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Influence of individual and socio-environmental factors on self-rated health in adolescents

Influência de fatores individuais e socioambientais na autoavaliação de saúde em adolescentes

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ABSTRACT: ***Objective:*** This study aimed to determine if individual and socio-environmental characteristics can influence the self-rated health among Brazilian adolescents. ***Methods:*** It included 1,042 adolescents from 11 to 17 years old who participated in the *Beagá* Health Study (*Estudo Saúde em Beagá*), a multistage household survey in an urban setting. Logistic regression analyses were performed to determine the association between the self-rated health and the following explanatory variables: sociodemographic factors, social support, lifestyle, physical and psychological health. ***Results:*** Good/very good and reasonable/poor/very poor self-rated health were reported by 88.5 and 11.5% of adolescents, respectively. The data on sociodemographic factors (SES), social support, lifestyle, psychological and physical health were associated with poor self-rated health ($p \leq 0.05$). The associated variables were: age 14 – 17 years (OR =1.71; 95%CI 1.06 – 2.74), low SES (OR =1.68; 95%CI 1.05 – 2.69), few (OR = 2.53; 95%CI 1.44 – 4.46) and many quarrels in family (OR = 9.13; 95%CI 4.53 – 18.39), report of unkind and unhelpful peers (OR = 2.21; 95%CI 1.11 – 4.43), consumption of fruits < 5 times a week (OR = 1.78; 95CI% 1.07 – 2.95), physical inactivity (OR = 2.31; 95%CI 1.15 – 4.69), overweight (OR = 2.42; 95%CI 1.54 – 3.79) and low level of life satisfaction (OR = 2.31; 95%CI 1.34 – 3.98). ***Conclusions:*** Poor self-rated health among adolescents was associated with individual and socio-environmental characteristics related to family, school and neighborhood issues. Quantifying the self-rated health according to the theoretical framework of the child's well-being should help in arguing that self-rated health might be a strong indicator of social inequities for the studied population.

Keywords: Self-assessment. Child welfare. Adolescent. Urban health. Adolescent behavior. Social conditions. Family relations.

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RESUMO: ***Objetivos:*** Determinar se características individuais e socioambientais podem influenciar a autoavaliação de saúde dos adolescentes brasileiros. ***Métodos:*** Foram incluídos 1.042 adolescentes de 11 a 17 anos de idade, participantes do "Estudo Saúde em Beagá", inquérito domiciliar realizado no município de Belo Horizonte em 2008-2009. Verificou-se a associação entre autoavaliação de saúde e as seguintes variáveis explicativas: fatores sociodemográficos, suporte social, estilos de vida, saúde psicológica e saúde física. ***Resultados:*** Com relação à autoavaliação da saúde, 11,5% consideraram sua saúde muito ruim/ruim/razoável e 88,5% boa/muito boa. Os domínios sociodemográfico, suporte social, estilos de vida, saúde psicológica e física foram associados com autoavaliação de saúde ruim ($p \leq 0,05$). As variáveis associadas foram: idade 14 – 17 anos (OR = 1,71; IC95% 1,06 – 2,74), baixo nível socioeconômico (OR = 1,68; IC95% 1,05 – 2,69), poucas (OR = 2,53; IC95% 1,44 – 4,46) e muitas brigas na família (OR = 9,13; IC95% 4,53 – 18,39), não considerar os colegas legais e prestativos (OR = 2,21; IC95% 1,11 – 4,43), consumo de frutas < 5vezes/semana, (OR = 1,78; IC95% 1,07 – 2,95), ser inativo fisicamente (OR = 2,31; IC95% 1,15 – 4,69), excesso de peso (OR = 2,42; IC95% 1,54 – 3,79) e baixo nível de satisfação com a vida (OR = 2,31; IC95% 1,34 – 3,98). ***Conclusões:*** A autoavaliação de saúde ruim entre os adolescentes foi associada com características individuais e socioambientais relacionadas com questões da família, escola e vizinhança. Conhecer a autoavaliação da saúde de acordo com o referencial teórico de bem-estar infantil pode nos auxiliar ajudar na argumentação de que a autoavaliação de saúde pode ser um forte indicador de desigualdades sociais para essa população estudada.

