

Assessing the Implementation, Attitudes, and Competencies of Evidence-Based Practice among Healthcare Professionals in the Middle East: A Cross-Sectional Study

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1 **Title page**

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3 Assessing the Implementation, Attitudes, and Competencies of Evidence-Based Practice among
4 Healthcare Professionals in the Middle East: A Cross-Sectional Study

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Abstract

Background: Evidence-based practice (EBP) is central to high-quality healthcare, yet its implementation in the Middle East remains insufficiently characterized across professions. This study assessed EBP implementation, attitudes, and competencies among healthcare professionals in multiple Middle Eastern countries.

Methods: We conducted a multi-center cross-sectional analytical study using the Evidence-Based Practice Questionnaire (EBPQ). Licensed healthcare professionals with at least one year of clinical experience were recruited using stratified convenience sampling. Data were collected electronically via KoBoToolbox from 3 November 2025 to 9 December 2025. EBPQ subscales (practice, attitude, skills/knowledge) were scored on a 7-point Likert scale. Scores were categorized into low, moderate, and high based on scale midpoints. Descriptive statistics and inferential analyses (chi-square with Monte Carlo simulation, Spearman's rank correlation) were performed; $p < 0.05$ was considered significant.

Results: A total of 518 participants were included. Mean (SD) scores were 2.88 (1.46) for practice, 3.67 (1.16) for attitude, and 4.10 (1.47) for skills/knowledge. Most participants had low practice (75.5%) and low overall EBP competency (53.1%). Age was significantly associated with practice (Spearman $\rho = 0.207$, $p < 0.0005$), while gender, profession, and country were not significantly associated ($p = 0.214$, 0.598 , and 0.067 , respectively).

Conclusions: EBP practice among healthcare professionals in the Middle East was low despite modestly positive attitudes and moderate self-reported skills. Educational and organizational strategies are needed to bridge the evidence-to-practice gap across the region.

Keywords: Evidence-based practice; EBPQ; cross-sectional; healthcare professionals; Middle East; attitudes; competencies

Abbreviations

EBP: Evidence-based practice

EBPQ: Evidence-Based Practice Questionnaire

IRB: Institutional Review Board.

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Background:

evidence-based practice (EBP) is central to contemporary health professions education and clinical care, requiring clinicians to integrate the best available research evidence with clinical expertise and patient values. Despite widespread endorsement of EBP, multiple studies across professions consistently demonstrate a gap between favorable attitudes and actual implementation in daily practice. Cross-sectional surveys among nurses show that while beliefs toward EBP are generally positive, implementation is variable and influenced by contextual and individual factors. (1,2) Similar patterns are observed among nurse-midwives and multidisciplinary health professional samples, underscoring that EBP uptake depends on professional role, workplace setting, and the availability of structured training and institutional support. (3–5)

Physiotherapy-specific studies also highlight uneven EBP adoption. Surveys in Latin America and Saudi Arabia report variability in EBP knowledge, attitudes, and behaviors, suggesting that access to resources and formal EBP instruction may be critical determinants of implementation. (6,7) In the Middle East, evidence is emerging but remains limited in scope and often restricted to single professions or countries. Studies among resident physicians in Syria and hospital pharmacists in Kuwait reveal variability in EBP knowledge, readiness, and practice, indicating ongoing educational and system-level barriers. (8,9) Collectively, these studies point to a persistent evidence-to-practice gap across healthcare professions and underscore the need for region-specific data that can inform curriculum design and organizational strategies.

The Middle East represents a diverse and rapidly evolving healthcare context, yet comprehensive, multi-country assessments of EBP across professional groups remain scarce. A broader regional analysis is needed to characterize current levels of EBP implementation, attitudes, and self-reported competencies, and to identify professional and demographic correlates that can guide targeted interventions in education and practice.

Therefore, this cross-sectional study aimed to assess EBP implementation, attitudes, and competencies among healthcare professionals across Middle Eastern countries, and to examine differences by profession and key demographic characteristics. The findings are intended to inform evidence-based educational planning and institutional policies to strengthen EBP integration in clinical practice.

Methods:

Study Design and Ethical Considerations

We conducted a cross-sectional, multi-center analytical study to assess the implementation, attitudes, and competencies related to Evidence-Based Practice (EBP) among healthcare professionals across the Middle East. The study protocol received formal ethical approval from the Institutional Review Board (IRB Approval No. **2526**). All procedures adhered to the ethical principles of the Declaration of Helsinki. Electronic informed consent was obtained from all participants prior to survey initiation, and the study maintained full anonymity—no personally identifiable information was collected. This manuscript was prepared with guidance from the STROBE reporting recommendations for observational studies.

Study Population and Sampling Strategy

The target population consisted of licensed healthcare professionals engaged in direct patient care within Middle Eastern countries. Inclusion criteria mandated a minimum of one year of clinical experience. Professionals in purely administrative or non-clinical roles were excluded. A **stratified convenience sampling** method was employed to ensure representation across professional groups and geographic regions. Recruitment targeted a sample size exceeding 500 to facilitate robust subgroup analysis.

Data Collection Period and Platform

Data collection took place over a five-week period from **3 November 2025 to 9 December 2025**. The survey was administered electronically using **KoBoToolbox**, a secure, open-source data collection platform widely used in academic and field research. KoBoToolbox was selected for its compliance with data security standards, offline data collection capability, and user-friendly interface.

Survey Instrument and Adaptation

The validated **Evidence-Based Practice Questionnaire (EBPQ)** was adapted for this study. The instrument comprises three subscales:

1. **Practice of EBP (6 items)**
2. **Attitude toward EBP (4 items)**
3. **Skills/Knowledge in EBP (14 items)**

All items used a 7-point Likert scale. The questionnaire was translated into Arabic using a standardized **forward-backward translation** protocol, followed by pilot testing to ensure conceptual equivalence and reliability (Cronbach's $\alpha > 0.85$ for all subscales). A demographic section captured variables including profession, country of practice, experience, specialty, academic qualification, and prior EBP training.

Data Collection Procedure

The KoBoToolbox survey link was disseminated through:

- Professional associations and societies
- Hospital and university administration networks
- Social media groups targeting healthcare professionals
- Direct email invitations

Two automated reminders were sent during the data collection period. KoBoToolbox's built-in validation features minimized data entry errors, and all responses were encrypted during transmission and storage.

Data Management and Security

Data were collected and stored on **secure KoBoToolbox servers** compliant with international data protection standards. Access was restricted to the principal investigators via password-protected accounts. Data were exported in encrypted format and analyzed only after full anonymization. No IP addresses or device identifiers were recorded.

