BIBLIOTEKA REGIONALISTY
REGIONAL JOURNAL

Daniel Puciato

Opole University of Technology
e-mail: d.puciato@po.edu.pl
ORCID: 0000-0002-2390-6038

HEALTH-RELATED QUALITY OF LIFE OF UNIVERSITY STUDENTS FROM WROCŁAW

JAKOŚĆ ŻYCIA ZWIĄZANA ZE ZDROWIEM STUDENTÓW Z WROCŁAWIA

Summary: The aim of the study is to assess health-related quality of life among students from Wrocław, Poland. The research was carried out in 2014 and 2015. The study sample consisted of 637 people (441 women, 196 men). The main research method used in the study was a diagnostic survey poll. The research tool was the World Health Organization Quality of Life (WHOQOL BRIEF) questionnaire. The results of the study showed that the majority of the surveyed students assessed their health-related quality of life as average. Mean scores for overall health-related quality of life, perceived health condition, and quality of life in the physical, psychological, social and environmental domains were higher among men than women. Among all the respondents, significant differences in quality of life ratings were also noted in individual domains. The respondents rated their health-related quality of life in the social domain as the highest, and in the physical domain as the lowest.

Keywords: health-related quality of life, state of health, students.

Streszczenie: Celem pracy jest diagnoza jakości życia związanej ze zdrowiem wśród studentów z Wrocławia. Badania do pracy przeprowadzono w latach 2014 i 2015. Materiał badań liczył 637 osób (441 i kobiet i 196 mężczyzn). Główną metodą badawczą wykorzystaną w pracy był sondaż diagnostyczny – technika ankietowa. Narzędziem badawczym był kwestionariusz The World Health Organization Quality of Life – WHOQOL BRIEF. Analiza wyników przeprowadzonych badań wykazała, że większość ankietowanych studentów średnio oceniała jakość swojego życia zależną od zdrowia. Średnie oceny ogólnej jakości życia związanej ze zdrowiem, zadowolenia z własnego stanu zdrowia oraz jakości życia w domenach: fizycznej, psychicznej, społecznej i środowiskowej były wyższe u badanych mężczyzn, w porównaniu z kobietami. Wśród badanych odnotowano także istotne różnice w oce-

nach jakości życia w poszczególnych domenach. Respondenci najwyżej ocenili jakość swojego życia w domenie społecznej, a najniżej w domenie fizycznej.

Słowa kluczowe: jakość życia związana ze zdrowiem, stan zdrowia, studenci.

1. Introduction

Quality of life is one of the most important conceptual categories in modern social sciences (Dąbrowska, 2017). According to Borys (2015), quality of life should be the overarching goal of every human being and every local, regional, national and international community. This is due to two key functions that quality of life fulfils (Kramer, 2011). Firstly, despite the problems with its objective measurement indicated, for example, by Ostasiewicz (2002), quality of life is often treated as a measure of happiness. Secondly, it is a factor of change related to the currently dominant theorem of sustainable, stable, and self-supporting development (Borys, 2011).

According to Słaby (2012), quality of life is a synthesis of welfare and well-being and it involves multiple dimensions of human life, e.g. economic, social, health, etc., as well as a number of other aspects. There are many definitions of quality of life in literature (Borys, 2015; Ostasiewicz, 2002; Weak, 2012). However, considering the research problem and the research tool in the present study, the most appropriate definition is the one formulated by the WHO: "The quality of life is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" (WHOQOL Group, 1995).

A key research problem in terms of cognition and application is the measurement not only of overall (general) quality of life, but also of its specific types and domains. Particularly noteworthy is the subjective health-related quality of life assessment because health status is one of the most important determinants of well-being for both healthy and sick people (Rėklaitienė, Bacevičienė, and Andrijauskas, 2009; Opoku-Boateng et al., 2017).

The results of the latest epidemiological studies show that diseases of affluence, mainly related to psychosomatic disorders, are increasingly common among young people (Artamonova et al., 2019; Gazibara et al., 2018). So far, however, the issues of health-related quality of life in relation to Polish students have been addressed relatively rarely in empirical research (Struzik, 2009; Turosz, 2011). The main focus has been on elderly and sick people. Bridging this research gap is one of the main tasks of this study, which aims at diagnosing health-related quality of life among university students from Wrocław. Two specific research problems were formulated:

1. Is gender related to the respondents' assessment of their quality of life?
2. What are the differences in the respondents' assessment of their quality of life in the physical, psychological, social, and environmental domains?

