Factors associated with adolescents' health-related quality of life

Fatores associados à qualidade de vida relacionada à saúde de adolescentes

Factores asociados con la calidad de vida relacionada con la salud de adolescentes

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Abstract

Objective: To analyze adolescents' health-related quality of life and their associations with sociodemographic, family, health habits and behavior variables.

Methods: This is a cross-sectional study developed at a Federal Institute in 2018, in the cities of Pedreiras and Grajaú, located in the state of Maranhão, with the participation of 289 adolescents. Participant characterization was carried out using sociodemographic, family, health habits and behavior data, and the health-related quality of life was assessed using the KIDSCREEN-52. To verify which variables significantly influenced the health-related quality of life of adolescents, a multinomial regression analysis was performed.

Results: The following influenced adolescents' health-related quality of life: sex (p=0.002, OR=2.396, CI=1.3777-4.169), age (p=0.021, OR=0.515, CI=0.292-0.906), family size (p=0.012, OR=2.004, CI=1.167-3.441), family head (p=0.005, OR=5.491, CI=1.687-7.875), frequency with which they practice physical activity (p=0.000, OR= 10.596, CI=3.425-2.785), weight (p=0.000, OR=8.147, CI=3.397-19.541) and sleep satisfaction (p=0.000, OR=13.377, CI=4.625-38.691).

Conclusion: Adolescents' quality of life is a multifactorial construct and was associated with individual characteristics, family variables and lifestyle habits. Sleep satisfaction, as well as the practice of physical activity and weight satisfaction, were the main predictors of good quality of life.

Resumo

Objetivo: Analisar a qualidade de vida relacionada à saúde de adolescentes e suas associações com variáveis sociodemográficas, familiares, hábitos e comportamentos em saúde.

Métodos: Estudo transversal desenvolvido em um Instituto Federal em 2018, nas cidades de Pedreiras e Grajaú, localizadas no estado do Maranhão, com a participação de 289 adolescentes. Foi realizada a caracterização dos participantes por meio de dados sociodemográficos, familiares, hábitos e comportamento em saúde e avaliada a qualidade de vida relacionada à saúde por meio do KIDSCREEN-52. Para verificar quais variáveis influenciaram de modo significativo a qualidade de vida relacionada à saúde dos adolescentes, foi realizada análise de regressão multinomial.

Resultados: Influenciaram a qualidade de vida relacionada à saúde dos adolescentes: sexo (p=0,002, RC=2,396, IC= 1,3777-4,169), idade (p=0,021, RC=0,515, IC=0,292-0,906), tamanho da família (p=0,012, RC=2,004, IC=1,167-3,441), chefe da família (p=0,005, RC=5,491, IC=1,687-7,875), frequência com que pratica atividade física (p=0,000, RC=10,596, IC=3,425-2,785), satisfação com o peso (p=0,000, RC=8,147, IC=3,397-19,541) e com o sono (p=0,000, RC=13,377, IC=4,625-38,691).

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Conclusão: A qualidade de vida de adolescentes é um constructo multifatorial e esteve associada a características individuais, variáveis familiares e hábitos de vida. A satisfação com o sono, bem como a prática de atividade física e a satisfação com o peso foram os principais preditores da boa qualidade de vida.

Resumen

Objetivo: Analizar la calidad de vida relacionada con la salud de adolescentes y sus asociaciones con variables sociodemográficas, familiares, hábitos y comportamientos en salud.

Métodos: Estudio transversal desarrollado en un Instituto Federal en el 2018, en las ciudades de Pedreiras y Grajaú, ubicadas en el estado de Maranhão, con la participación de 289 adolescentes. La caracterización de los participantes se realizó a través de datos sociodemográficos, familiares, hábitos y del comportamiento en salud y se evaluó la calidad de vida relacionada con la salud por medio de KIDSCREEN-52. Para verificar qué variables influenciaron de modo significativo la calidad de vida relacionada con la salud de los adolescentes, se realizó un análisis de regresión multinomial.

Resultados: Influenciaron la calidad de vida relacionada con la salud de los adolescentes: sexo (p=0,002, RC=2,396, IC= 1,3777-4,169), edad (p=0,021, RC=0,515, IC=0,292-0,906), tamaño de la familia (p=0,012, RC=2,004, IC=1,167-3,441), jefe de familia (p=0,005, RC=5,491, IC=1,687-7,875), frecuencia de la práctica de actividad física (p=0,000, RC=10,596, IC=3,425-2,785), satisfacción con el peso (p=0,000, RC=8,147, IC=3,397-19,541) y con el sueño (p=0,000, RC=13,377, IC=4,625-38,691).

