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Comparison of Physical Activity Levels of Nurses Working in Different Units

Farklı Birimlerde Çalışan Hemşirelerin Fiziksel Aktivite Düzeylerinin Karşılaştırılması

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ABSTRACT

Aim: The aim of this study is to compare the physical activity levels of intensive care, ward and administrative nurses and to examine whether these levels differ according to field of duty, smoking status and age.

Material and Methods: This descriptive cross-sectional study was conducted with 105 nurses (21 administrative, 43 ward, 41 intensive care). Data were collected using the short form of the International Physical Activity Questionnaire (IPAQ) via an online survey. Physical activity levels were categorized according to the IPAQ scoring protocol. Nonparametric tests (Mann–Whitney U and Kruskal–Wallis H) were applied to assess differences by work unit, smoking status, and age.

Results: Among the 105 participating nurses, 46 (43.81%) were classified as inactive, 44 (41.90%) as minimally active, and 15 (14,29%) as very active. Comparison of Metabolic Equivalent of Task (MET) scores showed no statistically significant differences between smokers and non-smokers (p=0.219). Likewise, no significant differences were observed across work units (administrative, ward, intensive care) or age categories (p=0.662).

Conclusion: Nurses demonstrated generally high levels of physical inactivity regardless of their work unit, age, or smoking status, highlighting the need for interventions to promote active lifestyles in this professional group. These findings emphasize the importance of institutional support and targeted wellness programs to improve nurses' physical activity and overall well-being.

Keywords: Nurse, physical activity, intensive care.

ÖZ

Amaç: Bu çalışmanın amacı, yoğun bakım, servis ve idari birimlerde çalışan hemşirelerin fiziksel aktivite düzeylerini karşılaştırmak ve bu düzeylerin görev alanı, sigara kullanımı ve yaş değişkenlerine göre farklılık gösterip göstermediğini incelemektir.

Gereç ve Yöntemler: Bu tanımlayıcı kesitsel çalışma, 105 hemşire (21 idari, 43 servis, 41 yoğun bakım) ile yürütülmüştür. Veriler, Uluslararası Fiziksel Aktivite Anketi (IPAQ) kısa formu kullanılarak çevrim içi anket yoluyla toplanmıştır. Hemşirelerin fiziksel aktivite düzeyleri, IPAQ puanlama protokolüne göre kategorize edilmiştir. Görev alanı, sigara kullanımı ve yaşa göre farklılıkları değerlendirmek amacıyla parametrik olmayan testler (Mann–Whitney U ve Kruskal–Wallis H) uygulanmıştır.

Bulgular: Çalışmaya katılan 105 hemşirenin 46'ü (%43.81) inaktif, 44'i (%41.90) minimal aktif, 15'i (%14,29) ise çok aktif olarak sınıflandırılmıştır. MET skorlarının karşılaştırılmasında, sigara kullananlar ile kullanmayanlar arasında istatistiksel olarak anlamlı fark bulunmamıştır (p=0,219). Benzer şekilde, görev alanı (idari, servis, yoğun bakım) ve yaş kategorileri arasında da anlamlı farklılık gözlenmemiştir (p=0,662).

Sonuç: Hemşireler, görev alanı, yaş veya sigara kullanım durumundan bağımsız olarak genel olarak yüksek düzeyde fiziksel inaktivite göstermiştir. Bu durum, hemşirelerde aktif yaşam tarzını teşvik edecek müdahalelere ihtiyaç olduğunu ortaya koymaktadır. Bulgular ayrıca, hemşirelerin fiziksel aktivite ve genel iyi oluşlarını artırmaya yönelik kurumsal destek ve hedefe yönelik sağlıklı yaşam programlarının önemini vurgulamaktadır.

Anahtar kelimeler: Hemşire, fiziksel aktivite, yoğun bakım.

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INTRODUCTION

According to the World Health Organization's 2020 guidelines, physical activity (PA) plays a crucial role in enhancing quality of life by reducing the risk of chronic diseases such as cardiovascular disease, obesity, and diabetes, while also supporting cognitive, mental, and musculoskeletal health (1-3). Despite these benefits, a significant portion of the global population remains sedentary; for example, inactivity rates reach 83% in European Union(EU) countries(3,4,20). Physical inactivity is responsible for approximately 6% of deaths worldwide, and although prevalence varies across regions, it remains a major public health concern (4). To maintain overall health and prevent chronic conditions, The World Health Organization (WHO) recommends at least 150 minutes of moderate-intensity PA per week (6). Regular exercise not only promotes active aging and improves sleep but also reduces stress, enhances mood, and increases social well-being through the release of endorphins, the so-called 'happiness hormones' (1,7). Given that adults spend nearly one-third of their day at work, occupational factors and work environments play a critical role in shaping physical activity and sedentary behaviour (6).

