

## Subjective assessment of health in secondary school adolescents

### Środowiskowe uwarunkowania subiektywnej oceny zdrowia młodzieży szkół ponadgimnazjalnych

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**Key words:** subjective assessment of health, environmental determinants, adolescents.

**Słowa kluczowe:** subiektywna ocena zdrowia, uwarunkowania środowiskowe, młodzież.

#### Abstract

**Introduction:** In order to assess the health of adolescents as they develop, it is highly recommended that positive health indicators are utilised, including health-related quality of life, while simultaneously taking into account the potential impact of their social environment.

**Aim of the research:** The present study has as its aim the assessment of health-related quality of life in adolescents to determine the existence of relationships between subjective assessments of health and selected environmental factors, such as place of residence and type of school.

**Material and methods:** The study included 588 second-year pupils from general-education, technical, vocational, and basic vocational secondary schools. The methods applied included survey and interview techniques. The research tool used was the Polish version of the KIDSCREEN 52 questionnaire, to test the health-related quality of life in children and adolescents, which allowed the authors to conduct a subjective assessment of health in terms of 10 categories, including physical and mental well-being, moods and emotions, self-perception, relationship with parents, home life, peers, social support, autonomy, school environment, social acceptance, and financial resources.

**Results:** As a result of the analysis of relationships between the particular dimensions of health-related quality of life and the type of school attended by the adolescents surveyed, it was stated that there exists a statistically significant dependence ( $p < 0.05$ ) for categories such as physical and mental well-being, self-image, autonomy, school environment, and social acceptance. There was no impact of the place of residence of the adolescents surveyed on the values of the results measured with the KIDSCREEN questionnaire, and in no case was the result statistically significant ( $p > 0.05$ ).

**Conclusions:** Type of school has a significant influence on the subjective assessment of health, and a particularly favourable assessment was returned by adolescents attending basic vocational school. Place of residence does not affect the assessment of health-related quality of life in the sample group.

#### Streszczenie

**Wprowadzenie:** W ocenie zdrowia populacji w okresie rozwojowym zaleca się wykorzystanie pozytywnych wskaźników zdrowia, w tym jakości życia związanej ze zdrowiem, z uwzględnieniem wpływu czynników środowiskowych.

**Cel pracy:** Ocena jakości życia związanej ze zdrowiem u młodzieży oraz przedstawienie związków pomiędzy subiektywną oceną zdrowia a wybranymi czynnikami środowiskowymi, takimi jak miejsce zamieszkania oraz typ szkoły.

**Materiał i metody:** Badaniem objęto 588 uczniów klas II szkół ponadgimnazjalnych – liceum ogólnokształcącego, technikum, liceum zawodowego i zasadniczej szkoły zawodowej. Zastosowano metodę sondażu diagnostycznego z wykorzystaniem techniki wywiadu. Narzędziem badawczym była polska wersja kwestionariusza do badania jakości życia związanej ze zdrowiem dzieci i młodzieży – KIDSCREEN 52, który umożliwia subiektywną ocenę zdrowia w 10 kategoriach.

**Wyniki:** W analizie związków pomiędzy poszczególnymi wymiarami jakości życia związanej ze zdrowiem a typem szkoły, do której uczęszczała młodzież objęta badaniami, stwierdzono statystycznie istotną zależność ( $p < 0,05$ ) dla kategorii: samopoczucie fizyczne, samopoczucie psychiczne, obraz własnej osoby, niezależność, środowisko szkolne, akceptacja społeczna. Nie wykazano wpływu miejsca zamieszkania badanej młodzieży na wartości wyników mierzonych testem KIDSCREEN. W żadnym przypadku wynik nie był istotny statystycznie ( $p > 0,05$ ).

**Wnioski:** Typ szkoły istotnie wpływał na subiektywną ocenę zdrowia, zwłaszcza korzystne oceny uzyskiwała młodzież uczęszczająca do zasadniczej szkoły zawodowej. Miejsce zamieszkania nie miało wpływu na ocenę jakości życia związanej ze zdrowiem u badanych uczniów szkół ponadgimnazjalnych.

## Introduction

The health of children and adolescents is to a great extent determined by the conditions in which they are raised and their social environment, the essential elements of which are family structure, peer group support or influence, and the school system [1].