Conclusión: La calidad de vida de adolescentes es un constructo multifactorial y estuvo asociada a características individuales, variables familiares y hábitos de vida. La satisfacción con el sueño, así como la práctica de actividades físicas y la satisfacción con el peso fueron los principales predictores de una buena calidad de vida.

Introduction

Understood as a transitional phase, adolescence is marked by intense changes not only of a physical order, but also mental and social. It is, therefore, during this process of (re)construction that adolescents enter a journey full of risks and vulnerabilities that can both enhance their development and compromise their life project.[1]

In this regard, it is accepted that experiences related to adolescence are capable of defining adulthood, including with regard to health and quality of life (QoL) issues. It is understood that QoL is "individuals' perception of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns".[2]

In the context of Health Sciences, a more specific concept emerges, the health-related quality of life (HRQOL) or perceived health, which is the self-assessment that the individual makes about their current health status compared to their personal expectations and under the influence of external factors, such as the duration or severity of the disease and the level of social or family support received.[3]

The investigation of QoL within the scope of health research is in growing expansion and, despite its relevance, it is little studied in the adolescent population. The exploration of the theme has gained greater prominence in the last decade and Brazil is the second country that most investigates the subject, only behind the United States of America.[4]

A broad line of study focuses on adolescents' HRQOL in a condition of illness, in the hospital or outpatient setting,[5] and demonstrates the negative impact that the pathological process has on the perception of HRQOL, with reflection on the state emotional, self-perception, family and school relationships.[6,7] However, the analysis of groups in the community context is limited, with a lack of research that investigates the natural fluctuations of HRQOL during this phase of life.[5]

In adolescence, representations about HRQOL are multifactorial and include individual, social and behavioral issues. In this sense, age and gender, the family nucleus characteristics, as well as the social experiences and behaviors assumed by this population group interfere in the perception of QoL.[8-10]

Based on the above, and considering the gaps identified regarding the need for further investigation on QoL predictors in groups of adolescents in healthy conditions, this study aims to analyze adolescents' HRQOL and their associations with sociodemographic and family variables, habits and behaviors in health.

Methods

This is a cross-sectional study carried out at the Federal Institute of Science and Technology of

Maranhão (IFMA - *Instituto Federal de Ciência e Tecnologia do Maranhão*), from May to August 2018. IFMA, created in 2008, offers courses at the basic, technical, undergraduate and graduate levels and currently has 29 campuses distributed throughout all regions of the state of Maranhão. The Federal Institutes are distinguished by having a diverse range of technical-administrative servers, including healthcare professionals (physician, nurse, nursing technician, psychologist, dentist, nutritionist). Professionals' work involves preventive and interventional actions for basic assistance to students.[11]

The study included younger campuses (opened less than a year ago) and with a newly installed health team (with less than one year of experience), as they understand that healthcare professionals did not have enough time to intervene and bring about changes in students' health and QoL. Thus, the campuses of cities of Grajaú and Pedreiras were part of the study.[12]

Students with an age group corresponding to adolescence, according to the classification of the World Health Organization (10 to 19 years), participated in the research.[1] Adolescents who, during the period of data collection, had their enrollment canceled or locked, who were transferred, retired or dropped out of school were excluded.

The population studied, considering the two campuses included in the study, consisted of 467 adolescents. It was decided to adopt a census sampling, in which all adolescents were approached and invited to participate in the research. In the end, 289 adolescents composed the study (response rate: 61.9%). The reasons for non-participation were non-acceptance or non-delivery of the assent term and/or duly signed and informed consent, after three approaches.

For this study, HRQOL represents the outcome and the predictor variables were adolescents' individual, family and behavioral characteristics. Data collection involved the use of two instruments to characterize the participants and assess HRQOL (KIDSCREEN-52). The application took place through the digital platform Google Forms, in electronic equipment, with individual filling by the adolescent. The researcher remained at participants' disposal to clarify any doubts during the collection.

