

# Sociodemographic variations in health-related quality of life (HRQOL) among elderly individuals in an urban locality in India

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## ABSTRACT

**Background:** Elderly population is growing rapidly in India. To direct public health actions to improve quality of life among elderly, it is important to understand the sociodemographic factors associated with quality of life. The aim of study was to assess health-related quality of life (HRQOL) among urban elderly in a setting of Assam, India, and to examine how HRQOL varied across different sociodemographic groups among the elderly populations. **Materials and Methods:** A cross-sectional study was carried among elderly aged  $\geq 60$  involving 300 participants. Eight domains of HRQOL of participants were measured using RAND SF-36. Analysis of variance test was used to examine sociodemographic differences in HRQOL. **Results:** The BP domain had highest ( $71.78 \pm 22.25$ ) and GH had lowest mean HRQOL score ( $48 \pm 16.93$ ). Males had significantly higher HRQOL score than females only in BP domain. Age gradients were observed with respect to HRQOL scores in five domains, with youngest age group having the best and oldest age group having the poorest HRQOL. Financially dependent subjects had lower HRQOL in five domains than those who were financially independent. Significant associations between education and HRQOL were found only in physical components of HRQOL, with lowest educated group being the most disadvantaged in terms of HRQOL. Marital status was found to be significantly associated with lower HRQOL scores. **Conclusion:** The study highlights sociodemographic inequalities in HRQOL among urban elderly in an Indian setting. The results may help reducing sociodemographic health inequalities among elderly in this region initiating public health actions paying more attention toward more vulnerable sections of populations.

**Keywords:** Health-related quality of life, SF-36, sociodemographic

## Introduction

It is a well-known fact that elderly population is increasing rapidly in India. Elderly people constituted 8.6% of total population in India according to 2011 census, which is likely to grow further to about 13% in 2020 and then to about 20% in 2050.<sup>[1,2]</sup> With the rise in elderly population, it is becoming a public health priority in India to ensure well-being to this rapidly increasing

section of population. Aging is a natural process; and quality of life at old age tends to deteriorate as older people are known to be more susceptible to multiple comorbidities, physical and cognitive decline.

Health-related quality of life (HRQOL) is a multidimensional concept of health. HRQOL refers how health is impacted by an individual's ability to function and his or her perceived well-being in physical, mental, and social domains of life.<sup>[3]</sup> So, HRQOL is an overall indicator of health, which reflects the state of physical, mental, and social well-being of a person.

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Elderly in India is sociodemographically diverse population. Sociodemographic health inequities have been well documented among elderly individuals in India in various studies.<sup>[4-7]</sup> But, sociodemographic health inequalities have been highlighted in most of these studies among elderly in terms of inequalities in diseases,<sup>[4-7]</sup> whereas there is paucity of research on inequalities with respect to HRQOL across various sociodemographic groups. Existence of such differences in HRQOL between different subpopulations have been documented in other countries, pointing out the need for a differential public health approach for improving equity in HRQOL.<sup>[8,9]</sup> Considering the paucity of evidences in this area, we carried out this study to examine variations in HRQOL across different important sociodemographic variables such as age, gender, marital status, educational status, and financial dependency among elderly in an urban setting of Assam, India.

## Materials and Methods

This cross-sectional study was carried out in two randomly selected urban wards of Dibrugarh city, Assam, India, during the period 2013 to 2015 among the elderly individuals aged  $\geq 60$  years.<sup>[10,11]</sup> Total numbers of 300 eligible elderly individuals who consented to participate were recruited into the study (men - 149 and women - 301). Data were collected through house to house visit. The Institutional Ethical Committee of Guwahati Medical College, Gauhati, provided the ethical approval to conduct the study.

Sociodemographic and other data were gathered from the participants through face-to-face interview using a pretested questionnaire. Independent variables used in this study were as follows: age, sex, marital status, economic dependency, and educational status. *Education* was categorized into three groups: lower (illiterates and up to grade 10), middle (grade 10 completed), and high (graduate and above). *Economic dependency* was categorized into two categories: fully or partially dependent on others and independent.

