

Evidence-Based Practice Awareness And Knowledge Levels among Health Care Practitioners in Saudi Tertiary Hospitals

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Abstract: Estimating the awareness levels of Evidence-Based Practice (EBP) among health care providers is currently active area of research. This study main objective is to evaluate the medical staff awareness about Evidence-Based Practice and its constitutes, tools and resources at Saudi General Tertiary Hospitals. The study was carried out at King Saud Medical City (KSMC) in Riyadh, Saudi Arabia. The research main data were collected predominantly using a cross-sectional survey questionnaire.

The research results showed that majority of participants have a good understanding of the term EBP (59.7%), while having a vague idea (34.7%) and with No idea are only (5.6%). Although of a high percentage of the participants realize the concept of EBP, levels of knowledge about various EBP tools vary considerably. The less known EBP tools were for: Confidence interval (34.2%), and P-value tool, Odd ratio, and Heterogeneity (31.9) followed by Absolute Risk (29.8%) and Sensitivity tool (27.7%). Among the most known EBP tools with "Good Understanding" level were for: Meta Analysis (27.7%) followed by Systematic review and Publication Bias both at 25.3% level. The Chi-Square tests for the correlation of specialty rank and awareness of EBP indicates that there is no statistically significant association between Profession specialty rank or gender with EBP awareness or its tool knowledge levels.

Main results from this research showed that Evidence-Based Practice awareness at King Saud medical city hospitals is at acceptable level. Furthermore, more intensive education and training and enhancement of EBP resources IT medical education resources are needed to increase its knowledge and understanding, and to support the diffusion of Evidence-Based Practice in daily practice.

Keywords-Evidence based practice in clinical practice, Evidence based medicine & Dentistry; Saudi health System.

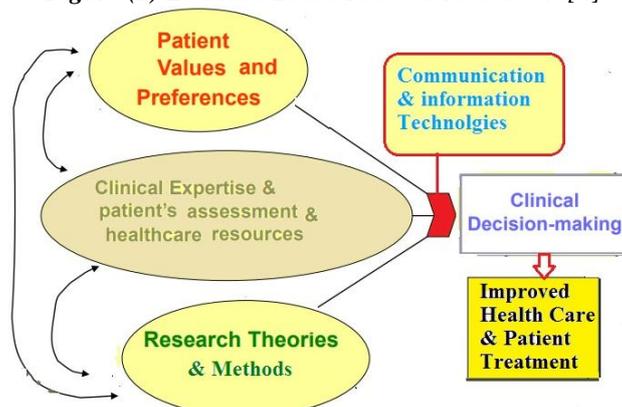
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I. Introduction

The diffusion of **Evidence-Based Practice (EBP)** in health care and modern clinical practice have increased worldwide. Recent research studies, shows that increasing number of physicians and dentists are implementing EBP in their daily clinical activities[1-7]. The main concept of EBP - as shown in figure 1- is to strength the coordination between the current research outcomes, Information and communication technologies, clinical practice, along with patients needs to quality improve health-care decisions. Various Evidence-Based Practice tools and methods are commonly utilized by health care practitioners.

Figure (1) Evidence-Based Practice Framework[8]



Several recent research studies concluded that high percentage of physicians population are using EBP to achieve better patient care, to produce new health policies, to improve treatment of various sickness, and to reduce health care cost [9]. It was also found that physicians have various motives for implementing EBP including : being on the cutting edge , for self-expression, and to improve health care outcome [10]. Research still identifies inconsistencies in EBP adoption and implementation in the workplace and suggests that physicians and nurses may struggle to implement EBP [11, 12]. It was also found that physicians have various reasons for not implementing EBP and not embracing the EBP process including: the lack of confidence, misperceptions and resistance from colleagues and leadership/management [13-16]

Evaluation of the diffusion of EBP on medical practice and healthcare is currently an important subject of health informatics research. In dental practice in particular , various academic and research organization stressed and supported heavily the incorporation of EBP into dentistry clinical practice the development of evidence-based dentistry [16-15]. Other similar studies of EBP were carried in many world countries for EBP enhancements and evaluation [17-21].

A healthcare research study was carried out to estimate EBP Level, Knowledge and awareness amongst Health Care Practitioners in Riyadh City Hospitals , Saudi Arabia. It was found that using EBP approach in Clinical tasks context has an overall average equals to 61.1% of all participants. Awareness about "evidence-based dentistry and medicine is relatively reasonable, as about (56.8%) agreed that they have good understanding of it. [22].

