

# THE RELATIONSHIP BETWEEN THE MENTAL HEALTH OF SLOVENIAN ADOLESCENTS AND THE SUPPORT OF THEIR VARIOUS PERSONAL SOCIAL NETWORKS

## POVEZANOST MED DUŠEVNIM ZDRAVJEM SLOVENSКИH MLADOSTNIKOV IN PODPORO NJIHOVIH OSEBNIH SOCIALNIH MREŽ

Anja KNEZ<sup>1\*</sup>, Irena MAKIVIĆ<sup>2</sup>, Helena JERIČEK KLANŠČEK<sup>2</sup>

<sup>1</sup> Sigmund Freud University Vienna - Ljubljana Branch, Trubarjeva cesta 65, 1000 Ljubljana, Slovenia

<sup>2</sup> National Institute of Public Health, Trubarjeva cesta 2, 1000 Ljubljana, Slovenia

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### ABSTRACT

**Aim:** To analyse the relationships between individual social networks and selected indicators of mental health among Slovenian adolescents aged 15 and 17.

**Keywords:**  
Adolescents  
Mental health  
Social support  
School  
Family  
Friends

**Methods:** Data from the international Health Behaviour in School-aged Children (HBSC) survey in 2018 were used. Cronbach's alpha coefficient was used to calculate the reliability of the scales. Data were presented using descriptive statistics and frequency distributions. Differences between the two groups were determined using the chi-square or t-test. Pearson's correlation coefficient was used to test the associations. Multiple linear regression was also used to explain adolescents' mental health.

**Results:** The mental health of adolescents is statistically significantly related to the experience of support in their social networks ( $p \leq 0.05$ ). Adolescents with better mental health differ from those with poorer mental health in the degree to which they experience support from their social networks. Support from a greater number of social networks is statistically significantly associated with lower perceived stress and the risk of depression. In explaining adolescents' good mental health, the support of the school environment, i.e. classmates and teachers, proved to be more important than the support of the family.

**Conclusions:** The support of personal social networks is essential for good mental health in young people. In practice, it would be reasonable to strengthen the support of teachers and classmates, as the school environment proved to be a very important source of support at that age.

### IZVLEČEK

**Namen:** Analizirati povezave med posameznimi socialnimi mrežami in izbranimi pokazatelji duševnega zdravja pri 15- in 17-letnih vsolanih slovenskih mladostnikih.

**Ključne besede:**  
mladostniki  
duševno zdravje  
socialna podpora  
šola  
družina  
prijatelji

**Metode:** Analizirani so bili podatki raziskave Z zdravjem povezana vedenja v šolskem obdobju (HBSC), izvedene leta 2018. Za izračun zanesljivosti lestvic je bil uporabljen Cronbachov alfa koeficient. Podatki so bili prikazani z opisnimi statistikami in frekvenčnimi porazdelitvami. Razlike med dvema skupinama smo ugotavljali s testom  $\chi^2$  ali t testom. Za preverjanje povezanosti je bil uporabljen Pearsonov koeficient korelacije. Uporabljena je bila tudi multipla linearna regresija z namenom pojasnjevanja duševnega zdravja mladostnikov.

**Rezultati:** Duševno zdravje mladostnikov je statistično značilno povezano z doživljanjem podpore v njihovih socialnih mrežah ( $p \leq 0,05$ ). Mladostniki z boljšim duševnim zdravjem se od tistih s slabšim duševnim zdravjem razlikujejo glede na stopnjo doživljanja podpore njihovih socialnih mrež. Tudi podpora večjega števila socialnih mrež je statistično značilno povezana z manjšim zaznanim stresom in tveganjem za depresijo. Pri pojasnjevanju dobrega duševnega zdravja mladostnikov se je za pomembnejšo od podpore družine izkazala podpora šolskega okolja, torej sošolcev in učiteljev.

