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Doctors' Knowledge and Practice toward Evidence-Based Medicine in Benghazi Teaching Hospitals

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Original Research Article

Abstract

Background: Evidence-based medicine (EBM) is the utilization of the best evidence available from reliable, bias-free clinical trials and the integration of that evidence with the preferences and conditions of the patient. The current study intends to comprehensively evaluate the status of EBM knowledge, attitude, and practice among doctors in Benghazi teaching hospitals because there have been no studies conducted in this field in Benghazi, Libya.

Methods: This cross-sectional study was conducted in August 2023. 129 doctors from teaching hospitals in Benghazi representing a variety of specialties, including medicine, pediatrics, surgery, obstetrics and gynecology (OBGYN), and others, participated in the study. A valid questionnaire that could be self-administered served as the data collection tool. Cronbach's alpha was used to evaluate the questionnaire's internal consistency.

Results: The study showed that 64.3% of the participated doctors had heard of EBM. The overall level of knowledge was relatively low. In general medicine doctors demonstrated more knowledge about EBM than other specialties, and more aware of the term of EBM than the other participants. Medicine specialty doctors had the highest score in knowledge, whereas paediatricians had the lowest score. Pediatricians were less likely to hear of the term EBM compared to medicine doctors, odds ratio: 3.83 (95% CI, 1.45 – 10.11), p-value: 0.007, and had less knowledge about EBM, p-value of 0.037.

Conclusion: The study indicates that while most participants have a positive attitude towards EBM, they have limited understanding. To improve EBM practice and accessibility, an electronic library with online databases should be established, and EBM training programs should be included in undergraduate and postgraduate curricula.

Keywords: Evidence-based medicine, EBM, Knowledge, Attitudes, Practice, Libya, KAP.

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Introduction:

Evidence-based medicine (EBM) is a method that combines the best available research evidence with clinical expertise and patient values to guide informed healthcare decision-making. It has gained significant attention in recent years to improve the quality of patient care and outcomes.[1,13]

In 1972, Professor Archie Cochrane emphasized that many treatment decisions lacked a foundation in systematically reviewed clinical evidence. He advocated for international collaboration among researchers to conduct comprehensive reviews of the best clinical trials within each medical specialty. This approach exposed the disconnect between research findings and clinical practice and began to persuade healthcare professionals of the value of an evidence-based approach. The term of evidence-based medicine was formally introduced in 1991 by Gordon Guyatt and his team, aiming to move clinical decision-making away from 'intuition, unsystematic clinical experience' to scientifically sound, clinically relevant research. In 1996, D.L. Sackett of McMaster University in Ontario, Canada, further defined evidence-based medicine as the integration of the best available research evidence, clinical expertise, and the individual patient's values and circumstances. [7,12]

Implementing EBM involves these five fundamental steps: (1) Defining the problem, which involves generating a related and searchable clinical question that is consistent with the disease's form. (2) Searching databases and resources for important clinical papers to get the best evidence. (3) Critically evaluating the evidence for validity and usefulness. (4)

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Using information and evidence in clinical practice. (5) Assessing the usefulness and efficacy of the use of such evidence. [2,3]

One of the core principles of evidence-based medicine (EBM) is the hierarchy used to evaluate the strength of evidence on which decisions are based. This principle stresses the importance of judging the quality of evidence before acting on it. Evidence is ranked in this hierarchy according to its susceptibility to bias. At the top are meta-analyses of multiple randomized controlled trials, as these are designed to minimize bias and reduce the likelihood of systematic errors. In contrast, evidence such as expert opinions or case series ranks lower, as it is more prone to bias from the author's personal views and often does not account for confounding variables.[4] The advantages of EBM include assisting doctors in managing information overload, distributing healthcare resources more fairly, reducing healthcare costs, and defending public treatment decisions. [5]

Using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system to rate the strength of recommendations and the quality of evidence in systematic reviews, as well as clinical practice guidelines that address alternative management options, are examples of modern EBM principles. The GRADE process starts with a question specifying all the important outcomes, then provides criteria for evaluating evidence quality, including study design, bias risk, imprecision, inconsistency, indirectness, and effect magnitude. Recommendations are classified as either strong or weak based on the quality of the supporting evidence and the trade-off between

