

## Headaches in Hospital Nurses

We read with interest the article by d'Ettore et al. on a retrospective study of the 1-year prevalence of primary headaches in 975 female hospital nurses and the association between occupational risk factors and headaches [1]. The 1-year prevalence of headaches was 45.9%, with tension-type headaches (TTH) being the most commonly reported subtype and associated with age  $\geq$  40 years, length of service  $\geq$  15 years, and more than 5 night shifts per month. Work-related stress (WRS) was a significant predictor of TTH [1]. The study is interesting, but some points should be discussed.

The first point concerns the discrepancy between the statement in the first paragraph of the discussion that all types of primary headaches were included and the statement in the "Methods" section that trigeminal autonomic cephalalgia and other types of primary headaches, as well as secondary headaches, were excluded from the study [1]. This discrepancy should be resolved.

The second point is that no cerebral and spinal imaging results were reported for any of the included patients [1]. As long as no information about the structure of the brain and cervical spine is available, the classification of a specific type of headache is unreliable. In order to rule out causes of secondary headaches in particular, it is essential to have imaging information from the brain and cervical spine of all included patients.

Thirdly, the type, frequency, duration, and accompanying symptoms of headaches may also depend on the specific activities of nursing staff. A nurse who works at a computer all day may have a lower risk of headaches than a nurse who regularly works with bedridden patients. In addition, a nurse who is active in a union may be exposed to less physical and mental stress than a nurse who works exclusively with patients and is not politically organized.

Therefore, the exact extent of physical and mental stress should be included in the analysis.

The fourth point is that headaches in nurses are not only caused by work-related stress, but also by factors unrelated to work. These include genetic predisposition, blood flow to the brain, brain chemistry, neural activity, personality type, personal life experiences outside of work, lifestyle, sleep quality and duration, the quality and intensity of personal relationships with parents, children, partners, neighbors, and friends, the ability to relax, hormonal changes, knowledge of relaxation exercises and coping strategies, nutrition, hydration, comorbidities, and concomitant medications [2]. These factors should be included in the analysis so that non-work-related factors that influence headaches as triggers and maintainers are not overlooked.

Overall, headaches in female nurses may depend not only on work-related factors, but also on numerous influencing factors that are unrelated to work. As long as these non-work-related factors are not included in the analysis, the results of any retrospective study may be misleading.

**Carla Scorza<sup>1</sup>, Fulvio Scorza<sup>1</sup>, Josef Finsterer<sup>2</sup>**

<sup>1</sup>Federal University of Sao Paulo  
(UNIFESP/EPM)

<sup>2</sup>Neurology Dpt., Neurology & Neurophysiology  
Center, Vienna, Austria

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Dear Author,

I read with great interest the study by d'Ettorre and Baldassarre examining the one-year prevalence of primary headache disorders (HDs) among female registered nurses (RNs) and their association with occupational risk factors [1]. The authors provide valuable evidence on an underrecognized occupational health burden in healthcare workers by integrating standardized headache classification with psychosocial risk assessment.

The reported one-year prevalence of HDs (45.9%), with tension-type headache (TTH) as the most frequent subtype, underscores a substantial impact on workforce well-being and productivity [2]. Particularly noteworthy is the observed association between TTH and modifiable occupational determinants, including high work-related stress (WRS), shift-work disorder (SWD), and exposure to more than five night shifts per month. These findings reinforce the growing recognition that headache disorders among nurses are shaped not only by individual vulnerability but also by organizational working conditions [3].

Several methodological aspects merit consideration. Headache identification relied on retrospective self-report during routine occupational health surveillance, with detailed characterization restricted to respondents who initially reported headache. This approach may have introduced recall bias and potential diagnostic misclassification, particularly in differentiating migraine from TTH. In addition, shift-work exposure was assessed using relatively broad indicators; future studies could benefit from more granular metrics capturing cumulative night-shift burden, rotation patterns, recovery intervals, and long-term circadian disruption [4].

