

# Assessing Health-Related Quality of Life (HRQOL) And Activity of Daily Living (ADL) in the Elderly Population of Urban Chengalpattu District, Tamil Nadu, India

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## ABSTRACT

**Background:** Improving the quality of life for India's increasing senior population is a pressing public health issue. The proportion of seniors has risen from 5.6% in 1961 to 8.6% in 2011 and is projected to reach 12.5% by 2030, escalating further to 20% by 2050. The study aimed to explore how functional status relates to various HRQOL dimensions among urban elderly in Chengalpattu.

**Methodology:** This cross-sectional study includes 260 elderly participants from Chengalpattu district, Tamil Nadu, India. The Short Form 36 (SF-36) assessed six domains of Health-Related Quality of Life (HRQOL), while the Barthel Activities of Daily Living (ADL) tool evaluated functional status.

**Results:** Primary education stands out as the most common educational background at 49.2%, the majority of females at 55.4%. Daily living participants' activities fall into three categories: independent (n = 134; 51.5%), partially dependent (n = 111; 42.7%), and dependent (n = 15; 5.9%). The ADL and HRQOL ratings showed strong relationships

**Conclusion:** The study underscores how declining ADL adversely affects multiple HRQOL aspects in the elderly, emphasizing the imperative of preserving functional health to enhance seniors' quality of life in India. Targeted interventions to maintain their independence and overall well-being are crucial amid the growing elderly population.

**Keywords:** Elderly, Health related quality of life, Activity of daily living

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## INTRODUCTION

The general well-being and day-to-day functioning of an individual are referred to as their quality of life<sup>1</sup>. The proportion of senior persons the population of India has been continuously developing, growing 5.6% in 1961 compared to 8.6% in 2011. It is anticipated to climb to 12.5% by 2030 and up to 20% by 2050<sup>1</sup>. Health-related quality of life (HRQOL) is composed of three basic components: physical health, which includes pain and physical impairment; social health, which includes connections and social activities; and mental health, which includes mood, self-esteem, perceived stigma, and overall health.<sup>1</sup>

ADLs can be defined as common everyday tasks that are required for maintaining an independent life or necessary for survival.<sup>1</sup> Age itself is not a disease; rather, older adults are more vulnerable to conditions known as chronic diseases, which are illnesses that develop gradually. Examples of these illnesses include diabetes, cancer, musculoskeletal and mental disorders, cardiovascular disease, and heart attacks (CVA).<sup>2</sup> The World Health Organization defined Quality of life (QOL) as individuals' perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns".<sup>3</sup>

The health-related quality of life (HRQOL), which encompasses views of one's physical and mental health and how those perceptions connect to functional status, social support, health risks and circumstances, and socioeconomic status, is one of the most important challenges facing older citizens.<sup>4</sup> It is well recognized that a decrease in physical activity levels raises stress levels, which are closely linked to HRQOL.<sup>5</sup>

Physical activity causes the release of endorphins, which are naturally occurring painkillers that can elevate mood and lower stress hormone levels like cortisol and adrenaline. Participating in regular physical exercise can also contribute to physiological changes in blood pressure, cardiac output, resting heart rate, stroke volume, and other areas.<sup>5</sup> These changes can enhance musculoskeletal and cardiorespiratory function and improve people's HRQOL.<sup>5</sup>

Adults over 65 years should have moderate-intensity aerobic physical activity for at least 150 minutes each week, as per the World Health Organization (WHO). It is advised to spend 300 minutes a week for added health benefits.<sup>6-8</sup>

There are numerous factors that influence physical activity levels in older persons, including age. It has been well-established that low levels of physical activity are correlated with self-perceived health (SPH), which has been extensively studied as a predictor of physical activity.<sup>9-10</sup> The purpose of this study is to determine whether functional status and health-related quality of life are related in older adults living in cities.