Statistical Analysis

Data were analyzed using **IBM SPSS Statistics (Version 26.0)** and **R (Version 4.2.1)**. Descriptive statistics summarized baseline characteristics. Inferential analyses included:

- **Chi-square tests** with Monte Carlo simulation for categorical comparisons
- **Spearman's rank correlation (ρ)** for ordinal/continuous associations
- **p-values < 0.05** were considered statistically significant

EBP scores were categorized into **Low, Moderate, and High** based on distribution tertiles. Missing data were minimal (<2%) and handled via pairwise exclusion.

Results

Participant Characteristics

A total of 518 healthcare professionals were included in the analysis. Males constituted 57.9% (n = 300) of the sample, while females accounted for 42.1% (n = 218). Most participants were young adults aged 20–29 years (76.1%, n = 394), followed by those aged 30–39 years (12.5%, n = 65). Physicians represented the majority of respondents (79.5%, n = 412), with nurses comprising 8.7% (n = 45); the remaining participants were distributed across other allied health professions.

Regarding clinical specialty, internal medicine was the most common (26.6%, n = 138), followed by general surgery (13.5%, n = 70), pediatrics (6.0%, n = 31), general practice (6.4%,

n = 33), and obstetrics and gynecology (4.6%, n = 24), with smaller proportions across other specialties. Participants primarily practiced in Syria (39.4%, n = 204), Egypt (25.3%, n = 131), Jordan (15.1%, n = 78), Morocco (6.9%, n = 36), Saudi Arabia (6.4%, n = 33), and Libya (4.2%, n = 22).

Most respondents had 1–5 years of professional experience (76.1%, n = 394). The predominant workplace was university or teaching hospitals (61.2%, n = 317), followed by non-teaching government hospitals (19.5%, n = 101) and private hospitals/clinics (11.6%, n = 60). In terms of academic qualifications, 42.3% held a bachelor's degree, 30.9% a diploma/associate degree, 13.7% a master's degree, and 8.5% a doctorate. More than half of participants (56.2%, n = 291) reported that evidence-based medicine (EBM) was included in their curriculum, whereas 33.2% reported no exposure and 10.6% were unsure.

Baseline characteristics			
		Frequency	Percentage
Gender			
	Female	218	42.1
	Male	300	57.9
Age			
	20–29 years	394	76.1
	30–39 years	65	12.5
	40–49 years	33	6.4
	50–59 years	17	3.3
	60 years and above	6	1.2
Profession			
	Physician	412	79.5
	Nurse	45	8.7
	Paramedic / Emergency Medical Technician	2	.4
	Pharmacist	25	4.8
	Physiotherapist	11	2.1
	Occupational Therapist	7	1.4
	Radiographer / Radiology Technologist	7	1.4
	Lab Technician	1	.2
	Medical Student	2	.4
	Dentist	3	.6
	Midwife	1	.2
	Research Assistant	1	.2
Your Primary Clinical Specialty			
	Obstetrics and Gynecology	24	4.6
	General Practice	33	6.4
	Internal Medicine	138	26.6
	Emergency Medicine	15	2.9
	General Surgery	70	13.5
	Pediatrics	31	6.0
	Ophthalmology	9	1.7
	Neurology	7	1.4
	ENT	18	3.5
	Psychiatry	3	.6
	Orthopedics	7	1.4
	Family Medicine	2	.4
	Laboratory Medicine	12	2.3

	Cardiology	12	2.3
	Dermatology	10	1.9
	Community/Public Health	16	3.1
	Oncology	9	1.7
	Urology	4	.8
	Radiology	20	3.9
	Intensive Care	4	.8
	Anesthesiology	7	1.4
	Neurosurgery	6	1.2
	Cardiothoracic Surgery	2	.4
	Rheumatology	1	.2
	Gastroenterology	2	.4
	Nephrology	1	.2
	Pediatric Surgery	5	1.0
	Pathology	5	1.0
	Respiratory Medicine	2	.4
	Plastic Surgery	1	.2
	Vascular Surgery	2	.4
	Other	40	7.7
Country			
	Syria	204	39.4
	Saudi Arabia	33	6.4
	Egypt	131	25.3
	Qatar	2	.4
	Lebanon	3	.6
	Kuwait	1	.2
	Jordan	78	15.1
	Bahrain	1	.2
	Russia	2	.4
	Morocco	36	6.9
	Algeria	1	.2
	Palestine	1	.2
	UAE	1	.2
	Libya	22	4.2
	Turkey	1	.2
	Sudan	1	.2
Years of exp			
	1–5 years	394	76.1
	6–10 years	47	9.1
	11–15 years	35	6.8
	16–20 years	22	4.2
	More than 20 years	20	3.9
Current position			
	Staff Nurse	13	2.5
	Resident	17	3.3
	Consultant	13	2.5
	Head of Department	3	.6
Primary Workplace			
	Private Hospital / Clinic	60	11.6
	University / Teaching Hospital	317	61.2
	Primary Healthcare Center	18	3.5
	Government Hospital (Non-Teaching)	101	19.5
	Military Medical City	8	1.5
	Other	14	2.7
Highest Academic Qualification			

	Diploma / Associate Degree	160	30.9
	Bachelor's Degree	219	42.3
	Board Certification / Fellowship	24	4.6
	Master's Degree	71	13.7
	Doctorate	44	8.5
EBM in curriculum			
	No	172	33.2
	I'm not sure	55	10.6
	Yes	291	56.2

Overall EBP Domain Scores

The mean (SD) scores were 2.88 (1.46) for Practice, 3.67 (1.16) for Attitude, and 4.10 (1.47) for Skills/Knowledge. For Practice, most participants were classified as low (75.5%, n = 391), with 21.6% (n = 112) moderate and only 2.9% (n = 15) high. Attitude was predominantly moderate (50.0%, n = 259), followed by low (45.0%, n = 233) and high (5.0%, n = 26). Skills/Knowledge showed a broader distribution, with 41.5% (n = 215) low, 31.7% (n = 164) moderate, and 26.8% (n = 139) high. Overall EBP performance was low in 53.1% (n = 275), moderate in 42.1% (n = 218), and high in only 4.8% (n = 25) of participants.

Main results			
Category			
Practice	2.88 (1.46)	Frequency	Percentage
	Low	391	75.5
	Moderate	112	21.6
	High	15	2.9
Attitude	3.67 (1.16)		
	Low	233	45.0
	Moderate	259	50.0
	High	26	5.0
Skills/Knowledge	4.1(1.47)		
	Low	215	41.5
	Moderate	164	31.7
	High	139	26.8
Overall			
	Low	275	53.1
	Moderate	218	42.1
	High	25	4.8

Factors Associated with EBP Practice

Practice level was significantly associated with age (Spearman $\rho = 0.207$, $p < 0.0005$) and years of professional experience ($\rho = 0.217$, $p < 0.0005$), with higher practice levels observed among older participants and those with longer experience. Formal EBP or research methodology

187 training was also significantly associated with practice ($\rho = 0.104$, $p = 0.018$), as participants
 188 reporting prior training were more likely to demonstrate moderate or high practice levels.

