RESEARCH ARTICLE

Analysis of job burnout, satisfaction and work-related depression among neurological and neurosurgical nurses in Poland: A cross-sectional and multicentre study

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Abstract

Aim: This study investigated the status of job burnout, work-related depression and job satisfaction among neurological and neurosurgical nurses in Poland.

Design: A cross-sectional and multicentre study.

Methods: The sample consisted of 206 neurological and neurosurgical nurses, all of whom completed a self-report questionnaire designed by the authors.

Results: The results revealed a work-related burnout incidence of 32%, colleague-related burnout incidence of 44.2% and patient-related burnout incidence of 22.8%. Nurses working in neurological departments were statistically over three times more likely to struggle with colleague-related burnout than nurses working in neurosurgical departments were. Further, work-related burnout was higher in people aged above 54 years than those in the youngest age category. Nonetheless, 71.8% of the nurses expressed satisfaction with their work. In sum, our results indicated that job burnout is common among registered nurses and that personal (age) and workplace (type of ward, distance to work, experience and shift work) factors contributed to symptoms of burnout.

KEYWORDS
job burnout, job satisfaction, neurological nurses, neurosurgical nurses

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1 | INTRODUCTION

Burnout is a triad of emotional exhaustion, depersonalization and a reduced sense of work-related personal achievement (Maslach & Jackson, 1981). The literature shows that more than half of all nurses report to be experiencing burnout (Fargen et al., 2020; Geuens et al., 2020). Moreover, compared to other professional groups and the general population, healthcare professionals show significantly higher rates of burnout and depression. This is because the burnout syndrome mainly affects representatives of professions that require close and direct contact with other people, often related to helping them and providing health and social services (Dyrbye et al., 2014). Moreover, burnout is a consequence of the negative effects of long-term stress and fatigue, which are closely related to work (Chirico et al., 2021). The World Health Organization (WHO) also refers to these correlations by defining occupational burnout as "a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed". It should also be emphasized that the WHO illustrates burnout in three dimensions: "feelings of energy depletion or exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and reduced professional efficacy" (WHO, 2019). For nurses, burnout is caused not only by overworking, but also by an imbalance between job demands and resources. These job demands are related to fatigue induced by contact with patients and their families and emotional requirements. When defining job burnout, it should be noted that this phenomenon applies only to the profession and should not be used to describe experiences from other areas of life. It is also important to emphasize the difference between burnout and depression, which is in the emotions one experiences. People who experience burnout often feel anger, while those depressed feel more guilt. Additionally, while burnout is typically related to professional duties, depression affects all areas of life. At the same time, it is worth noting that job burnout can lead to depression (Chirico, 2015, 2017a, 2017b, 2017c; Chirico & Magnavita, 2020; Magnavita et al., 2021).

Nowadays, due to reduced hospital stays caused by increasing cost constraints (Agha, 2014; Hussey et al., 2013), the intensity of nursing care in hospitals worldwide is increasing. This phenomenon increases nurse workload. Tired and overloaded with work, nurses experience negative health effects, possibly affecting their performance and quality of care. Moreover, work overload is one of the factors affecting the frequency and intensity of burnout. Nurses are generally considered a high-risk category about burnout and work-related stress. However, health care is a diverse sector, and the literature shows statistically significant differences between the work and burnout of nurses of different specializations (Misiak et al., 2020; Santos et al., 2020; Woo et al., 2020).

To date, little research has been conducted on job burnout among nurses in Poland. Moreover, the authors of the study did not find any published studies on burnout levels among both neurological and neurosurgical nurses in the Kuyavian-Pomeranian Voivodeship in Poland. The only study we managed to find, conducted among 112 nurses working in neurological departments in Poland, showed that the largest number of respondents had an average level (72.4%) of burnout. This level depended on the length of service and age of the respondents. Moreover, although the highest number of respondents with a high level of burnout was of those with over 20 years of experience, the highest risk of burnout was in the group with 11–20 years of experience (Ogińska & Żuralska, 2010). Moreover, globally, there have been a few studies on job stress, burnout and satisfaction among neurological and neurosurgical nurses. Fargen et al. (2020) found that 51% of neurointerventional non-physician procedural staff (nurses and technologists) met the burnout criteria. It is also disturbing that in the participating centres of that study, the percentage of layoffs among nurses and technologists was 25% above that of the previous year. Moreover, as many as 50% of their respondents declared that they had been thinking about changing their workplaces in the last 2 years, which is why it is important to conduct research on neurological and neurosurgical nurses. Further, Fargen et al. (2020) showed that burnout was mainly caused by interactions with physician staff and leadership rather than by stroke calls and thrombectomy procedural volume. Similarly, a study by Douglas et al. (2021) found that burnout was highest in the nursing group (23.5%).

