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Original Article

Burnout among Primary Health Care Workers during the COVID-19 pandemic: A Cross-Sectional Study in Gorgan, Iran

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Abstract

Background: Burnout is an occupational phenomenon resulting from chronic workplace stress that has not been successfully managed. During the COVID-19 pandemic, primary health care (PHC) workers faced sustained service pressures and expanded responsibilities. However, city-level evidence on burnout among Iran's PHC workforce remains limited. This study aimed to assess burnout among PHC workers in Gorgan during the COVID-19 pandemic.

Methods: This cross-sectional study, conducted in June 2022, included 400 PHC workers in Gorgan. Burnout was assessed using the Maslach Burnout Inventory–Human Services Survey (MBI-HSS). Data were analyzed using SPSS version 22. Group comparisons were performed using independent-samples t-tests and one-way analysis of variance (ANOVA), with effect sizes reported as Cohen's *d* and partial η^2. As an exploratory descriptive analysis, mean item scores for each subscale were compared with the neutral midpoint (3 on a 0–6 scale) using one-sample t-tests. All tests were two-tailed, with α=0.05.

Results: The mean (±SD) item scores were 4.60±1.13 for emotional exhaustion (EE), 5.45±0.74 for depersonalization (DP), and 3.99±0.95 for personal accomplishment (PA). Mean EE and DP scores were significantly higher than the neutral midpoint (both $p<0.001$). Overall burnout scores were higher among married participants than among unmarried participants ($p=0.002$; Cohen's d=0.40). No statistically significant differences were observed according to age, employment status, years of service, or field of study.

Conclusion: PHC workers in Gorgan reported high mean scores for emotional exhaustion and depersonalization during the COVID-19 pandemic. Organizational measures addressing workload and work–family demands may help reduce burnout among PHC workers. These findings should be interpreted cautiously because of the cross-sectional design and the single-city convenience sample.
Keywords: Burnout, Primary Health Care, Health Personnel, COVID-19

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Introduction

Burnout is recognized in the International Classification of Diseases, 11th Revision (ICD-11), as an occupational phenomenon resulting from chronic workplace stress that has not been successfully managed [1]. It is characterized by three core dimensions: emotional exhaustion, depersonalization or mental distancing, and reduced professional efficacy. Burnout should be distinguished from clinical mental disorders and is primarily related to occupational contexts [2].

Primary Health Care (PHC) represents the first level of contact for addressing the majority of population health needs and plays a central role in maintaining essential services, particularly during public health crises [3]. International studies have consistently reported high levels of burnout among PHC staff during the COVID-19 pandemic. For example, a study from China reported that 78.5% of primary healthcare staff met criteria for burnout [4]. Studies from Egypt and Turkey similarly documented elevated levels of emotional exhaustion and depersonalization among PHC workers, largely attributed to workload intensification, prolonged crisis exposure, and limited organizational resources [5, 6]

In Iran, evidence indicates that burnout was prevalent among PHC workers even before the COVID-19 pandemic. Multicenter and national studies have reported substantial psychological distress, high workload, and organizational stressors within the PHC system [7]. During the pandemic, these pre-existing structural challenges were further intensified by staffing shortages, infection risk, and service disruptions [8], increasing vulnerability to burnout among frontline PHC personnel [4] .

National and provincial evidence indicates that PHC services were disrupted and subsequently reorganized during the COVID-19 pandemic, including service delays and task shifting [9]. District health networks implemented incident-command approaches to manage community COVID-19 functions [10], and PHC workers reported substantial levels of depression, anxiety, and stress during 2021–2022 [11].

Despite growing national evidence of workforce strain, city-level data on PHC worker burnout remain sparse, particularly in medium-sized urban settings such as Gorgan. Local estimates are necessary to inform context-specific workforce planning and targeted support strategies [12]. Accordingly, this study aimed to estimate burnout levels and examine associated demographic and occupational factors among PHC workers in Gorgan during the COVID-19 pandemic.

Methods

Study design

A cross-sectional study was conducted in June 2022 to estimate the prevalence of occupational burnout among staff working in comprehensive primary health care (PHC) centers during the COVID-19 pandemic. Reporting followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies.

Setting

The study took place in comprehensive health service centers in Gorgan, Golestan Province, Iran. These centers form the core of the national PHC network and served as frontline service units throughout the pandemic.

Participants

The target population included all service-providing personnel in the PHC centers (general practitioners, nurses/midwives, community health workers/Behvarz, and administrative/support staff). Inclusion criteria were active employment at a target center during the study period, at least three months of PHC work experience, and provision of informed consent. Exclusion criteria were failure to complete consent or leaving employment during data collection.

