




Perceived health status and self-esteem in relation to health-related quality of life among adolescents living in orphanages: a multi-institutional study

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ABSTRACT

Introduction: Health-related quality of life (HRQoL) reflects the physical, mental, and social well-being of adolescents. Individuals in orphanages are often exposed to stress, which may undermine their HRQoL. This study aimed to explore the HRQoL of adolescents living in orphanages and to examine the roles of perceived health status, self-efficacy, and demographic factors.

Methods: A multi-center cross sectional study with convenience sampling was conducted to recruit 238 adolescents aged 13-18 years from 16 orphanages in Malang City, Indonesia. Data were obtained using the KIDSCREEN-27 Child and Adolescent Version, Perceived Health Status, and Rosenberg Self-Esteem Questionnaires. Stata 16.0 was used to conduct descriptive statistics, Pearson correlations, and hierarchical linear regressions.

Results: The mean total HRQoL score was 94.4±12.7, with the highest sub-scale score in peers and social support (3.8±0.7) and the lowest in physical well-being (3.2±0.7). Perceived health status (8.9±1.8) and self-esteem (29.1±3.5) were both positively associated with HRQoL ($r=0.31$ and $r=0.48$, respectively; $p<0.001$), whereas the two variables were not correlated with each other ($r=0.09$, $p>0.05$). In the parsimonious regression model, perceived health status ($\beta=3.19$, $p<0.001$) and self-esteem ($\beta=0.97$, $p<0.001$) together explained 30% ($R^2=0.30$) of the variance in HRQoL; inclusion of demographic characteristics increased the explained variance to only 31% and none reached statistical significance.

Conclusions: These findings suggest that perceived health status and self-esteem are determinants of HRQoL in adolescents living in orphanages. Nurses should prioritize routine assessments and implement interventions that strengthen self-esteem and perceived health status to improve HRQoL among adolescents living in orphanages.

Keywords: adolescents, health related quality of life, orphanages, perceived health status, self-esteem

Introduction

Health-related quality of life (HRQoL) is a multifaceted concept that captures an individual's personal assessment of their physical health, mental well-being, functional capacity, and social functioning (Duangchan & Matthews, 2021). Adolescence development poses a period of high vulnerability because it is frequently affected by environmental and

psychosocial factors. Identifying HRQoL in adolescents is crucial for understanding their overall well-being, ultimately influencing their health throughout adulthood (Garcia Dias et al., 2025). HRQoL is influenced by a series of factors such as lifestyle, environment, and society (Wang et al., 2022).

Adolescents face different problems that affect HRQoL, which could be more pronounced among those at

orphanages (Jaffer et al., 2023; Li et al., 2024). Without proper family climates and good parental relationships, HRQoL significantly deteriorates (Guevara et al., 2021). In addition, adolescents living in orphanages that often have a history of maltreatment have poorer HRQoL in several domains, including emotional functioning and physical health, and exacerbate vulnerabilities to mental health problems and maladaptive social functionality (Rothenberg et al., 2023).

Globally, a common reason for adolescents living in orphanages is the absence of parental care (Mahanta et al., 2022; Mohammadzadeh et al., 2018). In contrast, in Indonesia, the common reasons why children and adolescents are living in orphanages are being abandoned by their parents, lost parents, and economic reasons; the economic reasons account for almost 90% (Rienneke & Setianingrum, 2018). As of 2021, there are approximately 191,696 children and adolescents from 3,914 institutions across the country (Setiawan, 2021). This is probably an underestimation because of underreporting by the Ministry of Social Affairs of the Republic of Indonesia (Alkayyis et al., 2021). In the city of Malang, the twelfth-largest city in Indonesia and second largest in East Java Province, 62 officially registered orphanages were home to an estimated 3,143 children (Social Affairs Offices Malang City, 2021). However, only eight (10.7%) of these institutions hold level A accreditation, while 39 (52%) have not yet received any accreditation (Social Affairs Offices Malang City, 2021). This indicates that the majority of orphanages in Malang City still lack standard care, including healthcare, for children and adolescents under their care.

