

Well-being levels among students during the COVID-19 pandemic

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Abstract

Introduction. Over the past few months, the lives of people around the world have changed dramatically. Within a few days, they have been forced to adapt their daily behavior and habits to new conditions. The cause of this phenomenon is a state of the pandemic, introduced by the WHO in connection with the spread of the new pathogen causing COVID-19. The group particularly affected by the restrictions of the COVID-19 pandemic are the people involved in remote working, including students who, since the beginning of the pandemic, have been carrying out the entire educational process or using the support of distance learning methods and techniques. **Objective.** the study aims to assess the level of well-being and emotions accompanying the COVID-19 pandemic among students of three large Polish public universities. **Material and methods.** The survey was attended by 1054 students from three Polish public universities. The study was conducted using a questionnaire including mental health interview; WHO-5 scale - Good Feeling Index developed by the Psychiatric Research Unit of WHO; Beck's scale of depression; author's multiple-choice questions about the impact of the epidemic situation on the current life of the studied population. **Statistical significance** was determined using the chi-quadrat, U Mann-Whitney, and Kruskal-Wallis test. **Statistical significance level** $p=0.05$ was assumed for each test. **Results.** The mild form of depression was distinguished: 17% of respondents in March, 28% in June/July, and October. A moderate form of depression was found: in 4% of respondents in March, 6% in June/July, and 8% in October. The risk of developing depressive symptoms is higher with each successive stage of the study, this phenomenon is particularly visible in the group of women in whom depressive symptoms are more frequent ($p<0.05$). **Conclusion.** The study group is characterized by a high risk of depression. One-third of the respondents were found to have a mild to moderate stage of the disease. It is worth noting that in the studied group no symptoms indicating a deep form of depression were observed.

Key words: well-being, students, COVID-19, SARS-CoV-2, mental health

Introduction

Over the past few months, the lives of people around the world have changed dramatically. Within a few days, they have been forced to adapt their daily behavior and habits to new conditions. The cause of this phenomenon is a state of the pandemic, introduced by the WHO in connection with the spread of the new pathogen causing COVID-19. The virus, which belongs to the *coronavirus* group, was first identified in December 2019 in the Chinese province of Wuhan. The course of the disease may vary from asymptomatic to acute respiratory failure syndrome in the course of viral pneumonia (Huang, 2020; WHO, 2020).

Scientists around the world are trying to find effective therapy and prevention methods to protect the world's population from SARS-CoV-2. Restrictions introduced in a short period, isolation of many people, restriction of civil liberties, may lead to significant changes in the human psyche, including states of reduced well-being, negative emotions, anxiety, and even depression. Analyzing the experience of the MERS epidemic in 2012-2013, the significant impact of such events on the mental health of the general population has been confirmed. Based on the results obtained (Lee, 2007; Lee, 2018), it can be speculated that the current pandemic will also have a significant impact on the mental health of society. In many countries around the world, research is conducted to assess the impact of COVID-19 on the mental health of the population. The data collected from the Chinese and Iranian population (Qiu, 2020; Zandifar, 2020; Moghanibashi-Mansoureh, 2020) confirm the belief that the pandemic significantly interferes with the psyche and, consequently, with everyday life and quality of life.

The group particularly affected by the restrictions of the COVID-19 pandemic are the people involved in remote working, including students who, since the beginning of the pandemic, have been carrying out the

entire educational process or using the support of distance learning methods and techniques. In the initial phase of the pandemic (March-September), the entire education process in Poland was carried out remotely (MZ, 2020a). At the beginning of the academic year 2020-2021, it was decided to partially restore the contact form of classes (hybrid teaching), however, this lasted only until the end of October, when the epidemiological situation in Poland deteriorated significantly (Coronavirus cases, 2020) and it was decided to close the university again until the end of 2020 (only practical classes requiring specialist equipment or contact with another person and professional practices are subject to contact classes) (MZ, 2020b).

About the above, the study aims to assess the level of well-being and emotions accompanying the COVID-19 pandemic among students of three large Polish public universities.

Material and methods

The survey was attended by 1243 students from three Polish public universities (Medical University of Silesia in Katowice, Jerzy Kukuczka Academy of Physical Education in Katowice, Silesian University of Technology). The study was conducted using a questionnaire including mental health interview; WHO-5 scale - Good Feeling Index developed by the Psychiatric Research Unit of WHO (Topp, 2015); Beck's scale of depression (Beck, 1961; Beck, 1972) author's multiple-choice questions about the impact of the epidemic situation on the current life of the studied population. The questionnaire survey was conducted three times: in March - at the beginning of the COVID-19 pandemic in Poland, when remote learning for all students started; in late June and early July - during examination sessions and defense of thesis (4 months after starting remote learning); and in October - during the transition to the hybrid model (remote working + contact classes).