The self-evaluation of health evolves with age: younger children associate good health with a good somatic state. In adolescents, good health is understood in a wider context, with values such as functional performance and psychological comfort becoming more important. The adolescent period is very important due to the large scale changes that take place in psychosocial development concerning the shaping of self-identity and the creation of new social relations [2]. Changes taking place during adolescence govern the effect on lifestyle and health conditions in later life due to the formative impact of choices made [3].

In assessing the health of the population in the developmental period of adolescence, the utilisation of positive health indicators, including health-related quality of life (HRQOL), is highly recommended, while simultaneously taking into account the factors in the environment associated with impacts on health [4]. The concept of quality of life being determined by the state of health refers to two basic dimensions: the objective assessment of functional performance and a subjective sense of well-being in correlation with physical and psychosocial health [5, 6].

The analysis of quality of life in connection with health is currently one of the important methods of assessment recommended by the World Health Organisation (WHO). Tools used for the assessment of health-related quality of life are called indexes, scales, or questionnaires, which can be utilised in further studies carried out in the general population, as well as in clinical tests for particular medical cases [7].

A holistic view of health requires a three-dimensional perspective, from biological, psychological, and social standpoints. Therefore, according to the WHO's recommendations, tools used for testing the health-related quality of life in children and adolescents must be multidimensional and contain, in their question structure, four basic areas: physical, psychological, social, and the role of school.

## Aim of the research

The present study has as its aim the assessment of health-related quality of life in adolescents, to determine the existence of relationships between subjective assessments of health and selected environmental factors, such as place of residence and type of school.

## Material and methods

The study included 588 second-year pupils from general-education, technical, vocational, and basic vo-

ational secondary schools. The methods applied included diagnostic survey and standardised interview techniques. The research tool was the Polish version of the questionnaire to test the health-related quality of life of children and adolescents – KIDSCREEN 52, Health-Related Quality of Life Screening Instrument for Children and Adolescents adapted by J. Mazur. The KIDSCREEN questionnaire allows the subjective assessment of health in children and adolescents between eight and 18 years of age. KIDSCREEN 52 version, consisting of 52 questions, determines a quality of life profile, taking into consideration 10 different dimensions: one dimension concerns physical health; another, psychological health, which comprises the three areas of mental well-being, moods and emotions, and self-perception; seven dimensions analyse social functioning through respondents' relationships with parents, home life, relationships with peers, social support, autonomy, school environment, and social acceptance (understood to be the absence of bullying); and the final dimension, financial resources, concerns material conditions [7, 8].

## Statistical analysis

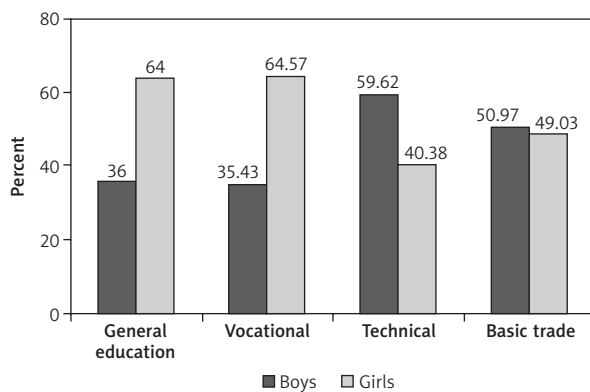
To examine the correlation between the variables, a Kruskal-Wallis ANOVA method was used as a non-parametric equivalent to the classical variance analysis. A value of  $p < 0.05$  was used as a standard borderline statistical significance level for all tests.

## Results

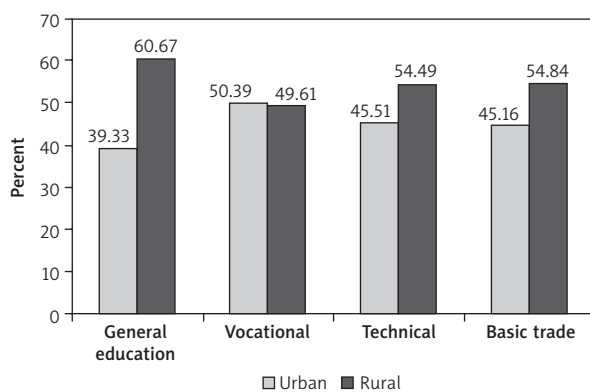
The research was conducted on second-year pupils from four types of upper secondary schools: general-education, vocational (specialising in economics), technical (specialising in electrical engineering and economics), and basic trade (offering the following courses: automotive technician, iron-worker/locksmith, waiter, and barber/hairstylist) schools in the Kielce and Busko-Zdrój region. Altogether, 588 people were tested including 314 girls and 271 boys. The age range of the research group was 16.6 to 18 years. The largest represented groups were pupils attending technical school (156 people), followed by basic trade school (155 people), and general-education school (150 people). The group of students from the vocational school was the least numerous, comprising 127 people.

