Society of Medical Education & Research

2023, Volume 3, Page No: 214-224
ISSN: 3108-4818

International Journal of Social and Psychological Aspects of Healthcare

Sociodemographic Determinants of Quality of Life among Community-Dwelling Adults in Rural Punjab, India: A Cross-Sectional Study Using WHOQOL-BREF

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Abstract

Quality of Life (QoL) refers to a person's subjective evaluation of their well-being within their cultural and social setting. Although much of the existing QoL research concentrates on people with specific illnesses, sociodemographic characteristics such as sex, marital status, educational attainment, and family composition may also shape QoL independently of age and health status. Given the scarcity of evidence on QoL within the general Indian population—particularly among rural communities—the current study seeks to assess QoL and identify sociodemographic determinants influencing QoL among adults living in rural Punjab. A community-based cross-sectional investigation was carried out among 931 adults of both sexes (59.6% women), aged 20–75 years, residing in rural regions of Mansa district, Punjab, India. Sociodemographic characteristics were obtained through structured interviews, and QoL was evaluated using the WHOQOL-BREF instrument.

The mean overall QoL score was 67.44 ± 14.7. The physical domain showed the greatest impairment (mean = 60.203 ± 13.49), followed by the psychological (mean = 65.67 ± 18.3), social-relationship (mean = 69.88 ± 26.43), and environmental domains (mean = 74.05 ± 20.58). Adjusted logistic regression analysis indicated that female sex, older age (≥ 60 years), illiteracy, and unmarried status were positively associated with poor QoL, whereas a family size of 6–10 members showed a negative association with poor QoL. The findings indicate that women, older adults, individuals without literacy, and those who are unmarried may be more vulnerable to poorer QoL. In addition, higher educational levels and larger family size appear to enhance perceived well-being among participants.

Keywords: Quality of life, Community-dwelling, Adults, India

Introduction

The World Health Organization (WHO) defines Quality of Life (QoL) as individuals' perceptions of their position in life in relation to their goals, expectations, concerns, and aspirations within the cultural and value systems in which they live [1, 2]. QoL is a multidimensional construct encompassing perceptions of overall well-being along with physical, psychological, social, and spiritual dimensions [1, 2]. With progress in medical care, improved living conditions, and the resulting rise in life expectancy, QoL has emerged as a key component of population health, as medical advances may prolong life while potentially compromising its quality [3, 4]. Although people now tend to live longer than in earlier centuries, increased longevity does not automatically imply better QoL [3]. Consequently, mortality indicators alone are insufficient to capture changes in population health, and QoL assessment has gained growing importance [3, 4]. Evaluating QoL allows outcomes beyond morbidity and biological functioning to be considered [3, 5].

Accordingly, substantial attention has been directed by healthcare professionals and researchers toward examining QoL from individuals' own perspectives, including their perceptions of physical and mental health, autonomy, adaptability to the environment, and overall

Access this article online https://smerpub.com/

Received: 15 August 2023; **Accepted:** 16 October 2023

How to cite this article: Sato Y, Nakamura K, Fujimoto A. Sociodemographic Determinants of Quality of Life among Community-Dwelling Adults in Rural Punjab, India: A Cross-Sectional Study Using WHOQOL-BREF. Int J Soc Psychol Asp Healthc. 2023;3:214-24. https://doi.org/10.51847/fCHC6vf3b9

well-being within their cultural and value frameworks [5, 6]. QoL functions as an indicator of individual well-being at community or national levels and is increasingly acknowledged as a meaningful conceptual model for evaluating living standards across diverse populations [4].

QoL assessment incorporates both objective and subjective perspectives [3, 7, 8]. The objective approach depends on external evaluations of factors such as disease status, symptom improvement, treatment side effects, functional ability, and engagement in daily or social activities, thereby assessing the quality of physical and social environments [3, 7, 8]. Conversely, the subjective approach enables individuals to articulate their experiences, beliefs, attitudes, emotions, and feelings, emphasizing internal experiences shaped by personal values and past life events, and is inherently individual-specific [3, 6-8]. To integrate subjective dimensions alongside objective measures of QoL, the WHO developed a generic subjective instrument, the WHOQOL-BREF [9], which is cross-culturally applicable, psychometrically valid, and available in multiple languages [9].

