

FOLIA MEDICA CRACOVIENSIA
Vol. LXV, 4, 2025: 155–166
PL ISSN 0015-5616 eISSN 2957-0557
DOI: 10.24425/fmc.2025.156705

Health behaviors and quality of life among young adults during the COVID-19 pandemic

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Abstract: Introduction: The COVID-19 pandemic has affected the life quality and young adults' health behaviors. Aim Assessment of health behaviors and life quality in young adults during the COVID-19 pandemic.

Material and Methods: The study was conducted in a group of 161 people aged 18–25 years. The study employed a diagnostic survey method using the World Health Organization Quality of Life Questionnaire in the Polish version and the Health Behavior Inventory, as well as a self-designed questionnaire.

Results: The average value of the total health behavior intensity index in the examined group was 75.83 ± 13.9 . The average scores obtained in each domain were similar, with the highest score referring to undertaking health practices (3.31 ± 0.68) and the lowest referring to proper eating habits (2.95 ± 0.81). Only 11.80% of respondents presented a high level of health behaviors. The average score for overall quality of life was 3.87 ± 0.81 points, with the physical domain scoring most favorably (15.18 ± 2.65 points) and the psychological domain scoring the lowest (13.45 ± 3.48 points). There was a significant positive correlation between respondents' health behaviors and their quality of life ($r = 0.288$; $p < 0.001$). Respondents indicated that the pandemic negatively affected their quality of life in the psychological (63.98%), social (60.25%) and environmental (45.34%) domains.

Conclusions: Nearly half of the respondents reported low intensity of health behaviors. Their quality of life was good. The physical domain scored highest and the mental domain scored lowest, which was also reflected in the highest score for the adverse impact of the pandemic on the quality of life in the same domain.

Keywords: quality of life, health behaviors, young adults, pandemic, COVID-19.

Submitted: 24-Oct-2025; **Accepted in the final form:** 30-Nov-2025; **Published:** 31-Dec-2025.



Introduction

The COVID-19 pandemic has affected the quality of life of people around the world [1]. Hence, many researchers highlight the negative consequences of the pandemic in terms of physical and mental health as well as social functioning [2, 3]. Limitations in social contact with peers and lack of their emotional support made the young particularly vulnerable to the effects of isolation [4]. The authors also emphasize elevated levels of negative emotions, depression, stress and anxiety [2], which were significantly higher in young people [4].

The pandemic has also undoubtedly affected the health behaviors of the societies of various countries [5–7], which could be observed as negligence in terms of dietary adherence [5, 7, 8], physical activity [5–8], sleep [6–8], body weight and even dysglycemia, especially in people with type 2 diabetes, obesity and overweight [7]. In addition, the researchers highlighted an unfavorable correlation between reduced sleep and mental condition of the respondents, as well as the impact of declared depression and sadness on the increased risk of insomnia among the study participants [6].

The aim of the study

The aim of this study was the assessment of health behavior and quality of life in a group of young adults during the COVID-19 pandemic.

Material and Methods

The study was carried out in January 2022 in a group of young adults aged 18–25. The study employed a diagnostic survey method, with the application of a questionnaire designed by the authors, the World Health Organization Quality of Life Questionnaire (WHOQoL-BREF) in the Polish version and the Health Behavior Inventory (HBI). The questionnaire designed by the authors consisted of 9 questions and a metrics and allowed us to collect information on sociodemographic data and the perceived impact of the pandemic on health behavior.

The World Health Organization Quality of Life (WHOQoL-BREF) questionnaire in its Polish version contains 26 questions assessing one's quality of life over the past four weeks. The scores from the obtained responses are assigned to particular domains: somatic, psychological, social and environmental. Then the total score in each domain is modified according to the instructions and, subsequently, presented within the range from 4 to 20. The scores closer to 20 indicate a higher level of the respondent's quality of life. The first two questions are analyzed separately, as they deal with individual perceptions of the respondent's quality of life and their own health. Their score is presented on a scale from 1 to 5 [9].