In the general-education and vocational schools, the majority of respondents were girls whereas in the technical and basic trade schools, boys predominated (Figure 1).

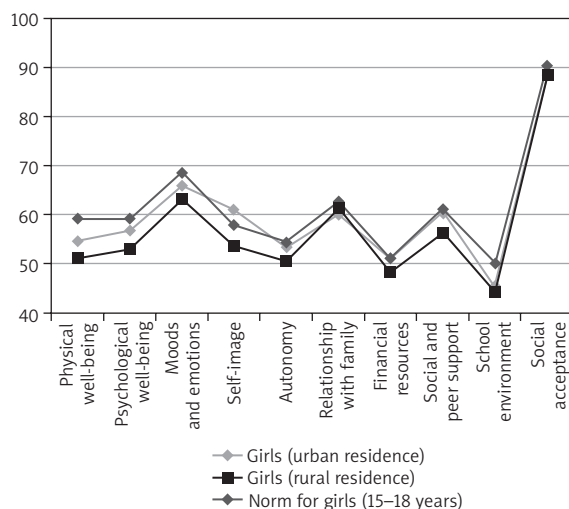
Based on the analysis of the results obtained during the research, it was ascertained that the majority of the subjects taking part (55.10%) lived in the countryside, whereas urban inhabitants constituted 45.10% of the group. Among the general-education school students the vast majority had a rural as op-



**Figure 1.** Respondents by gender and educational establishment



**Figure 2.** Respondents according to locality of residence and educational establishment attended



**Figure 3.** HRQOL profiles of girls according to the locality of residence

posed to an urban background (60.67% vs. 39.33%). No significant difference between the two locations was found among the students of the technical and the basic trade schools, where the countryside inhab-

itants were in a slight majority. In terms of the locality of residence, the least diverse group was among the vocational school students, where 50.39% of the assessed students lived in the countryside and 49.61% in the city (Figure 2).

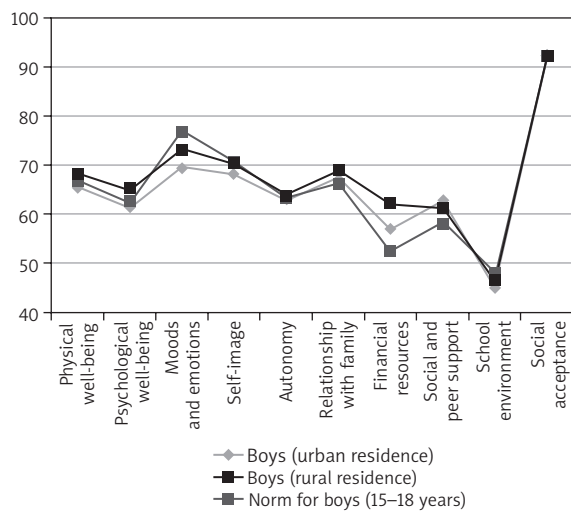
### Characteristics of the individual dimensions of KIDSCREEN questionnaire-derived health-related quality of life

The assessment of health-related quality of life (HRQOL) in students was conducted via the Polish version of the KIDSCREEN-52 questionnaire, which allowed the acquisition of quality of life profiles over 10 dimensions. Students answered questions in terms of the perspective of the preceding week, and the categorisation of these responses was described using a five-point Likert scale. The raw data was standardised on a 100-point scale and the average health-related quality of life indices aggregated. As a result, natural differences between individual HRQOL dimensions were retained, therefore allowing the interpretation of the result as a percentage of the maximum grade achievable. In the research average HRQOL indices were compared, according to each individual dimension, to the results of the Polish KIDSCREEN project study conducted by The Mother and Child Institute. According to the suggestion of project coordinator J. Mazur, existing population data (results considered as norm) were treated as a reference group for the results achieved during the present research activity after controlling for the development period [7].