2. Methodological basis

2.1. Methods

The study was carried out in 2014 and 2015 in Wrocław. The research project was given a positive opinion by the Commission of Bioethics at the University of Physical Education in Wroclaw. The main research method was a diagnostic survey. The adopted research tool was the World Health Organization Quality of Life – WHOQOL BRIEF (WHOQOL Group, 1995) questionnaire. Answers to particular questionnaire items were given by respondents on a scoring scale. For the purpose of achieving the study goal, the general quality of life index was additionally expressed by means of a nominal scale. To this end, the results obtained on the point scale (1-5 points) were converted to sten scores (from 1 to 10) according to the following formula:

$$S = 5.5 + 2 \times ZZ,$$

where: S – the value of the input variable after transformation, ZZ – values of the input variable after standardization to the mean and standard deviation.

Then, on the basis of the sten scores, the respondents were classified into groups differing in their assessment of overall health-related quality of life. The following sten score ranges were adopted: ≤ 3 sten scores − low quality of life; 4-7 sten scores − average quality of life; ≥ 8 sten scores − high quality of life. The obtained data were ordered and analyzed. The main measures were: number (n) and percent (%) in categories of the analyzed variables. Arithmetic means (M), standard deviation (SD), and mean ranks ($MR)$ were also calculated. The significance of the differences between the quality of life indicators in gender-differentiated groups was verified using the Mann-Whitney test. Cohen's index (r) was used as a measure of the size of effect of gender on quality of life. Differences in quality of life in particular domains were assessed using the Friedman test. *Post-hoc* comparisons of mean ranks were made with Dunn's test with the Bonferroni correction. The Kendall rank correlation coefficient (W) was used as a measure of the differences in the quality of life in the physical, psychological, social, and environmental domains. Statistical analysis was carried out at the level of significance of $\alpha < 0.05$ using the IBM SPSS Statistics 20.0 software package (IBM Corporation, Armonk, NY, USA). The obtained data were presented in tables, in total and by gender.

2.2. Material

The full study material comprised 4,332 people (2,276 women and 2,056 men) aged 18-64. This constituted about 1% of the working-age population of Wrocław. The sample selection was random using a three-level stratification. First, with the use of a random number table, ten residential areas were selected from all the alphabetically ordered Wrocław areas. Next, three streets from each selected residential area were chosen, whose residents were asked to fill in the questionnaire. The number of respondents from particular residential areas was proportionate to the number of residents of these areas. Among all the respondents, 637 people were interviewed, comprising 441 women and 196 men, who were university students. The characteristics of the respondents with respect to age, education, and marital status are presented in Table 1.

Table 1. Characteristics of Wrocław university students

Variable	Total ($n = 637$)		Women ($n = 441$)		Men ($n = 196$)	
	n	$\%$	n	$\%$	n	$\%$
Age						
Under 30 years	508	79.7	333	75.5	175	89.3
Over 30 years	129	20.3	108	24.5	21	10.7
Education						
Secondary	592	92.9	419	95.0	173	88.3
Higher	45	7.1	22	5.0	23	11.7
Marital status						
Single	528	82.9	355	80.5	173	88.3
Married	109	17.1	86	19.5	23	11.7

Notes: n – number of respondents, % – percent of respondents.

Source: author's own elaboration.

3. Results

When measuring the overall health-related quality of life according to the adopted criteria, it was noted that 86.7% of respondents − 81.6% of women and 97.4% of men, assessed it as average; 10.4% − 15% of women, as high; and 3% − 3.2% of women and 2.6% of men as low. Over 80% of all the respondents, comprising 76.6% of women and 92.3% of men, were on average satisfied with their perceived state of health. A low level of satisfaction with one's own health condition was declared by one in ten, and a high level by one in eight surveyed students from Wrocław. Also

in the case of particular quality of life domains, i.e. physical, psychological, social, and environmental, average scores prevailed. In this way, almost 90% of respondents assessed their quality of life in the above mentioned domains (Table 2).