## METHODOLOGY

A cross-sectional study was conducted in the urban field practice region of Chengalpattu district, Tamil Nadu, India, was carried out between June 2023 and December 2023. The host institution granted approval for ethical conduct. Simple random sampling was done to select the participants. A family folder was taken from the urban health center by using simple random table method about 143 women and 117 men participants were selected randomly face to face interviews were conducted with individuals who fulfilled the inclusion criteria and visited the urban health center of a tertiary care hospital.

People 60 years of age or older who live only in the urban field practice area of tertiary care center in Chengalpattu District were included in the study. The ability to speak in Tamil or English, the willingness to give informed permission, and availability for assessment sessions are requirements for participation. A range of functional abilities and health conditions were acknowledged.

People with severe cognitive impairment, incapable of communicating effectively, terminally ill, receiving palliative care, refusing to give informed consent, or being unable to communicate in Tamil or English and having indicated that they would not participate in the study or provide the required information were excluded from the study.

Data was collected after obtaining required consent from the participants. study was started after getting ethical clearance from Institutional Ethics Committee SRM/968/IEC/2016. Data was collected by interviewing using pre-tested questionnaire which comprising of questions related to functional capacity of elderly (Barthel activity of daily living (ADL) tool) and health related quality of life (RAND 36 tool). The first set of questions asks about the demographics of the participants their age, religion, socioeconomic level, etc. In the second segment, there are inquiries about health-related functional capacity of elderly. The third section has questions regarding activity of daily living among elderly patient. Data Analysis was done using SPSS, quantitative data analysis was carried out, with means and standard deviations (SD) for quantitative variables and percentages for qualitative variables. The chi-square test was computed in order to quantify the related components. Considered significant with a 95% confidence interval was a p-value of 0.05.

### Measurements:

**HRQOL:** The Research and Development (RAND) -36 (Short Form-36) tool, which was previously used in an Indian Council of Medical Research study<sup>9</sup>, was used by us in Assamese. The RAND-36 assesses six health domains: general health perceptions (5 items), role limitations resulting from physical health problems (4 items), role limitations resulting from emotional problems (3 items), social functioning (2

items), emotional or mental wellbeing (5 items), energy/fatigue or vitality (4 items), and bodily pain (2 items). The assessments are conducted using multi-item scales (35 items). Every SF-36 item has a score that ranges from 0 to 100 and is averaged over all items within the same domain. Higher scores are indicative of higher HRQOL. People who received a score of less than 50 in one of the HRQOL domains on the SF-36 were considered to have low HRQOL. A life quality score of 0 to 50 is regarded as poor or fair and a score of 50 or higher is considered good.

**ADL:** The elderly's functional capacity was assessed using the Barthel activities of daily living (ADL) tool.<sup>20</sup> The following 10 ADL tasks—feeding, bathing, grooming, dressing, bowel control, bladder control, toileting, transferring from bed to chair and back, mobility on level surfaces, and mobility on stairs—were assessed using this method to determine the participants' current level of competence. Every item has a total score that goes from 0 to 100, where 0 represents total dependence on all 10 ADLs and 100 represents entire independence in all ADLs.

## RESULTS

Table 1 presents demographic information about the participants, indicating a majority of females at 55.4%. Notably, the 60-65 age group emerges as the most prominent at 41.5%, while primary education stands out as the prevailing educational background at 49.2%. Furthermore, a significant 47.3% of participants are currently not employed.

Table 2 presents in terms of age categories, those between the ages of 60 and 65 made up the majority of the independent group (71.30%), while those over 70 made up a larger number of the somewhat dependent group (66.67%). Males had a more even distribution of 12.93% dependent, 41.38% independent and 45.69% partially reliant when it came to gender.

Education showed that most people who were illiterate or just had a primary education, whereas people with a secondary education were more likely to be independent. Occupational status, since a greater proportion of unemployed people fell into the category of those who were partially dependant, whereas pensioners tended to be independent.