As highlighted above, subjective QoL evaluation is essential for accurately tracking population health trends and assessing healthcare interventions [6, 10]. A large body of research has examined how health conditions and medical treatments influence individuals' perceived QoL [6, 11–14]. In addition, studies have investigated QoL within specific groups, including older adults, homeless populations, refugees, and others [15–19], as well as within general populations globally [4].

Despite this, research on QoL among the general Indian population—particularly in rural settings—remains limited [4, 20]. Moreover, the influence of sociodemographic factors such as age, sex, marital status, education, and family structure on QoL in Indian contexts has not been sufficiently explored. In view of the paucity of evidence on QoL and its associated determinants in rural India, this study aimed to assess QoL and examine the sociodemographic factors influencing it among community-dwelling adults in rural Punjab.

Materials and Methods

Study setting and sample

This cross-sectional investigation involved 931 apparently healthy adults aged 20–75 years of both genders (59.6% women) living in rural regions of Mansa district, Punjab, India. Punjab is situated in northwestern India, bordering Pakistan, Jammu and Kashmir, Himachal Pradesh, Haryana, and Rajasthan **(Figure 1)** [21]. The state spans 50,362 square kilometres, featuring varied terrain from flatlands to hilly areas, and has a population of around 27.7 million as per the 2011 Indian Census [21]. The primary language is Punjabi, with Chandigarh (a Union Territory) as the capital [21]. Agriculture dominates the economy, playing a key role in national food security through substantial wheat output [21]. Following Independence, Punjab achieved notable economic progress, especially via the Green Revolution, resulting in high per capita income and positioning its residents among India's wealthiest groups despite a relatively small national population share [21].

Figure 1. Map of India highlighting Punjab state (in red) (generated using www.mapchart.net)

Participants were selected randomly through door-to-door surveys, and information was gathered via face-to-face interviews. Eligibility required absence of self-reported chronic psychiatric disorders, malignancy, or serious infectious conditions. Women who were pregnant or breastfeeding were not included. Ethical approval was granted by the Department of Anthropology Ethics Committee, University of Delhi (Ref. No./Anth./2018/2890/28-12-18). Throughout data gathering, strict ethical standards were followed, including protection of participant privacy and identity, securing informed consent, guaranteeing voluntary involvement, reducing any potential distress, and

complying with discipline-specific guidelines. All individuals provided written informed consent in Punjabi before participation.

Instruments and procedures for data gathering

Information on sociodemographic factors, including age, gender, educational attainment, marital status, occupation, and household income, was obtained through a pre-tested and adapted interview questionnaire.

Evaluation of quality of life

Quality of life was evaluated using the Hindi adaptation of the WHOQOL-BREF [2, 9]. The instrument comprises 26 questions distributed across four domains: physical health (7 items), psychological well-being (6 items), social relationships (3 items), and environmental factors (8 items) [2, 9]. Scoring options include raw values, converted scores on a 4–20 scale, or converted scores on a 0–100 scale, with higher values indicating superior quality of life [2, 9]. In this research, domain raw scores were converted to a 0–100 scale. Overall quality of life was derived from the mean of the four domain scores. Lacking established thresholds for classifying quality of life as good or poor, median values for overall and domain scores served as cut-offs [22]. Participants scoring at or above the median were categorised as having a good quality of life, whereas those below were classified as having a poor quality of life.

Data analysis

Analyses were carried out with SPSS version 22. Normality of continuous data was assessed via the Kolmogorov–Smirnov test. Continuous data are reported as means with standard deviations (SD). Categorical data are presented as counts and proportions. Group mean comparisons for two or more categories were conducted using independent t-tests and one-way ANOVA, respectively. Odds ratios were derived from logistic regression models, adjusted for potential confounders including age, gender, education, and occupation. Statistical significance was set at $p < 0.05$ across all tests.

Results and Discussion

General and gender-specific average quality of life scores

Participant demographics are summarised in **Table 1**. The sample's mean overall quality of life score was 67.44 ± 14.7 **(Table 2)**. When stratified by gender, women exhibited lower mean scores across all domains and overall compared to men. These gender differences reached statistical significance in the psychological, social relationship, and environmental domains, as well as for total quality of life **(Table 2)**.

