

**Research Article**

**Studying the Amount of Information of Medical Students, General Practitioner and Specialists about Evidence-Based Medicine and the Most Practical Concepts in Statistics and Epidemiology in Khuzestan, Ahvaz In 2016**

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**ABSTRACT**

Evidence-based clinical strategies can lead to changes in clinical decision, recovery from disease and promotion of patients' health. The present research aims to study the amount of information of students, general practitioners and specialists about evidence-based medicine and the most practical concepts in statistics and epidemiology in Khuzestan province. The information was gathered from 70 general practitioners, 30 medical students and 23 specialists based on the researcher-conducted questionnaire. Data was analyzed by STATA 14. 63% of doctors under study were men and over half of them (62%) was graduated from medical science university of Ahvaz. most of participants (93%) were aware from the main goal of evidence-based medicine (EBM). the sources mostly used in this study for solving problems were books (61%) and domestic and foreign journals (5%). 45% of doctors have passed EBM programs and the scientific sources mostly used by doctors were PubMed and Up to date. mean score of familiarity with the most practical concepts of statistics and epidemiology was  $34.1 \pm 4.2$ . the questions that had the most difficult and the easiest answers for participants were the effect of new medication on hypertension and comparing incidence of disease in men and women respectively. The score of women ( $3.1 \pm 6.2$ ) was significantly higher than that of men ( $2.1 \pm 3.2$ ) and doctors with higher work experiences had lower awareness scores.

**Keywords:** awareness, evidence-based medicine, doctors and scientific references

**INTRODUCTION**

Evidence-based medicine means to use accurately and thoughtfully the best evidences available for each patient (Saket et al, 1996) and in recent two decades it has been approved as a dominant approach in clinical medicine and among medical communities (Esterous et al, 2005). This approach was created due to informational gap between medical researches and clinical practices. Another reason is that doctors' decisions are based on

information acquired from textbooks in their academic periods (that are old) and experiences learned from their clinical trainings. Therefore, the gap of results obtained from researches, preference and selections of patients is felt (Davidoff et al, 2000). Today, concerning that doctors are very busy; EBM is one of the methods for having up to dated medical information. Doctors will combine the best evidences with

clinical experiences and patients preferences based on EBM and instead of reviewing many journals and finding interesting materials, they direct their studies towards issues related to special problems of patients. EBM converts reading and evaluation of scientific texts into a realistic process in order that patient can use them and simultaneously it increases basic and medical information. Without EBM, doctors will decide on patients based on old information resulting in biased behaviors with patients and their confusion (Finkle et al, 2005). EBM tries to improve quality of decision making by creating and reinforcing ability of making question, skills of searching information, selecting the best convenient evidences and documents and evaluating and using them critically and applying results of analysis and criticism of documents and evidences and it wants to reduce the effect of errors and mistakes resulted from mental judgement, old information and non-critical inference from medical science by increasing quality of clinical decisions based on valid, up to dated scientific evidences. EBM is also a strong educational tool that provides the ground for permanent learning of students and learners in order to adjust the gap between theory and practice in medical science and to reach the best quality (Bordeli et al, 1997). Experts believe that good doctors use either their clinical experiences or the most appropriate documents and evidences for their scientific support and validation of their experiences but none of them suffices the complexity of medical decisions on patients because research evidences without applying sufficient clinical experiences will increase outcomes resulted from diagnoses and treatments. on the other hand, focusing on obtaining experiences and lack of using the best and newest evidences result in application of methods in diagnose and treatment that have been scientifically obsolete or they have negative outcomes on patients (Karimian et al, 2015). EBM is some aspects of healthcare about personal factors such as judgment on the quality and value

of life and only some part of it depends on scientific methods. In clinical governance, evidence-based performance has been focused on for promotion of health standards. Medical specialists require on time and convenient information for clinical cares. Today, concerning the high amount of information available in different medical disciplines, much time should be spent on information analysis (Green Holg, 1997). Evidence-based medicine is the main source of new knowledge for doctors. According to EBM, the diagnosis and treatment of patients are based on information that has been obtained based on clinical researches conducted in past. Retrospective studies on EBM have stated severe defects about this issue (Green Holg, 1998). Studies conducted on EBM showed that information has not been analyzed and interpreted well. The most important limitations about EBM were the size of statistical population and sample. Regarding these researches, results showed that statistical methods and the most practical concepts in epidemiology have not been used well. Results of retrospective researches indicated that doctors have made mistake in selection of statistical methods for treatment of diseases and application of the most practical concepts in epidemiology. EBM has been used differently in countries throughout the world and in some developing and developed countries, EBM has been considered well in curriculum of students (Mc Arthur and Jackson, 1984). Concerning abovementioned and since general doctors and clinical residents are the first persons who are in contact with patients in health-treatment service facilities and they play an important role in application of EBM in daily activities, decision making and transfer of medical information, the present study aims to investigate amount of information of students, general practitioners and specialists about EBM and some of the most practical concepts in statistic and epidemiology in order to determine strengths and weaknesses of them in this area and to meet their informational requirements and develop evidence-

based performance. By applying results of the present study and similar studies, it is hoped that the final goal in medical education is reached that is changing behaviors and improving performance of doctors for promoting health of society.