In assessing health behaviors, the Health Behavior Inventory (IZZ) was used in the Polish adaptation by Z. Juczyński (with the consent of the Psychological Testing Laboratory). It consists of 24 statements allowing for the assessment of the overall intensity of health behaviors and their individual components (proper eating habits, preventive behaviors, health practices, and a positive mental attitude). In each question, the respondent could choose one of five answer options (1 — almost never, 2 — rarely, 3 — occasionally, 4 — often, and 5 — almost always). The overall health behavior intensity index ranges from 24 to 120 points — the higher the score, the greater the intensity of the declared behaviors. To determine the level of health behaviors, the number of

points obtained by the respondent was converted to a sten scale; a result of 1–4 sten scores indicated a low level, 5–6 sten scores — an average level, and a result in the range of 7–10 sten scores — a high level of health behaviors [10].

In order to conduct the research, a license was obtained to convert the questionnaire into an electronic version using a platform from the Google Documents package. The research tools were made available online through the Google Forms platform.

The survey was conducted in accordance with the principles of the Declaration of Helsinki. Participation in the study was voluntary. The actual questionnaire was preceded by information about the purpose and course of the study, the voluntariness of taking part in it and the possibility of resigning from participation at any time.

Statistical analysis was performed using RStudio, version 4.1.3. Statistical significance was assumed at $p < 0.05$. Kruskal-Wallis and Dunn's tests as well as Spearman's rank correlation coefficient were used for calculations.

There were 172 participants in total, but due to the fact that some respondents did not meet the group selection criterion, 11 of them were rejected. Finally, 161 people — 119 women (73.91%) and 42 men (26.09%) were qualified for further analysis. The average age of the subjects was 21.98 ± 2.09 years. Detailed socio-demographic characteristics of the subjects are shown in Table 1.

Table 1. Socio-demographic characteristics of the studied group.

Variable	Total (n = 161)	
	n	%
Sex		
Female	119	73.91
Male	42	26.09
Place of residence		
Village	62	38.51
Small town (up to 100 thousand residents)	15	9.32
Big city (from 100 thousand residents)	84	52.17
Education level		
Elementary education	0	0.00
Vocational education	4	2.48
Lower secondary education	8	4.97
Secondary education	87	54.04
Higher education bachelor's degree	53	32.92
Higher education master's degree	9	5.59
Residential situation		
Living alone in own flat/ house	5	3.11
Living in dormitory room	9	5.59
Living in rented room in apartment	23	14.29

Table 1. Cont.

Variable	Total (n = 161)	
	n	%
Living in rented flat	45	27.95
Living with parents	79	49.07
Material status		
Full financial self-reliance	66	40.99
Lack of financial self-reliance	95	59.01
Current employment situation		
Working person	21	13.04
Learner/student	76	47.20
Working student/learner	61	37.89
Unemployed	3	1.86

Source materials: Study based on the authors' own research.

Results

Respondents' health behaviors

The average value of the overall health behavior intensity index in the study group was 75.83 ± 13.9 . The results in each of the four categories of health behaviors remained at a similar level, which, according to the accepted interpretation, indicates that the study subjects undertook them from time to time. The details of the results obtained for health behaviors in the study group are shown in Table 2.

An analysis of the results revealed that 47.83% of the respondents had a low intensity of health behaviors, 40.37% had an average intensity, and the remaining 11.80% had a high intensity of health behaviors (Table 3).

Table 2. Respondents' health behaviors — descriptive statistics.

Variable	n	χ	SD	Me	Min.	Max.	Q1	Q3
IZZ — overall score	161	75.83	13.90	77.00	32.00	110.00	67.00	85.00
Proper dietary habits	161	2.95	0.81	3.00	1.33	4.83	2.33	3.50
Preventive behaviors	161	3.12	0.79	3.17	1.17	5.00	2.50	3.67
Positive mental attitude	161	3.26	0.77	3.33	1.17	4.83	2.83	3.83
Health practices	161	3.31	0.68	3.33	1.17	4.83	3.00	3.83

Source: study based on the results of own research.

Legend: n — number of subjects; χ — mean value; SD — standard deviation; Me — median; Min. — minimum value; Max. — maximum value; Q1 — first quartile; Q3 — third quartile.

Table 3. Respondents' health behaviors — interpretation of the results.