Because of poor administration, such establishments are unable to report to the Social-Affairs Offices and, therefore, cannot benefit from the assistance provided by the government (Susilowati et al., 2017). The orphanages also face the challenges of placing them within the standard of care of service, primarily because the number of children they cater to and the available funding and human resources do not match (Sutinah, 2018). Several studies have reported that the majority of orphanages in Indonesia do not fulfil national standards (Susilowati et al., 2017). Therefore, adolescents living in orphanages are exposed to a range of health hazards that lead to decreased HRQoL (Kumari et al., 2024).

Our preliminary findings showed that adolescents living in orphanages in Malang City generally still have families residing in nearby small towns. These families mostly belong to lower economic classes, and limited opportunities to visit them frequently lead to feelings of disconnection from parental figures, which can increase perceived risks to health and lower self-esteem (Katkar et al., 2021). Furthermore, a shortage of caregivers in orphanages contributes to feelings of neglect and alienation, further impacting their emotional well-being (Westerlaken, 2021). Additionally, more than half of the

orphanages in Malang City lack accreditation and barriers to accessing proper healthcare, including public health services and national health insurance, worsening both physical health risks and self-perception (Putri et al., 2022).

Although an increasing number of HRQoL studies have been conducted among adolescents living in orphanages globally, little evidence is available to date from Indonesia. Previous studies have mostly focused on a single institution, which restricts the development of interventions aimed at specific groups and evidence-based policymaking (Destiana, 2024). This study addresses this gap by using a multi-institutional design to assess the levels and domains of HRQoL and identify factors such as perceived health status, self-esteem, and demographic characteristics that influence HRQoL among adolescents living in orphanages. The findings are expected to inform the design of customized health promotion interventions and influence policy reform in orphanages across Indonesia.

Materials and Methods

Study Design

This multicenter cross-sectional study was conducted in December 2024 at multiple orphanages in Malang City, Indonesia. Conducting this study across several institutions allows for a broader coverage of adolescents living in orphanages, enhancing the generalizability of the findings.

Participants

Convenience sampling was used to select orphanages. Convenience sampling was used because access to all orphanages in Malang was limited. Many of these institutions do not report to social affairs offices; therefore, reliable and complete data are lacking, making it impossible to create a full list for random sampling.

In total, 16 orphanages agreed to participate in this study. Of the 16 orphanages, two (13%) held level A accreditation, seven (44%) held level B accreditation, two (13%) held level C accreditation, and five (31%) had not yet received any accreditation. Eligible participants were adolescents aged 13–18 years who had resided in the orphanage for at least six months, did not have diagnosed mental or physical disabilities, and were willing to participate. In total, 238 adolescents met these criteria and were included in the analysis.

Measurement Tool

Demographic Characteristics Participants

A questionnaire-based questionnaire collected data on age, gender, education level, religion, orphan status, length of stay in orphanages, and the accreditation level of orphanages. We included the accreditation level of orphanages in our study, as accreditation in Indonesia serves the eligibility and standardization of social welfare

institutions (Ministry of Social Affairs of the Republic of Indonesia, 2011). The accreditation levels for orphanages are very good (A), good (B), sufficient (C), and unaccredited/not yet received accreditation rating (The Accreditation Board for Social Welfare Institutions of The Republic of Indonesia, 2022).

HRQoL (Health Related Quality of Life)

HRQoL was measured using the KIDSCREEN-27 (Ravens-Sieberer et al., 2007). The instrument measures five dimensions: physical well-being (five items), psychological well-being (seven items), autonomy and parent relations (seven items), peers and social support (four items), and school environment (four items). Each item is rated on a 5-point Likert scale ranging from 1 = "not at all" to 5 = "very much." Items 1, 9, 10, and 11 are reverse-scored; reverse scoring means that the numeric rating runs in the opposite direction for these items. Scores are summed (range, 27–135); higher values indicate a better quality of life. In this study, the Cronbach's alpha was 0.86, indicating good internal consistency.

