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Excess Body Weight Is Associated with Fall Risk Among Older Adults: A Cross-Sectional Study

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Abstract

Introduction: Tension-type headache (TTH) is one of the most common forms of headache globally, often triggered by stress, fatigue, and poor posture, factors frequently experienced by university administrative staff. Although headaches are widespread, limited data exist regarding their prevalence in non-academic university personnel.
Objective: To determine the prevalence of tension-type headache among administrative staff at the Faculty of Medicine, Udayana University.
Methods: A descriptive cross-sectional study was conducted from October 2022 to February 2023 involving 66 administrative staff selected through simple random sampling. Data were collected using a structured questionnaire based on standard diagnostic criteria for TTH.
Results: Among the participants, 1 individual (1.5%) was classified as having tension-type headache, while 17 individuals (25.8%) met the criteria for probable tension-type headache. The remaining 48 participants (72.7%) reported no symptoms consistent with TTH.
Conclusion: The prevalence of confirmed tension-type headache among administrative staff was relatively low. However, a significant proportion experienced probable TTH, suggesting a need for early identification and preventive strategies in occupational health settings.

Keywords: prevalence, tension-type headache, cross-sectional study, administrative staff, university, occupational health

Introduction

A headache is defined as any pain experienced in the head region. It is a common symptom encountered by nearly everyone at some point in their lives, typically occurring episodically. According to the World Health Organization (WHO), approximately 47% of the global adult population reports experiencing at least one episode of headache annually.[1] Based on etiology, headaches are categorized into two types: primary and secondary headaches. Primary headaches occur without an identifiable underlying condition, whereas secondary headaches result from structural or pathological abnormalities in the head.[2] Among these, primary headaches account for approximately 90% of all headache cases. There are three main types of primary headache: migraine, tension-type headache (TTH), and cluster headache. Among them, TTH is the most prevalent in the general population.[3,4]

Tension-type headache is characterized by mild to moderate intensity pain lasting from several minutes to several days.[5] It typically presents as a bilateral pressure or tightness sensation, often described as a band-like feeling around the head, accompanied by discomfort in the neck and head region.[6] This discomfort is associated with muscle tension due to prolonged static contraction of the neck, scalp, and forehead muscles, particularly in the occipitocervical area. TTH can affect individuals of all ages, although its prevalence is highest among those aged 25 to 30 years, with a notable increase in the 30 to 39-year age group. Around 40% of individuals with TTH report a family history of headaches, and 25% also suffer from migraines.[7,8]

Headaches can significantly impact quality of life by disrupting daily activities and contributing to economic burdens through reduced work productivity and absenteeism.[9] Tension-type headache, in particular, is known to cause substantial loss in work efficiency and operational hours, resulting in economic and personal losses for affected individuals.[4,10] The motivation for this study arises from the limited data available on the prevalence of TTH in Bali and the absence of specific prevalence data within the Faculty of Medicine at Udayana University. Therefore, this study aims to investigate the prevalence of TTH among administrative staff, a population particularly susceptible due to long working hours, sustained static postures, and the frequent adoption of ergonomically poor positions that may contribute to the onset of TTH.

Methods

This study employed a descriptive design with a cross-sectional approach. The research was conducted at the Faculty of Medicine, Udayana University, from October 2022 to February 2023. Participants were selected using a simple random sampling technique. The study involved 66 educational staff members at the Faculty of Medicine who met the inclusion and exclusion criteria.

The inclusion criteria were: (1) currently active staff at the Faculty of Medicine, Udayana University, (2) willingness to participate in the study, (3) routine use of a computer for work, and (4) ability to understand the Indonesian language and follow research instructions. Exclusion criteria included a history of mild, moderate, or severe head trauma and a diagnosis of hypertension.

The variables assessed in this study included tension-type headache complaints, age, sex, working duration per day, total length of employment, and working posture. Tension-type headache complaints were measured using the *Headache Screening Questionnaire*, which consists of 10 items with a validity value of $p < 0.05$ and a reliability coefficient > 0.7. A total score of 8 indicates the presence of tension-type headache, while a score of ≥6 indicates a probable tension-type headache. Body posture was assessed using the *Rapid Entire Body Assessment* (REBA) method.

All data collected were analyzed using SPSS version 26.0. Univariate analysis was conducted to describe the distribution of gender, age, length of employment, daily working duration, and working posture. This study was approved by the Ethics Committee of Udayana University, with approval number 2275/UN14.2.2.VII.14/LT/2022.

Results

The characteristics of the study participants, including age, sex, daily working duration, length of employment, work posture risk, and presence of tension-type headaches, are summarized in Table 1.

Table 1. Characteristics of the Subjects

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
24–33	13	19.7
34–43	26	39.4
44–53	18	27.3
54–59	9	13.6
Sex		
Male	19	28.8
Female	47	71.2
Daily Working Duration		
≤7 hours	36	54.5
8–9 hours	29	43.9
>9 hours	1	1.5
Length of Employment		
≤5 years	7	10.6
5–10 years	12	18.2
≥10 years	47	71.2
Work Posture (REBA)		
Medium Risk	53	80.3
High Risk	13	19.7
Tension-Type Headache		
No Tension Headache	48	72.7
Probable Tension Headache	17	25.8
Definite Tension Headache	1	1.5

As shown in Table 1, the majority of participants were aged 34–43 years, totaling 26 individuals (39.4%). The study sample was predominantly female, with 47 participants (71.2%). Most participants reported working more than 7 hours per day (54.5%) and had been employed for ≥10 years (71.2%). Regarding work posture based on the REBA assessment, most employees fell into the medium-risk category (80.3%). In terms of tension-type headache complaints, the majority of participants (72.7%) reported no symptoms, while 25.8% had probable tension-type headache, and only 1.5% met the criteria for a definite tension-type headache.

