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Psychological distress, suicidality and resilience of Lithuanian nurses

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Abstract

Background Nurses, like other healthcare workers, are prone to poorer mental health, increased burnout, and may have an increased risk of suicide.

Purpose This study aimed to evaluate mental health problems among Lithuanian nurses and explore factors associated with them.

Method The survey was completed by 533 nurses. Mental health was assessed using the Depression, Anxiety, and Stress Scale—21, and suicidal ideation was measured with the Suicidal Behaviours Questionnaire—Revised (SBQ-R).

Findings A large proportion of nurses in the study had high psychological distress, with 18% having high depression, 29.3% - high anxiety, and 17.1% - high stress. 21.2% of the sample had an increased suicide risk. 64.9% of nurses considered changing their careers to a non-medical profession in the last 12 months.

Discussion Addressing mental health issues in the national healthcare system is critical to avoiding the loss of valued medical community members and ensuring that patients do not lose their critical caretakers.

Keywords Mental health, Depression, Lithuania, Nurses, Suicide risk

Background

Nursing specialists are vital in providing healthcare services [1]. Even though physicians usually lead the medical care team, nurses are leading figures in caring for the patient, being the first person, the patient interacts with during healthcare provision. In recent years, more tasks have been shifted to the nurses [2]. Even though those additional responsibilities are to cope with the shortage of doctors and to provide better care to the patients [2],

it can also contribute to staff burnout [3]. Furthermore, workers whose job essence is frequent and intensive interactions with others are at higher risk of experiencing emotional exhaustion, lack of interest in work, problems with interpersonal communication and deteriorating physical health [4].

Studies in various countries reveal challenging work conditions and poor mental health among nursing staff. A national survey in Canada identified that depression was significantly more prevalent among nurses than among other professionals [5]. The prevalence of depression among nurses varies from 25.1 to 35.8% [6, 7]. Nurses are frontline workers with a high workload and often work every day of the week for prolonged hours. However, night shifts negatively affect mental health, causing more frequent depression and worsening of circadian and sleep [8]. Burnout is a common problem among healthcare workers. A study in the U.S. showed that the main reason

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for nurses leaving their work is burnout [9]. In addition, staff reported a stressful environment and inadequate staffing [9] as crucial factors for leaving their work. The profile of a nurse who is at risk for burnout is a single person with multiple jobs, high workload, and low work experience [3]. However, all nursing specialists can be exposed to burnout, and it does not depend on the position held [10]. Lastly, resilience is important in coping with work challenges and life stressors, as resilience is the process and outcome of successful adaptation to difficult situations through mental, emotional or behavioural flexibility [11]. Resilience may be viewed as a personality trait or feature. However, it may also be conceptualized as a skill which can be developed. A Cochrane meta-analysis demonstrated that resilience training improved resilience, lowered depression levels, and reduced stress levels or stress perception [4].

In Lithuania, there are more than 25,000 nurses [12]. However, according to the experts, there is a 16% lack of nursing specialists in the country. A study from 2009 showed that 23% of nurses had mental distress, with low social support being the most important risk factor [13]. However, the study was conducted 15 years ago, and responders were from a single district community, so they do not reflect the whole of Lithuania. Another previous study showed that 12.9% of nurses experienced bullying in their workplace, but this was conducted in only part of the country [14]. To our knowledge, no other published peer-reviewed articles have analysed this issue. There is a serious lack of well-designed and well-conducted studies that adequately reflect the current mental health situation of Lithuanian nurses. Due to the lack of empirical data on Lithuanian nurses' mental health, the current study aimed to evaluate mental health, more specifically, anxiety, depression, suicidality, and factors associated with mental health among the nursing specialists in Lithuania.

Methods
Participants and procedure
The current study was a part of a broader project of the national healthcare workers' mental health evaluation in Lithuania. The data was collected from December 2021 to January 2022 using the online survey platform. The invitation to participate in the study was distributed through various professional unions and associations, internal hospital networks, and Lithuanian healthcare workers' social networks throughout the country. All national and regional healthcare professional organizations and professional unions registered in Lithuania and whose contact information can be acquired were invited to participate. In addition, social network groups of healthcare workers were asked to share invitations to participate in the study for a more comprehensive reach

of the medical community in Lithuania nationally. Two additional reminders were sent to healthcare workers to participate in the survey after the release of the initial invitation. In total, 2354 responders opened the online survey, and 1653 completed the questionnaire. After excluding non-medical personnel, the total sample of 1618 licenced healthcare workers finished the survey and met the inclusion criteria for the study. Data from 533 nurses extracted from the larger study working across various regions of Lithuania were included in the study.