### Analysis and assessment of health-related quality of life dimensions in light of the results of the KIDSCREEN questionnaire, per gender and locality of residence

Analysing the influence of the residence location on the self-assessment of health, two categories, urban and rural, were taken into consideration. Based on results obtained, girls living in the city achieved higher average values in most of the HRQOL categories than female students living in the countryside. Their assessment of self-image was considerably higher than those from rural areas (61.00 vs. 53.60), and this result was also higher than the normative value. Students living in the countryside achieved considerably lower average results in the physical well-being (51.12) and mental well-being (52.98) categories when compared to both city-living girls and the norm. Regardless of the locality of residence, both groups of girls described their relationship with parents and their perception of social acceptance similarly to the norm. Their school environment was assessed below the norm (Figure 3).

For the group of boys living rurally, average indices for most dimensions were higher than for those



**Figure 4.** HRQOL profiles of boys according to the locality of residence

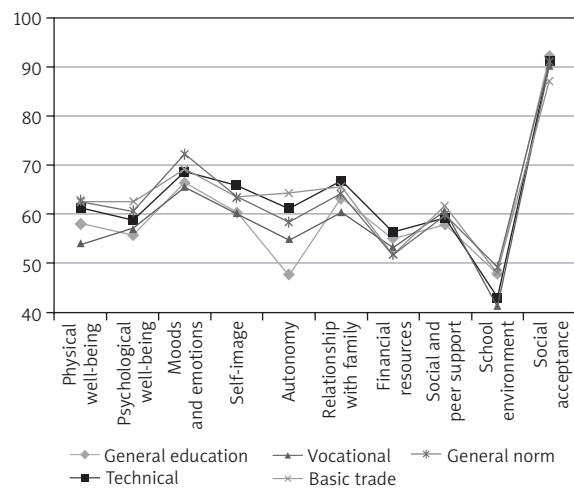
living in urban areas. In both groups, values describing moods and emotions were lower than the norm, and values describing financial resources were higher, while the results of boys from the countryside were higher than the boys from the city and were, accordingly, 72.96 vs. 69.35 and 62.03 vs. 56.85. Compared to the HRQOL profiles of students from the countryside, it should be ascertained that boys achieved better results than girls and that female students from the city assessed themselves better than the males from the same background (Figure 4).

The results of analysis conducted did not confirm a relationship between the respondents' locality of residence and the results measured using the KIDSCREEN 52 questionnaire, and in no case was the result statistically significant ( $p > 0.05$ ).

**Analysis of health-related quality of life according to gender and educational establishment attended**

Health-related quality of life profiles obtained in individual types of schools during the research show slight differentiation in average HRQOL indices. The highest self-evaluation was from the basic trade school, especially in areas of mental well-being and autonomy, but the lowest in social acceptance. General-education school students assessed autonomy and mental well-being the lowest and social acceptance the highest. Students attending technical school assessed the dimensions of self-image, relations with parents, and home life the most favourably and school environment the least. Students at the vocational school assessed physical well-being the lowest in comparison with other groups (Figure 5).

When comparing average HRQOL indices returned by boys and normative values, a lower value



**Figure 5.** HRQOL profiles of students according to school type

accorded to moods and emotions and a higher value accorded to financial resources can be noted in all types of school. The highest values were returned by the basic trade school students in most of the dimensions. They assessed their relations with parents (51.12) and independence (70.19) higher than other groups. Taking into consideration the quantity of assessed categories, boys attending general-education school evaluated their health the lowest. Their results were the lowest in comparison with other students as well as with the norm in seven HRQOL dimensions: mental well-being (56.10), moods and emotions (69.05), self-image (63.33), autonomy (52.78), relations with parents (60.11), financial resources (57.10), and social and peer support (59.10).

The best results were returned by male students from the basic trade school, who assessed themselves higher than their peers in eight categories. Values in dimensions such as physical well-being (69.37), mental well-being (69.51), autonomy (70.19), relations with parents (70.19), and social and peer support (64.19) were also higher than the norm. In relation to the variables of moods and emotions (72.42), self-image (69.87), and school environment (47.20), results from the trade school were higher than other boys in the study but lower than the population norm (Figure 6).