### Research methodology

#### Participants in the study

The main aim is to study the amount of information of students, general practitioners and specialists about EBM and some of the most practical concepts in statistic and epidemiology in Khuzestan Ahvaz. In this cross sectional-descriptive study, general practitioners, specialists and senior medical students have been studied. The participants were chosen among doctors who are working in governmental hospitals of Ahvaz based on convenient sampling. Medical students (who were in the fifth year or higher and who were passing training period), general practitioners and specialists (who were working in hospitals) were asked to fill questionnaires.

**Information collection tool:** the questionnaire includes three parts: demographic information,

**Table 1:** questionnaire of the most practical concepts in statistic and epidemiology

question	answer
What is the best study that can be used for answering the questions related to effectiveness of an intervention?	A- control case study B- cohort study C- report of a specialized committee D- random clinical trial study
Which of the following sources can be an instance of a secondary source of scientific evidences?	A- journal article B- Cochran database C- none of them
Which of the following studies is best fitted for studying the effect of new medication on hypertension?	A- retrospective cohort B- prospective control case C- controlled with placebo D- sectional study
You are studying the risk factors for a rare disease, which of the following studies do you choose for reaching better results?	A- prospective cohort B- control case C- clinical trial D- sectional study
Which of the following tests should be used for comparing disease incidence in men and women?	A- t test B- X2 test C- correlation D- ANOVA
A researcher can find an effect and result with P-value = 0.07 and confidence level= 95% for a relative risk and it can be .....	A- 1.4-1.8 B- 0.3-0.9 C- 0.9-1.3 D- 1.2-2.5

#### Statistical analysis

After reviewing questionnaires and being sure about their completion, data were coded and entered STATA version 14. At first, descriptive specifications of participants were presented relative to type of data (frequency, percent, mean, standard deviation). Then, the score of familiarity of doctors with some of the

awareness and 6 questions about statistic and epidemiology and the questionnaire was used after confirmation of validity and reliability. The questionnaire validity was studied via face validity. Therefore, the questionnaire was given to three faculty members and the final version was prepared after corrections. The questionnaire used in this study had two parts of descriptive and inferential statistics. Demographic specifications were obtained in descriptive part and 6 questions were asked about the most practical concepts in statistic and epidemiology in inferential part. In present study, after getting permission and ethical code No. 199 from Jondishapour medical science of Ahvaz dated on 18.Jun.2016 and coordination with head of hospitals, a list of doctors working in these facilities and the time of the presence were determined. Then after making them sure about information confidentiality, the aims were explained and the questionnaires were distributed among them in different shifts. 123 questionnaires were completed in presence of them.

most practical concepts in statistic and epidemiology was studied by a linear regression model. The confidence level was considered as 0.05.

## RESULTS

77male doctors and 46 female doctors participated in present study. 62.4% of them completed their studies in Ahvaz, 14.5% in Tehran and 23.1% in other cities. The mean medical profession of doctors was 8.07 years, the time duration for studying medical issues was 3.2 hours and the years passed from their graduation were 8.34 and the mean age was 34 years old.

Table 2: specifications of participants of the study

variable		mean	standard deviation
gender	men	77	-
	women	76	-
age		34	9.71
medical profession of doctors		8.07	6.7
time duration of study about medicine		3.2	2.75
years passed from their graduation		8.34	6.45

Results showed that 93% of doctors were familiar with the main goal of EBM and concerning the sources, 14.7% of them referred to clinical pamphlets and professors. 36% of doctors used internet, 61% of them used printed books and references and 4.9% of them used domestic and foreign papers. 45.4% of participants have passed EBM program. The most important informational sources used by doctors were PubMed, up to date and Cochrane. 48% of them used PubMed, 22% used Up to date and 4.9% used Cochrane.

Table 3: familiarity with informational sources

familiarity with informational sources	frequency percent
PubMed	48
Up to date	22
Cochrane	4.9

Concerning familiarity with the most practical concepts in statistic and epidemiology and components effective on them, results showed that the highest correct answer of doctors associated with medicinal effectiveness (52%) and the lowest correct answer associated with choosing appropriate statistical method for incidence of disease based on gender (11.4%).