189 Primary workplace showed a significant association with practice (Monte-Carlo chi-square, $p =$
 190 0.004), with higher practice levels more frequently observed among staff in university/teaching
 191 hospitals compared with non-teaching government hospitals and other settings. Clinical
 192 specialty was likewise significantly associated with practice (Monte-Carlo chi-square, $p =$
 193 0.016).

194 In contrast, no statistically significant associations were found between practice level and
 195 gender ($p = 0.214$), profession ($p = 0.598$), or country of practice ($p = 0.067$). Current
 196 professional position was also not significantly associated with practice (Spearman, $p = 0.435$).

Practice								
Variable / Category		Low n (%)	Moderate n (%)	High n (%)	Stat test	P-Value		
Gender								
	Female	173 (44.2%)	40 (35.7%)	5 (33.3%)	Chi-square	0.214		
	Male	218 (55.8%)	72 (64.3%)	10 (66.7%)				
Age Range								
	20–29 years	313 (80.7%)	72 (64.3%)	9 (60.0%)	Spearman (0.207)	<0.0005		
	30–39 years	41 (10.6%)	21 (18.8%)	3 (20.0%)				
	40–49 years	18 (4.6%)	12 (10.7%)	3 (20.0%)				
	50–59 years	13 (3.4%)	4 (3.6%)	0 (0.0%)				
	≥60 years	3 (0.8%)	3 (2.7%)	0 (0.0%)				
Profession								
	Physician	307 (78.7%)	94 (83.9%)	11 (73.3%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.598		
	Nurse	38 (9.7%)	5 (4.5%)	2 (13.3%)				
	Paramedic/EMT	2 (0.5%)	0 (0.0%)	0 (0.0%)				
	Pharmacist	16 (4.1%)	7 (6.3%)	2 (13.3%)				
	Physiotherapist	10 (2.6%)	1 (0.9%)	0 (0.0%)				
	Occupational Therapist	6 (1.5%)	1 (0.9%)	0 (0.0%)				
	Radiographer	5 (1.3%)	2 (1.8%)	0 (0.0%)				
	Lab Technician	1 (0.3%)	0 (0.0%)	0 (0.0%)				
	Medical Student	2 (0.5%)	0 (0.0%)	0 (0.0%)				
	Dentist	1 (0.3%)	2 (1.8%)	0 (0.0%)				
	Midwife	1 (0.3%)	0 (0.0%)	0 (0.0%)				
	Research Assistant	1 (0.3%)	0 (0.0%)	0 (0.0%)				
Country of Practice								
	Syria	158 (40.40%)	36 (32.10%)	10 (66.70%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.067		
	Saudi Arabia	26 (6.60%)	7 (6.30%)	0 (0.00%)				
	Egypt	104 (26.60%)	25 (22.30%)	2 (13.30%)				
	Qatar	2 (0.50%)	0 (0.00%)	0 (0.00%)				
	Lebanon	3 (0.80%)	0 (0.00%)	0 (0.00%)				
	Kuwait	1 (0.30%)	0 (0.00%)	0 (0.00%)				
	Jordan	51 (13.00%)	27 (24.10%)	0 (0.00%)				
	Bahrain	1 (0.30%)	0 (0.00%)	0 (0.00%)				
	Russia	1 (0.30%)	1 (0.90%)	0 (0.00%)				
	Morocco	22 (5.60%)	11 (9.80%)	3 (20.00%)				
	Algeria	1 (0.30%)	0 (0.00%)	0 (0.00%)				
	Palestine	0 (0.00%)	1 (0.90%)	0 (0.00%)				
	UAE	0 (0.00%)	1 (0.90%)	0 (0.00%)				
	Libya	19 (4.90%)	3 (2.70%)	0 (0.00%)				
	Turkey	1 (0.30%)	0 (0.00%)	0 (0.00%)				
	Sudan	1 (0.30%)	0 (0.00%)	0 (0.00%)				
Years of Experience								
	1–5 years	317 (81.1%)	69 (61.6%)	8 (53.3%)			Spearman (0.217)	<0.0005
	6–10 years	28 (7.2%)	16 (14.3%)	3 (20.0%)				
	11–15 years	21 (5.4%)	13 (11.6%)	1 (6.7%)				
	16–20 years	12 (3.1%)	8 (7.1%)	2 (13.3%)				
	>20 years	13 (3.3%)	6 (5.4%)	1 (6.7%)				
EBP / Research Methodology Training								
	No	137 (35.0%)	29 (25.9%)	6 (40.0%)		0.018		
	Not sure	48 (12.3%)	7 (6.3%)	0 (0.0%)				

	Yes	206 (52.7%)	76 (67.9%)	9 (60.0%)	Spearman (0.104)	
Speciality						
	Obstetrics & Gynecology	20 (5.1%)	4 (3.6%)	0 (0.0%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99% of confidence)	0.016
	General Practice	30 (7.7%)	3 (2.7%)	0 (0.0%)		
	Internal Medicine	103 (26.3%)	32 (28.6%)	3 (20.0%)		
	Emergency Medicine	14 (3.6%)	0 (0.0%)	1 (6.7%)		
	General Surgery	56 (14.3%)	13 (11.6%)	1 (6.7%)		
	Pediatrics	26 (6.6%)	3 (2.7%)	2 (13.3%)		
	Ophthalmology	6 (1.5%)	3 (2.7%)	0 (0.0%)		
	Neurology	5 (1.3%)	2 (1.8%)	0 (0.0%)		
	ENT	11 (2.8%)	7 (6.3%)	0 (0.0%)		
	Psychiatry	3 (0.8%)	0 (0.0%)	0 (0.0%)		
	Orthopedics	7 (1.8%)	0 (0.0%)	0 (0.0%)		
	Family Medicine	1 (0.3%)	1 (0.9%)	0 (0.0%)		
	Laboratory Medicine	8 (2.0%)	4 (3.6%)	0 (0.0%)		
	Cardiology	6 (1.5%)	5 (4.5%)	1 (6.7%)		
	Dermatology	7 (1.8%)	3 (2.7%)	0 (0.0%)		
	Community/Public Health	12 (3.1%)	4 (3.6%)	0 (0.0%)		
	Oncology	6 (1.5%)	2 (1.8%)	1 (6.7%)		
	Urology	0 (0.0%)	3 (2.7%)	1 (6.7%)		
	Radiology	15 (3.8%)	5 (4.5%)	0 (0.0%)		
	Intensive Care	4 (1.0%)	0 (0.0%)	0 (0.0%)		
	Anesthesiology	5 (1.3%)	2 (1.8%)	0 (0.0%)		
	Neurosurgery	4 (1.0%)	1 (0.9%)	1 (6.7%)		
	Cardiothoracic Surgery	1 (0.3%)	1 (0.9%)	0 (0.0%)		
	Rheumatology	1 (0.3%)	0 (0.0%)	0 (0.0%)		
	Gastroenterology	2 (0.5%)	0 (0.0%)	0 (0.0%)		
	Nephrology	0 (0.0%)	1 (0.9%)	0 (0.0%)		
	Pediatric Surgery	3 (0.8%)	2 (1.8%)	0 (0.0%)		
	Pathology	5 (1.3%)	0 (0.0%)	0 (0.0%)		
	Respiratory Medicine	1 (0.3%)	0 (0.0%)	1 (6.7%)		
	Plastic Surgery	0 (0.0%)	1 (0.9%)	0 (0.0%)		
	Vascular Surgery	2 (0.5%)	0 (0.0%)	0 (0.0%)		
	Other	27 (6.9%)	10 (8.9%)	3 (20.0%)		
Primary workplace						
	Private Hospital / Clinic	44 (11.3%)	16 (14.3%)	0 (0.0%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99% of confidence)	0.004
	University / Teaching Hospital	226 (57.8%)	80 (71.4%)	11 (73.3%)		
	Primary Healthcare Center	16 (4.1%)	2 (1.8%)	0 (0.0%)		
	Government Hospital (Non-Teaching)	89 (22.8%)	10 (8.9%)	2 (13.3%)		
	Military Medical City	5 (1.3%)	3 (2.7%)	0 (0.0%)		
	Other	11 (2.8%)	1 (0.9%)	2 (13.3%)		
Current position						
	Staff Nurse	9 (26.5%)	3 (33.3%)	1 (33.3%)	Spearman (-0.118)	<0.435
	Resident	14 (41.2%)	2 (22.2%)	1 (33.3%)		
	Consultant	9 (26.5%)	3 (33.3%)	1 (33.3%)		
	Head of Department	2 (5.9%)	1 (11.1%)	0 (0.0%)		

