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Quality of Life of Older Residents of the Grodno Region: Sex- and Residence-Specific Aspects

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ABSTRACT

BACKGROUND: The population of the Republic of Belarus belongs to the demographically old type, and with the increase in average life expectancy, the trend of population aging is expected to persist. An objective assessment will help identify reserves for improving quality of life and fully realize the potential of individuals aged 60 years and older.

AIM: The work aimed to analyze sex-related and territorial (urban vs rural) differences in quality of life, using the population of the Grodno Region aged 60 years and older as an example.

METHODS: Based on a representative database of the Grodno Region, an analysis of quality of life among individuals aged 60+ was performed, taking into account sex and place of residence. Descriptive, parametric, and non-parametric statistical methods were applied.

RESULTS: The overall quality of life score was $64.48\% \pm 0.9\%$ in men and $64.13\% \pm 0.63\%$ in women ($p > 0.05$ for sex-related differences). Urban residents rated their quality of life higher ($64.77\% \pm 0.61\%$) compared to rural residents ($63.24\% \pm 0.97\%$), which was due to a larger proportion of individuals with higher scores and a smaller proportion with average scores of perceived quality of life. The differences were mainly associated with the domains of Physical and Psychological Well-being and Self-perception, to a lesser extent with Social Well-being, whereas Microsocial Support showed no differences between urban and rural residents. The domain Physical and Psychological Well-being demonstrated the lowest values (95% CI $61.52\% \pm 0.55\%$), without gender differences but with lower scores among rural residents: $60.47\% \pm 1.04\%$ vs $62.05\% \pm 0.64\%$ in urban residents. The Self-perception domain values were $64.89\% \pm 0.59\%$ in urban residents and $62.91\% \pm 1.0\%$ in rural residents.

CONCLUSION: The absence of sex-related differences in perceived quality of life in old age indicates equality between men and women regarding factors influencing subjective well-being. Lower overall quality of life scores among rural residents require detailed analysis of underlying causes. It is reasonable to assume that improving self-perception among individuals aged 60+ is possible through the creation of micro- and macro-social environments that promote physical independence and autonomy. In addition to state support, measures of social partnership are necessary. Marketing strategies in Belarusian society should increasingly target the older consumer, whose potential must be maximized under conditions of demographic aging.

Keywords: older adults; Grodno Region; Republic of Belarus; quality of life; sex-related differences; residential differences.

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ОРИГИНАЛЬНОЕ ИССЛЕДОВАНИЕ

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Качество жизни пожилых жителей Гродненской области: гендерный и территориальный аспекты

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АННОТАЦИЯ

Обоснование. Население Республики Беларусь относится к демографически старому типу, и в связи с ростом средней ожидаемой продолжительности жизни прогнозируется сохранение тенденции постарения. Объективная оценка позволит выявить резерв роста качества жизни и в полной мере реализовать потенциал лиц в возрасте 60 лет и старше.

Цель исследования. На примере населения Гродненской области проанализировать гендерные и территориальные (город — село) различия в качестве жизни лиц в возрасте 60 лет и старше.

Методы. На основе репрезентативной базы данных Гродненской области выполнен анализ качества жизни лиц в возрасте 60+ с учётом пола и места проживания. Для статистической обработки применены методы описательной, параметрической и непараметрической статистики.

Результаты. Установлено, что интегральный уровень качества жизни у мужчин составил $64,48 \pm 0,9\%$, у женщин — $64,13 \pm 0,63\%$ (для различий по полу $p > 0,05$). Городские жители оценивали своё качество жизни выше ($64,77 \pm 0,61\%$) по сравнению с сельскими ($63,24 \pm 0,97\%$), что обусловлено большей долей лиц с повышенным уровнем и меньшей — со средним уровнем воспринимаемого качества жизни. Различия связаны в большей степени с доменами «Физическое и психологическое благополучие», «Самовосприятие», в меньшей — с доменом «Социальное благополучие», в то время как домен «Микросоциальная поддержка» не показал различий между жителями города и села. Наименьшие значения отмечены по домену «Физическое и психологическое благополучие» (95% доверительный интервал $61,52 \pm 0,55\%$), без различий по полу, но с более низкими показателями у сельских жителей: $60,47 \pm 1,04\%$ против $62,05 \pm 0,64\%$ у городских. Значения по домену «Самовосприятие» у городских жителей составили $64,89 \pm 0,59\%$, у сельских — $62,91 \pm 1,0\%$.

