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Original Research

Factors associated with quality of life for people in a rural area of Peru: importance of family health and socioeconomic aspects

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Abstract

Introduction: Considering socioeconomic aspects, this study aimed to analyze the relationship between quality of life and family health in residents of a rural area of Peru.
Methods: In a cross-sectional design study, the sample comprised 288 residents chosen through simple random probabilistic sampling. It included male and female Peruvian residents aged 18 years or more who lived with their families and agreed to participate in the study. The SALUFAM (family health) scale and the Quality of Life Index are used for data collection.
Results: The results revealed that residents with basic education (adjusted odds ratio (aOR): 2.44, 95%CI: 1.33–4.49, p=0.004) who did not have a job (aOR: 1.66, 95%CI: 1.23–2.23, p=0.001) and who

received an income less than the minimum wage (aOR: 1.45, 95%CI: 1.03–2.03, p=0.03) presented a greater probability of perceiving inadequate quality of life. Furthermore, residents with more vulnerable family health (aOR: 1.79, 95%CI: 1.34–2.38, p=0.000) were more likely to perceive an inadequate of their quality of life than those in families with less vulnerability. **Conclusion**: Socioeconomic factors and vulnerability in family health are significantly associated with a worse quality of life in these rural communities.

Keywords

family health, Peru, public health, quality of life, socioeconomic factors.

Introduction

Peru's 2022 National Household Survey on Living Conditions and Poverty (*Encuesta Nacional de Hogares,* ENAHO), conducted by the Instituto Nacional de Estadística e Informática (INEI), revealed that in Peru there is a significant increase in families without children, from 26% in 2016 to 28.5% in 2017, along with a decrease in the average size of families (4.42 to 3.94 people between 2007 and 2017), with socioeconomic strata A and E being the smallest. (In Peru, socioeconomic strata are classified from A to E, where A corresponds to the wealthiest households with full access to services, and E to the poorest households with limited access to basic needs.) Likewise, there was a 33% increase in the presence of women as heads of families, reflecting greater female participation in the workforce. On the other hand, the percentage of family spending on food decreased from 42% to 39% between 2008 and 2017[1]. This situation can affect family dynamics, influencing the health, wellbeing, and quality of life of its members. This is especially relevant in rural areas of the country, where living conditions and resource availability differ from urban areas, and this can create greater challenges for family health.

Quality of life in adults and family health are two interrelated dimensions that play a fundamental role in the general wellbeing of people and their families[2]. Quality of life refers to wellbeing in terms of physical health, mental health, social relationships, and satisfaction in various areas of life[3]. Previous studies by the National Institute of Statistics and Informatics of Peru have revealed significant disparities between urban and rural areas: only 52.6% of rural families have access to drinking water through the public network, compared to 90.9% in urban areas. Likewise, access to sewage disposal systems and electricity is considerably lower in rural areas[4]. These differences are also reflected in the educational field, and access to food programs is more limited in rural areas[5]. Additionally, local studies have shown that programs such as the Ministry of Health's (MINSA) Healthy Families and Housing program, aimed at improving the quality of life in rural areas, have found that many beneficiary families (households receiving support through government programs) report a poor quality of life, which highlights the persistence of challenges in improving living conditions in these communities[6]. A study of older adults from rural areas of Peru found a better quality of life in the physical, psychological, and environmental dimensions compared to older adults from urban areas, who only show higher levels of quality of life in the intimacy dimension, a dimension relating to close personal relationships and to feelings of closeness, affection, trust and emotional support[7]. This suggests that, despite difficulties in accessing basic services, rural older adults show resilience and satisfaction in their daily lives.

Family health refers to evaluating the health and wellbeing of a family as a system, considering aspects such as communication, decision-making, emotional support, and adaptability to change[8]. A recent study with 519 residents in the rural Peruvian population showed a greater probability of family health vulnerability in rural regions of the high Andean and jungle zones[9]. Another study characterized the 67 beneficiary families of the MINSA Healthy Families and Housing program in which a high percentage of families reported achievements in healthy behaviors and environments: 68.7% in hygiene, 77.6% in feeding children aged less than 36 months, 100% in lactating women, and 64.2% in sexual and reproductive health of pregnant women and women of childbearing age[10]. These results highlight the significant adoption of healthy practices within beneficiary families in the region, despite challenging socioeconomic conditions and limitations in basic infrastructure. However, limited research has simultaneously assessed the association between quality of life and family health in rural populations, particularly in low- and middle-income countries like Peru.

