

Research Article

Assessing Awareness, Attitude, Knowledge of Evidence-Based Medicine (EBM) Among the Ambulatory Care Physicians and Its Reflection on Their Prescriptions Pattern, 3 Centers at Al-Kharj Hospitals, Saudi Arabia

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***Corresponding author:** Taher Hashim Almaki, Department of Pharmaceutical Care, Umm Al-Qura University, Al-Kharj Armed Forces Hospital, Saudi Arabia**Received:** April 21, 2021; **Accepted:** May 20, 2021;**Published:** May 27, 2021**Abstract**

Background: Evidence-Based Medicine (EBM) can be defined as “the integration of best research evidence with clinical expertise and patients’ values”. It is the best evidence in making decisions about the care of individual patients. The growing awareness of the limitations of traditional information on clinical decisions led to a shift in medical practice from unsystematic observations from clinical experience, towards evidence-based medicine. The principles of evidence-based medicine have become core concepts of undergraduate, postgraduate, continuing medical education, courses, and workshops offered to health professionals. Irrational prescription being a global problem leading to ineffective or unsafe treatment and that sometimes resulting from the lack of using the EBM.

Objective: To assess awareness, attitude, knowledge of EBM among the ambulatory care physicians and its effect in their prescriptions pattern.

Methods: A cross-sectional questionnaire study was done to assess the knowledge, attitudes, and practices regarding evidence-based medicine among ambulatory care physicians in 3 hospitals in the Al-Kharj region. In addition, a random sample of ambulatory care prescriptions were collected, then the World Health Organization (WHO) prescription indicators were used to evaluate the physicians prescribing behavior. The prescriptions were collected from the pharmacy department after obtaining approval from the hospital director for each hospital.

Result: There was a positive attitude among the ambulatory physicians toward EBM (84%), but there were limit to the basic EBM knowledge (<50 %). Average number of medication encounter was out of the WHO standard value (>1.8%). The Barriers that faced the physicians were included Lack of time (47.7%) and no ready access to EBM (43.1%). The percentage of medications prescribe by generic name was varied between the hospitals, AKFAH (100%), AKMICH (90%) and PSABH (74.05%).

Conclusion: In general, there was a positive attitude among the ambulatory physicians toward EBM. The frequent barriers that face the physician to apply EBM included lack of time, no ready access to EBM, and lack of reliable evidence. The attitude and knowledge have a proportion relation to WHO prescribing indicators. It was observed the hospital implement an electronic system were more compliant with prescribing with the generic name.

Keywords: Evidence-based medicine; WHO; National list of essential medicines

Abbreviations

EBM: Evidence Based Medicine; WHO: World Health Organization; EDL: Essential Drug List; AKAFH: Al-Kharj Armed Forces Hospital; KMICH: Al-Kharj Military Industrials Corporation Hospital; PSABH: Prince Sultan Air Base Hospital

Introduction

Evidence-Based Medicine (EBM) can be defined as the

“combination of best research evidence with clinical expertise and patients’ values”. It is the best evidence in making decisions about the healthcare of individual patients [1]. It is also defined as “the process of systematically reviewing and using clinical research findings to assist the delivery of optimum clinical care to patients” [2]. Health care providers worldwide are being encouraged to apply EBM to improve patient care. The principles of EBM have become important concepts of undergraduate, postgraduate, continuing medical education,

courses, and workshops offered to health professionals. The term EBM has generally replaced the old term “clinical epidemiology” [3]. The clinical decisions based on traditional information were limited and led to a shift in medical practice to EBM [4,5]. Obtaining medical information from textbooks and consulting local experts were considered proper ways, but not all medical textbooks are based on evidence. It tends to be out of date compared to recent developments in scientific knowledge. To apply EBM in the practice, there are five steps which include “formulate answerable clinical questions, search for evidence, appraise the evidence, implement the valid applicable evidence, and evaluate” [5]. EBM deals directly with the uncertainties of clinical medicine and has the potential for transforming the education and practice of the next generation of physicians and pharmacists and other health care providers [4].

Drug utilization study as defined by the WHO, “is a structured process which is used to assess the quality of drug therapy by engaging in the evaluation of data on drug prescribing, dispensing, and patient use in a society with special emphasis on the resulting medical, social, and economic consequences.” Monitoring of prescription patterns is essential to determine the rationality of drug therapy [6]. The prescribing pattern shows the physician’s knowledge about the disease and use of pharmacotherapeutics [7]. The WHO has developed different indicators to evaluate the services offered to the population regarding medication which includes measuring the polypharmacy degree, percentage of prescribe drugs by generic name, measure the level of use of antibiotics and injections, and the percentage to which drugs are prescribed from the essential drug list of hospital formulary [8].