From a public health perspective, research on burnout is important as burnout plays an important role in the professional and personal lives of nurses. Earlier studies have shown that burnout has a statistically significant effect on the mental and physical health of nurses. Moreover, it reduces the quality of care they provide and correlates with nurse layoffs and turnover (Chen & Yu, 2014; Creedy et al., 2017; Gallagher & Gormley, 2009; Suñer-Soler et al., 2014). In addition, there is a relationship between burnout and the medical errors made by nurses (Kiymaz & Koç, 2018; Nantsupawat et al., 2016).

2 | AIMS AND METHODS

2.1 | Aims

Through this study, we aimed to determine the prevalence, levels and risk factors of burnout and to assess perceived job satisfaction among neurological and neurosurgical nurses in Poland.

2.2 | Design

This was a hospital-based cross-sectional study conducted from January 2019–February 2020. The study was part of a research project on the professional development and burnout of neurological nurses in Poland.

2.3 | Participants

The study included a convenience sample of neurological and neurosurgical nurses from eight hospitals selected from the

Kuyavian-Pomeranian Voivodeship in Poland. The study involved 206 registered nurses (196 women, 10 men) employed in the hospitals' neurology (N = 103) and neurosurgery (N = 103) departments.

Nurses had to meet the following inclusion criteria:

- work full-time and provide direct care for a neurological or neurosurgical patient,
- have at least six months of clinical experience and
- agree to participate voluntarily.

The study was anonymous. Information on the study subject and purpose was provided to the participants. Informed consent to participate in the study was obtained without pressure, voluntary participation in the project was ensured, and the respondents were guaranteed anonymity and confidentiality.

2.4 | Measures

Burnout level, work-related depression and job satisfaction were measured using a self-report questionnaire designed by the authors. However, prior to the study, we conducted a pilot project, wherein 40 nurses employed at University Hospital no. 1 of Dr. Antoni Jurasz in Bydgoszcz were asked to provide feedback and opinions about the questionnaire based on their cultures and beliefs. Through this, the intelligibility of the study items was checked. After completing the questionnaire, the participants were asked to specify the positions that were considered incomprehensible. Consequently, those questions were omitted or modified, as we wanted the questionnaire to be simple, understandable, factual, structured and specialized. The changes primarily involved linguistic and grammatical corrections. The results of this pilot study were not included in those of the final study.

The final questionnaire consisted of three parts comprising 8 questions related to demographic data and 24 questions related to burnout, job satisfaction and work-related depression. The first, second and third parts of the questionnaire concerned demographic data, job satisfaction and job burnout, respectively. All questions were written in simple Polish. The demographic data form consisted of eight questions related to nurses' age, current area of work (Department of Neurology or Neurosurgery), sex, education (diploma in nursing, bachelor of nursing, master of nursing), distance to work, marital status, years of experience and type of shift (morning shift, rotating between shifts, managerial position). The next part of the questionnaire contained 24 closed questions that referred only to satisfaction, burnout and depression symptoms. Question 1 measured level of perceived satisfaction, Question 2 assessed work-related burnout, Questions 3–7 and 12 assessed colleague-related burnout, Questions 22–24 measured patient-related burnout, and Questions 18 and 19 assessed work-related depression (Appendix). The reliability of the developed instruments was examined by computing internal consistency coefficients. The Cronbach alpha coefficient was 0.69.

To the best of our knowledge, based on an extensive literature review that we conducted, there is no standardized tool to assess burnout and job satisfaction among nursing staff in Polish literature. Therefore, we developed our survey questionnaire based solely on the study purpose and literature review (Akman et al., 2016; García-Izquierdo & Ríos-Rísquez, 2012; Kupcewicz & Jóźwik, 2019; Lin et al., 2009). Moreover, we decided to create our own questionnaire because we wanted to include questions that, from our experience, are important and relevant to neuroscience nursing and may affect the occurrence of burnout, work-related depression or satisfaction. The questions were typically adapted to neurological and neurosurgical wards. We used this questionnaire to study work-related stress, wherein job burnout was explored mainly with one item (Dolan et al., 2015). Studies have confirmed that individual questions assessing burnout, compared to full scales, have a strong psychometric accuracy. West et al. (2009), West et al. (2012) confirmed the validity of using single items from the emotional exhaustion and depersonalization subscales of the Maslach Burnout Inventory as standalone measures. Furthermore, Rohland et al. (2004), Hansen and Girgis (2010) and Dolan et al. (2015) concluded that the one-factor burnout measure could be effectively used as an alternative.

In order to carry out a detailed analysis of neurological and neurosurgical nurses' work-related depression, job burnout and satisfaction, we established a research team consisting of specialists working in neurological and neurosurgical departments. The team members met regularly throughout the study period. During the meetings, the development and direction of activities in the study area were set. At each meeting, the previous arrangements were modified to make the analysis as effective as possible. The first stage of obtaining qualitative material was the analysis of the desk research literature, that is an in-depth analysis of information on work-related depression, job burnout and satisfaction phenomena among neurological and neurosurgical nurses.