Palavras-chave: Autoavaliação da saúde. Bem-estar da criança. Adolescente. Saúde da população urbana. Comportamento do adolescente. Condições sociais. Relações familiares.

INTRODUCTION

Self-rated health (SRH) is one of the most commonly used health indicators in surveys, because it is an expression of social, psychological, and biological dimensions[1]. It is considered an easily assessed and understood, robust, valid and reliable measure of physical health status in adults[2,3].

Although most widely used as a proxy of health status among adults, SRH deserves more research attention as a health indicator among adolescents. Studies comparing SRH between adults and adolescents have shown that, while SRH in adults may reflect chronic and acute conditions, in adolescents, it may extend beyond the physical health status, reflecting personal, environmental and socio-behavioral factors[2,4,5].

Studies on the determinants of adolescent SRH are limited. One of the ancillary studies on this subject in this age group was led by Mechanic and Hansell in 1987, who analyzed longitudinal data from 1,057 adolescents in 19 public schools in the United States. They showed that SRH was related to school achievement, physical activity and psychological well-being. They postulated that SRH among adolescents was defined in a broad and global way, and represented the overall sense of functioning of life[6].

Afterwards, in 1998, Vingilis et al. found that socio-demographic variables, the structural environment, physical health, social factors, lifestyle behaviors and psychological

distress were predictors of SRH among adolescents. They considered that some of these variables directly affect self-rated health (e.g. adolescent self-esteem and school performance), while others are indirect (e.g. family structure, which is mediated by the family's financial situation)[4].

Therefore, the studies in developed countries have shown that SRH in adolescents can extend beyond the symptoms and be an expression of life distress, indicating that this age group defines health broadly and globally[4-11]. Considering that the social environment influences SRH in adolescents, it is necessary to understand how the social environment may influence the health of this age group. Then, the objective of this exploratory study was to understand which individual and socio-environmental characteristics can influence self-rated health among Brazilian adolescents in a large urban center.

METHODS

BEAGÁ HEALTH STUDY

The *Beagá* Health Study (*Estudo Saúde em Beagá*) is a population-based household survey conducted by the Observatory for Urban Health of Belo Horizonte City (OSUBH), in 2008-2009. The sample size (4,500 households) was defined based on estimates from previous research. The number of households selected was the one that produced a maximum relative error of 15% at a confidence level of 95% to the estimated proportion of variables selected (prevalence estimated between 17 and 22%). The survey focused on two of the nine administrative districts of Belo Horizonte city (Barreiro and West), with a population of about 250,000 people each and a total geographic area of 33.16 km^2. The sample was selected using stratified three-stage cluster sampling, including census tracts as the first level, households as the second and residents as the third level.

The sample strata were defined according to the Health Vulnerability Index (HVI)[12], an index created by combining social, demographic, economic and health indicators from each census tract. Census tracts are defined by the Brazilian Census Bureau and include an average of 1,000 residents each. In the first stage, 150 census tracts were selected from a total of 588 census tracts in the sampling frame. In the second stage, 6,493 households were initially eligible, using a sampling frame from the municipality. After deleting vacant lots, institutional and commercial buildings and eligible participants who were not found after three visits to their homes, 5,436 households remained eligible. The refusal rate was about 25.0%, resulting in a study sample of 4,051 households. In the third stage, one adolescent aged 11 – 17 years and one adult aged 18 years or older were randomly selected to participate within each sampled household[13]. A probabilistic sample of 1,042 adolescents at the age range of 11 – 17 years old was studied.

Two self-completed questionnaires were developed according to age. They were based on the UNICEF framework[14], on the "Birth Cohorts Follow-up of the Center for Epidemiological

Research / *Universidade Federal de Pelotas*" (CPE / UFPel)[15] and on the "National Survey of School Health" (PeNSE)[16]. The self-reported questionnaire developed for 11 – 13 year olds focused on aspects of well-being, covering factors such as educational well-being, family structure, physical activity, dietary habits and subjective well-being. For adolescents aged 14 – 17 years old, the instrument included, besides the aforementioned factors, questions related to violence, peer relationships, sexual behaviors, as well as tobacco, alcohol and illicit drug use. Also, the adolescents' weight, height and waist circumference were assessed by trained interviewers using standardized procedures[17].

