ORIGINAL ARTICLE

Pressure ulcer, knowledge, description and prevention among senior nursing students in Jordan

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ABSTRACT

Background: Pressure ulcers are preventable patient safety issues that adversely affect healthcare costs and outcomes. Senior nursing students are expected to be prepared to contribute to pressure ulcer prevention based on their clinical education and training; however, evidence suggests that gaps in knowledge and preparedness may still exist.
Objective: To assess nursing students' knowledge of pressure ulcer staging, prevention, risks, and wound description, and to examine differences according to participant characteristics.
Methods: A cross-sectional descriptive study was conducted among 200 nursing students from two governmental universities in Jordan; however, 184 completed surveys were included in the final analysis. The Pieper-Zulkowski Pressure Ulcer Knowledge Test was used. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) at the $p \leq .05$ significance level.
Results: Overall, students demonstrated poor knowledge (M = 31.33, SD = 8.95). Students from the University of Jordan and those who accessed online information had significantly higher prevention scores ($p < .05$).
Conclusions: The findings underscore the need to develop targeted teaching, training, and curricula to enhance students' knowledge of pressure ulcers.

Key Words: Pressure ulcer, Pressure injury, Prevention, Nursing, Students, Jordan

1. INTRODUCTION

Pressure ulcers (PrUs) involve damage to the skin or soft tissues. PrUs arise from long-term pressure on specific body areas and may have fatal outcomes if not treated promptly.[1] The National Pressure Ulcer Advisory Panel (NPUAP) and the European Pressure Ulcer Advisory Panel (EPUAP)[2] define pressure ulcers as localized damage to the skin and underlying tissue, typically occurring over a bony area, caused by sustained pressure or a combination of pressure and shear forces. The World Health Organization highlighted that pressure ulcers are typical adverse events that can cause preventable patient harm.[1] Pressure ulcers have negative consequences on patients' quality of life, especially at the psychological level.[3] Out of 100 deaths in low- to middle-income countries, four are related to unsafe care. According to the Mayo Clinic,[4] pressure ulcers can develop within a few hours or days, and although most sores respond to treatment and heal, some may never completely recover; therefore, measures can be implemented to prevent bedsores and aid in their healing.

The rate of pressure ulcers associated with medical devices in Jordan was 38.1%.[5] The sacrum and heel were the most

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commonly affected areas, and those most at risk included older individuals, patients admitted to public hospitals, and those with extended hospital stays.[5] Patients in critical care units in Jordan are at the highest risk of developing medical device pressure ulcers.[5] Therefore, it is important for nursing students to be aware since, as future nurses, they are considered frontline healthcare providers in the healthcare sector and will have an essential role in the prevention, care, and treatment of patients.[6] They possess the qualifications necessary to prevent pressure injuries in critical care settings. Although nursing students held positive attitudes regarding the prevention of pressure injuries,[7] several studies have highlighted the limited knowledge among nursing students regarding pressure ulcer staging, risk assessment, wound description, and appropriate interventions.[8,9] For example, research indicates that nursing students' knowledge of pressure injury prevention is inadequate, underscoring the immediate need for ongoing education.[7] Moreover, a cross-cultural comparison study of Jordanian and Turkish nursing students, conducted at private and public universities, used the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0) to assess knowledge of pressure ulcers, found that the overall knowledge levels were low.[10] Similarly, in Turkey, nursing students demonstrated a low level of knowledge regarding pressure ulcer prevention; however, the researchers found that students' understanding improved markedly with the experience of both learning about PrUs and delivering care.[11] Furthermore, inadequate knowledge of pressure injury prevention has been shown among nursing students in internship programs in Saudi Arabia and in Croatia.[12,13]

Acting on patient safety requires political will, investment, leadership, and communication.[14] Also, there are various strategies for preventing pressure ulcers that have been identified in a systematic review by Alshahrani et al.,[15] including pressure ulcer prevention bundles, regular repositioning, the use of supportive surfaces, prevention of pressure injuries associated with medical devices, and the availability of expert guidance. Every study included in the review indicated a decrease in pressure injuries after implementing these interventions. The World Health Organization[1] has also highlighted several approaches to promote patient safety, including establishing a safe working environment and ensuring the safety of procedures and clinical processes, fostering a culture where safety is prioritized, demonstrating leadership commitment to safety, and creating systems for reporting incidents related to patient safety that promote learning and ongoing enhancement. Research has highlighted the importance of integrating case-supported concept mapping education into nursing programs, which can significantly improve students' skills in preventing pressure injuries.[16]

