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Understanding Work-Related Burnout and Its Determinants Among Healthcare Professionals in Saudi Arabia: A Cross-Sectional Study

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Background: Stress is a common cause of burnout among healthcare professionals (HCPs), affecting health, increasing medical errors, and reducing patient outcomes. This study assessed work-related burnout and its drivers among HCPs in Riyadh, Saudi Arabia.

Material/Methods: A cross-sectional study of 523 HCPs at a tertiary hospital was conducted over 4 months in 2024 using convenience sampling. Data were collected through a structured questionnaire covering demographics, occupational factors, and the Maslach Burnout Inventory. Burnout was measured in 3 domains—emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA)—and categorized as low, moderate, or high. Data analysis was performed using SPSS v27.

Results: High burnout was reported in EE (69.2%), DP (88.3%), and PA (58.5%). Women had higher burnout than men (58.58 ± 24.99 vs 52.11 ± 28.34; $P = 0.007$). HCPs aged > 30 years had greater burnout than those < 30 years (60.39 ± 22.05 vs 51.96 ± 29.02; $P = 0.001$). Regression analysis showed age (B = -3.029, $P = 0.005$) and work-life balance (B = -2.339, $P = 0.028$) predicted EE. Sex (B = -1.568, $P = 0.009$) and age (B = -1.361, $P = 0.029$) predicted DP. Age (B = -2.717, $P = 0.006$) and chronic disease (B = -2.643, $P = 0.005$) predicted lower PA.

Conclusions: Burnout, particularly DP, is highly prevalent among HCPs and is significantly associated with female sex and older age. These findings highlight the importance of identifying high-risk groups, improving work-life balance, and supporting HCPs with chronic illness. Organizational strategies addressing workload and staff well-being may help enhance retention, staff health, and quality of patient care.

Keywords: burnout, professional • healthcare personnel • occupational health • risk factors • Saudi Arabia • surveys and questionnaires

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Introduction

Work-related stress is a common cause of burnout among healthcare professionals (HCPs) worldwide. More recently, the prevalence of burnout is rising among healthcare workers in daily practice [1-3]. Burnout is characterized as an occupational phenomenon brought on by ongoing stress at work that has not been effectively controlled [4-6]. The most common symptoms of burnout are feeling fatigue or low energy, being detached from work, being pessimistic, and having a decline in professional efficacy [7]. Therefore, burnout is a combination of physical and mental weariness from the working environment or caring responsibilities [3,8]. The World Health Organization states that depersonalization (DP), diminished personal accomplishment (PA), and emotional exhaustion (EE) are the 3 main characteristics of burnout [4]. Feelings of being emotionally overextended and emotionally exhausted are referred to as EE [4]. A detached or pessimistic attitude toward patients or job is a component of DP. PA indicates a decrease in one's sense of achievement and competence at work [4-6]. Ineffective stress management at work is a primary contributor to burnout in the medical field. Working in a demanding atmosphere that requires high-quality patient care, coupled with concerns about patient responses to treatment and the ongoing management of diverse patient needs, can lead to stress, depression, insomnia, and anxiety among HCPs [9]. As reported in the literature, these factors contribute significantly to burnout in HCPs [10]. Burnout among HCPs is strongly linked to negative patient health outcomes, an increased risk of medical errors, and overall poorer patient care results [10,11]. Furthermore, second-line workers are medical personnel who support healthcare delivery through indirect duties but are not directly involved in front-line patient care, including administrative staff, laboratory personnel, and other support services. These workers, albeit having less direct exposure, may nevertheless experience severe occupational stress and burnout due to workload, organizational demands, and the general healthcare atmosphere.

The prevalence of burnout among HCPs varies. For example, the global prevalence of burnout often ranging from 10.5% to 66% depending on the specialty and region [12]. In the United States, a recent survey reported that 44% of employees experienced burnout at work [13]. In Saudi Arabia, 61.8% of HCPs reported experiencing EE, 58.3% reported elevated DP, and 41.0% reported reduced PA [14]. A study from India reported that 47.9% of HCPs experienced work-related burnout [12]. A study from Lebanon reported burnout in 90.7% of HCPs [15]. In Uganda, it was 70.8% [1]. Evidence also suggests that burnout and stress are more common among front-line healthcare workers (43.9% and 55%, respectively) than among non-healthcare workers (31.2% and 40.8%, respectively) [16].

Healthcare systems worldwide continue to face staff shortages, and these shortages are expected to persist in the coming years [17]. Estimates from the World Health Organization suggest a global shortage of around 10 million healthcare workers by 2030, with the greatest impact in lower-income settings [17]. Nurse-to-patient ratios differ across countries, but general wards in well-resourced systems often aim for ratios of about 1: 4 to 1: 6; however, shortages can push these numbers higher, affecting care quality [17]. Physician availability is also expected to remain limited in many regions due to rising demand, aging populations, and workforce losses. Altogether, these pressures contribute to increased workload and risk of burnout among HCPs [17]. Since the launch of Vision 2030, Saudi Arabia has experienced significant changes in its economy, healthcare system, and overall development [18]. The vision aims to enhance national prosperity and global competitiveness while ensuring a high standard of living by 2030. According to recent figures, approximately 232 000 HCPs are working in Saudi Arabia, including physicians (60%), nurses (57%), allied health professionals (19%), and chemists (61%) [18]. Saudi Arabia, with a population of 36.5 million, is one of the largest healthcare markets in the Gulf Cooperation Council region. Despite this, its healthcare system is undergoing fundamental changes, which also necessitate the hiring of more personnel to provide healthcare [18]. However, a major contributing factor to professional burnout is the lack of healthcare personnel. Moreover, based on current studies, Saudi Arabia will need an additional 175 000 healthcare workers by 2030 to meet the country's growing population's healthcare needs and address the shortage of physicians and nurses [18]. Beyond causing negative personal experiences, burnout among HCPs has a substantial effect on the delivery of healthcare as a whole. To create efficient interventions and modifications to policies, it is vital to comprehend the frequency and fundamental causes of burnout in the professional healthcare environment. Such measures are crucial to reducing this burden and ensuring the long-term sustainability of healthcare professionals in their workplaces and in the delivery of care. Therefore, this study aimed to assess work-related burnout and its drivers among HCPs in Riyadh, Saudi Arabia.