VARIABLES

Despite the paucity of research on predictors of SRH among adolescents, the literature review identified several factors that may affect the subjective evaluation of health in this age group. We propose a framework for self-rated health in an urban environment, according to the personal, behavioral and socio-environmental factors that interact and define the subjective health of this age group. This framework is presented in Figure 1.

Dependent variables

The outcome measure, SRH, was assessed by the following question: "In general, do you consider your health: very good, good, reasonable, poor or very poor?" SRH was dichotomized into very poor, poor and reasonable (now called POOR), and very good or good (now called GOOD).

Independent variables

The independent variables according to the theoretical model were organized in the following blocks: sociodemographic, social support, lifestyles, psychological indicators and health indicator.

1. *Sociodemographic characteristics*

The following characteristics were evaluated: gender, age (11- to 13-years-old and 14- to 17-years-old), and a proxy of socioeconomic status, assessed by minimum wage obtained from the adult questionnaire and categorized into less than five and five or more times the Brazilian minimum wage.

Report of ownership of educational items at home was used as a proxy of socioeconomic status and assessed by the question[14]: "Which one of the following objects do you have in your home? Dictionary? Calculator? Textbook for school? Desk or table to study? Computer

to do school work? Internet? Educational software? A calm or quiet place to study?" The variable was created by adding all items whose score ranged from 0 to 8 and it was categorized as either low socioeconomic status (i.e. scores ranging from 0 to 5) or high socioeconomic status (i.e. 6 to 8).

2. *Social support from family and school*

Social support from family was comprised by the following variables: family structure (nuclear, single-parent families or stepfamilies); frequency of quarrels in the family (none, few,

*Social support: subdivided into social involvement, school and family.

Figure 1. Framework proposed for self-rated health among adolescents according to sociodemographic, lifestyles, risk behaviors, social support, physical and psychological health blocks.

or many); frequency of meals with parents (less than once a week or twice or more times a week); frequency of conversations with parents (never/rarely, sometimes, or always); family members' interest in the adolescent's school life (no one, parents, or other family member) and relationship with parents. The latter variable was scored from 0 to 6 and categorized as either bad, from 0 to 4, or good, from 5 or 6. The questions used were "My parents are always there for me when I need them"; "They make me feel loved and cared for"; "I can talk to them about any problems I might have"; "We have a lot of arguments"; "They give me the attention that I need"; and "They make me feel bad about myself".

Regarding social support from school, the following variables were examined: satisfaction with school life (likes or does not like school); school type (public or private) and a positive relationship with peers (considers them nice and helpful).

3. Lifestyle

This block included questions about fruit consumption five days a week (at least once, less or more, five days or more per week), frequency of breakfast (every day or never/rarely/sometimes), time spent watching TV (less than 1 hour/day, 2 hours/day; or 3 hours/day or more), time spent per day playing videogames or on the computer (less than 1 hour, 2 hours; or 3 hours or more), and physical activity over the last seven days (active: 300 minutes or more or inactive/insufficiently active: up to 299 minutes). Physical activity was based on the instrument of the National Health Survey of School (PeNSE)[16]. We calculated the time of physical activity accumulated in the last seven days using a combination of the following activities: commuting to school on foot or by bicycle, physical education classes at school and other extracurricular physical activities.

4. Psychological indicators

This block was evaluated using two visual scales: life satisfaction and psychological well-being. The "Satisfaction with Life Scale"[18] uses an ascending scale from 1 to 10 on the day of interview, where the lowest value represents low life satisfaction and the highest value represents high life satisfaction. Subsequently, these responses were categorized as either positive (6 to 10) or negative (1 to 5). The "Faces Scale"[18] was used for psychological well-being. This schematic instrument is composed of seven faces that refer to the prevailing mood over the two weeks prior to the interview. Psychological well-being answers were categorized as very high (face 1), high (face 2), or moderate to low (faces 3 to 7) based on a previous study[19].