Perceived Health Status

Perceived Health Status was measured using the "Perceived Health Status" (Speake et al., 1989). This instrument has three items: "How do you think your general health is now" with a 4-point Likert scale (1=poor, 2=fair, 3=good, 4=very good), "How does your health compare to the health of others your age" with a 5-point Likert scale (1=much worse, 2=somewhat worse, 3=about the same, 4=somewhat better, 5=much better), "How does your health compare to six months ago" with a 3-point Likert scale (1=changed for the worse, 2=same, 3=changed for the better) with a total score of 3-12. The higher the score, the higher the adolescent's perceived health status. Cronbach's alpha for this instrument was 0.87.

Self-Esteem

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (Rosenberg, 2015). This instrument has ten items and is scored on a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree), with a total score of 10-40. The higher the score, the higher the adolescents' self-esteem. Cronbach's alpha for this instrument was 0.93.

Before administration, these three measures (KIDSCREEN-27, Perceived Health Status, and Rosenberg Self-Esteem Scale) were translated into Indonesian following a systematic forward-backward method (von Steinbuechel et al., 2021). This process includes two translators working on a forward translation, while a third translator, who was unaware of the original texts, carried out a back-translation. The translations were then compared for discrepancies and a harmonized translation was compiled. This draft translation was then

cognitively debriefed with eight adolescents, after which feedback was incorporated by the translators, producing a finalized version of these measures in the Indonesian language.

Data Collection

Before data collection, the research team identified potential institutions using a list provided by the Malang City Social Affairs Office. Additional sites were located through online searches and consultations with local informants who had prior experience visiting orphanages in Malang. The team visited each institution on the list, explained the study to the caregivers/directors and obtained their consent to participate. After consent was granted, we collected preliminary health data on the adolescents that were shared by the institutions. The team also coordinated a schedule with the directors of each institution. On the day of data collection, the team visited each site and informed them of the study. All the adolescents in the selected institutions agreed to participate. The team then guided each participant through the questionnaire and entered their responses directly into the Kobo Toolbox platform (www.kobotoolbox.org) using 15 tablets or laptops provided for this study. All items were read aloud during administration to ensure clarity and reduce errors. Completion required approximately ten minutes per respondent. The institutions had between 5 and 40 participants, totaling 238 respondents. As each respondent was accompanied by a team member, there were no missing data. Data collection was completed within eight days over a two-week period.

Data Analysis

All analyses were performed using Stata software version 16.0. Descriptive statistics were used to summarize the sample characteristics. The internal consistency of the KIDSCREEN-27, perceived health status, and Rosenberg Self-Esteem Scale was examined using Cronbach's α . Bivariate analysis among variables was performed using Pearson correlation coefficients, and hierarchical linear regression was employed to identify the correlation between perceived health status, self-esteem, and demographic characteristics of HRQL adolescents living in orphanages. Two regression models were developed: (1) a full model that incorporated perceived health status, self-esteem, and demographic characteristics (age, gender, education level, religion, orphan status, length of stay in orphanages, and accreditation level of orphanages), and (2) a parsimonious model that retained only those predictors that reached statistical significance at $p < 0.001$. The parsimonious model was selected based on the principle of parameter economy: minimizing the number of variables while preserving the predictive ability. Model

Table 1. Characteristic participants

Variables	Frequency	Percentage	Mean ± SD
Age			15.3 ± 1.6
13-15 years	127	53.4	
16-18 years	111	46.6	
Gender			
Male	112	47.1	
Female	126	52.9	
Education Level			
Junior high school	118	54.5	
Senior high school	120	45.5	
Religion			
Islam	212	89.0	
Protestant	18	7.6	
Catholicism	8	3.4	
Orphan Status			
Not orphan	122	51.3	
Maternal orphan	20	8.4	
Paternal orphan	74	31.1	
Double orphan	22	9.2	
Length of Stay in Orphanages			3.3 ± 2.4
1-3 years	148	62.2	
4-5 years	48	20.2	
More than 5 years	42	17.6	
Level Accreditation of Orphanages			
A	17	7.1	
B	102	42.9	
C	51	21.4	
Unaccredited	68	28.6	

performance was evaluated using the adjusted R², Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC). The model with the lowest AIC and BIC values was deemed to provide the best fit relative to its complexity, and was therefore chosen as the primary model for interpretation.