**Zaključki:** Podpora osebnih socialnih mrež je ključna za dobro duševno zdravje mladostnikov. V praksi bi bilo smiselno okrepiti predvsem podporo učiteljev in sošolcev, saj se je šolsko okolje izkazalo za zelo pomemben vir podpore.

\*Correspondence: [anja.knez@gmail.com](mailto:anja.knez@gmail.com)

## 1 INTRODUCTION

The Constitution of 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). Mental illness accounts for 16 percent of the global burden of disease in the 10-19 age group (2). Mental health problems developing in adolescence account for ten times the long-term healthcare costs of those developing in adulthood (3). According to epidemiological studies, 10-20 percent of children and adolescents under the age of eighteen suffer from mental disorders corresponding to international classifications (4). Data on the prevalence of mental illness become even more important in light of international research findings stating that 50-70 percent of adults with severe mental illness experienced disorders or recognizable traces thereof already in childhood or adolescence, meaning that with a different approach the disorders could have been limited or prevented much earlier (5).

Mental health (as defined by WHO) is influenced by individual factors as well as those at the socio-economic, environmental and societal levels. The existing categorisations of mental health factors differ (6), but those relating to children and adolescents predominantly include (a) individual, (b) family, (c) school environment and (d) wider environment factors (5).

In adolescence, relationships change both quantitatively and qualitatively. In the context of close interpersonal relationships, adolescent social development is primarily influenced by the relationships with parents, friends and peers (7). Family represents the fundamental social framework for learning and developing values and rules, and family life is gradually perceived as a key mechanism of well-being and health (8). During adolescence, peer relationships become more extensive and intense. The importance of peers increases as they encourage the development of identity, personality traits and social skills (9). A large part of our lives is spent at school, which has been proven to influence health and health behaviour: a stimulating school environment strengthens the development of healthy habits, health and life satisfaction, and vice versa (10). Support from teachers and peers and school satisfaction are often associated with protective factors of mental health (11).

The number of Slovenian children and adolescents with mental disorders has been increasing in the last decade, together with a growing number of visits to primary and secondary healthcare and of prescriptions issued for treating mental disorders (5). The aim of the study was to examine the role and importance of Slovenian adolescents' social networks for their mental health, in order to meaningfully strengthen social support where necessary and possible, with the desire for changes not only at the individual or local level, but in the direction of

the design and implementation of policies and intervention strategies at the national level. With this aim in mind the study objectives were to determine 1) whether adolescent mental health (perceived stress and risk of depression) is related to the support experienced in various personal social networks (family, friends and school environment, i.e. classmates and teachers), 2) whether experiencing support from a larger number of personal social networks has a cumulative effect on adolescent mental health, and 3) whether the importance of support from individual social networks is equivalent.

In our literature review, we did not find any research measuring the same indicators, i.e. the association of social network support with the Cohen Perceived Stress Scale and the WHO-5 Well-Being Index, but we did find research examining the association between different sources of social support and other variables as indicators of mental health. To the best of our knowledge, this topic has not been systematically explored on Slovenian or other data until now.

## 2 METHODS

### 2.1 Study design and time frame

The present study is a part of a larger research project - the international cross-sectional Health Behavior in School-aged Children (HBSC) survey that is carried out periodically every four years. The data originate from a survey conducted in Slovenia in 2018 (HBSC 2018) in the period from 5 to 16 February 2018.

### 2.2 Target population and sampling

The sampling unit was a school class. The 2017/2018 enrollment data were collected for the 6th and 8th grades (11- and 13-year-olds) of all primary schools (a total of 489 schools) and for the 1st and 3rd years (15- and 17-year-olds) of all secondary schools (a total of 152 schools). Only 18 schools refused to participate. The detailed description of this process is presented elsewhere (12-14).

The HBSC 2018 database, which was the base for the present study, included 7,449 adolescents. Our sample included 15- and 17-year-olds. The response rate in this group was 69 % (12).

### 2.3 Study instrument and data collection process

The international HBSC study uses a standardized international self-reported questionnaire (12). For the purpose of the present study targeted questions were used, which are described below.