Previous studies have identified several potential confounding variables that may influence outcomes related to quality of life, including socioeconomic status, economic income, family structure, and other sociodemographic factors[11,12]. High levels of stress, conflict, or lack of support in a family can negatively impact the quality of life of its members[13-15]. There is still a need to explore how family health interventions can improve quality of life and evaluate the impact of government policies in these aspects. Although these previous studies have examined rural health, socioeconomic conditions, or quality of life independently, few have explored how family health vulnerability interacts with socioeconomic factors to influence perceived quality of life in rural Peru. These variables were taken into account in the design and analytical strategy of the present study to more accurately isolate the associations of interest.

This study aims to fill this research gap by analyzing the relationship between family health vulnerability and quality of life in residents of a rural district in southern Peru, while accounting for key socioeconomic variables.

Methods

Type of study, population, and sample

The study had a cross-sectional design. It was carried out in the Yauca del Rosario district of the province of Ica, which has a total population of 1116. Most of the homes in the area are *quincha* (cane with mud) constructions, characterized by their traditional structure. Access to basic services is limited because most homes do not have a public water network; water is supplied by tanker trucks or other sources. Likewise, sanitary conditions are precarious, with most people using cesspools or latrines. Regarding infrastructure, approximately 80% of homes have access to electrical services. However, access to education and health presents significant challenges, with few schools available and most of the population affiliated with the Complete Health

Insurance, a national public program that provides free or subsidized access to essential health services for people without other insurance, particularly those in poverty. The district has a level I-2 health center (a primary care facility that provides general outpatient services with basic diagnostic and pharmacy support, but without specialist care or hospitalization capacity) to meet local medical needs. The main activity in Yauca is agriculture, which is fundamental to the local economy. The region faces natural risks, such as the high risk of pluvial flooding, which affects the safety and wellbeing of its inhabitants.

The sample size was estimated using simple random probabilistic sampling, ensuring that every individual in the population had an equal chance of being selected. The calculation was based on a confidence level of 95% and a margin of error of 5%, which are standard statistical parameters used to ensure reliability and precision in the results. The formula commonly used for sample size estimation in a finite population (1116 inhabitants) was used. By applying these values to the formula, the estimated sample size was found to be 286 participants, ensuring a representative and statistically valid sample for the study. The participants were chosen according to the following inclusion criteria: Peruvian residents of both sexes, aged over 18 years, lived with their families and agreed to participate in the study. Foreign residents, minors living alone, and those who did not sign the informed consent were excluded.

Data collection instruments and techniques

The personal interview survey technique was used for data collection, which involved a face-to-face visit to participants' homes.

The instrument used was a structured questionnaire that consisted of two main parts: perception of family health and quality of life. To evaluate the perception of family health, the SALUFAM (family health) scale developed by Puschel and collaborators in Chile consists of 13 items and focuses on identifying families' health vulnerability[16]. This scale, which has demonstrated a Cronbach's alpha reliability greater than 0.91, categorizes family health into greater vulnerability (≤38 points) and less vulnerability (≥39 points).

To evaluate quality of life, the Spanish version of the Quality of Life Index, known as QLI-Sp, was used and validated in Peru with a reliability of 0.87 according to Cronbach's alpha coefficient[17,18]. It consists of 10 elements that address various important aspects of quality of life, such as physical and psychological wellbeing, self-care, occupational functioning, interpersonal functioning, social-emotional support, community and service support, personal and spiritual satisfaction, and overall perception of quality of life. Each element was evaluated using a Likert scale, ranging from poor (1) to excellent (10). Participants who obtained an average score greater than 5 on each element were categorized as those with adequate quality of life. In contrast, those who received an average score of less than 5 were considered to have inadequate quality of life.

Additionally, socioeconomic aspects were collected, including sex, age, level of education, marital status, employment status, economic income, health insurance, type of family, and history of a family member with chronic illness. The socioeconomic questionnaire was developed based on standardized instruments commonly used in population-based health and nutrition surveys conducted in Peru and Latin America. Its design was informed by validated tools used in national epidemiological studies, particularly the ENAHO, conducted by INEI, to ensure cultural and contextual relevance. Data collection occurred between January and March 2024, and each interview lasted approximately 15 minutes.