Ethical Consideration

The study was approved by the Institutional Review Board of the Institute of Technology, Science and Health RS Dr. Soepraoen, Malang (KEPK-EC-11/XII/2023). The purpose and procedures were explained to the participants and confidentiality was maintained. Written permission was obtained from each institution's director (acting as a legal guardian) and written assent was secured from all adolescents prior to data collection.

Results

A total of 238 adolescents from 16 orphanages in Malang City participated in this study. Of these, 126 were female (52.9%) and aged 13–15 years (53.4%). Most participants were Muslim (89.0%), and over half were junior high school students (64.5%) or were not orphans (51.3%). Nearly half were living in orphanages with B-level accreditation (42.9%), and 62.2% had been residing in their respective orphanages for 1–3 years (Table 1).

The mean total HRQoL score was 94.4 ± 12.7, indicating that adolescents in orphanages reported relatively good quality of life, as the score was above the median of 81. The highest score was for peers and social support (3.8 ± 0.7), and the lowest score was for physical well-being (3.2 ± 0.7). The perceived health status score was 8.9 ± 1.8, which indicates a relatively good perception of health status, as it exceeded the median of 7.5. Furthermore, the self-esteem score was 29.1 ± 3.5, suggesting a good level of self-esteem, as it was above the median value of 25 (Table 2).

Pearson's correlation analysis showed that HRQoL was positively associated with perceived health status (r = 0.31, p < 0.001) and self-esteem (r = 0.48, p < 0.001). Conversely, no significant relationship was found between perceived health status and self-esteem (r = 0.09, p > 0.05) (Table 3).

Table 4 summarizes the linear regression outcomes for HRQoL among adolescents living in orphanages. Two models were estimated: a parsimonious model that retained only predictors reaching statistical significance and a full model that incorporated all candidate variables. In the parsimonious model, perceived health status (β = 3.19, SE = 0.38, p < 0.001) and self-esteem (β = 0.98, SE = 0.24, p < 0.001) remained significant, whereas the remaining covariates were excluded. The full model,

Table 2. Descriptive statistics of total and subdomain health-related quality of life, perceived health status and self-esteem

Variables	Mean ± SD	Range	Midpoint	Min	Max
Total HRQoL	94.4 ± 12.7	27-135	81	48	126
Physical well-being	3.2 ± 0.7	1-5	2.5	1	5
Psychological well-being	3.3 ± 0.6	1-5	2.5	1.6	5
Autonomy and parent relations	3.5 ± 0.6	1-5	2.5	1.7	5
Peers and social support	3.8 ± 0.7	1-5	2.5	1.3	5
School environment	3.7 ± 0.7	1-5	2.5	1.8	5
Perceived Health Status	8.9 ± 1.8	3-12	7.5	3	12
Self-Esteem	29.1 ± 3.5	10-40	25	19	39

Table 3. Correlation HRQoL and Perceived Health Status and Self-Esteem

Variables	HRQoL	Perceived Health Status	Self-Esteem
HRQoL	1	0.31***	0.48***
Perceived Health Status	0.31***	1	0.09
Self-Esteem	0.48***	0.09	1

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

Table 4. Comparison of Regression Coefficients of Parsimonious and Full Models in Predicting Health-Related Quality of Life in Adolescents in Orphanages

Variable	Parsimonious		Full Model	
	β(SE)	P-value	β(SE)	P-value
Perceived Health Status	3.19 (0.38)	<0.001	3.13 (0.38)	<0.001
Self-Esteem	0.97 (0.24)	<0.001	0.98 (0.24)	<0.001
Age	-	-	-0.74 (2.41)	0.758
Gender	-	-	1.67 (1.56)	0.287
Education Level	-	-	-0.54 (2.64)	0.836
Religion	-	-	-0.40 (1.34)	0.763
Orphan Status	-	-	0.29 (0.77)	0.709
Length of Stay in Orphanages	-	-	-0.03 (0.91)	0.978
Level Accreditation of Orphanages	-	-	0.04 (0.77)	0.596