Factors Associated with Attitude Toward EBP

Attitude levels were significantly associated with age (Spearman $\rho = 0.136$, $p = 0.002$) and years of experience ($\rho = 0.089$, $p = 0.043$), indicating more favorable attitudes among older and more experienced participants. Country of primary practice demonstrated a strong association with attitude (Monte-Carlo chi-square, $p < 0.0005$). Academic qualification was also significantly related to attitude (Spearman, $p < 0.0005$), with higher degrees corresponding to more positive attitudes.

Formal EBP or research training showed a significant positive association with attitude ($\rho = 0.226$, $p < 0.0005$). Workplace setting was likewise associated with attitude (Monte-Carlo chi-square, $p < 0.0005$), with participants in university/teaching hospitals exhibiting higher proportions of moderate and high attitude levels compared with those in non-teaching government hospitals.

209 No significant associations were observed between attitude and gender ($p = 0.296$), profession ($p = 0.211$), specialty ($p = 0.175$), or current position ($p = 0.109$).

Attitude						
Variable / Category		Low n (%)	Moderate n (%)	High n (%)	Stat test	P-Value
Gender						
	Female	94 (40.30%)	116 (44.80%)	8 (30.80%)	Chi-square	0.296
	Male	139 (59.70%)	143 (55.20%)	18 (69.20%)		
Age Range						
	20–29 years	195 (84.10%)	180 (70.00%)	19 (73.10%)	Spearman (0.136)	0.002
	30–39 years	19 (8.20%)	42 (16.30%)	4 (15.40%)		
	40–49 years	9 (3.90%)	22 (8.60%)	2 (7.70%)		
	50–59 years	7 (3.00%)	9 (3.50%)	1 (3.80%)		
	60 years and above	2 (0.90%)	4 (1.60%)	0 (0.00%)		
Profession						
	Physician	193 (83.20%)	196 (75.70%)	23 (88.50%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.211
	Nurse	16 (6.90%)	27 (10.40%)	2 (7.70%)		
	Paramedic / EMT	0 (0.00%)	2 (0.80%)	0 (0.00%)		
	Pharmacist	7 (3.00%)	18 (6.90%)	0 (0.00%)		
	Physiotherapist	5 (2.20%)	6 (2.30%)	0 (0.00%)		
	Occupational Therapist	6 (2.60%)	1 (0.40%)	0 (0.00%)		
	Radiographer	3 (1.30%)	4 (1.50%)	0 (0.00%)		
	Lab Technician	0 (0.00%)	1 (0.40%)	0 (0.00%)		
	Medical Student	1 (0.40%)	0 (0.00%)	1 (3.80%)		
	Dentist	1 (0.40%)	2 (0.80%)	0 (0.00%)		
	Midwife	0 (0.00%)	1 (0.40%)	0 (0.00%)		
	Research Assistant	0 (0.00%)	1 (0.40%)	0 (0.00%)		
Country of Primary Practice						
	Syria	113 (48.50%)	84 (32.40%)	7 (26.90%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	<0.0005
	Saudi Arabia	20 (8.60%)	11 (4.20%)	2 (7.70%)		
	Egypt	53 (22.70%)	70 (27.00%)	8 (30.80%)		
	Qatar	1 (0.40%)	1 (0.40%)	0 (0.00%)		
	Lebanon	1 (0.40%)	2 (0.80%)	0 (0.00%)		
	Kuwait	0 (0.00%)	1 (0.40%)	0 (0.00%)		
	Jordan	27 (11.60%)	45 (17.40%)	6 (23.10%)		
	Bahrain	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Russia	1 (0.40%)	0 (0.00%)	1 (3.80%)		
	Morocco	6 (2.60%)	30 (11.60%)	0 (0.00%)		
	Algeria	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Palestine	0 (0.00%)	0 (0.00%)	1 (3.80%)		
	UAE	0 (0.00%)	1 (0.40%)	0 (0.00%)		
	Libya	9 (3.90%)	12 (4.60%)	1 (3.80%)		
	Turkey	0 (0.00%)	1 (0.40%)	0 (0.00%)		
	Sudan	0 (0.00%)	1 (0.40%)	0 (0.00%)		
Years of Professional Experience						
	1–5 years	188 (80.70%)	189 (73.00%)	17 (65.40%)	Spearman (0.089)	0.043
	6–10 years	18 (7.70%)	24 (9.30%)	5 (19.20%)		
	11–15 years	14 (6.00%)	20 (7.70%)	1 (3.80%)		
	16–20 years	8 (3.40%)	13 (5.00%)	1 (3.80%)		
	More than 20 years	5 (2.10%)	13 (5.00%)	2 (7.70%)		
Highest Academic Qualification						
	Diploma / Associate Degree	87 (37.30%)	70 (27.00%)	3 (11.50%)	Spearman	<0.0005
	Bachelor's Degree	92 (39.50%)	114 (44.00%)	13 (50.00%)		
	Board Certification / Fellowship	11 (4.70%)	11 (4.20%)	2 (7.70%)		
	Master's Degree	28 (12.00%)	40 (15.40%)	3 (11.50%)		
	Doctorate	15 (6.40%)	24 (9.30%)	5 (19.20%)		
Formal EBP / Research Training						
	No	106 (45.50%)	60 (23.20%)	6 (23.10%)	Spearman (0.226)	<0.0005
	I'm not sure	22 (9.40%)	32 (12.40%)	1 (3.80%)		
	Yes	105 (45.10%)	167 (64.50%)	19 (73.10%)		
Specialty						
	Obstetrics & Gynecology	11 (4.7%)	13 (5.0%)	0 (0.0%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.175
	General Practice	13 (5.6%)	19 (7.3%)	1 (3.8%)		
	Internal Medicine	74 (31.8%)	60 (23.2%)	4 (15.4%)		
	Emergency Medicine	9 (3.9%)	6 (2.3%)	0 (0.0%)		
	General Surgery	31 (13.3%)	35 (13.5%)	4 (15.4%)		
	Pediatrics	16 (6.9%)	11 (4.2%)	4 (15.4%)		
	Ophthalmology	5 (2.1%)	4 (1.5%)	0 (0.0%)		
	Neurology	4 (1.7%)	2 (0.8%)	1 (3.8%)		
	ENT	4 (1.7%)	10 (3.9%)	4 (15.4%)		
	Psychiatry	3 (1.3%)	0 (0.0%)	0 (0.0%)		
	Orthopedics	4 (1.7%)	3 (1.2%)	0 (0.0%)		
	Family Medicine	0 (0.0%)	2 (0.8%)	0 (0.0%)		
	Laboratory Medicine	4 (1.7%)	7 (2.7%)	1 (3.8%)		

