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RESEARCH ARTICLE

Mood states according to sociodemographic variables in the Peruvian population

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ABSTRACT

Mood states represent a central dimension of psychological well-being, influenced by multiple factors, including sociodemographic variables. However, in the Peruvian context, there is still no extensive empirical evidence that explores how these variables modulate emotional responses at different stages of the life cycle. Moods were analyzed according to sociodemographic variables in a representative sample of the Peruvian population. A quantitative, non-experimental and cross-sectional design was applied; 2283 people participated distributed according to population groups (adolescents, youth, adults and older adults). A validated scale was used to assess the child's condition. Data was analysed with non-parametric tests (absence of normal distribution in the data). High and medium levels were found in the dimensions of mood, significant differences were found in the dimensions of anxiety, depression, joy and hostility according to sociodemographic variables. Women and divorced/widowed people reported higher levels of anxiety and depression. Participants with higher levels of education, higher incomes, and residents of urbanized areas showed higher levels of joy. Adolescents, women, and people with higher education had higher scores in hostility. It is concluded that moods are influenced by specific sociodemographic characteristics, evidencing the need for differentiated interventions according to population profile, implementing community mental health strategies, especially in vulnerable contexts.

Keywords: Mood states; sociodemographic variables; mental health; anxiety; depression; hostility; emotional well-being; population groups

1. Introduction

Mood states are an essential component of psychological well-being, directly influencing people's perception of how to face their environment daily, various social and personal factors can significantly impact people's emotional function, generating variations that affect quality of life [1]. In societies characterized by structural inequalities, such as the Peruvian case, moods are usually conditioned by sociodemographic variables, such as sex, age, educational level, occupation, marital status, and

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socioeconomic level [2].

Some studies reported that certain social groups are more emotionally vulnerable, highlighting that women, older adults, unemployed people or people with a low level of education more frequently experience negative affects, such as sadness, anxiety or hopelessness. However, in the context of the study, scientific production is still limited, finding limitations in a comprehensive way in the analysis of moods and sociodemographic characteristics, especially in the non-clinical adult population [3].

Therefore, the National Institute of Mental Health in 2023 reveals that 45% of the Peruvian population indicates that mental health is a serious health problem, these specific data should contribute to the design of contextualized and effective psychosocial interventions in mental health [4]. Considering that Peru has a great cultural, social and geographical diversity, it is essential to study how moods vary according to different demographic profiles, allowing a deeper understanding of the emotional needs of the population and contributing to the generation of public policies that are more inclusive and sensitive to social differences [5].

Mood refers to a persistent emotional condition that influences how people perceive and respond to their environment, are less intense, of prolonged duration and generally have no clear origin, can be positive or negative and significantly affect psychological well-being and daily functioning [6].

And sociodemographic variables are personal and social characteristics that allow describing and classifying populations, these indicators influence the way people experience, express and regulate their emotions and are essential in social and psychological research [7].

In this sense, emotional states are modified throughout the life cycle, influenced by psychological development, social changes and the challenges of each stage; During adolescence, emotional instability, impulsivity and poor self-regulation predominate, increasing the risk of anxiety and negative moods, in addition, the emotions they experience are marked by the search for identity, strong peer influence and psychosocial risks typical of transition or age [8]. In youth, there are high levels of stress and social pressure, derived from educational, work and affective transitions, also, they have greater social empathy and sensitivity to social pain (shame, sadness of others), reaching their greatest empathy at this stage compared to adolescents or older people, and there is a decrease in emotional well-being due to factors such as social networks, inequality and economic stress [9].

In adulthood, people tend to experience greater emotional balance with less frequency of negative emotions and better ability to manage them, favoring more balanced experiences, presenting a greater ability to regulate emotional states, decreasing affective intensity and emotional discomfort [10]; This trend is maintained and accentuated in older adulthood, where, despite the losses associated with aging, levels of emotional well-being are experienced, however, at very advanced ages, factors such as loneliness or physical deterioration can negatively affect the emotional state [11].