Accordingly, this study specifically examined senior nursing students' knowledge of pressure ulcers, including staging, prevention, risk factors, and wound description, using the validated instrument, the Pieper and Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT).[8] Nursing students, especially those in their last year, are on the path to becoming registered nurses and are expected to apply evidence-based knowledge in clinical settings. Their level of knowledge at this stage reflects the effectiveness of the nursing curriculum and their readiness to provide safe and quality care. Despite the importance of this issue, and in accordance with the study's inclusion and exclusion criteria, a review of databases such as CINAHL, Google Scholar, MEDLINE, and ScienceDirect at the time of data collection reveals lack of published studies assessing senior nursing students' knowledge of pressure ulcers in Jordan. Therefore, this study aimed to assess senior nursing students' level of knowledge about pressure ulcers staging, description, and prevention by addressing the following research questions:

1. What is the level of senior nursing students' knowledge regarding PrU staging?
2. What is the level of senior nursing students' knowledge regarding PrU prevention and risks?
3. What is the level of senior nursing students' knowledge regarding PrU wound description?
4. What is the level of senior nursing students' knowledge regarding PrU and the demographic variables?"

2. METHODS

2.1 Design

A cross-sectional descriptive design was used to assess nursing students' knowledge at two governmental universities in Jordan.

2.2 Setting

This study was conducted at two large public universities in Jordan: Jordan University of Science and Technology (JUST) and the University of Jordan (UJ), both of which offer accredited nursing programs and serve diverse student populations. Both institutions are located in different regions of Jordan and represent variations in academic structure and student demographics.

2.3 Population and sampling

The target population included all undergraduate nursing students at governmental universities in Jordan. The accessible population included students from selected universities who met the inclusion criteria. Convenience sampling was used to recruit 200 students. The inclusion criteria were senior nursing students who had passed the courses for Adult

Health Nursing I and II and Maternal and Child Health Nursing. Students of any nationality, race, sex, or gender who were studying in English were eligible to participate. First-, second-, and third-year students were excluded because they had not yet completed essential coursework, such as Adult Health Nursing I and II and Maternal and Child Health Nursing, which provide foundational knowledge critical to understanding pressure ulcers. This descriptive study required a sufficient sample size to obtain reliable estimates of knowledge scores across participant characteristics. As suggested by VanVoorhis and Morgan,[17] larger samples improve the accuracy of estimates across multiple variables. At least 180 participants were needed, but 200 nursing students were recruited to minimize incomplete data.

3. DATA COLLECTION

3.1 Data collection instrument

The PZ-PUKT[8] was used to assess knowledge of staging, prevention, risk factors, and wound description. The tool consists of 72 items with true, false, and do not know responses. It has demonstrated construct validity and internal consistency, with a total Cronbach's α of 0.80. The prevention, wound description, and staging subscales contained 28, 24, and 20 items, respectively (α = 0.56, 0.64, and 0.67). The original English version was used with the authors' permission, Pieper and Zulkowski.

Demographic and educational characteristics were collected using a structured questionnaire that included the university name, academic year, age, sex, study style (bachelor, bridging, or regular bachelor), participation in an assessment or training on pressure ulcers (yes or no question), the last time a lecture on pressure ulcers was attended, the last time an article or book on pressure ulcers was read, seeking out information about pressure ulcers on the web, and reading the NPUAP/EPUAP International Pressure Ulcer Prevention and Treatment Guidelines. The questionnaire also included questions on knowledge, description, and prevention of PrU (true/false and don't know responses).

To estimate the internal consistency reliability of the PZ-PUKT, a Cronbach's α reliability coefficient was calculated for the overall PZ-PUKT scale and its subscales (see Table 1). The Cronbach's α values of the three subscales ranged from 0.63 for prevention to 0.71 for the wound subscale.

Table 1. The internal consistency reliability of the PZ-PUKT

Measures	Cronbach's alpha
Prevention	0.63
Staging	0.68
Wound	0.71
Total	0.83

3.2 Data collection procedure

Institutional Review Board ethical approval was obtained by the research team from JUST. Participants were approached before class, verbally explained the study. Participants completed the self-administered questionnaire in the classroom during scheduled class time. The Principal Investigator provided instructions and ensured independent completion without reference materials. The instructor facilitated classroom access but did not collect data. On average, completion took 20–30 minutes, allowing comprehensive responses in a structured setting. A total of 184 complete surveys were included in the final analysis as surveys with incomplete data were excluded from the final analysis.

