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Exploring knowledge, practices of safety measures for Al-Hijama practitioners at Qatar cupping community centers

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Abstract

Cupping therapy (Al-Hijama) remains a widely practiced complementary therapy in Arab and Muslim communities; however, its safe application depends on practitioners' knowledge and adherence to infection control measures. This study examined the knowledge and safety practices of Al-Hijama practitioners at community cupping centers in Qatar using a structured knowledge–practice assessment framework. An analytical cross-sectional study was conducted in 2023 among 120 practitioners working in five licensed cupping centers. Data were collected using a semi-structured questionnaire assessing knowledge related to cupping therapy and an observational checklist evaluating infection control practices before, during, and after cupping. Data were analyzed using descriptive statistics and analytical relationships. Results indicated notable deficiencies in practitioners' knowledge regarding general uses, indications, contraindications, and safety measures of cupping therapy, alongside low baseline adherence to infection control practices, particularly in hand hygiene, equipment disinfection, documentation, and post-procedure care. The overall mean pre-test practice score was 9.59 (SD 4.07). A statistically significant positive correlation was observed between knowledge and practice scores ($r = 0.681$, $p < 0.001$), indicating that higher knowledge levels were associated with better safety practices. Overall, although Al-Hijama practitioners demonstrated basic awareness of cupping therapy, adherence to infection control standards was suboptimal. The findings highlight the need for structured education, standardized clinical guidelines, and continuous training programs to improve safe cupping practices and enhance patient safety in community cupping centers.

Keywords: Knowledge, Infection control, Safety practices

Introduction

Cupping therapy (Al-Hijama) has been practiced for thousands of years in the Arab World. Cupping therapy dates back to ancient times and was used around the world. In 400 BC, Herodotus listed wet and dry cupping as a treatment for many ailments, including maldigestion, lack of appetite, and headaches. Hippocrates advocated cupping for gynecological complaints, back, and extremity illnesses, pharyngitis, lung diseases, and ear ailments. Cupping therapy was mentioned in the famous Papyrus Ebbers in Ancient Egypt (1550 BC) (De Castro Moura et al., 2022).

Cupping is one of the therapeutic interventions that nurses can provide in accordance with scientific standards and clinical guidelines, but it is now laden with risks, so its practitioners must familiarize themselves with safety precautions (WHO, 2019). Cupping has both a cultural and religious context which explains its wide use, practice, and acceptance in Arab and Muslim countries. There is some evidence that suggests that cupping may be beneficial for the treatment of pain-related diseases, such as herpes zoster, facial paralysis, and acne. There are many types of cupping therapy such as wet, dry, flash, and massage cupping (Osman et al., 2021).

In Qatar, cupping therapy locally known as Al-Hijama is widely practiced as a traditional and complementary health intervention and is offered across various settings including specialized clinics, medical centers, and community wellness facilities. The practice, rooted in ancient medicine and Islamic tradition, is used for a range of wellness and therapeutic purposes such as pain relief, improved circulation, muscle relaxation, and general well-being. Licensed health facilities in Doha and other regions provide both dry and wet cupping methods under trained practitioners, often integrating traditional techniques with modern hygiene and

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sterilization standards to enhance safety and effectiveness. (QCHP, 2021).

Cupping requires detailed safety measures for infection control that are vital for preventing infections from cupping therapy. Hand washing and wearing the appropriate protective equipment (gloves, mask, protective eyewear, gown) are essential in preventing the spread of infection. Disinfecting beds or chairs used during treatment ensures a sterile environment. Using disposable equipment for cups, surgical blades, and vacuum pumps is preferable to disinfecting (Sari et al., 2026)

Cupping therapy adverse events were not rare but infrequently reported. Scar formation, hyperpigmentation, skin infection, dermatitis bullae, burns, and anemias were reported. Most cupping adverse events can be avoided by following infection control measures and good training of cupping practitioners (Choi et al., 2021; Jam et al., 2025).

Eastern and Western countries are using cupping therapy as a key intervention for different medical problems, examples of those countries United Kingdom, South Korea, and the kingdom of Saudi Arabia (Khatoon & Shoaib ,2025).