2.5 | Ethical consideration

This study was approved by the Bioethics Committee of Nicolaus Copernicus University in Toruń at Collegium Medicum of Ludwik Rydygier in Bydgoszcz, and the Polish Society of Neurological Nurses. Informed verbal consent to participate in the study was obtained without any pressure, voluntary participation in the project was guaranteed, and respondents were provided with anonymity and confidentiality.

2.6 | Data analysis

Data were analysed using Statistica version 13.1. The chi-square test was used to assess the relationship between categorical variables (Tables 1 and 2), while logistic regression analysis was performed to identify factors related to occupational burnout and satisfaction (Table 3). Each type of burnout and level of satisfaction were treated as dependent variables. On the other hand, sociodemographic data were considered qualitative predictors. Path diagrams were used to

TABLE 1 Sociodemographic characteristics of participants

Characteristics	Neurological (N = 103) N (%)	Neurosurgical (N = 103) N (%)	Total (N = 206) N (%)	Ward difference p
Sex				
Female	99 (96.1)	97 (94.2)	196 (95.1)	.52
Male	4 (3.9)	6 (5.8)	10 (4.9)	
Age				
25–34 years	18 (17.5)	11 (10.7)	29 (14.1)	.15
35–44 years	42 (40.8)	51 (49.5)	93 (45.1)	
45–54 years	33 (32.0)	37 (35.9)	70 (34.0)	
>54 years	10 (9.7)	4 (3.9)	14 (6.8)	
Education				
Diploma in nursing	54 (52.5)	47 (45.6)	101 (49.0)	.55
Bachelor of nursing	26 (25.2)	27 (26.2)	53 (25.7)	
Master of nursing	23 (22.3)	29 (28.2)	52 (25.3)	
Distance to work				
0–9 km	42 (40.8)	51 (49.5)	93 (45.1)	.55
10–29 km	30 (29.1)	29 (28.2)	59 (28.6)	
30–59 km	21 (20.4)	16 (15.5)	37 (18.0)	
>59 km	10 (9.7)	7 (6.8)	17 (8.3)	
Marital status				
Single (never married)	19 (18.4)	16 (15.5)	35 (17.0)	.71
Married	69 (67.0)	76 (73.8)	145 (70.4)	
Divorcee	12 (11.7)	8 (7.8)	20 (9.7)	
Widow/Widower	3 (2.9)	3 (2.9)	6 (2.9)	
Years of experience				
0–9 years	14 (13.6)	14 (13.6)	28 (13.6)	.53
10–19 years	26 (25.2)	35 (33.9)	61 (29.6)	
20–29 years	51 (49.5)	42 (40.8)	93 (45.1)	
30 or more years	12 (11.7)	12 (11.7)	24 (11.7)	
Type of shift				
Morning (7.35 hr)	21 (20.4)	15 (14.6)	36 (17.5)	.49
Morning +night (12 hr)	77 (74.8)	81 (78.6)	158 (76.7)	
Managerial position	5 (4.8)	7 (6.8)	12 (5.8)	

Note: p-values for gender differences (chi-square test).

illustrate the Spearman's correlation between the three variables: job satisfaction, burnout and work-related depression (Figure 1). The statistical significance level was set at $p \leq .05$.

3 | RESULTS

3.1 | Descriptive characteristics

Table 1 shows the participants' sociodemographic characteristics. Regarding age, 14.1% of the participants were 25–34 years old, 45.1% were 35–44 years old, 34.0% were 45–54 years old, and 6.8% were 55 years and older. On average, 49% had secondary education, 25.7% had a bachelor's degree in nursing, and 25.3% had a master's degree in

nursing. Additionally, 45% of nurses travelled 0–9 km to work, 28.6% travelled 10–29 km, 18% travelled 30–59 km, and 8% travelled distances longer than 59 km. Most respondents were married (70.4%) or had always been single (17%). The largest percentage of respondents (45.1%) had 2 years of experience. Furthermore, the vast majority of nurses (76.7%) worked in a 12-hr shift system. There were no statistically significant differences between the examined features ($p > .05$).