Table 1. General characteristics of the study population

Sociodemographic Characteristics	Categories	N (%)
Age group	20–29	26 (2.8)
	30–39	228 (24.5)
	40–49	197 (21.2)
	50–59	202 (21.7)
	60–69	201 (21.6)
	70 and above	77 (3.3)
Gender	Male	376 (40.4)
	Female	555 (59.6)
Religion	Sikh	902 (96.9)
	Other	29 (3.1)
Caste	Jatt Sikh	813 (87.4)
	Other	117 (12.6)
Household size	Fewer than 5	568 (61.6)
	5–10	338 (36.7)
	More than 10	16 (2.2)
Marital status	Married	789 (84.7)
	Widowed	107 (11.5)
	Unmarried	35 (3.8)
Educational attainment	Literate	551 (59.2)
	Illiterate	380 (40.8)
Employment status	Employed	406 (43.6)
	Unemployed	525 (56.4)
Annual household income (INR)	Above 200,000	496 (56.8)
	Below 200,000	378 (43.2)

N count, INR Indian national rupee

Table 2. Overall and gender-wise mean quality of life (QoL) scores

Quality of Life Domain	Females Mean ± SD	Males Mean ± SD	Overall Mean ± SD	p-value#
Physical	59.51 ± 14.11	61.22 ± 12.45	60.203 ± 13.49	0.057
Psychological	63.85 ± 18.20	68.35 ± 18.24	65.67 ± 18.34	< 0.001*

Social Relationships	68.19 ± 26.02	72.36 ± 26.86	69.88 ± 26.43	0.018*
Environmental	70.90 ± 21.26	78.60 ± 18.63	74.05 ± 20.58	< 0.001*
Overall	65.61 ± 14.87	70.13 ± 14.24	67.44 ± 14.7	< 0.001*

SD standard deviation, QoL quality of life
*Significant at p-value < 0.05; #male vs females

Sociodemographic factors associated with quality of life

Mean quality of life scores varied significantly by age category, gender, marital status, education level, and employment status. Lower averages were noted among older adults versus younger ones, women versus men, widowed versus married individuals, those without literacy versus literate, and unemployed versus employed persons **(Table 3)**. No significant variations in mean quality of life emerged related to religion, caste (with the exception of the environmental domain), household size, or yearly income (except in the social relationship domain).

Table 3. Mean quality of life (QoL) scores with respect to socio-demographic variable