Заключение. Отсутствие гендерных различий в восприятии качества жизни в пожилом возрасте свидетельствует о равенстве мужчин и женщин в отношении факторов, влияющих на субъективное восприятие благополучия. Более низкие значения интегрального уровня качества жизни среди сельских жителей требуют детального анализа причин. Можно обоснованно предположить, что улучшение самовосприятия лиц 60+ возможно при создании микро- и макро-социальной среды, способствующей их физической независимости и самостоятельности. Помимо государственной поддержки, необходимы меры социального партнёрства. Маркетинговые стратегии в белорусском обществе должны в большей степени ориентироваться на пожилого потребителя, чей потенциал должен быть максимально востребован в условиях демографического старения.

Ключевые слова: пожилой возраст; Гродненская область; Республика Беларусь; качество жизни; различия по полу; различия по проживанию.

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BACKGROUND

All relevant classifications confirm that the Republic of Belarus' population is aging. Population aging is expected to continue in the nearest future, given that average life expectancy is increasing. This is consistent with trends observed worldwide [1] and in neighboring countries, notably Russia, where individuals over 60 and 65 years accounted for 23.13% and 16.04%, respectively, in 2022.¹

The state policy of the Republic of Belarus currently prioritizes active aging and preventable mortality reduction,² which includes a set of measures implemented in the healthcare system.³ Several factors influence the perception of well-being in older individuals, including typical societal preconceptions, population demographics, and objective approaches to establishing working, older, and senile ages. An objective assessment using unified tools will enable finding opportunities and completely unlocking the potential for improved quality of life.

AIM

The work aimed to analyze sex- and residence-specific (urban vs rural) differences in quality of life, using the population of the Grodno Region aged 60 years and older as an example.

METHODS

A survey was performed in 1270 individuals in outpatient and inpatient health facilities, as well as the Grodno Region Center of the Belarus Red Cross Society.

Prior to the survey, each respondent was informed of the terms of participation (anonymity, voluntary participation, and generic data assessment). Continuous data were collected between June 6, 2022, and November 27, 2023.

Exclusion criteria: refusal to participate or inability to participate for health reasons.

The survey included several domains, such as the World Health Organization Quality of Life—26 items (WHOQOL-26), health literacy assessment, and sociodemographic and behavioral domains.

The sample of individuals aged 60 years and older residing in the Grodno Region adequately represented the region, sex, and place of residence (urban/rural) [2].

The study protocol was reviewed and approved by the Scientific and Technical Council of Grodno State Medical University (Order of the Vice-Rector for Research No. 47-L (a/d) of December 21, 2022). The resulting database was registered as an object of copyright.⁴

WHOQOL-26 was used to assess sex- and residence-specific differences in quality of life, both by individual domains and the integral level⁵.

Four domains were assessed using the following formula:

$$R = (D/\max) \times 100\%,$$

where R is the percentage of the maximum possible value, D is the value for the domain in points, and $\max$ is the maximum possible total score in points for the domain.

The calculated values for domains (%) were compared with the scale used in the questionnaire:

- 0%–20%: low level;
- 21%–40%: below average;
- 41%–60%: average;
- 61%–80%: above average;
- 81%–100%: high level.

Descriptive, parametric, and non-parametric statistics were used. Descriptive statistics are presented as Me (Q1; Q3), where Me is the median, and Q1 and Q3 are the first and third quartiles. Intergroup comparisons of numerical variables were performed using the non-parametric Mann–Whitney U test. Categorical variables are presented as absolute and relative frequencies (proportions) of categories in the groups, with 95% confidence intervals (CIs) for relative frequencies calculated using the Wilson method. Intergroup comparisons of distributions were performed using the Fisher's exact test, followed by post-hoc pairwise comparisons of proportions using the Holm correction. Moreover, the chi-squared test (χ^2), Wilcoxon test (W), and Friedman test were used. The significance level was set as $p = 0.05$.

RESULTS

The integral quality of life level was 64.26 ± 0.52 (95% CI for the arithmetic mean), which corresponds to the level above average. There were no sex-specific differences: the 95% CI (for the arithmetic mean R) was $64.48\% \pm 0.9\%$ in males and $64.13\% \pm 0.63\%$ in females ($p > 0.05$).