The interpretation of the WHO-5 scale was based on summing up points for each of the 5 questions. A single question was scored from 0 to 5, where 0 meant the worst possible quality of life and 5 the best possible quality of life. The score range for the whole scale was 0-25. The raw score was multiplied by 4 to obtain the percentage score [%]. The percentage score was read according to the scale: 92-100% very good; 76-91% good; 56-75% moderate; 55% and less bad. The Cronbach's α -factor for the standardization test was 0.85.

Beck's test, in turn, included 21 questions about the basic symptoms of depression. The questions were scored on a scale from 0 to 3, with 3 being the highest intensity of the symptom. The final test score was, to sum up, the points for each question and read the degree of depression: 0-11 no depression; 12-19 mild depression; 20-25; moderate depression; 26 and more - severe depression. The Cronbach's α coefficient for the standardization test was 0.90.

The questionnaire was conducted using the CAWI (Computer Assisted Web Interviews) method. The participants of the survey joined it voluntarily. Participation in the survey was completely anonymous. All respondents declared student status on the day of the survey. The basic criterion for inclusion in the survey was the absence of past mental problems that required psychotherapeutic consultation or psychiatric treatment. The final analysis included 1054 persons.

The Statistica 13.3 program was used to develop the results. The analysis of the results was based on basic descriptive statistics. Statistical significance was determined using the chi-quadrat, U Mann-Whitney, and Kruskal-Wallis test. Statistical significance level $p=0.05$ was assumed for each test.

Results

1054 students from different regions of Poland took part in the study (68% of women and 32% of men). The division into subgroups in terms of place of education was as follows: 45% medical and health sciences students, 28% physical education students, 27% technology students. 43% of the respondents were first-degree students (bachelor's or engineer's degree), 37% of second-degree studies (master's degree), 20% of full education path. 44% of people were professionally active, of which 15% were active in the fight against the COVID-19 pandemic (volunteer or full-time work in a single-type hospital).

The analysis of the obtained results showed that the surveyed students in the initial stage of the pandemic (March) extremely rarely experienced negative emotions related to the isolation and epidemiological situation. At this stage, the most frequently indicated inconvenience associated with the epidemic, in the context of individual experiences, was the need for self-isolation (reduction of interpersonal contacts), which concerned 56% of the respondents. Overtime (in the second stage of the study - June/July), it can be seen that 28% (an increase of 11 percentage points compared to the previous study period) of the examined group suspected COVID-19 infection and 13% and 18% respectively were quarantined or isolated due to the diagnosis of SARS-CoV-2 infection (an increase of 7 and 16 percentage points respectively).

The survey conducted in October shows a clear increase in all the characteristics, especially in cases of suspected infection (45%, increase of 17 percentage points), quarantine (25%, increase of 12 percentage points), isolation (23%, increase of 5 percentage points). For the experiments "suspected COVID-19", "administrative quarantine (as a result of COVID-19 diagnosis)", "isolation (after COVID-19 diagnosis)" showed a positive trend in all examined periods, which was confirmed by a statistical test ($p<0.05$). A similar relationship was not confirmed for the remaining traits (Table I).

Table I. Experience with COVID-19 in the study group (N=1054)

Experience with COVID-19	MARCH		JUNE/JULY		OCTOBER		p-value
	X	SD	X	SD	X	SD	
Suspected COVID-19	11%	±2%	28%	±3%	45%	±1%	<0.05
Self-isolation (as part of prevention)	56%	±4%	64%	±3%	62%	±6%	>0.05
Administrative quarantine (after COVID-19 diagnosis)	6%	±6%	13%	±4%	25%	±4%	<0.05
Isolation (after COVID-19 diagnosis)	2%	±3%	18%	±5%	23%	±2%	<0.05
Hospitalization (after COVID-19 diagnosis)	0%	±5%	6%	±6%	5%	±5%	>0.05

Students were asked about their position on COVID-19. In the first stage of the study, most of the respondents (63%) declared that the risk of SARS-CoV-2 infection is real. In turn, 12% underestimated the essence of the threat. 25% of the respondents did not have an opinion on this issue. In the second and third period of research, the number of people who do not believe in the threat or do not have an opinion on the subject has decreased to the benefit of people with the position "I believe" - 74% in June/July and 78% in October. The statistical test confirmed the relationship (p<0.05) - Table II.

