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RESEARCH ARTICLE

THE CORRELATION BETWEEN BURNOUT SYNDROME AND TENSION-TYPE HEADACHE IN NURSES AT THE ROEMANI MUHAMMADIYAH HOSPITAL SEMARANG

(HUBUNGAN BURNOUT SYNDROME DENGAN TENSION-TYPE HEADACHE PADA PERAWAT DI RUMAH SAKIT ROEMANI MUHAMMADIYAH SEMARANG)

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ABSTRACT

Tension-type headache (TTH) is the most common form of primary headache in the general population, with a one-year prevalence ranging from 38 to 78%. The most common triggers for TTH are stress and emotional conflict. Nurses are among the workers exposed to high work stressors, placing them at risk of developing TTH, which is often triggered by chronic occupational stress known as burnout syndrome. This study aims to determine the correlation between burnout syndrome and tension-type headaches in nurses. This research employed an observational cross-sectional design conducted on 87 nurses at Roemani Muhammadiyah Hospital in Semarang, using proportional random sampling. The research instruments included a tension-type headache questionnaire and the Maslach Burnout Inventory (MBI). The statistical test used is the chi-square test. Among the 87 respondents, mild burnout syndrome was present in 64.4%, moderate burnout syndrome in 24.1%, and severe burnout syndrome in 11.5%. Respondents reporting tension-type headache constituted 26.4%, compared to 73.6% without this condition. The majority of respondents with severe burnout syndrome also experienced tension-type headaches (70%). There was a significant correlation between burnout syndrome and tension-type headaches among nurses at Roemani Muhammadiyah Hospital, Semarang, with a p-value of less than 0.005.

Keywords: burnout syndrome, headache, tension-type headache

ABSTRAK

Tension-type headache (TTH) adalah bentuk sakit kepala primer yang pada populasi umum paling sering terjadi dengan prevalensi satu tahun sebesar 38-78%. Pemicu tersering terjadinya TTH berupa stres dan konflik emosional. Perawat salah satu pekerja dengan stresor kerja tinggi sehingga memiliki risiko terjadinya TTH yang dipicu oleh stres kronis di tempat

kerja yang disebut burnout syndrome. Penelitian ini bertujuan untuk mengetahui adanya hubungan antara burnout syndrome dengan tension-type headache pada perawat. Penelitian studi observasional ini menggunakan desain cross-sectional dilakukan pada 87 perawat di RS Roemani Muhammadiyah Semarang dengan teknik sampling berupa proportional random sampling. Instrumen penelitian ini dengan kuesioner tension-type headache dan Maslach Burnout Inventory (MBI). Uji statistik yang digunakan berupa uji chi-square. Sampel berjumlah 87 responden dengan burnout syndrome ringan (64,4%), burnout syndrome sedang (24,1%), burnout syndrome berat (11,5%) dan mengalami tension-type headache (26,4%) sedangkan yang tidak mengalami tension-type headache (73,6%). Responden mengalami burnout syndrome berat dan mengalami tension-type headache (70%). Hasil uji Chi-Square didapatkan nilai p value 0,000 (p <0,05) yang artinya terdapat hubungan antara burnout syndrome dengan tension-type headache.

Kata kunci: burnout syndrome, sakit kepala, tension-type headache

INTRODUCTION

Tension-type headache (TTH) is the most common form of primary headache in the general population, with a one-year prevalence ranging from 38 to78%.[1] According to the Global Campaign Against Headache, TTH causes a greater disability burden than migraine, primarily due to its higher prevalence. Therefore, identifying risk factors for TTH is an important health issue.[2] Headaches in TTH are typically pressing or tightening in nature, of mild to moderate intensity, and bilateral. Routine physical activity does not aggravate the symptoms. There is no nausea or vomiting, but either photophobia or phonophobia may occur.[3] The most common triggers causing TTH are stress and emotional conflict.[4,5] Chronic stress results in a sustained increase in glutamate, which stimulates the production of large amounts of nitric oxide, causing vasodilation of intracranial structures as well as nitrosative damage leading to pain in the pericranial muscles.[6]