Patient safety is defined as the prevention of harm caused by errors of commission and omission. Over the past 10 years, it has become a key priority for healthcare, and an important axis during the cupping process. (WHO ,2023). When new equipment is introduced, all members of the cupping team must be trained on and practice with the new equipment as appropriate for the extent of their involvement, and all personnel involved must be aware of all safety features, warnings, and alarms of the device. Whenever possible, the institution's medical engineering department should inspect the equipment and verify that it is functioning properly before the equipment is put into clinical use (Mortensen et al., 2022). The present study aimed to assess the knowledge and practices related to safety measures among Al-Hijama practitioners at community cupping centers in Qatar.

Subject and Methods: An analytical cross-sectional study was conducted with 120 Al-Hijama practitioners from five cupping centers in Qatar. Data were collected using This analytical cross-sectional study was performed from December 2022 to May 2023 in the State of Qatar, a peninsula in the Arabian Gulf, encompassing approximately 11,600 square kilometers and a population of over 2.9 million throughout the study period. During the study, there existed 10 approved cupping therapy (Al-Hijama) centers regulated by the Ministry of Public Health (MOPH), which managed licensing to guarantee safe and evidence-based practices. A purposive sampling technique was utilized to choose centers that satisfied established operational requirements, guaranteeing stability, accessibility, and an adequate amount of practitioners for comprehensive data collection. This method selected centers with the greatest number of practitioners to enhance the representativeness of active practice environment while ensuring practicality. The inclusion requirements for centers comprised full licensure by the MOPH, operational capability for cupping therapy, established regular working hours from 06:00 to 18:00, a minimum of 12 months of uninterrupted operation, and the administration's readiness to participate and enable access. The Five centers fulfilled all inclusion criteria and were selected. The study population consisted of all Al-Hijama practitioners (n = 120) operating during regular hours (06:00–18:00) at the five designated centers. A census sample technique was employed to achieve comprehensive coverage of the available practitioner population within the designated centers.

The sample size was determined through G-power version 3.1 whith z1=1.96 (for alpha=0.05), z2=0.84 (for power=0.80), and r=0.30 (anticipated correlation coefficient, such as between adherence scores and years of experience), yielding a minimum requisite n=85. However, due to the small and fully accessible total population, a census approach was utilized to encompass all 120 practitioners.

Collaboration with central administrators and the arrangement of numerous scheduled visits facilitated shift patterns and guaranteed the inclusion of all qualified practitioners, achieving a 100% response rate.

Tool I:

Tool (I): A self-administered structured questionnaire was developed by the researchers after

reviewing the related literature to collect data from the participants.

It included two parts:

Part (1): It included the demographic characteristics of Al-Hijama practitioners at the selected cupping centers, such as sex, age, marital status etc., and years of experience.

Part (2): This part was used to assess the knowledge of the study participants about cupping therapy techniques and its safety measures, including the general uses of cupping, indications and contraindications, adverse events, health effects of cupping therapy, sources of information about cupping therapy. The questionnaire included 42 items to assess practitioners' knowledge of cupping therapy. Each correct answer was awarded one point, and incorrect responses received zero. The total knowledge score ranged from 0 to 42. A score of 50% or more (≥21 points) was considered satisfactory, while scores below this threshold indicated unsatisfactory knowledge (Al-Yousef et al., 2018).

Tool II

An observational checklist was adopted from Australian Capital Territory Government (2021), includes pre-cupping procedures (e.g., preparation, aseptic techniques, and sterilization methods), cupping techniques (e.g., proper placement, suction methods, and anatomical site identification), and post-cupping care (e.g., nutrition, hydration, and managing complications).

Study population

The study population comprised all Al-Hijama practitioners (n=120) working from 06:00 to 18:00 hours at the five selected Qatar Cupping Community Centers. These centers were purposively chosen based on their operational stability and the presence of regularly practicing staff. A total population sampling technique was employed, which included all eligible practitioners present during the data collection period. This approach represented full coverage of the accessible practitioner population. All participated in the study, achieving a 100% response rate. Their participation was facilitated by the researchers' coordination with center administrators and multiple visit schedules to accommodate all practitioners.