3.3 Ethical considerations

The participants reviewed the Arabic-language flyer that included more information about the study's purpose, specific expectations regarding participation (such as the time required to complete the questionnaire), voluntary participation, the right to withdraw at any time without any negative consequences, and the potential benefits of the study.

The anonymity and confidentiality of participants were ensured throughout the study; no names were recorded at any stage of data collection or reporting, and coded identifiers were used instead. All completed paper surveys were stored securely in a locked cabinet accessible only to the research team. After data entry and verification, all paper surveys were securely shredded to protect participant confidentiality, and the online data were stored in a secure Microsoft OneDrive, with access limited to the research teams. The completion and return of the questionnaire were considered implied consent to participate. The study has minimal risk to participants and did not exceed risks encountered in daily life, with no anticipated physical, psychological, social, or academic harm. Participants received no direct benefit, but they were given the opportunity to share more information regarding their understanding of pressure ulcers. Permission was obtained from the original English-language authors of the survey to adapt and adopt the questionnaire.

3.4 Data analysis

Data were analyzed using IBM SPSS Statistics version 24.0.[18] Descriptive statistics were used to present the results, with means and standard deviations reported for continuous variables (e.g., age). Percentages and frequencies with 95% confidence intervals were reported for categorical variables (e.g., sex, university name, and study style). The total scores for the PZ-PUKT and its subscales, as well as the percentage of correct answers, were calculated according to the tool authors' instructions. The normality of the data distribution

was assessed prior to selecting a parametric or nonparametric analysis. Independent sample t-tests were used to compare the mean scores of the PZ-PUKT and its subscales for dichotomous variables (e.g., sex, university, receiving PrU training, and reading PrU guidelines). However, when assumptions for the *t*-test were violated, the Mann–Whitney *U* test was used when comparing scores based on study style. The Kruskal–Wallis test was used instead of one-way analysis of variance (ANOVA) to compare mean scores for non-dichotomous variables, such as attending a PrU lecture or reading an article or book about PrUs, due to violations of ANOVA assumptions (e.g., normality and unequal group sizes). Additionally, nonparametric Spearman's rho correlations were performed to examine the relationship between pressure ulcer knowledge and participants' age, as age scores were not normally distributed (skewness = 3.88, kurtosis = 20.38). A p-value of ≤ 0.05 was considered statistically significant.

4. RESULTS

4.1 Characteristics of participants

Of the 200 nursing students invited, 184 completed the study, resulting in a response rate of 92%. All participants were senior nursing students. More than two-thirds of the participants were female (n = 132). The mean age of the participants was 21.75 years (SD = 1.79), with ages ranging from 20 to 35 years. More than half of the participants (n = 99, 53.8%) were enrolled at JUST. A total of 19 students (10.3%) were enrolled in a bridging program, and 165 (89.7%) were in a regular bachelor's program.

Regarding exposure to pressure ulcer education, more than half of the participants (59.2%) reported having received prior training on pressure ulcers, and 91 (49.5%) attended a lecture on the topic within the past year. The participant characteristics are presented in Table 2.

Table 2. The sample characteristics, frequency, percent for nursing students (n = 184)

Variable	Category	Frequency	Percent
Gender	Male	52	28.30
	Female	132	71.70
University name	JUST	99	53.80
	UJ	85	46.20
Studying style	Bridging	19	10.30
	Regular	165	89.70
Receive training of pressure ulcer	No	75	40.80
	Yes	109	59.20
Last time you attended a lecture about pressure ulcers	One year or less	91	49.50
	1-2 years	38	20.70
	2-3 years	39	21.20
	4 years or greater	5	2.70
	Never	11	6.00
Last time you read an article or book about pressure ulcers	One year or less	71	38.60
	1-2 years	38	20.70
	2-3 years	24	13.00
	4 years or more	6	3.30
	Never	45	24.50
Have you searched for information about pressure ulcers on the web?	No	70	38.00
	Yes	114	62.00
Have you read the NPUAP/EPUAP International Pressure Ulcer Prevention and Treatment Guidelines?	No	146	79.30
	Yes	38	20.70

Note. JUST = Jordan University of Science and Technology; UJ = University of Jordan; NPUAP = National Pressure Ulcer Advisory Panel; EPUAP = European Pressure Ulcer Advisory Panel

4.2 Level of knowledge regarding pressure ulcer staging, prevention, risks, and wound description

Overall, the participants had poor knowledge about PrU. The mean cumulative subscale score for the 28 items focused on PrU prevention was 15.67 out of 28 (SD = 3.70), with a mean percentage of correct answers of 56%. Regarding the staging subscale, participants had a mean cumulative score of 7.72 out of 20 (SD = 3.41) and a mean percentage of correct answers of 39%. For the wound subscale, the participants had a mean cumulative score of 7.95 out of 24 (SD = 3.85), with a mean percentage of correct answers of 33%. Regarding the total PZ-PUKT score, the participants had a mean cumulative score of 31.33 out of 72 (SD = 8.95), with a mean percentage of correct answers of 44% (see Table 3).