Sociodemographic data and work-related stressors
Sociodemographic data was collected, including gender, age, relationship status (being in a long-term relationship or single), type of work (working in an inpatient, outpatient setting, rehabilitation, palliative care or nursing homes, emergency department or intensive care unit), level of medical service provision (primary, secondary, tertiary), primary work location (size of the city, where responder work), workload and work experience after completion of training. Participants were screened for factors negatively affecting healthcare workers' mental health extracted from the previously published meta-analyses [15–19]. These factors included poor working conditions, high workload, work with patients, lack of professional development, lack of career perspectives, manager behaviours, mobbing (bullying in the workplace), and exhaustion. Additionally, responders were asked what positive factors are in their workplace: salary (adequate salary to support your life), satisfaction with work, professional development, patients' gratitude, and support from colleagues. Respondents were asked to indicate if any of those factors affected their daily lives by responding with a binary "yes/no" answer to the items listing these factors.

Psychological distress and resilience
The Depression, Anxiety and Stress Scale −21 (DASS-21) was used for the assessment of depression and anxiety [20]. The DASS-21 is a widely used self-report measure that includes three subscales, measuring emotional states of depression, anxiety and stress levels. Each subscale consists of seven items measured on a 4-point Likert scale ranging from 0 ("did not apply to me at all") to 3 ("applied to me most of the time"). Each DASS-21 subscale provides a score, a sum of responses to each subscale question, with a higher score indicating higher levels of depression, anxiety or stress. The severity of each component was graded by its score: depression (normal/mild < 7; moderate 7–10; severe > 11), anxiety (normal/mild < 6; moderate 6–7; severe > 8), stress (normal/mild < 10; moderate 10–12; severe > 13). The Cronbach alpha for depression, anxiety and stress scales were 0.88, 0.80 and 0,85, respectively.

Table 1 Sociodemographic characteristics of the sample (*N* = 533)

Variable	Prevalence (%)
Gender	
Male	12 (2.3)
Female	521 (97.7)
Age *M* (*SD*)	43.13 (12.32)
Relationships	
Not in a long-term relationship	112 (21)
In a long-term relationship	421 (79)
Having kids	
No kids	171 (32.1)
Having kids	362 (67.9)
Type of work	
Outpatient	199 (37.3)
Inpatient	246 (46.2)
Rehabilitation	15 (2.8)
Palliative care or nursing homes	119 (22.3)
Emergency department	90 (16.9)
Intensive care unit	60 (11.3)
Level of medical service provision	
Primary	212 (39.8)
Secondary	223 (41.8)
Tertiary	184 (34.5)
Primary workplace location	
One of the five biggest cities	377 (70.7)
Another smaller city	125 (23.5)
Township/rural area	31 (5.8)
Workload (Full-Time equivalent)	
< 1 FTE	22 (4.1)
1 FTE	269 (50.5)
> 1 FTE	242 (45.4)
Average work experience after finished training (years) *M* (*SD*)	20.17 (13.23)

The Resilience Scale 11 (RS-11) [21] was used to measure psychological resilience. The RS-11 is a unidimensional measure containing 11 items. Each RS-11 item was rated on a 7-point Likert scale ranging from 1 ("do not agree") to 7 ("agree"). The total RS-11 score ranges from 11 to 77, with a higher score indicating a higher level of resilience. The Cronbach alpha for the RS-11 scale was 0.85.

The Suicidal Behaviors Questionnaire-Revised (SBQ-R) was used to evaluate suicidality in the sample [22]. The SBQ-R comprises four items, each covering a different dimension of suicidality: lifetime suicidal ideation and attempts, the frequency of suicidal ideation over the preceding 12 months, the threat of suicide attempts, and self-reported probability of suicidal behaviour in the future. The four SBQ-R items are rated on Likert scales of varying lengths, resulting in a total score between 3 and 18. Each of them is evaluated with a different number of points. A sum of points of the SBQ-R with a cut-off of ≥7 indicates an increased risk for suicide for general population studies. The Cronbach alpha for this scale was 0.81.