Likewise, with advancing age, social networks are reduced in their use and dependence, allowing close and positive ties to be maintained, this situation is related to a greater proportion of positive and less negative emotional experiences in daily life [12].

From the theoretical perspective, the theory of socio-emotional selectivity [13], maintains that the perception of available time modulates social objectives, when feeling with limited time, people prioritize emotional goals (maintaining affective bonds) over the goals of knowledge or expansion; This motivational change guides a more affective emotional regulation, favoring emotionally rewarding relationships, avoiding intense negative interactions, and increasing emotional well-being in middle and advanced adulthood.

In addition, the cognitive-experiential theory [14] points out that behavior and emotions emerge from two mental systems, one rational and the other emotional-experiential; the experiential system is faster, associative and strongly influenced by immediate emotions; while the rational system is slower and evaluative, therefore, the interaction between the two allows modulating emotional responses to events, influencing the quality of the emotional state according to psychosocial contexts.

On the other hand, some previous studies in the Peruvian context have shown the significant influence of sociodemographic variables on emotional states, such as anxiety, depression and stress; a longitudinal analysis of data from the Demographic and Family Health Survey between 2014 and 2021 revealed a stability in the prevalence of depressive symptoms, although with marked inequalities in access to mental health services according to area of residence and socioeconomic level, to the detriment of rural and low-income populations [15].

Torales et al. [16], studied the association of anxiety and depression levels in educational settings with medical students, showing that women and those who perceive a negative academic climate report greater emotional distress; In adults with multimorbidity, a direct relationship has been reported between the presence of chronic diseases and greater depressive symptomatology, specifically in those with a lower level of education [17].

In the case of older adults, it has been highlighted that variables such as place of origin, educational level, physical activity, and reading habits are related to better cognitive performance, constituting a protective indicator of emotional well-being at this stage of life [18].

These findings allow us to understand that sociodemographic conditions not only condition access to mental health services but also modulate the prevalence and expression of emotional states in different age groups.

In addition, Peru is going through a post-pandemic scenario in which mood disorders have increased significantly, especially among adolescents, young people and older adults, however, there is still a gap in research that comprehensively analyzes emotional states and demographics in the general population, limiting the ability to generate strategies for prevention and promotion of mental health with a territorial and life-cycle approach.

In this sense, the present study provides updated empirical evidence that can guide psychosocial interventions, community health programs, and mental health equity policies.

Therefore, it was proposed to analyze moods according to sociodemographic variables in a representative sample of the Peruvian population.

2. Method

2.1. Type of study

A non-experimental design was used, with a descriptive level and a quantitative approach, data was collected during the first quarter of 2025.

2.2. Participants

2283 people participated, intentionally selected, the following inclusion criteria were followed: older from 12 years old, of both sexes, reading and writing skills, and without serious sensory problems, those selected formed population groups according to life stages such as: adolescents, young people, adults and older adults; Children under 12 years of age, people with sensory problems and people who did not wish to participate voluntarily in the research were excluded.

To determine the sample size, the G Power program was used, considering the following criteria, to establish the effectiveness of the statistical tests: t test (Means: difference between two independent means); f test (Anova, fixed effects, onmnibus, one way), error 0.05, probability 0.95, effect size 0.10 and number of groups six (6).

2.3. Instrument

The Sanz mood states scale [19] was used, which was adapted and validated for the Peruvian population by Calizaya et al. [20], this self-report tool, of brief application, aims to evaluate the immediate emotional state of individuals; the instrument consists of 16 items that inquire about how the person feels at a specific time, using an 11-point Likert-type scale, where 0 represents "nothing" and 10 "a lot", allowing to accurately capture the subjective intensity of the reported emotional state.