Table 3 presents Age-specific health characteristics. The Age group of 60-65 years showed higher score in General ( $51.76 \pm 6.98$ ) and Physical ( $42.5 \pm 17.5$ ). More than 70 years elderly individuals have higher scores in Energy ( $53.9 \pm 7.1$ ), Pain ( $55.9 \pm 9.2$ ), and social well-being ( $55.2 \pm 8.8$ ) where else in Emotional well-being ( $50.0 \pm 9.1$ ) the score is higher in elderly of age group between 66-70 years.

Table 4 presents Gender health characteristics. When comparing scores across variables, men generally showed slightly higher results than women in all domains except physical in which women ( $34.7 \pm 20.6$ ) shows higher score than men ( $28.1 \pm 16.2$ ).

**Table 1: Socio demographic information of the 260 study participants**

Socio demographic Variable	Participants (%)
<b>Age group</b>	
60 - 65 years	108 (41.5)
66 - 70 years	80 (30.7)
> 70 years	72 (27.7)
<b>Gender</b>	
Male	116 (44.6)
Female	144 (55.4)
<b>Education</b>	
Illiterate	86 (33.1)
Primary	128 (49.2)
Secondary	46 (17.7)
<b>Occupation</b>	
Not working	123 (47.3)
Working	85 (32.7)
Pensioner	52 (20)

**Table 2: shows the ADL groups distribution and socio demographic information of the 260 study participants**

Variable	Dependent (n=15) (%)	Independent (n=134) (%)	Partially dependent (n=111) (%)	Total (n=260) (%)
<b>Age group</b>				
60 - 65 years	0(0)	77(71.30)	31(28.70)	108(100)
66 - 70 years	0(0)	48 (60)	32(40)	80(100)
>70 years	15(20.83)	9(12.50)	48(66.67)	72(100)
<b>Gender</b>				
Male	15(12.93)	48(41.38)	53(45.69)	116(100)
Female	0(0)	86(59.72)	58(40.28)	144(100)
<b>Education</b>				
Illiterate	7(8.14)	37(43.02)	42(48.84)	86(100)
Primary	8(6.25)	73(57.03)	47(36.72)	128(100)
Secondary	0(0)	24(52.17)	22(47.83)	46(100)
<b>Occupation</b>				
Not working	7(5.69)	51(41.46)	65(52.85)	123 (100)
Working	8(9.41)	31(36.47)	46(54.12)	85(100)
Pensioner	0(0)	52(100)	0(0)	52(100)

**Table 3: shows the HRQOL Domain scoring among different age group in 260 study participants**

The RAND survey domains	Age group (Mean ± SD score)		
	60-65 yrs	66-70 yrs	>70 yrs
General	51.76 ± 6.98	46.81 ± 10.56	45.75 ± 8.7
Physical	42.5 ± 17.5	27.9 ± 13.6	20 ± 17.9
Energy	49.07 ± 7.9	46.6 ± 6.8	53.9 ± 7.1
Pain	51.5 ± 6.8	47.7 ± 7.2	55.9 ± 9.2
Emotional well-being	48.3 ± 6.3	50.0 ± 9.1	49.7 ± 7.7
Social well-being	52.08 ± 8.2	48.9 ± 6.9	55.2 ± 8.8

**Table 4: shows the HRQOL Domain scoring among different gender in 260 study participants**

The RAND survey domains	Gender (Mean ± SD score)	
	Male	Female
General	50.82 ± 9.2	46.7 ± 8.5
Physical	28.1 ± 16.2	34.7 ± 20.6
Energy	50.7 ± 7.9	48.78 ± 7.1
Pain	53.5 ± 8.5	49.5 ± 7.2
Emotional well-being	50.1 ± 5.8	48.5 ± 8.9
Social well-being	54.4 ± 8.6	50 ± 7.6