A characterization questionnaire, prepared by the authors, consisted of 20 questions that included: sociodemographic and family data (e.g., marital status, ethnicity, family structure, maternal and paternal education, family income), in addition to health habits and behaviors (e.g., internet use, alcohol consumption, smoking, physical activity, sleep satisfaction, and weight satisfaction).

KIDSCREEN was conceived by a European project and aims to assess the HRQOL of children and adolescents, aged 8 to 18 years, healthy or chronically ill. It differs from the others for being the first international, transcultural, generic and adaptable instrument to different realities. In this context, it allows for ample comparison and has valid measures for different health statuses.[13] This instrument has two versions, one for children/adolescents and the other for parents/guardians; and it is available in 3 formats, with 10, 27 and 52 items.[14] In this study, KIDSCREEN-52 was used in its version applicable to children/adolescents.

The KIDSCREEN-52 is a 5-point Likert scale consisting of 10 dimensions: Physical, Psychological Well-being, Moods and Emotions, Self-Perception, Autonomy, Parent Relations and Home Life, Social Support and Peers, School Environment, Social Acceptance (Bullying), Financial Resources. The instrument has translation, cross-cultural adaptation and validation for Brazil.[13]

Items, in general, assess the frequency or intensity that some feeling or attitude takes place. Regarding the calculation methodology, an overall score can be computed through the sum of all items assessment, ranging from 52 to 262.[6] The general scores allowed to categorize HRQOL into poor, moderate, and good. The cutoff points were the quartiles of the variable under study, respectively: values below the 1st quartile, from the 1st to the 3rd, above the 3rd quartile.

The collected data were statistically analyzed using the Software Statistical Package for Social Science (SPSS®), version 20.0. The significance level was set at $\alpha = 0.05$.

Population characterization through variables related to the sociodemographic profile, family variables, health habits and behaviors was constructed

using descriptive statistics such as absolute (n) and relative (%) frequency. Regarding quantitative variables, measures of central tendency (mean) and dispersion (standard deviation) were obtained.

To verify which variables significantly influenced adolescents' HRQOL, a multinomial regression analysis was performed, from which the odds ratio estimates were obtained, as well as their respective significance, using the Wald test. In order to assess goodness of fit and validate the results obtained, deviance and degrees of freedom inherent in the proposed model were taken into account.[15,6]

Regarding the quality of adjustment of the multinomial regression model and its respective interpretations, a value equal to 0.790 was obtained through the formula described below:

$$\text{Ratio} = \frac{\text{Deviance}}{\text{Degrees of freedom}} = \frac{382.537}{484} = 0{,}790$$

The obtained value indicates that the deviance was less than the degrees of freedom. In this case, the multinomial regression model fits the data well, which validates the results presented and their respective interpretations.

The study was submitted for consideration and approved by the Institutional Review Board of the UFPI, Opinion 2.445.803 (CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 80585217.0.0000.5214). All ethical precepts contained in Resolution 466/12 of the Brazilian National Health Council (*Conselho Nacional de Saúde*) were respected.[17]

Results

The study included 289 adolescents, 173 female and 116 male, with a mean age corresponding to the second half of adolescence (16.1 years; SD±0.96). Most students were single (98.6%), without children (99%), self-reported brown/black color (83.0%), did not work (95.2%) and lived in the urban area (86.2%) (Table 1).

Table 1. Sociodemographic and family characteristics of adolescents

Characteristics	n(%)
Age	
Up to 15 years	86(29.8)
15 years and over	203(70.2)
Mean ± SD	16.1±0.96
Sex	
Female	173(59.9)
Male	116(40.1)
Marital status	
Single	285(98.6)
Married/stable union	4(1.4)
Children	
No	286(99.0)
Yes	3(1.0)
Ethnicity/skin color	
Brown/black	240(83.00)
White	49(17.0)
Work	
No	275(95.2)
Yes	14(4.8)
Living area	
Urban	249(86.2)
Rural	40(13.8)
Family size	
≤ 4 people	178(61.6)
> 4 people	111(38.4)
Family nucleus	
Nuclear	163(56.4)
Female-headed single parent	69(23.9)
Absent parents	31(10.7)
Reconstituted nuclear	17(5.8)
Male-headed single parent	9(3.2)
Family head	
Father	140(48.4)
Mother	108(37.4)
Grandparents	25(8.7)
Others	16(5.4)
Family income	
Up to 1MW	86(29.8)
1-2MW	120(41.5)
2-3MW	55(19.0)
More than 3MW	28(9.7)

mw - minimum wage (equivalent to R$954,00 (US$173,45) in 2018)