Table II. Position towards COVID-19 in the study group (N=1054)

Position towards COVID-19	MARCH		JUNE/JULY		OCTOBER		p-value
	X	SD	X	SD	X	SD	
I believe (danger is real)	63%	±7%	74%	±4%	78%	±3%	<0.05
I don't have an opinion about this	25%	±2%	18%	±5%	17%	±2%	
I don't believe it (there is no real danger or it is irrelevant)	12%	±3%	8%	±4%	5%	±5%	

Emotions connected with the current epidemic situation accompanied every person examined and were characterized by fear, anxiety, or anxiety. For most of the emotions, a clear upward trend was observed over time. Particular attention should be paid to the emotions for which dependence was confirmed - along with the next stage of the study, and thus worsening of the epidemiological situation, such emotions as fear/anxiety of getting sick (of relative), anxiety related to isolation and/or hospitalization of the person from around you, fear/anxiety of losing a job (p<0.05), were growing stronger. The exact values are presented in Table III.

Table III. Emotions related to COVID-19 in the study group (N=1054)

Emotions directly related to COVID-19*	MARCH		JUNE/JULY		OCTOBER		p-value
	X	SD	X	SD	X	SD	
Fear/anxiety of getting sick	5.34	±1.28	7.12	±1.12	9.02	±0.98	<0.05
Fear/anxiety of a relative getting sick	5.48	±1.02	7.24	±1.46	9.42	±1.64	<0.05
Anxiety about the quarantine of the person around you	1.32	±1.32	2.02	±1.02	2.88	±1.34	>0.05
Anxiety about the isolation of the person around you	2.10	±0.98	4.08	±1.04	6.82	±0.94	<0.05
Anxiety about the hospitalization of the person around you	1.54	±1.06	4.42	±1.34	6.24	±0.96	<0.05
Emotions indirectly related to COVID-19*	-	-	-	-	-	-	-
Fear/anxiety of losing employment	4.68	±1.68	7.08	±1.24	8.88	±1.42	<0.05
Work-related/remote learning anxiety	2.78	±1.12	3.02	±1.02	3.78	±1.2	>0.05
Anxiety about social disinformation	3.02	±1.24	3.48	±0.98	4.04	±0.98	>0.05
Anxiety about not being able to contact family/friends	2.84	±0.92	3.18	±0.88	3.98	±0.88	>0.05

*All the discriminants were evaluated on a scale of 0-10, where 10 means the highest level of emotions in a given category.

Based on the results of the WHO-5 scale evaluating well-being, it can be concluded that in March the well-being of the respondents was about 20 points (with a maximum score of 25 points), which gives a level of 81.36% - well-being. The self-esteem of the respondents worsened with time. In the June/July stage, the

respondents' mood decreased by 18.98% (about 5 points) and in the October stage by another 4.98% (about 1 point), reaching a moderate level - $p < 0.05$. It can be said that the respondents' mood decreased with the development of the epidemic.

Table IV. Results of the WHO-5 scale in the study group (N=1054)

In the last two weeks, I've been feeling:*	MARCH		JUNE/JULY		OCTOBER		p-value
	X	SD	X	SD	X	SD	
Cheerful and in a good mood	4.24	±0.76	3.12	±0.66	2.98	±0.64	<0.05
Calm and relaxed	4.12	±0.88	3.48	±0.82	3.12	±0.98	
Active and energetic	4.36	±0.64	2.98	±0.61	2.68	±0.76	
Fresh and rested	3.88	±0.68	3.16	±0.74	3.02	±0.88	
My life was filled with things that interested me	3.74	±0.38	2.86	±0.56	2.56	±0.46	
TOTAL (raw score) [pt]	20.34	±3.34	15.56	±3.39	14.36	±3.72	
TOTAL (converted result) [%]	81.36%	±13.36%	62.40%	±13.56%	57.44%	±14.88%	
DIFFERENT (from the previous survey period)	0%		-18.98%		-4.96%		

*All the discriminants were evaluated on a scale of 0-5, where 5 meant that a given sensation accompanied the examined person for at least two weeks preceding the examined period.

Beck's test was used to assess the risk of depressive symptoms in the studied population. It is worth noting that none of the subjects were found to have a severe form of depression based on the test in all three study periods. The mild form of depression was distinguished: 17% of respondents in March, 28% in June/July, and 8% in October. A moderate form of depression was found: in 4% of respondents in March, 6% in June/July, and 8% in October. The risk of developing depressive symptoms is higher with each successive stage of the study, this phenomenon is particularly visible in the group of women in whom depressive symptoms are more frequent ($p < 0.05$). Detailed data are presented in Table V.