3.2 | Factors associated with burnout and job satisfaction

In this study, 32% of the respondents reported to experience work-related burnout. In addition, colleague- and patient-related burnout

TABLE 2 Prevalence of burnout and satisfaction among nurses

| Characteristic | Total sample (N = 206) | | | | | | | | |
| | Work-related burnout | | Colleague-related burnout | | Patient-related burnout | | Satisfaction | |
	N (%)	p	N (%)	p	N (%)	p	N (%)	p
Overall	66 (32.0)		91 (44.2)		47 (22.8)		148 (71.8)	
Department of								
Neurological	37 (56.1)	.23	61 (67.0)	<.01	28 (59.6)	.14	64 (84.2)	<.01
Neurosurgical	29 (43.9)		30 (33.0)		19 (40.4)		84 (15.8)	
Sex								
Female	63 (95.5)	.89	87 (95.6)	.79	46 (97.9)	.34	142 (95.9)	.4
Male	3 (4.5)		4 (4.4)		1 (2.1)		6 (4.1)	
Age								
24–34	5 (7.6)	.17	11 (12.0)	.90	4 (8.5)	.43	22 (14.9)	.61
35–44	31 (47.0)		42 (46.2)		25 (53.2)		68 (46.0)	
45–54	23 (34.8)		32 (35.2)		16 (34.0)		50 (33.8)	
>54	7 (10.6)		6 (6.6)		2 (4.3)		8 (5.3)	
Education								
Diploma in nursing	34 (51.5)	.44	46 (50.5)	.22	26 (55.3)	.61	70 (47.2)	.72
Bachelor of nursing	19 (28.8)		27 (29.7)		11 (23.4)		39 (26.4)	
Master of nursing	13 (19.7)		18 (19.8)		10 (21.3)		39 (26.4)	
Distance to work								
0–9 km	30 (45.5)	.25	36 (39.6)	.02	21 (44.7)	.89	65 (43.9)	.12
10–29 km	14 (21.2)		23 (25.3)		12 (25.6)		51 (34.5)	
30–59 km	16 (24.2)		19 (20.9)		9 (19.1)		21 (14.2)	
>59 km	6 (9.1)		13 (14.2)		5 (10.6)		11 (7.4)	
Marital status								
Single (never married)	12 (18.2)	.68	15 (16.5)	.96	9 (19.1)	.94	24 (16.2)	.80
Married	48 (72.8)		65 (71.4)		32 (68.2)		107 (72.3)	
Divorcee	4 (6.0)		8 (8.8)		5 (10.6)		13 (8.9)	
Widow/Widower	2 (3.0)		3 (3.3)		1 (2.1)		4 (2.6)	
Years of experience								
0–9 years	5 (7.6)	.12	8 (8.8)	.22	5 (10.6)	.74	22 (14.9)	.09
10–19 years	16 (24.2)		26 (28.6)		12 (25.5)		50 (33.8)	
20–29 years	35 (53.0)		47 (51.6)		24 (51.1)		61 (41.2)	
30 or more years	10 (15.2)		10 (11.0)		6 (12.8)		15 (10.1)	
Type of shift								
Morning (7.35 hr)	14 (21.2)	.57	19 (20.9)	.09	6 (12.8)	.51	25 (16.9)	.64
Morning +night (12 hr)	49 (74.2)		70 (76.9)		39 (82.9)		113 (76.4)	
Managerial position	3 (4.5)		2 (2.2)		2 (4.3)		10 (6.7)	

Note: p-value—chi-square test.

Italic values means significant dependencies.

were noted in 44.2% and 22.8% of the respondents respectively. Finally, 71.8% of the nurses were satisfied with their work. The independent sample chi-square test suggested that the type of department had a statistically significant effect on the presence of colleague-related burnout and on the level of perceived satisfaction ($p < .01$). Furthermore, distance to work influenced the occurrence of colleague-related burnout (Table 2).

3.3 | Correlation analysis

Table 3 shows the detailed correlation of sociodemographic and employment data with burnout syndrome. The amount of variance in burnout, explained by the logistic regression model, was 0.868, and the F-statistic for the overall regression model was 2.341, while the p-value for this F-statistic was 0.002. The results indicated that