Aims and Objectives

The aim of conducting this study to assessing awareness, attitude, knowledge of Evidence-Based Medicine (EBM) among ambulatory care physicians and its effect on their prescriptions pattern. The research hypothesis to assess if there is any correlation of the awareness, attitude, and knowledge of EBM among the ambulatory care physicians to their prescriptions pattern.

Review of Literature

Many studies had been conducted to assess the knowledge, attitude, perception, and practice of EBM among different health care providers. All studies were using a questionnaire survey. Some studies targeted physicians [3,9-12], consultant physicians [13], or medical students [12]. Most studies found an overall positive attitude towards EBM and have found that there is a belief in its importance [2]. The physician’s barriers to implement EBM were different from one doctor to another [3]. The most important barrier appears to be a lack of knowledge and familiarity with basic skills in practicing EBM [4]. Improving the ability to access information from medical literature, journal, guidelines and applying it to patient care requires skills that need to be taught. A study conducted by Abdussalam Ali Alshehri, Mohammad Saleh in Qassim Region, Saudi Arabia to assess the hospital physicians attitude, knowledge, and practice toward EBM. The study showed that most physicians have a positive attitude toward EBM, but it was not correlated with knowledge and awareness [2].

The study also had shown that physicians in the Qassim region

have a poor overall understanding of EBM resources and technical terms.

A study conducted by Al-Ansary and Khoja was titled “The place of evidence-based medicine among primary health care physicians in Riyadh region, Saudi Arabia”. The study showed positive attitudes among primary health-care physicians however, there was a lack of knowledge and use of EBM [1].

A study was done in the western region, Saudi Arabi by Al-Omary and Al-Asmary to assess the attitude, awareness, and practice of evidence-based medicine among consultant physicians. The study was showed the consultant physicians appear strong positive attitudes to EBM but they need more knowledge and training in EBM to be used in daily practice [13].

A study by Abeer Irshad, Musarat Ramzan, and Mobeen Iqbal was conducted in Pakistan to assess the knowledge about evidence-based medicine in medical students and doctors in a Pakistani health care setting. They note that the practice of evidence-based medicine is still in its early stage and this reflects a lack of awareness about the importance of EBM [12].

The observational study was conducted in Yemen to assess the physician’s attitude, awareness, and knowledge of EBM. The study showed a good positive attitude but, it was not reflected in the doctor’s awareness and knowledge. Physicians need probably training to use EBM in practice. The barriers that note to limit practicing the EMB include lack of internet access and lack of personal time [9].

A cross-section study was conducted in the kingdom of Bahrain to assess the awareness and attitude to practice and perceived barriers to use the EBM among physicians. The study was shown the practice of EBM was limited. The barriers that face the physicians and effect using the EBM were include lack of time, availability access to reliable resources [4].

A cross-section study was conducted in Eastern Saudi Arabia to assess physicians’ attitudes toward EBM. The study has shown a positive attitude among physicians towards EBM and also, notes that there was a proportion relation between EBM knowledge and physicians attitude. A good understanding of EBM was increasing awareness of its importance [10].

A cross-section study was carried in Doha, Qatar to assess the attitude and practice of primary health care physicians toward EBM. The result of this study was showed appositve attitude and notes the EBM needs improvement among the physicians working in primary care [3].

Regarding the evaluation of the prescription pattern, all the studies that had been conducted to assess the prescription pattern used the World Health Organization (WHO) to analyze the prescriptions [6,7,14-21]. The WHO Prescribing indicators included 1. The average number of medications per encounter 2. Percentage of medications prescribed by generic name 3. Percentage of encounters prescriptions with antibiotics 4. Percentage of encounters prescriptions with injections medications 5. Percentage of medications prescribed from an Essential Medicine List (EML) or the hospital formulary. Different studies were conducted with different target populations such as outpatient and ambulatory care clinics, emergency departments,

inpatient prescriptions, or community pharmacies.

A systemic review and meta-analysis study were done in Ethiopia to assess prescribing pattern of medications prescribed to outpatients based on WHO prescribing indicators. It showed that the average number of medications per prescription and percentage of medications encounter with injection match WHO indicators standard value whereas the percentage of medications encounter with antibiotics, medications prescribed by their generic name, and medications prescribed from Essential Drug List (EDL) in Ethiopia are below WHO standard level [20].