Adjusted R²: parsimonious = 0.30, full = 0.31; AIC: parsimonious = 1805.74, full = 1815.72; BIC: parsimonious = 1816.16, full = 1850.46; F-statistic (parsimonious): F(2, 235) = 47.74, p < 0.001, full: F(9,228) = 11.48, p < 0.001).

which included all demographic variables, yielded the same significant coefficients for perceived health status and self-efficacy, whereas the additional predictors showed no significant association with HRQoL (p > 0.05). We examined the adjusted R² to assess how well the model explained the variation in the dependent variable, taking into account the number of predictors. Although the full model produced a modestly higher adjusted R² (0.31 versus 0.30), its larger AIC and BIC values indicate that the additional demographic variables did not improve the model fit proportionally. Consequently, perceived health status and self-esteem can be regarded as primary determinants of HRQoL in this population, and a parsimonious model is recommended for interpretation. These findings also suggest that demographic factors are not correlated with HRQo in this population.

Discussions

The findings of this study indicate that adolescents living in orphanages report relatively good HRQoL, perceived health status, and self-efficacy. Both perceived health status and self-esteem were positively and significantly associated with HRQoL, whereas demographic characteristics were not significantly correlated with HRQoL. To our knowledge, this is the first study to evaluate HRQoL in adolescents living in orphanages and examine how perceived health status, self-efficacy, and socio-demographic factors relate to HRQoL in this population.

The HRQoL was relatively good among adolescents living in orphanages. This is in line with a previous study that orphan adolescents with good HRQoL have lower scores than normal adolescents; however, it is not significant (Ebrahimpour Roodposhti et al., 2021). The possible key factors contributing to this finding are the consistent and stable care they receive from institutions, the presence of a strong support system from institutions, and positive psychological health among these

adolescents. Institutions provide stable care and support, which contributes positively to the psychological well-being of adolescents (Li et al., 2024). In this study, 71.4% lived in level A, B, or C institutions, suggesting that orphanages met the minimum standard of care. Moreover, the participants had lived in the orphanages for an average of 3.3 years, indicating they had developed a strong sense of stability and adaptation within this supportive environment (Amai, 2023; Li, 2024).

Peers and social support were the highest-scoring subdomains, even though they postulated a positive perception of social support in an orphanage setting. In this study, we found that only 9.2% of adolescents were double orphans, while 51.3% were not orphans, indicating that most respondents still had parents, but had limited time to meet their parents. Generally, adolescents spend more time with peers than with their parents, resulting in peer relationships that are more caring than parent relationships (Delgado et al., 2022). Among adolescents living in orphanages where there is little or no parental guidance, adolescents become more reliant on their peers. Residents in orphanages encourage frequent interactions and social support (Boadu et al., 2020). Furthermore, caregivers tend to be merry in their communication, taking a peer-like stance instead of a traditional parent-child mode, leading adolescents to have the impression that they receive both social and peer support (Muhamedrahimov et al., 2023). Development of strong peer networks by organizing regular group activities that strengthen friendship and emotional support, while training caregivers to guide these relationships should be implemented in orphanages in Indonesia.

The lowest score was recorded for physical well-being among adolescents living in orphanages, indicating a struggle for them to achieve physical health. These low scores may also be due to poor accessibility to physical activity programs and inadequate access to health services (Aladegboye & Olowokere, 2024; Mahanta et al., 2022). However, in this research, we found that 50

percent of the adolescents in Level C or unaccredited orphanages experienced difficulty in conducting a good proportion of health practices, including practicing hygiene and having regular medical check-ups. Collaboration between caregivers and health professionals, especially nurses, to improve physical health programs should be implemented in every orphanage, regardless of the accreditation level of the institutions.