	Cardiology	5 (2.1%)	6 (2.3%)	1 (3.8%)		
	Dermatology	3 (1.3%)	7 (2.7%)	0 (0.0%)		
	Community/Public Health	7 (3.0%)	9 (3.5%)	0 (0.0%)		
	Oncology	4 (1.7%)	4 (1.5%)	1 (3.8%)		
	Urology	2 (0.9%)	1 (0.4%)	1 (3.8%)		
	Radiology	6 (2.6%)	14 (5.4%)	0 (0.0%)		
	Intensive Care	2 (0.9%)	2 (0.8%)	0 (0.0%)		
	Anesthesiology	3 (1.3%)	3 (1.2%)	1 (3.8%)		
	Neurosurgery	4 (1.7%)	1 (0.4%)	1 (3.8%)		
	Cardiothoracic Surgery	0 (0.0%)	2 (0.8%)	0 (0.0%)		
	Rheumatology	1 (0.4%)	0 (0.0%)	0 (0.0%)		
	Gastroenterology	0 (0.0%)	2 (0.8%)	0 (0.0%)		
	Nephrology	0 (0.0%)	1 (0.4%)	0 (0.0%)		
	Pediatric Surgery	3 (1.3%)	2 (0.8%)	0 (0.0%)		
	Pathology	2 (0.9%)	3 (1.2%)	0 (0.0%)		
	Respiratory Medicine	0 (0.0%)	2 (0.8%)	0 (0.0%)		
	Plastic Surgery	0 (0.0%)	1 (0.4%)	0 (0.0%)		
	Vascular Surgery	0 (0.0%)	2 (0.8%)	0 (0.0%)		
	Other	13 (5.6%)	25 (9.7%)	2 (7.7%)		
Position						
	Staff Nurse	0 (0.0%)	11 (35.5%)	2 (50.0%)	Spearman (-0.239)	0.109
	Resident	7 (63.6%)	8 (25.8%)	2 (50.0%)		
	Consultant	4 (36.4%)	9 (29.0%)	0 (0.0%)		
	Head of Department	0 (0.0%)	3 (9.7%)	0 (0.0%)		
Workplace						
	Private Hospital / Clinic	25 (10.7%)	32 (12.4%)	3 (11.5%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99% of confidence)	<0.0005
	University / Teaching Hospital	127 (54.5%)	171 (66.0%)	19 (73.1%)		
	Primary Healthcare Center	5 (2.1%)	13 (5.0%)	0 (0.0%)		
	Government Hospital (Non-Teaching)	70 (30.0%)	28 (10.8%)	3 (11.5%)		
	Military Medical City	4 (1.7%)	4 (1.5%)	0 (0.0%)		
	Other	2 (0.9%)	11 (4.2%)	1 (3.8%)		

211 Factors Associated with Skills and Knowledge

212 Skills/knowledge levels demonstrated significant associations with age (Spearman $\rho = 0.268$, p
213 < 0.0005) and years of experience ($\rho = 0.198$, $p < 0.0005$), with higher levels observed among
214 older and more experienced respondents. Profession was significantly associated with
215 skills/knowledge (Monte-Carlo chi-square, $p = 0.003$), as was country of practice ($p < 0.0005$).

216 Academic qualification showed a strong positive association with skills/knowledge ($\rho = 0.328$,
217 $p < 0.0005$), with participants holding master's or doctoral degrees more frequently classified in
218 the high category. Formal EBP training was also strongly associated with higher
219 skills/knowledge ($\rho = 0.359$, $p < 0.0005$). Clinical specialty demonstrated a significant
220 relationship with skills/knowledge (Monte-Carlo chi-square, $p < 0.0005$).

221 Primary workplace was significantly associated with skills/knowledge ($p < 0.0005$), with higher
222 levels observed among participants working in university/teaching hospitals and private settings
223 compared with government non-teaching hospitals. Gender showed a borderline association (p
224 $= 0.057$), while current professional position was not significantly associated ($p = 0.536$).