Pilot study

A pilot study was carried out on 10% (12 practitioners) who were included in the actual study because there are no modifications in the tools of the study to test the clarity of the tools and estimate the time needed for filling it.

Ethical considerations

Ethical approval for the study was obtained from the Ethical Committee of the Faculty of Nursing, Assiut University EG.AU. RESEARCH.REC. 4470025 on 21/09/2022. And the Corporate Quality Improvement and Patient Safety Research Assurance Committee at Hamad Medical Corporation, Qatar.QPS. RESEARCH.REC 4470025-1120230578. Additionally, official permissions were secured from the Dean of the Faculty of Nursing, Assiut University, and the directors of the selected cupping centers in Qatar.

Participation was voluntary, and written informed consent was obtained from all participants. Ethical principles were strictly followed, including ensuring participants' rights to withdraw from the study at any time without any consequences. Confidentiality and anonymity were maintained throughout data collection, and privacy was ensured during the administration of the questionnaire. The study was designed to pose no risk to the participants.

Data analysis

Data were analyzed using IBM Corp. (2022). IBM SPSS Statistics for Windows (Version *29.0)* Computer software. Both descriptive and inferential statistical methods were employed to examine the data. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participants' socio-demographic characteristics and practice adherence scores.

Table (1): shows the demographic analysis of 120 Hijama practitioners reveals a diverse profile within the profession. While about half of study participants (51.7%) are aged 35 or older, a significant proportion (48.3%) fall below this age threshold, indicating a mix

of experienced and relatively younger practitioners. Male practitioners dominate the field (72.5%) compared to their female counterparts (27.5%). The majority are married (90.8%), and physicians constitute the largest group (63.3%), followed by those with nursing backgrounds and trained licensed practitioners (both at 18.3%). Egyptian practitioners represent over half of the cohort (54.2%), reflecting a multi-national presence within the profession. Educational attainment is universally high, with all practitioners having completed college or university-level education. Experience-wise, a substantial proportion (60.8%) have 10 or more years of practice, with the mean experience being approximately 10.04 years.

Results

Table (1): Personal characteristics of Hijama practitioners at Community Cupping Centers in Qatar, 2023 (n:120)

Personal characteristics	No. (120)	%
Age: (years)		
25:35:00	58	48.30%
35:45:00	62	51.70%
Mean ± SD (Range)	34.94 ± 7.29 (25.0-50.0)	
Sex:		
Male	87	72.50%
Female	33	27.50%
Marital status:		
Single	11	9.20%
Married	109	90.80%
Specialty :		
Nursing	22	18.30%
Physician	76	63.30%
Trained licensed practitioner	22	18.30%
Nationality:		
Egyptian	65	54.20%
Yemeni	22	18.30%
Jordanian	11	9.20%
Pakistani	11	9.20%
Saudi	11	9.20%
Education:		
College/ university	120	100.00%
Years of experience:		
5: 10	47	39.20%
10:15	73	60.80%
Mean ± SD (Range)	10.04 ± 3.95 (5.0-16.0)	

Table (2): Knowledge of Al Hijama practitioners regarding general uses at community cupping centers in Qatar, 2023 (n:120)

Items	Yes	No
	n (%)	n (%)
Do you know that cupping therapy is practiced in clinical centers/hospitals?	42 (35%)	78 (65%)
Do you know that cupping therapy is practiced in Traditional clinics?	57 (47.5%)	63 (52.5%)
Do you know that cupping therapy can be performed at home by contacting a specialist?	49 (40.8%)	71 (59.2%)
Do you understand that cupping therapy is used for prophylactic purposes?	44 (36.7%)	76 (63.3%)
Do you understand that cupping therapy is used for treatment purposes?	41 (34.2%)	79 (65.8%)
Do you know cupping therapy has physical side effects?	40 (33.3%)	80 (66.7%)
Do you know cupping therapy has psychological side effects?	37 (30.8%)	83 (69.2%)
Do you know cupping therapy is appropriate for children?	60 (50%)	60 (50%)