TTH often occurs in workers exposed to high work stressors, such as nurses who face heavy workloads with high intensity for prolonged periods.[7,8] A collection of symptoms resulting from a response to chronic stress in the workplace is called burnout syndrome.[9] The classical triad of burnout syndrome include emotional exhaustion, low personal achievement, and depersonalization, which collectively have a negative impact on physical health, productivity, and work perfomance.[10] Nurses have been reported to have a higher prevalence of burnout among healthcare workers.[9] Nurses are confronted with various stressors in the workplace, including patient care demands and safety concerns, long shifts, excessive workloads, work-related conflicts, conflicts with supervisors, and a lack of organizational

support.[11] Nurses experiencing burnout may have decreased job satisfaction, worsening mental health issues, and physical health problems (e.g., sleep disturbances, headaches, or poor general health).[12] One of the potential health problems is headache, specifically tension-type headache. [4,13]

Burnout syndrome among nurses may trigger the occurrence of tension-type headaches, which in turn may affect their performance as healthcare professionals in providing patient care.[14,15] Research on the association between burnout and tension-type headache has not previously been conducted at Roemani Muhammadiyah Hospital, Semarang. Given this background, the present study aims to investigate the correlation between burnout syndrome and tension-type headache among nurses at Roemani Muhammadiyah Hospital, Semarang.

MATERIALS AND METHODS

This study emppoyed an observational cross-sectional design and was conducted in April 2023. The sample consisted of actively working nurses at Roemani Muhammadiyah Hospital, Semarang. A total of 87 nurses were selected using a probability-based proportional random sampling technique, which involved determining the sample size based on the proportion of nurses in each ward and selecting participants randomly. The inclusion criteria were functional nurses working at Roemani Muhammadiyah Hospital, Semarang, who were willing to participate in the study. The exclusion criteria included a history of mild to severe head trauma, a diagnosis of brain tumor, alcohol consumption within 24 hours prior to headache onset, consumption of coffee or other caffeinated beverages exceeding one cup per day over the past three months, history of sleep disorders (insomnia), and headaches occurring during menstruation.

Data for this study were collected through questionnaires completed by the respondents, which consisted of an informed consent form, personal identification, screening sheet, tension-type headache questionnaire, and the Maslach Burnout Inventory (MBI) questionnaire. The collected data were analyzed using univariate analyses to describe the characteristics of each research variable, and bivariate analyses were performed using the chi-square test with a confidence level of 95% and a significance level of $p < \alpha$ ($\alpha = 0.05$).

This study fulfilled the ethical research requirements, as evidenced by the issuance of the Ethical Approval Letter No.12/EC/KEPK-FK/UNIMUS/2023 by the Health Research Ethics Commitee (Komisi Etik Penelitian Kesehatan) KEPK)

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RESULTS AND DISCUSSION

Table 1 Respondent characteristics

No.	Variable	Category	Frequency (n)	Percentage (%)
1.	Age	24-29 years old	22	25,3
		30-39 years old	39	44,8
		40-49 years old	17	19,5
		50-55 years old	9	10,3
2.	Gender	Female	68	78,2
		Male	19	21,8
3.	Education	Diploma III in Nursing	65	74,7
		Ners	22	25,3
4.	Marital Status	Married	77	88,5
		Unmarried	10	11,5
5.	Burnout Syndrome	Mild	56	64,4
		Moderate	21	24,1
		Severe	10	11,5
6.	Tension-Type Headache	No TTH	64	73,6
		Experienced TTH	23	26,4

Table 1 presents the frequency distribution based on respondent characteristics, consisting of 87 nurses. The nurses' ages ranged from 24 to 55 years, with a mean age of 35.74 years and a standard deviation of 8.327 years. The majority were aged 30–39 years, representing 39 respondents (44.8%). The respondents were predominantly female, with 68 nurses (78.2%). Most of the nurses held a Diploma III in Nursing (74.7%), and the majority were married, totaling 77 individuals (88.5%). The highest proportion of nurses experienced mild burnout syndrome, affecting 56 respondents (64.4%), while severe burnout syndrome was reported by 10 respondents (11.5%). Additionally, 23 nurses (26.4%) experienced tension-type headaches.