At Western province of Saudi Arabia , a cross-sectional survey was performed to estimate on knowledge, attitude, and barriers towards the use of evidence based practice among senior dental and medical students in western Saudi Arabia. The study findings showed that most of the participants medical staff are well skilled in using computer and Internet. [23].

Considering the recent rapid progress and advancement in IT and communication technologies it is clear that more research studies are still needed for evaluation of the diffusion of various EBP based tools and methods in health care. Understanding the impact of EBP tools and methods can improve the quality of health care, patient safety and productivity in health institutions.

The focus of this research, at King Saud Medical City (KSMC) in Riyadh, Saudi Arabia is :

- a. Identify the barriers and ways to support EBP competency.
- b. Describe the patterns of adopting and implementation of EBP.
- c. Investigate healthcare providers and practitioners' perceptions of their practice of EBP,
- d. Evaluate attitudes towards clinical effectiveness of EBP and knowledge/skills associated with EBP
- e. Discuss ways to facilitate the uptake of EBP by healthcare providers and practitioners .

The research of this paper is a study of accomplished as a part of a larger research project to explore the implementation of EBP tools and methods used by Saudi physicians , dentists , and healthcare practitioners at King Saud Medical City (KSMC) tertiary Hospitals [24]. Accordingly, it is considered as a further extension and continuation of the research on EBP adoption presented in [22]. In particular , this paper presents detailed survey findings and statistical analysis results obtained using the Statistical Package for Social Sciences software(SPSS) for a questionnaire survey study carried during the last two years period at KSMC .

II. Survey Study Setting

King Saud Medical City is administrated as an independent medical institution , under the supervision of the Saudi Ministry of Health and is located in Riyadh , Saudi Arabia. Currently , it consists of several medical centers and four major hospitals namely : Dental hospital , General Hospital , Obstetrics and Gynecology hospitals and Pediatrics and Maternity Hospital . Outpatient and Emergency clinics are attached to the General hospital. The dental hospital constitute various specialized departments (e.g Pedodontal , Endodontist, Restorative Dentistry , Oral and maxillofacial surgery, ...etc) and outpatient and inpatients clinics. The city medical centers include: Spinal and Neurosurgery and Dialysis Centers. Other supporting centers are : research center , Training and academic center that support various professional residency programs.

KSMC data center include a heterogeneous environment of software , hardware , operating systems with application software include various HIS management modules. The Clinical Information Systems consists of several legacy systems (e.g : A picture archiving and communication system, Computerized physician order entry (CPOE) system and R4 Dental system..etc) [25].

KSMC's core competencies are Emergency Care, Trauma, Orthopedics, Burn, Bariatric Surgery, Dental Care and Critical Care. Work force size of KSMC is about nine thousand employees of different nationalities, of which 1412 are physicians and dentists. Bed capacity is 199 intensive-care unit beds and 1473 ward beds. Due to this, KSMC is considered among the largest hospital cities in the kingdom of Saudi Arabia [26].

III. Participants and research Methodology

The population for this study consisted of physicians, dentists, pharmacists, interim medical students and health care employees, working in the KSMC hospitals to get their feedback. The project was approved and supported by the KSMC research center. All participants were informed that their participation was voluntary and that any information obtained would be kept confidential. The research main data were collected predominantly using a cross-sectional survey questionnaires.[27]

The survey questionnaire instrument consisted of four parts, with questions about (1) Socio-Demographic & Educational Information (2) Levels of Awareness and Knowledge of Evidence Based Practice (EBP) (3) Level of practice and Implementation of EBP for Clinical Tasks and Practice (4) Barriers to Evidence Based Practice. Each participant is asked to fill out the questionnaire indicating his or her agreement of disagreement with each statement, mostly on a multitude format with two to five choices on Likert scales and including yes/no questions. Each question required only one choice to be ticked and for Socio-Demographic question, An open-ended answer may be added.

The questionnaires were handed to 200 KSMC health care and medical practitioners in one month period during the year 2017. Participants were selected by dividing KSMC population into strata based random sampling according to the participant's profession department. A disproportional stratified sample was formed in selecting the participants for the questionnaires survey. Study participants were then randomly selected from each strata. Sample demographic information with respect to gender, age, specialty, and experience was also taken for potential purposes in data analysis.