Material and Methods

Study Design and Population

A quantitative cross-sectional online questionnaire-based study was conducted among HCPs working in a tertiary hospital in the capital region of Saudi Arabia. Data were collected over a 4-month period, from the first week of July to the last week of October 2024, using a convenience sampling approach. HCPs who were actively working at the study site during the data collection period were considered eligible for participation.

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This included physicians from various specialties (such as internal medicine, pediatrics, surgery, ophthalmology, dentistry, and others), nurses, and interns who were directly or indirectly involved in patient care. HCPs were required to be currently employed and actively engaged in clinical services and willing to participate in the study by completing the online questionnaire. HCPs who were not actively working during the study period, including those on long-term leave or assigned to non-clinical administrative roles, were excluded. Allied HCPs were also excluded, as they were not within the scope of this study. In addition, incomplete or improperly completed questionnaires were excluded from the final dataset.

All eligible HCPs were invited to participate by completing an electronic questionnaire, and reminders were sent to encourage participation. Before participation, the purpose of the study, confidentiality of responses, and the voluntary nature of participation were clearly explained, and informed consent was obtained electronically. HCPs were also informed of their right to withdraw at any time without consequences. The study was approved by the Ethics Committee of Human Research at King Saud University (ref No: KSU-HE-24-907), Riyadh, Saudi Arabia, and was conducted in accordance with the Declaration of Helsinki.

Sample Size Estimation

The sample size was determined using the Raosoft sample size calculator, with a 95% confidence level and a 5% margin of error. A response distribution of 50% was used to obtain the maximum required sample size. Based on the estimated number of HCPs working in the selected tertiary hospital, the minimum calculated sample size was 388 HCPs. To reduce the effect of possible non-response and incomplete questionnaires, and to enhance the reliability and representativeness of the results, the target sample size was increased to 600 HCPs.

Instrument

The questionnaire used in this study was adopted from previous studies and aimed at evaluating burnout among HCPs. The first part of the questionnaire included sociodemographic and work-related characteristics of the HCPs, such as age, sex, marital status, years of experience, presence of chronic diseases, ability to take annual leave, satisfaction with work-life balance, and whether they would choose their specialty again if given the chance. The second part utilized the Maslach Burnout Inventory (MBI), a widely used instrument for assessing burnout among HCPs. The MBI consists of 22 items across 3 subscales: EE (9 items), DP (5 items), and PA (8 items). EE reflects feelings of being emotionally overextended and exhausted by one's work. DP refers to an unfeeling and impersonal response toward recipients of care or service. PA measures feelings of competence and successful accomplishment in one's work with people. Responses are rated on a 7-point Likert scale ranging from "Never" (0) to "Every day" (6). Higher scores on EE and DP and lower scores on PA indicate higher levels of burnout.

Following the initial drafting of the questionnaire, it underwent expert review by a panel (including a professor, nurse practitioners, and a researcher), who evaluated it for content, flow, and readability. Pilot testing was then conducted among 30 randomly selected HCPs, but the results of the pilot study were not included in the final analysis. The reliability of the questionnaire was determined using Cronbach's alpha, which was found to be 0.81, suggesting that the questionnaire was reliable. The score for each section of the MBI was computed by assigning scores to scales and computing each domain's items to obtain the overall means of each domain. Burnout levels were categorized as low, moderate, and high based on established score thresholds for each domain [3,19]. For EE, scores higher than 30 were classified as high degree of burnout, scores between 18 and 29 as moderate, and scores less than 17 as low. In the DP domain, scores of 12 or higher indicated high degree of burnout, scores ranging from 6 to 11 reflected moderate, and scores of 5 or less were considered low degree of burnout. In contrast, for PA, lower scores corresponded to higher burnout levels; a score of 33 or below was indicative of high burnout, scores between 34 and 39 were categorized as moderate, and a score of 40 or above represented low burnout [19]. In addition, severe burnout was computed by combining the high EE + high DP + low PA, while early signs of burnout were computed by moderate EE + moderate DP + moderate PA, and minimal burnout by computing low EE + low DP + high PA [4].

Data Analysis

The data were analyzed using Statistical Package for the Social Sciences (SPSS), version 27. Descriptive statistics are used to present categorical data, while continuous data are presented as mean (SD). Assessment of normality was performed prior to selecting the statistical methods. The Shapiro-Wilk test yielded a *P* value of 0.130, indicating that the data were normally distributed; therefore, a parametric approach was employed. The *t* test was used to analyze differences between burnout and HCPs' characteristics with 2 groups, and ANOVA was used for variables with more than 2 groups. All statistical tests were performed at a significance level of $\alpha = 0.05$.

Results

A total of 523 HCPs who met the inclusion criteria participated in the study, yielding a response rate of 87.7% (523/600). **Table 1** shows a summary of the demographic and

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Table 1. Distribution of sociodemographic and work-related characteristics among healthcare professionals.

Characteristics	Frequency (%)
Age, y	
≤ 30	351 (62.7%)
> 30	172 (30.7%)
Sex	
Male	311 (55.5%)
Female	212 (37.9%)
Marital status	
Single/engaged/divorced	324 (57.9%)
Married	199 (35.5%)
Years of experience	
0-2 years	187 (33.4%)
2-5 years	249 (44.5%)
> 5 years	87 (15.5%)
Chronic disease	
Yes	291 (52.0%)
No	232 (41.4%)
Satisfaction with work-life balance	
Yes	330 (58.9%)
No	193 (34.5%)
Ability to take annual occupational leave (30 days at one time)	
Yes	320 (57.1%)
No	203 (36.3%)
If you were to go back in time, would you have chosen your specialty again?	
Yes	329 (58.8%)
No	194 (34.6%)

health-related characteristics of the HCPs. Most HCPs (67.1% [n = 351]) were 30 years old or younger, while 32.9% (n = 172) were over 30 years. In terms of sex, 59.5% (n = 311) were men, and 40.5% (n = 212) were women. Regarding marital status, 62% (n = 324) were single, and 38% (n = 199) were married. Most HCPs had 2 to 5 years of experience (n = 249; 47.6%) and 55.6% (n = 291) reported having a chronic disease.

In terms of work-life balance, 63.1% (n = 330) were satisfied. Regarding annual leave, 61.2% (n = 320) were able to take time off. When asked if they would choose their specialty again, 62.9% (n = 329) answered yes. In this study, 30% (n = 157) were nurse practitioners, 20.5% (n = 107) were internal medicine physicians, 9.9% (n = 52) were interns, and 6.3% (n = 33) were surgeons, as shown in **Figure 1**.