Students completed the online questionnaire on school computers in computer classrooms or libraries of selected schools (12). An open-source online survey software was used for data collection.

## 2.4 Phenomena under study

### 2.4.1 Observed outcomes

HBSC questions on perceived stress and risk of depression were used for designing the observed outcomes.

To evaluate perceived stress, the HBSC questionnaire uses questions from the 5-point Cohen Perceived Stress Scale (15). The sum of individual items generates a global stress score (GSS) based on four general questions about a sense of control over life. This score represented the first observed outcome for the present study. The GSS items and the range of GSS values are described in detail in Table 1. The scale from 1 to 5 was changed to a scale from 0 to 4. The average perceived stress was recoded as “more perceived stress” up to a value of 2.5, and as “less perceived stress” from a value of 2.6 onwards.

To evaluate the risk of depression, the HBSC questionnaire uses questions from the 6-point WHO-5 Well-Being Index instrument (16). The sum of individual items generates a well-being index (WBI) based on five statements that can be used as a screening tool for depression. This index represented the second observed outcome for the present study. The WBI items and the range of WBI values are described in detail in Table 1. The scale from 1 to 6 was changed to a scale from 0 to 5. The average risk of depression was recoded as “higher risk of depression” up to a value of 2.5, and as “lower risk of depression” from a value of 2.6 onwards.

### 2.4.2 Explanatory factors

Perceived support from individual social networks (i.e. family, friends, classmates and teachers) served as explanatory variables for both observed outcomes.

The items in the HBSC questionnaire that measure the perceived availability of emotional support from family and friends form two of the three subscales which make up the Multidimensional Scale of Perceived Social Support (17). The items were expressed on a 7-point scale through the average of four statements in each set (Table 2). The average perceived support in both sets was recoded as “no support” up to a value of 4.5 and as “expressed support” from a value of 4.6 onwards.

The items in the HBSC questionnaire that measure classmate and teacher support were designed within the HBSC network to measure the perceived satisfaction with, and the helpfulness and availability of, support from classmates and teachers (18). The items were expressed on a 5-point scale through the average of three statements in each set (Table 2). The average perceived support in both sets was recoded as “no support” up to a value of 3.5 and as “expressed support” from a value of 3.6 onwards. The support scores of individual social networks were formed as the sum of the values of all items included in individual sets of the variables (Table 2).

**Table 1.** Description of observed outcomes in the study of the mental health of Slovenian adolescents and the support of their various personal social networks.

Observed outcome (score)/Item	Item values	Range of score values
<b>Perceived stress (Perceived stress score - PSS)</b>		
In the last month ...		
... how often have you felt that you were unable to control the important things in your life?	1 - Never to 5 - Very often	4-20
... how often have you felt confident about your ability to handle your personal problems?		
... how often have you felt that things were going your way?		
... how often have you felt difficulties were piling up so high that you could not overcome them?		
<b>Risk of depression (Well-being index - WBI)</b>		
Over the last two weeks ...		
... I have felt cheerful and in good spirits.	1 - At no time to 6 - All the time	5-30
... I have felt calm and relaxed.		
... I have felt active and vigorous.		
... I woke up feeling fresh and rested.		
... my daily life has been filled with things that interest me.		

### 2.4.3 Other factors

The set of other observed factors included gender (male, female), age (15 and 17 years old), socio-economic status (SES) (high, middle, low) and family type (single-parent family, two-parent family, reconstituted family) (19).

## 2.5 Methods of analysis

First, the internal consistency of observed outcome scores was assessed by using the Cronbach  $\alpha$  coefficient.

For multivariate analysis of the association between OO and observed EF, multiple linear regression was used.

In all statistical procedures the value of less than  $p < 0.05$  was used to assess the statistical significance of the results.

Data analysis was performed using SPSS Statistics for Windows (Version 25.0. SPSS Inc. Chicago, IL, USA). All analyses were performed on a refined and weighted basis.