The scale is structured in four dimensions: anxiety, depression, hostility and joy, thus providing an emotional profile that includes both negative and positive aspects. Regarding its validity, confirmatory factor analysis showed a good fit of the model ($\chi^2(98) = 2186.15$; *CFI* = .989; *TLI* = .987, *RMSEA* = .069; SRMR = .047), and for the reliability of the scale, values of .90 to .95 (Cronbach's Alpha and Omega) were found in the different dimensions, demonstrating a high internal consistency of the instrument.

2.4. Procedure

For data collection, various ethical and logistical procedures were considered according to the population group. In the case of adolescents, their participation was managed through educational institutions, with prior authorization from the directors and through communication of the objectives of the study to parents or guardians, guaranteeing the voluntary participation of the students. For young people, the contact strategy focuses on spaces where they carry out their daily activities (higher education institutions, work, sports and leisure centers), locating them mainly at entrances and exits. As for adults, they were contacted in areas of high attendance such as markets, shopping centers and recreational areas. Finally, for the elderly, access was made through health centers and community shelters.

In all cases, informed consent was obtained before applying for the instrument, which was administered individually, with the assistance of a trained applicator to resolve any doubts during the process. The information obtained was treated with strict confidentiality, ensuring the ethical and responsible safeguarding of the data provided by the participants.

2.5. Ethical considerations

This study respected the ethical guidelines defined by the Ministry of Health of Peru, in accordance with the provisions of Resolution 233-2020, which regulates the execution of health research with the participation of human beings under criteria of ethics and responsibility. The research was also carried out in accordance with the international ethical principles stipulated in the Declaration of Helsinki, which promote respect for the dignity, rights and well-being of the participants.

2.6. Data analysis

The surveys collected in physical format were digitized and organized in a Microsoft Excel database; subsequently, the database was exported to JASP statistical software, where the corresponding quantitative analyses were carried out. First, the normality of the data was evaluated using the Shapiro-Wilk test. The results indicated that the variables did not follow a normal distribution; consequently, it was decided to apply non-parametric tests for inferential analyses [21].

For the comparison between independent groups, the Mann-Whitney U test was used, while for the comparison between more than two groups, the Kruskal Wallis test was used, accompanied by post hoc tests

to identify specific differences. In addition, the corresponding effect sizes were calculated, using biserial correlation and epsilon-squared, to complement the interpretation of the results obtained.

3. Results

A database was developed considering sociodemographic variables such as sex, age, marital status, level of education, monthly income, and residence of the person being evaluated. From the analysis carried out, it can be stated that 2,283 people participated, with ages ranging from 12 to 93 years (M = 39.25 years, SD = 18.05 years), of which: 1373 (60.14%) are female and 910 (39.86%) are male. According to the population group, 10.95% were adolescents, 23.74% were youth, 49.93% adults and 15.37% were older adults; According to the educational level, 16.86% had incomplete basic education, 50.55% complete basic education and 32.59% complete higher education.

Table 1 Presents the levels of the dimensions of moods, according to their four dimensions: Depression, Anxiety, Joy and Hostility. It is observed that the majority of those evaluated are at the high (24.57% - 26.37%) and medium (22.34% - 25.67%) levels in the four dimensions evaluated.

The results indicate the simultaneous presence of negative and positive emotions with moderate to high intensities in the population, reflecting the multiple emotional demands that people face in different contexts of their daily lives. The findings also reflect the impact of psychosocial factors on moods, such as daily stress, economic insecurity, limited access to mental health services, social environment, and emotional coping mechanisms.

Table 1. Levels of mood state dimensions

Levels	Depression f (%)	Anxiety f (%)	Joy f (%)	Hostility f (%)
Very low	301 (13.8%)	274 (12.0%)	254 (11.13%)	363 (15.90%)
Low	354 (15.51%)	324 (14.19%)	329 (14.41%)	242 (10.60%)
Middle	510 (22.34%)	570 (24.97%)	586 (25.67%)	564 (24.70%)
High	584 (25.58%)	600 (26.28%)	602 (26.37%)	561 (24.57%)
Very high	534 (23.39%)	515 (22.56%)	512 (22.43%)	553 (24.22%)

Table 2 Identified statistically significant differences in the depression dimension according to sex, marital status, monthly income, and type of residence. Women and divorced people reported higher levels of depressive emotional affectation, while people with high incomes and living in young towns showed lower levels in these dimensions, and the effect sizes were small.

