Self-perceived health and psychological well-being among Serbian schoolchildren and adolescents: data from National Health Survey

Research Article

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Abstract: The purpose was to determinate possible factors associated with psychosocial health through self-perceived health and psychological well-being among Serbian schoolchildren and adolescents. A cross-sectional study. The study is based on the 2006 National Health Survey of the population of Serbia. A total of 2,721 schoolchildren and adolescents were included. Face-to-face questionnaire and self-administered questionnaire were used for collection of data. For the assessment of psychosocial health we created two indicators (varibles): Self perceived health (using the categorical principal components), and Psychological well-being (using reliability analisys). Data were analyzed using descriptive statistics, Pearson's correlation coeficient and categorical regression. Self-perceived health was found to have a positive association with gender, age, objective and subjective socioeconomic status. Psychological well-being was associated with gender, age, social support, objective and subjective socioeconomic status. Age group was strongly associated with self-perceived health and psychological well-being. Older respondents and female perceived their health to be better than others. Male and respondents in age group 7-11 had higher levels of psychological well-being. Results show that both demographic and socioeconomic variables have an important influence on schoolchildren and adolescent self-perceived health and psychological well-being.

Keywords: Self-perceived health • Psychological well-being • Schoolchildren • Adolescents • Serbia

1. Introduction

Health is more than not being sick. Health is a resource for everyday living. It is the ability to realize hopes, satisfy needs, change or cope with life experiences, and participate fully in the society. The World Health Organization (WHO) defines health as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity [1]. This definition calls attention to the fact that health is a complex and multidimensional concept.

Psychosocial health is very important to appreciation of life and so contributes greatly to quality of life. It includes a complex interaction of mental, emotional, social, and spiritual components. Psychosocial health can be explained through self-perceived health and psychosocial well-being [2].

Self-perceived health does not focus on any particular dimension of health, but provides a succinct way of summarizing the diverse components of health. Beyond its strong correlation with mortality and objective health status, it may be viewed as a subjective evaluation and psychosocial health indicator [3,4]. Self-perceived health is one of the most commonly used health indicators. In longitudinal studies poor self-perceived health was associated with increased mortality during [5,6].

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The criteria used for health perceptions and health beliefs vary across the lifespan. While middle-aged or elderly persons tend to evaluate their own health based on the presence of chronic illness or self-limiting health problems, children and youth tend to use psychosocial health, psychological well-being and health-related behaviours as a frame of reference for their health perceptions [7]. There is a certain level of „health equalization" during childhood and adolescence. Despite this equalization, there are still differences in health perceptions, psychosocial health, psychological well-being and health-related behaviours among youth. Because of its important consequences in adult life, investigating the construct and assessment of subjective health in early life may be of particular interest [8].

Psychological well-being has always been an important focus for mental health research. Measures of well-being usually reflect actual mood or self-esteem and can often assess levels of psychological distress [9,10]. Psychological well-being is closely linked with a quality of social relationships young people are able to establish with family members and peers. Psychosocial factors continue to play an increasingly important role in understanding health and illness and may have major implications for adult morbidity and mortality.

Young people, especially adolescents, are undergoing major biological, psychological, sociocultural and cognitive changes which can have a profound influence on their self-perceived health and psychological well-being [11]. Because psychosocial health problems may have a major impact on adolescent psychosocial well-being they should receive investigative priority [7].

The aim of our study was to focus on possible association of socioeconomic status (SES), demographic variables and the self-perceived health and psychological well-being of schoolchildren and adolescents, which together are indicators of psychosocial health.

To our knowledge, there are no studies that have explored self-perceived health, psychological well-being, and possible associations with socioeconomic status and demographic variables among young people in a country undergoing political, social and cultural transition.

2. Material and Methods

Our survey was a part of the 2006 National Health Survey for the population of Serbia (excluding Kosovo and Metohia) which was carried out by the Ministry of Health of the Republic of Serbia with the financial and professional support of the World Bank, the World Health Organization Regional Office for Europe (Country Office Serbia) and the Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" [12].

Sample and study populations. A stratified two-stage representative sample of the population of Serbia was used. The sample included all registered households in 2002 Serbia population Census and was selected to provide statistically reliable estimates of the health indicators at the national level and at the levels of six geographical regions of Serbia (Vojvodina, Belgrade, West, Central, East, and South-East Serbia) which were identified as the major strata in the sample. By their further division into urban and rural areas, a total of 12 strata were obtained. A total of 675 census enumeration areas within each region with probability proportional to their size were defined as primary stage units. Second stage units were households selected by using a simple random sampling without replacement. Within each selected census enumeration areas, 10 households were chosen (+ 3 backup households). Backup households were interviewed only if some of the first 10 households were not found. If a household refused to be interviewed, a backup household was not contacted.