This study identified a relationship between perceived health status and HRQoL among orphanage adolescents. While information on HRQoL among this population is scarce, the results support previous studies that showed perceived health status as a significant predictor of the general quality of life of adolescents (Fernandes & Lemos, 2022; Kallio et al., 2024). This association is congruent with the biopsychosocial model of health, in which the perception of health can greatly affect an individual's physiological and psychosocial well-being of an individual (Guo & Wu, 2024). In many studies, perceived health status is a major determinant of quality of life, as it affects an individual's ability to function normally and be satisfied with one's life (Kaplan & Hays, 2022).

There was also a positive and statistically significant correlation between self-esteem and HRQoL among adolescents living in orphanage areas. This result aligns with the principles of social psychology theory, which emphasizes self-esteem as a fundamental component of psychological well-being (Merino et al., 2024). High self-esteem is associated with enhanced self-confidence, greater emotional resilience, and more adaptive coping strategies, all of which contribute to improved perceived well-being and life satisfaction (Mikkelsen et al., 2022). Furthermore, empirical evidence from Alsarrani et al. (2022) shows that self-esteem is closely linked to subjective well-being and quality of life across diverse age groups, including adolescents.

In this study, adolescents living in orphanages had good self-esteem. This contrast with a previous study conducted in Padang City, Indonesia, which found 52,3% of 256 adolescents experienced poor self-esteem (Febristi et al., 2020). Self-esteem is shaped by various factors, including past experiences, social comparisons, and how others treat them in the past (Deuling & Burns, 2017; Pinquart & Gerke, 2019). In the current study, many adolescents shared similar backgrounds (having both parents but coming from a lower socioeconomic status), possibly reducing the need for social comparison and strengthening a sense of belonging. Moreover, adolescents with higher self-esteem tend to have effective coping mechanisms and maintain positive emotional health, suggesting that a supportive environment and internal resilience may play key roles in self-esteem (Mohammadzadeh et al., 2019).

Furthermore, perceived health status and self-esteem were not significantly associated in this study. In the subsequent analysis, a parsimonious regression model explained 30% of the variance in HRQoL; the inclusion of demographic characteristics increased the explained variance only marginally to 31%. Demographic characteristics such as age, sex, education level, religion, orphan status, length of stay in the orphanages, and accreditation level of orphanages were not significantly associated with the outcome. The simultaneous effects of self-esteem and perceived health status suggest that psychosocial factors are more important than demographic variables in predicting HRQoL in adolescents living in orphanages. It lends support to an intervention method that is well-rounded and comprehensive, by targeting not only physical health but also psychosocial resources, such as the improvement of self-esteem and emotional support (Chu-Ko et al., 2021). Interventions to increase self-esteem and health literacy are expected to have a significant impact on HRQoL in this population.

Future research should employ longitudinal designs to track changes in HRQoL over time and evaluate the efficacy of psychosocial interventions. In addition, qualitative studies that explore adolescents' subjective experiences of caregiver relationships, school dynamics, and future expectations would enrich the existing quantitative understanding. Crucially, comparative studies examining HRQoL among adolescents living in orphanages versus those residing with family or in other settings would enable a more nuanced interpretation of the findings.

Respondents were sampled from multiple institutions with varied environments and accreditation levels. Nonetheless, the limitations include the cross-sectional design and convenience sampling, which restrict the generalizability of the results. Additionally, reliance on self-report questionnaires may introduce subjective bias, as the responses may be influenced by personal perceptions, emotional state, social desirability, and cultural factors.

Conclusion

In this study, perceived health status and self-esteem were the only significant predictors of health-related quality of life among adolescents living in orphanages, whereas demographic factors showed no effect. Nurses should prioritize routine assessment of self-esteem and perceived health status and implement interventions that concurrently strengthen self-esteem and perceived health status to improve HRQoL among adolescents living in orphanages.

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Availability of data and materials

The data for this study are available from the corresponding author upon reasonable request.

Authors' contributions

AI developed the study concept, collected data, performed statistical analyses, and wrote the manuscript. RA conducted statistical analysis and wrote the manuscript. ZIA conducted a literature search and wrote the manuscript. All the authors have read and approved the final version of the manuscript.

Declaration of Interest

The authors declared no potential conflict of interest.

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