Do you know cupping therapy is appropriate for adults?	49 (40.8%)	71 (59.2%)
Do you know cupping therapy is appropriate for the elderly?	47 (39.2%)	73 (60.8%)
Do you know that a physician may request this cupping therapy for patient ?	39 (32.5%)	81 (67.5%)
Do you know that patient education about activity, sleep , rest ,diet is important in cupping therapy?	50 (41.7%)	70 (58.3%)
Do you know about dry cupping (one-step technique)?	23 (19.2%)	97 (80.8%)
Do you know about traditional wet cupping (two-step technique& three-step technique) is important in specific cases?	57 (47.5%)	63 (52.5%)

Table (2): shows the knowledge of Al Hijama practitioners regarding the general uses of cupping therapy. A bout two thirds (65%) were unaware that cupping therapy is practiced in clinical centers or hospitals, and (52.5%) did not recognize its presence in traditional clinics. Additionally, only (36.7%) acknowledged its prophylactic use, and **(**34.2%) recognized its therapeutic role. Knowledge about potential side effects only (33.3%) identifying physical side effects and (30.8%) recognized psychological effects. Furthermore, practitioners demonstrated uncertainty regarding the appropriate age groups**,** while (50%) correctly stated cupping is suitable for children, while knowledge about its suitability for adults (40.8%**)** and the elderly (39.2%**)** was also limited. Physician recommendations for cupping therapy were acknowledged by just (32.5%). (47.5%) reported their knowledge about traditional wet cupping techniques, while only (19.2%) were knowledgeable about dry cupping methods

Table (3): Knowledge of Al Hijama practitioners regarding indications and contraindications at community cupping centers in Qatar, 2023 (n:120)

Items	**Yes**	**No**
	n (%)	**n (%)**
Do you know that cupping therapy can relieve joint pain?	45 (37.5%)	75 (62.5%)
Do you know that cupping therapy can relieve shoulder and back pain?	43 (35.8%)	77 (64.2%)
Do you know that cupping therapy can relieve sciatica?	45 (37.5%)	75 (62.5%)
Do you know that cupping therapy can help control hypertension?	40 (33.3%)	80 (66.7%)
Do you know that cupping therapy can relieve headache?	47 (39.2%)	73 (60.8%)
Do you know that cupping therapy can relieve dysmenorrhea?	27 (22.5%)	93 (77.5%)
Do you know that cupping therapy can relieve varicose veins?	29 (24.2%)	91 (75.8%)
Do you know that cupping therapy can stimulate circulation?	25 (20.8%)	95 (79.2%)
Do you know cupping therapy is contraindicated for geriatric patients?	54 (45%)	66 (55%)
Do you know cupping therapy is contraindicated for pediatric clients?	32 (26.7%)	88 (73.3%)
Do you know cupping therapy is contraindicated during pregnancy?	27 (22.5%)	93 (77.5%)
Do you know cupping therapy is contraindicated for patients receiving high-alert medications?	31 (25.8%)	89 (74.2%)
Do you know cupping therapy is contraindicated for patients with cardiovascular disease?	50 (41.7%)	70 (58.3%)
Do you know cupping therapy is contraindicated at sites with deep vein thrombosis?	54 (45%)	66 (55%)
Do you know cupping therapy is contraindicated for open wounds or bone fractures?	40 (33.3%)	80 (66.7%)
Do you know cupping therapy is contraindicated for certain chronic diseases (e.g., kidney, liver)?	53 (44.2%)	67 (55.8%)
Do you know cupping therapy is contraindicated during an acute infection?	46 (38.3%)	74 (61.7%)

Table (3): Reveals deficiencies in knowledge regarding the indications and contraindications of cupping therapy. Less than 40% of practitioners recognized cupping's effectiveness in relieving joint pain (37.5%), back pain (35.8%), or sciatica (37.5%). Additionally, less than a quarter (20.8%-24.2%) acknowledged its potential benefits for circulation, varicose veins, and dysmenorrhea. Regarding contraindications, fewer than half correctly identified risks associated with geriatric patients (45%), deep vein thrombosis (45%), and chronic illnesses (44.2%). The lowest knowledge levels were observed for contraindications during pregnancy (22.5%) and pediatric cases (26.7%).