**Table 2.** Description of explanatory factors in the study of the mental health of Slovenian adolescents and the support of their various personal social networks.

Explanatory factor (score)/Item	Item values	Range of score values
<b>Family support (Family support score - FaSS)</b>		
My family really tries to help me.	1 - Very strongly disagree to	4-28
I get the emotional help and support I need from my family.	7 - Very strongly agree	
I can talk about my problems with my family.		
My family is willing to help me make decisions.		
<b>Friend support (Friend support score - FrSS)</b>		
My friends really try to help me.	1 - Very strongly disagree to	4-28
I can count on my friends when things go wrong.	7 - Very strongly agree	
I have friends with whom I can share my joys and sorrows.		
I can talk about my problems with my friends.		
<b>Classmate support (Classmate support score - CSS)</b>		
The students in my class(es) enjoy being together.	1 - Strongly disagree to	3-15
Most of the students in my class(es) are kind and helpful.	5 - Strongly agree	
Other students accept me as I am.		
<b>Teacher support (Teacher support score - TSS)</b>		
I feel that my teachers accept me as I am.	1 - Strongly disagree to	3-15
I feel that my teachers care about me as a person.	5 - Strongly agree	
I feel a lot of trust in my teachers.		

### 3 RESULTS

#### 3.1 Study group description

##### 3.1.1 Basic characteristics of the sample

Our sample included 3,463 15- and 17-year-old adolescents, of which there were a few more males (51.6%) than females (48.4%). Almost half (n=1739, 49.9%) described their SES as high.

##### 3.1.2 Explanatory factors description

Family support was assessed on average with  $4.97 \pm 2.08$  and friend support with  $5.26 \pm 1.73$ .

Classmate support was rated on average higher than teacher support, with a rating of  $3.88 \pm 0.84$ . Teacher support was assessed with  $3.48 \pm 0.91$ .

#### 3.2 Results of relationship analysis between perceived stress score and explanatory factors

The internal consistency of Cohen PSS was acceptable ( $\alpha=0.63$ ).

On average, participants scored  $9.62 \pm 2.98$  points on a scale with a maximum value of 16 points. Males ( $\bar{x}=10.33$ ;  $\pm 2.74$ ) statistically significantly ( $p < 0.05$ ) perceived more stress on average than females ( $\bar{x}=8.85$ ;  $\pm 3.04$ ).

The multivariate model as a whole was highly statistically significant ( $p < 0.001$ ) and explained 10.7% of perceived stress. Other results of multiple linear regression are shown in Table 3.

#### 3.3 Results of relationship analysis between well-being index and explanatory factors

The internal consistency of WBI was good ( $\alpha=0.86$ ).

The average value of the risk of depression among participants on a scale of 0-25 was  $13.16 (\pm 5.44)$ .

The multivariate model as a whole was highly statistically significant ( $p < 0.001$ ) and explained 12.2% of the risk of depression. Other results of multiple linear regression are shown in Table 4.

**Table 3.** Results of multivariate relationship analysis between perceived stress score and the support scores of various personal social networks of adolescents in the HBSC study, Slovenia 2018 (n=3463).

Support score	b	95% CI for b		p-value
		Lower limit	Upper limit	
FaSS	0.209	0.161	0.257	$p < 0.001$
FrSS	0.198	0.140	0.256	$p < 0.001$
CSS	0.352	0.229	0.476	$p < 0.001$
TSS	0.552	0.441	0.664	$p < 0.001$

Legend: b=regression coefficient; CI=confidence interval; FaSS=family support score; FrSS=friend support score; CSS=classmate support score; TSS=teacher support score

**Table 4.** Results of multivariate relationship analysis between well-being index and the support scores of various personal social networks of adolescents in the HBSC study, Slovenia 2018 (n=3463).