In the case of girls, the majority of high indicators were noted among the general-education school students in five HRQOL dimensions: mental well-being (55.56), self-image (58.70), relations with parents (64.84), social acceptance (91.32), and school environment (48.96). In all of the listed categories except school environment, the returned results were also higher than the population norm. Female students in basic general-education school evaluated their financial resources the worst (42.76), as well as their relations with parents (56.30), whereas they assessed

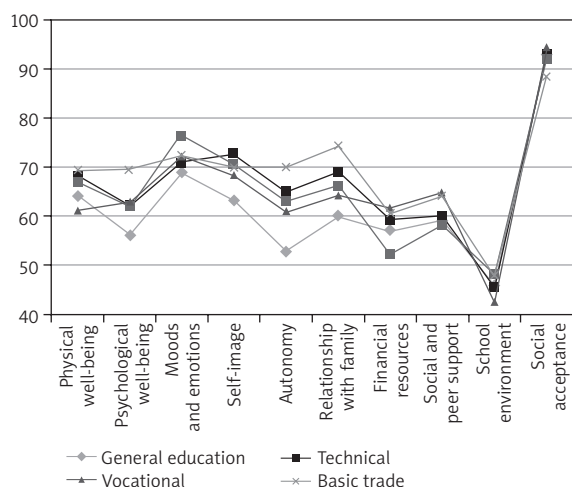


Figure 6. HRQOL profiles of boys according to school type

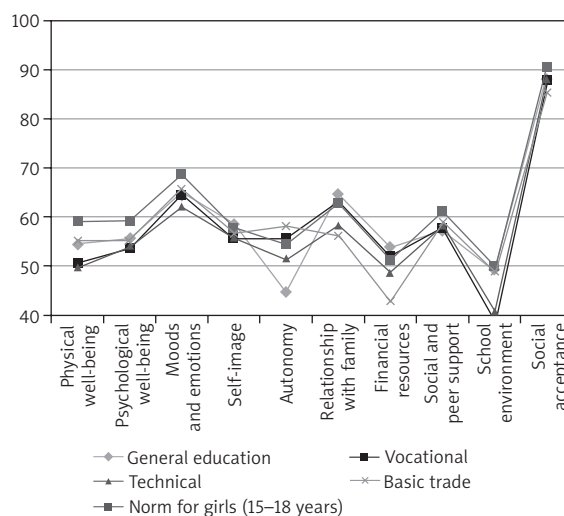


Figure 7. HRQOL profile of girls according to school type

their autonomy higher than their peers or the norm (58.09). More favourable than others but lower than norm were physical well-being (55.07) and social and peer support (58.77) (Figure 7).

**Analysis of the dependency between dimensions in the KIDSCREEN questionnaire and the type of educational establishment attended**

As a result of the analysis conducted into the relationship between each HRQOL dimension and the type of school attended, a statistically significant dependency was identified for the following categories: physical well-being, mental well-being, self-image, autonomy, school environment, and social accep-

tance. No significant differentiation was ascertained between the type of school and the following dimensions: moods and emotions, relations with parents and home life, financial resources, and social and peer support; all the results turned out to be statistically insignificant (Table 1).

Test results demonstrated the strongest relationship between the type of school and the “autonomy” dimension ( $p < 0.0001$ ). General-education school students demonstrated significantly lower levels of dependency compared to those attending basic trade and all other types of school (Figure 8). Self-assessment of the extent of physical function was significantly higher ( $p < 0.001$ ) in the basic trade school group when compared with the vocational school students (Figure 9).

Table 1. The results of Kruskal-Wallis tests and the median between the KIDSCREEN questionnaire and the type of school

HRQOL dimensions according to KIDSCREEN questionnaire	Test results			
	Kruskal-Wallis		Median	
	H	P-value	$\chi^2$	df
Physical well-being	16.28	0.001	13.65	3
Mental well-being	9.95	0.05	9.04	3
Moods and emotions	5.13	0.1623	4.50	3
Self- image	9.89	0.05	14.72	3
Independence	50.78	0.0001	36.24	3
Relations with parents and home life	6.04	0.1096	4.25	3
Financial resources	1.94	0.5859	3.17	3
Social and peer support	2.71	0.4382	3.26	3
School environment	18.85	0.001	13.62	3
Social acceptance	14.65	0.05	13.73	3