**Table 5: shows the HRQOL Domain scoring among different Education in 260 study participants**

The RAND survey domains	Education (Mean ± SD score)		
	Illiterate	Primary	Secondary
General	44.48 ± 7.6	50.1 ± 9.5	51.9 ± 7.3
Physical	26.3 ± 18.7	35.2 ± 20.4	32.3 ± 12.3
Energy	51.6 ± 8.8	48.4 ± 7.3	49.4 ± 6.9
Pain	50.4 ± 6.9	50.8 ± 8.7	54.1 ± 7.9
Emotional well-being	51.4 ± 9.8	48.7 ± 5.9	46.5 ± 6.5
Social well-being	52.1 ± 9.4	50.1 ± 7.6	55.5 ± 6.3

**Table 6: shows the HRQOL Domain scoring among different Occupation in 260 study participants**

The RAND survey domains	Occupation (Mean ± SD score)		
	Not working	Working	Pensioner
General	45.6 ± 8.1	52.8 ± 5.9	50.1 ± 10.4
Physical	24.6 ± 16.7	49.9 ± 19.4	31.1 ± 14.2
Energy	51.9 ± 7.7	50.0 ± 9.8	46.1 ± 5.2
Pain	51.7 ± 7.1	52.7 ± 10.8	49.7 ± 7.4
Emotional well-being	49.9 ± 9.8	51.3 ± 2.8	46.9 ± 5.4
Social well-being	52.2 ± 8.3	50.4 ± 10.1	52.5 ± 7.1

**Table 7: Association of ADL categorization with various domains of RAND health survey among study subjects (n=260)**

The RAND survey domains	ADL categorization (Mean ± SD score)		p-value*
	Independent (N=134)	Partial/ fully dependent (N=126)	
General	52.31 ± 6.9	44.6 ± 9.45	<0.001*
Physical	40.49 ± 18.6	22.54 ± 14.7	<0.001*
Energy	49.59 ± 7.6	49.77 ± 8.1	0.861
Pain	52.26 ± 7.6	50.2 ± 8.5	0.047*
Emotional well-being	50.15 ± 8.3	48.25 ± 6.9	0.048*
Social well-being	50.37 ± 8.9	53.6 ± 7.4	0.001*

(\*p&lt;0.05 is statistically significant)

Table 5 presents Education health characteristics, those with secondary education often score higher than people with primary or no education in General (51.9 ± 7.3), Pain (54.1 ± 7.9) and social well-being (55.5 ± 6.3). Primary education has higher physical health scores (35.2 ± 20.4). While scores in Energy levels (51.6 ± 8.8) and Emotional well-being (51.4 ± 9.8) are generally high in Illiterates.

Table 6 presents Occupation health characteristics, those working elderly often score higher than non-working or Pensioner in General (52.8 ± 5.9), Physical (49.9 ± 19.4), Pain (52.7 ± 10.8) and Emotional well-being (51.3 ± 2.8). Not working elderly has higher energy scores (51.9 ± 7.7). While Social well-being (52.5 ± 7.1) is generally high in Pensioner elderly.

Table-7 compares the mean ± SD scores for different domains of the RAND survey between two groups categorized by ADL status, Independent (N=134) and Partial/Fully Dependent (N=126). Energy domain is insignificant where else rest of all 5 domains including General, Physical, Pain, Emotional well-being and social well-being are significant showing a p value of less than 0.05.