A total of 72 participants of KSMC employees completed the questionnaire. The demographic distribution of the study sample participants was 47 (65.3%) female, 25 (34.7%) male. Majority of participants were Saudi nationals (819%). Age group ranges were from below 25 (29.2%) years old up to above 50 years (4.2%). The respondents' work experience majority were with less than 2 years (48.6%), while those with more than 10 years represent (27.8%) of the study population. The participants have various job positions, with 22 Specialists (30.6%), consultants (23.6%), residents (22.2%), internship is (8.3%) and post graduate trainees and students is only (1.4%). The majority of participations were General practitioners (11.1%), Pedodontist (9.7%), other specialties percentages are shown in Table I, reflecting the population from which the sample was drawn.

Table I : STATISTICS OF PARTICIPANTS SPECIALTIES

Specialty Type	Frequency	Percent
cardiologist	2	2.8
Dermatologist	3	4.2
Emergency medicine	1	1.4
Endodontic	7	9.7
ENT	2	2.8
Epidemiologist	1	1.4
General practitioner	8	11.1
gynecologist	1	1.4
hematologist	1	1.4
HI	1	1.4
In all medical department	1	1.4
Internal medicine	1	1.4
Internship	1	1.4
Medical surgeon	2	2.8
Ophthalmologist	2	2.8
Oral and maxillofacial surgeon	3	4.2
oral medicine / pathologist	2	2.8
pathologist	1	1.4
pediatrician	3	4.2
Pedodontist	7	9.7
Periodontist	2	2.8
Phelobotomist	1	1.4
Prosthodontist	5	6.9
radiologist	1	1.4
Restorative Dentist	4	5.6
Undergraduate	6	8.3
undergraduate student	1	1.4
Undergraduate	2	2.8
Total	72	100.0

The collected questionnaire data was processed and went through subsequent analysis using the Statistical Package for Social Sciences software (SPSS Inc. Version . 19.0). Frequency distributions were used together with Chi-Square test. Frequencies were grouped by questionnaire survey sections. Chi-square tests were used to examine relationships where the dependant variable was ordinal, scale or nominal. The Chi-square significance was set at $P < 0.05$ level.

IV. Major Findings and Statistical Outcomes

In what follows we present major research outcomes (as concluded from statistical analysis of questionnaire responses):

- **Awareness about Evidence-Based Practice**

Statistics of rates of awareness of the survey participants about the term “Evidence based dental and medical practice” showed that majority of participants have a *good understanding* of the term EBP (59.7%), while *having a vague idea* (34.7%) and with *No idea* are only (5.6%). The majority of (76.4%) knows about EBP within the last two years, (11.1%) know about it for a period of two to five years. The Level depth of the knowledge of EBP also show a significant percentage with (41.7%) of participants with a “Fair” level, (40.3%) has a “Good” level, while only (18.1%) consider their level as “Poor”. Ways knowing about EBP varies, with majority through attending lectures (52.8%) as shown in Table II.

Table II : STATISTICS OF WAYS OF KNOWELDGE ABOUT EBP

Ways of knowledge about EBP	Percent
Attending a lecture about EBDM	52.8
Attending a workshop about EBDM	6.9
Email	1.4
From friends	2.8
I hear about it	1.4
Part of our practice and training in kfshrc	1.4
Reading a book about EBDM	11.1
Reading Journal article about EBDM	22.2

- **Level of knowledge of EBDM tools**

Although of a high percentage of the participants realize the concept of EBP, levels of knowledge about various EBP tools vary considerably as shown in Table III.

- The less known EBP tools were for: *Confidence interval* (34.2%), and *P-value* tool, *Odd ratio*, and *Heterogeneity* (31.9) followed by *Absolute Risk* (29.8%) and *Sensitivity* tool (27.7%).
- The most known EBP tools with “Good Understanding” level were for: *Confidence interval* (29.8%), and *Meta Analysis* (27.7%) followed by *Systematic review and Publication Bias* both at (25.3%) level.
- The Chi-Square tests for the correlation of specialty rank and awareness of EBP shows Chi-Sq χ^2 , significance equals to (19.28) at $p = (0.154)$ which indicates that there is no statistically significant association between Profession specialty rank and EBP awareness as group rank correlation is not significant at ($P < 0.05$) level (2-tailed). Also, the test for the gender correlation (being male or female) with awareness of EBP showed that correlation is not significant at ($P < 0.05$) level ($\chi^2 = 4.05$ and $p = .132$).