Table V. Beck's test results in the study group (N=1054)

Test period / Gender of respondents	Interpretation			α-Cronbach	p-value	
	No depression	Soft depression	Moderate depression			
March	Female	77%	19%	6%	0.85	<0.05
	Male	84%	14%	2%	0.83	
	Total	79%	17%	4%	0.84	
June/July	Female	62%	30%	8%	0.91	
	Male	71%	25%	4%	0.89	
	Total	66%	28%	6%	0.90	
October	Female	60%	32%	8%	0.81	
	Male	68%	25%	7%	0.83	
	Total	64%	28%	8%	0.82	

Discussion

The studies conducted so far among the populations affected by the pandemic indicate its impact on the psychological condition of society. The main aim of the study was to assess the sense of fear and anxiety of the Polish society in the era of the COVID-19 pandemic, as well as to search for the main factors that caused these emotions. The results of the questionnaire indicate the intensification of the feeling of anxiety in the persons participating in the survey, with as much as 28% of those surveyed in the last stage of the study obtaining a result indicating a mild form of depression. 8% of the respondents showed features of moderate depression. Such

a high percentage of positive results may be caused by the current restrictions, social limitations, and the feeling of helplessness and powerlessness of people in the fight against COVID-19.

The possibility of direct interpersonal contacts, which, according to specialists, are necessary to maintain human mental balance, has been significantly reduced (Xiao, 2020; Kmietowicz, 2020). According to pre-pandemic epidemiological reports, the features of generalized anxiety syndrome among Poles occur in about 1% of the population, significantly more often in women than in men (Kiejna, 2015). During their lifetime, generalized anxiety attacks may occur in 5-9% of the population (Sadock, 2015). The state of the pandemic is a special period, which led to a significant increase in the percentage of people exhibiting features of generalized anxiety syndrome. Worldwide reports investigating the severity of anxiety in the populations severely affected by the COVID-19 pandemic, similarly as in Poland, showed a significant increase compared to the state before 2019. Among Chinese students, 25% of the respondents in the analysis of the GAD-7 questionnaire (generalized anxiety) obtained a result indicating symptoms of anxiety of varying severity (Cao, 2020). A survey conducted on 1210 respondents living in China shows anxiety symptoms in 36% of respondents [19]. Iranians in 51% show anxiety features during the COVID-19 pandemic. However, it should be kept in mind that the results obtained may be overestimated in relation to the general population assessment due to the significant prevalence of women in all the cited studies, as women tend to have anxiety disorders significantly more frequently than men (Wang, 2020).

A study in Australia, on the other hand, showed that symptoms of depression and anxiety were significantly elevated compared to normal population data, also for people without an existing mental health diagnosis. The study showed that financial difficulties related to the pandemic, and not the loss of work itself, were also a key correlate of poorer mental health (Dawel, 2020). Other reports from Walla conducted based on an online questionnaire prove that the well-being of the respondents showed a large decrease compared to the 2019 level. Clinically significant mental disorders were found in about 50% of the population. Young people, women, and people from poor areas were most affected (Gray, 2020). The authors of the review paper on the mental condition of university students in Great Britain came to the same conclusions as in their study. The authors note how difficult the situation was for the students, who had to learn about the new learning environment overnight. They also draw attention to the impact of the current situation on the well-being and uncertainty related to the future (Burns, 2020; Grajek, 2021).

The limitation of the study is the method of data collection in the form of a questionnaire distributed via the Internet, however, this research method is gaining more and more recognition due to the possibility of quick data collection in a short period and complete anonymity of the respondents. Modern world reports suggest that people feel more comfortable filling in questionnaires via the Internet (Heerwegh, 2009).

It should also be noted that during a pandemic, due to social isolation, this is the only easily accessible research method. Participation in the study may contribute to deepening thoughts on one's mental condition and increasing people's self-awareness in the assessment of the need to seek specialist advice. Analyzing the results of the study, the impact of the COVID-19 pandemic on the mental condition of Polish society was proven. The main stressors include economic uncertainty and a significant reduction in daily social functioning. The instability of the situation and fears about its impact on the future lead to growing uncertainty, frustration, and anxiety about the quality of life after the pandemic. It should be borne in mind that the pandemic period is a special time for everyone and joint actions of public authorities, the health care system, and law enforcement services should lead to alleviating the feeling of uncertainty and fear among Poles. Social support is an essential aspect in the slow way of returning to normality. In cases of particularly severe and persistent symptoms, psychiatric consultation is advisable.

Conclusions

The following conclusions can be drawn from the research conducted:

1. The most common experience with COVID-19 among the respondents is the suspicion of infection in oneself or someone close to them and the quarantine/ isolation of the person around them.
2. The respondents' self-esteem is closely correlated with the development of the epidemic situation. In the initial stages of the study, the respondents were characterized by good mood, while in the last stage of the study they represented a moderate level.
3. Factors causing negative emotions in the examined group include fear/anxiety of falling ill and losing work and anxiety related to isolation or hospitalization of someone from a close environment.
4. The study group is characterized by a high risk of depression. One-third of the respondents were found to have a mild to moderate stage of the disease. It is worth noting that in the studied group no symptoms indicating a deep form of depression were observed.

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