IZZ — range of the score obtained			Interpretation of the results		
F (n = 119)	M (n = 42)	F+M (n = 161)	Level	F+M (n = 161)	%
24–77	24–71	24–77	Low	77	47.83%
78–91	72–86	72–91	Intermediate	65	40.37%
92–120	87–120	87–120	High	19	11.80%

Source: study based on the results of own research.

Legend: n — number of respondents; F — female; M — male; % — percentage of respondents.

Quality of life of the subjects surveyed

The WHOQoL-BREF questionnaire used in the study provided insight into the degree of satisfaction with one's own health status and overall quality of life and also quality of life in terms of its individual domains, as detailed in Table 4.

Table 4. Quality of life of the subjects — descriptive statistics.

Variable	n	χ	SD	Me	Min.	Max.	Q1	Q3
Satisfaction with one's own state of health	161	3.69	0.93	4.00	1.00	5.00	3.00	4.00
General quality of life	161	3.87	0.81	4.00	1.00	5.00	3.00	4.00
Physical domain	161	15.18	2.65	16.00	7.00	20.00	13.00	17.00
Psychological domain	161	13.45	3.48	14.00	5.00	20.00	11.00	16.00
Social domain	161	14.32	3.93	15.00	4.00	20.00	12.00	17.00
Environmental domain	161	14.03	2.72	14.00	5.00	20.00	12.00	16.00

Source: study based on the results of own research.

Legend: n — number of subjects; χ — mean value; SD — standard deviation; Me — median; Min. — minimum value; Max. — maximum value; Q1 — first quartile; Q3 — third quartile.

The average of the scores received from the respondents regarding satisfaction with their own health was 3.69 ± 0.93 points. The majority of the respondents were satisfied (47.83%) or very satisfied (17.37%) with it. Those who were very dissatisfied with their own health accounted for 1.24% of the respondents (Fig. 1).

The average score of the respondents' subjective general quality of life was 3.87 ± 0.81 points. Interpretation of the obtained scores indicated that nearly half of the respondents rated their quality of life as good (49.07%), one in five considered their quality of life to be very good (21.74%), while no one rated it as very bad (Fig. 2).

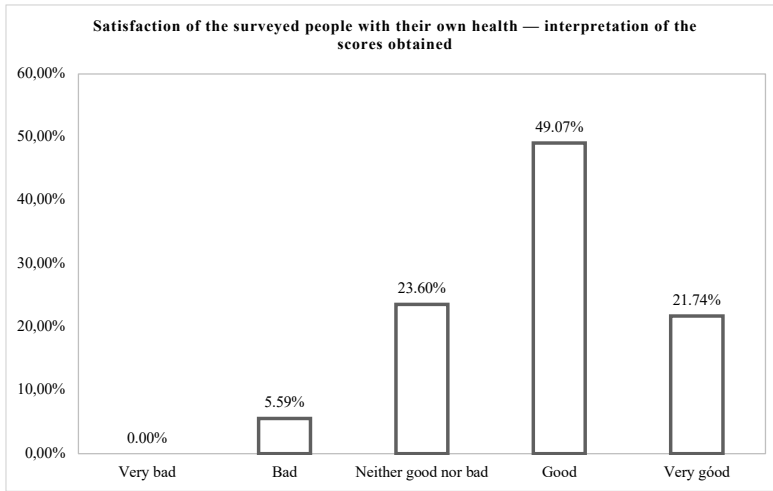


Fig. 1. Satisfaction of the surveyed people with their own health — interpretation of the scores obtained.