Table 2. Self-assessment of health-related quality of life by university students from Wrocław

Variable	Total ($n = 637$)		Women ($n = 441$)		Men ($n = 196$)	
	n	%	n	%	n	%
Overall quality of life						
Low	19	3.0	14	3.2	5	2.6
Average	552	86.7	361	81.9	191	97.4
High	66	10.4	66	15.0	–	–
Perceived state of health						
Low	64	10.0	49	11.1	15	7.7
Average	519	81.5	338	76.6	181	92.3
High	54	8.5	54	12.2	–	–
Quality of life – physical domain						
Low	51	8.0	32	7.3	19	9.7
Average	556	87.3	397	90.0	171	87.2
High	30	4.7	12	2.7	6	3.1
Quality of life – psychological domain						
Low	40	6.3	28	6.3	25	12.8
Average	555	87.1	369	83.7	154	78.6
High	42	6.6	44	10.0	17	8.7
Quality of life – social domain						
Low	43	6.8	26	5.9	13	6.6
Average	555	87.1	376	85.3	183	93.4
High	39	6.1	39	8.8	–	–
Quality of life – environmental domain						
Low	43	6.8	27	6.1	16	8.2
Average	562	88.2	380	86.2	171	87.2
High	32	5.0	34	7.7	9	4.6

Notes: n – number of respondents, % – percent of respondents. Quality of life scores: low – below –1 on Z scale (≤ 3 sten scores), average – from –1 to 1 on Z scale (4-7 sten scores), high – above 1 on Z scale (≥ 8 sten scores).

Source: author's own elaboration.

The analysis of mean values of health-related quality of life assessments in groups by gender indicates statistically significant differences between them. On average, men were characterized by a higher overall quality of life (4.0 ± 0.8 pts.)

than women (3.8 ± 0.7 pts.). The Mann Whitney test results (Z = –2.0, p = 0.048) indicate that the mean scores for the overall health-related quality of life for both sexes differ significantly in favour of men. The mean value of perceived state of health was 3.7 ± 0.9 pts. for the men and 3.5 ± 0.8 pts. for the women. The differences in perceived state of health between both genders were also statistically significant (Z = –2.4, *p* = 0.015). In the case of average health-related quality of life in the physical (12.7 ± 1.6 pts. in men, 12.3 ± 1.9 pts. in women), psychological (14.4 ± 2.2 pts. in men, 13.8 ± 2.1 pts. in men), social (16.1 ± 2.7 pts. in men, 15.5 ± 2.6 pts. in women) and environmental (14.1 ± 2.1 pts. in men, 13.5 ± 2.2 pts. in women) domains, statistically significant differences were observed between the sexes in favor of men (*p* < 0.05).

The size of effect of gender on the health-related quality of life (*r*) in the study group ranged from –0.18 to –0.10. This means that gender had a small but significant effect on the assessment of the quality of life domains of interviewed Wrocław university students (Table 3).

Table 3. Differences in health-related quality of life in Wrocław university students by gender

Variable	Sex	*M*	*SD*	*MR*	*Z*	*p*	*r*
Overall quality of life [pts.]	Women (*n* = 441)	3.8	0.7	310.4	–2.0	0.048	–0.10
	Men (*n* = 196)	4.0	0.8	338.3			
Perceived state of health [pts.]	Women (*n* = 441)	3.7	0.9	308.4	–2.4	0.015	–0.13
	Men (*n* = 196)	3.9	0.8	342.9			
Quality of life – physical domain [pts.]	Women (*n* = 441)	12.3	1.9	307.5	–2.4	0.018	–0.12
	Men (*n* = 196)	12.7	1.6	344.8			
Quality of life – psychological domain [pts.]	Women (*n* = 441)	13.8	2.1	304.1	–3.1	0.002	–0.16
	Men (*n* = 196)	14.4	2.2	352.4			
Quality of life – social domain [pts.]	Women (*n* = 441)	15.5	2.6	306.1	–2.7	0.007	–0.14
	Men (*n* = 196)	16.1	2.7	348.1			
Quality of life – environmental domain [pts.]	Women (*n* = 441)	13.5	2.2	301.9	–3.5	<0.001	–0.18
	Men (*n* = 196)	14.1	2.1	357.4			

Note: *M* – arithmetic mean, *SD* – standard deviation, *MR* – mean ranks, *Z* – U Mann-Whitney test value, *p* – probability level Z, *r* – effect size ($r = Z/\sqrt{n}$), where *r* = 0.1 – small, *r* = 0.3 – medium, *r* = 0.5 large effect (Cohen, 1988).