Table 2 Respondent characteristics based on Burnout Syndrome

No.	Variable	Category	Burnout Syndrome						Amount	
			Mild		Moderate		Severe			
			n	%	n	%	n	%	n	%
1.	**Age**	24-29 years old	11	50	6	27,3	5	22,7	22	100
		30-39 years old	27	69,2	7	17,9	5	12,8	39	100
		40-49 years old	10	58,8	7	41,2	0	0	17	100
		50-55 years old	8	88,9	1	11,1	0	0	9	100
2.	**Gender**	Female	42	61,8	18	26,5	8	11,8	68	100
		Male	14	73,7	3	15,8	2	10,5	19	100
3.	**Education**	Diploma III in Nursing	43	66,2	14	21,5	8	12,3	65	100
		Ners	13	59,1	7	31,8	2	9,1	22	100
4.	**Marital Status**	Married	50	64,9	19	24,7	8	10,4	77	100
		Unmarried	6	60	2	20	2	20	10	100

Table 2 shows the characteristics of respondents based on burnout syndrome. The majority of nurses experiencing severe burnout syndrome were aged 24–29 years (22.7%). A higher percentage of those with severe burnout syndrome were female (11.8%). Nurses with a Diploma III in Nursing had the highest proportion of severe burnout (12.3%). Furthermore, unmarried nurses had the highest percentage of severe burnout syndrome (20%).

Table 3 Respondent characteristics based on tension-type headache

No.	Variable	Category	Tension-Type Headache				Amount	
			No TTH		Experienced TTH			
			n	%	n	%	n	%
1.	**Age**	24-29 years old	15	68,2	7	31,8	22	100
		30-39 years old	27	69,2	12	30,8	39	100
		40-49 years old	14	82,4	3	17,6	17	100
		50-55 years old	8	88,9	1	11,1	9	100
2.	**Gender**	Female	47	69,1	21	30,9	68	100
		Male	17	89,5	2	10,5	19	100
3.	**Education**	Diploma III in Nursing	48	73,8	17	26,2	65	100
		Ners	16	72,7	6	27,3	22	100
4.	**Marital Status**	Married	57	74	20	26	77	100
		Unmarried	7	70	3	30	10	100

Table 3 presents the characteristics of respondents based on the presence of tension-type headache (TTH). The majority of nurses who experienced TTH were aged 24–29 years (31.8%), while those without TTH were primarily aged 50–55 years

(88.9%). Most nurses with TTH were female (30.9%). TTH was most prevalent among nurses with a Professional Nursing Degree (Ners) (27.3%) and among those who were unmarried (30%).

The results of this study indicate that tension-type headaches were more commonly observed by respondents aged 24–29 years (31.8%), who also showed a higher prevalence of severe burnout syndrome within the same age group (22.7%). The typical age of onset for tension-type headaches ranges between 20 and 35 years.[2] Younger individuals are at greater risk of experiencing burnout syndrome, as this stage often mark the early phase of their careers, which requires adaptation to job demands. As individuals age, the risk tends to decrease due to improved job mastery and better adaptation to occupational stressors.[16,17] Inadequate occupational adaptation may result in work-related stress, which acts as a triggering factor for tension-type headaches.[18]

The majority of respondents were female (78.2%), with a higher proportion of severe burnout syndrome observed among females (11.8%). Similarly, tension-type headaches were more prevalent in female respondents (30.9%). Females are generally more susceptible to emotional exhaustion than males, as they tend to experience higher levels of stress. There are gender-based differences in stress responses, which are associated with the activity of the hypothalamic-pituitary-adrenal (HPA) axis responsible for cortisol production, as well as the sympathetic nervous system. Female sex hormones attenuate the HPA and sympathoadrenal responses, thereby reducing the negative feedback of cortisol to the brain, which makes females more prone to experiencing stress.[19] Additionally, females naturally exhibit a greater number of pain-sensitive points involved in the pathophysiology of tension-type headaches (TTH) compared to males, which contributes to a higher risk of developing TTH among females.[18]