Sociodemographic Factor	Category	Environmental Mean ± SD	Social Relationships Mean ± SD	Psychological Mean ± SD	Physical Mean ± SD	Overall Mean ± SD
Age group	20–29	76.80 ± 22.21	71.15 ± 31.08	66.53 ± 20.27	64.38 ± 14.57	69.72 ± 16.76
	30–39	78.75 ± 19.51	69.43 ± 31.00	70.32 ± 17.4	64.48 ± 11.05	70.75 ± 13.8
	40–49	76.08 ± 19.49	70.62 ± 26.65	66.65 ± 18.0	62.0 ± 13.52	68.84 ± 13.99
	50–59	72.50 ± 20.73	74.09 ± 24.11	66.09 ± 17.08	59.34 ± 14.08	68.00 ± 14.48
	60–69	70.66 ± 20.58	68.19 ± 21.66	61.20 ± 18.9	56.27 ± 13.05	64.08 ± 14.7
	70 and above	66.45 ± 21.88	62.19 ± 25.25	59.61 ± 18.86	53.97 ± 13.98	60.55 ± 16.11
p-value		< 0.001*	0.026*	< 0.001*	< 0.001*	< 0.001*
Gender	Male	78.60 ± 18.63	72.36 ± 26.86	68.35 ± 18.24	61.22 ± 12.45	70.13 ± 14.24
	Female	70.90 ± 21.26	68.19 ± 26.02	63.85 ± 18.20	59.51 ± 14.11	65.61 ± 14.87
p-value		< 0.001*	0.018*	< 0.001*	0.057	< 0.001*
Religion	Sikh	74.20 ± 20.58	69.94 ± 26.45	65.80 ± 18.34	60.20 ± 13.49	67.54 ± 14.7
	Other	72.50 ± 21.45	68.10 ± 25.90	62.93 ± 19.15	59.83 ± 14.20	65.84 ± 15.2
p-value		0.773	0.600	0.231	0.965	0.474
Caste	Jatt Sikh	74.55 ± 20.34	69.83 ± 26.45	65.80 ± 18.07	60.34 ± 13.5	67.63 ± 14.5
	Other	70.01 ± 21.80	70.00 ± 26.43	64.52 ± 20.12	59.06 ± 13.24	65.90 ± 14.8
p-value		0.026*	0.946	0.478	0.338	0.236
Household size	≤ 5	72.98 ± 20.62	70.38 ± 25.81	64.80 ± 18.69	59.60 ± 13.85	66.94 ± 14.89
	6–10	76.16 ± 20.24	69.39 ± 21.63	67.50 ± 17.53	61.33 ± 12.96	68.59 ± 14.38
	> 10	73.13 ± 22.34	74.13 ± 21.63	61.93 ± 20.89	60.53 ± 10.22	67.43 ± 15.64
p-value		0.117	0.311	0.113	0.308	0.199
Marital status	Married	74.80 ± 20.13	70.92 ± 26.63	66.35 ± 17.99	60.92 ± 13.00	68.25 ± 14.3
	Widowed	66.14 ± 22.58	63.40 ± 24.37	59.17 ± 20.26	54.43 ± 16.55	60.79 ± 16.55
	Unmarried	80.34 ± 18.99	66.05 ± 25.30	70.14 ± 16.04	61.51 ± 9.33	69.51 ± 12.42
p-value		< 0.001*	0.006*	< 0.001*	< 0.001*	< 0.001*
Educational level	Literate	77.56 ± 19.82	70.55 ± 28.20	68.34 ± 18.07	62.30 ± 12.20	69.69 ± 14.28
	Illiterate	68.86 ± 20.61	68.89 ± 23.63	61.79 ± 18.06	57.15 ± 14.64	64.17 ± 14.89
p-value		< 0.001*	0.346	< 0.001*	< 0.001*	< 0.001*
Employment status	Employed	77.53 ± 19.38	71.88 ± 27.40	68.40 ± 18.02	61.68 ± 12.96	69.87 ± 14.40

	Unemployed	71.29 ± 21.09	68.33 ± 25.57	63.56 ± 18.32	59.05 ± 13.7	65.56 ± 14.80
p-value		< 0.001*	0.042*	< 0.001*	0.003*	< 0.001*
Annual income (INR)	> 200,000	77.53 ± 19.38	71.88 ± 27.40	68.40 ± 18.02	61.68 ± 12.96	69.87 ± 14.40
	< 200,000	71.29 ± 21.09	68.33 ± 25.57	63.56 ± 18.32	59.05 ± 13.7	65.56 ± 14.80
p-value		0.084	0.022*	0.076	0.165	0.655

N count, SD standard deviation, QOL quality of life, INR Indian national rupees
*Significant at p-value < 0.05

Odds ratio findings

Multivariable logistic regression, adjusted for confounders, examined links between sociodemographic characteristics and quality of life **(Table 4)**. Adults aged 60 years and older faced 3.27 to 4.24 times greater odds of poor quality of life in the physical domain relative to the 20–29-year reference group. Women showed 1.7 to 2.1 times higher odds of poor quality of life in the psychological, social relationship, and environmental domains, plus overall. Unmarried respondents had 2.3 times elevated odds of poor social relationship quality of life compared to married ones. Illiterate individuals carried 1.5 to 1.7 times greater odds of poor quality of life in physical and environmental domains and overall versus literate counterparts. Conversely, households with 6–10 members displayed lower odds of poor quality of life in the physical domain and overall compared to smaller households (≤5 members). Notably, illiteracy was linked to decreased odds of poor quality of life in the psychological domain relative to literacy **(Table 4)**.