Source: author's own elaboration.

The results of the Friedman test ($\chi2$ = 747.3 for all respondents; $\chi2$ = 510.0 for women; $\chi2$ = 237.6 for men) and the probability level (*p* < 0.001) indicate that the mean ranks of health-related quality of life assessments in individual domains differ significantly from each other. *Post-hoc* comparisons with Dunn's test with the

Bonferroni correction between groups showed that for all respondents statistically significant differences ($p < 0.001$) occurred between quality of life assessments in the physical domain and quality of life assessments in other domains, and between quality of life assessments in the psychological and social domains, as well as the social and environmental domains. Similar differences were observed separately in the groups of women and men.

The Kendall rank correlation coefficient values ($W = 0.39$ for all respondents and for women; $W = 0.4$ for men) indicate the occurrence of average and significant impact of physical, psychological, social, and environmental domains on the quality of life of the Wrocław students (Table 4).

Table 4. Differences in health-related quality of life of university students from Wrocław by domain

Quality of life	M	SD	MR	χ^2	p	W	Post-hoc comparisons of mean ranks with Dunn's test with the Bonferroni correction			
							Physical domain	Physical domain	Physical domain	Physical domain
Total ($n = 637$)										
Physical domain	12.4	1.8	1.5	747.3	<0.001	0.39	1	<0.001	<0.001	<0.001
Psychological domain	14.0	2.2	2.6					1	<0.001	0.440
Social domain	15.7	2.6	3.5						1	<0.001
Environmental domain	13.7	2.2	2.4							1
Women ($n = 441$)										
Physical domain	12.3	1.9	1.5	510.0	<0.001	0.39	1	<0.001	<0.001	<0.001
Psychological domain	13.8	2.1	2.5					1	<0.001	1.000
Social domain	15.5	2.6	3.5						1	<0.001
Environmental domain	13.5	2.2	2.4							1
Men ($n = 196$)										
Physical domain	12.7	1.6	1.5	237.6	<0.001	0.40	1	<0.001	<0.001	<0.001
Psychological domain	14.4	2.2	2.6					1	<0.001	0.989
Social domain	16.1	2.7	3.5						1	<0.001
Environmental domain	14.1	2.1	2.4							1

Note: M – arithmetic mean, SD – standard deviation, MR – mean ranks, $\chi 2$ – Friedman test, p – probability level $\chi 2$, W – effect size ($W = \chi 2/n(k-1)$), where $W = 0.1$ – small, $W = 0.3$ – medium, $W = 0.5$ – large (Cohen, 1988).

Source: author's own elaboration.

4. Discussion

The study results show that the majority of the surveyed students from Wrocław assessed their health-related quality of life as average. Similar observations were made by Turosz (2011) in her study of students of the University of Physical Education in Warsaw. Almost half of the students surveyed by Turosz assessed their quality of life as average. However, among the Warsaw respondents there were more high scores. This may be due to several reasons. Firstly, Turosz took into account only full-time students who were on average younger than the respondents from Wrocław. Secondly, in both studies different rules of classification of respondents were applied to particular categories of quality of life assessments. Thirdly and finally, Turosz considered only students of a sports university, and not as in the present survey, students of various universities. Average, health-related quality of life was also self--assessed by American dental students interviewed by Andre, Pierre and McAndrew (2017). Nursing students from nine countries surveyed by Cruz et al. (2018) reported similar values of health-related quality of life indicators in the particular domains to those interviewed in Wrocław.