TABLE 3 Logistic regression models among sociodemographic characteristics

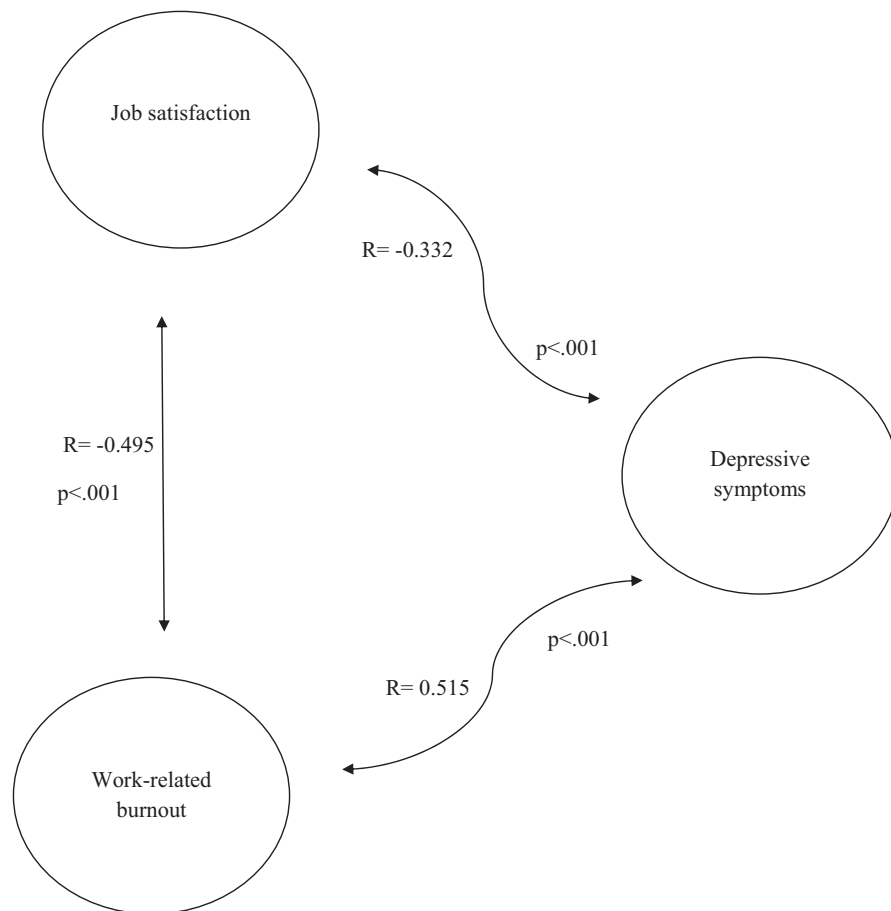| Question	Work-related burnout OR (95%CI)	p	Colleague-related burnout OR (95% CI)	p	Patient-related burnout OR (95% CI)	p	Satisfaction OR (95% CI)	p
Neurological vs. Neurosurgical	1.43 (0.79–2.58)	.23	3.53 (1.98–6.31)	<.01	1.65 (0.85–3.20)	.14	0.37 (0.20–0.70)	<.01
Sex (Female vs. Male)	1.11 (0.28–4.42)	.89	1.20 (0.33–4.38)	.79	2.76 (0.34–22.36)	.34	1.75 (0.48–6.45)	.40
Age (vs. 24–34)								
35–44	2.40 (0.84–6.90)	.1	1.34 (0.57–3.17)	.49	2.30 (0.73–7.26)	.16	0.87 (0.29–2.59)	.81
45–54	2.35 (0.79–6.95)	.12	1.38 (0.57–3.34)	.48	1.85 (0.56–6.11)	.31	0.80 (0.29–2.15)	.65
>54	4.80 (1.16–19.92)	.03	1.22 (0.34–4.49)	.76	1.04 (0.17–6.50)	.97	0.42 (0.11–1.65)	.22
Education (vs. master of nursing)								
Diploma in nursing	1.52 (0.72–3.23)	.27	1.58 (0.79–3.16)	.2	1.46 (0.64–3.31)	.37	0.75 (0.35–1.60)	.46
Bachelor of nursing	1.68 (0.72–3.89)	.23	1.96 (0.89–4.30)	.09	1.10 (0.42–2.86)	.85	0.93 (0.39–2.23)	.87
Distance to work (>59 km)								
0–9 km	0.87 (0.33–2.27)	.77	0.19 (0.06–0.64)	<.01	0.70 (0.22–2.21)	.54	1.27 (0.43–3.76)	.67
10–29 km	0.57 (0.18–1.82)	.34	0.20 (0.06–0.68)	<.01	0.61 (0.18–2.08)	.43	3.48 (1.00–12.05)	.04
30–59 km	1.40 (0.43–4.58)	.58	0.32 (0.09–1.18)	.09	0.78 (0.21–2.79)	.69	0.72 (0.22–2.35)	.58
Marital status (vs. single)								
Married	0.95 (0.44–2.07)	.89	1.08 (0.51–2.28)	.83	0.82 (0.35–1.92)	.64	1.29 (0.58–2.88)	.53
Divorcee	0.48 (0.13–1.76)	.27	0.89 (0.29–2.72)	.84	0.96 (0.27–3.41)	.95	0.85 (0.27–2.72)	.79
Widow/Widower	0.96 (0.15–6.01)	.96	1.33 (0.24–7.56)	.75	0.58 (0.06–5.63)	.64	0.91 (0.15–5.78)	.93
Years of experience (0–9 years)								
10–19 years	1.64 (0.53–5.03)	.39	1.86 (0.71–4.87)	.21	1.13 (0.35–3.57)	.84	1.24 (0.41–3.78)	.71
20–29 years	2.78 (0.97–7.97)	.05	2.55 (1.02–6.38)	.04	1.60 (0.55–4.68)	.39	0.52 (0.19–1.41)	.20
30 or more years	3.29 (0.93–11.61)	.06	1.79 (0.56–5.66)	.32	1.53 (0.40–5.84)	.53	0.46 (0.14–1.55)	.21
Type of shift (morning 7.35h)								
Morning+night (12 hr)	0.71 (0.33–1.50)	.36	0.71 (0.34–1.47)	.36	1.64 (0.63–4.23)	.31	1.10 (0.50–2.43)	.8
Managerial position	0.52 (0.12–2.27)	.39	0.18 (0.03–0.93)	.04	1.00 (0.17–5.77)	.98	2.20 (0.41–11.75)	.36