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the benefits and harms of different management options. The GRADE system advises presenting this evidence in clear, concise, and informative summary of findings tables, which outline both the quality of the evidence and the magnitude of relative and absolute effects for each key outcome. Additionally, evidence profiles may provide detailed explanations for how the quality ratings were determined.[11]

By creating reliable standards and guidelines and evaluating their performance against them, health systems today attempt to raise the caliber of healthcare services [15]. Additionally, applying research findings to clinical practice is a means of broadening the scientific foundation and expertise of those who specialized in the topic. [16] Research findings can be used to replace outdated and unreliable practices with safe and dependable practices , which will raise healthcare standards and improve the quality of services rendered by medical personnel. Therefore, the best evidence for "evidence-based decision-making" must be accessed in order to implement best practices that guarantee the clinical effectiveness of healthcare services.[17]

This study sought to identify the levels of knowledge and practice of EBM among teaching hospital physicians in Benghazi, Libya.

In addition to Evaluate the impact of the related factors on knowledge and practice, of EBM.

This study, in our opinion, can contribute to the development of strategies for encouraging clinicians to use EBM and eventually enhance patient outcomes. Knowing the elements that affect EBM adoption can also help with the creation of focused interventions and training programs for health-

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care personnel.

Methods:

Analytic cross-sectional study was used for this research. Held during August 2023, at Benghazi teaching hospitals (Benghazi Medical Center, Benghazi Children Hospital, and Alhawary Cardiac Center, Aljalaa Hospital).

According to the following inclusion criteria, the study's subjects were doctors working in Benghazi teaching hospitals as senior house officers (SHOs), specialists, or consultants in various departments (medicine, surgery, pediatrics, and other specialties). Doctors who were on vacation at the time the data was being collected and doctors who did not want to participate were excluded from the study.

A self-administered questionnaire was used to gather information from doctors. A reliable and valid questionnaire was adopted. [14] It includes questions about the following:

1. Socio-demographic information.
2. Physician's knowledge about EBM (concept, relevant databases, and study designs)
3. Physicians' attitudes towards evidence-based medicine
4. Questions about the application of EBM.
5. Considered important obstacles to using EBM in clinical practice.

The variables included in the questionnaire were gender, medical specialty, position, and years of experience, and the questionnaire also asked about any previous training or education on EBM. Additionally, the questionnaire assessed the level of familiarity with different databases used for EBM research as "Aware" = 1, "Unaware" = 2, as well as the understanding of the technical terms used in EBM as "It would

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not be helpful for me to understand" = 1, Don't understand but would like to" = 2, "Some understanding" = 3, "Understand and could explain to others" = 4. and a score was generated for each subject with a min score of 14 and max score of 56.

The practice of evidence-based medicine in clinical practice were measured using a five-point Likert scale of "Strongly Agree" = 5, "Agree" = 4, "Neutral" = 3, "Disagree" = 2, "Strongly Disagree" = 1. And a score for each was generated. As for practice, the min is 8 and the max is 40.

SPSS version 26 was use for data management and analysis. The frequencies of different variables were shown using frequency tables. Additionally, descriptive statistics such as means, and standard deviations were calculated to summarize continuous variables. The internal reliability of the questionnaire was determined using Cronbach's alpha coefficient. To assess the association between the independent and dependent variables, univariable and multivariable logistic regression analyses, as well as multiple linear regression analysis were conducted.

Due to small numbers of cases in some categories and to obtain more stable logistic regression models, the obstetrics and gynecology (OBJYN) and other categories specialties were collapsed together in one level, also consultant and specialists categories were re-categorized into one variable named senior versus junior (SHOs). No evidence of multicollinearity was detected in all multiple regression models.

A p-value of less than 0.05 indicates that the association is significant.

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The ethical aspects of this study involved coordination with appropriate authorities, hospitals, and the university; securing informed consent from participants; and ensuring the confidentiality of their personal information.

Results:

A total of 129 doctors have responded to the questionnaire. Of them, 25.6% were males (n = 33) and 74.4% were females (n = 96). Internal reliability analysis was used to verify the validity of the questionnaire, and the results showed that the knowledge and practice domains had Cronbach's alpha values of 0.93 and 0.84, respectively.