5. Health indicator

Anthropometry was evaluated using body mass index (BMI), which was calculated and classified as percentiles by age group according to the World Health Organization (2007). According to this classification, a BMI below the 3rd percentile was considered low; between the 3rd and 85th percentiles, it was considered adequate or normal; between the 85th and 97th percentiles, it was considered as overweight; and above the 97th percentile, it was considered as obesity. Age (in months) was used as a reference (years * 12 + 6 months)[20].

DATA ANALYSIS

The descriptive and univariate analysis of the SRH were carried out. Variables associated at the level of $p \leq 0.20$ were included in the multivariate analysis. All variables of each domain were entered simultaneously in the model.

The analyses were carried out using multiple logistic regressions to obtain odds ratios (OR) and 95% confidence intervals (95%CI). The final analysis included all variables that remained statistically associated with SRH at the level of $p \leq 0.05$. To assess the model, we used the Hosmer and Lemeshow Test.

Weights were used to correct differences in the selection probabilities of each individual. All analyses were weighted for the sample design effect through the command SVY of the STATA 10.0 software.

All participants and their parents gave their written consent to participate in the study. The study was approved by the Institutional Review Board of *Universidade Federal de Minas Gerais,* under case no. ETIC 253/06.

RESULTS

Regarding SRH, 11.2% (n = 120) out of 1,042 adolescents considered their health from very poor to reasonable and 88.8% (n = 915) from good to very good.

Table 1 shows the univariate analysis according to all blocks. In the sociodemographic domain, age and low socioeconomic status (SES) were significantly associated with poor SRH. With respect to the social support sub-blocks, in the family subdomain, single-parent households and stepfamilies, reports of family quarrels, rarely or never engaging in conversation with the parents and bad relationship with parents were all associated with poor health perception. In the school subdomain, dislike of school life was associated with poor health ratings ($p \leq 0,05$). In the social involvement subdomain, no factors were associated with SRH. In the lifestyles domain, low consumption of fruits, not eating breakfast and physical inactivity were associated with poor SRH ($p \leq 0.05$). Regarding the psychological indicators, all variables were significantly associated with poor SRH. For the physical health domain, only overweight was associated with a poor evaluation.

Table 2 presents results of the multivariate analyses. Given the existence of a significant multicollinearity between "low consumption of fruits" and "not eating breakfast", only "low consumption of fruits" was kept into the multivariate model. The variables were: age 14 – 17 years, low SES, report of quarrels in the family, report of unkind and unhelpful peers, consumption of fruits < 5 times/week, physical inactivity, overweight and low level of life satisfaction. The model showed a very good fit by the Hosmer and Lemeshow Test ($p = 0.7654$).

Figure 2 presents results of bivariate analysis of reports of quarrels and the relationship of adolescents with their parents. It was noted that adolescents who reported quarrels in the family also reported worse relationships with parents.

Table 1. Sociodemographic characteristics, social support, lifestyles, psychological indicators and health according to self-rated health among adolescents. Beagá Health Study, 2008 – 2009.

Characteristics	Total		Poor SRH	Good SRH	p-value*
	n	%	%	%	
Sociodemographic					
Sex					
Female	494	47.2	53.6	46.5	0.277
Male	541	52.8	46.4	53.5	
Age					
11-13 years	435	41.9	28.6	43.5	0.023
14 -17 years	600	58.1	71.4	56.5	
Socioeconomic status					
High (≤ 6 educational items)	428	42.9	53.8	40.5	0.007
Low (< 6 educational items)	581	57.1	46.2	59.5	
Social Support					
Family					
Family structure					
Nuclear	659	63.3	53.3	64.5	0.045
Single-parents	268	24.8	30.8	25.0	
Stepfamilies	116	11.9	15.8	10.5	
Quarrels in the family					
None	330	31.7	15.0	33.8	< 0.001
Few	613	58.8	55.8	59.2	
Many	99	9.5	29.2	6.9	
Has meals with parents					
< 2 times/week	177	17.1	22.6	16.4	0.168
≥ 2 times/week	855	82.9	77.4	83.6	
Parents spend time 'just talking' to them					
Never or rarely	150	15.1	24.4	13.9	0.021
Sometimes or always	888	84.9	75.7	86.1	
Family interest in school life					
Parents	778	81.4	76.4	82.0	0.112
Another family member	123	11.6	11.2	11.6	
Nobody	72	7.0	12.4	6.4	
Relationship with parents					
Good	717	69.8	45.7	72.9	< 0.001
Bad	303	30.2	54.3	27.1	
School					
Satisfaction with school life					
Like	865	88.9	80.7	89.9	0.023
Dislike	115	11.1	19.3	10.1	
Type of school					
Public	838	84.5	85.3	85.3	0.968
Private	145	14.5	14.7	14.5	
Social involvement					
Consider peers 'kind and helpful'					
No	65	7.2	6.6	12.1	0.097
Yes	940	92.8	93.4	87.9	