Sampling strategy

Participants were recruited using convenience sampling, whereby all eligible PHC workers present during the study period were invited to participate. To maximize participation across job categories, the survey link was disseminated through official internal communication channels (messaging groups and email).

Sample size

Using the single-proportion formula, we estimated the required sample size for burnout prevalence with Z = 1.96 (%95 confidence level), d = 0.05, and p = 0.53 based on prior evidence [13]. This yielded a minimum sample size of 383 participants. Allowing 5% for nonresponse, the target was increased to 400 participants.

Data collection

Following ethics approval, eligible staff were invited and screened. An electronic questionnaire with e-consent was developed on the Porsline platform and distributed via official internal channels. The original Porsline survey link is no longer active; the questionnaire is available from the corresponding author upon reasonable request. All 22 MBI-HSS items were mandatory to avoid missing primary outcome data; some demographic items were optional.

Instruments and variables
Demographic/Occupational Form

This form included the following information: age (numerically and categorized as less than 30, 30-39, 40-49, and 50 years and older), gender (male/female), marital status (single/married/other), education level, years of service, job category/role (physician; nurse/midwife; community health worker/expert; administrative/supportive), and employment type (formal, contract, rural service scheme).

Maslach Burnout Inventory—Human Services Survey (MBI-HSS)

Burnout was measured with the 22-item MBI-HSS, comprising three subscales: Emotional Exhaustion (EE, 9 items), Depersonalization (DP, 5 items), and Personal Accomplishment (PA, 8 items). Items are scored on a 7-point scale (0 = never to 6 = every day). In line with standard scoring, PA items were not reverse-coded; higher EE and DP indicate greater burnout, while higher PA scores indicate greater professional accomplishment and lower burnout on this subscale [14, 15]. Subscale scores were summed (EE range 0–54, DP 0–30, PA 0–48). Following best practice, analyses focused on subscale scores separately [16].

We analyzed burnout subscales as continuous variables to preserve statistical power and comparability. Nevertheless, commonly reported MBI-HSS cut-offs (EE ≥ 27 for high emotional exhaustion, DP ≥ 10 for high depersonalization, and PA ≤ 33 for low personal accomplishment) were considered for descriptive interpretation, consistent with prior international and Iranian validation studies [16, 17].

The MBI-HSS has demonstrated robust psychometric properties in diverse settings. Among Italian nurses (n=925), the original instrument showed a stable three-factor structure and good internal consistency (EE α=0.896; DP α=0.755; PA α=0.821; total α=0.800) [15]. Previous studies in Iranian healthcare populations have also confirmed adequate reliability, with Cronbach's α values exceeding 0.70 for all subscales [17].

Bias control

To minimize volunteer bias, all eligible staff were invited to participate, responses were collected anonymously, and reminder contacts were implemented during the data collection period.

Data analysis

Data were analyzed using SPSS version 22. Descriptive statistics are presented as mean ± standard deviation (SD) for continuous variables and frequency (percentage) for categorical variables. Normality and homogeneity of variance were assessed using the Shapiro–Wilk test and Levene's test, respectively.

Subscale scores for EE, DP, and PA were computed according to standard guidelines, and analyses focused on these continuous outcomes. As an exploratory descriptive reference (not a clinical cutoff), subscale item-mean scores were compared with the neutral midpoint value of 3 using two-tailed one-sample t-tests, with results interpreted cautiously.

Group comparisons were conducted using independent-samples t-tests for two-group variables and one-way ANOVA for multi-level variables (e.g., age group, employment status, years of service, field of study); non-parametric alternatives were applied when assumptions were violated. Effect sizes were reported as Cohen's d for t-tests and partial η^2 for ANOVA, using conventional benchmarks: Cohen's d = 0.20 small, 0.50 medium, 0.80 large; 1.20–1.99 very large; ≥2.00 huge; partial η^2 = 0.01 small, 0.06 medium, 0.14 large [18, 19]. All analyses were two-tailed with a significance level of α=0.05, and %95 confidence intervals are reported.

Primary outcomes were the continuous scores of the three MBI-HSS subscales (EE, DP, and PA). Consistent with methodological recommendations, a global "total burnout" score was not used for primary inference; any overall composite score was calculated solely for secondary or exploratory description and interpreted cautiously [16], with no multiplicity-adjusted hypothesis testing planned for this composite

Results

This study evaluated burnout subscales among PHC workers in comprehensive health service centers in Gorgan during the COVID-19 pandemic using the MBI-HSS.