Table 4. Adjusted odds ratio analysis for overall and domain-wise Quality Of Life (QoL)

Sociodemographic Factor	Category	Environmental Domain OR (95% CI)	Social Relationships Domain OR (95% CI)	Psychological Domain OR (95% CI)	Physical Domain OR (95% CI)	Overall QoL OR (95% CI)
Age group (years)	20–29	Reference	Reference	Reference	Reference	Reference
	30–39	1.019 (0.421–2.46)	1.014 (0.435–2.365)	1.507 (0.619–3.669)	1.14 (0.43–3.05)	0.832 (0.355–1.949)
	40–49	1.187 (0.485–2.209)	0.977 (0.412–2.316)	0.994 (0.406–2.436)	1.90 (0.707–5.08)	0.828 (0.348–1.970)
	50–59	1.284 (0.522–3.16)	0.812 (0.340–1.93)	0.957 (0.389–2.355)	2.42 (0.90–6.51)	1.008 (0.422–2.410)
	60–69	1.600 (0.640–3.99)	1.244 (0.151–3.008)	0.622 (0.249–1.553)	4.24 (1.55–11.59)*	1.829 (0.751–4.456)
	≥ 70	2.195 (0.792–6.083)	1.842 (0.688–4.93)	0.705 (0.256–1.946)	3.27 (1.07–9.63)*	1.895 (0.696–5.164)
Gender	Male	Reference	Reference	Reference	Reference	Reference
	Female	2.177 (1.408–3.365)*	1.715 (1.119–2.62)*	0.87 (0.61–1.34)	1.28 (0.88–1.99)	2.022 (1.312–3.11)*
Religion	Sikh	Reference	Reference	Reference	Reference	Reference
	Other	0.499 (0.182–1.369)	0.447 (0.166–1.206)	1.32 (0.501–3.475)	0.773 (0.290–2.064)	0.427 (0.162–1.122)
Caste	Jatt Sikh	Reference	Reference	Reference	Reference	Reference
	Other	1.253 (0.771–2.037)	1.305 (0.809–2.106)	0.724 (0.445–1.177)	1.187 (0.726–1.940)	1.744 (1.064–2.86)
Marital status	Married	Reference	Reference	Reference	Reference	Reference
	Widowed	1.309 (0.822–2.085)	1.484 (0.940–2.345)	0.717 (0.450–1.143)	1.449 (0.903–2.326)	1.489 (0.921–2.406)
	Unmarried	0.782 (0.341–1.79)	2.253 (1.066–4.76)*	1.985 (0.807–4.885)	1.584 (0.732–3.427)	1.731 (0.810–3.702)
Educational level	Literate	Reference	Reference	Reference	Reference	Reference

	Illiterate	1.635 (1.201–2.225)*	1.045 (0.767–1.423)	0.564 (0.414–0.769)*	1.756 (1.290–2.90)*	1.462 (1.074–1.990)*
Employment status	Employed	Reference	Reference	Reference	Reference	Reference
	Unemployed	0.864 (0.571–1.308)	0.956 (0.637–1.436)	0.747 (0.491–1.137)	1.054 (0.693–1.603)	1.067 (0.708–1.608)
Annual household income (INR)	> 200,000	Reference	Reference	Reference	Reference	Reference
	< 200,000	1.278 (0.952–1.715)	0.830 (0.620–1.112)	0.851 (0.632–1.146)	0.958 (0.711–1.291)	1.006 (0.750–1.349)
Household size	≤ 5	Reference	Reference	Reference	Reference	Reference
	6–10	0.726 (0.537–0.981)	1.068 (0.797–1.433)	1.307 (0.964–1.772)	0.719 (0.530–0.975)*	0.710 (0.527–0.956)*
	> 10	0.874 (0.292–2.615)	1.795 (0.621–5.186)	0.459 (0.151–1.394)	0.942 (0.308–2.883)	1.120 (0.374–3.353)

OR adjusted for age, sex, education status, and occupation status

OR odds ratio, QOL quality of life, CI confidence interval, INR Indian national rupees

*Significant at p-value < 0.05

The current investigation was carried out to evaluate Quality of Life (QoL) among rural populations of Punjab, India, and to identify sociodemographic factors linked with poorer QoL. In this study, the mean overall QoL score was 67.44 ± 14.7. A global meta-analysis assessing QoL across populations stratified by Human Development Index (HDI) reported an average QoL score of 74.26 in very high HDI countries, whereas nations with high to low HDI showed mean values ranging between 65.57 and 64.10 [4]. Accordingly, the observed mean QoL score of 67.44 in the present sample exceeds that reported for low-, medium-, and high-HDI countries, yet remains lower than the levels documented in very high HDI nations [4].