## DISCUSSION

The purpose of this research is to provide insight into the ADL profile and its relationship to other HRQOL factors in elderly urban Indian citizens. In one or more ADL measures, about one-third of the research sample had limits. It was found that compared to the elderly people of the same rural area and other Indian urban and rural areas, the elderly population in this north-eastern Indian urban area had a lower prevalence of ADL dependency.<sup>10-13</sup> But it was also discovered that a sizable percentage of senior citizens continue to enjoy good functional health well into old life.<sup>10-13</sup> Two other studies from Jhansi and Chandigarh discovered a lower prevalence of ADL impairment than this one did.<sup>14,15</sup> In our study partially dependent (42.7%) and dependent (5.9%) individuals contribute a higher prevalence. This higher dependence rate in increased age may be due to considerable correlation between ADL dependency and chronic morbidities, highlighting the role that chronic illnesses play in contributing to impairments in the elderly.<sup>16-18</sup> ADL dependency was found to be substantially linked to worse average ratings for HRQOL across all SF-36 dimensions, suggesting that functional dependence has an adverse effect on social, emotional, and mental well-being in addition to physical well-being.

The average HRQOL ratings across all SF-36 domains declined as the degree of ADL dependence, suggesting that HRQOL deteriorates as functional dependence gets worse. In this study<sup>19</sup> it shows that age and sex variables indicated that the likelihood of having a lower HRQOL as the degree of functional impairment

increased. which was similar in our study showing men generally slightly higher results than women and with the group aged 60–65 having the highest mean ( $42.5 \pm 17.5$ ) and the group aged 70 and above having the lowest ( $20 \pm 17.9$ ).

Additional research has demonstrated a graded association between HRQOL and category functional impairment levels.<sup>21</sup> When compared to people without functional disabilities, people with functional disabilities experience higher levels of exhaustion and lower levels of energy, which may have a more severe impact on the energy domain<sup>22</sup> but in our study energy domain is affected but it does not show any significant difference because in our study we excluded terminally ill and bed ridden person.

In line with earlier studies, we also found that functional impairment negatively affects the SF-36's physical dimensions as well as its other aspects, including MH (Emotional well-being), RE(Role limitations due to Emotional problems), SF(Social Functioning), and GH(General Health Perception).<sup>23,24</sup> Similarly in our study also General, physical, pain, social wellbeing and emotional wellbeing are most commonly affected among elderly when it is associated with the activity of daily living because these variables are related to each other they show significance difference.

The General Health perception of people with limited functional status was shown to be considerably lower than that of people with normal functional status, suggesting that GH perception deteriorates as functional status declines<sup>23</sup> which is similar to our study where general health score is  $52.31 \pm 6.9$  in independent participants and is  $44.6 \pm 9.45$  partially dependent individual since limiting the functional status may lead to dependency of the older age group populations and thus reducing the general health.

A study conducted on the elderly population in urban Delhi found that nearly half of the participants required help with ADLs, particularly those above the age of 75. This indicates a high level of dependency and the need for supportive services in urban settings<sup>25</sup> which is contrary to our study with dependent category (5.9%) nearly 6% this is low because our study includes age group above 60 years and people involved above 70 years are only 27.7%.

The study demonstrated that age, gender, and the presence of chronic diseases were drivers of ADL and Instrumental Activities of Daily Living (IADL) disability. It also revealed an elevated prevalence of ADL and IADL disability among older adults living in southeastern Poland.<sup>26</sup> Additionally, in our study, ADL of partial dependence was higher up to 42.7% because old age has high prevalence of morbidity which need more dependence for improving their quality of life.

A study using the Longitudinal Aging Study in India (LASI) data revealed that elderly people who are illiterate and belong to the poorest wealth quintile re-

port lower Katz scores in ADL<sup>27</sup> which is consistent with our study: those who are illiterate report 7 (2.7%) dependent people, those who attend primary school report 8 (3%) dependent people, and those who attend secondary education report no dependent people. This may be because educated people have a greater understanding of healthy aging than do illiterate persons. Those with greater education may also recognize the value of getting health care and enjoy a higher standard of living.

## CONCLUSION

Our study highlights a considerable association between ADL disability and HRQOL deterioration in the older population. This relationship emphasizes how functional restrictions have a broad effect on the physical, emotional, and social dimensions of well-being. Healthcare practitioners can effectively improve functional health outcomes and total HRQOL in this vulnerable population by incorporating these results into primary care practices.

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