The observation units were households, adults aged 20+ years and children aged 7 to 19 years. Out of 7,673 households, 6,156 were interviewed during September and October 2006. The household response rate was 86.5%. In the interviewed households 2,921 school children and adolescents aged 7 to 19 years were identified of which 2,721 were completely interviewed. The response rate was 93.2%.

Instruments. The information on the health of the children and adolescents in this study was obtained from interviews, anthropometric and blood pressure measurements. Two questionnaires were used for collection of data: a face-to-face questionnaire and a self-administered questionnaire. The questionnaires were based on the standard questionnaires which were used in similar types of surveys (WHO Health Survey 2002, SF-36) [13,14]. Two weeks prior to the start of the survey, all questionnaires were pretested in 10 cities of Serbia and they were validated instruments [12]. Questionnaires were administered by trained interviewers. Each interview team consisted of two interviewers and one health care professional.

The questionnaires covered the following topics: informational panel (containing basic information about interview procedure with children and adolescents), demographic characteristics and socio-economic status, hygiene habits, diet, leisure time, physical activity and sports, traffic behaviour, injuries, lifestyles, reproductive health, other risks and knowledge about health, health self-assessment and life satisfaction, relations with others, mental health characteristics, ability to perform

Self-perceived health and psychological
well-being among Serbian schoolchildren
and adolescents: data from National Health Survey

activities of daily living, use of health services and satisfaction with health care, medication and objective health status.

Statistical methods and procedure. Self-perceived health was measured by asking respondents how they felt about their health (the responses included: *Very poor* = 1, *Poor* = 2, *Fair* = 3, *Good* = 4, *Very good* = 5), and their attitudes about their own health. The attitudes were measured by indicating how much they agreed or disagreed with the next four statements: (1) I take responsibitily of my health; (2) If I take care about own health, I will be healthy; (3) Even, if I take care about personal health, I still can be ill; (4) Beeing healthy is pure luck. Responses included: *I do not agree* = 1, *I am not sure* = 2, *I agree* = 3. Using the categorical principal components, the dependent variable *Self perceived health* was created as a two-dimensional variable – poor and good self-perceived health (Cronbach' alpha was 0.86).

To determine psychological well-being respondents were asked to report how often they had, during the past 4 weeks: (1) felt eager, (2) felt nervous, (3) been low in spirits, (4) felt optimistic, (5) felt energetic, (6) felt sad, (7) felt weak, (8) felt happy, (9) felt weariness. Responses were coded as: *always* =1, *often* = 2, *most of the time* = 3, *sometimes* = 4, *seldom* = 5, *never* = 6. The dependent variable p*sychological well-being* was calculated as the score of all nine questions, using the reliability analysis. Because items 1, 4, 5 and 8 are "reverse keyed;" we reversed the answers to those questions before averaging the responses. The final scale had a range of 9-54. The good internal consistency of the scale was demonstrated with a Cronbach's alpha of 0.82.

For the purpose of objective socioeconomic status, children and adolescents were classified according to Demographic and Health Survey Wealth Index into five socio-economical groups or quintiles with the same number of individuals in each: poorest, poorer, middle class, richer and richest [15]. Statistical procedure principal components analysis (PCA) was used to assign the weights, or factor scores to each variable. Variables included in Wealth Index calculation were related to examinee's assets. Every item which could give a clear picture of socio-economic status was used: number of bedrooms per household member, main material used for floor, roof and walls of house, main source of drinking water and sanitation, source of energy used for heating, possession of colour TV, mobile phone, refrigerator, computer, washing machine, dishwasher, air conditioning, central heating, car, access to the internet. The resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. These standardized scores were summed by household and individuals were ranked according to the total score of the household. The Wealth Index cut-off points which define the quintiles were calculated by obtaining a weighted frequency distribution of households, the weight being the product of the number of de jure members of the household and the sampling weight of the household. The distribution represents the national household population, where each member was given the Wealth Index score of his or her household. Persons were then ordered by the score and the distribution was divided at the points that form the five 20-percent sections. The household score was recoded into the quintile variable, so that each member of a household also received that household's quintile category [15].

The subjective socioeconomic status was determined by responses to the question: "How would you rate your family socioeconomic status?". The answer categories included: *lower* = 1, *lower-middle* = 2, *middle* = 3, *upper middle* = 4, *upper class* = 5.

Sociodemographic variables included sex, age, and social support. Social support was defined as having someone to help respondents in any situation. Gender was coded: *female* = 1, *male* = 2; age was coded: *age group 7-11* = 1, *age group 12-19* = 2.