Data analysis

The Statistical Package for the Social Sciences v24 (IBM Corp; https://www.ibm.com/products/spss-statistics) was used for data analysis and processing. The dependent variable was quality of life, and independent variables were family health (categorized as 'more vulnerability' or 'less vulnerability'), socioeconomics and demographics. Initially, the data was cleaned extensively to ensure its quality and reliability. The analysis proceeded in three stages: descriptive statistics, bivariate analysis, and multivariate analysis. A descriptive analysis of the study variables was carried out, including simple frequency tables for categorical variables.

Bivariate analysis was conducted using the χ^2 test to examine the association between the dependent variable (quality of life) and each independent variable. This helped identify variables significantly associated with quality of life at a preliminary level ($p<0.05$). Multivariate analysis was employed to control for potential confounding variables that could bias the associations under investigation. Based on evidence from prior literature, variables such as level of education, employment status, economic income, health insurance, and type of family were included in the model. Multivariate analysis was conducted using binary logistic regression to estimate the strength of association between independent variables and the likelihood of reporting inadequate quality of life, while adjusting for confounding variables. The odds ratios (ORs) and adjusted odds ratios (aORs) with 95% confidence intervals (CI) were calculated and reported to indicate the magnitude and direction of associations. Only variables that showed statistical significance in the bivariate analysis were included in the regression model. The multivariate approach allowed the identification of independent predictors of quality of life after controlling for age, sex, and marital status. Statistical significance was defined as $p<0.05$ for all analyses.

Ethics approval

The research project was approved by the ethics committee of the Faculty of Health Sciences of the Universidad Peruana Unión (RS 2024-CE-FCS—UPeU-028). In addition, informed consent was signed before questionnaires were completed.

Results

Of the 288 people surveyed, 57.6% were women, and 42.4% were men; the adult age group (18–59 years) represented 50.3%. Of those surveyed, 86.8% had a higher level of education, 63.5% were married or cohabiting, 50.3% had a job, and 82.6% reported a monthly income less than the country's minimum wage (USD 280). In total, 86.5% had health insurance, 70.1% lived in an extended family, and 83% reported having a family member with a chronic illness (Table 1).

Regarding descriptive analysis of the study variables, 65.6% of respondents reported greater vulnerability in family health, while 34.4% indicated lower vulnerability (Table 1). A considerable

percentage of respondents reported an inadequate quality of life in terms of physical wellbeing (61.8%), psychological wellbeing (49.3%), and self-care (41.0%). The majority of participants rated positively other aspects of their quality of life, such as occupational, interpersonal functioning, social-emotional, community, and service support, as well as personal fulfillment, spiritual satisfaction, and quality of life overall, with percentages ranging between 65.3% and 70.1% < href="#table2">(Table 2).

In the bivariate analysis, the level of education (p=0.000), employment status (p=0.000), economic income (p=0.000), health insurance (p=0.045), family type (p=0.000), and family health (p=0.000) were significantly related to quality of life (Table 3).

Chi-squared test was used to explore associations between quality of life and various sociodemographic characteristics. A p-value less than 0.05 was considered statistically significant.

The adjusted multivariate analysis showed that respondents with a basic education were 2.44 times more likely to have an inadequate perception of their quality of life (95%CI: 1.33–4.49, p=0.004), unlike those with higher education degree. Similarly, those who did not have a job were 1.66 times more likely to have an inadequate perception of their quality of life (95%CI: 1.23–2.23, p=0.001) than those who worked. Those with an income less than the minimum wage had 1.45 times greater probability (95%CI: 1.03–2.03, p=0.03) of an inadequate perception of their quality of life compared to those with an income greater than or equal to the minimum wage. Participants with more vulnerable family health were 1.79 times more likely to have a perception of inadequate quality of life (95%CI: 1.34–2.38, p=0.000) than those in families with lower vulnerability (Table 4).

Table 1: Sociodemographic characteristics of study population

Variable	Characteristics	*n* (*N*=288)	%
Sex	Female	166	57.6
	Male	122	42.4
Age (years)	Adult (18–59)	145	50.3
	Older adults (≥60)	143	49.7
Educational level	Basic	38	13.2
	University	250	86.8
Marital status	Married, cohabitant	183	63.5
	Single, separated, or widowed	105	36.5
Employment status	Unemployed	143	49.7
	Employed	145	50.3
Economic income	Less than minimum wage	238	82.6
	More than minimum wage	50	17.4
Health insurance	Yes	249	86.5
	No	39	13.5
Type of family	Single parent	36	12.5
	Extended	202	70.1
	Nuclear	50	17.4
Any family member with chronic disease?	Yes	239	83.0
	No	49	17.0
Family health	More vulnerability	189	65.6
	Less vulnerability	99	34.4