Most earlier Indian studies have focused on elderly populations or individuals with specific health conditions and have documented lower QoL scores than those reported here. For example, mean QoL values of 38.9 among elderly individuals in Kerala [23], 48.86 among elderly populations in Haryana [22], 49.74 among elderly residents of urban Puducherry [24], 55.10 among individuals with diabetes in Andhra Pradesh [25], 58.05 among diabetics in Tamil Nadu, 61.49 among people living with epilepsy in Tamil Nadu, and 63.8 among individuals with epilepsy in Punjab have been reported [26]. Only a limited number of Indian studies have examined QoL in the general population, reporting either similar or lower mean scores than those observed in the present study, such as 63.5 among adults in Puducherry [27] and 67.6 among rural adults in Haryana [20]. Conversely, substantially higher QoL values, such as 86.6 among adults residing in Delhi, have also been documented [28]. When compared internationally, the mean QoL observed in the present study aligns with findings from certain earlier studies conducted in other countries [10, 29], including research by Lodhi *et al*. in Pakistan, Chen *et al*. in China, and Wong *et al*. in Hong Kong [29, 30, 31]. Collectively, these comparisons suggest that the study population demonstrates an overall satisfactory QoL, although the higher scores reported in very high HDI countries and some Indian settings indicate potential room for enhancement [4, 28].

It is also relevant to contextualize these findings in relation to the World Happiness Report 2024 [32]. Although different assessment instruments were employed, both approaches rely on subjective evaluations of well-being. Contrary to the World Happiness Report 2024, which places India at 126th position in life evaluation rankings for the overall population [32], the present sample appears to report comparatively better QoL. This is underscored by the fact that the mean QoL score in this study exceeds those reported in several middle- and high-income countries that ranked higher than India in the World Happiness Report 2024 [4, 32].

With respect to domain-specific outcomes, physical health emerged as the most compromised QoL domain, followed by psychological health and social relationships, whereas environmental health was least affected. Similar patterns—where physical and psychological domains are most impaired—have been documented by Malibary *et al*. among medical students

in Saudi Arabia, Gholami *et al*. among cataract patients in Iran, and Mohammed *et al*. among elderly populations in the Gaza Strip [33–35]. In contrast, studies conducted in general populations have often identified environmental and psychological domains as the most affected aspects of QoL [4, 29]. For example, reduced environmental QoL has been reported among adults in Pakistan [29], while diminished psychological well-being has been observed among Chinese medical students by Zang *et al*. [36] and among medical students in Punjab by Ghazanfar *et al*. [37].

Differences in the most affected QoL domains across studies may reflect variations in study contexts and associated sociodemographic and environmental factors. While much of the literature on general populations highlights environmental and psychological domains as being most compromised [4], the present study identified physical health as the most affected domain. This finding is concerning, particularly as the sample includes individuals from younger age groups. Prolonged involvement in physically demanding agricultural activities, coupled with a high prevalence of hypertension and diabetes in the region [38], may partly explain this outcome. These findings underscore the need for strengthening community-level healthcare services and implementing early preventive interventions. Additionally, given that a substantial proportion of participants are engaged in farming, the promotion of ergonomic agricultural practices is warranted.

In relation to sociodemographic correlates of QoL, age, sex, marital status, education, and family size were significantly associated with poor QoL, whereas religion, caste, and annual income showed no such association in this study. Adjusted regression analysis indicated that increasing age was linked with poorer QoL, a finding consistent with previous reports [29, 39]. However, contrasting evidence has been reported by Cruz *et al*. in Brazil, where individuals aged 30–40 years experienced the lowest QoL across domains [40]. Advancing age is commonly accompanied by physical and psychological changes that may adversely affect QoL [29]. Existing literature suggests that emotional vulnerability tends to increase with age due to factors such as social isolation, age-related illnesses, and bereavement, thereby reducing overall well-being among older adults [41].

Although Indian studies among elderly populations have frequently identified physical health as the most adversely affected domain [24], evidence from developed countries such as Japan has shown no significant association between older age and poor physical QoL, suggesting that aging alone does not inevitably lead to diminished QoL [42]. While advancing age increases susceptibility to chronic conditions and disabilities—some of which may be unavoidable—adopting healthy lifestyles, improving access to healthcare services (including family physicians within primary healthcare systems), and ensuring timely referral to tertiary care facilities may alleviate physical health burdens among older individuals. Furthermore, the implementation of social and emotional support initiatives in rural areas may contribute to improvements in psychological, social, and environmental well-being.

