, T. & Rahe, R. in 1967.[4].

The methodology comprised of interview and clinical examination. The information was collected on a pre-designed, pre-tested format, covering all the relevant aspects including the demographic details and information regarding presence of any health problems like diabetes mellitus, hypertension, cardiac ailments, obesity, substance abuse and physical activity. Subjects were clinically evaluated based on the steps given by the "***Handbook on Health Care of the Elderly: A Manual for Physician in Primary and Secondary Health Care Facilities"*** i.e. by their reported illness (Existing diagnosis), medication held by the subjects, history and clinical examination. The physical equipments used were Stethoscopes, B.P. Apparatus, and glucometer has been used to assess the morbidity status of the elderly. The data was compiled and transformed into proportions for comparison and analysis was done using chi$^2$ test using the statistical software Epi Info software version 3.4.1.

***Inclusion criteria****:* Age 60 years and above. ***Exclusion Criteria****:* Age less than 60 years, Chronic and seriously ill person.

***Sample size estimation:*** Based on the prevalence (50%), a sample of 400 was calculated with allowable error of 10% by using this formula. N = (1.96 ×1.96) pq /L×L.

Where N=Sample size, P is the prevalence of hypertension among geriatric subjects, q is (100-p) and L is allowable error. So that, N=1.96×1.96×50×50/5×5= nearly 400

Following **Operational definitions** were put to use in the present study.

***Stress****:* Stress problems were elicited by large discussion on some of the personal problems related with psychosocial trouble. Holmes and Rahe stress inventory scale was used to find out their severity of stress [4]**.**

***Hypertension:*** Blood pressure was recorded by using standardized mercury sphygmomanometer in right upper arm in sitting position and if high BP detected in 1st instance, two more readings were taken on different occasions to confirm hypertension. A person was labeled as hypertensive if the systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg [5]. Already diagnosed cases taking anti-hypertensive were also considered for prevalence study. Hypertension was categorized according to the report of JNC-VII for detection and evaluation of blood pressure [6].

***Diabetics****:* Diabetes was diagnosed based on drug treatment for diabetes (insulin or oral hypoglycemic agents) and/or criteria laid by the ADA in 2004 i.e. fasting plasma glucose (FPG) 126 mg/dl or 2 hr post-glucose value 200 mg/dl. Impaired glucose tolerance (IGT) was diagnosed if FPG was <126 mg/dl and 2 hr post- glucose value (140 mg/dl and <200 mg/dl) [7]

***B.M.I****.:* B.M.I. is defined as weight in Kg. divided by square of height in meters & measured in Kg/m$^2$. The International Classification of adult underweight, overweight and obesity according to BMI was used for study purposes [8].

***Current alcoholics****:* Who consumed 30 ml or more of any type of alcohol per day for last six months preceding the survey

***Current smoker****:* Someone who at the time of survey, smoked in any form either daily or occasionally for the last six months

***Current smokeless tobacco user****:* Reported consumption of smokeless tobacco in any form at the time of survey either daily or occasionally for the last six months.

***Dependency****:* A person is considered economically independent if he had a source of income that he considered sufficient to maintain himself. If there was no personal income then the person is classified as economically dependent. [9].

## RESULTS

Of the 400 study subjects who participated in the study, 235 (58.75%) were females and 165 (41.25%) were males and stress was found among 241 (60.25%) of the participants.

Of the 400, overall prevalence of stress was 241 (60.25%), of which 114 (28.5%) were mildly stress, 120 (30.0%) were moderate stress and 7 (1.75%) were found to be suffering from severe stress. Males and females were near equally stressed.(61.21% & 59.57% respectively). [Table 1].

***Table 1: Distribution of study subjects according to severity of stress (n=400)***

| Stress scores | Grades of stress | Males (%) | Females (%) | Total 400 (%) |
|---|---|---|---|---|
| 0-149 | Normal | 64(38.79) | 95(40.43) | 159 (39.75) |
| 150-199 | Mild | 44(26.67) | 70(29.79) | 114 (28.5) |
| 200-299 | Moderate | 55(33.33) | 65(27.66) | 120 (30.00) |
| ≥300 | Severe | 2(1.21) | 5(2.13) | 7 (1.75) |
| Total | | 165(41.25) | 235(58.75) | 400(100.00) |

($X^2$=0.11, p=0.741, not significant).

