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Menstrual Hygiene Conditions of a University Hospital Staff during the Earthquake Period

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Abstract: ***Background*:** This study clearly demonstrates the menstrual hygiene conditions of female staff at a university hospital following the Kahramanmaraş earthquakes of February 6–7, 2023, and definitively identifies challenges encountered during the disaster period. ***Materials and Methods*:** This descriptive, cross-sectional study included 116 female healthcare workers. A structured questionnaire definitively assessed sociodemographic characteristics, access to menstrual hygiene products, personal hygiene practices, and challenges following the earthquake. Data were analyzed using IBM SPSS Statistics 20.0 with appropriate statistical tests. ***Results*:** The mean age of participants was 33.9±8.3 years; 49.1% were nurses and 17.2% were physicians. A total of 24.1% reported difficulty accessing menstrual hygiene products, and 67.2% were unable to find a private space for menstrual hygiene. Notably, 36.2% experienced changes in menstrual flow, and 38.8% had limited access to bathing facilities. There were no statistically significant differences in menstrual cycle parameters during the three months before and after the earthquake ($p>0.05$). ***Conclusion*:** This study demonstrates that significant gaps persist in meeting women's menstrual hygiene needs during disasters. Disaster management plans must urgently prioritize the provision of hygiene products, the establishment of safe facilities, and the assurance of adequate opportunities for personal hygiene to better protect the health and dignity of affected women.

Keywords: Earthquake, menstrual hygiene, healthcare workers.

Research Paper

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INTRODUCTION

Menstrual hygiene management (MHM) is an essential component of public health and hygiene, directly affecting women's health, dignity, and well-being. MHM refers to practices and resources—such as using clean menstrual products that can be changed privately, and ensuring access to soap, water, and facilities for safe disposal—that enable women to manage menstruation safely and with dignity [1].

For hospital health-care workers, shift work, heavy workloads, and infection-control protocols often limit routine hygiene [2].

During major earthquakes, health facilities and staff face severe challenges. Structural damage and disruptions to water and sanitation systems increase pressure on the system. Overwhelming patient loads intensify hospital work demands. Facility breakdowns during disasters can prevent staff from maintaining cleanliness, disposing of waste safely, and accessing sanitary supplies [3].

In this context, managing menstrual hygiene among hospital staff constitutes an under-explored yet essential intersection of gender, health, and disaster response. Empirical studies in humanitarian settings show that women and girls in disaster-affected areas often lack access to menstrual products. They also face inadequate sanitation facilities and experience compromised privacy and dignity [4-5]. For example, a landmark study in post-earthquake Nepal found that

none of the respondents received menstrual absorbents during the first month of the relief phase, despite significant expressed need [6]. Recent research in flood-affected areas of Bangladesh identified three main problems: lack of accessible private sanitation, insufficient supplies, and socio-cultural taboos that increase health risks [5]. According to findings of health units working in the region following the earthquake disaster in Turkey, the presence of a large number of collapsed health facilities, environmental conditions, destruction of vital infrastructures, overcrowding in emergency shelters, and poor sanitation could further worsen the already fragile public health situation [7]. Although these studies focus on the public, hospital staff during earthquakes face similar problems. Damaged infrastructure and service loss combine with gendered hygiene needs.

Local and regional disaster policies strengthen community resilience and reduce the impacts of natural and human-induced hazards. Effective local policies incorporate risk assessment, implement early warning systems, engage communities, and coordinate post-disaster recovery planning. Policymakers and stakeholders should prioritize implementing and continually improving these policies to ensure safer, more resilient communities [8].

During earthquakes, hospital staff may face disrupted water supplies and compromised sanitary facilities [9]. Inadequate waste disposal systems may coincide with the intense demands of patient care [10]. These conditions can hinder effective menstrual management, increase psychological stress, raise infection risk, and reduce work performance and well-being. Despite these challenges, the literature rarely addresses this issue. Menstruation remains a "silent need" in emergency and disaster contexts [11].

Given the combined pressures of professional responsibilities and physiological hygiene needs, this study specifically highlights the critical gap in research on menstrual hygiene among hospital staff during earthquakes [3]. Addressing this intersection of occupational health, gender equity, and disaster preparedness clarifies the main argument that supporting menstrual hygiene is essential to the well-being of women health-care providers in disaster-prone regions [5-12].

Gender-sensitive disaster response recognizes the different needs and strengths of women, men, and gender-diverse people. It ensures fair access to help and involvement in decisions. Including gender perspectives strengthens community preparedness and supports recovery for everyone [13].