A retrospective cohort study was conducted in the Eastern region, Saudi Arabia to measure WHO prescribing indicators pattern at primary health centers. The study showed that the average number of encounters medication prescribe and percentage of prescriptions with injectable medications were within an optimal value. The percentage of prescribing by generic name and antibiotic were high compared to WHO standard value [24].

A cross-sectional study was conducted in 2017 by Akshitha S Ragam, to assess drug use patterns using WHO prescribing indicators in a tertiary care hospital in Mangalore where it was showed moderate compliance with the WHO core prescribing indicators. Prescriptions with polypharmacy being frequent, low compliance of prescribing by generic Name, and reduced prescription of drugs from National List of Essential Medicines (NLEM) 2015, the prescription of antibiotics and injections were within the normal limits [14].

A study was done on Tikar Anbessa, to evaluate drug prescription patterns using the world health organization prescribing indicators. The study finds the prescribing the drugs from the essential medicines list and using the generic name were accepted. The prescriptions with polypharmacy were higher than the WHO stander value. The antibiotics and injectable medication prescriptions were low compared to the ideal or standard [17].

A study conducted on Mekelle general hospital in Ethiopia, to assess the drug prescription pattern using the WHO prescribing indicators. The study was shown the average number of drug prescribe per encounter, using the generic name, and use the essential medication list of the hospital to prescribe the medication were out of the WHO standards. Also, it was notes a large number of prescriptions with antibiotics and injectable medication [23].

A Retrospective cross-section study was conducted to evaluate trends of drug prescribing patterns using the WHO prescribing indicators at the outpatient department in Southern Ethiopia. It was finding all hospitals need improvement in the WHO prescribing indicators. It was observed high antibiotics prescribed, overuse of injectable medication, prescriptions with polypharmacy, and using the generic name [19].

A cross-section study was conducted in Iran to evaluate medication prescriptions pattern using WHO prescribing indicators. The study was showed the prescription pattern needs improvement, the percentage of antibiotic prescription was 45% and 41% was for injectable prescriptions which are much higher than WHO standard value [18].

Method and Materials

Study design

A cross-sectional questionnaire-based survey has been adopted for this study to assess awareness, attitude and knowledge of Evidence-Based Medicine (EBM) among ambulatory care physicians. The study was conducted between 1 January 2021 and 28 February 2021 on three of Ministry of Defense Hospitals in Al-Kharj region, Al-Kharj Armed Forces Hospital (AKAFH), Al-Kharj Military Industrials Corporation Hospital (AKMICH), and Prince Sultan Air Base Hospital (PSABH)".

Data collection

This study was carried out in outpatient and ambulatory care clinics. Data were collected through a questionnaire and distributed as hard and soft copies. The survey is a modified questionnaire from Al-Ansary and Khoja studies and including some questions that related directly to clinical practice [1,10]. The questionnaire was created by google survey forms, divided into 4 sections. The first section includes the demographic data such as age, gender, nationality, years of experience, and specialty. The second section assesses the attitude of ambulatory care physicians to EBM, whether it is useful in their daily management, improves patient care, or represents overload on their limited time. The third section is related to assess the physician's knowledge and practice of EBM. Knowledge questions include the basic information about the EBM and most common terminology and some questions to assess the physicians' knowledge related to the clinical practice. The last section is to identify the challenges that faced the physicians to implement and practice EBM. The collected data were analyzed by Statistical Package for the Social Sciences (SPSS, Windows version 25).

The ambulatory and outpatient physicians prescriptions sample were collected from the pharmacy department and were analyzed based on the World Health Organization (WHO) indicators. The following indicators were considered for evaluation of the prescription patterns for physicians: (1) Average medicine items per prescription, calculated by dividing the total number of medications item prescribed by the total number of encounters prescriptions. (2) Percentage of medications prescribed by generic name, calculated by dividing the number of medications prescribed by generic name by the total number of medications prescribed, multiplied by 100. (3) Percentage of prescriptions with an antibiotic, calculated by dividing the number of prescription encounters antibiotic by the total number of encounters prescriptions, multiplied by 100. (4) Percentage of prescriptions with an injection medication calculated by dividing the number of prescriptions encounters injection medications by the total number of prescriptions encounters multiplied by 100. (5) Percentage of medicines prescribed which are from the essential medicines list or formulary list, calculated by dividing the number of drugs that from the hospital formulary by the total number of drugs prescribed, multiplied by 100. Data were presented by Excel Data Sheet 2016 to compare the participating hospitals.

