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Evaluation of Quality of Life among the Geriatric Population in Rural Regions Following the COVID-19 Pandemic

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ABSTRACT

Background: Aging is a natural and inevitable biological process characterized by a steady decline in physical and mental functions. The World Health Organization (WHO) defines aging as a series of progressive changes that lead to diminished physical and cognitive capabilities, increased susceptibility to illnesses, and ultimately, mortality. With advancements in healthcare and declining birth rates worldwide, there is a notable rise in the global elderly population.

Objectives

1. To estimate the proportion of elderly individuals residing in rural areas.
2. To examine the morbidity patterns among the elderly and explore their relationship with socio-demographic variables.
3. To evaluate the quality of life (QoL) of the elderly during the defined study period.
4. To recommend strategies for enhancing health and well-being among the rural elderly population.

Methodology: This research was carried out as a community-based, cross-sectional study using a multistage sampling method. The target population consisted of individuals aged 60 and above, comprising 5% of the rural population (estimated at 550). To ensure adequate representation, the study aimed to include at least 90% of the elderly population, accounting for a potential 10% non-response rate. The study was conducted in selected rural areas of Satara District, Maharashtra, India. Ethical consent was obtained from all participants. Data collection was carried out using standardized tools, and both descriptive and inferential statistical methods were employed for analysis.

Results: Among the 550 elderly participants, the majority fell within the 60–69 age group, with no significant differences observed between rural and urban distributions ($p = 0.803$), suggesting a uniform aging pattern. Gender distribution in rural areas was also balanced, with males accounting for 71.7% of participants, showing no significant variation across locations.

Conclusion: The findings revealed that elderly individuals in rural areas generally experienced a higher quality of life than their urban peers, particularly in terms of psychological well-being, social engagement, and overall life satisfaction. Key demographic variables such as age, gender, and body mass index (BMI) did not significantly influence QoL. However, socioeconomic conditions and family support systems played a more impactful role. Addictive behaviors and co-existing illnesses were more detrimental in urban areas, although the general quality of life across different groups remained relatively stable.

Keywords: *Quality of Life (QoL / AQoL), Geriatric Population, Rural Area, COVID-19 Pandemic*

1. INTRODUCTION

Background (Paraphrased – Vancouver Style):

Aging is a universal and natural biological phenomenon characterized by a gradual deterioration of physiological and functional abilities. The World Health Organization (WHO) defines aging as the progressive accumulation of changes over time that result in decreased physical and mental capacity, increased susceptibility to disease, and eventually death (1). A global demographic transition is underway, with increasing life expectancy, declining birth rates, and advancements in healthcare contributing to a rise in the elderly population (2).

By 2050, the population aged 60 years and older is projected to reach 2.1 billion, up from 1 billion in 2020, with the majority residing in low- and middle-income countries (3). This demographic shift presents complex challenges, as aging is commonly associated with chronic illnesses, functional decline, and disability. The consequences include rising healthcare costs, a growing dependency ratio, and the need for targeted social and healthcare policies (3).

While developed nations have established systems for elderly care, developing countries like India face hurdles due to limited healthcare infrastructure, economic constraints, and inadequate social support (4,5). Understanding the impact of aging within different socio-economic settings is crucial for policy formulation to improve elderly well-being.

India is undergoing a significant demographic transition, marked by a growing elderly population due to increased longevity and reduced fertility. The Longitudinal Aging Study in India (LASI) estimates that the elderly population (aged 60 and above) will rise from 10.1% in 2021 to 19.5% by 2050 (6). Approximately 70% of India's elderly live in rural areas where access to healthcare is often limited, economic vulnerability is common, and dependence on family members is high. Urban elderly, though benefitting from better healthcare facilities, frequently experience social isolation due to smaller family structures and migration of younger family members (7).

Older adults in India face multifaceted challenges such as inadequate financial security, limited social support, chronic disease burden, and restricted healthcare access. Mental health concerns like depression and anxiety are also prevalent due to isolation and lack of social engagement, necessitating focused health policies for aging populations (8–10).

The COVID-19 pandemic severely impacted elderly populations globally. Reduced immunity and underlying health conditions made older adults more susceptible to severe illness and increased mortality, particularly among those with comorbidities like diabetes, hypertension, and respiratory disorders (11–13).

2. METHODS

Methodology (Paraphrased)

A community-based, cross-sectional study was carried out in the rural regions of Satara District, Maharashtra, over a three-year period from January 2022 to December 2024. A multistage random sampling method was employed to ensure representative data collection. From each of the 11 talukas in the district, one village under a sub-centre and one municipal ward were randomly selected. The study targeted elderly individuals aged 60 years and above, with a total sample size of 550 participants drawn exclusively from rural settings.

Data collection was conducted through structured, face-to-face interviews following informed consent. A team of 22 trained field investigators performed door-to-door household surveys under continuous real-time supervision. A three-level quality control system, along with photographic documentation and regular monitoring visits, ensured strict adherence to data collection protocols. Data management was carried out using Microsoft Excel, with ongoing validation for accuracy and consistency.