Table (4): Knowledge of Al Hijama practitioners regarding safety and infection control measures at community cupping centers in Qatar .2023 (n:120)

Items	Yes	No
	n (%)	n (%)
Do you believe that hand washing is necessary during cupping therapy?	40 (33.3%)	80 (66.7%)
Do you believe that wearing protective equipment is necessary during cupping therapy?	42 (35%)	78 (65%)
Do you believe that disinfecting beds or chairs used during cupping therapy is necessary?	55 (45.8%)	65 (54.2%)
Do you believe that using disposable equipment is necessary during cupping therapy?	40 (33.3%)	80 (66.7%)
Do you know it is important to correctly identify the client during cupping therapy?	31 (26.1%)	88 (73.9%)
Do you know it is important to identify the appropriate site and equipment during cupping therapy?	51 (42.5%)	69 (57.5%)
Do you know it is important to identify the correct time and type of cupping therapy?	51 (42.5%)	69 (57.5%)

Table (4): shows that awareness of infection control measures is moderate, with (45.8%) recognizing the importance of disinfecting treatment areas and **(**42.5%) identifying proper site and equipment selection. However, only (33.3%) acknowledge the necessity of hand washing and disposable equipment use, while just (26.1%) recognize the importance of patient identification.

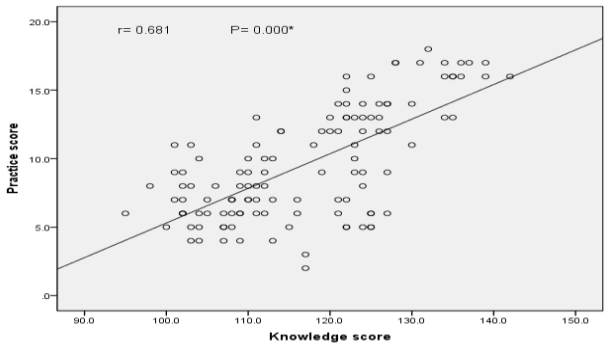
Table (5): Infection control inspection check list of AL Hijama practitionners at Community Cupping Centers in Qatar, 2023 (n:120)

Checklist item	Done	Not done
	n (%)	n (%)
Before cupping		
Hand hygiene performed (before and after procedure)	26 (21.70)	94 (78.30)
Skin disinfection performed before procedure	35 (29.20)	85 (70.80)
Separate swabs used for separate sites	33 (27.50)	87 (72.50)
Client medical history reviewed	27 (22.50)	93 (77.50)
Appropriate sharps container available	35 (29.20)	85 (70.80)
Personal Protective Equipments(PPEs) worn (gloves, eye protection, gown)	42 (35.00)	78 (65.00)
Bamboo cups are single-use only	39 (32.50)	81 (67.50)
Equipment properly cleaned and stored	39 (32.50)	81 (67.50)
Sharps injury procedure explained	37 (30.80)	83 (69.20)
Contaminated waste disposed in clinical waste container	31 (25.80)	89 (74.20)
During cupping		
Cover changed after every client	41 (34.20)	79 (65.80)
Single-use puncture device used	42 (35.00)	78 (65.00)
Aseptic technique maintained	45 (37.50)	75 (62.50)
Client monitored during procedure	37 (30.80)	83 (69.20)
After cupping		
Routine cleaning and disinfection of bed and surfaces	16 (13.30)	104 86.70)
Appropriate documentation completed	28 (23.30)	92 (76.70)
Client advised on aftercare	34 (28.30)	86 (71.70)
Non-healing cut referred to GP/medical professional	32 (26.70)	88 (73.30)

Table (5): shows that adherence to infection control practices among Al-Hijama practitioners was generally low across all checklist domains. Before cupping, fewer than one-third of practitioners performed essential safety measures, including hand hygiene (21.70%), skin disinfection (29.20%), review of clients' medical history (22.50%), and appropriate disposal of contaminated waste (25.80%). Similarly,

during the cupping procedure, adherence remained suboptimal, with aseptic technique maintained by only 37.50% of practitioners and client monitoring performed by 30.80%. Post-procedure practices demonstrated the lowest adherence levels, particularly routine cleaning and disinfection of treatment surfaces (13.30%) and appropriate documentation of procedures (23.30%).