HRQOL of the participants were assessed using RAND short form - 36 (SF-36) tool, which is regarded as the most widely used generic instrument to measure HRQOL. The reliability and validity of the tool has been tested in multiple languages, including in elderly populations.<sup>[3]</sup>

RAND-36 assesses eight health concepts (domains) of HRQOL. The domain subscales includes the following: physical functioning (PF), role limitations caused by physical health problems (RP), role limitations caused by emotional problems (RE), social functioning (SF), emotional or mental well-being (MH), energy/fatigue or vitality (VT), bodily pain (BP), and general health perceptions (GH). The scores of each HRQOL domains ranged from 0 to 100, with higher score indicating better HRQOL.<sup>[3,9]</sup>

A descriptive analysis using one-way analysis of variance (ANOVA) was conducted to examine the associations between

sociodemographic factors and each HRQOL domains of SF-36 by SPSS software. A  $P$  value  $< 0.05$  was considered as statistically significant, and  $P$  value  $< 0.05$  was considered as borderline significant for all the statistical procedures.

## Results

The mean age of the participants was 68.59 years. Widow and widower consisted of nearly 26% of the participants. One-fifth of the participants had educational qualification graduation or above. Nearly 51% of them reported to be financially independent and nearly 49% reported to be financially dependent on others [Table 1].

Table 2 presents the domain-wise mean HRQOL scores among the participants. The BP domain had highest mean HRQOL score ( $71.78 \pm 22.25$ ) and GH domain had lowest mean HRQOL score ( $48 \pm 16.93$ ).

Table 3 presents the results of ANOVA tests examining associations between HRQOL and participants' sociodemographic characteristics. There were no statistically significant gender differences in HRQOL between males and females in seven SF-36 domains. However, males had significantly higher HRQOL score than females in BP domain. Irrespective of statistical significance level, an age gradients were observed with respect to HRQOL scores in five domains (PF, RP, VT, SF, and BP), with youngest age group having the highest and oldest age group having the lowest mean scores. The differences were statistically significant for PF, RP, VT, and SF domains, and borderline significant in BP domain ( $P < 0.09$ ). In the remaining three HRQOL domains (i.e. RE, MH, and GH), such age gradients were not observed, but HRQOL scores were found to be lowest among oldest age group (i.e., 80+) in these three domains too. Widows and widowers were found to be significantly more vulnerable

**Table 1: Sociodemographic distribution of participants (n=300)**

| Characteristics              | Total (%)   |
|------------------------------|-------------|
| Sex                          |             |
| Male                         | 149 (49.7)  |
| Female                       | 151 (50.3)  |
| Age (years)                  |             |
| 60-69                        | 179 (59.7)  |
| 70-79                        | 90 (30)     |
| >80                          | 31 (10.3)   |
| Mean age ( $\pm$ SD)         | 68.59 (7.3) |
| Education                    |             |
| Lower                        | 111 (37.1)  |
| Middle                       | 125 (41.8)  |
| Higher                       | 63 (21.1)   |
| Marital status               |             |
| Currently living with spouse | 218 (72.7)  |
| Widowed/widower              | 78 (26.0)   |
| Divorced/separated           | 1 (0.3)     |
| Unmarried                    | 3 (1.00)    |
| Economic dependency          |             |
| Dependent                    | 145 (48.3)  |
| Independent                  | 155 (51.7)  |

to poor HRQOL in six domains compared to those who were currently living with their spouses. HRQOL scores also differed significantly according to economic dependency status of participants. Those who were economically dependent on others had lower HRQOL scores in all domains compared with those who were economically independent. The differences in HRQOL between these two groups were significant for five domains and borderline significant for other three domains. There were statistically significant differences in HRQOL scores according to education. Statistically significant differences were observed in mean HRQOL scores for PF, VT domains, whereas the difference was borderline significant for BP domain ( $P < 0.075$ ). Lowest educated group had lowest scores in all physical domains among all the educational groups, whereas the differences in HRQOL were very marginal between middle and higher.