Sampling and sample size

The sampling method was systematic random sampling for 50 prescriptions for each hospital.

The questionnaire was distributed between the ambulatory and

outpatient clinics.

Inclusion criteria

All ambulatory clinic and outpatient physicians were included. The prescriptions of the ambulatory outpatient clinic only were collected for this study.

Exclusion criteria

Inpatient and emergency department physicians, inpatient and emergency pharmacy prescriptions

Ethical approval

The ethical approval for this study was obtained from the research and ethics committee of AlKharj Military Industrials Corporation Hospital.

Result

A total of 44 respondents were collected from the Ambulatory and outpatient clinic physicians at 3 of the Minister of Defense Hospitals at Al-Kharj. The most participants were males (63.6%) and 45.5 % were within 31- 40 years old. Family medicine specialist was 61.4 % of physicians participation. Most of the respondents have been working for >15 years (36.4%) where (18.2%) have been working <5 years and (45.5%) between 6-15 years. Most of the participants in this study were Non-Saudi (90.9%). The characteristics of respondents are presented in Table 1.

Regarding the attitude towards EBM, this study showed there was a positive attitude towards EBM among the Ambulatory and

Table 1: Participated physicians characteristics.

Parameter	Frequency (n=44)	%
Gender:		
Female	16	36.4
Male	28	63.6
Age:		
20-30 Years	3	6.8
31-40 Years	20	45.5
41-50 Years	8	18.2
51-60 Years	13	29.5
Nationality:		
Non Saudi	40	90.9
Saudi	4	9.1
Experience:		
1-5 Years	8	18.2
6-10 Years	6	13.6
11-15 Years	14	31.8
>15 Years	16	36.4
Specialty:		
Family Medicine	27	61.4
Gynaecology	5	11.4
Pediatric	4	9
Internal Medicine	2	4.5
Others	6	13.8

Table 2: Attitude Towards EBM.

Parameter	Frequency (n=44)	%
What is your attitude towards EBM?		
Positive	37	84.1
Neutral	7	15.9
Negative	0	0
Do you think practicing EBM improves patient care?		
Agree	37	84.1
Neutral	7	15.9
Do not Agree	0	0
Do you think the EBM represents overload on your limited time?		
Yes	5	11.4
No	24	54.5
Maybe	15	34.1
Total	44	100

outpatient doctors.

The positive attitude to EBM was (84%) while (15%) was a neutral attitude to EBM. Most of the respondents were agree that practicing EBM can improve patient care (84.1%) and (15.9%) were neutral as presented in Table 2.

Physician knowledge was depended on continuous medical education (43%), attending courses related to EBM (45.5%) while (9.1%) of physicians have not learned EBM. The questions related to general information regarding EBM shows that (27%) of the participant correctly answer the type of study design, (31%) knows the level of evidence and (38.6%) knew the recommendation classes. The questions related to clinical information regarding EBM shows that (34.1%) of the participant knows what clinical significance means, (65.9%) knows pregnancy category classification, (61.4%) can differentiate drug-drug interaction classes and (52.3%) familiar with drug-drug interaction level of documentation, as presented in Table 3.

Regarding the EBM practice (61.4%) of participant did not have access to EBM in their work institution, (59.1%) of the participant prefer UP TO DATE as a source of EBM, and (56.8%) sometimes change their practice based on EBM as shown in Table 4. Lack of time (47.7 %) and no ready access to EBM (43.1%) were the most common challenges that can limit the physicians to implement the EBM in daily practice. The challenges to the implementation of EBM among the physicians are presented on Figure 1.

In terms of attitude and knowledge to EBM among the 3 participated hospitals, descriptive statistic and ANOVA Test were done. The result showed no statistically significant difference between the 3 hospitals. However, AKFAH shows a more welcoming attitude to EBM (93.3%), more reliability on EBM to improve patient care (93.3%) where PSABH shows that EBM represents work overload (75.0%). AKMICH shows more awareness regarding the type of study design (42.8%) where AKAFH shows more knowledge about the level of evidence (40%) and recommendation classes (53.3%). Regarding the clinical questions, PSABH showed more awareness regarding clinical significance meaning (50%), drug-drug interaction categories

Table 3: Knowledge of EBM.