¹ Federal State Statistics Service. Population of Russia by sex and age as of January 1, 2022. Statistical bulletin. Moscow, 2021. Available at: <https://web.archive.org/web/20220615061535/https://rosstat.gov.ru/folder/12781?print=1> Accessed on: December 5, 2024.

² On the National Strategy of the Republic of Belarus "Active Aging 2030." Resolution of the Council of Ministers of the Republic of Belarus No. 693 of December 3, 2020. Available at: <https://pravo.by/document/?guid=3871&p0=C22000693> Accessed on: December 5, 2024.

³ On Improving the Efficacy of the Healthcare System. Presidential Decree of the Republic of Belarus No. 89rp of June 2, 2023. Available at: <https://pravo.by/novosti/obshchestvenno-politicheskie-i-v-oblasti-prava/2023/june/74394/> Accessed on: December 9, 2024.

⁴ M.Yu. Surmach, P.L. Korneyko. "Quality of Life and Health Literacy in Individuals Aged 60 Years and Older Residing in the Grodno Region: A Database". Certificate of registration No. 6–BD of June 13, 2024. Grodno State Medical University, Grodno, 2024. Available at: <http://search.ncip.by/depon/index.php?pref=2&lng=ru&page=3&target=1978> Accessed on: December 5, 2024.

⁵ WHO [Internet]. Russian_WHOQOL-BREF. Available at: <https://www.who.int/tools/whoqol/whoqol-bref/docs/default-source/publishing-policies/whoqol-bref/russian-whoqol-bref> Accessed on: May 30, 2024.

In domain 1 (Physical and Psychological Well-Being), the 95% CI (for the arithmetic mean) was 21.5 ± 0.2 , which corresponds to $R1$ (95% CI) = 61.52 ± 0.55 , or above average. There were no sex-specific differences: the 95% CI (for the arithmetic mean $R1$) was $61.89\% \pm 0.94\%$ in males and $61.31\% \pm 0.68\%$ in females ($p > 0.05$). However, there were residence-specific differences: the 95% CI (for the arithmetic mean $R1$) was $62.05\% \pm 0.64\%$ for urban residents and $60.47\% \pm 1.04\%$ for rural residents ($U = 162,059.0$; $p = 0.005$; $t = 2.55$; $p = 0.011$; $T = -2.72$; $p = 0.007$).

In domain 2 (Self-Perception), the $D2$ value in points (95% CI for the arithmetic mean) was 19.3 ± 0.2 points, which corresponds to $R2 = 64.23 \pm 0.52$, or above average. There were no sex-specific differences: the 95% CI (for the arithmetic mean $R2$) was $64\% \pm 0.88\%$ in males and $64.35\% \pm 0.64\%$ in females ($p > 0.05$). However, there were residence-specific differences: the 95% CI (for the arithmetic mean $R1$) was $64.89\% \pm 0.59\%$ for urban residents and $62.91\% \pm 1\%$ for rural residents ($t = 3.33$; $p = 0.001$; $T = -3.20$; $p = 0.001$; $U = 159,218.5$; $p = 0.001$).

In domain 3 (Microsocial Support), the $D3$ value in points (95% CI for the arithmetic mean) was 9.8 ± 0.1 points, which corresponds to $R3$ (95% CI) = 65.64 ± 0.81 , or above average. There were no sex-specific differences: the 95% CI (for the arithmetic mean $R3$) was $66.17\% \pm 1.39\%$ in males and $65.34\% \pm 1.0\%$ in females ($p > 0.05$). Moreover, there were no residence-specific differences: the 95% CI

(for the arithmetic mean $R3$) was $66.03\% \pm 0.98\%$ for urban residents and $64.87\% \pm 1.46\%$ for rural residents ($p > 0.05$).

In domain 4 (Social Well-Being), the $D4$ value in points (95% CI for the arithmetic mean) was 26.5 ± 0.2 points, which corresponds to $R4$ (95% CI) = 66.2 ± 0.6 , or above average (Table 1).

There were no sex-specific differences: the 95% CI (for the arithmetic mean $R4$) was $66.5\% \pm 1.1\%$ in males and $66\% \pm 0.8\%$ in females ($p > 0.05$). However, there were significant residence-specific differences: the 95% CI (for the arithmetic mean $R4$) was $66.6\% \pm 0.7\%$ for urban residents and $65.3\% \pm 1.1\%$ for rural residents ($t = 1.92$; $p = 0.055$; $T = -2.53$; $p = 0.012$; $U = 163,737.5$; $p = 0.011$).