Data Analysis. Firstly data were analysed by descriptive statistics. Categorical variables were expressed as counts and percentages, while continuous variables were presented as means and standard deviations (SD). To assess bivariate relationships, we calculated Pearson's correlation coefficients. In order to examine the possible effects of demographic and socioeconomic characteristics of respondents on self-perceived health and psychological well-being, two categorical regression models were used. The probability, $p<0.05$, was taken as the minimum level of significance. The analyses were done by using the statistical software package SPSS 15.0.

3. Results

The study included a total of 2721 children and adolescents aged 7 to 19 years, 1350 (49.6%) girls and 1371 (50.4%) boys. The response rate was 93.2%. Sample analysis is presented in Table 1. The vast majority of the respondents perceived their own health as good (92.6%) with very high scores on the psychosocial well-being scale (Mean = 42.7; SD = 6.2). Positive attitudes toward health were present among the most of the children and adolescents who agreed that they were responsible for their own health (80.9%) and that if they take care of health they will be healthy (79.6%).

Table 1. Characteristics of Serbian schoolchildren and adolescents (n=2721).

Characteristics	n (%)	Mean	SD
Gender			
Male	1371 (50.4)		
Female	1350 (49.6)		
Age group		13.2	3.6
7-11	939 (34.5)		
12-19	1782 (66.5)		
Social support			
Yes	2530 (96.1)		
No	104 (3.9)		
Objective SES (Wealth Index)			
poorest	506 (18.6)		
poorer	586 (21.5)		
middle	542 (19.9)		
richer	616 (22.6)		
richest	471 (17.3)		
Subjective SES			
Lower	316 (11.7)		
Lower-middle	648 (23.9)		
Middle	1328 (49.0)		
Upper-middle	366 (13.5)		
Upper class	54 (2.0)		
Psychosocial well-being		42.7	6.2
Self-perceived health			
Poor	201 (7.4)		
Good	2514 (92.6)		

Most of them perceived their socioeconomic status as middle class (49.0%), but according to the objective socioeconomic status only one out of five respondents (19.9%) was middle class.

Table 2 shows the correlation coefficients between the self-perceived health, psychological well-being, SES and demographic variables. The strongest correlation was found between psychological well-being and all other variables (except self-perceived health). Both, objective and subjective SES variables and age were positively related to self-perceived health. In addition, the correlation between the objective and subjective SES variables was significant. Age is significantly correlated with subjective SES variable. Gender and age are significantly correlated with self-perceived health and psychological well-being: girls and older respondents evaluated their own health more positively compared to boys and those from younger age groups, but reported more psychosomatic symptoms.

In order to examine factors associated with self-perceived health and psychological well-being we used two categorical regression models.

In the first categorical regression model we used self-perceived health as a dependent variable, and gender, age, social support, objective and subjective SES as independent variables (Table 3).

Age group was found to be the factor with the strong relationship to respondents' self-perceived health. Respondents from the older age group perceived their health to be better than those from the younger age group. Objective and subjective SES were both positively associated with self-perceived health – those with higher SES assessment perceived their health to be better. We also found gender differences. Female respondents perceived their health to be better than male respondents. Social support was not associated with self-perceived health.

In the second categorical regression model, psychological well-being was used as dependent variable and gender, age, social support, objective and subjective SES as independent variables (Table 4). All the independent variables were statistically significantly associated with psychological well-being. As in the first regression model, age was found to be the most significant factor: this time contributing to respondents' psychological well-being. Respondents from the age group 7-11 had higher levels of psychological well-being than the older age group. Objective and subjective SES were both positively associated with psychological well-being – those with lower SES assessment reported lower levels of psychological well-being. Respondents with social support and male respondents had higher levels of psychological well-being.

Table 2. Correlation analyze among Self perceived health, Psychological well-being, SES and demographic variables.

	Social suport	Gender	Age	Subjective SES indicator	Objectice SES indicator	Psychological well-being
Self perceived health	0.006	-0.039*	0.202***	0.099***	0.158***	-0.013
Psychological well-being	0.104***	0.054**	-0.293***	0.101***	0.095***	
Objectice SES indicator	0.018	0.007	0.012	0.319***		
Subjective SES indicator	-0.005	0.029	-0.056**			
Age	-0.020	0.009				
Gender	-0.007					

*p<0.05; **p<0.01; ***p<0.001

Self-perceived health and psychological
well-being among Serbian schoolchildren
and adolescents: data from National Health Survey

Table 3. Categorical regression model for self-perceived health.

	Standardized Coefficient			
	Beta	Std. Error	F	p
Gender	-0.039	0.019	4.173	0.041
Age	0.214	0.019	127.617	0.000
Objective SES	0.139	0.020	50.450	0.000
Subjective SES	0.074	0.020	14.383	0.000
Social support	-0.002	0.19	0.010	0.919
$R^2 = 0.077$				

Table 4. Categorical regression model for Psychological well-being.