Table 3. Level of knowledge regarding pressure ulcer staging, prevention, risks, and wound description among nursing student in Jordanian governmental universities (n = 184)

	Mean Total Score	SD	Mean % of Correct Answers
PZ-PUKT prevention (28 items)	15.67	3.70	56
PZ-PUKT staging (20 items)	7.72	3.41	39
PZ-PUKT wound (24 items)	7.95	3.85	33
PZ-PUKT total (72 items)	31.33	8.95	44

Note. PZ-PUKT = Pieper and Zulkowski Pressure Ulcer Knowledge Test

4.3 Differences in pressure ulcer knowledge based on participant characteristics

The results of the independent t-test indicated a significant difference in knowledge about the prevention and staging of PrU, in addition to the total PZ-PUKT score, between students from JUST and UJ [$t(179) = -5.506$, $p < .05$]. The analysis revealed that students from UJ had higher mean scores on the total PZ-PUKT (M = 48.12, SD = 9.8), prevention subscale (M = 60.25, SD = 11.06), and staging subscale (M = 47.35, SD = 13.35) than those from JUST (M total PZ-PUKT = 39.56, SD = 13.10; M prevention subscale = 52.27, SD = 13.84; M staging subscale = 31.06, SD = 13.35).

In addition, the results of the independent sample t-test indicated that students who read information about PrU online had higher knowledge about PrU prevention (M = 57.74, SD = 14.53) than those who did not use the internet to obtain information about PrU (M = 53.06, SD = 12.057), $t(182) = -2.360$, $p < .05$). On the other hand, the results of the independent t-test indicated no significant difference in the total PZ-PUKT or its subscales according to reading the international PrU guidelines or receiving PrU training ($p > .05$). Moreover, the Mann–Whitney U test revealed no significant difference in the total PZ-PUKT or its subscales according to study style. Finally, the results of the Kruskal–Wallis test revealed no significant difference in the total PZ-PUKT or its subscales according to attending a lecture about PrU or reading an article or book about PrU ($p > .05$) (see Table 4). Non-parametric Spearman's rho analysis indicated that students' age was not significantly associated with the total PZ-PUKT score or any of its subscales ($p > .05$) (see Table 5).

Table 4. Differences in pressure ulcer knowledge based on participants characteristics (n = 184)

Variable	Category	% Correct			
		Prevention	Staging	Wound	Total
Gender	Male	53.57	36.54	33.25	42.07
	Female	56.90	39.39	33.05	44.09
University name	JUST	52.27*	31.06*	31.82	39.56*
	UJ	60.25	47.35	34.61	48.12
Studying style	Regular	58.46	41.05	35.75	46.05
	Bridging	55.67	38.30	32.80	43.22
Receive PrU training	No	55.05	37.13	34.67	43.28
	Yes	56.59	39.59	32.03	43.68
Attend PrU lecture	One year or less	57.57	41.81	34.11	45.38
	1-2 years	54.13	33.95	27.96	39.80
	2-3 years	54.21	36.67	33.97	42.59
	4 years or greater	58.57	36.00	45.83	48.06
	Never	53.90	35.91	33.71	42.17
Read an article or book about PrU	One year or less	57.55	41.34	32.34	44.64
	1-2 years	57.05	37.90	33.77	43.97
	2-3 years	56.40	40.42	34.90	44.79
	4 years or more	49.40	29.17	36.11	39.35
	Never	53.17	35.11	32.41	41.23
Read information about PrU online	No	53.06*	37.00	33.63	42.12
	Yes	57.74	39.56	32.79	44.37
Read International PrU Guidelines	No	55.43	37.43	32.05	42.64
	Yes	57.99	43.03	37.17	46.89

Note. JUST = Jordan University of Science and Technology; UJ = University of Jordan; PrU = Pressure ulcers; *$p < .05$