This study found that respondents with a diploma in nursing (DIII) experienced a higher proportion of severe burnout syndrome (12.3%). This finding contrasts with the study by Putri, Zulkaida, and Rosmasuri, which reported that nurses with a bachelor's degree were more likely to experience severe burnout. Nurses with higher educational attainment may face conflicts arising from high expectations in professional practice, such as anticipating higher job positions that are not realized.[20] Respondents holding a Diploma in nursing (DIII) had a greater tendency to experience burnout syndrome, as lower educational qualifications may exacerbate stress levels due to limited knowledge and clinical experience relative compared with those holding a bachelor's degree.[21] In this study,

respondents with a Professional Nursing Degree (Ners) constituted the largest proportion experiencing tension-type headaches (27.3%), which aligns with the findings of El-Sherbiny et al., who reported that the risk of headaches increases with higher educational attainment. Higher levels of education are often associated with elevated stress, which can trigger the onset of tension-type headaches.[22]

The majority of nurses who were unmarried experienced severe burnout syndrome (20%). Compared to married individuals, unmarried individuals are more vulnerable to burnout syndrome. Unmarried persons tend to exhibit higher levels of burnout because they lack contact with family or children, who can provide emotional support and help them mentally prepare to manage personal issues and emotional conflicts. Individuals can better cope with work-related emotional stress through love and social support from family.[23] Emotional conflicts may trigger tension-type headaches, as evidenced by this study, where the highest incidence of tension-type headaches was observed among unmarried nurses (30%). This finding contrasts with the study by Nurul, Parningotan, and Yuniasih, which reported that the majority of tension-type headache sufferers were married, attributing the headaches to marital stressors such as financial concerns, child-rearing responsibilities, and family conflicts that may precipitate or exacerbate symptoms. This discrepancy may reflect individual differences in coping mechanism and adaptation to stressors, resulting in varying risks of developing tension-type headaches.[24]

Table 4 Correlation between burnout syndrome and tension-type headache among nurses

Variable	Category	Tension-Type Headache				Amount (N=87)		P value
		No TTH		Experienced TTH				
		n	%	n	%	n	%	
Burnout Syndrome	Mild	53	94,6	3	5,4	56	100	0,000
	Moderate	8	38,1	13	61,9	21	100	
	Severe	3	30	7	70	10	100	

Table 4 demonstrates that the majority of nurses with severe burnout syndrome also experienced tension-type headache (70%). The Chi-Square test yielded in a p-value of 0.000 (<0.05), indicating a significant correlation between burnout syndrome and tension-type headache.

The findings of this study revealed that 70% of nurses experiencing severe burnout syndrome also suffered from tension-type headaches. The Chi-square test produced a p-value of 0.000 (<0.05), indicating a significant correlation between burnout syndrome and tension-type headaches. This result is consistent with the study by Stuart et al., which reported a relationship between stress and the intensity of tension-type headaches, mediated by pain sensitivity.[25] Early activation of the adrenal axis by glucocorticoids, known to increase glutamatergic excitability in the central nervous system, represents a characteristic component of the stress response. Consequently, elevated levels of glutamate and other cytokines activate receptors and secondary messenger signaling pathways, leading to the activation of nuclear factor κ-light-chain-enhancer of activated B cells (NF-κB). This induces the expression of inducible nitric oxide synthase (iNOS), increases nitric oxide levels, and alters in vasodilation and oxidative properties. Pain results from the dilation of cerebral arteries, dura mater, and other related structures. Persistent pain may subsequently contribute to the development of tension-type headaches.[26,27]

CONCLUSION

This study identified a significant correlation between burnout syndrome and tension-type headache among nurses at Roemani Muhammadiyah Hospital, Semarang.

CONFLICT OF INTEREST

The author declares no conflict of interest with any parties involved in this research.

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