Continue...

Table 1. Continuation.

Characteristics	Total		Poor SRH	Good SRH	p-value*
	n	%	%	%	
Insecurity in the neighborhood					
No	559	53.2	51.8	53.4	0.786
Yes	478	46.8	48.2	46.6	
Lifestyles					
Consumption of fruits					
< 5 times/week	660	65.0	81.2	62.9	< 0.001
≥ 5 times/week	378	35.0	18.8	37.0	
Eats breakfast					
Never or almost never	122	11.6	20.5	10.5	0.004
Sometimes or always	915	88.4	79.5	89.5	
Physical Activity					
Active	515	49.4	34.2	51.4	< 0.001
Insufficiently active	430	41.2	48.3	40.3	
Inactive	98	9.4	17.5	8.3	
Watches TV					
Never or 1 hour or less/day	271	26.3	21.0	27.0	0.365
2 hours/day	170	16.5	16.8	16.4	
3 hours or more/day	590	57.2	62.2	56.6	
Plays videogames or uses the computer					
Never or 1 hour or less/day	547	52.9	53.8	52.7	0.438
2 hours/day	152	14.6	10.9	15.8	
3 hours or more/day	336	32.5	35.3	32.1	
Psychological indicators					
Psychological well-being					
Poor	47	4.3	10.9	3.5	0.001
Good	989	95.7	89.1	96.5	
Life satisfaction					
Negative level	129	12.5	24.6	11.1	< 0.001
Positive level	901	87.5	75.4	88.9	
Personal well-being					
Great	716	69.3	55.0	71.1	< 0.001
Medium	230	22.2	26.7	21.7	
Poor	88	8.5	18.3	7.2	
Body image					
Satisfaction	208	19.5	10.5	20.7	0.030
Dissatisfaction	811	80.5	89.5	79.3	
Health indicators					
Body Mass Index (BMI)					
Without excess weight	776	75.7	64.9	77.1	0.029
Excess weight	257	24.3	35.1	22.9	
Dental services utilization					
< 2 years	661	72.2	72.0	72.3	0.963
≥ 2 years	247	27.8	28.0	27.7	

*p-value obtained by the χ^2 Test.

Table 2. Results of the multivariate logistic regression of poor self-rated health among adolescents (n = 974). Beagá Health Study, 2008 – 2009.

Characteristics	OR	95%CI
Socio-demographic		
Age		
11 to 13 years	1.00	–
14 to 17 years	1.71	1.06 – 2.74
Socioeconomic status		
High SES (≥ 6 educational items)	1.00	–
Low SES (< 6 educational items)	1.68	1.05 – 2.69
Social support		
Quarrel in family		
There are no quarrels	1.00	–
Few quarrels	2.53	1.44 – 4.46
Many quarrels	9.13	4.53 – 18.39
Considers peers 'kind and helpful'		
Yes	1.00	–
No	2.21	1.11 – 4.43
Lifestyles		
Consumption of fruits		
≥ 5 times/week	1.00	–
< 5 times/week	1.78	1.07 – 2.95
Physical Activity		
Active	1.00	–
Insufficiently active	1.43	0.89 – 2.30
Inactive	2.31	1.15 – 4.69
Psychological indicators		
Life satisfaction		
Positive Level	1.00	–
Negative Level	2.31	1.34 – 3.98
Health indicators		
Body Mass Index		
Without excess weight	1.00	–
Excess weight	2.42	1.54 – 3.79
p-value**	0.7654	

*The variables included in this model were those whose p-value was less than 0.20 in the bivariate analysis presented in Tables 1 and 2; **Hosmer & Lemeshow Test (model fit).