Graph 1: frequency percent of correct answers of doctors to familiarity with the most practical concepts in statistic and epidemiology

After controlling other important factors, it was observed that the there was a reversely significant relationship between the score of participants' awareness and age but such relationship was not affected by gender and participation in EBM program. Concerning passing EBM programs,

results indicated that most doctors have passed EBM program and those with lower ages passed more programs than other doctors.

## DISCUSSION

Reviewing theoretical basics and researches in the past especially experience of foreign universities shows that in recent years, EBM is increasingly enhancing in medical faculties and various efforts have been done in different countries. Results of the research showed that 62.6% of general practitioners were men and 37.4% of them were women. Concerning sources used for getting information about medical issues, results indicated that 61% of doctors used printed reference books and 4.9% of them used domestic and foreign papers. The research results are in agreement with

results of Rangraz Jadi et al (2014) who studied the status of EBM and 13.4% of doctors used scientific articles and they were not in agreement with results of Amini et al (2007) who studied EBM and showed that 8.3% of participants were not familiar with EBM. In order to explain the research results, it can be said that doctors who are working in hospitals and treatment facilities of Ahvaz use rarely scientific sources for increasing their scientific information and authorities of JondiShapour medical university should plan to promote scientific information of doctors such as establishing scientific centers in hospitals, holding workshops for familiarity with scientific references. Of the most important reasons for using a few scientific sources is work pressure of general practitioners in governmental hospitals. Therefore, for solving such problem, some measures should be taken to fit the number of visits with the ability of general practitioners. Concerning that for promotion of technical knowledge of doctors and studying the amount of information and performance of doctors about EBM, they have to be sufficiently familiar with scientific policies and references, it is necessary that some workshops are held once every few years for novice general practitioners. concerning familiarity with the most practical concepts in statistic and epidemiology and components effective on them, results indicated that the highest mean information of doctors associated with the effect of a new medication on hypertension (52% answered correctly) and the lowest mean information associated with statistical test for studying the comparison of disease incidence between men and women (11.4% answered correctly). Results indicated that doctors were more familiar to the most practical concepts in epidemiology than statistical methods. Therefore, it is necessary that they are being trained by statisticians. The results are in agreement with those of Sadeghi et al (2011) who studied amount of awareness; attitude and application of EBM via clinical residents in Kerman medical

science university and results showed that less than 20% of them were familiar with statistical tests in scientific papers. But the results of the present research are not in agreement with those of Rouhani et al (2012) who showed that 54% of doctors used statistical methods for treatment of patients. Also the results were in agreement with those of Alansari et al (2002) who found that 20% of doctors were skillful in EBM. Concerning the amount of information and application of EBM via doctors, most students and doctors have passed EBM programs and younger individuals have passed more EBM programs than older ones. results are in agreement with those of Al Baghili et al (2002) who indicated that 46% of doctors (older than 50 years old) were less skillful on EBM than 72% of doctors who were younger than 35 years old but they are not in agreement with those of Sadeghi et al (2012) who found that doctors older than 40 years were more skillful than younger ones. Amount of information and performance of doctors was low in this study and they had low familiarity with EBM, evaluation of dominance and application of EBM and evaluation of dominance on some of the most practical concepts and principles in epidemiology. The results were in agreement with those of Novak et al (2006) who found low amount of information, attitude and performance of doctors related to EBM and they were not in agreement with those of Javani et al (2008) who showed that 64% of doctors had a positive attitude towards EBM. Concerning EBM performance, doctors had low skill on using searching methods, low familiarity with search engines and understanding of review papers and their performance was weak in this area. Lack of investment and lack of material and spiritual incentives and requiring learning new skills were the most important obstacles for using EBM. Results of the present research suggest that a short EBM program should be held to promote statistical knowledge of doctors. Also, if possible, an EBM course is formulated in curriculum in medical science

universities and workshops related to treatment, diagnosis and taking care of evidence have to be held. Among limitations of this research are individual features, different facilities of hospitals regarding access to internet, hospital crowdedness and lack of objective control of doctors' performance based on EBM.

### CONCLUSION

Results suggest low amount of information and performance of doctors in EBM and low familiarity with the most practical concepts in statistic and epidemiology. The amount of information about statistic was lower than that of epidemiology. Most participants were agreed with necessity of EBM. Doctors had no enough information about EBM and its concepts and applications. Since doctors play important role in treatment of patients and among the most important decision makers in practice in governmental centers, they are the most important group for learning EBM. Therefore, they require an accurate educational planning in form of educational classrooms or workshops with regular intervals in educational hospitals or when they are passing their training and commitment period in the hospital. Studies show that EBM is one of educational courses of doctors in several countries throughout the world. Therefore, it is necessary to formulate a comprehensive curriculum when studying in medical science universities.

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