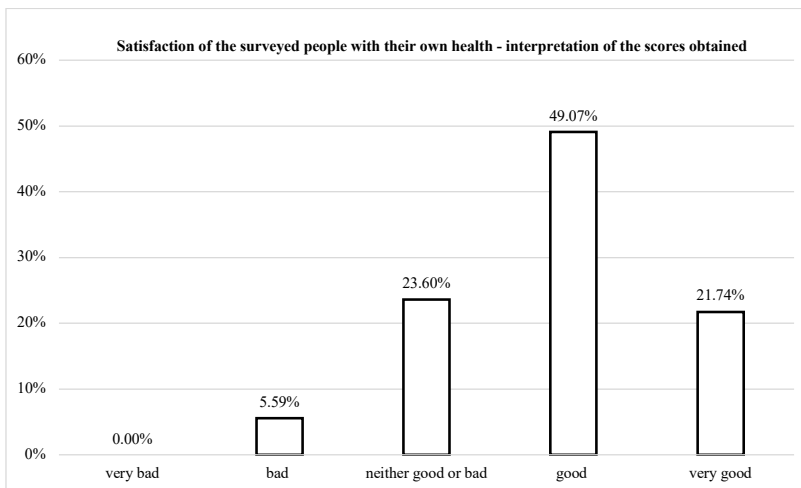


Fig. 2. Subjective general quality of life of the subjects — interpretation of the scores obtained.

Relationship between respondents' quality of life and their health behaviors

When examining the relationship between the quality of life and its individual domains and the respondents' health behaviors, it was shown that the higher the score achieved by the respondents in the IZZ, the higher their quality of life in each of its analyzed domains. The results were statistically significant. Similarly, the relationship between the respondents' quality of life and each area of health behavior was analyzed, as shown in Table 5.

Table 5. Relationship between respondents' quality of life and health behaviors.

WHOQoL-BREF	IZZ — overall score	r	p
	Satisfaction with one's own state of health	0.288	<0.001*
General quality of life	0.319	<0.001*	
Physical domain	0.322	<0.001*	
Psychological domain	0.466	<0.001*	
Social domain	0.426	<0.001*	
Environmental domain	0.427	<0.001*	
WHOQoL-BREF	IZZ — proper dietary habits	r	p
	Satisfaction with one's own state of health	0.097	0.222*
General quality of life	0.210	0.008*	
Physical domain	0.190	0.016*	
Psychological domain	0.268	0.001*	
Social domain	0.207	0.009*	
Environmental domain	0.204	0.010*	
WHOQoL-BREF	IZZ — preventive behaviors	r	p
	Satisfaction with one's own state of health	0.176	0.026*
General quality of life	0.171	0.030*	
Physical domain	0.172	0.030*	
Psychological domain	0.303	<0.001*	
Social domain	0.291	<0.001*	
Environmental domain	0.292	<0.001*	
WHOQoL-BREF	IZZ — positive mental attitude	r	p
	Satisfaction with one's own state of health	0.495	<0.001*
General quality of life	0.473	<0.001*	
Physical domain	0.449	<0.001*	
Psychological domain	0.621	<0.001*	
Social domain	0.581	<0.001*	
Environmental domain	0.566	<0.001*	
WHOQoL-BREF	IZZ — health practices	r	p
	Satisfaction with one's own state of health	0.187	0.017*
General quality of life	0.144	0.069*	
Physical domain	0.193	0.014*	
Psychological domain	0.261	0.001*	
Social domain	0.251	0.001*	
Environmental domain	0.289	<0.001*	

Source: study based on the results of own research.

Legend: p — significance level; r — Spearman correlation coefficient; * — statistically significant relationship.

Impact of pandemic on respondents' health behaviors and their quality of life

Nearly half (42.86%) of the respondents found it difficult to determine whether the pandemic had an impact on their health behavior, with one in five indicating that the pandemic had no impact on them. The negative impact of the pandemic on health behavior was evident in 28.57%. The respondents were asked to indicate the strength of the negative impact of the pandemic on their health behavior on a scale ranging from 1 (least) to 5 (most). The average score was 3.33 ± 1.11 . As for the negative health behaviors caused by the pandemic, respondents most often indicated neglecting physical activity — 44.72%, neglecting regular checkups and follow-up visits to the doctor — 33.54%, 28.57% of respondents did not follow a proper diet, and 18.63% admitted to excessive alcohol consumption. The least frequently mentioned negative behavioral changes included neglect of hygiene — 3.11%, smoking — 5.59%, and in a few cases: lack of sleep hygiene, fewer hours of sleep due to work commitment, deterioration of work hygiene, isolation due to/or causing anxiety.

