

BURDEN OF CHRONIC CONDITIONS AND SUBJECTIVE COMPLAINTS AS FACTORS MODIFYING THE WAY POLISH STUDENTS ARE FUNCTIONING AT SCHOOL

Abstract: Introduction: Recurrent subjective complaints may be a result or a cause of worse functioning at school. Interrelations of this type are rarely analysed from the perspective of simultaneously occurring chronic conditions.

Method: 5225 students in three age groups (average age 13,59 \pm 1,66) from the 2017/2018 school year were qualified for the Polish HBSC sample (*Health Behaviour in School-aged Children*). The occurrence of chronic conditions (CC) and multiple recurrent symptoms (SCL) were analysed jointly. Following groups revealed: CC (-) & SCL (-): 51.5%; CC (-) & SCL (+): 33.5%; CC (+) & SCL (-): 7.1%; CC (+) & SCL (+): 7.9%. Eight aspects of functioning at school were analysed in three subject blocks: general adjustment, social support and bullying. Logistic regression adjusted by gender and grade was applied.

Results: The percentage of students qualified to the most positive group CC (-) & SCL (-) is significantly higher among boys than girls and decreases significantly with age. Perception of the school environment becomes significantly worse in the group reporting multiple complaints, regardless of occurrence of chronic conditions. In the group without complaints students with chronic conditions are significantly more likely to experience a higher level of school stress than their healthy peers ($p=0.006$) and have a slightly worse perception of teacher support ($p=0.067$). In the multivariate analysis the greatest difference between the CC (-) & SCL (-) and CC (+) & SCL (+) group was determined for being a victim of bullying (OR=4.38) and school stress (OR=3.40). Suffering from a chronic condition clearly modifies the interrelation between perception of school and subjective complaints in the following areas: victimization, school stress and academic achievement.

Conclusion: Functioning at school depends on the health of the students and declines in line with increasing health problems, especially in the context of school stress and peer violence. The obtained results ought to be taken into account in the work with the entire class as well as individual work with a student suffering from a chronic disease.

Keywords: Chronic conditions, subjective complaints, students, school functioning, bullying, school stress.

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INTRODUCTION

In the young population the prevalence of chronic conditions is estimated to be approximately 20%, which means that an average of one in five school children may be suffering from a long-lasting health disorder (Sawyer et al. 2012; GUS 2016). It is also estimated that 40% of teenagers experience various types of subjective complaints of somatic or mental nature, which are not explained by a medical diagnosis (Mazur 2018, 64). The occurrence of subjective complaints is analysed among others as a defensive mechanism called somatisation (Gabbard 2009, 45), reaction to stress (Siwek 2016, 182), reaction to difficulties at school (Kołakowski 2016, 388), improper life style (Kleszczewska 2017). In many cases frequent affliction by somatic complaints may be a forewarning of illness. Even with no medical diagnosis frequently recurrent somatic complaints should never be treated lightly.

Somatic complaints experienced by teenagers suffering from chronic conditions may result from the disease but on the other hand may also not be related to it in any way. The complaints experienced by this group of students may be associated with a specific condition (eg. abdominal pain with celiac disease, headache with allergy) or may be connected with perception of the condition or its phase (eg. depression due to inability to be cured). Suris et al. (2011) point to the need to examine the impact of chronic conditions and somatic complaints on the functioning of teenagers jointly as well as on separate basis.

The study makes use of the school environment model provided by the methodology of the HBSC studies (Health Behaviour in School-aged Children)¹. The ecological model of the school environment allows for an analysis of various areas related to attitude to school, self-assessment of academic achievement and the burden of school stress, social relations with peers and teachers, as well as social support and peer violence (Inchley 2018). Numerous studies demonstrated the connection between perception of the school environment and teenage health

(Sonmark & Modin 2017; Tabak & Mazur 2016, Berntsson & Gustafsson 2000; Le & Roux & Morgenstern 2013; Torsheim & Wold 2001).

Analyses concerning the joint impact of chronic conditions and somatic complaints in the context of functioning at school are very rarely undertaken. Until now all studies were based on separate analyses. It has been demonstrated that students with chronic conditions function worse at school (Thies & McAllister 2001; Forrest et al. 2011; Santos et al. 2013; Lum et al. 2017), experience more stress related to school work (Mazur and Małkowska-Szcutnik 2010), are more frequently exposed to peer violence (Sentenac 2012) and have a worse perception of teacher support (Vance & Eiser 2002).