Discussion

This study involved 66 educational staff members from the Faculty of Medicine, Udayana University, who met the specified inclusion and exclusion criteria. The majority of participants were aged ≥30 years. At this age, individuals may begin to experience musculoskeletal complaints due to the onset of degenerative changes in bones, which reduce the stability of muscles and bones. This degeneration impairs the ability of tissues to maintain their function, making them more susceptible to injury and less capable of repairing damage.[11,12]

Based on sex distribution, the sample comprised more females (71.2%) than males (28.8%). The predominance of female staff suggests a significant role of women in contributing to household income and engaging in the workforce for personal and economic reasons. Physiologically, females generally have lower muscle strength and capacity

compared to males.[13] Additionally, females tend to have more myofascial trigger points, which are associated with increased pressure pain sensitivity—a factor that contributes to the higher prevalence of tension-type headaches (TTH) among women.[14]

In terms of working hours, the majority of participants reported working ≤7 hours per day. Prolonged static work postures can lead to fatigue and muscle discomfort, potentially resulting in microtrauma to muscles, joints, tendons, ligaments, and other tissues. These biomechanical stresses contribute to muscle tension and may trigger the onset of TTH.[15,16]

Regarding years of service, most employees had worked for ≥10 years. A longer duration of service implies prolonged exposure to occupational risks, which may contribute to musculoskeletal disorders and physical complaints related to work tasks.[17]

The majority of participants exhibited moderate-risk work posture (80.3%). Non-ergonomic postures, such as sustained forward bending, can cause discomfort and fatigue, increasing the likelihood of musculoskeletal pain. Prolonged forward-leaning postures can lead to excessive muscle contractions and sustained nociceptive input, which in turn elevates pericranial muscle activity. This process promotes the release of neurotransmitters associated with pain perception, contributing to the development of headaches. Neurotransmitters such as serotonin (5-HT) and nitric oxide have been identified as playing key roles in modulating pain pathways in the brain and influencing pain sensitivity.[15,18,19]

With regard to the prevalence of tension-type headaches, only 1 participant (1.5%) was diagnosed with TTH, 17 participants (25.8%) were classified as having probable TTH, and 48 participants (72.7%) reported no headaches. The relatively low prevalence of TTH may be attributed to the standard working hours adopted by most staff (7 hours/day), in accordance with Indonesian Law No. 13 of 2003, which stipulates a 7-hour workday and a 40-hour workweek for a 6-day work schedule.[20] Additionally, most staff had worked for more than 10 years, suggesting that prolonged service may lead to greater work adaptation and familiarity with occupational demands. Employees with longer work experience tend to have broader knowledge and higher productivity, which may help reduce work-related stress and physical complaints.[21]

The participant who was diagnosed with TTH was a 34-year-old female with ≤7 hours of daily work, 5–10 years of service, and a moderate-risk work posture.[22] Notably, the study results contrast with existing theories, suggesting the involvement of unmeasured confounding variables such as psychological factors, including stress, anxiety, and depression, which are known to influence the occurrence of TTH.[23] Moreover, the study did not include comprehensive physical examinations, which could have improved the accuracy of TTH diagnosis, especially among those categorized with probable TTH.[24]

To address these limitations, several recommendations are proposed: (1) future studies should incorporate psychological assessments to evaluate the influence of stress, anxiety, and depression on TTH, thereby offering a more comprehensive understanding of its multifactorial nature; (2) detailed physical examinations, including neurological and musculoskeletal evaluations of the head and neck regions, should be performed to confirm TTH diagnoses and rule out other potential causes; (3) inclusion of a control group—comprising individuals without TTH—would enhance the ability to identify specific risk factors and strengthen the validity of the study findings; and (4) future research should consider larger and demographically representative samples to increase the generalizability of results and gain more accurate prevalence estimates across different populations.

In conclusion, this study found that the prevalence of TTH among educational staff at the Faculty of Medicine, Udayana University, was 1.5%, with 25.8% classified as having probable TTH, and 72.7% reporting no headache. These findings are limited to the study population and cannot be generalized to other institutions or the general public without additional research involving larger and more diverse samples.

Conclusion

The prevalence of tension-type headache (TTH) among educational staff at the Faculty of Medicine, Udayana University was found to be 1 individual (1.5%) with confirmed TTH, 17 individuals (25.8%) with probable TTH, and 48 individuals (72.7%) without any TTH symptoms. The relatively low prevalence suggests that TTH may not be a widespread issue within this population; however, it still warrants attention. The presence of 17 individuals with probable TTH highlights the need to identify underlying contributing factors and to implement appropriate management strategies. Although the majority of staff members did not report experiencing TTH, preventive efforts and a broader understanding of this condition remain essential. These findings provide a foundation for further research involving additional variables and larger, more diverse populations to gain a deeper understanding of TTH and inform effective intervention strategies.

Author Contribution

Rismawati Alidasil: Conceptualization, methodology, data collection, data analysis, and manuscript drafting.

Putu Ayu Sita Saraswati: Supervision, guidance on research design, and critical review of the manuscript.

Gede Parta Kinandana: Supervision, validation, and manuscript editing.

M. Widyana: Supervision, methodological consultation, and final manuscript review.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

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Ethics Statement

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was not required as the study involved only non-invasive procedures (blood pressure measurement and questionnaire surveys) and posed minimal risk to participants. Informed consent was obtained from all participants prior to their inclusion in the study, and confidentiality was strictly maintained.

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