Figure 2 illustrates the EE responses of HCPs in their work environment. The highest percentage reported feeling emotionally exhausted several times a month (19.3%, n = 101). Meanwhile, 23.1% (n = 121) reported never feeling stressed from working with people all day, and 23.3% (n = 122) reported they never experience burnout. Frustration at work occurred several times a month for 21.8% (n = 114) of respondents, who also indicated feeling they worked too hard at the same rate. Additionally, 22.8% (n = 119) reported never feeling stressed from direct contact with colleagues. Lastly, 18.7% (n = 98) reported feeling at their wit's end (overwhelmed) several times a month, highlighting varying levels of emotional strain in the workplace.

Regarding treating patients or colleagues impersonally, 25.2% (n = 132) reported never feeling this way. For fatigue or feeling tired at the start of work, 26.2% (n = 137) indicated they never experienced it. When asked about feeling blamed by colleagues, 22.2% (n = 116) reported never feeling this way. Additionally, 22.2% (n = 116) expressed a lack of interest in their colleagues, 26% (n = 136) felt they never became more emotionally hardened since starting their job, and 22.6% (n = 118) indicated they never fear becoming emotionally hardened. These results reflect varying levels of emotional engagement and stress in the workplace, as shown in **Figure 3**.

Regarding PA, 19.9% (n = 104) of HCPs reported never feeling they were achieving worthwhile things at work. Regarding emotional exhaustion, 20.3% (n = 106) reported never feeling energetic at work. In understanding colleagues and supervisors, 22.9% (n = 120) stated they never struggle to comprehend their actions. Additionally, 23.1% (n = 121) reported never finding it difficult to deal with others' problems, and 20.7% (n = 108) reported feeling relaxed when addressing emotional issues. Furthermore, 22.6% (n = 118) reported they never felt they positively influenced others, 21.0% (n = 110) reported never finding it easy to create a relaxed atmosphere, and 22.6% (n = 118) reported never feeling stimulated when working closely with colleagues, as shown in **Figure 4**.

In this study, 69.2% of HCPs had a high degree of burnout related to EE, while 12.8% had a moderate level of burnout related to EE. Additionally, 88.3% of the HCPs had high levels of burnout related to DP, and 3.3% had moderate levels. On

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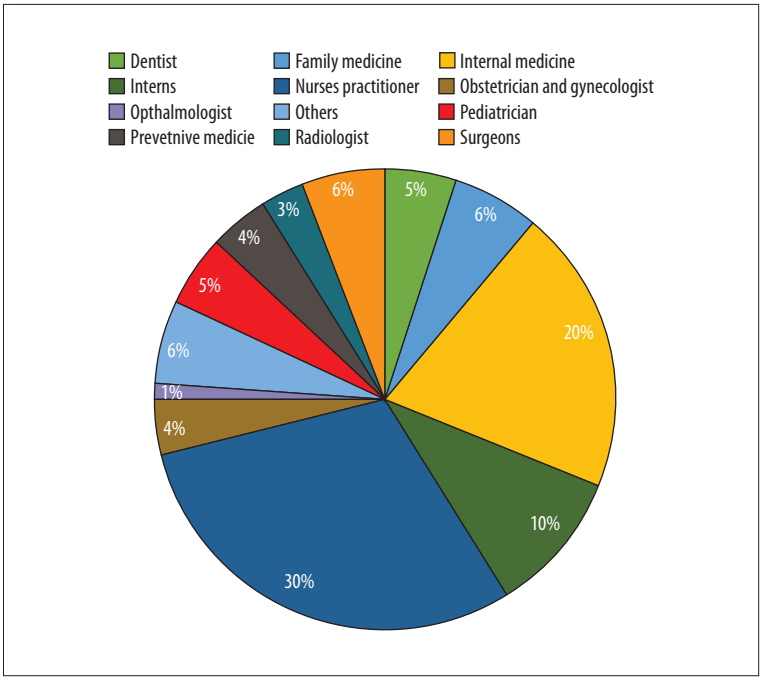

Figure 1. Professional classifications of the healthcare professionals included in this study.