Nearly one in ten respondents (9.32%) observed a positive impact of the pandemic on their health behavior. Among the positive health behavior changes during the COVID-19 pandemic, respondents most often mentioned body observation and increased hygiene as a positive health-promoting implication (49.69%). The second most positive behavioral change was taking up some physical activity (22.98%). A similar percentage of respondents (18.01%) began following a healthy diet. Individuals started vitamin D supplementation, took care of their rest and sleep hygiene, and limited contact with sick people.

Nearly half of the respondents (47.20%) experienced an increase in negative emotions, increased fatigue (45.96%) and impaired memory and/or concentration (43.48%) due to the pandemic. The least common symptom according to respondents was weight loss 11.80%, while its increase was noticed by one in three respondents (31.68%). The same percentage of respondents complained of impaired vision. The respondents also declared the onset of back pain (37.89%), muscle pain (27.33%) and joint pain (21.12%) due to the COVID-19 pandemic.

Respondents were also asked to determine what impact the COVID-19 pandemic had on their physical, mental, social and environmental quality of life. The detailed responses of respondents are illustrated in Fig. 3.

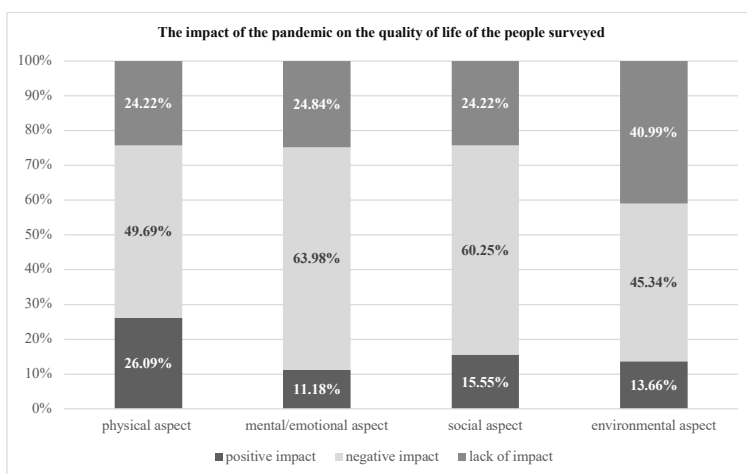


Fig. 3. The impact of the pandemic on the quality of life of the people examined.

Discussion

The COVID-19 pandemic and the socioeconomic changes which it caused have had a major impact on health in all its dimensions, which, consequently, has affected functioning, well-being as well as the quality of life of people around the world. According to many authors, the numerous changes and restrictions forced by the pandemic affected especially those who were previously fully active and engaged in studying, that is, young people [11].

Our study assessed health behaviors and the quality of life in a group of young adults during the pandemic and attempted to determine a relationship between these two. The analysis of health behaviors showed in almost half of the respondents the scores indicating low (47.83%) or average (40.37%) intensity of health-promoting behaviors overall, while results indicating high overall intensity of health behaviors were reported by only one in ten people (11.80%). Similar results were obtained by Kupcewicz *et al.* in a study involving 894 nursing students. The authors discovered that in almost half of the respondents (48.43%) the obtained results indicated low intensity of health-promoting behaviors in general, while results indicating high overall intensity of health behaviors were found in only 14.77% of the respondents [3]. Similar results were also obtained by Radosz *et al.* who conducted a study in a group of 290 students of three medical faculties: midwifery (N = 90), physiotherapy (N = 99) and nursing (N = 101). The overall index of health behavior intensity in the group of nursing and midwifery students was higher than in our study, with 78.12 and 77.74 points, respectively. However, analyzing the components of the IZZ, the authors discovered a significantly lower intensity of preventive behaviors ($p = 0.004$) in the group of physiotherapy students than in the group of midwifery and nursing students [12]. In our study, the intensity of health behaviors in the abovementioned category ranked at 3.12. However, it is worth noting that in the study in question, a higher overall intensity of health behaviors was observed in the group of medical students, and especially in the group of nursing students [3, 12]. Although nursing students may have experienced negative effects of the COVID-19 pandemic related to the need to comply with the new guidelines as well as they may have suffered from the effects of the pandemic on their own health, the fact that they were receiving training to prepare for a medical profession may have been a determining factor for obtaining a higher overall intensity of health behaviors than it could be observed in the case of those studying other subjects or with less education. On the other hand, the study carried out in a group of 111 high school students showed a low level of health behavior, which, according to the authors, could be caused by a lack of awareness of the dangers of the COVID-19 pandemic and the consequences of activities undertaken or abandoned during this period [13].