Nursing is a high-stress profession with heavy workloads and irregular shift patterns. Nurses, particularly those working in intensive care units, often have limited opportunities for physical activity due to long working hours, demanding patient care responsibilities, and insufficient rest periods. These conditions not only increase the risk of physical inactivity but also contribute to a range of health problems, including musculoskeletal disorders, cardiovascular risk, and sleep disturbances. In addition, reduced opportunities for exercise may negatively affect mental health, leading to higher levels of stress, fatigue, and burnout among nurses (8). Previous studies have shown that nurses frequently report lower levels of physical activity compared with other occupational groups, underscoring the importance of workplace interventions to promote healthier lifestyles in this population.

While administrative nurses generally experience fewer physically demanding tasks compared to their clinical counterparts, they are nonetheless at heightened risk for physical inactivity due to prolonged sedentary behavior. Extended periods of sitting can slow metabolism and contribute to numerous health issues for instance, such behavior is linked to elevated risks of metabolic disorders, cardiovascular disease, and increased mortality rates (8,18). Regular intermittent movement, such as short walking breaks, significantly helps mitigate these negative effects (17,19). In this context, evaluating the physical activity levels of nurses is highly important in terms of quality of life and general health.

The study's objective is to assess the physical activity levels of nurses working long shifts under heavy workloads and to analyze these levels in relation to various factors.

MATERIAL AND METHODS

This descriptive cross-sectional study was approved by the Non-Interventional Health Research Ethics Committee (Decision No: 2025/87, dated April 7, 2025). A total of 105 nurses participated, selected using a convenience sampling method. Of the participating nurses, 21 (20.00%) worked in administrative units, 43 (40.95%) in general wards, and 43 (39.05%) in intensive care units. Data were collected using the International Physical Activity Questionnaire (IPAQ) short form, along with seven structured questions administered via an online survey.

All participants were informed about the purpose, scope, and confidentiality of the study through an electronic consent form. The statement emphasized that data would be collected anonymously, used exclusively for scientific purposes, and that participation was entirely voluntary. Digital consent was obtained by requiring participants to read the information provided at the beginning of the online form and to indicate agreement by proceeding to complete the questionnaire.

Data were collected using the International Physical Activity Questionnaire–Short Form (IPAQ-SF), which consists of seven items assessing the frequency and duration of vigorous activity, moderate activity, walking, and sitting over the last seven days. Physical activity levels were calculated in MET-minutes/week according to the IPAQ scoring protocol, using standardized MET values (walking = 3.3 METs, moderate activity = 4.0 METs, vigorous activity = 8.0 METs). Based on these scores, participants were categorized into inactive, minimally active, or very active groups.

The validity and reliability of the IPAQ-SF have been extensively tested. The original IPAQ-SF demonstrated good test-retest reliability, with intraclass correlation coefficients (ICCs) ranging from 0.66 to 0.88 across different activity domains, and acceptable construct validity through correlation with accelerometer data (24). The Turkish version of the IPAQ-SF also showed satisfactory psychometric properties: test-retest reliability coefficients ranged between 0.64 and 0.83, and internal consistency (Cronbach's alpha) values were reported as 0.65 to 0.80, confirming its suitability for use in Turkish populations (1). These findings support the IPAQ-SF as a reliable and valid instrument for measuring physical activity in diverse populations, including the Turkish context (1,9).

Statistical Analysis

It was observed that the corrected efficiency values in Table 2 had skewness and kurtosis Z-scores outside the ±1.96 range, suggesting a deviation from normality. However, to objectively assess normality, the Shapiro–Wilk test was performed, which confirmed that the data did not follow a normal distribution ($p < 0.05$). Therefore, nonparametric tests were used in the statistical analyses. Descriptive statistics were presented as n (%), and for continuous variables, mean ± standard deviation was reported if the data were normally distributed; otherwise, median (minimum–maximum) or median (1st quartile – 3rd quartile) values were given. To assess the physical activity levels of nurses, the short form of the International Physical Activity Questionnaire (IPAQ-SF) was administered to nurses working in intensive care units, general wards, and administrative departments. Using the collected data, physical activity levels were determined, and the Mann–Whitney U and Kruskal–Wallis H tests were applied to evaluate differences based on work unit, smoking status, and age. The chi-square test was performed to examine the relationship between categorical variables.

All statistical analyses were conducted using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). In all analyses, the significance level was accepted as $p < 0.05$.