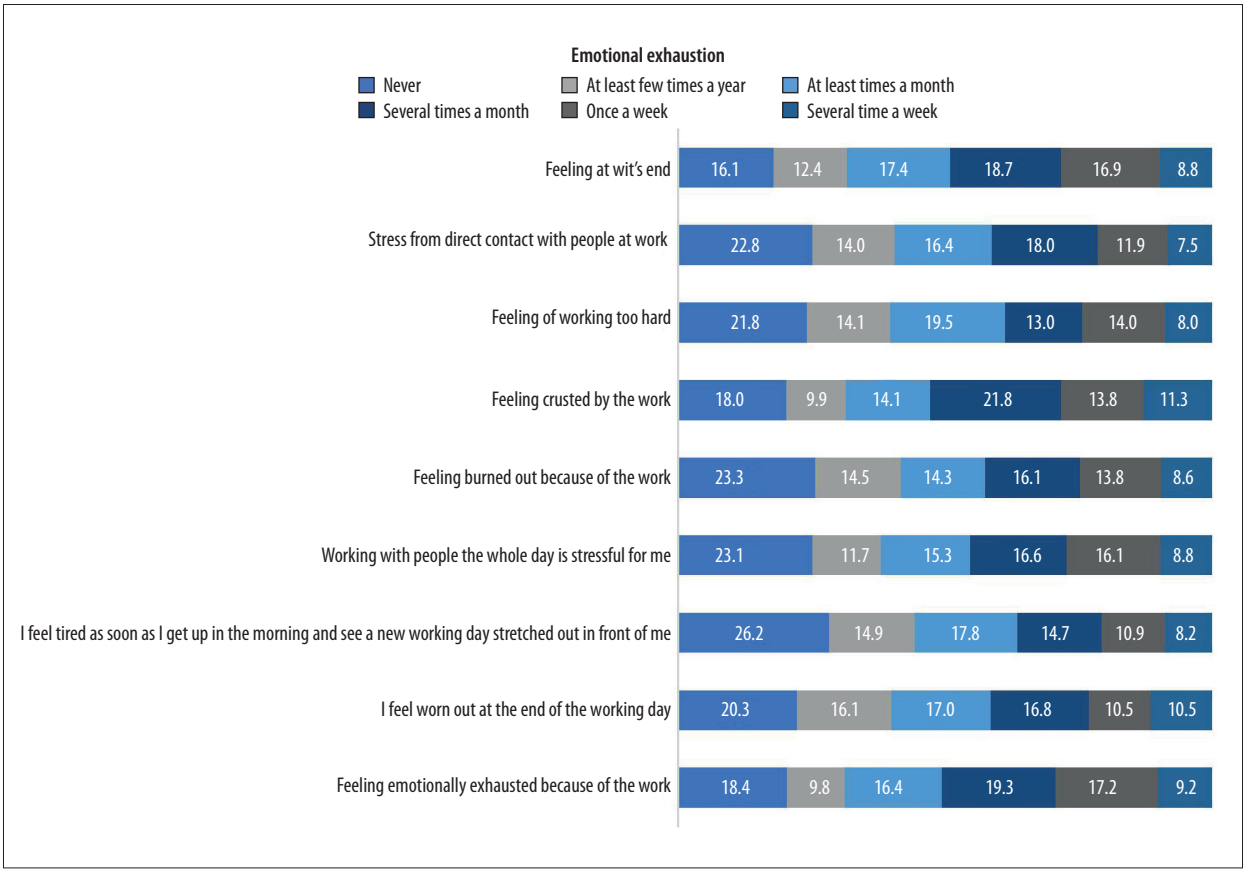

Figure 2. Distribution of emotional exhaustion (EE) responses among healthcare professionals.

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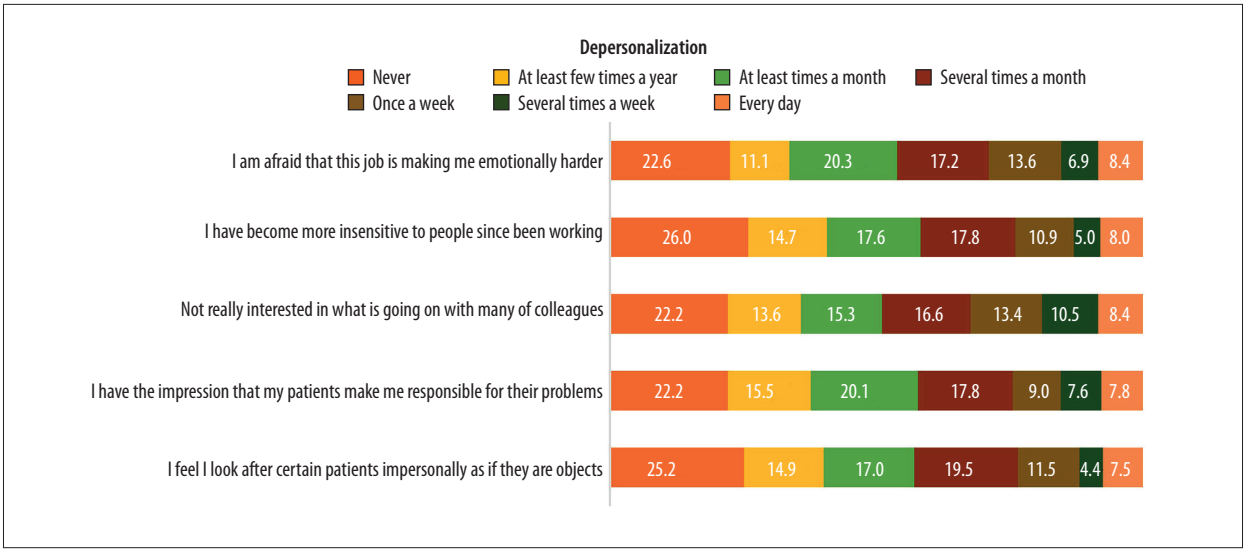

Figure 3. Distribution of depersonalization responses among healthcare professionals.

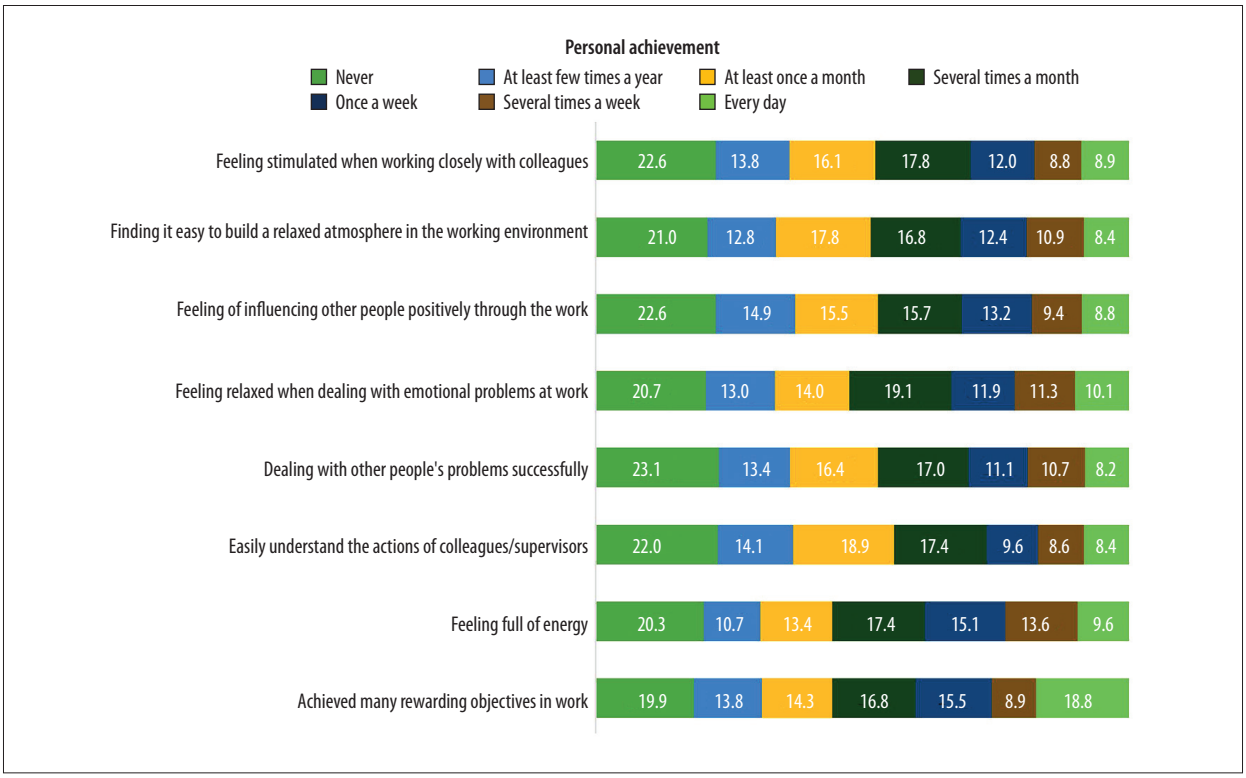

Figure 4. Distribution of personal achievement (accomplishment) responses among healthcare professionals.

the other hand, 58.5% of the HCPs had high levels of burnout related to PA, as shown in **Figure 5**. The mean EE score was 22.85 (SD = 11.7), with a median of 24 (range, 0-54). The mean DP score was 11.63 (SD = 6.7), with a median of 12 and a range of 0 to 30. The mean PA score was 20.25 (SD = 10.69), with a median of 21 and a range of 0 to 48. The overall mean score of burnout among HCPs was 54.73 (SD = 27.20), with a median of 59 and a range of 0 to 132.