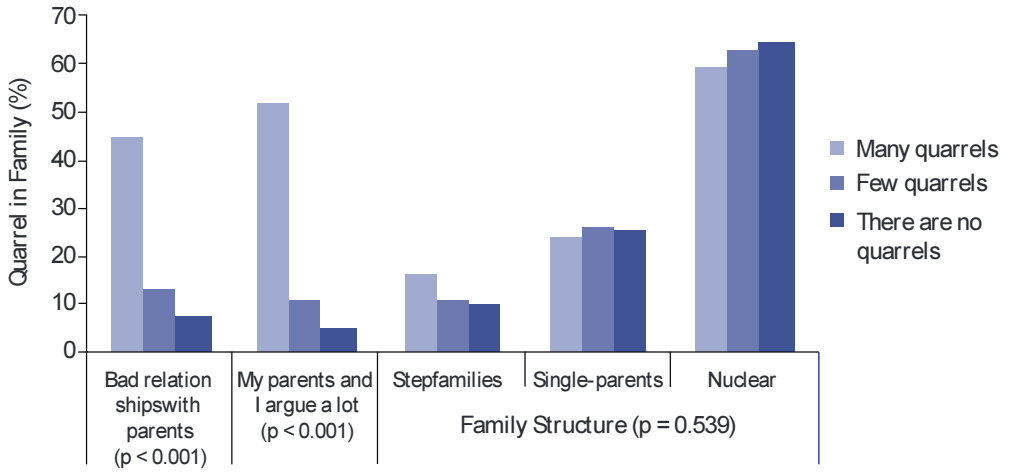

Figure 2. Presence of family quarrels, relationship with parents, fights with parents and family structure among adolescents (n = 1,042). Beagá Health Study, 2008 – 2009.

DISCUSSION

Our results show that the self-rated health in the population studied can be influenced by individual and family characteristics in a large urban center. SRH among Brazilian adolescents seemed to be a multidimensional indicator associated with five of the six blocks investigated: sociodemographic, social support, lifestyle, psychological and physical health. Brazilian adolescents living in large cities seemed to have similar factors associated with SRH when compared to those living in developed countries, suggesting that, beyond physical health, other factors may influence the SRH.

Regarding sociodemographic factors, older age and socioeconomic status have been described as risk factors for poor self-rated health in Brazilian adolescents, as well as in international studies[4,5,7]. In this study, the prevalence of poor SRH increases with age, suggesting that adolescents may become increasingly preoccupied with their health as they age, with similar health perception patterns as adults.

According to UNICEF (2007), the lack of educational and cultural resources should rank alongside lack of income, and that the educational resources of the household, in particular, play a critical role in children's educational achievements[14]. Therefore, in the present study, the lack of educational items was associated with poor SRH. Previous studies support this association, and showed that the possession of household assets contribute to the perception of satisfactory health[21,22].

Karademas et al.[8] say that the major determinant of children's and adolescents' health and psychological indicators is the social environment in which they grow up and live, such

as family and school. They showed the strong relationship of family-related factors with children and adolescents' health.

In our study, regarding family context, only one variable remained in the final model: report of quarrels, with a remarkable dose-response with poor SRH. The highest magnitude of association was with many quarrels (OR = 4.53), despite large 95% confidence intervals, due to a relatively small sample (n = 99). These findings corroborate previous studies reporting the importance of the family environment on the self-rated health of adolescents[8,10]. Looking at the univariate association and trying to understand the above finding, we performed a bivariate analysis of reports of quarrels and the relationship of the adolescents with parents. It was noted that adolescents who reported quarrels in the family also reported worse relationships with parents (Figure 2), suggesting that quarrels that occurred in the family might be related to the adolescents and their parents, possibly explaining why the model could not include both variables.