Table 2: Descriptive analysis of the quality of life variable and its 10 dimensions

Quality of life dimension	Mean	Standard deviation	95%CI	Adequate (>5 points)		Inadequate (<5 points)	
				n	%	*n*	%
Physical wellbeing	4.90	1.57	4.71–5.08	110	38.2	178	61.8
Psychological wellbeing	5.29	1.80	5.08–5.50	146	50.7	142	49.3
Self-care	5.45	1.78	5.24–5.66	170	59.0	118	41.0
Occupational functioning	5.77	2.05	5.53–6.01	185	64.2	103	35.8
Interpersonal functioning	5.70	1.98	5.47–5.93	200	69.4	88	30.6
Social-emotional support	5.78	2.11	5.54–6.03	170	59.0	118	41.0
Community and service support	5.86	2.15	5.61–6.11	185	64.2	103	35.8
Personal fulfillment	6.11	1.88	5.89–6.33	188	65.3	100	34.7
Spiritual satisfaction	5.93	1.98	5.70–6.16	202	70.1	86	29.9
Overall quality of life	6.17	1.95	5.95–6.40	188	65.3	100	34.7

CI, confidence interval.

Table 3: Bivariate analysis between sociodemographic aspects/family health and quality of life of the residents of a rural area of Peru

Variable	Characteristics	Quality of life				*p*-value
		Adequate		Inadequate		
		n (*N*=188)	%	*n* (*N*=100)	%	
Sex	Female	113	60.1	53	53.0	0.245
	Male	75	39.9	47	47.0	
Age (years)	Adult (18–59)	99	52.7	46	46.0	0.282
	Older adults (≥60)	89	47.3	54	54.0	
Educational level	Basic	11	5.9	27	27.0	0.000*
	University	177	94.1	73	73.0	
Marital status	Married, cohabitant	117	62.2	66	66.0	0.527
	Single, separated, or widowed	71	37.8	34	34.0	
Employment status	Unemployed	70	37.2	73	73.0	0.000*
	Employed	118	62.8	27	27.0	
Economic income	Less than minimum wage	144	76.6	94	94.0	0.000*
	More than minimum wage	44	23.4	6	6.0	
Health insurance	Yes	157	83.5	92	92.0	0.045*
	No	31	16.5	8	8.0	
Type of family	Single parent	33	17.6	3	3.0	0.000*
	Extended	136	72.3	66	66.0	
	Nuclear	19	10.1	31	31.0	
Family members with chronic diseases	Yes	155	82.4	84	84.0	0.738
	No	33	17.6	16	16.0	
Family health	More vulnerability	97	51.6	92	92.0	0.000*
	Less vulnerability	91	48.4	8	8.0	

*p<0.05, **p<0.01, ***p<0.001.

Table 4: Multivariate regression analysis according to the quality of life of the residents of a rural area of Peru

Variable	Characteristics	cOR	95%CI for cOR	*p*-value	aOR	95%CI for aOR	*p*-value
Educational level	University	1			1		
	Basic	2.68	(1.06–6.73)	0.036	2.44	(1.33–4.49)	0.004*
Employment status	Employed	1			1		
	Unemployed	2.77	(1.38–5.54)	0.004	1.66	(1.23–2.23)	0.001*
Economic income	More than minimum wage	1			1		
	Less than minimum wage	3.53	(1.31–9.51)	0.012	1.45	(1.03–2.03)	0.03*
Health insurance	Yes	1			1		
	No	0.13	(0.04–0.41)	0.001	0.79	(0.54–1.16)	0.239
Type of family	Single parent	1			1		
	Extended	5.00	(1.18–21.23)	0.029	0.84	(0.61–1.16)	0.304
	Nuclear	2.78	(1.32–5.84)	0.007			
Family health	Less vulnerability	1			1		
	More vulnerability	5.61	(2.39–13.18)	0.000	1.79	(1.34–2.38)	0.000*

*p<0.05, **p<0.01, ***p<0.001. Statistically significant by binary logistic regression. Multivariate approach is adjusted by marital status, age, and sex.
aOR, adjusted odds ratio. CI, confidence interval. cOR, crude odds ratio.

Discussion

Rural areas in Latin American countries are distinguished by the poverty of their residents and the lack of essential services, such as drinking water, electricity, drainage, security, medical care, and education. These social deficiencies prevent the members of these communities from reaching their full potential in the social, economic, and family spheres, resulting in a reduced possibility of enjoying a good quality of life[19]. Little is still being studied about the impact of family health on the quality of life in rural areas. This study analyzed the relationship between quality of life and family health in residents of a rural region of Peru, taking into account socioeconomic factors.