### Discussion

The SF-36 of RAND is a widely used instrument, which can assess HRQOL taking into account eight different dimensions of

quality of life, such as PF, RP, RE, VT, MH, SF, BP, and GH.<sup>[3,8]</sup> To best of our knowledge, studies that evaluate the HRQOL addressing similar multidimensional concept of quality of life are very limited among elderly people in this region of India.<sup>[10,12]</sup> The average HRQOL scores of urban elderly of this study in all eight domains were higher than rural elderly people of same geographical area reflecting a better quality of life among elderly living in urban area compared to their rural counterparts of this region and other rural areas of India.<sup>[12,13]</sup>

Participants in this study obtained lowest score in GH and VT domain. Other studies carried out in India also observed similar findings.<sup>[12,14]</sup> A comparison of our findings with other studies conducted in other countries among elderly populations demonstrates notable differences in the HRQOL levels in different domains. The observed variations in HRQOL level between countries or groups may be attributed to differences in their income or educational level, health care or social support systems, or cultural differences in the conceptualization of some of the SF-36 subscale.<sup>[8,9,15-17]</sup>

**Table 2: Domain-wise mean SF-36 scores (n=300)**

| HRQOL Domain         | Total Sample |
|----------------------|--------------|
| Physical functioning | 65.87±25.86  |
| Role physical        | 57.08±42.08  |
| Role emotional       | 67.78±37.36  |
| Vitality             | 49.33±13.65  |
| Mental health        | 66.1±12.56   |
| Social functioning   | 71.1±24.46   |
| Bodily pain          | 71.78±22.25  |
| General health       | 48±16.93     |

HRQOL=health-related quality of life

Understanding the variations in HRQOL level by sociodemographic factors may help in identifying the groups who are lagging in quality of life. We observed some notable differences in HRQOL levels across sociodemographic groups. As reported previously, we also observed that mean HRQOL progressively declined with advancing age in all physical component (PF, RP, VT, and BP), with statistically significant differences in PF and RP domains.<sup>[8]</sup> Although not statistically significant, HRQOL scores also showed clear declining trend with increasing age in BP and VT domains. Such age-related