Skills/knowledge						
Variable	Category	Low n (%)	Moderate n (%)	High n (%)	Statistical Test	P-value
Gender	Female	100 (46.50%)	71 (43.30%)	47 (33.80%)	Chi-square	0.057
	Male	115 (53.50%)	93 (56.70%)	92 (66.20%)		
Age Range	20–29 years	188 (87.90%)	120 (74.10%)	86 (61.90%)	Spearman (0.268)	<0.0005
	30–39 years	11 (5.10%)	28 (17.30%)	26 (18.70%)		
	40–49 years	8 (3.70%)	7 (4.30%)	18 (12.90%)		
	50–59 years	5 (2.30%)	6 (3.70%)	6 (4.30%)		
	≥60 years	2 (0.90%)	1 (0.60%)	3 (2.20%)		

Profession						
	Physician	175 (81.40%)	139 (85.30%)	98 (70.50%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.003
	Nurse	18 (8.40%)	10 (6.10%)	17 (12.20%)		
	Paramedic / EMT	0 (0.00%)	2 (1.20%)	0 (0.00%)		
	Pharmacist	9 (4.20%)	4 (2.50%)	12 (8.60%)		
	Physiotherapist	2 (0.90%)	2 (1.20%)	7 (5.00%)		
	Occupational Therapist	6 (2.80%)	1 (0.60%)	0 (0.00%)		
	Radiographer	2 (0.90%)	2 (1.20%)	3 (2.20%)		
	Lab Technician	0 (0.00%)	0 (0.00%)	1 (0.70%)		
	Medical Student	2 (0.90%)	0 (0.00%)	0 (0.00%)		
	Dentist	0 (0.00%)	2 (1.20%)	1 (0.70%)		
	Midwife	1 (0.50%)	0 (0.00%)	0 (0.00%)		
	Research Assistant	0 (0.00%)	1 (0.60%)	0 (0.00%)		
Country						
	Syria	110 (51.20%)	49 (29.90%)	45 (32.40%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	<0.0005
	Saudi Arabia	10 (4.70%)	13 (7.90%)	10 (7.20%)		
	Egypt	42 (19.50%)	56 (34.10%)	33 (23.70%)		
	Qatar	1 (0.50%)	0 (0.00%)	1 (0.70%)		
	Lebanon	3 (1.40%)	0 (0.00%)	0 (0.00%)		
	Kuwait	1 (0.50%)	0 (0.00%)	0 (0.00%)		
	Jordan	38 (17.70%)	26 (15.90%)	14 (10.10%)		
	Bahrain	0 (0.00%)	1 (0.60%)	0 (0.00%)		
	Russia	1 (0.50%)	0 (0.00%)	1 (0.70%)		
	Morocco	1 (0.50%)	5 (3.00%)	30 (21.60%)		
	Algeria	0 (0.00%)	1 (0.60%)	0 (0.00%)		
	Palestine	0 (0.00%)	1 (0.60%)	0 (0.00%)		
	UAE	0 (0.00%)	0 (0.00%)	1 (0.70%)		
	Libya	8 (3.70%)	10 (6.10%)	4 (2.90%)		
	Turkey	0 (0.00%)	1 (0.60%)	0 (0.00%)		
	Sudan	0 (0.00%)	1 (0.60%)	0 (0.00%)		
Years of Experience						
	1–5 years	179 (83.30%)	127 (77.40%)	88 (63.30%)	Spearman (0.198)	<0.0005
	6–10 years	14 (6.50%)	11 (6.70%)	22 (15.80%)		
	11–15 years	10 (4.70%)	16 (9.80%)	9 (6.50%)		
	16–20 years	6 (2.80%)	4 (2.40%)	12 (8.60%)		
	>20 years	6 (2.80%)	6 (3.70%)	8 (5.80%)		
Highest Qualification						
	Diploma	98 (45.60%)	24 (14.60%)	38 (27.30%)	Spearman (0.328)	<0.0005
	Bachelor's	89 (41.40%)	88 (53.70%)	42 (30.20%)		
	Board/Fellowship	6 (2.80%)	12 (7.30%)	6 (4.30%)		
	Master's	19 (8.80%)	24 (14.60%)	28 (20.10%)		
	Doctorate	3 (1.40%)	16 (9.80%)	25 (18.00%)		
Formal EBP Training						
	No	115 (53.50%)	28 (17.10%)	29 (20.90%)	Spearman (0.359)	<0.0005
	Not sure	31 (14.40%)	12 (7.30%)	12 (8.60%)		
	Yes	69 (32.10%)	124 (75.60%)	98 (70.50%)		
Specialties						
	Obstetrics and Gynecology	7 (3.3%)	9 (5.5%)	8 (5.8%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	<0.0005
	General Practice	18 (8.4%)	8 (4.9%)	7 (5.0%)		
	Internal Medicine	81 (37.7%)	33 (20.1%)	24 (17.3%)		
	Emergency Medicine	6 (2.8%)	8 (4.9%)	1 (0.7%)		
	General Surgery	27 (12.6%)	27 (16.5%)	16 (11.5%)		
	Pediatrics	13 (6.0%)	10 (6.1%)	8 (5.8%)		
	Ophthalmology	2 (0.9%)	4 (2.4%)	3 (2.2%)		
	Neurology	1 (0.5%)	3 (1.8%)	3 (2.2%)		
	ENT	3 (1.4%)	12 (7.3%)	3 (2.2%)		
	Psychiatry	1 (0.5%)	2 (1.2%)	0 (0.0%)		
	Orthopedics	4 (1.9%)	1 (0.6%)	2 (1.4%)		
	Family Medicine	0 (0.0%)	1 (0.6%)	1 (0.7%)		
	Laboratory Medicine	3 (1.4%)	2 (1.2%)	7 (5.0%)		
	Cardiology	2 (0.9%)	3 (1.8%)	7 (5.0%)		
	Dermatology	3 (1.4%)	5 (3.0%)	2 (1.4%)		
	Community / Public Health	4 (1.9%)	3 (1.8%)	9 (6.5%)		
	Oncology	3 (1.4%)	4 (2.4%)	2 (1.4%)		
	Urology	1 (0.5%)	0 (0.0%)	3 (2.2%)		
	Radiology	6 (2.8%)	2 (1.2%)	12 (8.6%)		
	Intensive Care	0 (0.0%)	2 (1.2%)	2 (1.4%)		
	Anesthesiology	2 (0.9%)	2 (1.2%)	3 (2.2%)		
	Neurosurgery	3 (1.4%)	1 (0.6%)	2 (1.4%)		
	Cardiothoracic Surgery	1 (0.5%)	1 (0.6%)	0 (0.0%)		
	Rheumatology	0 (0.0%)	1 (0.6%)	0 (0.0%)		
	Gastroenterology	2 (0.9%)	0 (0.0%)	0 (0.0%)		