Table 2 Negative and positive factors related to the work among nurses (*N* = 533)

Variable	Prevalence (%)
Negative factors	
Poor working conditions	209 (39.2)
High workload	322 (60.4)
Work with patients	124 (23.3)
Lack of professional development	78 (14.6)
Lack of career perspectives	118 (22.1)
Managers	214 (40.2)
Mobbing	193 (36.2)
Exhaustion	356 (66.8)
Positive factors	
Adequate salary	163 (30.6)
Satisfaction with work	258 (48.4)
Professional development	134 (25.1)
Patients' gratitude	335 (62.9)
Support from colleagues	305 (57.2)

Data analysis

Statistical analysis was performed using IBM SPSS 26.0. A one-way ANOVA test was used to evaluate the association between resilience and psychological distress. Chi-square and Student-t tests were used for univariate analysis to identify statistically significant risk factors for suicidal ideation. Multivariate binary logistic regression was used to assess risk factors for high suicide risk. A dependent variable was a binary variable of high suicide risk (SBQ-R score ≥ 7). Normal values were used as a reference for assessing the role of depression and anxiety in the analysis. Results were held statistically significant when $p < 0.05$.

Results
Characteristics of the sample

A total of 533 nurses participated in the study, with a mean age of 43.13 years and an age range of 20 to 69 years. Work experience ranged from 1 to 46 years, with a mean work experience of 20.17 years. In the past 12 months, 64.9% (346) of nurses considered switching to a non-medical profession. The sample was predominantly female, comprising 97.7% of the sample. Table 1 presents the detailed descriptive characteristics of the study sample. The study identified exhaustion and high workload as the primary negative factors, and patients' gratitude and colleagues' support as the primary positive factors associated with the nursing job. Table 2 represents the detailed negative and positive factors associated with work.

Resilience and mental health

The average resilience score in the sample was 58.68 (SD ± 9.89), ranging from 22 to 77. Statistically significantly, nurses with high suicide risk had the lower RS-11 scores, which were 59.98 (± 9.52) for the population

without suicide risk and 53.85 (±9.75) for the population with high suicide risk. Spearman's non-parametric correlation showed a low positive correlation between age and RS-11 score of 0.24 ($p<0.001$). A positive correlation was found between work experience and the RS-11 score of 0.22 ($p<0.001$). A one-way ANOVA test was applied to compare resilience across the subsamples having various levels of anxiety and depression levels identified using the DASS-21. The analysis indicated that higher severity of depression and anxiety was significantly associated with lower levels of resilience at $p<0.001$ (see Table 3).

Factors associated with psychological distress

In the sample, 62 (11.6%) and 34 (3.4%) nurses were identified as having severe and extremely severe levels of depression, respectively. Additionally, 72 (13.5%) and 84 (15.8%) had severe and extremely severe anxiety, and 76 (14.3%) and 15 (2.8%) severe and extremely severe stress, respectively. Univariate analysis for severe and extremely severe depression and anxiety (see Table 4) showed that work in an Outpatient setting was associated with higher levels of depression, and work in an Inpatient was associated with higher levels of anxiety. Career change ideation, poor working conditions, lack of career perspectives, managers, mobbing and exhaustion were associated with high levels of depression among nurses. However, satisfaction with work, professional development and support from colleagues were protective factors associated with lower depression rates (see Table 4). Career change ideation, poor working conditions, managers, mobbing, exhaustion, high workload and working with patients were associated with more frequent anxiety disorders.

Meanwhile, satisfaction with your work was associated with lower anxiety levels (see Table 4).

Suicidality among the nurse population

In the sample, 113 nurses (21.2%) scored ≥7 on the SBQ-R questionnaire, indicating an increased risk for suicide. Additionally, 27 nurses (5.1%) reported having a suicide plan, and 8 nurses (1.5%) reported previous suicide attempts. Univariate analysis showed that having no children, ideation to change work, poor working conditions, lack of professional development, lack of career perspectives, managers, exhaustion and low satisfaction with work were significantly associated with high suicide risk. Table 5 presents the detailed results of the univariate analysis of the factors related to suicidality.