Medicine had 33.3% (n = 43) of the doctors, surgery had 17.1% (n = 22), pediatrics had 34.1% (n = 44), OBGYN had 3.9% (n = 5), and other specialties had 11.6% (n = 15). The majority of the doctors (n = 89, 69%) were SHOs, (n = 32, 24.4%) were specialists, and (n = 8, 6.2%) were consultants (Table 1).

Table.(1): Demographic characteristic of the participants

Variable	Variable level	Number (%)
Gender	Male Female	33 (25.6) 96 (74.4)
Specialty	Medicine Surgery Pediatrics OBGYN Other	43 (33.3) 22 (17.1) 44 (34.1) 5 (3.9) 15 (11.6)
Position	SHO Specialist Consultant	89 (69) 32 (24.8) 8 (6.2)

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The means and standard deviations of knowledge and practice scores were 39.31 (9.13) and 29.65 (7.01), respectively (Table 2).

Table .(2): Descriptive statistics for knowledge and practice scores

	Knowledge	Practice
Min score	14	8
Max score	56	40
Mean	39.31	29.65
Std. Deviation	9.13	5.94

multivariable logistic regression analysis' dependent variable EBM awareness, responding (no/yes) to the question (Have you heard of the term "evidence-based medicine")? The independent variables were gender, specialty, and position. Female doctors were more likely not hearing of the term EBM compared male doctors, the adjusted odds ratio of 3.17 (95% CI, 1.06 – 9.45), p-value 0.038. In terms of specialty, pediatric doctors had more odds of not hearing of the term EBM compared to medicine doctors, with an odds ratio of 3.83 (95% CI, 1.45 – 10.11), p-value 0.007. For surgery and OBJYN/ Others, the adjusted odds ratios were 1.28 (95% CI, 0.36 – 4.58), p-value 0.70, and 2.30 (95% CI, 0.70 – 7.55), p-value 0.17 respectively (Table 3).

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Table.(3): Logistic Regression Models for Knowing EBM term

	Univariable[a]		Multivariable[b]	
	Crude OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Gender Male (reference) Female	4.17 (1.48 – 11.74)	0.007	3.17 (1.06 – 9.45)	0.038
Specialty Medicine (reference) Surgery Pediatric OBJYN and Other specialties	1.11 (0.32 – 3.83) 4.53 (1.76 – 11.65) 2.52 (0.80 – 8.01)	0.86 0.002 0.12	1.28 (0.36 – 4.58) 3.83 (1.45 – 10.11) 2.3 (0.70 – 7.55)	0.70 0.007 0.17
Position Junior (reference) Senior	0.95 (0.44 – 2.10)	0.92	1.03 (0.43 – 2.47)	0.95

[a]Univariable logistic regression

[b]Multivariable logistic regression includes gender, specialty and position

Abbreviations:

OR, odds ratio; CI, confidence interval

The results of the Multiple linear regression analysis on knowledge domain showed that doctors of medicine specialty had more knowledge than other specialties, higher scores of 3.38 (p-value 0.13), 4.54 (p-value 0.037), and 4.56 (p-value 0.84) compared to doctors of surgery, pediatrics and OBJYN/Other, respectively. No notable difference in knowledge by gender and position. (Tables 4). Likewise, in the practice domain, no remarkable differences in practice in terms of gender specialties nor in position (Tables 5).

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Table.(4): Multiple linear regression analysis of EBM knowledge domain.