	Standardized Coefficient			
	Beta	Std. Error	F	p
Gender	0.051	0.018	7.468	0.006
Age	-0.313	0.019	286.221	0.000
Objective SES	0.086	0.019	19.809	0.000
Subjective SES	0.072	0.019	14.025	0.000
Social support	0.101	0.018	30.110	0.000
$R^2 = 0.130$				

4. Discussion

The aim of our study was to determine the possible relationship between socioeconomic status (SES), demographic variables and self-perceived health, and psychological well-being among schoolchildren and adolescents in Serbia.

In recent years, there has been renewed interest both in the SES gradient in health and in demographic differences in health. The effects of socioeconomic status (SES) on health are well documented in adulthood, but far less is known about its effects in childhood. The persistence of these disparities suggests that, in addition to behavioural and structural factors, psychological and physiological processes are also active in the development and maintenance of social inequalities in health [16,17].

In this study, schoolchildren and adolescent self-perceived health was found to be associated with multiple factors, including gender, age, objective and subjective SES. Further, the strong relationship between age group and self-perceived health has already been demonstrated. Respondents from the age group 12-19 perceived their health to be better than younger age group (7-11). In addition, female respondents perceived their health to be better than male respondents. Both objective and subjective SES were associated with self-perceived health, nevertheless we noticed a stronger relationship between objective SES and self-

perceived health. Also, we found that psychological well-being was associated with gender, age, social support, objective and subjective SES. On the other hand, with self-perceived health, respondents from age group 7-11 and males had higher levels of psychological well-being. Possible explanations for these findings are that older respondents are more sensitive and vulnerable. This period of life is also associated with notable changes in mood. It appears that as children reach their adolescent years, they feel less secure, both psychologically and in their social environment. Relationships between Psychological well-being and objective and subjective SES were consistent with the self-perceived health model. Also, studies indicate that health problems have been influenced by gender across all age groups. However, the direction and magnitude of gender differences in health vary according to particular symptoms or conditions present during specific phases of the life cycle. Self-assessment of health finds that men evaluate their health more positively than women do. Although a significant number of males have physical symptoms and conditions, women tend to report more psychosomatic and distress symptoms. A study among Turkish adolescents showed that perception of health differed to some extent according to gender which correspondence with our results that girls perceived their health better, but reported more psychological symptoms [7,18,19].

Studies report an association between familial SES and satisfaction with health, comfort, resilience, and risk avoidance for both children and adolescents [20,21]. Bradley and Corwyn described a significant relation between SES and health, cognitive, and emotional outcomes from early childhood through to adulthood: a higher SES seems to be associated with better health, cognitive, and socio-emotional outcomes in children [22]. In an Australian study, children from lower socioeconomic backgrounds were reported to have more negative experiences of health and wellness than children from higher socioeconomic backgrounds [23]. Multiple mechanisms linking SES to child wellbeing have been discussed in the literature. Most of these mechanisms involve differences in access to material and social resources or reactions to stress inducing conditions by children as well as their parents.

Our results indicated that objective SES had stronger relationship with self-perceived health and Psychological well-being. The explanation for this may be the fact than a small per cent of respondents reported higher SES compared to the objective SES indicator. The review of literature shows robust relationship between perceived SES and self-related health and suggests that SES identity, which is easily assessed, may be

a more sensitive predictor of health status among youth than objective measures of SES [17,24,25]. In addition, some studies have found SES differences in psychological well-being [20,21,26-28] while others suggest that, in terms of general measures of psychological well-being, adolescence is characterized by little or no SES differentiation [29].

The period after 1990, coincided with a very difficult period of political changes in Serbia. Citizens were surrounded by war, bombarded with incessant and aggressive war propaganda with constant images of human suffering and continuous exposure to violence and crime. Families were torn apart by problems of economic survival. Young people were often left with minimal support, no role models and only vague values for what was right and wrong. It is possible that this has increased the vulnerability of young people [30-32].

Limitations. When interpreting the findings of this study, some limitations should be considered. Self-perception, compared with facts, can be very time sensitive, and could increase the correlation due to report bias. Also, the cross-sectional study design does not allow us to establish causal relationships among variables. Balancing out these limitations are some considerable strengths to this study: a large sample, the use of validated instruments, and measuring the objective SES through Demographic and Health Survey Wealth Index.

In conclusion the present study is an important step in investigating schoolchildren and adolescent health in Eastern European countries. Modern illness and disability seem closely connected with subjective ill health and lack of subjective well-being. From the public health perspective, improving young people's health and well-being and reducing health related risk behaviour should be of great interest. Health promotion, education, addressing the needs of youth and building empowering social relationships are very important measures to strengthen adolescent health. Our study focuses on several factors; we suggest that future research need to include other variables in the analysis using a longitudinal design.

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Self-perceived health and psychological
well-being among Serbian schoolchildren
and adolescents: data from National Health Survey

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