Demographic and baseline participant Characteristics

A total of 400 Primary Health Care (PHC) workers from comprehensive health service centers in Gorgan were included in the study. The majority of participants were married **(**320; %80.0), and the largest age group was 36–45 years (175; 43.8%**).** Nearly half held permanent formal employment **(**179; %44.8**)**. The most frequent fields of study were Health Care (associate degree) 130 (%32.5) and Midwifery 93 (%23.3). A small proportion of responses were missing for some variables; available-case denominators are reported in Table 1.

Table 1: Comparison of patient characteristics between groups

Category / Variable		N (%)
Age groups	Under 25 years	30 (%7.5)
	26–35 years	90 (%22.5)
Age groups	36–45 years	175 (%43.8)
	Above 45 years	94 (%23.5)
	Not reported	11 (2.8%)
Marital status	Single	75(%18.8)
Marital status	Married	320 (%80)
	Other/Not reported	1.2)%5 (
Employment status	Contractual	118 (%29.5)
	Formal-probationary	37 (%9.3)
	Fixed-term (formal-contractual)	22 (%5.5)
	Formal-permanent	179 (%44.8)
	Corporate/Agency	40 (%10)
	Not reported	4 (1.0%)
Years of service	Under 5 years	78 (%19.5)
	6–10 years	93 (%23.3)
	11–15 years	63 (%15.8)
	16–20 years	96 (%24)
Years of service	21–25 years	42 (%10.5)
	Over 25 years	27 (%6.8)
	Not reported	1 (0.2%)
Field of study	Medical Sciences*	7 (%1.8)
	Humanities	22 (%5.5)
	Culture and Art*	5 (%1.3)
	Professionalism*	7 (%1.8)
	Bachelor of Health	91 (%22.8)
	Midwifery	93 (%23.3)
	Health Care (Associate)	130 (%32.20)
	Experimental Sciences	31 (%7.8)
	Nursing	14 (%3.5)

* Indicates field-of-study categories with fewer than 10 participants.

Table 2: Comparison of MBI-HSS subscales with the neutral midpoint

Subscale	Mean ± SD	Mean difference from 3 (95% CI)	t (df=399)	p	Cohen's d (95% CI)
Emotional exhaustion (EE)	4.60 ± 1.13	1.60 (1.49–1.71)	28.32	p<0.001	1.42 (1.28–1.55)
Depersonalization (DP)	5.45 ± 0.74	2.45 (2.38–2.52)	66.22	p<0.001	3.31 (3.06–3.56)
Personal accomplishment (PA)	3.99 ± 0.95	0.99 (0.90–1.08)	20.84	p<0.001	1.04 (0.92–1.16)

Data are presented as frequency (n) and percentage (%). Percentages were calculated using available-case analysis for each variable. Missing or non-reported responses indicates missing responses.

Assumption checks

Data screening indicated no material departures from normality (Shapiro–Wilk, all p > 0.05) and supported homogeneity of variances (Levene, all p > 0.05). Parametric procedures were therefore used.

Burnout subscales compared with the neutral reference

Burnout status was evaluated by comparing the mean score of each MBI-HSS subscale with the neutral reference value of 3 (on a 0–6 scale) using two-tailed one-sample t-tests. As shown in Table 2, mean scores for all three subscales differed significantly from the reference value (all p<0.001). Emotional exhaustion and depersonalization scores were significantly higher than 3, indicating elevated burnout-related strain. Higher PA scores indicate greater professional efficacy and therefore lower burnout on this dimension.
Effect sizes ranged from moderate to very large, with particularly large effects observed for depersonalization, indicating a pronounced deviation from the neutral reference.

Two-tailed one-sample t-tests versus the neutral reference value (3 on a 0–6 scale); n=400; df=399. Values are reported as mean ± SD, mean difference from the reference (%95 CI), t-statistic, p-value, and Cohen's d values reported with %95 CI. Higher EE and DP indicate greater burnout; higher PA indicates greater professional accomplishment (i.e., lower burnout on PA). Overall burnout by demographic subgroups (secondary/exploratory).

As a secondary and exploratory analysis, overall burnout (item-mean composite of all 22 MBI-HSS items) was compared across demographic and occupational subgroups (Table 3). A statistically significant difference was observed for marital status, with married participants reporting higher overall burnout than single participants, t (393)=−3.15, p=0.0017, Cohen's d=0.40 (95% CI 0.15–0.66), indicating a small-to-moderate effect size.