OBJECTIVE OF THE STUDY

The purpose of the study is to evaluate functioning at school depending on the occurrence of chronic conditions and recurrent mental or somatic complaints. When defining the research questions, it was verified whether there is a difference in school functioning depending on:

- a) affliction by chronic condition,
- b) experiencing various mental and somatic complaints,
- c) affliction by chronic condition and at the same time experiencing recurrent complaints.

MATERIAL AND METHOD

The study embraced 5225 students in Poland surveyed between October 2017 and May 2018 within the framework of the most recent round of international HBSC studies. 5th and 7th grade primary school and 3rd grade high school students participated in the anonymous survey conducted in the schools. The studied group consisted of 49.2% boys and 50.8% girls. The three age groups were similar in number (33.1%; 33.4% and 33.6%). The average age was 13.59 years (SD=1.66). The data come from 378 randomly chosen classes, 194 schools of various types from all 16 provinces. The response rate was 84.9% in relation to the number

¹ International HBSC studies apply to school children aged 11-15 years and are performed periodically every 4 years by teams of scientists belonging to the research network. At present the research network has 49 member or regions in Europe and North America (www.hbsc.org). Poland is a

member of the HBSC network since 1989 and conducted 8 studies. The national coordinators are: Professor B. Woynarowska (until 2004); Professor J. Mazur (2004-2018); Professor J. Mazur and A. Małkowska-Szcutnik PhD (from 2018 to date).

of students in the selected classes. More detailed information about the organization of this round of HBSC studies is available in the national report (Mazur i Małkowska-Szcutnik 2018).

VARIABLES AND INDICATORS

1. Affliction by chronic conditions

Prevalence of a chronic condition was identified on the basis of an answer to one question: *Do you have a long-term illness, disability, or medical condition (like diabetes, arthritis, allergy or cerebral palsy) that has been diagnosed by a doctor?* 14.9% of respondents gave an affirmative answer to this question. The question comes from the Chronic Condition Short Questionnaire (CCSQ) used as an additional package in the HBSC protocol. CCSQ is an example of a tool which uses non-categorical approach in analysing the occurrence of chronic conditions, as distinct from the categorical approach, where the individual condition is important (Mazur et al. 2013). According to the non-categorical approach the fact of being ill is in itself important, as are the resulting consequences, among others from the point of view of developmental tasks such as studying, functioning in the peer group, gaining autonomy etc.

2. Affliction with subjective complaints

The basis for the analysis is a division of the studied group into four groups, by recurrence of subjective complaints and presence of chronic conditions or other long-lasting health disorders.

A complaints scale used for many years in HBSC studies has been employed, frequently called the subjective complaints checklist (SCL). The list includes eight symptoms: somatic complaints: *headache, abdominal pain, backache, dizziness*; and complaints of mental nature: *despondency, irritation or bad mood, nervousness, sleeping problems*. The frequency of these symptoms is analysed over the past 6 months, using five categories of answers: *almost every day, more than once a week, nearly every week, nearly every month, rarely or never*. Experiencing the complaints *nearly every day* or *more than once a week* is considered frequent. When analysing the results, the percentage of young people afflicted by two or more complaints more often than once a week or every day has been taken into account. This indicator is frequently defined as the *multiple*

recurrent symptoms. 41.4% of respondents fulfilled the recurrent symptoms criterion.

In general four groups were distinguished and described using the acronyms SCL and CC:

- SCL(-) & CC(-): no chronic condition or recurrent complaints, which applied to 51.5% of those polled;
- SCL(+) & CC(-): no chronic condition but presence of recurrent complaints (33.5%);
- SCL(-) & CC(+): presence of chronic condition but no recurrent complaints (7.1%);
- SCL(+) & CC(+): combined occurrence of chronic condition and recurrent complaints (7.9%).

It is worth noting that healthy students and those with chronic conditions and identified multiple recurrent complaints differ in terms of the type of reported symptoms ($p=0.042$). Among 97.2% at least one complaint of mental nature appears among the multiple symptoms. In the healthy group only mental conditions appear more frequently among multiple symptoms than among the ill group (40.5% vs. 34.8%). On the other hand, in the ill group mental conditions co-occur with somatic complaints more frequently than in the healthy group (63.2% vs. 56.5%). In general students with chronic diseases report more recurrent complaints than their healthy peers. The average number of reported symptoms was respectively 2.08 ± 1.99 among the ill and 1.47 ± 1.73 among the healthy.

3. Functioning at school

General school adjustment was taken into account, as was social support associated with school and experience with bullying. Eight questions or measurements scales were analysed, categorised into 3 or 4 ranges. Conventional division criteria were used, identical as in the national report.

a) In the area of *general school adjustment* the following were analysed:

- question concerning general attitude to school: *How do you feel about school at present?* with answer categories: *I like it a lot, I like it a bit, I don't like it very much, I don't like it at all*. The study analysed

answers according to three categories: like a lot, like a bit, don't like.