Predictors of suicide risk

Multivariable binary logistic regression was conducted to evaluate the role of suicide risk factors, including sociodemographic characteristics, work-related stressors, depression and anxiety, and resilience. The entire model containing all predictors was statistically significant, χ^2 [12]=116.16, $P<0.001$. The model explained between 20.4% (Cox and Snell R^2) and 31.7% (Nagelkerke R^2) of the variance in suicidality and correctly classified 81.1% of cases. Managers were a negative work-related factor with OR=0.54 ($p=0.025$), and extremely severe depression and anxiety were significant risk factors with OR of 3.8 and 7.6 ($p<0.001$) for higher suicide risk, respectively. Lower resilience was an important predictor for high suicide risk OR=0.97 ($p=0.027$). Detailed analysis is presented in Table 6.

Discussion

This study is the first attempt to evaluate the mental health among Lithuanian nurses in a national survey. We found out that 18% of nurses reported severe and extremally severe levels of depression symptoms, 29.3% - anxiety, and 17.1% stress. Around one-fifth of the sample (21.2%) had a high lifetime suicide risk, and 1.5% reported a previous suicide attempt.

A meta-analysis by Huang et al. [7] showed that among nurses in the intensive care unit, depression prevalence was almost 25%. Another meta-analysis [23] showed that 22% of nurses had depression. The data in our study was collected during the COVID-19 pandemic, which might have impacted the mental health of the sample. At the time of data collection in Lithuania, all healthcare employees were vaccinated against COVID-19, and more than half had booster vaccines. However, the pandemic was associated with a high workload and work-related stressors in healthcare systems. We found higher levels of depression in comparison to previous studies, with 18% of nurses having severe and highly severe depressive

Table 3 Resilience in various levels of depression, anxiety, and stress in the sample

Variable	Prevalence (%)	Resilience M(SD)
Depression		
Normal	181 (34)	63.12 (7.75)
Mild	97 (18.2)	60.43 (9.13)
Moderate	159 (29.8)	56.41 (9.45)
Severe	62 (11.6)	52.22 (10.75)
Extremely severe	34 (6.4)	52.41 (10.2)
Anxiety		
Normal	155 (29.1)	62.83 (8.84)
Mild	47 (8.8)	60.29 (10.54)
Moderate	175 (32.8)	58.38 (8.61)
Severe	72 (13.5)	56.12 (9.51)
Extremely severe	84 (15.8)	52.92 (10.7)
Stress		
Normal	226 (42.4)	62.93 (8.27)
Mild	101 (18.9)	58.09 (9.77)
Moderate	115 (21.6)	54.74 (9.67)
Severe	76 (14.3)	55 (9.13)
Extremely severe	15 (2.8)	47.4 (9.81)

Table 4 Variables associated with severe and extremely severe depression and anxiety