Support score	b	95% CI for b		p-value
		Lower limit	Upper limit	
FaSS	0.295	0.208	0.382	p<0.001
FrSS	0.356	0.251	0.461	p<0.001
CSS	1.140	0.916	1.364	p<0.001
TSS	0.933	0.730	1.135	p<0.001

Legend: b=regression coefficient; CI=confidence interval; FaSS=family support score; FrSS=friend support score; CSS=classmate support score; TSS=teacher support score

### 3.4 Comparative analyses between observed outcome (perceived stress and risk of depression) and explanatory factors (family, friend, classmate and teacher support)

There was a weak correlation between adolescent mental health ( $p<0.001$ ) and the experience of support in various personal social networks.

Adolescents with higher perceived support from family [ $r=0.156$ ,  $r=0.199$ ,  $r=0.180$ ], friends [ $r=0.235$ ,  $r=0.180$ ,  $r=0.184$ ], classmates [ $r=0.323$ ,  $r=0.188$ ,  $r=0.256$ ] and teachers [ $r=0.283$ ,  $r=0.226$ ,  $r=0.234$ ], on average show lower perceived stress and lower risk of depression.

Statistically significant differences were found between adolescents who perceive stress more and less often regarding the average expressed support of family ( $p<0.001$ ), friends ( $p<0.001$ ), classmates ( $p<0.001$ ) and teachers ( $p<0.001$ ). Adolescents who perceive stress less often, more likely agree on support from friends ( $\bar{x}=5.27$ ,  $\pm 1.72$ ), family ( $\bar{x}=5.00$ ,  $\pm 2.07$ ), classmates ( $\bar{x}=3.89$ ,  $\pm 0.83$ ) and teachers ( $\bar{x}=3.50$ ,  $\pm 0.90$ ).

Similarly, statistically significant differences were found between adolescents with average higher and lower risk of depression regarding the average expressed support of family ( $p<0.001$ ), friends ( $p<0.001$ ), classmates ( $p<0.001$ ) and teachers ( $p<0.001$ ). Adolescents with a lower risk of depression more likely agree on support from friends ( $\bar{x}=5.29$ ,  $\pm 1.71$ ), family ( $\bar{x}=5.00$ ,  $\pm 2.06$ ), classmates ( $\bar{x}=3.89$ ,  $\pm 0.82$ ) and teachers ( $\bar{x}=3.50$ ,  $\pm 0.90$ ).

Based on the results, adolescents who on average perceive less stress or have a lower risk of depression, on average have higher expressed support from family, friends, classmates and teachers.

## 4 DISCUSSION

Our research has found that the perceived support from family, friends, classmates and teachers in adolescents is negatively related to perceived stress and the risk of depression, that adolescents with the support of a larger number of personal social networks have better mental health, and that in explaining adolescent mental health in terms of perceived stress and the risk of depression, family is not the most important source of support. Multiple linear regression results showed that support from classmates and/or teachers is more important than family support in explaining mental health in adolescents. Many other studies also show that parental, teacher, classmate and friend support are significantly associated with adolescent mental health (20-25). In adolescents, good social support is associated with reduced symptoms of stress, anxiety and depression (20, 21), better subjective well-being and positive emotions (22, 23), better self-image (24) and better academic achievements (25).

Our analyses confirm that the support of a greater number of personal social networks is significantly related to better mental health of adolescents. Other studies discuss the cumulative impact of protective and risk factors as well (20, 26), but their independent and combined impact on mental health should be considered for a complete understanding (20). For example, some studies show that family and peer support are more likely to have additive rather than compensatory effects (27, 28), meaning that if an adolescent does not receive adequate support at home, good peer support cannot fully compensate for this loss.