RESULTS

A total of 105 nurses were included in the study. The distribution of participants by work unit, age group, smoking status and physical activity level is presented in Table 1. Descriptive statistics of MET scores and comparisons across subgroups are summarized in the following tables.

Table 1. Frequency tables of categorical variables.

Categories		Frequency	Percentage %
Unit Works In	Administrative unit	21	20.00
	Service nurse	43	40.95
	Intensive care	41	39.05
	Total	105	100.0
Age Category	18-30	31	29.52
	31-40	41	39.05
	41-55	33	31.43
	Total	105	100.0
Smoking Status	Smokes	34	32.38
	Does not smoke	71	67.62
	Total	105	100.0
Physical Activity Level	Inactive	46	43.81
	Minimally active	44	41.90
	Very active	15	14.29
	Total	105	100.0

Table 1 summarizes the distribution of participants according to work unit, age category, smoking status, and physical activity level. Of the 105 nurses included, 20% worked in administrative units, 41% in wards, and 39% in intensive care. Regarding physical activity, 43.81% were classified as inactive, 41.90% as minimally active, and only 14.29% as highly active.

Table 2. Descriptive statistics of MET values.

Variable	n	Median	Q1–Q3 (IQR)
METscore	105	1132.5	495.0 – 3148.0

Table 2 presents the descriptive statistics for MET (Metabolic Equivalent of Task) values. The median MET score among the 105 participants was 1132.5, with an interquartile range (IQR) from 495.0 to 3148.0. The wide IQR indicates substantial variability in physical activity levels. Furthermore, the use of the median and IQR suggests that the distribution of MET scores is likely non-normal.

Table 3. Examination of the difference between MET scores according to the unit served.

Variable	Unit Works in	n	Median (Q1–Q3)	Average Rank	KWH	df	P
MET Score	Administrative unit	21	1032.0 (494.9–2224.6)	47.90	4.41	2	0.110
	Service nurse	43	1525.5 (457.8–4196.5)	60.49			
	Intensive care	41	1043.8 (579.4–2792.4)	47.76			

KWH: Kruskal-Wallis H test statistical value; df : Degrees of freedom

Table 3 presents the comparison of MET scores based on the work units of the nurses. The median MET scores were 1032.0 (Q1–Q3: 494.9–2224.6) for those working in administrative units, 1525.5 (Q1–Q3: 457.8–4196.5) for ward nurses, and 1043.8 (Q1–Q3: 579.4–2792.4) for intensive care nurses. The average rank scores were 47.90, 60.49, and 47.76, respectively. A Kruskal–Wallis H test was conducted to examine whether there were significant differences in MET scores across the three groups. The test indicated that the differences were not statistically significant (KWH = 4.41, df = 2, p = 0.110).

Table 4. Examination of the difference between MET scores according to age categories.

Variable	Age Category	n	Median (Q1–Q3)	Average Rank	KWH	df	p
MET Score	18-30	31	986.0 (580.8–2377.5)	49.58	0.83	2	0.662
	31-40	41	1323.5 (357.4–2901.7)	52.77			
	41-55	33	1316.5 (548.4–3860.3)	56.50			

KWH: Kruskal-Wallis H test statistical value; df: Degree of freedom

Table 4 presents the comparison of MET scores across different age categories. The median MET scores were 986.0 (Q1–Q3: 580.8–2377.5) for participants aged 18–30, 1323.5 (Q1–Q3: 357.4–2901.7) for those aged 31–40, and 1316.5 (Q1–Q3: 548.4–3860.3) for those aged 41–55. The corresponding average ranks were 49.58, 52.77, and 56.50, respectively.

A Kruskal–Wallis H test indicated no statistically significant difference in MET scores among the three age groups (KWH = 0.83, df = 2, p = 0.662).

Table 5. Examination of the difference between MET scores according to smoking status.

	Smoking Status	n	Median (Q1–Q3)	Average Rank	Total of Ranks	MWU	Z	p
MET Score	Smokes	34	1031.8 (494.1–3111.8)	47.68	1621.00	1026.0	-1.24	0.219
	Does not smoke	71	1165.5 (580.8–3090.0)	55.55	3944.00			

MWU: Mann-Whitney U test statistics

Table 5 compares MET scores based on smoking status. The median MET score for smokers was 1031.8 (Q1–Q3: 494.1–3111.8), while for non-smokers it was 1165.5 (Q1–Q3: 580.8–3090.0). The average rank was 47.68 for smokers and 55.55 for non-smokers. A Mann–Whitney U test showed that the difference was not statistically significant (MWU = 1026.0, Z = -1.24, p = 0.219).