	Nephrology	0 (0.0%)	0 (0.0%)	1 (0.7%)		
	Pediatric Surgery	3 (1.4%)	1 (0.6%)	1 (0.7%)		
	Pathology	3 (1.4%)	1 (0.6%)	1 (0.7%)		
	Respiratory Medicine	1 (0.5%)	0 (0.0%)	1 (0.7%)		
	Plastic Surgery	0 (0.0%)	1 (0.6%)	0 (0.0%)		
	Vascular Surgery	1 (0.5%)	1 (0.6%)	0 (0.0%)		
	Other	14 (6.5%)	16 (9.8%)	10 (7.2%)		
Current position						
	Staff Nurse	2 (20.0%)	7 (30.4%)	4 (30.8%)	Spearman (-0.094)	0.536
	Resident	4 (40.0%)	10 (43.5%)	3 (23.1%)		
	Consultant	2 (20.0%)	5 (21.7%)	6 (46.2%)		
	Head of Department	2 (20.0%)	1 (4.3%)	0 (0.0%)		
Primary workplace						
	Private Hospital / Clinic	18 (8.4%)	17 (10.4%)	25 (18.0%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99% of confidence)	<0.0005
	University / Teaching Hospital	118 (54.9%)	113 (68.9%)	86 (61.9%)		
	Primary Healthcare Center	5 (2.3%)	7 (4.3%)	6 (4.3%)		
	Government Hospital (Non-Teaching)	65 (30.2%)	22 (13.4%)	14 (10.1%)		
	Military Medical City	4 (1.9%)	1 (0.6%)	3 (2.2%)		
	Other	5 (2.3%)	4 (2.4%)	5 (3.6%)		

Factors Associated with Overall EBP Performance

Overall EBP performance was significantly associated with age (Spearman $\rho = 0.205$, $p < 0.0005$) and years of experience ($\rho = 0.146$, $p = 0.001$), indicating progressive improvement with increasing age and professional tenure. Country of practice was significantly associated with overall EBP (Monte-Carlo chi-square, $p = 0.003$).

Higher academic qualification correlated positively with overall EBP performance ($\rho = 0.204$, $p < 0.0005$), with participants holding doctoral degrees showing the highest proportion of high overall EBP levels. Formal EBP training was also significantly associated with improved overall EBP ($\rho = 0.259$, $p < 0.0005$). Workplace setting demonstrated a significant relationship ($p = 0.004$), with university/teaching hospitals associated with higher overall EBP levels compared with non-teaching government hospitals.

Clinical specialty was significantly associated with overall EBP (Monte-Carlo chi-square, $p = 0.023$). Current professional position also showed a significant association (Spearman $\rho = -0.314$, $p = 0.034$), although interpretation is limited by small subgroup sizes.

No significant associations were observed between overall EBP and gender ($p = 0.135$) or profession ($p = 0.337$).

Overall Variable	Category	Low n (%)	Moderate n (%)	High n (%)	Statistical Test	P-value
Gender						
	Female	122 (44.40%)	90 (41.30%)	6 (24.00%)	Chi-square	0.135
	Male	153 (55.60%)	128 (58.70%)	19 (76.00%)		
Age Range						
	20–29 years	233 (85.30%)	144 (66.40%)	17 (68.00%)	Spearman (0.205)	<0.0005
	30–39 years	18 (6.60%)	44 (20.30%)	3 (12.00%)		
	40–49 years	10 (3.70%)	18 (8.30%)	5 (20.00%)		
	50–59 years	10 (3.70%)	7 (3.20%)	0 (0.00%)		
	≥60 years	2 (0.70%)	4 (1.80%)	0 (0.00%)		
Profession						
	Physician	223 (81.40%)	169 (77.50%)	20 (80.00%)	Chi-square (via Monte-Carlo with 10,000 simulations)	0.337
	Nurse	21 (7.70%)	20 (9.20%)	4 (16.00%)		
	Paramedic / EMT	0 (0.00%)	2 (0.90%)	0 (0.00%)		
	Pharmacist	11 (4.00%)	13 (6.00%)	1 (4.00%)		
	Physiotherapist	4 (1.50%)	7 (3.20%)	0 (0.00%)		
	Occupational Therapist	7 (2.60%)	0 (0.00%)	0 (0.00%)		

	Radiographer	4 (1.50%)	3 (1.40%)	0 (0.00%)	and 99\$ of confidence)	
	Lab Technician	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	Medical Student	2 (0.70%)	0 (0.00%)	0 (0.00%)		
	Dentist	1 (0.40%)	2 (0.90%)	0 (0.00%)		
	Midwife	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Research Assistant	0 (0.00%)	1 (0.50%)	0 (0.00%)		
Country						
	Syria	125 (45.50%)	66 (30.30%)	13 (52.00%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.003
	Saudi Arabia	19 (6.90%)	13 (6.00%)	1 (4.00%)		
	Egypt	66 (24.00%)	59 (27.10%)	6 (24.00%)		
	Qatar	1 (0.40%)	1 (0.50%)	0 (0.00%)		
	Lebanon	3 (1.10%)	0 (0.00%)	0 (0.00%)		
	Kuwait	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Jordan	40 (14.50%)	36 (16.50%)	2 (8.00%)		
	Bahrain	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Russia	1 (0.40%)	1 (0.50%)	0 (0.00%)		
	Morocco	6 (2.20%)	28 (12.80%)	2 (8.00%)		
	Algeria	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Palestine	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	UAE	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	Libya	11 (4.00%)	10 (4.60%)	1 (4.00%)		
	Turkey	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	Sudan	0 (0.00%)	1 (0.50%)	0 (0.00%)		
Years of Experience						
	1–5 years	224 (81.50%)	157 (72.00%)	13 (52.00%)	Spearman (0.146)	0.001
	6–10 years	18 (6.50%)	23 (10.60%)	6 (24.00%)		
	11–15 years	15 (5.50%)	19 (8.70%)	1 (4.00%)		
	16–20 years	9 (3.30%)	10 (4.60%)	3 (12.00%)		
	>20 years	9 (3.30%)	9 (4.10%)	2 (8.00%)		
Highest Qualification						
	Diploma	103 (37.50%)	50 (22.90%)	7 (28.00%)	Spearman (0.204)	<0.0005
	Bachelor's	118 (42.90%)	94 (43.10%)	7 (28.00%)		
	Board/Fellowship	11 (4.00%)	12 (5.50%)	1 (4.00%)		
	Master's	32 (11.60%)	36 (16.50%)	3 (12.00%)		
	Doctorate	11 (4.00%)	26 (11.90%)	7 (28.00%)		
Formal EBP Training						
	No	120 (43.60%)	44 (20.20%)	8 (32.00%)	Spearman (0.259)	<0.0005
	Not sure	35 (12.70%)	20 (9.20%)	0 (0.00%)		
	Yes	120 (43.60%)	154 (70.60%)	17 (68.00%)		
Workplace						
	Private Hospital / Clinic	28 (10.20%)	30 (13.80%)	2 (8.00%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.004
	University / Teaching Hospital	154 (56.00%)	145 (66.50%)	18 (72.00%)		
	Primary Healthcare Center	8 (2.90%)	10 (4.60%)	0 (0.00%)		
	Government Hospital (Non-Teaching)	73 (26.50%)	24 (11.00%)	4 (16.00%)		
	Military Medical City	6 (2.20%)	2 (0.90%)	0 (0.00%)		
	Other	6 (2.20%)	7 (3.20%)	1 (4.00%)		
Current position						
	Staff Nurse	2 (12.50%)	8 (32.00%)	3 (60.00%)	Spearman (-0.314)	.034
	Resident	7 (43.80%)	8 (32.00%)	2 (40.00%)		
	Consultant	5 (31.30%)	8 (32.00%)	0 (0.00%)		
	Head of Department	2 (12.50%)	1 (4.00%)	0 (0.00%)		
Specialty						
	Obstetrics & Gynecology	11 (4.00%)	13 (6.00%)	0 (0.00%)	Chi-square (via Monte-Carlo with 10,000 simulations and 99\$ of confidence)	0.023
	General Practice	19 (6.90%)	14 (6.40%)	0 (0.00%)		
	Internal Medicine	89 (32.40%)	42 (19.30%)	7 (28.00%)		
	Emergency Medicine	9 (3.30%)	5 (2.30%)	1 (4.00%)		
	General Surgery	39 (14.20%)	29 (13.30%)	2 (8.00%)		
	Pediatrics	18 (6.50%)	10 (4.60%)	3 (12.00%)		
	Ophthalmology	4 (1.50%)	5 (2.30%)	0 (0.00%)		
	Neurology	3 (1.10%)	3 (1.40%)	1 (4.00%)		
	ENT	3 (1.10%)	14 (6.40%)	1 (4.00%)		
	Psychiatry	3 (1.10%)	0 (0.00%)	0 (0.00%)		
	Orthopedics	4 (1.50%)	3 (1.40%)	0 (0.00%)		
	Family Medicine	0 (0.00%)	2 (0.90%)	0 (0.00%)		
	Laboratory Medicine	3 (1.10%)	8 (3.70%)	1 (4.00%)		
	Cardiology	4 (1.50%)	6 (2.80%)	2 (8.00%)		
	Dermatology	4 (1.50%)	6 (2.80%)	0 (0.00%)		
	Community / Public Health	7 (2.50%)	9 (4.10%)	0 (0.00%)		
	Oncology	5 (1.80%)	2 (0.90%)	2 (8.00%)		
	Urology	1 (0.40%)	2 (0.90%)	1 (4.00%)		