Sex-based comparisons revealed that women reported significantly lower mean QoL scores across all domains except physical health, as well as in overall QoL, compared with men. Adjusted regression analysis further demonstrated that women faced a higher risk of poor QoL in psychological and social domains, as well as in overall assessments, relative to men. These findings are consistent with earlier studies [35, 43]. In contrast, research from Japan has reported better QoL among women compared with men [44]. Lower QoL among women may be influenced by sociocultural and structural factors, including higher rates of illiteracy among women in low- and middle-income countries such as India, economic dependence, domestic and occupational stress, limited leisure time, and the expectation that women manage multiple roles encompassing household duties and agricultural labor [43]. The World Happiness Report 2024 provides additional context, indicating that among Indians, older age was associated with higher life satisfaction and that older women reported greater life satisfaction than men after adjusting for covariates [45]. This suggests that age and gender alone may not fully explain variations in QoL, and that broader contextual and social factors likely play an important role.

Marital status demonstrated a clear relationship with poor QoL within the social-relationship domain. Individuals who were widowed, divorced, or never married exhibited poorer social-relationship QoL compared with married participants. Comparable patterns have been documented in earlier research [44, 46], where married respondents consistently reported higher QoL than those who were widowed, divorced, or unmarried. The presence of a spouse or partner has repeatedly been linked to improved subjective well-being [22]. Such companionship facilitates the formation of reliable emotional support

systems and social ties, which are fundamental contributors to QoL and overall well-being [22].

In line with expectations, participants lacking literacy showed a significantly greater vulnerability to poor QoL in the physical, psychological, and environmental domains when compared with literate individuals. Prior studies have similarly indicated that higher educational attainment corresponds with better QoL outcomes [47]. Education not only enhances socioeconomic positioning but has also been shown to independently influence health status and perceived well-being [48]. Closely related to education is employment status, which warrants discussion here. Although unemployed individuals in this study exhibited lower mean QoL scores across all domains relative to employed participants, adjusted regression analysis did not reveal employment status as a significant predictor of QoL. This observation contrasts with findings reported elsewhere [29, 49]. A plausible explanation is that most respondents were engaged in agriculture, where employment is often seasonal and supplemented by alternative income sources. Taken together, these findings suggest that within rural agrarian communities, educational attainment may exert a stronger influence on QoL than employment status alone.

This interpretation is reinforced by another notable outcome of the study: average annual income did not demonstrate a significant association with QoL. While this finding differs from previous evidence [50], it further supports the idea that determinants of QoL in rural farming settings may differ substantially from those in urban or non-agricultural populations. In the present sample, most participants had achieved formal education only up to the secondary school level, which may not confer substantial employment or financial advantages; nevertheless, even this level of education appeared to offer protection against poor QoL. Overall, these observations underscore that education remains a key contributor to improved QoL, even in the absence of occupational mobility or financial advancement.

Additionally, the study revealed that individuals belonging to larger households (6–10 members) experienced a significantly lower risk of poor QoL compared with those from smaller families (≤ 5 members). This finding highlights the importance of family structure in shaping psychological and social dimensions of well-being. The role of family size in influencing QoL within rural populations merits further detailed investigation.

When interpreting these findings, the limitations of the study must be acknowledged. Owing to its cross-sectional design, the study is restricted to identifying associations between QoL and sociodemographic characteristics and cannot establish causal relationships.

Conclusion

The findings indicate that the physical health domain was the most adversely affected aspect of QoL, followed by psychological health, social relationships, and environmental conditions. Adjusted regression analysis identified female sex, older age (≥ 60 years), lack of literacy, and unmarried status as factors positively associated with poor QoL, while belonging to a family of 6–10 members was inversely associated with poor QoL. The results further suggest that occupation and household income may not have a direct influence on QoL in this population, whereas educational attainment plays a pivotal role. These outcomes imply that even when education does not lead to non-agricultural employment or financial gains, it remains a critical determinant of improved QoL.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

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