Table 2. Descriptive statistics and comparisons of the depression dimension according to sociodemographic variables

Variable	Category	M (SD)	E.S.
Sex	Male	13.0 (10.2)	-0.14***
	Female	14.5 (10.9)	
Age	From 12 to 17 years old	15.2 (10.4)	0.002
	From 18 to 29 years old	13.8 (10.9)	
	Ages 30 to 59	13.9 (10.9)	
	Over 60 years of age	13.3 (9.62)	
Marital status	Married	14.7 (11.0)	0.01***
	Cohabitant	15.0 (11.3)	

Variable	Category	M (SD)	E.S.
Level of education	Divorced/Widowed	16.8 (11.3)	0.000
	Bachelor	13.3 (10.3)	
	Incomplete Basic	14.3 (10.2)	
	Complete Basic	13.8 (10.2)	
	Complete Superior	14.0 (11.6)	
Monthly Income	Not applicable	13.3 (9.97)	0.006*
	Less than S/. 1,030	14.2 (10.3)	
	S/. 1,031 – S/. 2,000	13.3 (11.1)	
	S/. 2,001 – S/. 3,000	14.6 (11.7)	
	S/. 3,001 – S/. 4,000	16.7 (11.4)	
	S/. 4,001 and more	13.0 (11.2)	
Residence	Human settlement	14.5 (10.8)	0.006*
	Association	14.6 (10.3)	
	Cooperative	13.5 (9.53)	
	Slum	12.2 (10.1)	
	Residential	13.4 (11.0)	
	Urbanization	14.4 (11.1)	

Table 2. (*Continued*)

**p <.05; ** p < .01; p < .001; M = Mean; S.D. = Standard deviation; E.S.= Effect size*

Table 3 Found statistically significant differences between the anxiety dimension and the variables sex, marital status, monthly income, and type of residence. On average, women reported higher levels of anxiety than men. Divorced participants also had higher scores compared to other marital statuses. On the other hand, those with high monthly incomes showed lower levels of anxiety, as did those who reside in young towns. Although the differences were significant, the effect sizes were small, with low magnitude in the associations.

Table 3. Descriptive statistics and comparisons of the Anxiety dimension according to sociodemographic variables

Variable	Category	M (SD)	E.S.
Sex	Male	14.2 (9.99)	-0.160
	Female	15.9 (10.9)	
Age	From 12 to 17 years old	16.6 (10.2)	0.002
	From 18 to 29 years old	15.3 (10.6)	
	Ages 30 to 59	15.1 (10.9)	
	Over 60 years of age	14.6 (9.60)	
Marital status	Married	15.8 (11.1)	0.006**
	Cohabitant	16.3 (10.6)	
	Divorced/Widowed	17.3 (10.9)	
	Bachelor	14.7 (10.4)	
Level of education	Incomplete Basic	15.1 (10.3)	0.000

Variable	Category	M (SD)	E.S.
Monthly Income	Complete Basic	15.6 (10.1)	0.004
	Complete Superior	15.2 (11.2)	
	Not applicable	15.0 (10.0)	
	Less than S/. 1,030	15.5 (10.5)	
	S/. 1,031 – S/. 2,000	14.6 (10.9)	
	S/. 2,001 – S/. 3,000	15.1 (11.2)	
	S/. 3,001 – S/. 4,000	17.5 (11.2)	
	S/. 4,001 and more	14.1 (10.6)	
Residence	Human settlement	15.6 (10.3)	0.006*
	Association	15.8 (10.3)	
	Cooperative	15.1 (9.30)	
	Slum	13.6 (10.7)	
	Residential	14.6 (10.9)	
	Urbanization	15.7 (10.8)	

Table 3. (*Continued*)

**p <.05; ** p < .01; p < .001; M = Mean; S.D. = Standard deviation; E.S.= Effect size*

In **Table 4** In relation to the joy dimension, significant differences were found according to marital status, educational level, income and residence. Singles presented lower levels of joy, while participants with completed higher education, higher incomes and residing in housing estates presented higher levels. However, the effect sizes were small.