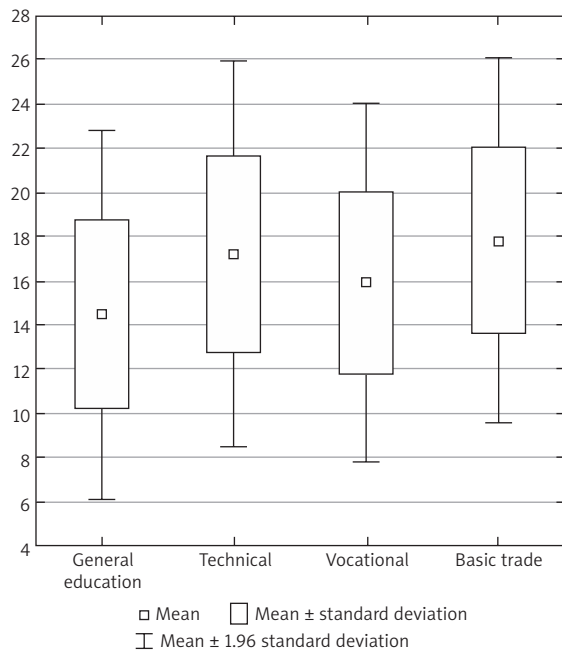


Figure 8. "Autonomy" vs. type of school

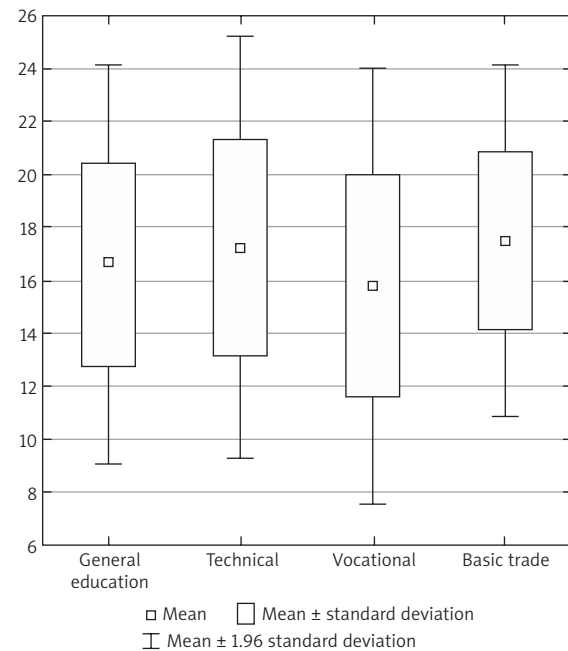


Figure 9. Dependence between "physical well-being" and the type of school

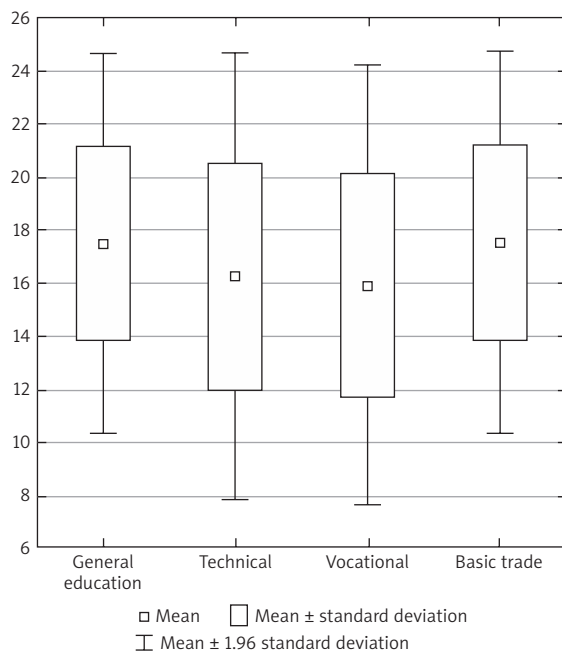


Figure 10. Dependency between the "school environment" dimension and school type

The type of school attended significantly modified ( $p < 0.001$ ) the results returned on the school environment variable, lower results for which were elicited from technical and vocational school students. Higher, and also comparable to the mean, results were returned by general-education and basic trade school students (Figure 10). Students attending basic trade