There were no sex-specific differences in the distribution of the integral quality of life level (R , %) (Table 2 and Fig. 1).

The integral quality of life level (R , %) was significantly lower in rural residents (Table 3).

A more detailed analysis revealed that the differences resulted from a larger proportion of rural residents with moderate levels, whereas high integral quality of life levels were more common in urban residents (Fig. 2 and Table 4).

Therefore, there are differences between urban and rural residents in the distribution of the quality of life level ($p = 0.0005$). Intergroup pairwise comparisons of categories show significant differences in proportions for Average (28.84% for urban residents vs 39.39% for rural residents) and Above Average (67.26% for urban residents vs 54.72% for rural residents) categories.

Table 1. Calculation of quality of life levels by domains and the integral level in the overall sample

Variable	Study size, n	Minimum value, abs. units	Maximum value, abs. units	$M \pm SD$, abs. units	Confidence interval for the mean, abs. units	Confidence interval for the median, abs. units	Me (Q1; Q3), abs. units
D1	1270	9	33	21.5 ± 3.5	21.5 ± 0.2	22 ± 0.3	22 (19; 24)
D2	1270	10	30	19.3 ± 2.8	19.3 ± 0.2	19 ± 0.2	19 (18; 21)
D3	1270	3	15	9.8 ± 2.2	9.8 ± 0.1	10 ± 0	10 (9; 12)
D4	1270	8	40	26.5 ± 4.5	26.5 ± 0.2	27 ± 0.3	27 (24; 29)
$R1$, %	1270	25.71	94.29	61.52 ± 9.99	61.52 ± 0.55	62.86 ± 0.71	62.9 (54.3; 68.6)
$R2$, %	1270	33.33	100	64.23 ± 9.44	64.23 ± 0.52	63.33 ± 0.83	63.3 (60; 70)
$R3$, %	1270	20	100	65.64 ± 14.77	65.64 ± 0.81	66.67 ± 0	66.7 (60; 80)
$R4$, %	1270	20	100	66.2 ± 11.2	66.2 ± 0.6	67.5 ± 0.6	67.5 (60; 72.5)
Integral quality of life level R	1270	27.5	95	64.26 ± 9.44	64.26 ± 0.52	65 ± 0.62	65 (57.5; 70.8)

Table 2. Distribution of the integral quality of life level by respondents' sex

Sex	Quality of life level, n (R, %, 95% CI for mean values)					Total, individuals, n (%)
	Low	Below average	Average	Above average	High	
Male	0 {0 (0; 1.42) %}	6 {1.3 (0.48; 3.52) %}	146 {31.74 (26.44; 37.56) %}	284 {61.74 (55.77; 67.37) %}	24 {5.22 (3.13; 8.58) %}	460 (100)
Female	0 {0 (0; 0.81) %}	5 {0.62 (0.21; 1.83) %}	265 {32.72 (28.63; 37.09) %}	517 {63.83 (59.38; 68.05) %}	23 {2.84 (1.68; 4.77) %}	810 (100)
Both sexes	0	11	411	801	47	1270

Note. CI, confidence interval.

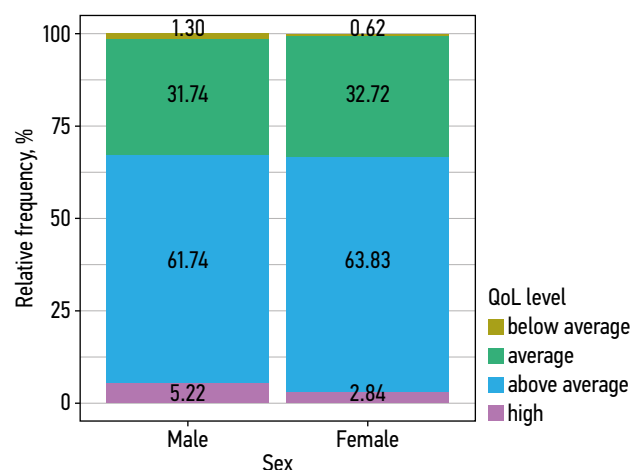


Fig. 1. Distribution of the Integral Quality of Life Level indicator in men and women. R% values within the following intervals: 0%–20%, low level (not reported by respondents); 21%–40%, below average; 41%–60%, average; 61%–80%, above average; 81%–100%, high level; Vertical axis, proportion of respondents with the corresponding quality of life level; horizontal axis, sex of respondents. QoL, quality of life.