Table 4. Descriptive statistics and comparisons of the Joy dimension according to sociodemographic variables

Variable	Category	M (SD)	E.S.
Sex	Male	22.4 (9.75)	0.01
	Female	22.3 (9.91)	
Age	From 12 to 17 years old	21.8 (9.38)	0.000
	From 18 to 29 years old	22.3 (10.0)	
	Ages 30 to 59	22.2 (10.0)	
	Over 60 years of age	22.9 (9.39)	
Marital status	Married	24.4 (9.65)	0.017***
	Cohabitant	24.1 (9.06)	
	Divorced/Widowed	23.3 (9.09)	
Level of education	Bachelor	21.4 (9.95)	0.016***
	Incomplete Basic	21.6 (9.88)	
	Complete Basic	21.1 (9.58)	
	Complete Superior	24.1 (9.69)	
Monthly Income	Not applicable	21.1 (9.77)	0.014***

Variable	Category	M (SD)	E.S.
	Less than S/. 1,030	22.8 (10.5)	
	S/. 1,031 – S/. 2,000	23.3 (9.62)	
	S/. 2,001 – S/. 3,000	24.9 (8.71)	
	S/. 3,001 – S/. 4,000	24.9 (8.71)	
	S/. 4,001 and more	25.6 (8.99)	
Residence	Human settlement	20.9 (10.8)	0.013***
	Association	21.8 (9.18)	
	Cooperative	20.9 (9.20)	
	Slum	21.0 (10.4)	
	Residential	22.0 (10.4)	
	Urbanization	23.6 (9.65)	

Table 4. (*Continued*)

**p <.05; ** p < .01; p < .001; M = Mean; S.D. = Standard deviation; E.S.= Effect size*

Table 5 In the hostility dimension, significant differences were found according to sex, age, marital status, level of education, income and residence. Women, adolescents, divorced/widowed people and those with completed higher education presented higher levels of hostility. On the contrary, those who do not receive income and reside in young towns showed lower levels. However, the effect sizes were small.

Table 5. Descriptive statistics and comparisons of the Hostility dimension according to sociodemographic variables

Variable	Category	M (SD)	E.S.
Sex	Male	11.7 (10.2)	-0.10*
	Female	12.8 (10.9)	
Age	From 12 to 17 years old	14.2 (10.5)	0.004*
	From 18 to 29 years old	12.2 (10.7)	
	Ages 30 to 59	12.3 (10.9)	
	Over 60 years of age	11.9 (9.48)	
Marital status	Married	14.2 (11.3)	0.025***
	Cohabitant	14.5 (11.3)	
	Divorced/Widowed	16.0 (11.4)	
	Bachelor	11.2 (10.0)	
Level of education	Incomplete Basic	11.5 (9.98)	0.008***
	Complete Basic	13.0 (10.0)	
	Complete Superior	13.6 (11.7)	
Monthly Income	Not applicable	10.9 (9.48)	0.017***
	Less than S/. 1,030	12.4 (10.2)	
	S/. 1,031 – S/. 2,000	11.9 (11.2)	
	S/. 2,001 – S/. 3,000	14.3 (11.7)	