Note: Italic values means significant dependencies.

nurses working in the neurology department were statistically more than three times more likely than those in neurosurgical departments to struggle with colleague-related burnout (odds ratio [OR] 3.53; 95% confidence interval [CI] 1.98, 6,31; $p < .01$). In addition, nurses from the neurological department were statistically less satisfied with their work (OR 0.37; CI 0.20, 0.70; $p < .01$). Work-related burnout was higher in nurses older than 54 years than those that in the youngest age category (OR 4.80; CI: 1.16, 19.92; $p = .03$). The subjects who lived closest to their workplaces, that is, within 0–9 km and 10–29 km, statistically experienced less colleague-related burnout than those living farthest away >59 km (OR 0.19, CI: 0.06, 0.64, $p < .01$; OR 0.20, CI: 0.06, 0.68, $p < .01$ respectively). Nurses living 10–29 km from their workplaces experienced job satisfaction over three times more often than those living >59 km away (OR 3.48; CI: 1.00, 12.05; $p = .04$). Furthermore, those with 20–29 years of working experience underwent over twice as much work- and colleague-related burnout as those with 6 months to 9 years of working experience (OR 2.78, CI: 0.97, 7.97, $p = .05$; OR 2.55, CI: 1.02, 6.38, $p = .04$ respectively). In this study, colleague-related burnout was statistically less frequent in managers than in those working 7.35h (OR 0.18; CI 0.03, 0.93; $p = .04$).

The path diagram in Figure 1 illustrates the structural model analysis of the relationship between job satisfaction, burnout and depressive symptoms. The cause-and-effect relationship was specified, where the absence of burnout was a predictor of job satisfaction (correlation coefficient [R] = −0.495; $p < .001$). In addition, symptoms of depression were predictors of occupational burnout ($R = 0.515$; $p < .001$). In contrast, job dissatisfaction was a predictor of depression symptoms ($R = −0.332$; $p < .001$) (Figure 1).

4 | DISCUSSION

The current study is the first multicentre study conducted in Poland among a fairly large, geographically diverse sample of neurological and neurosurgical nurses. Few studies worldwide have examined the prevalence of burnout among neuroscience nurses. In the present study, we found that a high percentage of nurses experienced work-, colleague- and patient-related burnout (32%, 44.2% and 22.8% respectively). These prevalence rates were similar to those reported in most studies. For example, Purvis and Saylor (2019) assessed burnout among 65 healthcare professionals in the Neurosciences Critical Care Unit (NCCU). Of these, 49 (75%) were nurses, 49 (75%) were females, and the mean age was 34 years. Their research reported high scores for emotional burnout dimension (EE) and depersonalization (DP) in 45% ($N = 29$) and 28% ($N = 18$) of the participants respectively. Slezáková et al. (2015) assessed the occurrence of burnout among 120 neurological nurses. Medium degrees of EE and DP were reported among 28% ($N = 34$) and 37% ($N = 44$) of nurses respectively. Furthermore, high degrees of EE and DP were recorded in

51% (N = 61) and 42% (N = 51) of the respondents respectively. In addition, we assessed job satisfaction (medium degree 48%, N = 58; high degree 17%, N = 21). Here, 71.8% of the nurses reported satisfaction with their work. In contrast, Jiang et al. (2016), who studied 367 neurological nurses, reported job satisfaction among 37% (N = 137) of respondents. Additionally, in that study, nearly 90% and 93% of nurses experienced EE and DP respectively. In a study by Wang et al. (2019), conducted on 2,504 nurses, 64% experienced excessive burnout, while more than half (56.2%) experienced mild or moderate burnout. Furthermore, Kupcewicz and Jóźwik's (2019) study on 1,806 nurses working in 23 hospitals showed that during contact with patients, 28.2% of the respondents experienced burnout symptoms. In addition, 27% of the respondents reported work-related burnout and 21% reported personal burnout. Almost half of the respondents (46.6%) assessed their self-esteem as average.