Among the surveyed male students in Wrocław, the mean values of the following indicators were significantly higher than among the female students: overall health-related quality of life, perceived state of health, and quality of life in the physical, psychological, social, and environmental domains. The results of earlier studies in this respect were not uniform. Al-Fayez and Ohaeri (2011) also achieved higher quality of life scores for men than for women in their study conducted in Kuwait. Strózik (2009), who surveyed students from twelve Poznań universities, noticed a higher percentage of respondents who rated their quality of life as high in the group of women, while the percentage of those who assessed their quality of life as average was similar in both gender groups. Andre, Pierre and McAndrew (2017) reported a higher quality of life related to women's health than to men's in their study, but only in the social domain. However, Turosz (2011) and Cruz et al. (2018) reported no significant gender differences in their quality of life assessments.

The respondents in the study rated their health-related quality of life in the social domain the highest, and in the physical domain the lowest. In both cases, the mean values were statistically significantly different from the mean values of quality of life ratings in the other quality of life domains; also in this case, the results of previous studies were not unambiguous. Mao et al. (2018) reported results analogous to those in the present study. The surveyed nursing students from Hong Kong also gave the highest scores to the quality of life in the social domain and the lowest in the physical domain. In some other studies, different results were obtained. The environmental domain was rated the highest and the social domain the lowest by medical students from Chile (Irribarr et al., 2018), dental students from Saudi Arabia (Al-Shibani and Al-Kattan, 2019), and students of various majors from Kuwait (Al-Fayez and Ohaeri, 2011). Andre, Pierre and McAndrew (2017) and Cruz et al. (2018), on the

other hand, reported the results of studies in which the highest mean values of quality of life indicators were found in the physical domain and the lowest in the social or psychological domains.

The presented study has its strengths and weaknesses. Among the strengths of the paper are its subjective and objective research scopes. University students, especially from Poland, have rarely been the subject of earlier studies on health--related quality of life. So far, part-time students have not been considered either, and the authors focused exclusively on full-time students. The weakness of the paper is the limited spatial scope (a single city) and lack of representativeness for the population of Wrocław students. All the observations and conclusions in the article refer only to the students participating in the questionnaire survey.

Concerning the conducted research, some issues have also appeared which, in the author's opinion, should become the subject of further considerations. In future studies it will become necessary to extend the spatial scope to other local and regional subpopulations and to the national population. The problem of health-related quality of life determinants also seems to be interesting in terms of cognition and application. Apart from the type of university, specialisation and mode of study, as well as socio-economic factors, a significant group of potential modifiers of health--related quality of life is lifestyle, which has already been proven in these authors' earlier work (Puciato, Borysiuk and Rozpara, 2017; Puciato, Rozpara and Borysiuk, 2018). A future research approach worth recommending is also the measurement of objective parameters of health status and the identification of potential correlations with its subjective evaluation.

5. Conclusions

Analysis of the results of empirical research carried out showed that the vast majority of the surveyed university students from Wrocław assessed their health-related quality of life as average. The mean scores for overall health-related quality of life, perceived state of health and quality of life in the physical, psychological, social, and environmental domains were higher in the surveyed men than in the surveyed women. Among the respondents, significant differences in quality of life ratings were noted in particular domains. The highest average ratings were recorded in the social domain, and the lowest in the physical domain. In the case of the interviewed Wrocław students, it is particularly desirable, in terms of application, to urge public health entities to address to young people various activities related to the modelling of health-related quality of life in the physical domain.

References

Al-Fayez, G., and Ohaeri, J. (2011). Profile of subjective quality of life and its correlates in a nation-wide sample of high school students in an Arab setting using the WHOQOL-Bref. *BMC Psychiatry*, *11*(71). doi: 10.1186/1471-244X-11-71

Al-Shibani, N., and Al-Kattan, R. (2019). Evaluation of quality of life among dental students using WHOQOL-BREF questionnaire in Saudi Arabia: A cross sectional study. *Pakistan Journal of Medical Sciences*, *35*(3), 668-673. doi: 10.12669/pjms.35.3.213

Andre, A., Pierre, G. and McAndrew, M. (2017). Quality of life among dental students. A survey study. *Journal of Dental Education*, *81*(10), 1164-1170. doi: 10.21815/JDE.017.074

Artamonova, S., Ammosova, A., Zakharova, N., Markova, S., Stepanova, L., and Handy, M. (2019). Psychoemotional state and condition of the vegetative nervous system of adolescents in Yakutsk. *Yakut Medical Journal*, 1, 112-114, doi: 10.25789/YMJ.2019.65.34

Borys, T. (2011). Sustainable development. How to recognize integrated order. *Problemy Ekorozwoju*, *6*(2), 75-81.