Table 2 summarizes the mean EE scores across different groups of HCPs. Female HCPs had a higher mean EE score (24.17 ± 10.70) than male HCPs (21.96 ± 12.31). A similar pattern was seen with age, where those older than 30 years reported higher scores (25.20 ± 10.09) than did those under 30 (21.69 ± 12.28). Married HCPs also showed higher EE, with a mean of 24.39, compared with 21.90 among those who were single, engaged, or divorced. In contrast, HCPs without chronic

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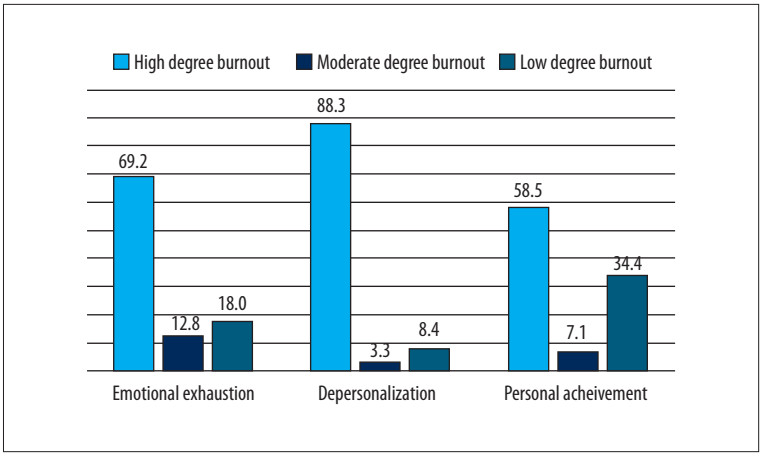

Figure 5. Distribution of burnout levels by burnout dimensions.

Table 2. Differences in mean emotional exhaustion (EE) scores by healthcare professionals' characteristics.

HCP characteristics	Mean EE (SD)	t (df)	Mean difference	95% CI	*P* value
Sex					
Male	21.96 (12.31)	2.19	2.21	0.22-4.21	0.029*
Female	24.17 (10.70)	(491.28)			
Age, y					
> 30	25.20 (10.09)	3.24	3.51	1.52-5.49	< .001*
< 30	21.69 (12.28)	(405.102)			
Marital status					
Married	24.39 (0.78)	2.37	2.49	0.54-4.43	0.012*
Single/engaged/divorced	21.90 (0.83)	(492.97)			
Chronic disease?					
Yes	21.90 (11.48)	2.08	2.13	0.11-4.16	0.039*
No	24.04 (11.93)	(486.698)			
Satisfaction with work-life balance					
Yes	22.03 (11.93)	2.09	2.22	0.17-4.26	0.034*
No	24.25 (11.23)	(421.667)			
Ability to take annual occupational leave (30 days at one time)					
Yes	21.79 (11.83)	2.60	2.72	0.69-4.76	0.009*
No	24.52 (11.36)	(442.857)			
If you were to go back in time, would you have chosen your specialty again?					
Yes	22.43 (11.77)	1.06	1.127	-0.95-3.20	0.287*
No	23.56 (11.62)	(409.061)			

* *t* test.

diseases had higher EE scores (24.04 ± 11.93) than those with chronic conditions (21.90 ± 11.48). Regarding work-life balance, those who were not satisfied reported higher EE (24.25 ± 11.23) than those who were satisfied (22.03 ± 11.93). HCPs who were unable to take 30 days of annual leave at one time also had higher EE scores (24.52 ± 11.36) compared with those who could (21.79 ± 11.83).

One-way ANOVA revealed a statistically significant difference in EE scores across years of experience ($F[2, 520] = 8.76$, $P < 0.001$). Participants with 2 to 5 years of experience reported the highest mean EE score (24.53 ± 8.19), followed by those with more than 5 years (24.11 ± 12.27), while the lowest scores were observed among those with 2 or less years of experience (20.03 ± 14.62).

Table 3 presents the DP scores across different characteristics of HCPs. Women reported a higher mean DP score (12.78 ± 6.27) than did men (10.84 ± 6.89). Similarly, HCPs older than 30 years had a higher mean DP score (12.74 ± 5.71) than those younger

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Table 3. Differences in mean depersonalization (DP) scores by healthcare professionals' (HCP) characteristics.

HCP characteristics	Mean DP (SD)	t (df)	95% CI	*P* value*
Sex				
Male	10.84 (6.89)	3.26 (480.0)	0.79-3.07	< .001
Female	12.78 (6.27)			
Age, y				
> 30	12.74 (5.71)	2.66 (412.02)	0.52-2.79	0.004
≤ 30	11.08 (7.09)			
Marital status				
Married	12.26 (5.76)	1.68 (485.97)	-0.11-2.13	0.077
Single/engaged/divorced	11.24 (7.21)			
Chronic disease?				
Yes	11.11 (6.60)	1.98 (489.05)	0.01-2.33	0.048
No	12.28 (6.79)			
Satisfaction with work-life balance				
Yes	11.26 (6.90)	1.66 (430.65)	-0.15-2.17	0.090
No	12.26 (6.32)			
Ability to take annual occupational leave (30 days at one time)				
Yes	11.03 (6.91)	2.57 (459.69)	0.38-2.69	0.009
No	12.57 (6.28)			
If you were to go back in time, would you have chosen your specialty again?				
Yes	11.41 (6.67)	0.988 (400.13)	-0.59-1.79	0.326
No	12.01 (6.77)			

* *t* test.