**Table 3: Sociodemographic differences in the mean score distribution of participants (n=300)**

| Characteristics              | Mean HRQOL score (±SD) |             |              |             |             |             |             |             |
|------------------------------|------------------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|
|                              | PF                     | RP          | RE           | VT          | MH          | SF          | BP          | GH          |
| Sex                          |                        |             |              |             |             |             |             |             |
| Male                         | 67.9 (28.6)            | 58.2 (41.9) | 66.22 (40.5) | 49.6 (15.4) | 66.6 (13.5) | 71.6 (26.6) | 76.3 (22.8) | 48.1 (18.3) |
| Female                       | 63.9 (22.7)            | 56 (42.4)   | 69.3 (34.1)  | 49.1 (11.7) | 65.5 (11.6) | 70.6 (22.2) | 67.3 (20.8) | 48 (15.6)   |
| P                            | 0.187                  | 0.642       | 0.474        | 0.772       | 0.430       | 0.738       | 0.000       | 0.957       |
| Age (Years):                 |                        |             |              |             |             |             |             |             |
| 60-69                        | 70.5 (24.8)            | 64.1 (42.2) | 68.3 (37.4)  | 50.2 (12.9) | 66.4 (11.8) | 73.8 (24.8) | 74.0 (22)   | 48.4 (16.7) |
| 70-79                        | 62.3 (24.8)            | 51.9 (40.4) | 68.9 (36.7)  | 48.8 (13.6) | 67.3 (12.3) | 69.7 (22.1) | 69.0 (22.7) | 48.6 (16.5) |
| >80                          | 49.7 (27.4)            | 31.5 (34.7) | 61.3 (39.5)  | 45.8 (17.2) | 60.5 (16.4) | 59.3 (26.0) | 66.8 (21.5) | 43.9 (19.2) |
| P                            | 0.000                  | 0.000       | 0.592        | 0.226       | 0.029       | 0.007       | 0.092       | 0.358       |
| Education                    |                        |             |              |             |             |             |             |             |
| Up to class 10               | 61.3 (27.7)            | 52.5 (43.3) | 68.2 (35.2)  | 46.9 (14.1) | 64.4 (13.0) | 68.1 (25.8) | 67.9 (21.7) | 45.8 (17.8) |
| Up to Collage                | 69.7 (23.6)            | 59.2 (41.5) | 67.5 (37.7)  | 51.2 (12.6) | 66.4 (12.1) | 74.1 (23)   | 73.5 (22.3) | 49.1 (16.1) |
| Graduation and above         | 66 (26.0)              | 60.3 (41.1) | 67.2 (40.8)  | 49.1 (13.6) | 68.1 (12.4) | 70.0 (24.8) | 74.7 (22.4) | 49.4 (16.9) |
| P                            | 0.044                  | 0.366       | 0.983        | 0.049       | 0.171       | 0.163       | 0.075       | 0.231       |
| Marital Status:              |                        |             |              |             |             |             |             |             |
| Currently living with spouse | 68.6 (25.5)            | 60.6 (41.5) | 68.7 (38.0)  | 50.1 (13.8) | 67.1 (12.4) | 72.9 (24.8) | 74.2 (21.7) | 48 (17.4)   |
| Widowed/widower              | 57.6 (25.7)            | 46.2 (42.3) | 65 (36)      | 46.8 (13.3) | 63.1 (12.9) | 65.4 (23.2) | 65.2 (22.8) | 47.6 (15.9) |
| P                            | 0.001                  | 0.009       | 0.455        | 0.066       | 0.018       | 0.020       | 0.002       | 0.852       |
| Economic dependency          |                        |             |              |             |             |             |             |             |
| Dependent                    | 61.5 (26.4)            | 52.9 (42.8) | 64.4 (36.4)  | 47.3 (13.3) | 64.3 (12.1) | 68.7 (24.5) | 67.8 (20.7) | 45.8 (17.2) |
| Independent                  | 70 (24.7)              | 61 (41.1)   | 71 (38.1)    | 51.2 (13.7) | 67.7 (12.8) | 73.3 (24.3) | 75.5 (23)   | 50.1 (16.4) |
| P                            | 0.004                  | 0.09        | 0.13         | 0.01        | 0.02        | 0.10        | 0.003       | 0.03        |

HRQOL=health-related quality of life, PF=physical functioning, RP=role physical, RE=role emotional, VT=vitality, MH=mental health, SF=social functioning, BP=bodily pain, GH=general health

changes in HRQOL could be related to worsening physical and functional health with advancing age as reported earlier in this study.<sup>[10,11]</sup> We observed significant age group differences in mean HRQOL scores in two psychological components (SF and MH), with oldest old age group (i.e., 80+) having the worst scores. The restriction to participate in social life due to higher prevalence of functional disability among 80 plus age group could lead to lowering of score in SF scales.<sup>[10,18]</sup> Lower score in MH scale among oldest age group could be due to increased widowhood, dependency, and health deterioration with age.<sup>[19]</sup> However, we could not detect any significant impact of age on RE scale in this study, which is in contrary to the previous reports from other countries.<sup>[8]</sup> The differences in the mean score in the GH domain was also insignificant, which was in line of results from other studies.<sup>[8,10,15]</sup>