Many studies have shown a correlation between occupational burnout and various factors. These factors primarily include workplace, personal and professional factors (Berger et al., 2015; Cañadas-de la Fuente et al., 2018; Kupcewicz & Jóźwik, 2019; Lin et al., 2009; Meeusen et al., 2010). Among personal factors, age, global self-esteem and marital status play a statistically significant role (Akman et al., 2016; Berger et al., 2015; Cañadas-de la Fuente et al., 2018; Kupcewicz & Jóźwik, 2019). Among the profession-related factors, years of work experience, work system, workplace and ward/clinic profile (Gallagher & Gormley, 2009; Kupcewicz & Jóźwik, 2019; Moussa & Mahmood, 2013), lacking a clear professional role (Liakopoulou et al., 2008), working conditions, hostility towards workers (Alameddine et al., 2015; Bernaldo-De-Quirós et al., 2015), excessive working hours (García-Izquierdo & Ríos-Rísquez, 2012), contract conditions and lack of assertiveness (Salazar et al., 2014; Va´squez-Manrique et al., 2014) play an important role. Our study also showed that personal (age) and professional (type of department, distance to work, experience and shift work) factors influence the occurrence of burnout symptoms. Older nurses with longer work experience were more prone to burnout than younger nurses were. A possible explanation is that senior nurses have been overburdened and tired for many years and may have not fully developed strategies to help them manage stress effectively. The results show that older and longer-term nurses have less substantive knowledge about burnout syndromes, which is somewhat surprising. One possible explanation for this is that younger nurses, who are currently new in the profession, received elementary knowledge on this subject in their comparatively new training courses (Kędra & Sanak, 2013). The study also showed that a high shift workload increases the risk of professional burnout in nurses. This is in line with the results of previous studies including Gallagher and Gormley (2009), Kupcewicz and Jóźwik (2019), and Wang et al. (2019).

Nevertheless, there is a large discrepancy among the results of occupational burnout studies. This may be because the authors used differing research tools. For example, while some studies (Akman et al., 2016; Gallagher & Gormley, 2009; García-Izquierdo & Ríos-Rísquez, 2012; Jiang et al., 2016; Liakopoulou et al., 2008; Moussa & Mahmood, 2013; Purvis et al., 2019; Slezáková et al., 2015;

Wang et al., 2019) used Maslach Burnout Inventory (MBI), others (Kupcewicz & Jóźwik, 2019) used the Copenhagen Burnout Inventory (CBI), and still others (Jiang et al., 2016) used the authors' questionnaire. Other important factors influencing the differences in the prevalence of burnout may be different work practices applied and recommended in different countries, different in-hospital procedures, work organization, interpersonal relations, cultural differences or the size of the sample—the last of which differed across studies, ranging from 49 (Purvis et al., 2019)–over 1,800 nurses (Kupcewicz & Jóźwik, 2019; Wang et al., 2019).

Worldwide research has shown a link between depressive disorders and burnout syndrome. However, whether these disorders are symptoms of the same clinical picture or constitute a separate disease entity is debatable (Bianchi et al., 2013, 2015; Schonfeld & Bianchi, 2016). In this study, symptoms of depression were predictors of the development of burnout syndrome. Studies conducted by other scientists have also shown that insomnia and depression are risk factors for burnout (Iorga et al., 2017). However, burnout also predisposes one to symptoms of depression. A study conducted among ICU nurses showed that an increase in the level of DP and EE had a statistically significant influence on the occurrence of depressive disorders (Vasconcelos et al., 2018). Moreover, this research also shows that occupational burnout also reduces job satisfaction and vice versa.

4.1 | Implications and limitations

It should be noted that the workers with a higher risk of burnout include doctors, nurses, social workers and emergency service workers. Among them, the nursing profession is particularly interesting. Many authors report that it is in this profession that the most important elements for the development of burnout syndrome are present. These include beliefs and values that determine the choice of profession, personality traits that are most desirable in a nurse's role, work that is extremely emotionally burdensome and the structure and organization of work (Dyrbye et al., 2014; Fargen et al., 2020; Geuens et al., 2020; Maslach & Jackson, 1981; Misiak et al., 2020; Santos et al., 2020; Woo et al., 2020). Our research showed that nurses do not feel completely satisfied with their work and most of them experience burnout while working in neuroscience units. Therefore, it is necessary to improve neurological and neurosurgical nurses' perceived job satisfaction and reduce their occupational burnout levels. In turn, the measures taken could help ensure high-quality care and contribute to maintaining the stability of the nursing staff. Additionally, it is recommended that nurses receive training in burnout, depressive syndromes and stress management. It is also necessary to conduct screening tests in this area and organize support programmes for people with problems.

This study had several limitations. First, the sample size was relatively small and, second, the study employed convenience sampling. Thus, it is not possible to generalize the results to the entire population. Furthermore, due to the reasons why some chose to participate and others chose not to, the results might be biased. It is not possible

to estimate fully the degree of error probability with which we extrapolate the obtained results to the entire population. Third, the study design was cross-sectional, making it impossible to determine the causality of the factors affecting the level of burnout. Therefore, a longitudinal study is necessary to investigate changes in recorded occupational burnout and job satisfaction over time. Finally, the results may not be applicable to other regions of the country since our study was conducted in only one province. Thus, research on a more diverse sample is necessary.