In contrast, overall burnout did not differ significantly across age groups, employment status, years of service, or field of study (all p>0.05), and the corresponding effect sizes (partial η^2) were small. Several subgroups included small sample sizes; therefore, these comparisons should be interpreted with caution, and no post-hoc tests were conducted.

Discussion

In our sample of PHC staff in Gorgan, mean scores for emotional exhaustion and depersonalization were markedly above the scale midpoint, reflecting substantial work-related strain, whereas mean personal accomplishment remained relatively comparatively high. The comparison with the neutral midpoint of 3 (on the 0–6 response scale) was used as an exploratory descriptive reference rather than a clinical cutoff, to indicate the direction and magnitude of deviations from a neutral frequency of burnout-related experiences. These findings are consistent with international evidence on pandemic-related burnout. Global meta-analyses have shown that approximately half of healthcare workers experienced high levels of emotional exhaustion or depersonalization during the COVID-19 pandemic, while a considerably smaller proportion reported low personal accomplishment, indicating relative preservation of professional efficacy across settings [20]. Regionally, a recent meta-analysis from the Middle East, North Africa, and Turkey reported particularly high burnout prevalence in Iran and neighboring countries, highlighting the disproportionate burden of burnout in this region during the pandemic [21]. Together, these findings suggest that elevated emotional exhaustion and depersonalization among PHC workers represent a widespread phenomenon during COVID-19, even in contexts where personal accomplishment remains relatively preserved.

Table 3: Overall burnout by demographic subgroup (secondary analysis)

Factor	Subgroup (n)	Mean ± SD [95% CI]	Overall test & effect size
Age group	Under 25 (30)	4.44 ± 1.02 [4.06–4.82]	One-way ANOVA: $F(3, 385)=0.52$, $p=0.666$; partial $\eta^2=0.004$
	26–35 (90)	4.62 ± 0.80 [4.45–4.79]	
	36–45 (175)	4.58 ± 0.80 [4.46–4.70]	
	>45 (94)	4.51 ± 0.81 [4.34–4.68]	
Marital status*	Single (75)	4.28 ± 1.02 [4.05–4.51]	Independent-samples *t*-test: $t(393)=-3.15$, $p=0.0017$; Cohen's $d=0.40$ (95% CI 0.15–0.66)
	Married (320)	4.61 ± 0.76 [4.53–4.69]	
Employment status	Contractual (118)	4.48 ± 0.87 [4.32–4.64]	One-way ANOVA**:** $F(4, 391)=1.53$, $p=0.192$; partial $\eta^2=0.015$
	Probationary (37)	4.76 ± 0.64 [4.55–4.97]	
	Fixed-term (22)	4.74 ± 0.65 [4.45–5.03]	
	Formal—permanent (179)	4.54 ± 0.83 [4.42–4.66]	
	Corporate/Agency (40)	4.73 ± 0.84 [4.46–5.00]	
Years of service	<5 (78)	4.63 ± 0.75 [4.46–4.80]	One-way ANOVA**:** $F(5, 393)=0.98$, $p=0.427$; partial $\eta^2=0.012$
	6–10 (93)	4.60 ± 0.78 [4.44–4.77]	
	11–15 (63)	4.50 ± 0.90 [4.28–4.72]	
	16–20 (96)	4.53 ± 0.82 [4.37–4.69]	
	21–25 (42)	4.48 ± 0.94 [4.19–4.77]	
	>25 (27)	4.85 ± 0.65 [4.59–5.11]	
Field of study	Medical Sciences (7) †	4.44 ± 1.14 [3.39–5.49]	One-way ANOVA**:** $F(8, 391)=1.48$, $p=0.164$**;** partial $\eta^2=0.029$
	Humanities (22)	4.26 ± 0.98 [3.83–4.69]	
	Culture & Art (5) †	4.92 ± 0.55 [4.24–5.60]	
	Professional Training (7) †	4.99 ± 0.87 [4.19–5.79]	
	Public Health (BSc) (91)	4.63 ± 0.83 [4.46–4.80]	
	Midwifery (93)	4.52 ± 0.82 [4.35–4.69]	
	Health Care (Associate) (130)	4.65 ± 0.77 [4.52–4.78]	
	Experimental Sciences (31)	4.28 ± 1.04 [3.90–4.66]	
	Nursing (14)	4.48 ± 0.57 [4.15–4.81]	

† Categories with fewer than 10 participants; estimates for these small subgroups should be interpreted cautiously.