The authors appropriately highlight the possible bidirectional relationship between SWD and HDs. Emerging evidence suggests shared neurobiological and metabolic pathways linking sleep disruption, stress, and headache susceptibility [5]. Prospective

longitudinal studies incorporating chronotype, objective sleep measures, and workload indicators may help clarify causal mechanisms.

From a prevention perspective, the study supports prioritizing organizational-level interventions over purely individual-focused approaches. Reducing excessive night-shift exposure, optimizing staffing and shift design, mitigating psychosocial stressors, and implementing structured sleep-health programs may represent effective strategies to reduce headache-related morbidity among nursing personnel. Integrating headache prevention into institutional occupational health policies and regulatory risk-assessment frameworks could contribute to improved workforce sustainability, reduced productivity loss, and safer healthcare environments.

Overall, this study represents a meaningful contribution to occupational headache research and highlights the importance of translating epidemiological findings into actionable, evidence-based workplace interventions.

**Elif Reyhan Sahin**

Erzurum City Hospital, Occupational Medicine  
Clinic, Cat Yolu Caddesi, Yakutiye, Erzurum,  
Turkiye

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## Authors' Reply

Dear Editor,

We thank the authors of the letter to the editor for their comments regarding our cross-sectional study, "Occupational risk for headache disorders in female registered nurses. A retrospective study" [1], and for their interest in our work. In this study, we aimed to analyze the 1-year prevalence of primary headache disorders (HDs) among female registered nurses (RNs) and to investigate the relationship between occupational risk factors and HDs.

Firstly, in our study, we focused only on HDs classified as migraine, chronic headache (CH), medication overuse headache (MOH), and tension-type headache (TTH), in line with other studies that investigated the prevalence of these primary HDs and occupational factors associated with headache among nursing staff [2]. The diagnostic criteria for HDs were based on the International Classification of Headache Disorders, 3rd edition (beta version). Trigeminal autonomic cephalalgia (TAC) was not considered in our study, given its very low prevalence in the general population [3]. Therefore, the sample size in our study did not provide sufficient statistical power to detect TAC in the RN sample.

Secondly, all RNs included in the study underwent mandatory health surveillance conducted by occupational physicians, and any secondary causes of headache were excluded through specialist consultation.

Thirdly, our study was designed to examine the relationship between selected risk factors and HDs, in line with the existing literature [2, 4, 5]. The independent variables were age, length of service, work schedule, number of night shifts per month, shift work disorder, and work-related stress (WRS), and the dependent variables were the headache types (migraine, TTH, CH, MOH). WRS was evaluated according to the INAIL methodology, and each RN was assigned a WRS level (high, medium, or low).

We agree that the role of other occupational factors, such as physical stress, working with bedridden patients or exclusively with patients, and not being

politically organized, may potentially influence the prevalence of HDs and therefore should be explored in future studies focusing on occupational settings.

Finally, we fully agree that headaches have a multifactorial origin, with multiple potential risk factors, both occupational and non-occupational, in a causal relationship. However, as we stated in the limitations section, our study, due to its cross-sectional design, does not allow us to determine causal relationships between variables. Cross-sectional studies can reveal associations but cannot indicate whether the associated factor is a cause or a consequence, or whether there is reciprocity between variables. Therefore, in future studies, causal relationships between both occupational and non-occupational variables should be analyzed using a longitudinal study design.

**Gabriele d'Ettorre<sup>1\*</sup>, Roberta Tornese<sup>2</sup>,  
Andrea Baldassarre<sup>3</sup>**

<sup>1</sup>Department of Occupational Medicine,  
Vito Fazzi Hospital, Lecce, Italy

<sup>2</sup>Vito Fazzi Hospital. Local Health Authority,  
Lecce, Italy

<sup>3</sup>Prevention Department, Occupational Health and  
Safety Service,  
Local Health Authority, Lecce, Italy

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