Variable	Depression (%)		p	Anxiety (%)		p
	Normal and moderate	Extreme and extremely severe		Normal and moderate	Extreme and extremely severe	
Gender						
Male	12 (100%)	0 (0%)	0.101	11 (91.7%)	1 (8.3%)	0.107
Female	425 (81.6%)	96 (18.4%)		366 (70.2%)	155 (29.8%)	
Age M (SD) [a]	43.6 (±12.26)	40.94 (±12.37)	0.054	43.69 (±12.26)	41.77 (±12.36)	0.102
Relationships						
Not in a long-term relationship	348 (82.7%)	73 (17.3%)	0.434	302 (71.7%)	119 (28.3%)	0.324
In a long-term relationship	89 (79.5%)	23 (20.5%)		75 (67%)	37 (33%)	
Having kids						
No kids	136 (79.5%)	35 (20.5%)	0.312	113 (66.1%)	58 (33.9%)	0.105
Having kids	301 (83.1%)	61 (16.9%)		264 (72.9%)	98 (27.1%)	
Type of work [b]						
Outpatient	167 (83.9%)	32 (16.1%)	0.373	130 (65.3%)	69 (34.7%)	**0.034**
Inpatient	189 (76.8%)	57 (23.2%)	**0.004**	174 (70.7%)	72 (29.3%)	1
Rehabilitation	15 (100%)	0 (0%)	0.081	100 (84%)	19 (16%)	0.517
Palliative care or nursing homes	100 (84%)	19 (16%)	0.510	85 (71.4%)	34 (28.6%)	0.855
Emergency department	72 (80%)	18 (20%)	0.591	62 (68.9%)	28 (31.1%)	0.674
Intensive care unit	45 (75%)	15 (25%)	0.135	44 (73.3%)	16 (26.7%)	0.638
Level of medical service provision*						
Primary	179 (84.4%)	33 (15.6%)	0.233	142 (67%)	70 (33%)	0.122
Secondary	178 (79.8%)	45 (20.2%)	0.269	156 (70%)	67 (30%)	0.738
Tertiary	149 (81%)	35 (19%)	0.659	138 (75%)	46 (25%)	0.116
Primary workplace location						
One of the five biggest cities	305 (80.9%)	72 (19.1%)	0.486	261 (69.2%)	116 (30.8%)	0.496
Another smaller city	107 (85.6%)	18 (14.4%)		93 (74.4%)	32 (25.6%)	
Township/rural area	25 (80.6%)	6 (19.4%)		23 (74.2%)	8 (25.8%)	
Workload (Full-Time equivalent)						
< 1 FTE	21 (95.5%)	1 (4.5%)	0.193	18 (81.8%)	4 (18.2%)	0.051
1 FTE	216 (80.3%)	53 (19.7%)		178 (66.2%)	91 (33.8%)	
> 1 FTE	200 (82.6%)	42 (17.4%)		181 (74.8%)	61 (25.2%)	
Average work experience after finished training (years) M (SD) [a]	20.66 (±13.21)	17.98 (±13.32)	0.074	20.79 (±13.11)	18.68 (±13.52)	0.100
Career change ideation						
Yes	259 (74.9%)	87 (25.1%)	**< 0.001**	217 (62.7%)	129 (37.3%)	**< 0.001**
No	178 (95.2%)	9 (4.8%)		160 (85.6%)	27 (14.4%)	
Poor working conditions						
Yes	148 (70.8%)	61 (29.2%)	**< 0.001**	127 (60.8%)	82 (39.2%)	**< 0.001**
No	289 (89.2%)	35 (10.8%)		250 (77.2%)	74 (22.8%)	
High workload						
Yes	257 (79.8%)	65 (20.2%)	0.106	211 (65.5%)	111 (34.5%)	**0.001**
No	180 (85.3%)	31 (14.7%)		166 (78.7%)	45 (21.3%)	
Work with patients						
Yes	97 (78.2%)	27 (21.8%)	0.213	77 (62.1%)	47 (37.9%)	**0.016**
No	340 (83.1%)	69 (16.9%)		300 (73.7%)	109 (26.7%)	
Lack of professional development						
Yes	60 (76.9%)	18 (23.1%)	0.208	50 (64.1%)	28 (35.9%)	0.164
No	377 (82.9%)	78 (17.1%)		327 (71.9%)	128 (28.1%)	
Lack of career perspectives						
Yes	83 (70.3%)	35 (29.7%)	**< 0.001**	78 (66.1%)	40 (33.9%)	0.213
No	354 (85.3%)	61 (14.7%)		299 (72%)	116 (28%)	
Managers						
Yes	161 (75.2%)	53 (24.8%)	**< 0.001**	137 (64%)	77 (36%)	**0.005**
No	264 (87.7%)	37 (12.3%)		227 (75.4%)	74 (24.6%)	
Mobbing						
Yes	141 (73.1%)	52 (26.9%)	**< 0.001**	117 (60.6%)	76 (39.4%)	**< 0.001**
No	296 (87.1%)	44 (12.9%)		260 (76.5%)	80 (23.5%)	

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Table 4 (continued)