Regarding family composition, family size was up to four people for 61.6% of the adolescents and 54.7% had a nuclear-type family structure (father and mother). The head of the family was the father for 48.4% of respondents, followed by the mother (37.4%). Family income was up to 2 minimum wages (R$1,908 (US$346,90)) for 71.3% of the adolescents (Table 1). Participants' health habits and behaviors are shown in Table 2. Adolescents never consumed alcohol (77.9%) or smoked (98.6%), sometimes or rarely practiced physical activity (61.9%) and were always connected to the Internet (51.2%).

Regarding eating habits, most regularly consumed soft drinks, sweets and fried foods (often or always – 62.3%). The same did not occur with fruit, vegetable and green consumption, in which the most frequent answer was "sometimes" (35.6%). In agreement, 54.4% were not at all, slightly or moderately satisfied with their weight. Regarding sleep pattern, there was low satisfaction (45.3%, nothing or little satisfaction) and 65.7% of the adolescents had less than 8 hours of sleep per day (Table 2).

Table 2. Adolescents' health habits and behaviors

Variables	Never n(%)	Rarely n(%)	Sometimes n(%)	Often n(%)	Always n(%)
Alcohol consumption frequency	225(77.9)	34(11.8)	23(8.0)	3(0.9)	4(1.4)
Smoking frequency	285(98.6)	4(1.4)	-(-)	-(-)	-(-)
Internet use frequency	-(-)	5(43)	43(14.9)	93(32.2)	148(51.2)
Physical activity frequency	26(9.0)	74(25.6)	105(36.4)	38(13.1)	46(15.9)
Fruit, vegetable and green consumption frequency	4(1.4)	25(8.7)	103(35.6)	90(31.1)	67(23.2)
Soft drink, sweet and fried food consumption frequency	3(1.0)	22(7.6)	84(29.1)	120(41.5)	60(20.8)
Weight satisfaction*	43(14.9)	58(20.1)	56(19.4)	37(12.7)	95(32.9)
Sleep satisfaction*	55(19.0)	76(26.3)	62(21.5)	67(23.2)	29(10.0)

*Categorization of responses (not at all satisfied, little satisfied, moderately satisfied, satisfied, very satisfied)

Adolescents' health-related quality of life and associated factors

The HRQOL analysis revealed a mean overall score of 176.66 (SD ±30.76), with the following categorization: poor HRQOL (values below 153), moderate HRQOL (values between 153 to 201) and good HRQOL (values above 201).

The variables associated with good adolescents' HRQOL, considering the 95% confidence interval, were: age (p-value: 0.021), sex (p-value: 0.002), family size (p-value: 0.012), head family (p-value: 0.007), physical activity frequency (p-value: 0.000), weight satisfaction (p-value: 0.000), and sleep satisfaction (p-value: 0.000). The relationship of HRQOL with each of the variables mentioned is presented in Table 3.

Regression analysis performed allows us to infer that adolescents aged over 15 years were 48.5% less likely to have a good HRQOL. In relation to males, they were approximately 2.4 times more likely to have good HRQOL.

Regarding "family size", students with a family of more than four people were about twice as likely to have a good HRQOL. For "family head", having the father as head of the house represented 5.5 times more chance of having a good HRQOL when compared to other heads of household (as long as this head was not the mother or grandparents).

Regarding "physical activity", it is noteworthy that the greater the physical activity frequency, the greater the chance of the adolescent having a good HRQOL. In this sense, the adolescent who always practiced physical activity had around 10 times more chance of having a good HRQOL compared to those who never practice.

Furthermore, adolescents who were satisfied with their weight and who were very satisfied with their sleep had an approximate value, respectively, of 8 and 13 times more likely to have a good HRQOL when compared to those who declared themselves not to be satisfied.

Discussion

The findings of this study reveal the variables associated with adolescents' HRQOL in two cities in northeastern Brazil. The main limitation is coverage level, which is restricted to a small portion of the Brazilian adolescent population and requires caution in generalizing the results. Nevertheless, it brings relevant data that help in the construction of a local panorama and encourage new investigations in other regions of the country, in order to characterize the national scenario regarding the fluctuation of QoL in adolescence, focusing on the identification of its predictor variables.