- question concerning the pressure of schoolwork (school stress): *How pressured do you feel by the schoolwork you have to do?*; with answer categories: *not at all, a little, some, a lot*. The study analysed answers according to three categories: not at all, a little, some or a lot.
- visual academic achievement scale used in Poland outside the HBSC report, based on McArthur's concept adopted by Goodman (2001) to the needs of studies of young people. Students were shown the picture of a ladder with number 10 at the top, signifying the students achieving the best results in class. At the bottom was the number 0, denoting the students having the worst grades. Students were asked to think about their class and on which step of the ladder they would stand. The results were divided into four groups, where the number of points 0-4 meant poor; 5-6 average; 7-8 good and 9-10 very good academic achievements.

b) In the area of *support associated with school* three scales were analysed consisting of three statements with four categories of answers, ranging from definitely disagree to definitely agree. These scales fall within the range of 0-12 points and refer to classmate, teacher and parent support in matters related to school. Questions concerning peer (*The students in my class(es) enjoy being together. Most of the students in my class(es) are kind and helpful, Other students accept me as I am*), teacher (*I feel that my teachers accept me as I am, I feel that my teachers care about me as a person, I feel a lot of trust in my teachers*) and parent (*If I have a problem at school, my parents are ready to help, My parents are willing to come to school to talk to teachers, My parents encourage me to do well at school*) support scale.

c) In the area related to *bullying* two questions concerning being a bully or victim within the past two months were considered. Students were asked

questions: *How often have you taken part in bullying another person(s) at school in the past couple of months?*; *How often have you been bullied in the past couple of months?* with answer categories from *I have not bullied another person(s)/been bullied at school in the past couple of months* to *Several times a week*. Students who did not have such experiences, had them sporadically (once or twice) and more frequently were distinguished.

The characteristics of the sample from the point of view of functioning in school are found in the result tables.

STATISTICAL METHODS

The relationship between belonging to the CC & SCL affliction group and functioning in school was observed using the chi-squared test in the whole sample and as pairwise comparisons. Regardless of this the four groups and pairs of groups were compared, with separate examination of the CC and SCL effect. Logistic binomial regression adjusted by gender and school grade was used in the multivariate analysis. The dependant variable consisted in dichotomous indicators of functioning in school. The lowest level for each variable assumed the value "1". The results were presented as an odds ratio (OR) with a 95% confidence interval (CI). The main independent variable was membership in a group identified according to CC and SCL. Healthy students who did not experience recurrent subjective complaints were the reference category.

RESULTS

Table 1. presents membership in four groups by gender and school grade. It was demonstrated that the percentage of those qualified to the most positive group (absence of chronic conditions and recurrent complaints) is significantly higher among boys than girls and significantly declines with age.

Table 1. Groups differentiated in terms of occurrence of chronic conditions and subjective complaints, by gender and grade (%).

	CC (-) & SCL (-)	CC (-) & SCL (+)	CC (+) & SCL (-)	CC (+) & SCL (+)	P
Total sample	52,5	33,5	7,1	7,9	
Boys	58,6	27,5	7,6	6,3	<0,001
Girls	44,8	39,2	6,6	9,4	
V grade primary school	60,2	27,9	7,1	4,7	<0,001
VII grade primary school	51,2	33,4	7,6	7,8	
III grade high school	43,5	39,0	6,5	11,1	

Table 2. presents the indicators of general functioning at school in four of the above groups. The results observed among students reporting multiple subjective complaints are definitely worse. In the comparison of healthy students and those with chronic conditions without such complaints only a significantly higher level of

school stress was noted among the latter. Strong school stress was experienced by 33.6% of students with chronic conditions and 26.6% of their healthy peers. The appearance of complaints results in an increase of these percentages to 55.4% and 59.1% respectively.