This study revealed that stress was more in the geriatric subjects ageing ≥70 yrs (62.32%), Christian +Muslim 4(66.67), Widowed/ unmarried/ divorced / separated 54(78.26), Literate 156(65.55), Working 174(62.37), Nuclear family 150(70.09), Economically dependent 178(62.02) and Upper + Upper middle class SES 70(67.31). The association of stress with marital status, type of family and education was statistically significant (p<o.o5). [Table 2].

***Table 2: Role of Socio-demographic Factors leading to stress among geriatric subjects (n=400)***

| Characteristics | | Non-stress 159 | Stress 241 | $X^2$ | P value |
|---|---|---|---|---|---|
| Age | 60-69 years 262(%) | 107(40.84) | 155(59.16) | 0.38 | 0.539 |
| | ≥ 70 years 138(%) | 52(37.68)) | 86(62.32) | | |
| Sex | Males 165(%) | 64(38.79) | 101(61.21) | 0.11 | 0.741 |
| | Females 235(%) | 95(40.43) | 140(59.57) | | |
| Religion | Hindu 274(%) | 114(41.61) | 160(58.39) | | |
| | Buddhist 120(%) | 43(35.83) | 77(64.17) | 1.27 | 0.531 |
| | Christian +Muslim 6(%) | 2(33.33) | 4(66.67) | | |
| Marital status | Widowed/ unmarried/ divorced / separated 69 (%) | 15(21.74) | 54(78.26) | 11.29 | 0.00078 |
| | Married 331(%) | 144(43.50) | 187(56.50) | | |
| Education | Illiterate 162(%) | 77(47.53) | 85(52.47) | 6.88 | 0.008 |
| | Literate 238(%) | 82(34.45) | 156(65.55) | | |
| Occupation | Non-working 121(%) | 54(44.63) | 67(55.37) | 1.72 | 0.189 |
| | Working 279(%) | 105(37.63) | 174(62.37) | | |
| Type of family | Nuclear 214(%) | 64(29.91) | 150(70.09) | | |
| | Joint 132(%) | 70(53.03) | 62(46.97) | 19.34 | 0.00006 |
| | 3 Generation 54(%) | 25(46.30) | 29(53.70) | | |
| Economic dependency | Yes 287(%) | 109(37.98) | 178(62.02) | 1.33 | 0.248 |
| | No 113(%) | 50(44.25) | 63(55.75) | | |
| Socio economic status | Upper + Upper middle 104(%) | 34(32.69) | 70(67.31) | | |
| | Middle 131(%) | 51(38.93) | 80(61.07) | 6.97 | 0.137 |
| | Lower middle + Lower 167(%) | 74(44.31) | 93(55.69) | | |

Majority (71.75%) of the study subjects were economically dependent on his/ her family members. Among them, females (81.28%) were more dependent than males (58.18%). Here association of gender with economic dependency was found highly significant. (p<o.oo1). [Table 3].

***Table 3: Distribution of study subjects according to Economic dependency (n=400)***

| Economic status | Male 165 (%) | Female 235 (%) | Total 400 (%) | $X^2$ | P value |
|---|---|---|---|---|---|
| Economically Dependent | 96(58.18) | 191(81.28) | 287 (71.25) | 25.51 | 0.0000004 |
| Economically Independent | 69(41.82) | 44(18.72) | 113 (28.25) | | |

*Table 4: Role of Risk Factors leading to stress among geriatric subjects (n=400)*

| Risk Factors | | Non stress (n=159) | Stress (n=241) | Chi-square | P-value |
|---|---|---|---|---|---|
| Hypertension | Present | 40(25.16) | 99(41.08) | 10.71 | 0.0010 |
| | Absent | 119(74.84) | 142(58.92) | | |
| Diabetes | Present | 25(15.72) | 46(19.09) | 0.74 | 0.388 |
| | Absent | 134(84.28) | 195(80.91) | | |
| Obesity (BMI≥25) | Present | 27(16.98) | 56(23.24) | 2.28 | 0.131 |
| | Absent | 132(83.02) | 185(76.76) | | |
| Coronary heart | Present | 6(3.77) | 05(2.07) | 1.03 | 0.309 |
| diseases | Absent | 153(96.23) | 236(97.93) | | |
| Substance abuse | Yes | 59(37.11) | 110 (45.64) | 2.86 | 0.090 |
| | No | 100(62.89) | 131(54.36) | | |
| Physical activity | Active | 78(49.06) | 118 (48.96) | 0.00 | 0.98 |
| | Inactive | 81(50.94) | 123(51.04) | | |