Table 5. The relationship between PrU knowledge and the age of participants

	Prevention	Staging	Wound	Total
Correlation Coefficient (Spearman's rho)	−0.010	0.036	0.025	0.016
p-value	.891	.632	.732	.834

5. DISCUSSION

The findings of this study revealed that nursing students had a generally low level of knowledge about pressure ulcers, particularly in staging and wound identification. This result is consistent with the findings from previous research.[7, 11] In contrast, it differs from that[19] who reported that student nurses possess a good understanding, positive attitudes, and effective practices regarding the prevention and management of pressure ulcers. Similarly, in a systematic review of nursing students' knowledge on pressure ulcers and related factors, the overall level of knowledge was moderate.[20]

Accurate staging is crucial for selecting appropriate prevention and treatment methods. The current study found a low mean score on the PZ-PUKT staging subscale. An inadequate understanding of pressure ulcer staging among nursing students could hinder early detection and effective treatment in clinical settings. This finding differs from[21] results as they reported significantly higher knowledge scores related to pressure ulcer staging and assessment among students particularly who participated in in-situ simulation-based learning. The difference in findings may be related to variations in teaching and learning approaches reported in the literature. Previous research suggests that simulation-based education may enhance students' ability to differentiate between pressure ulcer stages by providing structured learning experiences and opportunities to apply knowledge in clinical scenarios.[21] These findings highlight the importance of strengthening educational strategies related to pressure ulcer staging in undergraduate nursing programs.

In addition to staging knowledge, a clear understanding of strategies for preventing pressure ulcers is essential for effective patient care. However, the mean score on the prevention subscale was low.[22] These findings parallel those of [23], who reported that the lowest knowledge scores were associated with preventive measures and highlighted that knowledge of pressure ulcer prevention among nurses and nursing students is inadequate; they recommended ongoing training for nurses and the integration of pressure ulcer prevention principles into nursing curricula to enhance students' knowledge. However, the current findings are inconsistent with those studies,[19,24] who reported that nursing students demonstrated strong knowledge, positive attitudes, and effective practices regarding the treatment and prevention of pressure ulcers. The low prevention score in the current study may be attributed to the limited emphasis placed by both clinical and theoretical instructors on pressure ulcer prevention, as well as insufficient focus on teaching students to recognize risk factors and apply preventive measures.

An independent-samples *t*-test showed a significant difference in pressure ulcer knowledge between the universities. Students from UJ had higher mean scores on the total PZ-PUKT and the prevention and staging subscales than those from JUST. This difference may stem from varying educational preparation, such as differences in clinical training environments, emphasis on wound care content, or learning opportunities related to pressure ulcer prevention and staging. Although some training sites overlap, clinical placements differ, leading to varied experiences with patients who have pressure ulcers and with wound care practices, which may influence students' knowledge. Multiple factors might have contributed to these differences, as shown in previous research,[25] in which the researchers indicated that nursing students' learning during clinical placements was affected by limited time for learning, a short clinical placement period, and negative attitudes from both students and facilitators.

Additionally, students who accessed online information had higher scores on the prevention subscale than those who did not. This finding may be explained by the fact that online sources often provide up-to-date information, and many students prefer digital learning tools over traditional textbooks and lectures. This result is consistent with the study[26] who found that blended learning formats combining online education with hands-on workshops are effective for improving students' understanding of pressure ulcers.

Interestingly, no significant differences in total PZ-PUKT or subscale scores were found based on participants' age, gender, pressure ulcer training, years of education, or attendance at a pressure ulcer lecture. Although senior students were required to complete core nursing courses expected to include pressure ulcer (PrU) content, some reported not receiving training or attending a lecture on the topic. This variation may reflect differences in the integration of pressure ulcer content across courses, variation in emphasis on wound care, differences in clinical exposure, or issues related to student recall or recognition of terminology such as the abbreviation

PrU. These results should be interpreted with caution, as senior nursing students were selected based on the assumption that they had received the required education regarding PrU. Their responses highlight potential differences in how this content is presented within their curriculum or variation in students' understanding of the terminology used in the survey. These results are consistent with Abrahams et al.,[19] who found no significant link between demographics and knowledge, attitudes, or practices. In contrast, Bayram et al.[27] found that academic level, gender, and clinical experience were significantly associated with understanding and confidence in managing pressure ulcers. Additionally, Murugiah et al.[28] reported that degree students showed higher knowledge than diploma students, suggesting that more education may influence knowledge acquisition. Also, Ghobadi-Larimi et al.[20] found a notable positive correlation between knowledge and factors including attitude, age, the number of clinical units, and self-evaluation of knowledge. Additionally, a significant association existed between nursing students' knowledge and factors such as years of education, the number of clinical units, clinical experience, age, experience in treating pressure ulcers, gender, specialization, level of education, and attitude