Table 2. School adjustment (%) according to recurrent subjective complaints and chronic conditions

	N	Chronic conditions (CC) & subjective complaints (SCL)				Pairwise comparisons			
		CC- SCL - (1)	CC- SCL+ (2)	CC+ SCL- (3)	CC+ SCL+ (4)	1&3	2&4	1&2	3&4
Liking school									
Like a lot	1564	35.7	22.3	34.1	21.6	p= 0.356	p= 0.867	p< 0.001	p< 0.001
Like a bit	2156	42.8	38.7	46.6	37.9				
Don't like	1490	21.5	39.0	19.3	40.5				
		Chi-sq=220.07; d.f.=6; p<0.001							
Pressured by school work									
Not at all	681	16.3	9.0	11.8	9.0	p= 0.006	p= 0.348	p< 0.001	p< 0.001
A little	2494	57.1	35.6	54.6	31.9				
Some or a lot	2039	26.6	55.4	33.6	59.1				
		Chi-sq=435.02; d.f.=6; p<0.001							
Academic achievements									
Very good	931	19.8	14.9	22.0	15.3	p= 0.719	p= 0.538	p< 0.001	p< 0.001
Good	1687	35.2	30.4	34.1	26.9				
Average	1720	31.7	35.1	32.1	35.9				
Poor	827	13.3	19.6	11.8	21.9				
		Chi-sq=72.73; d.f.=9; p<0.001							

Similarly, table 3 presents results concerning the level of social support from friends, teachers and parents. The conclusions proved identical, the main differentiating factor being experiencing

subjective complaints. In the group without recurrent subjective complaints the greatest difference between healthy students and those with chronic conditions applied to teacher support.

Table 3. Social support related to school (%) according to recurrent subjective complaints and chronic conditions

Source and level of support	N	Chronic conditions (CC) & subjective complaints (SCL)				Pairwise comparisons			
		CC-SCL - (1)	CC-SCL+ (2)	CC + SCL- (3)	CC + SCL+ (4)	1&3	2&4	1&2	3&4
Classmates									
High	1125	26.6	15.2	26.3	12.6	p= 0.549	p= 0.360	p< 0.001	p< 0.001
Average	3071	60.9	56.6	59.2	57.0				
Low	991	12.5	28.2	14.5	30.4				
Chi-sq=245.10; d.f.=6; p<0.001									
Teachers									
High	1106	26.2	14.3	29.6	11.6	p= 0.067	p= 0.384	p< 0.001	p< 0.001
Average	2944	59.2	54.1	52.8	55.7				
Low	1135	14.6	31.6	17.6	32.7				
Chi-sq=260.34; d.f.=6; p<0.001									
Parents									
High	2768	60.3	44.3	57.4	42.2	p= 0.474	p= 0.653	p< 0.001	p< 0.001
Average	2141	36.7	47.1	38.7	49.7				
Low	277	3.0	8.6	3.9	8.1				
Chi-sq=159.32; d.f.=6; p<0.001									

Students frequently experiencing multiple complaints also reported more frequent episodes of being a victim or perpetrator of peer violence defined as bullying (Table 4). A comparison between the group most afflicted by health conditions (CC+ and SCL+) and the healthiest

group of students (CC- and SCL-) a twofold increase is noted in the percentage of those frequently acting as perpetrators of violence (5.0% vs. 10.0%) and a threefold increase in the percentage of being a victim of peer violence (4.3% vs. 13.0%).

Table 4. Experiences with bullying at school (%) according to recurrent subjective complaints and chronic conditions

Participation in bullying in the past 2 months	N	Chronic conditions (CC) & subjective complaints (SCL)				Pairwise comparisons			
		CC-SCL - (1)	CC-SCL+ (2)	CC + SCL- (3)	CC + SCL+ (4)	1&3	2&4	1&2	3&4
Perpetrator									
Never	3775	76.2	67.5	74.6	69.2	p= 0.592	p= 0.728	p< 0.001	p< 0.013

Once or twice	1053	18.8	22.6	20.9	20.8				
More often	369	5.0	9.9	4.5	10.0				
		Chi-sq=63.80; d.f.=6; p<0.001							
Victim									
Never	3977	81.5	69.8	82.1	66.7	p=	p=	p<	p< 0.001
Once or twice	830	14.2	18.7	12.0	20.3	0.248	0.463	0.001	
More often	391	4.3	11.5	5.9	13.0				
		Chi-sq=134.32; d.f.=6; p<0.001							

Summarising the above results, we tried to answer the question which aspects of functioning at school differentiate the four distinct groups to a greatest extent (Table 5). The logistic regression analysis additionally took into account the gender and age of respondents. Three groups having smaller or greater health problems were compared with the privileged group of healthy students who did not report recurrent complaints. Students with chronic conditions who additionally reported multiple complaints risked being 4 times more likely

victims of bullying and 3 times more likely to experience a high level of school stress. Following a more advanced statistical analysis it may also be concluded that affliction by a chronic condition moderates the connection between various aspects of functioning in school and subjective complaints. In a comparison between groups CC-& SCL+ and CC+ & SCL+ the OR indicators are clearly higher in the latter group for school stress, academic achievement and experiencing violence.