than 30 years (11.08 ± 7.09). Married HCPs showed a slightly higher mean DP score (12.26 ± 5.76) than those who were single, engaged, or divorced (11.24 ± 7.21). Regarding health status, HCPs without chronic diseases had a higher mean score (12.28 ± 6.79) than did those with chronic conditions (11.11 ± 6.60). In terms of work-life balance, those who were not satisfied reported a higher mean DP score (12.26 ± 6.32) than those who were satisfied (11.26 ± 6.90). A similar pattern was observed for annual leave, where HCPs unable to take 30 days of leave at one time had a higher mean score (12.57 ± 6.28) compared to those who could (11.03 ± 6.91). Finally, HCPs who indicated they would not choose their specialty again had a slightly higher mean DP score (12.01 ± 6.77) than those who would choose it again (11.41 ± 6.67). A statistically significant difference in DP scores across years of experience (F[2, 520] = 12.39, $P < 0.001$) was observed in 1-way ANOVA. Participants with more than 5 years of experience reported the highest mean DP score (12.78 ± 0.76), followed by those with 2 to 5 years (12.67 ± 4.93), while the lowest scores were observed among those with 2 or less years of experience (9.71 ± 8.02).

Female HCPs reported a higher mean PA score (21.63 ± 9.92) than male HCPs (19.30 ± 11.10). Likewise, those older than 30 years had higher scores (22.44 ± 9.01) than those under 30 (19.17 ± 11.28). Married HCPs also showed higher PA levels, with a mean score of 21.39 ± 9.29, compared with 19.54 ± 11.42 among those who were single, engaged, or divorced. HCPs without chronic diseases reported higher PA scores (21.87 ± 10.76) than those with chronic conditions (18.95 ± 10.48). **Table 4** shows the differences between the mean scores of PA and the characteristics of the HCPs.

One-way ANOVA revealed a statistically significant difference in PA scores across years of experience (F[2, 520] = 7.92, $P < 0.001$). Participants with 2 to 5 years of experience reported the highest mean PA score (21.81 ± 7.72), followed by those with more than 5 years (20.98 ± 10.77), indicating years of experience was significantly associated with PA.

The findings of this study revealed a significant difference in mean burnout among HCPs based on their characteristics. For example, men scored 52.11 (SD = 28.34) on the overall mean score, compared with women, who scored 58.58 (SD = 24.99), suggesting that women experience higher burnout than men ($P = 0.007$). Similarly, HCPs aged over 30 years had a higher mean score (60.39, SD = 22.05) of burnout than those under 30 (51.96, SD = 29.02; $P < 0.001$). Factors such as place of residence ($P = 0.005$), years of experience ($P < 0.001$), presence of chronic disease ($P = 0.009$), ability to take annual occupational

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Table 4. Differences in mean personal accomplishment (PA) scores by healthcare professionals' (HCP) characteristics.

HCP Characteristics	Mean PA (SD)	t (df)	95% CI	P value
Sex				
Male	19.30 (11.10)	2.45 (484.47)	0.49-4.14	0.013
Female	21.63 (9.92)			
Age, y				
> 30	22.44 (9.01)	3.31 (415.06)	1.46-5.06	< 0.001
≤ 30	19.17 (11.28)			
Marital status				
Married	21.39 (9.29)	1.91 (481.58)	0.044-3.64	0.045
Single/engaged/divorced	19.54 (11.42)			
Chronic disease?				
Yes	18.95 (10.48)	3.11 (489.52)	1.07-4.75	0.002
No	21.87 (10.76)			
Satisfaction with work-life balance				
Yes	19.80 (11.12)	1.24 (440.13)	-0.64-3.05	0.201
No	21.01 (9.90)			
Ability to take annual occupational leave (30 days at one time)				
Yes	19.31 (11.13)	2.52 (469.16)	0.585-4.23	0.010
No	21.72 (9.80)			
If you were to go back in time, would you have chosen your specialty again?				
Yes	20.05 (10.85)	0.53 (417.59)	-1.36-2.40	0.588
No	20.57 (10.43)			

* *t* test.

leave ($P = 0.006$), and marital status ($P = 0.029$) showed significant associations. However, work-life balance satisfaction ($P = 0.072$) and reconsideration of specialty choice ($P = 0.362$) were not associated (**Table 5**).

The regression model indicates a statistically significant relationship between the predictors and the outcome variable ($F = 4.064$, $P < 0.001$). However, the model's explanatory power is modest, with only 5.9% of the variance explained ($R^2 = 0.059$; adjusted $R^2 = 0.045$). This suggests that while the predictors collectively have an effect, much of the outcome's variation remains unexplained. When examining individual predictors, age, ability to take annual leave, and satisfaction with work-life balance were found to be statistically significant factors affecting the EE of the HCPs. Age showed a negative association with EE ($B = -3.029$, $P = 0.005$), meaning that as age increases, EE tends to decrease. Similarly, those with better ability to take annual leave had lower scores on EE ($B = -2.150$, $P = 0.042$). Satisfaction with work-life balance also had a negative association with EE ($B = -2.339$, $P = 0.028$), indicating that higher satisfaction corresponds with lower EE scores (**Table 6**).

A multiple linear regression analysis was performed to assess whether demographic and occupational factors were associated with DP. The overall regression model reached statistical significance ($F[8, 514] = 3.706$, $P < 0.001$), indicating that the included predictors jointly contributed to explaining variation in DP scores. However, the model accounted for a relatively small proportion of variance ($R^2 = 0.055$; adjusted $R^2 = 0.040$), suggesting limited explanatory strength. Only sex was significantly associated with DP ($B = -1.568$, $P = 0.009$). However, age of the HCPs showed a significant negative relationship ($B = -1.361$, $P = 0.029$), suggesting that DP scores tended to decrease with increasing age (**Table 7**).

The association between demographic and work-related factors and the mean physical activity score of multiple linear regression revealed that the overall model was statistically significant ($F[8, 514] = 4.382$, $P < 0.001$). This indicates that the set of predictors reliably explained variation in PA. However, the explanatory power of the model was modest, with $R^2 = 0.064$ and adjusted $R^2 = 0.049$, suggesting that approximately 4.9% of the variance in physical activity was explained by the included variables. Among the predictors, age was a significant negative predictor ($B = -2.717$, $P = 0.006$), indicating that higher age was associated with lower PA. Additionally, chronic disease was a significant negative predictor ($B = -2.643$, $P = 0.005$), suggesting that individuals with chronic conditions reported lower PA levels (**Table 8**).