The study showed significant associations between socioeconomic and family variables and the perception of quality of life. First, we found that individuals with a basic educational level reported an inadequate perception of quality of life compared to those with higher education. This association is consistent with previous research, such as studies carried out in both rural and urban areas highlighting the positive impact of educational level on quality of life, especially in dimensions related to mental and physical health. For example, in the physical health dimension, adults with secondary education had a 245% worse assessment of physical health than adults with a university education. The physical health of adults from rural areas was 186% worse than that of people from urban areas[20,21]. This relationship can be explained by the

access to resources and opportunities that education provides and the increased knowledge and skills to face the challenges of daily life. Interestingly, in the present study population, the majority mentioned having higher education, and 65% of participants perceived an adequate overall quality of life. However, dimensions such as physical and psychological wellbeing were inadequate for the majority. Although our results and those found in the literature show the importance of education, it is necessary to further explore this variable and its importance, especially in managing physical and emotional health.

Lack of employment was found to be significantly related to a perception of inadequate quality of life. Likewise, previous research showed the negative impact of unemployment on people's psychological and social wellbeing. Job loss can affect self-esteem, financial stability, and social relationships, influencing perceptions of quality of life[22]. In contrast, other results showed that those who worked reported higher levels of quality of life than those who were not working (β (SE)=0.02 (p<0.001). This association between quality of life and employment status was stronger for older adults controlling for sex, marital status, education, household income and any diagnosis of chronic disease[23]. Governments should promote actions in rural population centers that generate local and direct employment while making progress in closing gaps in this issue and improving quality of life indicators in these areas.

We observed that an income less than the minimum wage was also associated with a perception of inadequate quality of life. This finding aligns with previous studies in rural areas of Peru and other countries, highlighting poverty's influence on people's subjective wellbeing. The results of these studies revealed significant differences in the impact of rural poverty on quality of life. A very high correlation (%uD835%uDF80=0.902) was observed, indicating that reducing rural poverty would lead to a substantial improvement in the quality of life for residents[24,25]. The lack of economic resources can limit access to health services, adequate food, decent housing, and leisure activities, negatively impacting quality of life. The problem of poverty and lack of opportunities in rural areas is a reality ignored by government authorities. In that sense, it is an extraordinary challenge to contribute to improving the quality of life for the inhabitants of these areas.

Our results indicated that greater family health vulnerability was associated with a perception of inadequate quality of life. A previous study conducted among adults in rural China found that family health was significantly associated with quality of life (β=0.829, 95%CI: 0.660–0.997, p<0.001). Additionally, binary logistic regression models indicated that family health was significantly related to three dimensions of quality of life: mobility, self-care, and usual activities (p<0.01)[26]. These findings are supported by previous studies that found that family cohesion and social support are important predictors of quality of life[8,26]. The recent pandemic severely affected these countries, which also affected family health[9]. Healthy family relationships and emotional support can provide a sense of belonging, security, and wellbeing that positively influence individuals' perceptions of quality of life[27,28]. This study is an initial approach to continuing to investigate how family health can positively predict the quality of life among adults in rural Peru. Family-focused interventions have more potential and value, as improved family health will significantly improve quality of life.

Limitations

Despite the significant findings obtained in this study, certain limitations that could affect the validity and generalizability of the results must be recognized. The study was carried out in the Yauca del Rosario district of the rural region of Ica, Peru. Therefore, the results cannot be generalized to urban or suburban areas. The cross-sectional design used prevents establishing causal relationships between the variables studied. However, a multivariate analysis was carried out to control some confounding factors and explore the relationships between multiple variables simultaneously; the study's observational nature prevents confirming definitive causal relationships. Additionally, other unmeasured factors could influence the results, limiting the generalizability of the findings. Information collected through self-administered questionnaires may be subject to response bias, in which the participants' subjective perceptions may have an influence.

Conclusion

Residents of rural areas of Peru with basic education, who do not have a job, who receive an income less than the minimum wage, and who present greater vulnerability in their family health are more likely to perceive their quality of life as inadequate. In addition to managing socioeconomic aspects, the government and primary healthcare workers must consider family health as a key indicator and evaluate it before and after implementing any strategy that seeks to improve the quality of life of the residents of the communities in rural zones.

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Conflicts of interest

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