Variable	Depression (%)		p	Anxiety (%)		p
	Normal and moderate	Extreme and extremely severe		Normal and moderate	Extreme and extremely severe	
Exhaustion						
Yes	275 (77.2%)	81 (22.8%)	**< 0.001**	232 (65.2%)	124 (34.8%)	**< 0.001**
No	149 (90.9%)	15 (9.1%)		133 (81.1%)	31 (18.9%)	
Adequate salary						
Yes	136 (83.4%)	27 (16.6%)	0.564	112 (68.7%)	51 (31.3%)	0.496
No	301 (81.4%)	69 (18.6%)		265 (71.6%)	105 (28.4%)	
Satisfaction with work						
Yes	222 (86%)	36 (14%)	**0.018**	198 (76.7%)	60 (23.3%)	**0.003**
No	215 (78.2%)	60 (21.8%)		179 (65.1%)	96 (64.9%)	
Professional development						
Yes	121 (90.3%)	13 (9.7%)	**0.004**	100 (74.6%)	34 (25.4%)	0.252
No	316 (79.2%)	83 (20.8%)		277 (69.4%)	122 30.6%)	
Patients' gratitude						
Yes	279 (83.3%)	56 (16.7%)	0.312	231 (69%)	104 (31%)	0.241
No	158 (79.8%)	40 (20.2%)		146 (73.7%)	52 (26.3%)	
Support from colleagues						
Yes	259 (84.9%)	46 (15.1%)	**0.042**	224 (73.4%)	81 (26.6%)	0.112
No	178 (78.1%)	50 (21.9%)		153 (67.1%)	75 (32.9%)	

Note. Chi-Square was used for all univariate tests, except if indicated - [a] Student t-test was used as a statistical model for comparison

[b] responders could choose more than one response option

symptoms, and in addition to this, 29.8% had moderate depression symptoms. It is more than two times higher than the general population, with an average prevalence of 7.2% [24], according to epidemiological studies.

Anxiety and anxiety disorders are significant for healthcare workers. In our study, 32% of nurses had moderate anxiety symptoms, and 29.3% had severe and extremely severe anxiety symptoms. The prevalence of anxiety disorders ranged from 23.2 to 37% [23, 25, 26] based on several published metanalyses of healthcare staff in other studies. Prolonged mental problems can cause lower motivation, leading to poorer care for patients [27], major depression, risk of cardiac events, worsened quality of life and relationships [28], and lastly, severe anxiety can be associated with increased suicide risk [28, 29].

We identified that low resilience was associated with poor mental health, and lower resilience was significantly related to high suicide risk in logistic binary regression. Resilience is the ability to adapt to stress and adverse situations [30]. Yu et al. showed that stress, burnout, post-traumatic stress disorder and bullying were associated with poorer resilience [31]. A high-volume meta-analysis from Cochrane showed that resilience training might positively affect healthcare workers. However, the evidence for resilience training is uncertain [4]. Therefore, promoting mental health in nurses should focus on several directions: addressing work conditions, reducing work-related stressors, and providing resilience training.

Using the SBQ-R questionnaire, we identified that 21.2% of our study participants had a high suicide risk.

Suicidal ideation differs from country to country and the specific populations, and it ranges among nurses from 5.2 to 62% [32–35]. High variability of suicide risk prevalence is associated with the methodology used in these studies. However, our study indicates worrying numbers of suicide risk among nursing staff in Lithuania. The binary logistic regression identified that depression and anxiety were significant risk factors increasing suicide risk up to 3.8 and 7.6 times. The findings are in line with previous studies, which revealed that depression and hopelessness can increase the death risk by suicide up to 1.9 to 2.2 times [36, 37]. In addition, anxiety is also a proven risk factor, contributing to increased suicide risk in previous studies [29, 37].

Coping with the COVID-19 pandemic puts additional strain on all healthcare workers' psychological well-being and increases the burden of existing mental health problems [38]. In the early stages of the COVID-19 outbreak in Wuhan, frontline workers especially female nurses suffered the most due to depression, anxiety, insomnia and distress [39]. Additionally, Cai et al. [40] indicated that nurses experienced higher anxiety and nervousness relative to other healthcare professionals. Lastly, some reviews hypothesized that the COVID-19 pandemic can be an independent risk factor for worsened mental health [41]. However, we need not forget that the COVID-19 pandemic may not be the last; as shown in the 2015 MERS outbreak [42], frontline workers had the highest risk for post-traumatic stress disorder symptoms during the pandemic. Such outbreaks and pandemics will be a

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Table 5 Univariate analysis of factors associated with suicidality