This study evaluates menstrual hygiene conditions of female staff at a university hospital during an earthquake, focusing on specific challenges encountered. The findings will directly guide institutional preparedness plans, gender-sensitive disaster response protocols, and hygiene policy interventions that support the dignity and health of women healthcare providers in earthquake-prone regions.

MATERIALS AND METHODS

Study Population and Design

A cross-sectional descriptive study was conducted from March to April 2023 among female healthcare workers at a university hospital impacted by the earthquakes of February 6–7, 2023. The study population included all female healthcare personnel at the hospital, with 116 individuals volunteering to participate. No sample selection was made in the study; personnel who worked during the earthquake and agreed to participate were included in the study. Data were collected using a face-to-face questionnaire. In preparing the survey, studies in the existing literature and the experiences of the authors were used.

Exclusion Criteria

- Those who refused to participate in the study.

Examined Variables

- Age
- Marital Status
- Occupation
- Living conditions
- Menstrual hygiene and access problems
- Changes in menstrual patterns

Ethics

All procedures were conducted in accordance with the Declaration of Helsinki. Ethical approval was granted by the Clinical Research Ethics Committee of the Faculty of Medicine at a university hospital (October 13, 2023; No. 45/137/2023). Participation was voluntary, and informed consent was obtained from all respondents, with assurances of anonymity and confidentiality.

Statistical Analysis

Data analysis was performed using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA). Categorical variables, defined as variables with distinct categories without inherent order, are presented as frequencies and percentages, while continuous variables, defined as variables measured on a scale with meaningful numeric values, are summarized by their mean ± standard deviation, median, minimum, and maximum. The Kolmogorov–Smirnov test assessed the distribution of numerical variables, and the Wilcoxon Signed-Rank test compared dependent variables that were not normally distributed. Statistical significance was set at $p < 0.05$.

RESULTS

The participants were predominantly nurses (49.1%) and doctors (17.2%), with a mean age of 33.9±8.3 years (range: 20–50); 60.3% were married. Most participants (80.2%) were at home during the earthquake, while 17.2% were at the hospital. In the first week after the earthquake, 36.2% stayed at home, 38.8% with relatives, and 13.8% in their cars, illustrating significant upheaval in living arrangements. These demographic and situational details set the context for the menstrual health findings (Table 1 - 2).

Table 1: Sociodemographic characteristics of participants

Variable	n (%)	Mean±SD
Age (years)		33.9±8.3
20–30	45 (38.8%)	
31–40	40 (34.5%)	
41–50	31 (26.7%)	
Marital status		
Married	70 (60.3%)	
Single	46 (39.7%)	
Occupation:		
Nurse	57 (49.1%)	
Physician	20 (17.2%)	

Table 2: Living conditions of participants after the earthquake

Variable	n (%)
Living condition (first week)	
Own home	42 (36.2%)
Relative's home	45 (38.8%)
Car	16 (13.8%)
Other	13 (11.2%)

Building on these contexts, regarding menstrual health, 36.2% of participants reported changes in their menstrual routines. 24.1% of participants reported difficulties accessing sanitary menstrual products, and 67.2% indicated an inability to find private spaces for menstrual hygiene during work hours (Table 3). Additionally, 38.8% experienced limited access to showers. No statistically significant differences were observed in menstrual cycle length (p=0.170), menstrual duration (p=0.430), or the number of pads used per day (p=0.074) in the three months before and after the earthquake (Table 4).

Table 3: Menstrual hygiene and access problems of participants

Variable	n (%)
Menstrual health parameter	
Change in menstrual flow	42 (36.2%)
Difficulty accessing menstrual products	28 (24.1%)
No private space for hygiene	78 (67.6%)
Limited access to bathing	45 (38.8%)

Table 4: Comparison of participants' menstrual characteristics three months before and after the earthquake.

Variable	Before 3 Months	After 3 Months	p
Menstrual cycle length	31.9±5.3	30.1±6.1	0.17
Menstrual duration	9,4±1,3	8,9±1,6	0.43
Number of pads used per day	1,2±0,3	1,5±0,4	0.07

DISCUSSION

The earthquakes of February 2023 significantly disrupted the daily routines and professional environments of female healthcare personnel. Over one-third of participants in this study reported changes in menstrual routines, suggesting a strong association between acute stress and altered menstrual patterns. Although previous disasters, including the Great East Japan Earthquake [14] and the 2015 Nepal earthquake [6], were linked to increased self-reported menstrual irregularities, objective parameters such as cycle length, duration, and pad use did not change significantly in this cohort. These findings indicate that stable employment and institutional support may have mitigated disruptions to menstrual cycles during the crisis [15].