Hypertension was significantly more in stressed group (41.08%) in comparison to the non-stressed group (25.16%). Diabetes and obesity were relatively more in stressed group (19.09% & 23.24% respectively). However the difference was not found statistically significant. Similarly the substance abuse was found more in stressed group than in non stressed group.(45.64% & 37.11% respectively) .There was no major difference in coronary heart diseases and physical activity in stressed and non stressed group. [Table 4].

## DISCUSSION

Stress in geriatric is often overlooked as a clinical diagnosis, since it is assumed to be a normal response to aging, physical losses or other life events. It causes excess disability and has an adverse interaction with physical health [10]. Our study revealed a high rate of stress in geriatric people which could be attributed to factors like widowed/separated/divorce/unmarried, nuclear family and hypertension.

Although, the rate of stress was found to be higher in males 101(61.21%) when compared to females 140(59.57%) but this difference was not statistically significant. Contrary to our result, the prevalence of stress has been found to be higher in elderly women in other studies done by Jain RK [11], Rajkumar AP[12] and by Poongothai S[13].

The present study highlights the importance of marital status as an important socio-demographic characteristic leading to stress. The finding that the elderly who had lost their spouse 54 (78.26%) were suffering from a higher rate of stress could be explained by the fact that late life emotional support by the partner is of importance to their psychological health. Death of a spouse renders them vulnerable to mental stress. Circumstances which lead to divorce or separation, especially if it occurs at a late stage, can lead to adjustment problems, which may manifest as depressive symptoms. Such factors may inevitably lead to psychological stress and depression. A study done by Kamble SV [14] also concluded that widowhood, marital disruption and single status were associated with a higher prevalence of stress in both men and women.

The findings of our study indicate that stress was higher among geriatric subjects belonging to upper SES 70(67.31), which is contrary to other studies done by Jain RK [11] and Rajkumar AP [12].

When the role of risk factors leading to stress was assessed, it was found that hypertension was found to be highly significantly associated to stress ($p<0.001$). This finding favors that stress itself might be a risk factor, or it could be that high levels of stress make other risk factors (such as high cholesterol or high blood pressure) worse. For example, if you are under stress, your blood pressure goes up, you may overeat, you may exercise less, and you may be more likely to smoke.

In the present study the prevalence of diabetes mellitus and Coronary heart diseases was 17.75% & 2.75% respectively. Result shows that both were not significantly associated with stress.

Stress 56(23.24%) among study subjects of BMI more than or equal 25 was found higher while majority of non stressed subjects 132(83.02%) belong to BMI less than 25, and it was found statistically non significant with stress.($X^2=2.28$, $p=0.131$)

We did not find any relationship of substance abuse (smoking, alcohol, tobacco etc) with stress. Possibly majority of our respondents did not use substance abuse. When the role of physical activity was assessed, it was found that 78 (49.06%) elderly who were involved in physical activity were not under stress compared to 123 (51.04%) physically inactive suffering from stress ($X^2=0.00$, $p=0.98$, not significant).

The transition in social and cultural values may have a deleterious effect on the physical and mental health of the

geriatrics and stress is one such problem which is a major cause of concern and may represent a serious public health problem in the near future. Stress in geriatric is evitable and can be prevented by addressing the risk factors leading to stress was concluded by study done by Korte J [15] Hence effective interventions to prevent stress and promote mental health of the elderly is the need of the hour.

## CONCLUSION

A high prevalence (60.25%) of stress was found among geriatric community using the Holmes and Rahe stress inventory scale. It also highlights that with the epidemiological transition resulting in an increase in the number of elderly people in the total population, geriatric stress may emerge as a public health problem which needs to be restricted by large scale studies and there is a need for the development of effective preventive strategies to halt this silent epidemic.

## RECOMMENDATIONS

A feeling of neglect by family and society and the perception of futility of self-existence perpetuate a negative attitude towards life among the elderly. This, in turn, hastens physical, social and psychological stress leading to deterioration in quality of life. Community must be made aware that old people are their assets. Rather, it should assist the aged to fight the triple evils of poverty, loneliness and ill health.

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