	Radiology	7 (2.50%)	13 (6.00%)	0 (0.00%)		
	Intensive Care	2 (0.70%)	2 (0.90%)	0 (0.00%)		
	Anesthesiology	3 (1.10%)	4 (1.80%)	0 (0.00%)		
	Neurosurgery	4 (1.50%)	1 (0.50%)	1 (4.00%)		
	Cardiothoracic Surgery	1 (0.40%)	1 (0.50%)	0 (0.00%)		
	Rheumatology	1 (0.40%)	0 (0.00%)	0 (0.00%)		
	Gastroenterology	2 (0.70%)	0 (0.00%)	0 (0.00%)		
	Nephrology	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	Pediatric Surgery	3 (1.10%)	2 (0.90%)	0 (0.00%)		
	Pathology	3 (1.10%)	2 (0.90%)	0 (0.00%)		
	Respiratory Medicine	1 (0.40%)	0 (0.00%)	1 (4.00%)		
	Plastic Surgery	0 (0.00%)	1 (0.50%)	0 (0.00%)		
	Vascular Surgery	1 (0.40%)	1 (0.50%)	0 (0.00%)		
	Other	21 (7.60%)	17 (7.80%)	2 (8.00%)		

Discussion:

Principal Findings

This multi-country cross-sectional study assessed evidence-based practice (EBP) implementation, attitudes, and self-reported competencies among healthcare professionals in the Middle East. Overall, EBP practice was low (mean 2.88), with 75.5% of participants in the low practice category, while attitudes were relatively more favorable (mean 3.67) but still showed 45.0% in the low category. Skills/knowledge were higher (mean 4.10), yet 41.5% were classified as low. The composite profile indicated that most participants had low overall EBP competency (53.1%), with only 4.8% in the high category. These findings reinforce the evidence-to-practice gap reported across health professions. (1–7)

Comparison With Previous Studies

Our results align with prior cross-sectional studies among nurses and allied health professionals showing that positive attitudes toward EBP do not necessarily translate into routine implementation. (1,2,4,8) Similarly, physiotherapy-specific studies in Latin America and Saudi Arabia report variable knowledge, attitudes, and EBP behaviors, emphasizing the role of training and access to evidence resources. (6,7) Within the region, studies among resident physicians in Syria and hospital pharmacists in Kuwait also demonstrate variability in EBP knowledge, readiness, and use, suggesting persistent educational and system-level barriers. (8,9)

Sociodemographic and Professional Correlates

Age was significantly associated with EBP practice (Spearman $\rho = 0.207$, $p < 0.0005$), suggesting improved practice with greater age or experience. In contrast, gender and professional group were not significantly associated with practice, and country-level differences did not reach statistical significance. Similar mixed associations have been reported in cross-sectional EBP literature across professional groups. (1–5)

Implications for Education and Practice

The gap between skills/knowledge and actual practice indicates that EBP education should go

beyond theory and emphasize applied competencies such as clinical question formulation, rapid appraisal, and point-of-care evidence use. Studies across nursing, physiotherapy, and multidisciplinary samples suggest that limited time, training, and access to evidence resources are common barriers, which should be addressed through curricular reform and organizational support. (1–7)

Strengths and Limitations

Strengths include the multi-country scope, inclusion of multiple professional groups, and use of a validated EBPQ instrument. Limitations include stratified convenience sampling, reliance on self-reported measures, and a sample that was predominantly young and physician-heavy, which may limit generalizability. Similar limitations are common in cross-sectional EBP research. (1–7)

Future Research

Future studies should apply probability-based sampling, include more balanced professional representation, and incorporate objective indicators of EBP behavior. Longitudinal and interventional designs are needed to test whether targeted training and organizational changes improve implementation. (1–7)

Conclusion

EBP practice among healthcare professionals in the Middle East was low despite modestly positive attitudes and moderate self-reported skills. These findings highlight the need for educational and institutional strategies that close the evidence-to-practice gap and promote sustainable EBP integration.

Declarations

Ethics approval and consent to participate

Ethical approval was granted by the Institutional Review Board of the study center in Aleppo, Syria (IRB No. 2526). Electronic informed consent was obtained from all participants.

Ethical Standard:

The study protocol adhered to WHO guidelines and Declaration of Helsinki for observational studies.

Consent for publication

Not Applicable.

Availability of data and materials

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

Competing interests

The authors declare that they have no competing interests.

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468 **Supporting Information:**

469 S1 Questionnaire. Full survey instrument used in the study.

470 This file contains the complete questionnaire administered to healthcare professionals. It
471 includes demographic and professional background details, followed by the Evidence-Based
472 Practice Questionnaire (EBPQ), which measures behaviors, attitudes, and self-rated
473 competencies related to evidence-based practice.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [S1Questionnaire.docx](#)