Studies from China and Egypt have similarly documented high levels of emotional exhaustion and depersonalization among PHC workers, largely attributed to workload intensification, administrative burden, and prolonged exposure to crisis conditions [4, 6]. In Iran, several studies have reported widespread psychological distress and burnout among healthcare workers, driven by factors such as infection risk, staffing shortages, and resource constraints [8, 22]. Importantly, evidence suggests that burnout was already prevalent in the Iranian PHC system prior to the COVID-19 pandemic, indicating that pre-existing structural and organizational vulnerabilities may have increased susceptibility to burnout, which was further exacerbated during the pandemic [7].

The coexistence of high emotional exhaustion and depersonalization alongside relatively high personal accomplishment is well explained by the Job Demands–Resources (JD-R) model. According to this framework, excessive job demands (e.g., long working hours, heavy caseloads, and time pressure) increase strain and contribute to exhaustion and cynicism, whereas job resources—such as social support, perceived professional meaning, and role identity help sustain motivation and personal accomplishment [23]. In the present study, pandemic-related demands likely intensified through expanded duties and infection risk, thereby increasing emotional exhaustion and depersonalization. Concurrently, a strong professional identity and sense of social contribution may have functioned as key resources that preserved personal accomplishment. This interpretation aligns with previous findings showing that supportive work environments and professional pride are associated with lower burnout across dimensions [4, 24]. Accordingly, the relatively high PA score observed here should be interpreted as preserved self-efficacy rather than an absence of burnout [25].

Regarding subgroup differences, marital status was the only demographic variable showing a small-to-moderate association with overall burnout, whereas age, employment status, years of service, and field of study were not significantly related to burnout levels. Higher burnout among married PHC workers may reflect increased work–family conflict during the COVID-19 pandemic, including caregiving responsibilities, school closures, and concerns about transmitting infection to family members.

Similar associations have been reported in both international and Iranian studies, particularly under conditions of high organizational demands and limited flexibility during the pandemic [26, 27]. Thus, marital status may serve as a proxy for heightened family responsibilities that became more salient under pandemic conditions, intensifying occupational strain among married staff. These findings highlight the potential importance of family-sensitive organizational support measures during prolonged public health emergencies.

Taken together, the findings suggest that burnout among PHC workers during the COVID-19 pandemic was shaped by the interaction between intense organizational demands and available contextual resources. While sustained pressures contributed to emotional exhaustion and depersonalization, motivational and value-based resources may have helped protect professional efficacy. This pattern underscores the importance of organizational-level interventions that reduce excessive demands while preserving the meaningful aspects of PHC work.

Several limitations should be considered. First, the cross-sectional design limits causal inference. Second, convenience sampling may affect generalizability and introduce selection bias. Third, online data collection may have produced selection bias due to unequal internet access and reduced control over response conditions. Finally, Self-report measures may be subject to reporting bias Cross-sectional design limits causal inference.

Although organizational factors were not directly measured in this study, the observed pattern of burnout highlights potential areas for supportive action in primary health care settings. Approaches aimed at managing sustained work-related strain while supporting professional efficacy may be beneficial, particularly during prolonged public health emergencies. In addition, given the higher burnout levels observed among married staff, family-sensitive practices, such as flexible scheduling where feasible, may be considered during periods of sustained work pressure.

Longitudinal or multicenter studies are needed to further examine burnout trajectories and associated contextual factors among primary health care workers.

Conclusion

PHC workers in Gorgan experienced significant emotional exhaustion and depersonalization during the COVID-19 pandemic while preserving professional accomplishment. Organizational measures (e.g., predictable scheduling, equitable task distribution, family -sensitive policies) are recommended to mitigate burnout; further longitudinal and multicenter research is required to confirm these results

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Conflict of Interests

The authors declare no conflict of interest related to this study.

Author's contribution

M.E.H, E.A., MH.R, and Sh.GH.; Contributed to writing the first draft. E.A. and M.E.H; Contributed to data collection. M.M. and R.F.H.; Contributed to all data and statistical analysis and interpretation of data. M.M, A.CH.; Contributed to the research concept, supervised the work, and revised the manuscript. All authors read and approved the final manuscript.

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Ethics statement

The protocol was approved by the Ethics Committee of Iran University of Medical Sciences (IR.IUMS.REC.1400.988) and conducted in accordance with the Declaration of Helsinki. Written/electronic informed consent was obtained from all participants. Confidentiality and anonymity were ensured throughout data collection, coding, and analysis.

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