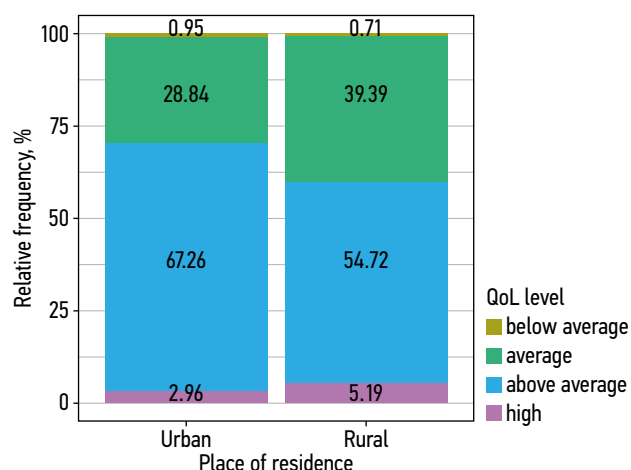


Fig. 2. Distribution of the Integral Quality of Life Level indicator by respondents' place of residence. R% values within the following intervals: 0%–20%, low level (not reported by respondents); 21%–40%, below average; 41%–60%, average; 61%–80%, above average; 81%–100%, high level. Vertical axis, proportion of respondents with the corresponding quality of life level; horizontal axis, place of residence (urban/rural). QoL, quality of life.

Table 3. Analysis of the integral quality of life level (R, %) depending on respondents' place of residence

Place of residence, groups	Study size, <i>n</i> (% of the sample)	Minimum values of the parameter	Maximum values of the parameter	M ± SD	95% CI for the mean	95% CI for the median	Me (Q1; Q3)	Intergroup differences
Urban	846 (66.61%)	27.5	93.33	64.77 ± 9.03	64.77 ± 0.61	65 ± 0.62	65 (59.17; 70.83)	$t = 2.63$, $p = 0.009$ $T = -3.00$, $p = 0.003$
Rural	424 (33.39%)	35.83	95	63.24 ± 10.15	63.24 ± 0.97	63.33 ± 1.04	63.33 (55.83; 70)	$U = 160,478.0$, $p = 0.002$

Note. CI, confidence interval.

Table 4. Differences in quality of life of the Grodno Region's older population based on urban versus rural residence

Quality of life level	Urban		Rural		<i>p</i>
	<i>n</i>	Proportion (95% CI for the proportion), %	<i>n</i>	Proportion (95% CI for the proportion), %	
Low	0	0 (0–0.78)	0	0 (0–1.54)	1
Below average	8	0.95 (0.39–2.26)	3	0.71 (0.18–2.76)	1
Average	244	28.84 (25.01–33.01)	167	39.39 (33.48–45.62)	0.0007
Above average	569	67.26 (62.98–71.27)	232	54.72 (48.47–60.82)	0.0001
High	25	2.96 (1.78–4.86)	22	5.19 (3.04–8.72)	0.1702
Total	846	100	424	100	—

Note. CI, confidence interval.

DISCUSSION

The findings indicate that, in order to fulfill the labor and social potential of individuals aged 60 years and older, the most susceptible quality of life domains must be addressed. These include the Physical and Psychological Well-Being domain, as well as the Self-Perception domain for rural residents.

The Physical and Psychological Well-Being domain is directly associated with the satisfaction

with health and the ability of older individuals to compensate for accumulated disorders under the given conditions. Notably, the measures taken in the healthcare system of the Republic of Belarus receive substantial government support.

Positive changes in the Self-Perception domain in individuals aged 60 years and older are achievable in a micro- and macrosocial environment that facilitates physical independence in older age. This includes fall prevention, availability of socially significant facilities

to those with limited mobility, visual impairment, or hearing impairment, and measures that account for individual visual perceptions. Physical obstacles create psychological barriers, leading to negative self-perception, self-isolation, and stigmatization. Differences in infrastructure may explain lower self-perception scores as a quality of life component in rural residents.