The existence of family conflicts seems to be more important for the self-rated health of adolescents than the other variables in the family domain of the framework proposed (Figure 1). Mechanic and Hansell[6] found that family structure is not associated with physical and psychological symptoms, unlike the existence of family conflicts. Other studies show that adolescents who live in single-parent families have worse health assessments, but they argued that this is not a direct effect, and is probably mediated by family SES and the quality of family interactions[10]. A previous study[9] suggested that parental support may be more important than support from peers or other adults to promote a better self-rated health in adolescents.

Adolescents who consider their colleagues as unkind and unhelpful had poorer SRH as compared to their counterparts. This variable is part of the social subdomain of the conceptual model proposed, and can inform about the relationships with colleagues/peers. Some authors show that peer support also influences adolescent health. In particular, relationships with colleagues are one of the most important parts of an adolescent's social life; being supported by friends is associated with better self-rated health[4,9,10].

In the lifestyle domain, unhealthy behaviors, represented by the low consumption of fruit and physical inactivity, were associated with poor SRH. Previous studies[3,23-25] with adults have found persistent relationships between dietary habits, physical activity and SRH. In the study based on the Nord-Trøndelag Health Study (HUNT), which included 2,741 adolescents aged 13 – 19 years old, the absence of exercise was associated with poor self-rated health[7].

In the literature[4,26], we also found that physical health status is a relevant predictor of SRH among adolescents, despite the influence of personal, socio-environmental, behavioral and psychological factors. Considering BMI as an objective physical health indicator, being overweight remained associated with health perception in the final model. According to the literature, a high BMI may influence the subjective health of individuals[4].

As expected, adolescents who have lower satisfaction with their life reported worse SRH. The importance of psychological well-being for SRH among adolescents has been demonstrated by most studies dealing with a subjective evaluation of health. These studies highlight the association of low self-esteem[6] and low level of life satisfaction[8] with worse

SRH. So, we can add to the body of the literature the same finding for adolescents living in an urban area in a developing country.

The *Beagá* Health Study seems to have external validity when compared with some estimates provided by the School-based Health Survey (PeNSE, 2009). This school survey interviewed 60,973 adolescents in the 9th grade of elementary school (13 to 15 years old) in all Brazilian capitals and the Federal District in 2009[16]. The citywide PeNSE showed that in Belo Horizonte 36.8% of school children reported fruit consumption in five or more days per week, similar to that found herein (35.0%). Likewise, regarding violence in Belo Horizonte, the proportion of adolescents involved in fights (12.9%) was very similar to that found in this study (14.6%). PeNSE, like other studies involving adolescents in Brazil, did not evaluate SRH, which precludes comparison with the results of our study.

Possible limitations include the cross-sectional nature of this study, which does not allow causal or temporal inferences about the associations found[26]. Also, researching SRH poses difficulties because of the need for extensive information that enables researchers to control for potential confounders[27]. Although the present study included information regarding different aspects of adolescent health and its determinants, it did not investigate reported morbidity, but only objectively measured the weights and heights of participants. Thus, a more in-depth analysis regarding the physical health dimensions of SRH was limited.

Importantly, the Odds Ratio can overestimate or underestimate the strength of an association. But the choice of Binary Logistic Regression, which provides the Odds Ratio, was made on the basis of this method being suitable for outcomes considered "rare", as is the case in the present study that the prevalence of poor SRH was equal to 11.2% in the total sample, and 7.63% among teens aged 11 – 13 years old, and 13.71% between adolescents aged 14 – 17 years old.

Moreover, other factors not investigated here may also be associated with subjective health and may interact with the blocks studied, such as relationship with teachers, presence of siblings, reports of co-morbidity, child labor, and/or domestic violence.

CONCLUSIONS

Self-rated health and its determinants, as reported in this study, have been only incipiently evaluated in the literature, despite its importance and contemporaneity. In our study population, SRH was associated with individual and socio-environmental factors, including family, peers, school and neighborhood. This composition reassembles the theoretical framework of child well-being proposed by UNICEF[14], which was considered a strong indicator of social inequities[28].

The findings have important implications for public health and for epidemiological surveys involving adolescents. Self-rated health seems to be a good measure to assess the subjective health of adolescents, reinforcing the findings of the international literature, which demonstrates the importance of this single-item measure used in the assessment of adolescent health[4-10].

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