Borys, T. (2015). Typologia jakości życia i pomiar statystyczny. *Wiadomości Statystyczne*, (7), 1-18.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale NJ: Lawrence Erlbaum.

Cruz, J., Rhe, F., Reynaldo, F., Lam, S., Contreras, F., Cecily, H., Papathanasiou, I., Fouly, H., Kamaui, S., Valdez, G., Adams, K., and Colet, P. (2018). Quality of life of nursing students from nine countries: A cross-sectional study. *Nurse Education Today*, (66), 135-142. doi: 10.1016/j.nedt.2018.04.016

Dąbrowska, A. (2017). Jakość życia – aspekty definicyjno-badawcze. *Rozprawy i Studia Uniwersytetu Szczecińskiego*, (981), 11-18.

Gazibara, T., Pekmezovic, T., Popovic, A., Paunic, M., and Kisic-Tepavcevic, D. (2018). Chronic diseases among university students: Prevalence, patterns and impact on health-related quality of life. *Vojnosanitetski Pregled*, 75, (12), 1178-1184. doi: 10.2298/VSP160920050G

Irribarr, L., Mery, P., Lira, M., Campos, M., González, F., and Irarrázaval, S. (2018). Quality of life scores among 411 medical students. *Revista Medica De Chile*, (146), 1294-1303.

Kramer, J. (2011). Konsumpcja – ewolucja ról i znaczeń. *Konsumpcja i Rozwój*, (1), 5-15.

Mak, Y., Kao, A., Tam, L., Tse, V., Tse, D., Leung, D. (2018). Health promoting lifestyle and quality of life among Chinese nursing students. *Primary Health Care Research & Development*, (19), 629-636. doi: 10.1017/S1463423618000208

Opoku-Boateng, Y., Kretchy, I., Aryeetey, G., Dwomoh, D., Decker, S., Agyemang, S., Tozan, Y., Aikins, M., and Nonvignon, J. (2017). Economic cost and quality of life of family caregivers of schizophrenic patients attending psychiatric hospitals in Ghana. *BMC Health Services Research*, *17*(2), 697. doi: 10.1186/s12913-017-2642-0

Ostasiewicz, W. (Ed.). (2002). *Metodologia pomiaru jakości życia*. Wrocław: Wydawnictwo Akademii Ekonomicznej we Wrocławiu.

Puciato, D., Borysiuk, Z., and Rozpara, M. (2017). Quality of life and physical activity in an older working-age population. *Clinical Interventions in Aging*, (12), 1627-1634. doi: 10.2147/CIA.S144045

Puciato, D., Rozpara, M., and Borysiuk, Z. (2018). Physical activity as a determinant of quality of life in working-age people in Wrocław. Poland. *International Journal of Environmental Research and Public Health*, *15*(4), 623. doi: 10.3390/ijerph15040623

Reklaitiene, R., Baceviciene, M., and Andrijauskas, K. (2009). Quality of life in Lithuanian population: the impact of country residence and socio-economic status. *Central European Journal of Medicine*, *4*(4), 476-482. doi: 10.2478/s11536-009-0058-x

Słaby, T. (2012). *Quality of life of the emerging upper class in Poland*. Warszawa: Oficyna Wydawnicza SGH.

Strózik, T. (2009). *Uwarunkowania jakości życia młodzieży akademickiej*. Poznań: Uniwersytet Ekonomiczny w Poznaniu.

Turosz, M. (2011). Personal resources and deficits vs. quality of life of students from the University of Physical Education in Warsaw. *Problemy Higieny i Epidemiologii*, *92*(2), 204-210.

WHOQOL Group. (1995). The World Health Organisation Quality of Life Assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine*, (41), 1403-1409.