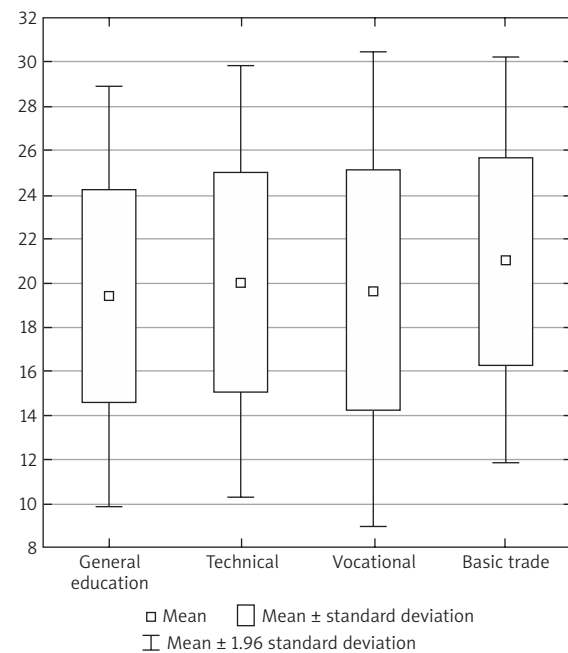
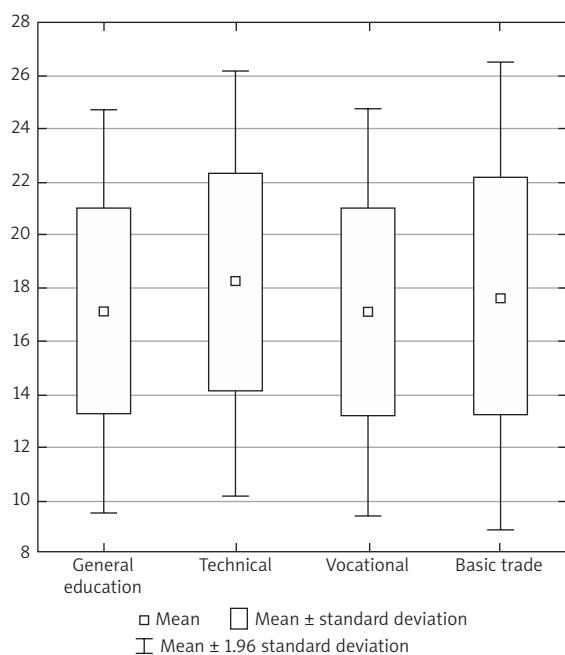


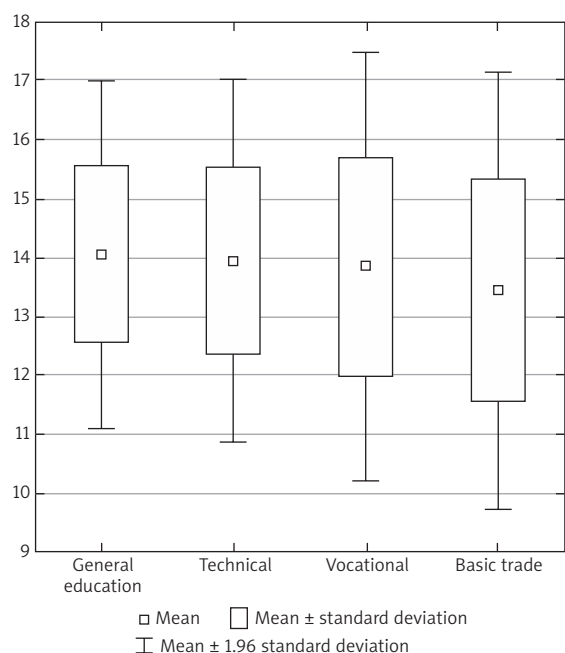
Figure 11. Dependency between the "mental well-being" dimension and school type

school achieved a significantly higher result ( $p < 0.05$ ) in the mental well-being category in comparison with general-education school students, whose average results in this category were the lowest (Figure 11).

During the research period an assessment of subjects' self-image was carried out. The obtained results demonstrate that the technical and basic trade school



**Figure 12.** Dependence between the “self-image” dimension and the type of school



**Figure 13.** Dependence between the “social acceptance” dimension and the type of school

students assessed their self-image significantly higher ( $p < 0.05$ ) in comparison with peers who attended vocational and general-education school (Figure 12).