Parameter	Frequency (%)	N	Mean	Std. Deviation
What was the main source from which you learnt to practice EBM?		44	1.16	0.37
Undergraduate education	9.1			
Postgraduate school	18.2			
Continuous medical education	43.2			
Self-learning	20.5			
None, I haven't learnt EBM	9.1			
Have you attended courses related to evidence based medicine as Continuous education?		44	1.55	0.504
Yes	45.5			
No	54.5			
In the hierarchy of evidence in medicine, what is the study design that gives the strongest level of evidence?		44	2.52	1.131
Case control studies	18.2			
Randomized controlled studies	36.4			
Systematic Reviews and metaanalysis	27.3			
Cohorts studies	11.4			
Expert opinions	6.8			
Anticoagulation (vitamin K antagonist [VKA] or heparin) is indicated in patients with Mitral stenosis and AF (paroxysmal, persistent, or permanent) with level B evidence. What does level B mean?		44	2.82	1.674
correct answer given	31.8			
wrong answer given	68.2			
Measurement of natriuretic peptides is not recommended for CHD risk assessment in asymptomatic adults with class III recommendation. What does class III mean?		44	3.82	1.299
correct answer given	38.6			
wrong answer given	25			
Unknown	36.4			
Regarding Clinical significance		44	2.73	1.107
First time to hear/read this term	11.4			
All statistical significant results are clinically significant	34.1			
Statistically significant results can be clinically significant or not	34.1			
Clinically significant difference between arms of a trial can be nonstatistically significant	11.4			
Clinical significance and statistical significance are interchangeable	9.1			
Perindopril is antihypertensive medication with category x classification in pregnancy, What does category x mean?		43	3.44	0.959
correct answer given	65.9			
wrong answer given	31.8			
No answer	2.3			
Captopril and valsartan have excellent documentation drug-drug interaction, what does it means?		43	2.3	1.081
correct answer given	52.3			
wrong answer given	20.5			
Unknown.	25			
No answer	2.3			
Metronidazole and mebendazole have major drugdrug interaction, what does it mean?		43	2.81	0.794
correct answer given	61.4			
wrong answer given	22.7			
Unknown	13.6			
No answer	2.3			

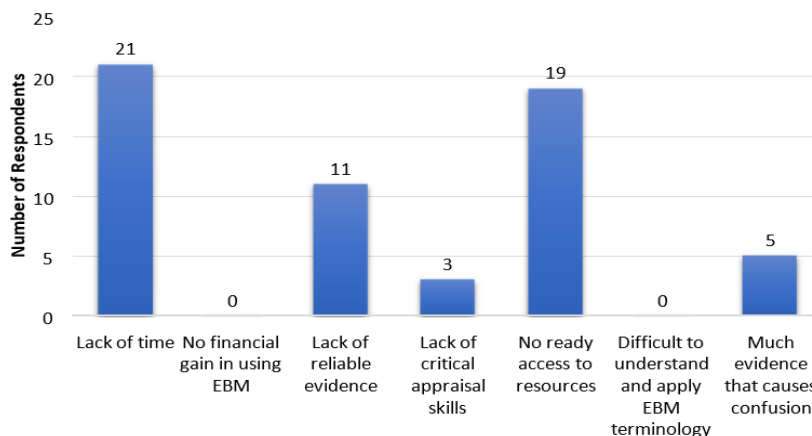


Figure 1: Challenges to implementation of EBM.

Table 4: Practice of EBM.

Parameter	Frequency (%)	N	Mean	Std. Deviation
Do you have access to specialized EBM resources in your institution?		44	1.93	0.625
Yes	22.7			
No	61.4			
I did not try	15.9			
What is your preferred decision support tool at point of care?		44	2.39	1.755
Uptodate	59.1			
Dynamed	0			
BMJ best practice	6.8			
Micromedex	11.4			
Medscape	22.7			
How much you change your practice based on EBM?		44	1.84	0.645
Always	29.5			
Sometimes	56.8			
I don't change my practice based on EBM	13.6			

(75%), and their level of documentation as shown in Table 5, Figure 2.