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Table 5. Differences in mean burnout dimension scores (emotional exhaustion, depersonalization, and personal accomplishment) by healthcare professionals' (HCP) characteristics.

HCP Characteristics	Mean (SD)	F value	t value*	*P* value
Sex				
Male	52.11 (28.34)		2.687	0.007*
Female	58.58 (24.99)			
Age, y				
> 30	60.39 (22.05)		3.363	< 0.001*
≤ 30	51.96 (29.02)			
Marital status				
Married	58.05 (23.02)		2.192	0.029*
Single/engaged/divorced	52.70 (29.32)			
Place of residence				
Riyadh	51.96 (28.42)		2.789	0.005*
Other cities in Saudi Arabia	58.64 (24.92)			
Chronic disease?				
Yes	51.97 (27.01)		2.613	0.009*
No	58.19 (27.10)			
Year of experiences				
< 2 years	47.56 (34.19)			
2-5 years	59.02 (18.31)	10.554		< 0.001**
> 5 years	57.88 (28.64)			
Satisfaction with work-life balance				
Yes	53.10 (28.04)		1.803	0.072*
No	57.53 (25.52)			
Ability to take annual occupational leave (30 days at one time)				
Yes	52.14 (27.92)		2.75	0.006*
No	58.82 (25.54)			
If you were to go back in time, would you have chosen your specialty again?				
Yes	53.90 (27.27)		0.912	0.362*
No	56.14 (27.07)			

* *t* test; ** ANOVA.

Discussion

Burnout was common among HCPs, with a considerable proportion reporting frequent work-related strain. DP emerged as the most prominent dimension of burnout. In this study, 88.3% of HCPs reported high levels and 69.2%% reported high degree of EE, while 34.4% experienced low PA on a weekly basis. EE reflects feelings of being emotionally overextended and depleted as a result of continuous exposure to work demands. Overall, 64% of the HCPs reported severe burnout in this study. The high levels observed in this study are consistent with those of previous research conducted among healthcare workers in different countries [20-22]. For example, in the United States, HCPs commonly describe feeling emotionally drained and overwhelmed by their work responsibilities [22]. In Thailand, authors reported a 29.4% burnout rate among medical staff [20]. Similarly, in China, a study among physicians and nurses revealed that 32.3% experienced high EE and 37.6% had moderate EE [21]. In Kazakhstan, a study among HCPs showed a very high EE prevalence of 57.4% [23]. In Iran, another recent study among HCPs revealed 92% EE [24]. In the Middle East, more particularly in United Arab Emirates, 70% of physicians reported burnout, where 75.5% reported moderate-to-high EE [25]. Many studies confirm relatively high levels of burnout among HCPs in the Middle East, with estimated prevalence between 40% to 60% [26]. Burnout related to EE among HCPs impacts state of mind and physical wellness [27]. HCPs who have EE may first realize they are feeling more cynical or depressed than usual [27]. They might lose motivation to work, interact with others, or do simple things [27].

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Table 6. Multiple linear regression analysis for predicting extreme exhaustion scores.

Predictor	B	SE	β	t	*P*	95% CI (lower, upper)
Constant	40.329	4.130	—	9.765	< 0.001	32.216, 48.443
Sex	-1.372	1.040	-0.058	-1.320	0.188	-3.415, 0.671
Age	-3.029	1.083	-0.122	-2.798	0.005	-5.155, -0.902
Marital status	-1.621	1.055	-0.067	-1.536	0.125	-3.694, 0.452
Years of experience	1.027	0.688	0.065	1.492	0.136	-0.325, 2.380
Ability to take annual leave	-2.150	1.054	-0.089	-2.040	0.042	-4.221, -0.079
Satisfaction with work-life balance	-2.339	1.064	-0.096	-2.199	0.028	-4.430, -0.249
Would choose specialty again	0.002	1.081	0.000	0.002	0.999	-2.122, 2.126
Chronic disease	-1.733	1.022	-0.074	-1.696	0.091	-3.741, 0.275

B, unstandardized coefficients; SE, standard error; β, standardized coefficients beta; CI, confidence intervals.
Model summary: R = 0.244, R^2 = 0.059, adjusted R^2 = 0.045, F(8, 514) = 4.064, $P < 0.001$.

Table 7. Multiple linear regression analysis for predicting depersonalization scores.

Predictor	B	SE	β	t	*P*	95% CI (lower, upper)
Constant	21.297	2.371	—	8.982	< 0.001	16.639, 25.955
Sex	-1.568	0.597	-0.115	-2.626	0.009*	-2.741, -0.395
Age	-1.361	0.622	-0.095	-2.190	0.029*	-2.582, -0.140
Marital status	-0.481	0.606	-0.035	-0.794	0.428	-1.671, 0.710
Years of experience	0.475	0.395	0.052	1.201	0.230	-0.302, 1.251
Ability to take annual leave	-1.178	0.605	-0.086	-1.946	0.052	-2.367, 0.011
Satisfaction with work-life balance	-1.026	0.611	-0.074	-1.680	0.094	-2.226, 0.174
Would choose specialty again	-0.069	0.621	-0.005	-0.111	0.912	-1.289, 1.151
Chronic disease	-0.978	0.587	-0.072	-1.666	0.096	-2.130, 0.175

Model summary: R = 0.234, R^2 = 0.055, adjusted R^2 = 0.040. ANOVA: F(8, 514) = 3.706, $P < 0.001$; * $P < 0.05$.

Therefore, to overcome EE, HCPs and individuals who have it may benefit from lifestyle modifications, therapy, and medication to manage stress and tiredness [27].

In the present study, 46.1% of HCPs indicated an increasing tendency to become emotionally distant or less responsive toward patients over time. DP refers to a detached or impersonal attitude toward recipients of care and is often understood as a response to prolonged occupational stress. A study among physicians and nurses in China revealed a very high level of DP, with 59.1% of both groups experiencing it, and 30.1% having a moderate level of burnout related to DP [21]. In Kazakhstan, 64.6% of healthcare workers reported DP [23]. Among Iranian healthcare workers, a very high 94.4% experienced DP-related burnout [24]. In the UAE, 84% of HCPs reported high DP [25]. Burnout related to DP affects professional relationships and may cause a disconnection between professionals [28], suggesting that emotional distancing may develop in high-pressure clinical environments as a coping response to sustained workload demands [28].