Data Collection Tools

- **Demographic Information Form**: Gathered socio-demographic details such as age, gender, education, occupation, income level, marital status, type of family, and place of residence.
- **Personal and Medical History Questionnaire**: Recorded the presence of chronic illnesses, functional limitations (based on Activities of Daily Living), and lifestyle habits like tobacco and alcohol use, and levels of physical activity.
- **Assessment of Quality of Life (AQoL) Version 1**: A 15-item instrument evaluating five dimensions—illness, independence, relationships, sensory functions, and mental health.
- **AQoL 8-Dimensions Instrument**: A comprehensive 35-item tool covering eight domains including physical and mental health, independence, pain, coping, social support, self-worth, and sensory perception.

Statistical Analysis

Data analysis was performed using SPSS software. Descriptive statistics such as mean, standard deviation (SD), frequencies, and percentages were used to summarize demographic and health-related variables. Group comparisons were made using independent t-tests, Mann-Whitney U tests, and chi-square tests, as appropriate. Multivariate regression analysis was conducted to identify determinants of Health-Related Quality of Life (HR-QoL). Receiver Operating Characteristic (ROC) curve analysis was applied to assess the predictive power of significant variables. Statistical significance was set at $p < 0.05$, and results were presented using visual aids such as bar graphs and scatter plots.

Ethical Considerations

The study was conducted in compliance with ethical standards for research involving human participants. Written informed consent was obtained from all respondents prior to their inclusion in the study. Participants were assured of confidentiality

and the voluntary nature of their participation, including the right to withdraw at any time. The research protocol received approval from both the Institutional Protocol Committee and the Institutional Ethics Committee.

3. RESULTS

Demographic Characteristics

- **Age:** The majority of the study participants (79.8%) were aged between 60 and 69 years, with consistent proportions across rural areas (79.6%).
- **Gender:** Males constituted 71.7% of the rural sample.
- **Body Mass Index (BMI):** A notable proportion (43.0%) of the rural elderly were categorized as Obese Class II (BMI >30), while 20.8% were Obese Class I, and 28.3% had normal BMI.
- **Family Structure:** Separated (52.6%) and joint families (33.7%) were more common in rural areas.
- **Education:** Illiteracy was more prevalent in rural areas (22.8%).
- **Socioeconomic Status:** In rural settings, 21.1% were from the upper class, and 29.1% from the lower class.
- **Addiction:** Alcohol addiction was more common among the rural elderly (37.9%).

Quality of Life Assessment (AQoL Version 1)

- **Illness Domain:** Rural elderly reported significantly better health perceptions (mean score: 8.6; $p < 0.001$), possibly due to lifestyle or healthcare access.
- **Independent Living:** Rural participants maintained their independence in daily activities.
- **Social Relationships:** Rural participants scored significantly higher (8.6; $p < 0.001$), likely reflecting strong family and community ties.
- **Physical Senses:** Rural respondents reported better sensory function (8.8; $p < 0.001$), possibly due to reduced environmental exposure.
- **Psychological Well-being:** Mental health scores were significantly better in rural populations (8.7), attributed to lower stress and stronger social support.

Quality of Life Assessment (AQoL 8D)

- **Independence:** Rural elderly had greater perceived independence (11.8; $p < 0.001$), potentially reflecting more active lifestyles.
- **Pain:** Reported pain levels were moderate (8.3; $p < 0.001$).
- **Sensory Abilities:** Sensory function scores were comparable, indicating similar access to sensory care.
- **Happiness:** Rural elderly had significantly higher happiness scores (12.5 vs. 9.9; $p < 0.001$), possibly due to simple lifestyles and supportive communities.
- **Mental Health:** Better mental health scores (22.4; $p < 0.001$) were recorded in rural populations, reflecting lower psychological distress.
- **Coping:** Rural elderly exhibited stronger coping mechanisms (10.0; $p < 0.001$), aided by familial and community support.
- **Relationships:** Higher relationship scores (19.4; $p < 0.001$) suggest stronger interpersonal ties**.**
- **Self-Worth:** Rural elderly reported better self-worth (9.5; $p = 0.003$).

Comparative Analysis of Influencing Factors

- **Gender:** No statistically significant difference in any QoL domain was observed between males and females ($p > 0.05$).
- **BMI**: No significant association between BMI categories and QoL was found in either AQoL Version 1 or 8D tools ($p > 0.05$).
- **Tobacco Use**: Tobacco consumption did not significantly influence QoL domains in rural populations ($p > 0.05$).
- **Alcohol Consumption**: No significant effect on any QoL dimension was observed among alcohol users ($p > 0.05$).
- **Addiction:** While overall QoL remained unaffected, coping scores were lower among rural elderly with addiction

(27.21 vs. 28.67; $p = 0.020$).

- **Comorbidities:** No significant impact on QoL was noted in rural participants, though urban counterparts experienced worse mental health outcomes.
- **Marital Status:** QoL domains did not differ significantly between married and unmarried elderly individuals ($p > 0.05$).
- **Employment Status:** While general QoL

4. CONCLUSION

The study revealed notable rural elderly showing better scores across most QoL domains. Rural participants reported superior health perceptions, social relationships, mental health, and happiness, likely due to stronger community ties and simpler lifestyles. Factors like gender, age, BMI, addiction, and marital status showed minimal impact on overall quality of life. However, addiction and comorbidities negatively influenced mental health and coping, particularly in urban populations.

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