Variable	Suicide risk		p
	Low suicide risk (SBQ-*R* < 7) (*N* = 412)	High suicide risk (SBQ-*R* ≥ 7) (*N* = 113)	
Gender			
Male	8 (66.7%)	4 (33.3%)	0.298
Female	412 (719%)	109 (20.9%)	
Age *M* (*SD*) [a]	43.64 (± 12.28)	41.22 (± 12.31)	0.064
Relationships			
Not in a long-term relationship	326 (82.7%)	95 (22.6%)	0.135
In a long-term relationship	94 (83.9%)	18 (16.1%)	
Having kids			
No kids	126 (73.7%)	45 (26.3%)	**0.047**
Having kids	294 (81.2%)	68 (18.8%)	
Type of work [b]			
Outpatient	157 (78.9%)	42 (21.1%)	0.973
Inpatient	189 (76.8%)	57 (23.2%)	0.324
Rehabilitation	14 (93.3%)	1 (6.7%)	0.162
Palliative care or nursing homes	92 (77.3%)	27 (22.7%)	0.650
Emergency department	72 (80%)	18 (20%)	0.764
Intensive care unit	50 (83.3%)	10 (16.7%)	0.362
Level of medical service provision*			
Primary	168 (79.2%)	44 (20.8%)	0.838
Secondary	175 (78.5.8%)	48 (21.5%)	0.877
Tertiary	142 (77.2%)	42 (22.8%)	0.505
Primary workplace location			
One of the five biggest cities	298 (79%)	79 (21%)	0.811
Another smaller city	97 (77.6%)	28 (22.4%)	
Township/rural area	25 (80.6%)	6 (19.4%)	
Workload (Full-Time equivalent)			
< 1 FTE	16 (72.7%)	6 (27.3%)	0.086
1 FTE	203 (75.5%)	66 (24.5%)	
> 1 FTE	201 (83.1%)	41 (16.9%)	
Average work experience after finished training (years) *M* (*SD*) [a]	20.65 (± 13.29)	18.34 (± 13.04)	0.107
Career change ideation			
Yes	253 (73.1%)	93 (26.9%)	**< 0.001**
No	167 (89.3%)	20 (10.7%)	
Poor working conditions			
Yes	152 (72.7%)	57 (27.3%)	**0.006**
No	268 (82.7%)	56 (17.3%)	
High workload			
Yes	256 (79.5%)	66 (20.5%)	0.624
No	164 (77.7%)	47 (22.3%)	
Work with patients			
Yes	95 (76.6%)	29 (23.4%)	0.497
No	325 (79.5%)	84 (20.5%)	
Lack of professional development			
Yes	54 (69.2%)	24 (30.8%)	**0.025**
No	366 (80.4%)	19.6 (19.6%)	
Lack of career perspectives			
Yes	79 (66.9%)	39 (33.1%)	**< 0.001**
No	341 (82.2%)	74 (17.8%)	
Managers			
Yes	149 (69.6%)	65 (30.4%)	**< 0.001**
No	257 (85.4%)	44 (14.6%)	
Mobbing			
Yes	132 (68.4%)	61 (31.6%)	**< 0.001**
No	288 (84.7%)	52 (15.3%)	

Table 5 (continued)

Variable	Suicide risk		p
	Low suicide risk (SBQ-*R* < 7) (*N* = 412)	High suicide risk (SBQ-*R* ≥ 7) (*N* = 113)	
Exhaustion			
Yes	270 (75.8%)	86 (24.2%)	**0.021**
No	139 (84.8%)	25 (15.2%)	
Adequate salary			
Yes	130 (79.8%)	33 (20.2%)	0.729
No	290 (78.4%)	80 (21.6%)	
Satisfaction with work			
Yes	213 (82.6%)	45 (17.4%)	**0.018**
No	207 (75.3%)	68 (24.7%)	
Professional development			
Yes	121 (90.3%)	13 (9.7%)	**0.041**
No	316 (79.2%)	83 (20.8%)	
Patients' gratitude			
Yes	102 (76.1%)	32 (23.9%)	0.387
No	318 (79.7%)	81 (20.%)	
Support from colleagues			
Yes	264 (78.8%)	71 (21.2%)	0.996
No	156 (78.8%)	42 (21.2%)	