With regard to PA, 58.5% of HCPs reported a high level, 7.1% reported a moderate level, and 34.4% reported a low level. Within the Maslach framework, PA reflects an individual's sense of competence, effectiveness, and accomplishment in their professional role. Reduced PA therefore indicates a diminished sense of professional efficacy and satisfaction. In the present study, a notable proportion of HCPs reported limited

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Table 8. Multiple linear regression analysis for predicting professional accomplishment scores.

Predictor	B	SE	β	t	*P*	95% CI (lower, upper)
Constant	35.328	3.760	—	9.396	< 0.001	27.942, 42.714
Sex	-1.636	0.947	-0.075	-1.729	0.084	-3.496, 0.223
Age	-2.717	0.986	-0.119	-2.757	0.006*	-4.653, -0.781
Marital status	-1.073	0.961	-0.049	-1.117	0.265	-2.960, 0.815
Years of experience	1.069	0.627	0.074	1.706	0.089	-0.162, 2.301
Ability to take annual leave	-1.821	0.960	-0.083	-1.897	0.058	-3.706, 0.065
Satisfaction with work-life balance	-1.382	0.969	-0.062	-1.427	0.154	-3.285, 0.521
Would choose specialty again	0.396	0.984	0.018	0.402	0.688	-1.538, 2.329
Chronic disease	-2.643	0.930	-0.123	-2.841	0.005*	-4.471, -0.816

Model summary: R = 0.253, R^2 = 0.064, adjusted R^2 = 0.049; * $P < 0.05$. ANOVA: F(8, 514) = 4.382, $P < 0.001$.

recognition and reduced feelings of accomplishment in their work, which is consistent with findings from other studies conducted among HCPs in China and other developing healthcare settings. For example, in China, a study revealed that 23.7% of nurses and physicians reported high levels of burnout related to PA [21], while Iran, a high prevalence of PA-related burnout was found among HCPs [23]. Among front-line health workers in Iran, burnout related to PA was very low, at 12.1% [24]. Another study from Iran, in 2022, revealed that 29.3% of HCPs had high EE, 10.9% had high DP, and 34.3% had low PA [29].

When compared with previous studies, the observed differences in prevalence appear to be influenced not only by variation in results but also by differences in study populations, healthcare settings, and measurement approaches. For example, studies conducted in Western settings such as the United States have often focused primarily on physicians in structured healthcare systems with different staffing ratios and workload distribution, which may partially explain differences in reported burnout levels [22]. In contrast, studies from countries such as Kazakhstan, Iran, and other low- and middle-income settings have reported higher levels of EE, which may be linked to higher patient loads, resource constraints, and differences in organizational support systems [23,24]. In addition, variability in measurement tools and scoring thresholds used to define "high burnout" across studies may contribute to differences in reported prevalence. Even when the MBI is used, variations in cut-off points and interpretation methods can influence the comparability of findings.

In the present study, the overall mean burnout among HCPs was 54.73 ± 27.20, with a median of 59 (range, 0-132). Previous studies reported a higher mean score of burnout among HCPs compared with the present study [23,30,31]. For example, primary healthcare workers in Kazakhstan had a mean score of 32.6 (SD =13.5) on the EE subscale, 14.4 (SD = 6.1) on DP, and 42.2 (SD = 7.5) on PA [23]. Among nurses, the overall mean burnout score was 45.16 (SD = 22.84) [31]. Another study among HCPs during the COVID-19 pandemic revealed a mean score of 26.6 ± 7.4 on EE, 10.2 (SD = 2.2) on DP, and 27.3 (SD = 3.9) on PA, with an overall mean burnout score of 64.2 (SD = 7.7), indicating significantly higher burnout among HCPs. These findings were somewhat similar to the findings of the present study [30]. Although burnout in our study varied compared with that of earlier studies based on personal and occupational factors, differences in HCP sex, timing of the study, socioeconomic status of the HCPs, and country-specific factors may account for these discrepancies.

In the present study, the overall mean score of burnout among male HCPs was 52.11, lower than that of female HCPs (58.58), suggesting that women experience higher burnout than men. Similarly, HCPs aged over 30 years reported higher burnout than those under 30, indicating that senior HCPs had higher burnout compared with younger ones. Factors such as place of residence, years of experience, presence of chronic disease, ability to take annual occupational leave, and marital status showed significant associations with burnout. However, the study in China among HCPs concluded that burnout was correlated with age, sex, occupation, marital status, years of practice, and education level [21]. Furthermore, another systematic review concluded that burnout among HCPs in the Middle East is associated with work environments, exposure to violence and terror, emotional distress, and low social support [26]. In Kazakhstan, work location and professional classification of the HCPs were predictors of emotional burnout [23]. Burnout related to DP was associated with the employment status of the individual, specifically whether their work was

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permanent or not full-time [23]. Factors such as HCP sex and job location were statistically significantly related to PA [23].

Burnout is a well-recognized psychological consequence of working in the healthcare sector, and its impact on physical and emotional health, patient safety, and quality of care is well documented. We used a relatively large sample with an acceptable response rate. The study population included HCPs from a public hospital in the capital region of Saudi Arabia, working across different specialties. Nevertheless, this study provides important baseline data on burnout among HCPs in Saudi Arabia, which may inform future efforts to improve healthcare over time.

The present study has several limitations. First, the data presented here were limited to HCPs. Second, because the results of this study were drawn from a single region in a selected hospital in Riyadh, Saudi Arabia, they may not fully reflect the burnout experienced by all HCPs working in both private and government facilities in the country. Due to the self-administered and online nature of the questionnaire used to gather the data, recall or social desirability bias may have been present. Furthermore, the observational nature and the methodology of our study make it impossible to establish any causal assumptions. Therefore, in future research, we propose an alternate technique for gathering data that might reduce this issue. Future research with a larger sample size and HCPs from various healthcare facilities, covering public sector, is needed to better corroborate the findings.

Conclusions

The findings indicate a high prevalence of burnout among HCPs, with the PA dimension being particularly high. Burnout was found to be significantly associated with female sex and older age. These results highlight an urgent need for the development and implementation of comprehensive national-level interventions aimed at mitigating burnout. Such strategies should focus on early identification of associated factors, strengthening of workplace support systems, and promotion of mental well-being to enhance professional satisfaction. Addressing burnout at a systemic level is essential not only to safeguard the health of HCPs but also to ensure the sustainability and quality of healthcare services.

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Ethics Approval and Consent to Participate

Before data collection, the study protocol was approved by the Institutional Review Board at King Saud University Human Research Ethics Committee. Informed consent was obtained from all healthcare professionals, and confidentiality was ensured to maintain privacy.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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