In addition to government support, social partnerships also play a significant role. Notably, current marketing strategies in the Republic of Belarus are insufficiently focused on older customers, who, for example, value the size of smartphone buttons more than its functionality. However, customers aged 60 years and older remain capable (and often employable) for a long period of time; therefore, their potential must be in demand in an aging population.

We found no research assessing quality of life in older individuals in the Republic of Belarus. Moroz et al. (2020) used WHOQOL-26 for a survey in 500 residents of the Republic of Belarus aged 25 years and older (mean age: 59.4 years) who sought medical care. There were no sex-specific differences [3]. The integral quality of life level was 66.0% (95% CI: 65.3–66.7), which is consistent with our findings. Moroz et al. found that the Self-Perception, Microsocial Support, and Social Well-Being domains had the highest scores, whereas the Physical and Psychological Well-Being domain had the lowest. Our findings for the Physical and Psychological Well-Being domain (95% CI: 61.52 ± 0.55) were higher than those reported by Moroz et al. (55.3% in individuals aged 60–74 years to 57.5% in individuals aged 90 years and older). However, this domain was the most susceptible in our study, especially in rural residents. Our findings for the Self-Perception domain (95% CI: 64.23 ± 0.52) were comparable to those reported by Moroz et al. (66.5% in individuals aged 75–89 years to 65.2% in individuals aged 90 years and older), whereas the findings for the Microsocial Support and Social Well-Being domains (95% CI: 65.64 ± 0.81 and 66.2 ± 0.6 , respectively) were somewhat lower. Overall, the findings for the four domains according to WHOQOL-26 were comparable to those reported by Moroz et al.

According to Russian research, differences in quality of life can be attributed to health behaviors. Urban residents generally seek medical care more actively, which is beneficial for their health and quality of life, given the association between self-perception of quality of life and satisfaction with health, which has been demonstrated in our study. Reshetnikov et al. (2022) presented a sociological profile of a typical healthcare user in the Moscow Region: a married woman with children aged 41–70 years, residing in a regional capital, who does not smoke and rarely consumes alcohol [4]. A typical patient profile indicates that this patient category tends to be more attentive to their health, because it is difficult not to seek medical care in this age, given the accumulated burden of diseases.

Another noteworthy hypothesis is the influence of occupation on quality of life and health behavior, including

professional activities prior to retirement. For example, Prisyazhnaya et al. (2022) assessed quality of life of military retirees. The authors found that this category is socially and physically active and prioritizes a healthy lifestyle. Despite the fact that returning to civil society can be stressful, military retirees regard this social adaptation as “another combat mission.” By transforming challenges into a source of motivation, they successfully integrate into a new social setting and maintain employment [5]. This is undoubtedly a protective factor for health-related quality of life. Occupation likely influences self-management and may reduce risks.

CONCLUSION

When assessing quality of life in individuals aged 60 years and older, the highest scores were reported for the Microsocial Support and Social Well-Being domains. The integral quality of life level was 64.26 ± 0.52 (95% CI for the arithmetic mean), which corresponds to the level above average, regardless of sex.

However, lower integral quality of life levels in rural residents are concerning and require a detailed analysis of causes. Urban residents have a better self-perception of their quality of life. A detailed analysis by domains shows that the differences are mainly associated with the Physical and Psychological Well-Being and Self-Perception domains, and to a lesser extent with the Social Well-Being domain, whereas the Microsocial Support domain shows no differences between urban and rural residents.

ADDITIONAL INFORMATION

Author contributions: M.Yu. Surmach: conceptualization, formal analysis, writing—review & editing; P.L. Korneiko: investigation, writing—original draft preparation. All authors confirm that their authorship meets the international ICMJE criteria (all authors have made a significant contribution to the development of the concept, research and preparation of the article, read and approved the final version before publication).

Ethics approval: The study protocol was reviewed and approved by the Scientific and Technical Council of Grodno State Medical University (Order of the Vice-Rector for Research No. 47-П (a/d) dated December 21, 2022). The resulting database was registered as an object of copyright.

Consent for publication: The survey was conducted on the basis of informed consent from the respondents.

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Data availability statement: The editorial policy regarding data sharing does not apply to this work, and no new data was collected or created.

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Provenance and peer-review: This paper was submitted to the journal on an unsolicited basis and reviewed according to the usual procedure. Two external reviewers, a member of the editorial board, and the scientific editor of the publication participated in the review.

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