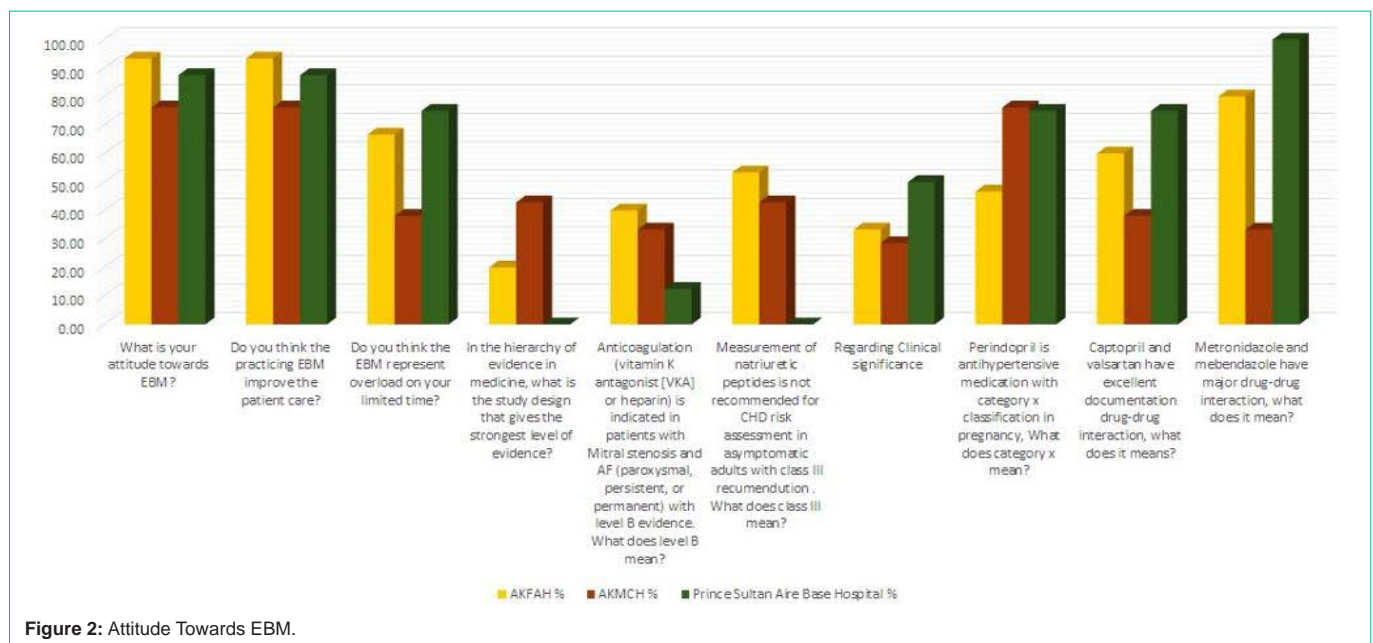
A total of 155 prescriptions for all participated hospitals were analyzed by World Health Organization (WHO) indicators. It is presented in Table 6, Figure 3. Descriptive statistic and One Sample T Test were done. The average number of drugs per encounter for AKFAH, AKMCH, and PSABH were 3.42%, 3.32%, and 2.62% respectively with statistically significant between the hospitals (P. 0.006). Prescription encounter with antibiotic was 14%, 5%, and 20% respectively. The percentage of encounters prescription with an injection medication was 4 %, 22%, and 6% respectively. Medication prescribed by generic name was 100% with AKFAH where 90 % with AKMCH and 74 % with Prince Sultan Air Base with statistically significant difference between the hospitals (P. 0.007). The percentage of drugs prescribed from the essential drug list or formulary was 100%.

In general, there is a positive attitude toward EBM since both patient care and the decision-making process would be improved. Several studies have shown also a positive attitude toward EBM among health care providers and it might be related to availability

and accessibility to different sources of information [1-3,9,22]. The knowledge related to basic information regarding EBM was limited may be due to insufficient awareness of EBM terminology or depended on tertiary resources, similar to study conducted in Riyadh that showed a limitation in basic information [1]. A study was done in the western region, Saudi Arabi to assess the attitude, awareness, and practice of evidence-based medicine among consultant physicians. This study showed also positive attitudes to EBM but need more knowledge and training to apply EBM in practice [13]. A cross-section study was conducted in Eastern Saudi Arabia to assess physicians' attitudes toward EBM. This study was showed same result a positive attitude among physicians towards EBM and also, notes there was a proportion relation between EBM knowledge and physicians' attitude. A good understanding of EBM was increasing awareness of its importance [10]. Some barriers notes can face the health care providers to apply the EBM in practice include Lack of time, no ready access to EBM and lack of reliable evidence, so by providing different EBM resources and internet access to EBM database can overcome those barriers. An observational study was conducted in Yemen was find same barriers that limit practicing the EMB which include lack

Table 5: Comparison Attitude and Knowledge to EBM among the 3 Hospitals.