5.1 Strength and limitations

The strength of this study lies in its large sample size of 184 senior student nurses, whose clinical experiences provide important insights into pressure ulcer staging, description, and prevention. Despite these valuable findings, several limitations should be noted. The study was conducted at only two governmental universities, limiting the generalizability of the results. Also, data collection relied on self-reported questionnaires, which may have introduced response bias. Although the PZ-PUKT was administered in English, language barriers may have influenced student understanding, as English is not the first language for most participants. Differences in how pressure ulcer (PrU) content is taught across universities, instructors, and student experiences were not controlled.

There was limited availability of recent literature specifically addressing Jordanian nursing students' knowledge of pressure ulcers (PrU), which limited the scope of directly comparable studies. Another limitation is that the study did not assess students' actual clinical performance in identifying or managing pressure ulcers. Future studies might incorporate observational assessments or objective structured clinical examinations (OSCEs). Although senior nursing students reportedly completed courses expected to cover pressure ulcer prevention, some still lacked this essential instruction. The study did not measure how consistently or thoroughly such content was delivered, nor what teaching methods were used. Differences in curriculum, clinical practice exposure, or students' recall may have shaped knowledge gaps. To promote consistent pressure ulcer competency, future research should examine how this education is structured and provided throughout nursing programs. Finally, the present study did not collect detailed data on curricular structure, simulation use, or clinical placement characteristics.

5.2 Implications

The findings of this study highlight the need to strengthen nursing curricula by integrating comprehensive PrU content, including prevention, staging, and management. Simulation-based training can enhance students' understanding and clinical skills in realistic settings. These results will inform initiatives to improve patient safety and support evidence-based practices in Jordan. Policymakers and nursing managers should implement training, develop clinical guidelines, and support orientation programs. Nursing managers can also collaborate with instructors to assess students' knowledge, provide practical learning opportunities, and emphasize the role of preceptorship in preparing future nurses for effective PrU prevention and care. Future research should examine how differences in curricular content, clinical settings, and educational approaches across universities contribute to variations in students' knowledge of pressure ulcer prevention and management.

6. CONCLUSIONS

The findings of this study revealed that nursing students had a generally low level of knowledge about pressure ulcers, particularly in staging and wound identification. Differences between institutions suggest variability in educational exposure, underscoring the need for a more standardized, comprehensive approach to pressure ulcer education. Given the critical role of nurses in preventing and managing pressure ulcers, strengthening students' knowledge in this area is essential. Curriculum development should expand practical training, and the integration of evidence-based guidelines is necessary to better prepare nursing students for clinical responsibilities. Future research should include broader samples and evaluate the effectiveness of targeted educational interventions in improving both knowledge and clinical practice.

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AUTHORS CONTRIBUTIONS

Islam Banisalman: Contributed to the conception and design of the study, methodology development, literature review, data collection and acquisition, data analysis, interpretation

of results, drafting of the manuscript, and revision of the manuscript. Ibrahim Al- Faouri: Provided methodological guidance, including advising on the statistical analysis plan, contributed to the conception and design of the study, interpretation of findings, and revision of the manuscript. Mohammad Alrawashdeh & Loai. I Tawalbeh: Contribution, conception, design, acquisition, revision. All authors reviewed the final manuscript, approved the current version for publication, and agreed to be accountable for all aspects of the work.

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CONFLICTS OF INTEREST DISCLOSURE
The authors declare they have no conflicts of interest.

INFORMED CONSENT
Potential study participants received an information sheet about the study prior to agreeing to enroll. Prior to conducting the study interview, the PI obtained verbal consent from participants. The requirement for written documentation of informed consent was waived by the PI's institutional IRB.

ETHICAL STATEMENT
Primary data were collected from human participants for this work. Institutional review board/ethics committee review was required and obtained from JUST (IRB ID: 2019-422).

ETHICS APPROVAL
The Publication Ethics Committee of the Sciedu Press. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

PROVENANCE AND PEER REVIEW
Not commissioned; externally double-blind peer reviewed.

DATA AVAILABILITY STATEMENT
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

DATA SHARING STATEMENT
The data can be requested from the corresponding author.

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