Table 5. Results of binomial logistic regression adjusted for gender and grade – students without chronic conditions and without recurrent subjective complaints as reference category.

Dependent Variable	Chronic conditions (CC) & subjective complaints (SCL)					
	CC- & SCL+		CC + & SCL-		CC + & SCL+	
	P	OR 95% CI(OR)	p	OR 95% CI(OR)	P	OR 95% CI(OR)
Liking school	0.000	2.23 1.94-2.56	0.248	0.85 0.64-1.12	0.000	2.25 1.80-2.81
Pressured by school work	0.000	3.06 2.68-3.50	0.016	1.34 1.06-1.71	0.000	3.40 2.72-4.25
School Achievements	0.000	1.59 1.35-1.89	0.394	0.86 0.61-1.21	0.000	1.80 1.38-2.35
Support from Classmates	0.000	2.57 2.19-3.02	0.328	1.17 0.85-1.61	0.000	2.79 2.18-3.57
Support from Teachers	0.000	2.48 2.13-2.89	0.222	1.20 0.89-1.62	0.000	2.41 1.89-3.07
Support from Parents	0.000	2.66 2.00-3.55	0.439	1.26 0.70-2.25	0.000	2.32 1.51-3.57
Perpetrator of bullying	0.000	2.31 1.81-2.95	0.717	0.91 0.53-1.54	0.000	2.34 1.60-3.41
Victim of bullying	0.000	3.55 2.77-4.55	0.126	1.46 0.90-2.36	0.000	4.38 3.07-6.27

*OR – odds ratio; CI-confidence interval

DISCUSSION

The study presents the results of the last round of HBSC studies carried out in Poland during the school year 2017/2018 among over 5 thousand teenage students. The interrelation between health-related afflictions (existence of chronic conditions and recurrent subjective complaints) and functioning in school have been analysed. Various areas of the school environment have been examined: adjustment to school, social relations and peer violence. It was found that affliction with recurrent subjective complaints is associated with worse functioning in school and is not related to a chronic condition. It was also found that with more severe health afflictions, chronic condition and concurrent frequent subjective complaints, functioning in school declines. This applies specifically to an increased level of school stress and experiencing peer violence.

In the study related to acceptance of peers with chronic conditions by their healthy peers King et al. (2010) demonstrated that students who report subjective complaints, such as frequent abdominal pain, not supported by a medical diagnosis, meet with the lowest level of acceptance. This is the group of students who are exposed to the highest risk of rejection in comparison with those who also report somatic complaints but caused by a medically diagnosed somatic disorder.

The results of our study have shown that the occurrence of subjective complaints increases the level school stress both among healthy students as well as those with chronic conditions. It may be presumed that school stress aggravates complaints. The results obtained support the theoretical cognitive-behavioural model which takes into account: a) the situation (in our case a stressful situation at school), b) thoughts about it and c) reaction (in our case one of them may be aggravation of subjective complaints) (Beck 2012, 33). Explaining to students how vicious circles of stress and reaction to it originate may mitigate their discomfort in difficult situations. It is also important to take up preventive actions, for instance in the form of training in relaxation techniques and mindfulness (Goodman 2015, 278). Dutch experiences, where mindfulness training is included in the basic primary school curriculum and has been clearly shown to be an effective method of dealing with school stress, are worth looking at (Snel 2010).

In the group of students suffering from chronic conditions it is to be remembered that the subjective complaints (frequently related to the disease) may be associated with the increased level of stress. The studies conducted among students with chronic conditions and among teachers indicate that the occurrence of complaints is one of the most important concerns in the context of everyday functioning at school. The results of studies among over 1600 Polish primary school teachers have shown that somatic and mental complaints associated with illness, including fatigue (apart from missing classes, problems with concentration) are considered by them to be one of the most important areas affecting the functioning of a student suffering from a chronic condition in school (Małkowska-Szkutnik 2018). For this group of students, it is necessary to determine whether the complaints are directly connected with the condition.

It has been demonstrated that students with chronic conditions who are additionally afflicted with recurrent complaints are several times more likely to be victims of peer violence. The results obtained correspond with the studies of other authors (Sentenac et al. 2012; Pinquart 2017; Greco et al. 2007; Due et al. 2005). It is to be noted that students with visible chronic conditions are more frequently rejected by peers. Another risk factor, namely the experience of being bullied, may additionally undermine the ability to function in the classroom.

An added value of the study is demonstrating the connection between health conditions, that is chronic diseases and recurrent subjective complaints, in the context of functioning in the school environment. Understanding of the correlations between health and perception of the school environment may support the work of teachers, which will indirectly affect the students themselves.

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