Parameter	AKFAH (n=15, %)	AKMCH (n=21, %)	PSABH (n=8, %)	N	Mean	Std. Deviation	P value
What is your attitude towards EBM?	14 (93.33)	16 (76.19)	7 (87.50)	44	1.16	0.37	0.384
Do you think the practicing EBM improve the patient care?	14 (93.33)	16 (76.19)	7 (87.50)	44	1.16	0.37	0.384
Do you think the EBM represent overload on your limited time?	10 (66.67)	8 (38.10)	6 (75.00)	44	2.23	0.642	0.459
In the hierarchy of evidence in medicine, what is the study design that gives the strongest level of evidence?	3 (20.00)	9 (42.86)	0 (0.00)	44	2.52	1.13	0.267
What does evidence level B mean?	6 (40.00)	7 (33.33)	1 (12.50)	44	2.82	1.67	0.441
What does recommendation class III mean?	8 (53.33)	9 (42.86)	0 (0.00)	44	3.82	1.29	0.593
Regarding Clinical significance	5 (33.33)	6 (28.57)	4 (50.00)	44	2.73	1.1	0.758
What does pregnancy category x mean?	7 (46.67)	16 (76.19)	6 (75.00)	43	3.44	0.95	0.505
Excellent documentation drug-drug interaction, what does it means?	9 (60.00)	8 (38.10)	6 (75.00)	43	2.3	1.08	0.08
Major drug-drug interaction, what does it mean?	12 (80.00)	7 (33.33)	8(100.00)	43	2.81	0.79	0.77



of internet access and lack of personal time [9]. Also, a cross-section study was conducted in the kingdom of Bahrain shown the practice of EBM was limited due to barriers that face the physicians which include lack of time, availability access to reliable resources [4].

Regarding WHO indicators, the average number of drugs per-encounter was above the standard for all the hospitals and it may be related to prescribing medications not related to the patient diagnosis, repeat prescribing a medication without regard to the patient prognosis, and prescribing a medication based on the patient request. A cross-sectional study was conducted to assess drug use patterns using WHO prescribing indicators in a tertiary care hospital in Mangalore showed similar finding low compliance with the WHO core prescribing indicators. This study finds the prescriptions with polypharmacy were match higher than the WHO standard value [14]. Also, a retrospective cross-section study was conducted to evaluate trends of drug prescribing patterns using the WHO prescribing indicators in the outpatient department in Southern Ethiopia, it showed that hospital needs improvement in the WHO prescribing indicators, high prescriptions with polypharmacy [19].

The percentage of drugs prescribed by the generic name was varied among the hospitals and it may be due to the implementation of the electronic system which facilitates the selection of the generic name for the prescriber and it was statistically significant between the hospitals. It was noticed that the more implementation of an electronic system, the better achievement of the WHO indicator. A study conducted in Mekelle general hospital in Ethiopia, to assess the drug prescription pattern using the WHO, showed the percentage of prescriptions using the generic name was higher than WHO standard [23]. A retrospective cohort study was conducted in the Eastern region, Saudi Arabia to measure WHO drug prescribing indication at primary health centers. The study showed that the percentage of prescribing by generic name and antibiotic were high compare to standard value [24]. The percentage of encounters prescriptions with an antibiotic was 20 % for PSABH which met the WHO standard where AKFAH and AKMICK were below the standard value. Prescriptions with injectable medication were low compared to WHO standard. A study conducted on Mekelle general hospital in Ethiopia, to assess the drug prescription pattern using the WHO was shown

Table 6: WHO prescribing indicators.