Table 6. Analysis of the relationship between the unit of duty and physical activity levels (Chi-Square).

Work Unit	Inactive n (%)	Minimally active n (%)	Very active n (%)	Total n (%)
Administrative	10 (47.62)	10 (47.62)	1 (4.76)	21 (100.0)
Service nurse	18 (41.86)	15 (34.88)	10 (23.26)	43 (100.0)
Intensive care	18 (43.90)	19 (46.34)	4 (9.76)	41 (100.0)
Total	46 (43.81)	44 (41.90)	15 (14.29)	105 (100.0)

df: Degree of freedom, Chi-Square = 5.31, df = 4, p = 0.261

Table 6 The proportion of physically inactive nurses was 47.62% in administrative units, 41.86% among ward nurses, and 43.90% in intensive care units. The highest percentage of very active nurses was observed among ward nurses (23.26%), followed by those in intensive care (9.76%) and administrative units (4.76%). A Chi-square test showed no statistically significant association between work unit and physical activity levels (Chi-square = 5.31, df = 4, p = 0.261).

Table 7. Analysis of the relationship between age category and physical activity levels (Chi- Square).

Age Category	Inactive n (%)	Minimally active n (%)	Very active n (%)	Total n (%)
18–30	16 / 13.6	12 / 13.0	3 / 4.4	31
31–40	18 / 18.0	18 / 17.2	5 / 5.9	41
41–55	12 / 14.5	14 / 13.8	7 / 4.7	33
Total	46 / 46.0	44 / 44.0	15 / 15.0	105

df: Degree of freedom, Chi-Square = 2.66, df = 4, p = 0.662

Table 7 presents the relationship between age categories and physical activity levels. However, the Chi-square test indicated no statistically significant association between age category and physical activity level (Chi-square = 2.66, df = 4, p = 0.662).

DISCUSSION

This study aimed to assess the physical activity levels among nurses and uncovered a notable trend of physical inactivity within the profession. According to the data collected from 105 nurses, 46 participants (43.81%) were found to be physically inactive, 44 (41.90%) were minimally active, and only 15 (14,29%) were classified as very active. These findings indicate that a significant proportion of nurses do not engage in sufficient physical activity, which may pose long-term risks to their health and well-being. Although the current study did not directly evaluate occupational stress, workload, or psychological parameters, the high rate of physical inactivity observed may be partially explained by the known demands of the nursing profession. Nurses often face irregular work schedules, night shifts, long hours, and emotional exhaustion all of which may serve as barriers to maintaining an active lifestyle. While these variables were not assessed quantitatively in the study, existing literature has identified them as relevant contributors to physical inactivity in healthcare professionals. Thus, the interpretation that workload and stress may influence activity levels should be viewed as a plausible explanation, though further research is needed to confirm such associations.

When compared with findings from other occupational groups in previously published studies, the physical inactivity levels observed in this study appear higher. For example, a study involving teachers reported that 17.1% were physically inactive, 63.9% had low levels of physical activity, and 19% were sufficiently active. In a separate study focusing on desk-based workers, 25.2% were inactive, 48.9% had low activity levels, and 25.9% were sufficiently active (11,16,21). Although these comparisons are useful for contextual understanding, they should be interpreted cautiously, as this study did not involve a direct cross-occupational comparison. The methodological differences, sample characteristics, and workplace dynamics across these studies may affect comparability. Nonetheless, the results suggest that nurses may represent a group at increased risk for physical inactivity.

These findings are consistent with recent literature suggesting that nurses, particularly those in hospital-based or shift-working roles, exhibit disproportionately lower levels of physical activity compared to other professional groups. A 2023 comparative study by Inocian et al. found that nurses working in hospital settings performed less moderate-to-vigorous physical activity (MVPA) per day compared to non-nursing healthcare workers, averaging only 25 minutes/day versus 45 minutes/day, respectively (12).

Similarly, a recent systematic review by Janssen (2023) found that healthcare workers generally accumulate more steps during work hours than sedentary office workers—averaging 7,282 vs. 3,626 steps/day yet this occupational activity did not necessarily translate into better health outcomes, particularly when recovery time and sleep were inadequate. This supports the notion that occupational physical activity does not substitute for the benefits of structured leisure-time physical activity (13,22).

Furthermore, physical inactivity among nurses may be compounded by role-specific and shift-related factors. A study by Smith et al. (14). found that nurses over the age of 40 were significantly less likely to meet physical activity recommendations, while those with higher quantitative job demands (e.g., emergency or ICU settings) paradoxically engaged in more workplace activity, albeit under greater physical strain and with higher fatigue scores.