Regarding individual characteristics, both male adolescents and those aged 15 years or less showed a better perception of HRQOL. Moreover, large or male-headed households positively impacted HRQOL at this stage of life. Regarding health

Table 3. Variables associated with adolescents' health-related quality of life

Variables	Poor n(%)	Moderate n(%)	Good n(%)	Odds Ratio	Confidence Interval	p-value
Age						
≤15 years	13(18.6)	47(31.8)	26(36.6)	-	-	-
> 15 years	57(81.4)	101(68.2)	45(63.4)	0.515	[0.292; 0.906]	0.021 *
Sex						
Female	53(75.7)	99(66.9)	21(29.6)	-	-	-
Male	17(24.3)	49(33.1)	50(70.4)	2.396	[1.377; 4.169]	0.002 *
Family size						
≤ 4 people	48(68.6)	91(61.5)	39(54.9)	-	-	-
> 4 people	22(31.4)	57(38.5)	32(45.1)	2.004	[1.167; 3.441]	0.012 *
Family head						
Others	7(10.0)	7(4.7)	2(2.8)	-	-	-
Mother	31(44.3)	54(36.5)	23(32.4)	3.915	[1.168; 3.124]	0.027 *
Father	23(32.9)	76(51.4)	41(57.7)	5.491	[1.687; 7.875]	0.005 *
Grandparents	9(12.9)	11(7.4)	5(7.0)	1.742	[0.429; 7.069]	0.438
Physical activity frequency						
Never	13(18.6)	12(8.1)	1(1.4)	-	-	-
Rarely	21(30.0)	47(31.8)	6(8.5)	2.103	[0.800; 5.530]	0.132
Sometimes	28(40.0)	56(37.8)	21(29.6)	2.614	[1.019; 6.703]	0.046 *
Often	6(8.6)	15(10.1)	17(23.9)	4.999	[1.606; 5.509]	0.005 *
Always	2(2.9)	18(12.2)	26(36.6)	10.596	[3.425; 2.785]	0.000 *
Weight satisfaction						
Not satisfied at all	25(35.7)	16(10.8)	2(2.8)	-	-	-
Little satisfied	14(20.0)	40(27.0)	4(5.6)	3.832	[1.601; 9.169]	0.003 *
Moderately satisfied	19(27.1)	27(18.2)	10(14.1)	2.064	[0.844; 5.048]	0.112
Satisfied	9(12.9)	49(33.1)	37(52.1)	8.147	[3.397; 19.541]	0.000 *
Very satistied	3(4.3)	16(10.8)	18(25.4)	6.790	[2.294; 20.098]	0.001 *
Sleep satisfaction						
Not satisfied at all	26(37.1)	28(18.9)	1(1.4)	-	-	-
Little satisfied	27(38.6)	40(27.0)	9(12.7)	1.728	[0.809; 3.692]	0.158
Moderately satisfied	8(11.4)	35(23.6)	19(26.8)	3.572	[1.554; 8.208]	0.003 *
Satisfied	7(10.0)	34(23.0)	26(36.6)	5.037	[2.215; 11.456]	0.000 *
Very satisfied	2(2.9)	11(7.4)	16(22.5)	13.377	[4.625; 38.691]	0.000 *

*Significant values through the Wald Test

habits and behaviors, the main predictors for good HRQOL in adolescence were: frequent physical activity, weight and sleep satisfaction.

With regard to HRQOL and its associations, the analyzes denote plurality in QoL, as they reflect the interaction between the different systems to which the adolescent is inserted. Such results are part of national and international overviews by understanding that HRQOL is a multifactorial construct and includes individual, family and behavioral issues.[8-10]

Regarding the gender and age variables, the data corroborate the existing literature that establish them as factors capable of interfering in the perception of HRQOL by adolescents. In this regard, investigations point to a progressive decrease in the perception of HRQOL with advancing age, especially for females, which suggests a homeostatic system that is more sensitive to variations.[8,10,18]

A cross-sectional study conducted with 385 Korean girls added that HRQOL's negative judgment refers to cultural issues and the imposition of social standards that make them dissatisfied with their body image, overload their emotional state and impact on other dimensions of life.[19]