Analysis of the degree of social acceptance experienced by test subjects showed that students attending basic trade school elicited a significantly lower result

of this variable ( $p < 0.05$ ), on average, in comparison with general-education and technical school students. By extension, it can be stated that, in the opinion of basic trade school students, their social acceptance is significantly lower than of those attending general-education or technical school (Figure 13).

The analysis undertaken did not confirm a statistically significant correlation between the type of school and HRQOL dimensions that relate to social functioning: relations with parents and home life, social support, moods and emotions, and financial resources; in these cases the level of significance was above the value  $p > 0.05$ .

## Discussion

The state of health in children and adolescents is described as a health crisis concerning society as a whole. In the context of the assessments of formative periods of adolescent growth, a particularly important group constitutes mental health disorders described since the 1980s as “the new morbidity”. According to the World Health Organisation, around a fifth of the world’s juvenescent and adolescent population experience ailments and mental disorders to such a degree as to require specialist care. In Poland, the scale of this phenomenon is estimated to involve approximately 10–20% of young people, who require consultative intervention and psychological or psychiatric therapy [9]. It is believed that the causes of these disorders are related to suboptimal functioning of the most important formative structures in the social environment – those of family, school, and peer groups – and are caused by social, economic, and political changes accompanied by an increase in biological and psychosocial needs, especially within the family unit. Some of the most common mental health disorders are neurosis and various forms of social maladjustment such as abusing addictive substances and self-destructive behaviour [10].

The KIDSCREEN 52 questionnaire used to assess health-related quality of life in children and adolescents allowed for the calculation of average values in indices of particular HRQOL dimensions in relation to psychosocial functioning and the delineation of a quality of life profile according to the parameters of educational establishment and locality of residence.

Cross-referencing the results of this study with those obtained by other researchers was limited due to the fact that the assessment using the KIDSCREEN 52 questionnaire had been undertaken only once in Poland, in 2003, as part of the KIDSCREEN project.

In this research, as well as in the results obtained in the KIDSCREEN project, it was not possible to confirm an influence of the locality of residence on the values measured by the KIDSCREEN test, and in neither case was the result statistically significant ( $p > 0.05$ ). The results of students in terms of residence and gender point out a lower assessment of

self-esteem in girls living rurally in the majority of the recorded HRQOL categories and their results are also significantly lower than normative values in the population at large.

The most recent research carried out in 2014 pointed out that area of residence has a low impact on the self-assessment of health, except in the case of girls living in big cities, a large percentage of whom assessed their health as worse than that of their peers from small towns and villages [11].

Next in line was the assessment of the correlation between the type of educational establishment attended and health-related quality of life. The research took into consideration four types of schools: general-education, vocational, technical, and basic trade. Emerging from the analysis of the relation between the individual dimensions of health-related quality of life and the type of school attended, a significant statistical dependency ( $p < 0.05$ ) was determined for the categories of physical well-being, school environment, autonomy, mental well-being, self-image and social acceptance. Students at the basic trade school assessed their autonomy, physical and mental well-being, and their self-image the highest. In this last dimension, the students from the technical school achieved similarly high results. The HRQOL social acceptance dimension was scored highest by the general-education and technical school students. School environment was assessed most favourably by general-education and basic trade school students. The type of educational establishment emerged as a strong correlative of HRQOL results, especially in the case of basic trade school students, who received the highest results in the majority of categories.

Research into health-related quality of life of children and adolescents allow for the early detection of abnormalities in mental health development, evident social interaction disorders and, in addition, the rapid identification of people at risk of health problems [12]. Furthermore, such research creates opportunities for broadening knowledge on the social and behavioural determinants of the inequalities in differing states of health across the juvenescent and adolescent populations. The need for applications of subjective indicators of health is justified by many factors, above all by the fact that they allow multidimensional assessments of health and well-being from the adolescents' own perspective [13, 14].

## Conclusions

The application of subjective indicators of health and health-related quality of life is a valuable method of gathering data regarding the state of health of populations in the developmental stage. The type of school attended has a significant impact on the subjective assessment of health and especially favourable results were achieved by the students who attended

basic trade school. The locality of residence did not have an impact on the assessment of health-related quality of life in the test subjects attending upper-secondary schools.

## Conflict of interest

The authors declare no conflict of interest.

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