Variable	β coefficients	Standard errors	P-value
Gender Male (reference) Female	0.42 (- 4.06 – 4.14)	2.07	0.98
Specialty Medicine (reference) Surgery Pediatric OBJYN and Other specialties	- 3.83 (- 8.84 – 1.20) - 4.54 (- 8.62 – - 0.28) - 4.56 (- 9.675 – 0.62)	2.53 2.10 2.62	0.13 0.037 0.84
Position Junior (reference) Senior	1.21 (- 2.64 – 5.06)	1.94	0.92

Table.(5): Multiple linear regression analysis of EBM practice domain

Variable	β coefficients	Standard errors	P-value
Gender Male (reference) Female	- 1.72 (- 4.29 – 0.83)	1.30	0.18
Specialty Medicine (reference) Surgery Pediatric OBJYN and Other specialties	0.70 (- 2.52 – 3.92) 2.06 (- 0.56 – 4.68) 0.27 (- 2.94 – 3.49)	1.62 1.32 1.62	0.67 0.12 0.86
Position Junior (reference) Senior	- 1.73 (- 4.10 – 0.62)	3.92	0.15

Discussion:

This study found that 64.3% of the participants had heard of EBM. While a comparable survey conducted in Sudan (2010) by Zeidan A. Z et al. found that only 15% of the sample had heard of it, [9] About 87% of the participants in a different survey conducted in Sri Lanka (2008) by Chrishantha Abeysena et al. had heard of it. [10]

Our study revealed no significant correlations between gender and knowledge scores, which was in line with findings from a different study by Mojgan Javedani Masroor et al. that was carried out in Iran (2024).[18] This study also demonstrated that Medicine doctors are more generally aware of the term EBM and have more knowledge than other

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specialties, however the overall level of EBM knowledge was relatively low. Among the participants, medicine doctors demonstrated the highest level of knowledge regarding (EBM), whereas pediatricians had the lowest scores, in contrast to a study done in Damascus, Syria (2022) by Muhammad Nour et al., where pediatricians achieved the highest score in practicing EBM. [8]

A cross-sectional study conducted in Egypt (2019) by Amira Abdel-Kareem et al. found that the most commonly used resources " used in decision making" were PubMed 61.3%, the Cochrane Database of Systematic Reviews 10.1%, and EBM from the BMJ Publishing Group 5.5% 19, whereas Mukhtiar Baig et al. conducted another study in Saudi Arabia (2016). revealed that while just 8.5% and 7.7% of participants used the Cochrane Database of Systematic Reviews and Best Evidence Review, respectively, over half of them (48.7% and 47.9%) were aware of it. The New England Journal of Medicine was the most "frequently" read journal 31.6%, followed by the British Medical Journal 12.0%, while the least accessed journals were the Lancet 3.4% and the Middle East Medical Journal 3.4%%.[20]

Nearly 69.3% of doctors were aware of "Up-to-date" and used it in clinical judgements, according to a different study done in Al-Kuwait (2021) by Iman Qadhi et al., while 27% of doctors were aware of "JAMA Evidence.".21 The mean scores of knowledge and practice in our study were 60.26% and 67.65%, respectively; this was slightly lower than Muhammad Nour et al. (2022), in which the mean scores were 59.2%, 74.3%, and 53.9%, respectively. [8]

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Our results indicated that there was no agreement between knowledge and practice, as medicine doctors have higher EBM knowledge than other specialties, however there were no differences in practicing EBM among different specialties.

The study shed a light on the important topic of EBM among Libyan doctors at teaching hospitals in Benghazi, providing deeper understanding of different aspects of EBM. Additionally, in order to improve the accuracy of our results, we also carried out a multivariate analysis and controlled for other factors.

The study has limitations, one it was conducted as a cross-sectional study, it restricts our ability to infer causal relationships or observe changes over time. Another limitation of our study is the convenience sample and the non-standardized data collection procedure. This may have introduced bias or inconsistency in the way the data was collected, potentially affecting the accuracy and reliability of our results. Furthermore, the relatively limited sample size in our study reduces the statistical power and the extent to which our findings can be generalized. It is possible that a bigger sample would have provided more reliable and representative results. Additionally, the small sample size may have restricted our ability to detect relevant effects that could be present in a larger population.

Conclusion:

The results of this study indicate that while the majority of participants hold a positive attitude toward evidence-based medicine (EBM), their understanding of the concept remains limited. An electronic library with a subscription to online databases should

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be set up to ensure excellent EBM practice and to make them easier for students and doctors to access. EBM training programs should be made available to doctors and included in the undergraduate and postgraduate curricula in order to ensure the effective application of EBM in everyday practice.

Conflict of Interest Statement:

The Authors declare that they have no conflicts of interest related to this study

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