TABLE III: STATISTICS LEVEL OF KNOWELDGE OF VARIOUS EBP TOOLS

CLINICAL TASK	I have a “Good” Understand-ing	I have a “Fair” Understand-ing	I have “No idea”
EBDM tool	21.3	29.8	27.7
P-value	4.3	40.4	31.9
Relative risk	19.1	42.6	21.3
Sensitivity	12.8	23.4	27.7
Meta-analysis	27.7	19.1	23.4
Odds ratio	12.8	29.8	31.9
Publication bias	25.5	29.8	21.3
Confidence interval	29.8	8.5	34.0
Systematic Review	25.5	40.4	17.0
Randomization	25.5	34.0	21.3
Heterogeneity	12.8	21.3	31.9
Blinding	10.6	25.5	31.9
Likelihood Ratio	14.9	46.8	19.1
Specificity	23.4	31.9	21.3
Absolute Risk	17.0	27.7	29.8
EBDM tool	18.87%	30.01%	26.1%

Level of EBP sources usage and knowledge

Statistics of rates of usage of various EBP sources of knowledge is shown in Table IV. As shown, most sources are utilized for EPB knowledge update by majority of the survey participants. The most used source are Internet resources (80.6%) followed by the hospital library (72.2%).

TABLE IV: STATISTICS OF EBD KNOWLEDGE SOURCES USAGE

Source of EBD knowledge Update	I don't know it	I know it and I use it	I know it but never use it
General Scientific Journal	8.3	68.1	23.6
Specialized Journal of Evidence-based Dental Practice	18.1	33.3	48.6
Hospital Library	8.3	72.2	19.4
Research Database	8.3	68.1	23.6
Textbooks	6.9	80.6	12.5
Internet resources	5.6	84.7	9.7
The Critically Appraised Topics	25	43.1	31.9

• Level of knowledge of EBP Components and Structure

The questionnaire contains several questions related to measurement of EBP understanding. These include the following:

- Which one of the following is an EBDM component?
- Are you aware of the 'hierarchy of evidence' in EBDM?
- Which of the following provide strongest evidence in your opinion

Levels of knowledge about various EBP components vary as shown in Table V.

TABLE V: STATISTICS OF EBD COMPONENTS KNOWLEDGE

Knowledge about EBP components	Yes, It's a component	No, It's not a component	I do not know
Senior consultant's opinions	73.6	26.4	0
Individual clinical expertise	68.1	31.9	48.6
Famous textbooks	77.8	22.2	19.4
Patient's choice	69.4	30.6	23.6
WHO reports	83.3	16.7	12.5
EBDM Resources	95.8	4.2	9.7

- The percentage of (52.8%) know about the term 'hierarchy of evidence'. This indicates that almost half of participants are aware enough of such important EBD structure component.
- Evidences to survey participants were: "systematic Review" (29.8%), "Cohort Study" (6.9%) and for "longitudinal study" (12.5%).
- The Chi-Square tests for the correlation of gender and knowledge of various EBP components shows Chi-Sq χ^2 , significance equals to (2.513) at $p = (0.113)$ which indicates that there is no statistically significant association between gender type and EBD components knowledge level.
- Also, the test for the gender correlation (being male or female) with awareness of EBP evidences showed that correlation is not significant at ($P < 0.05$) as ($\chi^2 = 3.314$ and $p = .191$).
- The Chi-Square tests for the correlation of specialty rank and knowledge of various EBP major evidences shows Chi-Sq χ^2 , significance equals to (64.74) at $p = (0.15)$ which indicates that there is no statistically significant association between specialty type and EBD evidence knowledge level.

V. Conclusion

This research study at King Saud Medical City in Riyadh, Saudi Arabia, evaluated the awareness and knowledge rate among KSMC medical and healthcare staff in: level of EBP general awareness, level of knowledge of EBP tools, components and resources.

In an age of rapid technological advancements and great progress of scientific applications and tools in medicine, our study and many other similar studies are essential for providing helpful conclusions and guidance. Our study results will hopefully allow development of various recommendations for using the EBP for improving the quality of medical and dental practice, enhance patient safety, and clinical treatment at

KSMC . Furthermore, we suggest that further study is still needed for determining the impact on health care quality through implementation of EPB and on medical and dental practice. And to determine barriers that limit its usefulness at Saudi hospitals.

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