5 | CONCLUSIONS

This is the first multicentre study on burnout prevalence and job satisfaction among neurological and neurosurgical nurses in Poland. The study showed that 32% of the respondents experience work-related burnout, 44.2% experience colleague-related burnout, and 22.8% experience patient-related burnout. On the other hand, 71.8% of the nurses were satisfied with their work. Our research has shown that personal factors (age) and place of work (type of department, distance to work, experience and shift work) influence the occurrence of burnout symptoms. Therefore, measures to improve nurses' current work environment, enable their professional and personal development and optimally support their emotional needs are imperative.

CONFLICT OF INTEREST
The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS
R.Ś.: Conceptualization, methodology, investigation, resources, data curation and visualization. R.Ś., K.F.: Software, project administration. R.Ś., R.J.: Validation. R.Ś., K.F., A.K.: Formal analysis. R.Ś., K.F., R.J., A.K., M.T.S., A.W., M.B.: Writing—original draft preparation. K.F.: Writing—review and editing. A.W., M.B.: Supervision. R.Ś., M.T.S: Funding acquisition. All authors have read and agreed to the published version of the manuscript.

DATA AVAILABILITY STATEMENT
The data presented in this study are available on request from the corresponding author.

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APPENDIX

QUESTIONNAIRE—ANALYSIS OF JOB BURNOUT, SATISFACTION AND WORK-RELATED DEPRESSION AMONG NEUROLOGICAL AND NEUROSURGICAL NURSES IN POLAND: A CROSS-SECTIONAL AND MULTICENTRE STUDY

1st sociodemographic part

1. Sex:

☐ Female
☐ Male

2. Age:

☐ 25–34
☐ 35–44
☐ 45–54
☐ 55 and older

3. Marital status:

☐ Single (never married)
☐ Married
☐ Divorced
☐ Widow/Widower

4. What distance do you cover when travelling to work:

☐ 0–9 km
☐ 10–29 km
☐ 30–59 km
☐ Over 60 km

5. Education:

☐ Diploma in nursing
☐ Higher—bachelor's degree
☐ Higher—master's degree

6. Work experience in the profession:

☐ 0–9
☐ 10–19
☐ 20–29
☐ 30 and more

7. What department do you work at?

☐ Department of Neurosurgery
☐ Department of Neurology

8. Position at work:

☐ Executive—nurse (systemic—12 hr)
☐ Executive—nurse (single shift—7.35 hr)
☐ Managerial position

2nd part—satisfaction

1. Do you feel contentment and satisfaction with your professional work?

☐ yes
☐ no

3rd part—burnout

2. Do you feel burned out because of your work?

☐ yes
☐ no

3. Are you afraid of criticism of your superiors and associates while performing professional activities?

☐ yes
☐ no

4. Do you avoid contact with your superiors and colleagues?

☐ yes
☐ no

5. Is it difficult for you to work with your superiors and colleagues?

☐ yes
☐ no

6. Does working with your superiors and colleagues consume all your energy?

☐ yes
☐ no

7. Do you feel tired of working with your superiors and colleagues?

☐ yes
☐ no

8. Do you feel satisfied with the remuneration for the work performed?

☐ yes
☐ no

9. Do you feel reluctant to go to work?

☐ yes
☐ no

10. Do you have the opportunity to raise your professional qualifications?

☐ yes
☐ no

11. Do you see the need to raise professional qualifications?

☐ yes
☐ no

12. Do you feel support and understanding from your superiors and colleagues?

☐ yes
☐ no

13. Do you feel a sense of being overburdened with professional duties?

☐ yes
☐ no

14. Do you feel any negative emotions (irritation, reluctance) during your work?

☐ yes
☐ no

15. Do you have difficulty concentrating during your work?

☐ yes
☐ no

16. Have you noticed symptoms such as frequent colds, headaches, infections, gastrointestinal pains?

☐ yes
☐ no

17. Do you have any problems related to sleep (waking up at night, difficulties in falling asleep and getting up in the morning)?

☐ yes
☐ no

18. Does the topic of your professional work cause you irritation, anxiety, depression?

☐ yes
☐ no

19. Do you feel tired and mentally exhausted after finishing work?

☐ yes
☐ no

20. Do you often think about quitting your job or changing your profession?

☐ yes
☐ no

21. Did you use the help of a psychologist or psychiatrist in connection with your work?

☐ yes
☐ no

22. Has your treatment of patients (stereotypically) changed last year?

☐ yes
☐ no

23. Do you feel reluctant to talk to the patient?

☐ yes
☐ no

24. Do you notice a lack of empathy and indifference in relations with patients?

☐ yes
☐ no