Figure (1): Illustrates a statistically significant positive correlation between practitioners' knowledge scores and their practice scores (r = 0.681, p < 0.001). This finding indicates that higher levels of knowledge regarding infection control and safety measures are associated with better adherence to recommended cupping practices



Notes: Pearson correlation between knowledge and practice scores (r = 0.681, p < 0.001)
Figure (1): Correlation between knowledge score and practice score among Al-Hijama practitioners (N = 120)

Table (6): Relationship between personal characteristics and knowledge and practice scores among Al-Hijama practitioners (n: 120)

Personal characteristics	Knowledge score, Mean (SD)	p-value	Practice score, Mean (SD)	p-value
Age (years)				
< 35	117.95 (11.81)	0.344	9.95 (4.49)	0.355
≥ 35	116.05 (10.08)		9.26 (3.63)	
Sex				
Male	117.91 (11.66)	0.127	10.08 (4.33)	0.032*
Female	114.48 (8.46)		8.30 (2.95)	
Marital status				
Single	106.91 (5.15)	0.001*	7.73 (1.85)	0.111
Married	117.98 (10.87)		9.78 (4.18)	
Professional background				
Nursing	115.68 (9.79)	0.829	8.32 (3.51)	0.183
Physician	117.32 (12.18)		9.68 (4.42)	
Trained licensed practitioner	117.05 (7.12)		10.55 (2.97)	
Years of experience (years)				
< 10	116.51 (8.05)	0.716	7.38 (2.96)	<0.001*
≥ 10	117.26 (12.51)		11.01 (4.06)	

Notes: Mean (SD). t-test for two-group comparisons; ANOVA for ≥3 groups. p < 0.05 significant. * p < 0.05.

Table (6): knowledge scores showed no statistically significant differences by age (p = 0.344), sex (p = 0.127), professional background (p = 0.829), or years of experience (p = 0.716), while marital status was significantly associated with knowledge levels (p = 0.001). In contrast, practice scores were significantly associated with sex (p = 0.032) and years of experience (p < 0.001), but not statistically significant with age (p = 0.355), marital status (p = 0.111), or professional background (p = 0.183).

Discussion

The current study provides a comprehensive assessment of the knowledge, and infection control practices of Al-Hijama practitioners working in community cupping centers in Qatar.

In the present study, practitioners were predominantly male whith (72.5%) middle-aged, married, and highly educated, with most having more than 10 years of experience. This demographic profile

is consistent with findings reported by El-Olemy (2025) in Saudi Arabia, where cupping practitioners enrolled in qualification programs were largely experienced healthcare professionals. Similarly, studies from Saudi Arabia and Indonesia reported a male predominance with (69%)and high educational attainment among cupping providers, reflecting the

traditional and professionalized nature of Hijama practice in these regions. However, despite this favorable professional background, the current study demonstrates that high education and long experience alone do not guarantee adequate knowledge or safe practice.

Regarding general knowledge of cupping uses, the present findings revealed considerable deficiencies, with fewer than half of practitioners recognizing the prophylactic, therapeutic, and clinical applications of cupping therapy (45%). These findings contrast with public- and patient-focused studies from Saudi Arabia, such as those by Mawgod et al. (2025) and

Aljohani (2025), where awareness of cupping indications was relatively higher among the general public and primary healthcare attendees. This discrepancy suggests that informal cultural knowledge among patients may sometimes exceed formal clinical understanding among practitioners, underscoring a critical training gap within the professional practice setting.

Similarly, knowledge related to indications and contraindications was notably limited in the current study, particularly for high-risk groups such as pregnant women (22.5%), pediatric patients (26.7%), and individuals with chronic or cardiovascular conditions (44.2). These findings align with safety concerns highlighted by (Emiral et al. 2025), who documented fatal outcomes associated with wet cupping therapy due to inadequate clinical judgment and risk assessment. The observed gaps also support arguments made by (Isdianto et al. 2025) and Al-Worafi et al., who emphasized the necessity of integrating medical standards with religious and traditional practices to mitigate avoidable complications.