Note. Chi-Square was used for all univariate tests, except if indicated - [a] Student t-test was used as a statistical model for comparison

[b] responders could choose more than one response option

Table 6 Multivariate analysis of risk factors associated with high suicide risk among nurses

Variable	Odds ratio	95.0% CI for Odds Ratio		p
		Lower	Upper	
Not having kids	1.4	0.84	2.35	0.191
Career change ideation	1.3	0.69	2.48	0.413
Poor working conditions	1.26	0.72	2.22	0.415
Lack of professional development	0.74	0.38	1.45	0.384
Lack of career perspectives	0.73	0.39	1.35	0.318
Managers	0.54	0.31	0.92	**0.025**
Mobbing	0.74	0.44	1.26	0.364
Exhaustion	0.9	0.5	1.62	0.739
Satisfaction with work	1.09	0.66	1.81	0.735
Depression				
Normal*	1	-	-	-
Mild	1.02	0.4	2.58	0.963
Moderate	1.71	0.78	3.75	0.182
Severe	2.3	0.88	6.05	0.091
Extremely severe	3.79	1.26	11.36	**0.017**
Anxiety				
Normal*	1	-	-	**-**
Mild	2.79	0.88	8.78	**0.071**
Moderate	3.6	1.46	8.87	**0.005**
Severe	2.26	0.79	6.44	0.127
Extremely severe	7.61	2.77	20.85	**< 0.001**
Resilience	0.97	0.94	0.99	**0.027**

* - Normal value was used as a reference in a comparison

huge burden for all medical staff in the future, especially those who are closely involved with patients, especially nurses.

Our study had some limitations. First, this was a cross-sectional study, and we did not use a longitudinal design; therefore, future longitudinal studies could provide more information on the role of various risk factors on mental health changes in Lithuanian nurses. Second, while we aimed to conduct a large-scale national study of healthcare workers' mental health, the recruitment of the study participants was not random and included self-referred participants willing to respond to our survey. Lastly, COVID-19 might have had an impact on the study findings. At the time of data collection, the COVID-19 pandemic was ongoing, and patients and healthcare workers were still exposed to its dangers. However, the data collection coincided with the third wave of the COVID-19 pandemic. There were enough protection measures in hospitals, the Lithuanian Ministry of Health had issued sufficient information and guidelines on how to deal with patients, and there was an experience of how to deal with patients because the country has already been living with the COVID-19 pandemic for more than one and a half years. In addition, all health workers (including nurses) were vaccinated on a priority basis and had already received 2 or more vaccines [43]. Due to these factors and the lack of sufficient baseline data, we are unable to determine the extent of the COVID pandemic's impact on our nursing staff. Lastly, COVID-19 has not disappeared; revaccination is ongoing every year, and the virus

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has become a part of life in societies [44]. The mental health of the medical community has always been a huge concern. Since nurses and other medical practitioners play a vital role in society, it is essential to conduct periodic investigations and evaluations of this community to understand their challenges. Our investigation into this population revealed that nurses require improved mental health care to reduce depression and anxiety and prevent suicides. Secondly, our multivariate analysis showed that improving healthcare management could lead to mental health promotion in nurses. While significant structural changes in healthcare services and institutions are challenging and time-consuming, our study reveals that resilience training can enhance stress control, potentially reduce psychological distress, improve mental health, and potentially reduce suicidality. Finally, for mental health promotion in nurses, it is essential to target and reduce exhaustion, increase satisfaction with work, improve working conditions, reduce the workload, and, most importantly, eliminate mobbing.

Conclusion

We evaluated a significant part of the Lithuanian nurse population to delineate mental health problems. We found that a substantial proportion of nurses in Lithuania had high levels of depression and anxiety problems. In addition to this, 21.2% had increased suicide risk. It is essential to address these problems in the national health care system to prevent the medical community and society from losing its valuable members and patients from losing essential caretakers.

Declarations

Ethics approval and consent to participate
This study was conducted in accordance with the Declaration of Helsinki and was reviewed and approved by the Vilnius Regional Bioethics. Reference number: 2021/5-1350-826. Informed consent to participate was obtained from all of the participants in the study. No identification data was collected.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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