WHO prescribing indicators	AKFAH (n=162, %)	AKMICH (n=183, %)	Prince Sultan Air Base Hospital (n=131, %)	Stander values (%)	Average	Std. Deviation	P value
1. Average number of drugs per encounter	162 (3.42)	183 (3.32)	131 (2.62)	1.6 - 1.8	3.12	0.43	0.006
2. Percentage of encounters with an antibiotic prescribed	7 (14)	3 (5)	10 (20)	20.0 - 26.8	13	7.54	0.096
3. Percentage of encounters with an injection prescribed	2 (4)	12 (22)	3 (6)	13.4 - 24.1	10.66	9.86	0.202
4. Percentage of drugs prescribed by generic name	162 (100)	165 (90)	97 (74.056)	100	88.01	13.08	0.007
5. Percentage of drugs prescribed from the essential drug list or formulary	162 (100)	183 (100)	131 (100)	100	100	0	0

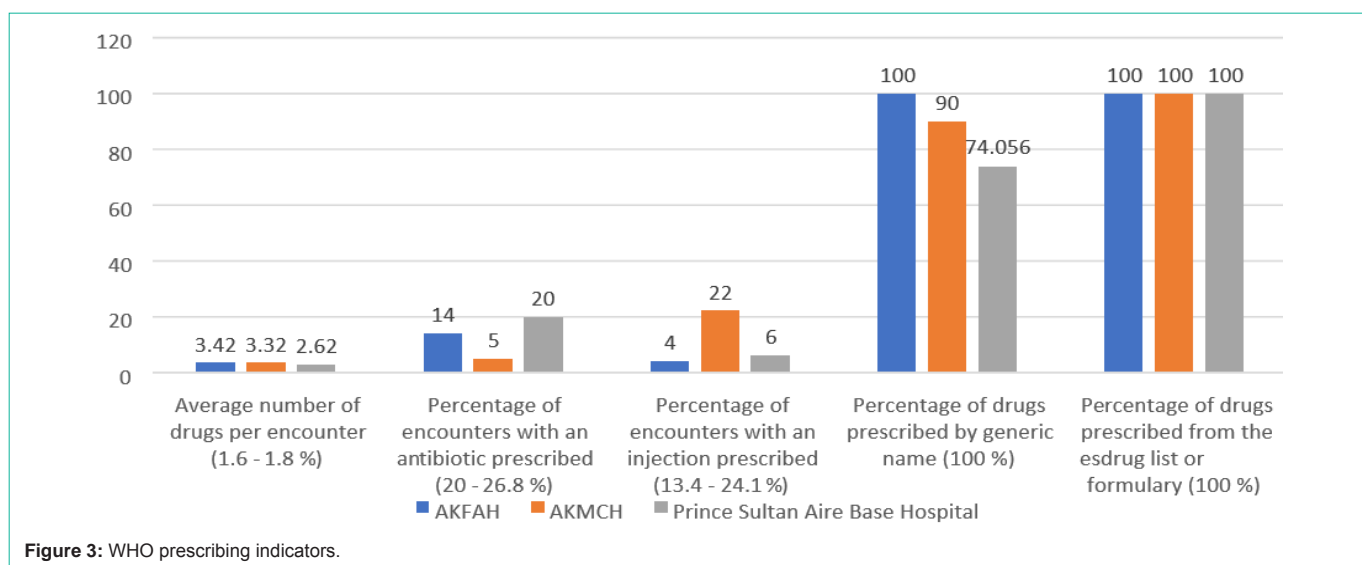


Figure 3: WHO prescribing indicators.

same result, prescriptions with antibiotics and injectable medications were low compared to the ideal or standard [23]. Also, there is a cross-sectional study was conducted in a tertiary care hospital in Mangalore showed the prescription of antibiotics and injections were within the normal limits [14]. A cross sectional study in Asmara, Eritrea and a study conducted in Nepal were showed that the percentage of drug prescribed from the EDL or Formulary was below the WHO Standard [21,16]. In this study all hospitals were applied to the laws and regulations in terms of prescribing medication according to the formulary which met the WHO standard.

Conclusion

In general, there was a positive attitude among the ambulatory physicians toward EBM, but the knowledge related to basic information was limited due to insufficient awareness of EBM terminology. The health care institution has an important role to improve the knowledge of EBM among the health care provider by establishing a continuous program. The frequent barriers that face the physician to applied EBM included lack of time, no ready access to EBM, and lack of reliable evidence. By providing different EBM resources and internet access to the EBM database, these barriers can be overcome. Through this study, it was observed the attitude and knowledge have a proportion relation to WHO prescribing indicators. The average number of drugs per encounter was above the standard for all the hospitals. It was observed the hospital that implements an electronic system had the better achievement of the

WHO indicator. The electronic system is recommended because it facilitates the selection of the generic name for the prescriber, matching the medications prescribed with a patient diagnosis which limits the polypharmacy prescriptions and allows the physicians to prescribe the medication only from the hospital formulary. This study recommends to encourage the physicians to focus on patient prognosis before repeat prescribing the patient medications.

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