Although quantitative cycle parameters remained stable, participants encountered significant

barriers to menstrual hygiene. Approximately one-quarter of respondents reported difficulty accessing menstrual products, reflecting common supply chain disruptions observed in humanitarian contexts. Similar shortages were documented in Puerto Rico following Hurricane Maria [16] and in various low-resource emergencies [1], underscoring the need to include menstrual supplies in emergency logistics, even in high-resource settings. Research following the Türkiye–Syria earthquakes also identified shortages of pads and insufficient attention to menstrual needs in relief efforts [17].

Nearly 70% of participants reported a lack of private, sanitary spaces, underscoring persistent barriers to menstrual management after disasters. The broader emergency literature similarly identifies inadequate facilities as a recurring issue in humanitarian settings, where damaged infrastructure and overcrowding intensify these challenges [18]. Frontline healthcare workers during the COVID-19 pandemic experienced comparable difficulties, including long shifts, limited protective equipment, and insufficient restroom access, which compromised menstrual hygiene [19]. The present findings indicate that, even within hospitals, which are generally considered more stable and regulated than community shelters, privacy and sanitation may remain severely limited after disasters.

Restricted access to bathing facilities, reported by 38.8% of participants, further highlights the vulnerability of hygiene during emergencies. Previous studies in Nepal [6], Haiti [18], and Indonesia [20] similarly identified bathing limitations as a significant challenge for menstrual hygiene management. For healthcare workers, who already face substantial physical and emotional demands during disasters, these limitations may pose risks to both personal comfort and infection control.

Collectively, these findings reinforce the view that menstrual hygiene constitutes an essential yet historically neglected component of emergency preparedness. Institutional emergence preparedness fosters a culture of resilience that other hospitals can replicate to strengthen health system responsiveness and safeguard patient outcomes under extreme conditions. Include MHM in hospital disaster preparedness to ensure equitable and dignified care during emergencies. Hospitals should: stock menstrual health supplies; provide designated sanitation facilities; and train staff as part of contingency protocols. Integrate MHM into emergency logistics, infection control, and patient care frameworks to enhance resilience, reduce health risks, and promote gender-sensitive disaster response. Use a structured MHM approach to safeguard menstruating individuals and strengthen hospitals' capacity for inclusive, effective emergency services.

While physiological cycle parameters may remain stable, subjective burdens such as loss of privacy, inadequate sanitation, and restricted access to products represent significant stressors with potential implications for well-being and occupational performance. Implementing gender-sensitive planning within healthcare institutions, including assured access to menstrual products, designated private spaces, and functional sanitation facilities, may alleviate these burdens. Further research is warranted to assess long-term menstrual outcomes following disasters and to evaluate structural interventions to enhance menstrual hygiene resilience in crisis settings.

Several limitations should be acknowledged when interpreting these findings. First, the cross-sectional design restricts causal inference, as menstrual changes and hygiene challenges were assessed retrospectively, complicating the determination of the temporal sequence of observed associations. Second, reliance on self-reported questionnaires introduces potential recall bias and subjective interpretation, especially in a post-disaster context where acute stress may influence perceptions. Third, the sample comprised female healthcare workers from a single university hospital, which may limit the generalizability of results to other professional groups or to women residing in community shelters who may have experienced greater deprivation. Furthermore, although institutional support may have mitigated some adverse outcomes among healthcare personnel, the study did not evaluate workplace policies, resource allocation strategies, or departmental variations that could have contributed to differences in menstrual hygiene experiences. Finally, the absence of biomarker or hormonal data precluded objective physiological validation of the reported menstrual changes and self-selection of participants with greater awareness of menstrual problems may lead to selection bias. Future research utilizing longitudinal designs, multi-center sampling, and mixed-methods approaches is recommended to advance understanding of menstrual health dynamics in disaster contexts.

Conflict of Interest: The authors reported no conflicts of interest.

The Institutions Supporting the Study: Private Turan Çetin IVF Center, Adana, Cukurova University Faculty of Medicine, Adana

Ethical Statement: Our study was approved by the Clinical Researchs Ethical Commitee of Çukurova University Faculty of Medicine with a decision numbered October 13, 2023; 45/137/2023.

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Concept/Design: ANÇG; Data acquisition: MO, BÇ, TH, ANÇG; Data analysis and interpretation: MKÖ, SPY, ANÇG; Drafting manuscript: MKÖ, ANÇG; Critical revision of manuscript: MKÖ, ANÇG; Final approval and accountability: MKÖ, MO, ANÇG; Technical or material support: MKÖ; Supervision: ANÇG

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