In terms of infection control knowledge and practice, the present study revealed alarmingly low adherence to fundamental safety measures, including hand hygiene (21.70%), use of personal protective equipment, proper waste disposal, (22.80%) and post-procedure disinfection. These results contrast with the structured infection control frameworks described by Isdianto and Fitrianti (2025), who demonstrated that integrating Islamic ethics with modern sterilization standards can significantly enhance compliance level with (70%). The low adherence observed in Qatar mirrors earlier findings reported in community-based cupping settings across the Middle East and Southeast Asia, where the absence of standardized regulation and continuous monitoring remains a persistent challenge.

Importantly, the current study identified a strong positive correlation between knowledge and practice ($r = 0.681$, $p < 0.001$), reinforcing conclusions drawn by Amien Ali et al. (2025), who demonstrated that structured educational training programs significantly improved both knowledge and safety practices among Al-Hijama practitioners in Qatar. This consistency supports the argument that targeted training interventions are effective and urgently needed.

The current study demonstrated a statistically significant positive relationship between knowledge and practice scores among Al-Hijama practitioners ($r = 0.681$, $p < 0.001$), indicating that higher knowledge levels were strongly associated with better adherence to safe and recommended cupping practices. This finding is consistent with the results reported by Amien Ali et al. (2025) in Qatar, who showed that improvements in practitioners' knowledge following an educational training program were directly reflected in enhanced infection control and safety practices. Together, these findings confirm that knowledge is a key determinant of practice quality in cupping therapy.

In contrast, the relationship between personal characteristics and knowledge in the current study was largely non-significant. Knowledge scores were not significantly associated with age, sex, professional background, or years of experience, which aligns with observations from El-Olemy (2025), where baseline knowledge gaps were identified among experienced practitioners prior to formal qualification. Similarly, Isdianto et al. (2025) emphasized that experience alone does not ensure adequate clinical knowledge unless supported by structured education and medical integration.

Regarding practice performance, the present study found significant associations with sex and years of experience, with male practitioners and those with longer experience demonstrating higher practice scores.

This pattern is partially supported by findings from Aljohani (2025) and Mawgod et al. (2025), who reported that more than half of participants (approximately 55%–70%) relied primarily on exposure, repeated practice, and informal experiential learning to develop procedural confidence, despite variable knowledge levels, which ranged from low to moderate among 40%–60% of respondents. These findings suggest that practical competence may develop through cumulative experience; however, such experiential learning does not necessarily correspond to evidence-based or safe practice, as a substantial proportion of practitioners demonstrated gaps in formal knowledge and adherence to safety standards. Notably, the lack of a significant relationship between professional background and both knowledge and practice in the current study contrasts with expectations reported in nursing and medical education literature, such as Syahruramdhani et al. (2025), where structured integration of cupping therapy into nursing curricula was associated with improved theoretical understanding and standardized practice. This discrepancy may reflect differences in regulatory oversight and curriculum formalization across settings.

Overall, when compared with regional and international studies, the current findings reinforce the conclusion that knowledge–practice alignment is the most consistent and clinically meaningful relationship, whereas demographic and professional characteristics show inconsistent or weak associations. These comparisons highlight the critical role of formal training and regulatory frameworks in translating knowledge into safe cupping practice, rather than reliance on experience or practitioner characteristics alone. Despite notable strengths including total-population sampling across five cupping centers and the use of a validated adherence instrument this study has limitations. Its cross-sectional design precludes causal inference and does not capture temporal variation, and reliance on self-reported data introduces potential recall and social-desirability biases. The relatively small sample and limited geographic scope may further constrain external validity. To address these constraints, future research should employ longitudinal or panel designs or repeated cross-sectional surveys across seasons to characterize temporal trends and within-center change. Sampling should follow a stratified, multi-stage cluster approach that deliberately includes small and informal centers to reduce selection bias and enhance generalizability.

Conclusion

The present study concluded that the level of knowledge and practice related to safety measures among Al-Hijama practitioners is insufficient, highlighting the need for adherence to the standardized guidelines, competency-based training, and routine monitoring.

Recommendations

- Implement mandatory competency-based training on safety, infection control, and clinical indications for all Al-Hijama practitioners.
- Develop national guidelines and standard operating procedures to standardize cupping practices in community centers.
- Establish regular inspection, auditing, and certification systems to ensure sustained compliance with safety standards.

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Conflicting interest

The authors declare no conflicts of interest.

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