It is also disturbing that in our survey, with the average age of 21.98, almost one in three respondents (28.57%) noticed a negative impact of the pandemic on the health behaviors they undertook. Respondents most often reported neglecting physical activity, regular checkups and follow-up visits to the doctor, adherence to a healthy diet, and 18.63% admitted to excessive alcohol consumption. Also, a survey of Canadians conducted during the first months of the pandemic, indicated an increase in fast-food consumption in 25% of people and increased alcohol consumption in 14%. According to the authors, negative health behaviors, such as increased alcohol consumption, may be a coping mechanism in response to the difficulties associated with the socioeconomic changes that emerged, particularly the experience of job insecurity, changes in daily routine or a sense of uncertainty [14]. On the other hand, the observed negative changes in health behavior may have long-term consequences for health, especially in terms of the future incidence

of numerous diseases, including metabolic, musculoskeletal and atherosclerotic cardiovascular diseases [15–17].

Changes in lifestyle-related health behaviors can also determine the quality of life [1]. Currently, many authors confirm in their studies the negative impact of the COVID-19 pandemic on various domains of the quality of life [1, 18]. In a study carried out in a group of adolescents aged 11–19 and attending high schools and colleges in Norway, Lehmann *et al.* showed lower, in comparison to pre-pandemic European norms, scores in all dimensions of the quality of life in the first weeks of the national lockdown, with the exception of the dimension of autonomy and relationship with parents. Scores related to physical and psychological well-being declined even further during the following nine-month pandemic period [18]. In our study, the respondents rated their quality of life as good, which was reflected in the individual quality-of-life domains assessed. They rated the physical domain best (mean score of 15.18), and the psychological domain worst (mean score of 13.45). At the same time, according to the respondents, the pandemic most severely affected their quality of life in the psychological sphere — as many as 63.98% of the respondents believed that it had a negative impact on this area. This is reflected in the intensification of negative emotions in 47.20% of respondents, deterioration of memory or concentration in 43.48%, or anxiety disorders in 22.36% observed, according to the respondents, since the beginning of the pandemic. Researchers point to a significant impact of COVID-19 on mental health, which mainly affected young people (18–24 years old), which may have been, among other things, the result of the introduction of social isolation policies in many countries, i.e. limiting opportunities for direct “face-to-face” contact [19]. It is also worth noting that a significant proportion of people in the pandemic era were significantly more likely to feel sadness or a sense of hopelessness compared to the pre-pandemic period [20].

Our study showed a statistically significant positive correlation between health behaviors and the overall quality of life as well as the quality of life in all its particular domains observed among the respondents. The more intense the health behaviors were, the better the subjective assessment of the respondents’ quality of life turned out to be. Another study conducted in a group of 796 students also found a positive correlation between health behaviors and the quality of life among study participants. In addition, it was shown that the category of health behavior described as positive mental attitude was an important predictor of participants’ quality of life [1].

Conclusions

1. The results obtained for almost half of the respondents indicated low or average intensity of health-enhancing behaviors in general.
2. The quality of life in the study group was assessed as good. The physical domain of quality of life was the best rated by the respondents, while the psychological domain was the worst.
3. There was a positive correlation between the overall intensity of health behaviors and the quality of life both in general and in its particular domains.

Authors’ contributions

E.K.-K. — concept and realization of the study, development of the methodological and results part, substantive proofreading; I.K. — participation in the preparation of the paper, development of the discussion; I.Ś. — concept and realization of the study; M.P. — author of the introduction

and summary of the work; P.O.-G. — participation in the development of the paper concept, proofreading, and editorial control; J.S. — development of the methodological, substantive proofreading, translation proofreading, text edition.

Fundings

The study and paper were funded from our own resources.

Conflict of interest

None declared.

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