Our results show that teacher support is more important than family support in explaining good adolescent mental health in terms of perceived stress. In the risk of depression, classmate and teacher support are most important, while family support is equal to friend support. We did not find any research examining the experience of support in personal social networks in relation to the Cohen Perceived Stress Scale and the WHO-5 Well-Being Index, but we did find research that included other variables as indicators of mental health. Some support our findings (22,

29, 30), while others, on the contrary, state that parental or family support is the strongest predictor of mental health during this period (23, 31). The mutual influence of individual social support sources proved to be important here as well. One study found that school staff support was positively associated with good mental health among youth with less family support, suggesting that teacher support is most beneficial for youth with a less supportive family environment. It also showed that peer friendships can act as a protective or risk factor depending on the level of connectedness with school - connectedness with peers was associated with better mental health only for students with a higher level of connectedness with school staff (20). The same applies to how interaction between family and peers affects the occurrence of risky behaviors (32). Lower levels of family support may exacerbate the potentially negative effects of adolescent relationships on their health and well-being. Conversely, peer support can have a positive effect on young people's well-being if accompanied by family support (33).

Our research had some limitations. Different scales were used to measure perceived family and friend support and perceived teacher and classmate support, but the internal consistency of individual sets was good nevertheless. Also, the research shows the relationship between social support and perceived stress and the risk of depression, but not the causality. Another limitation is that our sample includes numerically fewer adolescents with more frequently expressed stress and the risk of depression. Despite the limitations, the research has some strengths in advancing the theoretical understanding of the complex relationship between social support from multiple sources and adolescent mental health, and may have practical implications.

This research primarily demonstrates the importance of perceived social support for adolescent mental health. The findings provide recommendations for a sensible and effective formulation of much-needed national mental health policies and strategies in contrast to existing fragmented and less effective individual mental health programmes. The school, together with teachers and classmates, proved to be a very important source of support compared to other sources, therefore it is reasonable and necessary to strengthen its role in the area of young people's mental health. Interventions focused on student-teacher relationships may be particularly important for adolescents with lower family support (20). Interventions based on peer support (e.g. organised school and extracurricular activities, workshops and gatherings) must take into account possible harmful effects for students with less family support and carefully monitor the dynamics and events within groups.

Regarding future research, an agreement on unified variables as indicators of mental health would facilitate the comparison of results. The advantage of the used instruments measuring perceived stress and the risk of depression is their international applicability and thus comparability. Also, while an increasing number of studies, including the present one, demonstrates the importance of individual microsystems, little progress has been made in considering various environmental levels and understanding the interactions between them that also influence adolescent mental health. Therefore, we suggest studies in this direction in the future. Furthermore, much of the existing evidence is based on cross-sectional studies (20, 25, 29-31, 34) that do not include prior mental health problems. There is an association of lower social support and smaller and poorer social networks with youth with a history of mental health problems, which may in turn result in an inflated effect size (21). Therefore, longitudinal studies are needed to establish causal relationships.

## 5 CONCLUSION

Taking into account the results of the research and the factors that prevent adolescents from accessing appropriate professional help (e.g., parental burden, shame from stigma, insufficient or inadequate resources, geographical distance, paid services), the school environment may be the one that can provide the most opportunities for strengthening the social support and mental health of adolescents through effective public health programmes and interventions. Systematic placement of psychosocial and public health content in the Slovenian educational system and everyday educational process can in the long run lead to the normalisation and destigmatisation of the mental health field. However, this requires effective mutual cooperation and connection between the health and education professions.

## CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

## FUNDING

The study received no funding.

## ETHICAL APPROVAL

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Slovenian Medical Research Ethics Committee No. 0120-639/2017/8.

## AVAILABILITY OF DATA AND MATERIALS

The data used for this study are available from the Health Behaviour in School-aged Children survey database, which is freely available from the National Institute of Public Health. The data set includes information on demographic characteristics, health behaviours, health outcomes and social environments of school-aged children. The data set is available in both SAS and SPSS formats.

## ORCID

Anja Knez:

<https://orcid.org/0009-0005-9008-2314>

Irena Makivić:

<https://orcid.org/0000-0003-2748-5522>

Helena Jeriček Klanšček:

<https://orcid.org/0000-0003-4337-6449>

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