In the gender-specific analysis, no significant variations were observed in the mean scores in all domains except BP. However, in contrary to our findings, studies from other countries found significant female disadvantages in HRQOL level in almost all SF 36 domains.<sup>[8,9]</sup> In our study, females obtained significantly lower score than males in BP domain. Lower score in BP domain indicates higher pain level.<sup>[20]</sup> Female disadvantage in BP scale could be attributed to higher burden of pain-associated diseases, such as musculoskeletal disorders among females than males in India.<sup>[4,5]</sup>

The study found that there were significant variations in HRQOL scores according to educational levels in physical components only. Lowest educated group had worse HRQOL scores in all physical domains than middle and higher educational groups, whereas the differences in HRQOL were very marginal between middle and higher levels. Lower educational group in this study comprised of mostly elderly participants who were illiterates or had primary level of education. Poorer HRQOL in physical components among this group could be attributed to their relatively higher burden of physical health problems; lower level of health awareness and poor-health-seeking behaviors.<sup>[4,5]</sup> Furthermore, opportunity to get a job with better income is likely to be less among illiterates or less educated people, which may adversely influence in their health spending to keep them healthy.<sup>[4,5,21]</sup> In contrast to previous reports from other countries, we could not detect variations in HRQOL in any psychological dimensions in this study, which probably reflects that persons' educational level is not an important factor that determines the psychological well-being or better social functioning among elderly in this population.

In this study, we found that those who were financially independent had better HRQOL scores in both physical as well as psychological dimensions than those who were financial dependent on others. Financial security or economic conditions were positively associated with both physical and psychological dimensions of HRQOL in previous studies too.<sup>[8,9]</sup> Financial security is very important to cover basic needs of life including healthcare needs.<sup>[22]</sup> Lack of income or financial dependence on

another may force elderly people to forego treatment altogether, which may cause further deterioration of their quality of life.<sup>[23]</sup> The results of present and other studies proves that financial dependency is a very crucial factor determining health and well-being at old age.<sup>[22-24]</sup>

Married elderly who were living with spouse had better HRQOL in six domains than those who were widowed, indicating importance of marital status in maintaining quality of life at old age. Some previous studies also reported better physical and mental quality of life among married women than their widowed counterparts.<sup>[25,26]</sup> Mutual support and help between married couples may positively influence the mental health.<sup>[21]</sup> However, impact of widowhood on health is considered to be very heterogeneous in India. Various factors such loneliness due to loss of spouse, financial vulnerability, and discriminations may play roles in causing poorer health among widows or widowers in India.<sup>[24,27,28]</sup> Further studies will be required to establish causes of such inequalities in HRQOL according to marital status in bigger sample size.

There are several limitations in the study as described elsewhere.<sup>[10,11]</sup> One limitation of this analysis was that we assessed the sociodemographic differences in HRQOL only by comparing the mean HRQOL scores between various sociodemographic groups without taking into account the influences of confounding variables, which may mask some true variations. We also could not carry out gender-specific analysis due to inadequate sample size. There might be some information bias depending on time and places of interview.<sup>[9]</sup> Participants might answer to the questions related to psychological components in front of other family members in a positive manner, thus over-reporting their quality of life status. Properly designed longitudinal study should be carried out in future by minimizing the deficiencies of this study to understand the true relationship between sociodemographic factors and HRQOL. We may also need to undertake qualitative studies to better understand the causes of such inequalities across sociodemographic groups.

## Conclusion

The study shows that elderly people may fare differently in different dimensions of HRQOL as measured by SF-36, and this tool may be a useful tool for assessing well-being of elderly individuals in different physical and psychological dimensions of health in primary care settings. The study detected significant differences in different domains of HRQOL according to some important sociodemographic variables. However, the sociodemographic variations were, to some extent, found to be different for both physical and psychological components of HRQOL. For example, educational inequality in HRQOL was detected only in physical components. To tailor effective public health actions to improve quality of life among elderly people, healthcare planners should take into account such sociodemographic inequalities in health among elderly by paying more attention toward more vulnerable sections.

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## Conflicts of interest

There are no conflicts of interest.

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