Variable	Category	M (SD)	E.S.
Residence	S/. 3,001 – S/. 4,000	16.5 (11.8)	0.009**
	S/. 4,001 and more	12.9 (11.0)	
	Human settlement	11.6 (10.7)	
	Association	12.7 (10.1)	
	Cooperative	13.0 (9.57)	
	Slum	10.4 (9.95)	
	Residential	12.0 (11.0)	
	Urbanization	13.1 (11.1)	

**p <.05; ** p < .01; p < .001; M = Mean; S.D. = Standard deviation; E.S.= Effect size*

4. Discussion

The results of this study show that sociodemographic variables exert a significant, albeit slight, influence on the different dimensions of moods in the Peruvian population; In particular, significant differences were identified according to sex, age, marital status, educational level, monthly income, and type of residence, coinciding with studies that recognize the importance of contextual and structural factors in emotional health [2].

According to the sociodemographic variables, it is a significant contribution to the results found, considering that, in sex, it was observed that women reported higher levels of depression, anxiety and hostility, compared to men, these results are consistent with previous research that indicates greater emotional vulnerability in women, possibly related to sociocultural factors. gender roles and psychosocial burden [22].

Regarding age, adolescents showed higher levels of hostility, which could be associated with the neurobiological, hormonal, and social changes typical of this stage of development, characterized by greater emotional reactivity and search for identity [23].

Marital status also showed significant associations, where divorced and widowed people presented higher scores of depressions and hostility, reflecting the possible emotional burden derived from the loss of significant relationships or situations of grief and loneliness [24].

At the educational level, those with completed higher education reported higher levels of hostility and joy, demonstrating greater emotional expressiveness, both positive and negative, possibly linked to reducing divergent situations to identify and express emotions [25].

On the other hand, participants with higher monthly incomes presented lower levels of depression-anxiety and greater joy, being consistent with the literature that indicates that economic resources function as protective factors against emotional difficulties, by reducing stress derived from material insecurity [26].

And the type of residence also showed effects, those who reside in housing estates reported higher levels of joy, while those who reside in young villages had lower levels of anxiety and depression, although this finding requires further analysis, as it contrasts with some studies that link precarious urban contexts with greater psychological distress [27].

Although the effect sizes were small, these results provide evidence on the way in which sociodemographic variables influence emotional well-being, having implications for the design of public policies and intervention programs differentiated according to population groups.

In addition, the sample size represents a support for the statistical strength of the results, as it is a large and diverse sample, this sample breadth allows us to observe more precisely how moods vary according to the characteristics of the different population groups in the Peruvian context.

Although the present study provides relevant evidence, it has some limitations that must be considered, the cross-sectional design prevents establishing causal relationships between the variables analyzed, limiting itself only to identifying associations. The application of the self-report instrument may be subject to social desirability biases or underestimation of symptoms, specifically in negative emotional dimensions such as depression and hostility. Geographical representativeness was limited to certain regions of the country, so the results cannot be generalized to the entire Peruvian population.

Based on this study, lines of action and future research are proposed: the multivariate approach should be broadened, including relevant psychosocial variables; longitudinal designs should be promoted, allowing changes in emotional states to be identified over time; mixed approaches, incorporating qualitative methodologies (interviews and focus groups); post-pandemic evaluations, considering the emotional impact of the pandemic to compare the results.

Finally, considering the practical applications, the results can be used by health and education institutions to design psychoeducational interventions focused on the most vulnerable groups, promoting emotional well-being through public policies with a preventive approach.

5. Conclusions

Moods are influenced by specific sociodemographic characteristics, evidencing the need for differentiated interventions according to population profile, implementing community mental health strategies, especially in vulnerable contexts.

The results show that moods cannot be understood only as individual experiences, but as phenomena influenced by social factors, supporting psychosocial theories that maintain that emotions are characterized by structural conditions such as sex, marital status, income or place of residence.

In addition, the differences found in anxiety, depression, hostility and joy according to sociodemographic characteristics confirm the validity of biopsychosocial models, in which social and environmental determinants play a key role in mental health.

Conflict of interest

The authors declare no conflict of interest.

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