Regarding the reduction in HRQOL with age, a longitudinal study carried out over a 4-year period in Hong Kong states two explanatory theories. The first concerns the growing demands and responsibilities that are assumed with advancing age. The second refers to the maturation of cognitive functions and the more realistic perspective with which the adolescent starts to see the world.[20]

Furthermore, family characteristics also interfere in the perception of HRQOL by adolescents. In the present study, the extended family nucleus was a predictive factor for a better perception of

HRQOL, since it expands the support available. In Portugal, similar data support that the subjective well-being of adolescents is related to their family characteristics and, in particular, to the support received.[21]

The male house head was also associated with a better perception of HRQOL in adolescence. This finding is possibly related to the social role of gender and new family models. For women, being a mother and the main provider of their family nucleus implies a distance from activities related to the home, which affects the quality of relationships and the social support perceived by their children.[22]

Work is, for women, a source of satisfaction and social recognition; while motherhood represents personal fulfillment. In order to achieve a balance between professional aspirations and personal plans, it is pertinent that beliefs and practices within the domestic space be re-signified. Maternity planning, emotional and financial organization, paternal co-responsibility for child care and task division minimize the maternal burden and, therefore, the consequences suffered byx children.[23]

It is important to highlight that, based on preliminary studies, an association between adolescents' income and HRQOL was expected, which was not confirmed in this study. Both in Brazil and in other countries, studies have suggested that a favorable social condition and greater ownership of goods implies a better perception of HRQOL by adolescents.[4,8,9,24] The inconsistency between the findings may be related to local regional disparities or even reflect the different methodologies used to measure and classify adolescents in terms of socioeconomic status.

The other characteristics associated with HRQOL refer to behaviors and habits adopted by adolescents, such as physical activity, weight and sleep satisfaction. Accordingly, recent studies carried out in Portugal and Peru demonstrated low adherence to physical activity, insufficient fruit and vegetable consumption and irregular sleep patterns in adolescence, with negative impacts on HRQOL.[25.26]

The maintenance of unhealthy habits and the preference for sedentary behavior are closely related to overweight/obesity and the occurrence of eating disorders. In Brazil, the relationship between overweight and HRQOL in adolescence was demonstrated by a study carried out in Florianópolis (SC) with 467 adolescents, in which a body mass index above normal was associated with lower HRQOL scores.[27] Furthermore, in Austria, the occurrence of bulimia and anorexia resulted in a worse global assessment of HRQOL in adolescence.[7]

Sleep habits are also capable of interfering with adolescents' HRQOL. Irregularity in sleep and rest patterns is related to the adoption of sedentary behaviors and involvement in low-energy activities in adolescence, such as the use of computers, cell phones and electronic games.[28] In the present study, sedentary behavior associated with screen time, verified by the exacerbated internet use, was quite common among participants.

Based on what was discussed, it is observed that HRQOL was associated with individual intrinsic and extrinsic characteristics, with emphasis on adolescents' habits and behaviors. In this sense, healthcare professionals' work with a focus on promotion, prevention and assistance is urgently needed. The importance of family involvement in this process is highlighted, since social support is considered one of the main predictors of a good QoL.[9]

The findings of this study can support professional practice in the context of preventive and health promotion actions. QoL will be achieved through care interventions and health education practices, especially for the most vulnerable groups, with an emphasis on changing behavior and adopting healthy habits. It is worth emphasizing the relevance of the school environment as the locus of health education actions and the importance of the role of healthcare professionals in mediating these educational practices.[29]

It is added that educational technologies, such as the use of games, dynamics and plays, are useful resources in the process of acquiring and appropriating knowledge, valuing autonomy and encouraging decision-making by adolescents in relation to self-care in health.[30] This fact reinforces the importance of professional updating and the search for intervention options that meet the needs of adolescents in terms of content and form of approach.[29]

Conclusion

In adolescence, HRQOL is defined by multiple factors that include individual and family characteristics, health habits and behaviors. The predictors of good HRQOL were age, sex, family size, family head, physical activity frequency, weight and sleep satisfaction. The results presented guide the development of educational actions in order to promote health and QoL in this population group, with specific actions for the most vulnerable, emphasizing behavior change and adopting healthy habits.

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Collaborations

Alencar NES, Silva GRF, Gouveia MTO and Silva ARV collaborated with the study design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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