Comparisons with other sectors also underscore the issue: A longitudinal survey involving over 4,000 professionals in Australia reported that leisure-time physical activity was significantly associated with lower absenteeism and improved self-rated health, whereas high occupational physical activity such as walking or standing for long hours was linked to increased physical exhaustion and sick leave (15).

These findings reinforce the idea that nursing as a profession uniquely combines high physical workload with limited opportunity or energy for health-promoting eisure time activity, distinguishing it from other occupational groups where physical inactivity may stem more from sedentary work patterns than from systemic barriers like shift work or emotional exhaustion (25).

The data did not reveal a statistically significant difference in physical activity levels between nurses working in clinical units and those in administrative roles. However, overall physical activity levels were low across all groups. This widespread inactivity may be attributed to the demanding nature of nursing work environments, including long shifts, irregular hours, and limited opportunities for movement during work. Regardless of unit type, these occupational constraints likely contribute to reduced engagement in physical activity. Future research should focus on identifying organizational and environmental barriers to physical activity among nurses and exploring strategies to promote active lifestyles within the workplace (26).

A significant limitation of the current study is the exclusion

of variables such as perceived stress, emotional exhaustion, sleep quality, and job satisfaction all of which could interact with physical activity behaviors. The omission of these parameters restricts the ability to establish a more comprehensive understanding of the contributors to inactivity. Consequently, conclusions drawn from this research should remain within the boundaries of the available data, and any interpretations involving unmeasured variables should be considered speculative. Nonetheless, the possibility that heavy workload and occupational stress negatively affect nurses' physical activity levels is consistent with findings from related literature and should be explored further in future research (27).

It is important to note that this study utilized a non-probability convenience sampling method, which limits the generalizability of the findings. The sample was composed of nurses who were readily accessible and willing to participate, and as such, may not fully represent the broader nursing population. While the results offer meaningful insights into the physical activity patterns of the participating nurses, they should be interpreted with caution. Future research employing probabilistic sampling methods and larger, more diverse samples would be necessary to draw more generalizable conclusions.

The implications of physical inactivity among nurses extend beyond individual health concerns. Nurses serve as role models within healthcare systems and are integral to patient education and health promotion. Their ability to maintain their own health behaviors including physical activity can influence patient perceptions and care outcomes. Additionally, physical inactivity may contribute to increased risk for chronic diseases, reduced job performance, higher absenteeism, and early burnout, all of which can further strain healthcare systems (31).

Based on the findings of this study, several actions are recommended. Healthcare organizations should develop structured, evidence-based wellness initiatives targeting physical activity promotion among nurses. These programs may include workplace fitness challenges, group exercise opportunities, and educational seminars delivered in collaboration with sports science professionals. Hospital administrations and nurse managers should also advocate for institutional policies that prioritize staff well-being. This may involve ensuring adequate staffing levels, providing longer or more flexible break periods, and offering incentives for physical activity participation. Physical inactivity should be recognized as an occupational health issue, especially in high-demand units such as intensive care. Regular health screenings, physical activity tracking tools, and individual consultations with physiotherapists or occupational health professionals should be made accessible. To help mitigate barriers to physical activity, interventions aimed at improving work-life balance such as flexible scheduling, reduced mandatory overtime, and adequate shift rotations should be implemented. These adjustments may provide nurses with more opportunities and motivation to engage in physical activity. Further studies should adopt multidimensional designs that evaluate psychological, social, and organizational factors alongside physical activity levels. Longitudinal approaches could provide insights into changes over time, while including other occupational groups would allow more robust comparative analyses (28,29,30).

In conclusion, this study highlights the high prevalence of physical inactivity among nurses, particularly those working in intensive care settings. Although key influencing factors such as workload and stress were not directly measured, the results suggest that occupational demands may limit opportunities for regular physical activity. Addressing this issue requires a comprehensive and interdisciplinary approach involving institutional support, policy development, and targeted health promotion strategies. Ultimately, enhancing nurses' physical activity levels is not only beneficial for their personal health but also critical for maintaining a sustainable and effective healthcare workforce.

CONCLUSION

In this study, physical inactivity was consistently high among nurses, regardless of their work unit, age group, or smoking status. However, due to the use of a non-probability convenience sampling method, the findings cannot be generalized to the broader nursing population. The sample consisted of individuals who were accessible and willing to participate, which may have introduced selection bias. Therefore, while the observed trends offer valuable insights, they should be interpreted with caution. Addressing physical inactivity remains essential—not only for enhancing nurses' own health and well-being but also for maintaining effective and high-quality patient care.

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