

# #1086\_FACTORS RELATED TO DOCTORS' AND NURSES' PERCEPTIONS OF EVIDENCE-BASED PRACTICE

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# 1 FACTORS RELATED TO DOCTORS' AND NURSES' PERCEPTIONS OF EVIDENCE-BASED PRACTICE AND HEALTHCARE INFORMATION ACCESS THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY IN DEPOK CITY

## Abstract

**Article Title** 10 Evidence-based clinical practice that is supported by the availability of the best literature can improve the 1 quality of health services. This study aims to identify the perception of doctors and nurses in Depok city of evidence-based practice and access to evidence through information and communication technology. This survey was conducted in November 2017-January 2018 at Depok District Hospital, 5 Private Hospitals, 11 Community Health Centers and 5 private clinics. 85 doctors and 271 nurses selected by proportional probability sampling were given online or paper-based question 3 ires. The questionnaire consisted of 12 questions of access to information and 24 statements of perception of evidence-based practice adopted from the evidence-based practice questionnaire Upton & Upton. The frequency distribution, and Pearson Correlation results found high technology access, positive evidence-based practice of doctors and nurses, 3 factors 2 ated to doctors' ICT and 6 factors related to the nurses' EBP and ICT. But there was a misperception of evidence-based practice. Advocacy is needed to increase the use of ICTs for EBP and further research related to factors that influence EBP, and online information systems.

**Keywords:** information access, doctors, nurses, perception, evidence-based practice, information communication technology.

## Abstrak

Praktik klinis berbasis ilmiah yang ditunjang dengan ketersediaan literatur terbaik dapat meningkatkan kualitas pelayanan kesehatan. Penelitian ini bertujuan untuk mengidentifikasi persepsi dokter dan perawat di Kota Depok terhadap evidence-based practice dan akses bukti ilmiah melalui sarana teknologi informasi dan komunikasi. Survey ini dilaksanakan pada November 2017- Januari 2018 di RSUD Depok, 5 RS Swasta, 11 Puskesmas dan 5 klinik swasta. 85 dokter dan 271 perawat yang dipilih secara proportional probability sampling diberikan kuesioner online atau paper-based. Kuesioner terdiri dari 12 pertanyaan akses informasi dan 24 pernyataan persepsi evidence-based practice yang diadopsi dari evidence-based practice questionnaire Upton & Upton. Hasil distribusi frekwensi, independent T-test dan one-way ANOVA menemukan akses teknologi tinggi, persepsi evidence-based practice dokter dan perawat positif, 3 faktor berhubungan dengan TIK dokter dan 6 faktor berhubungan dengan EBP dan TIK perawat. Namun terdapat persepsi 5 g salah tentang evidence-based practice. Perlu advokasi peningkatan pemanfaatan TIK untuk EBP dan penelitian lebih lanjut terkait faktor-faktor yang mempengaruhi EBP, dan sistem informasi online.

**Kata Kunci:** akses informasi, dokter, perawat, persepsi, praktik klinis berbasis ilmiah, teknologi informasi komunikasi.

## Introduction

7 Evidence-based practice (EBP) contributed to the death of mothers and infants in South East Asia related to inappropriate clinical practice by health care workers (McDonald et al., 2010). This inappropriate practice was caused by the shortage of best health care information 11 nd skills for producing and synthesizing them. Additionally, half of the health care workers have limited access to comp 3 ers and the Internet, and 48% did not know EBP. Indonesia was one of the countries examined by the South East Asia Optimizing Reproductive and Child Health in Developing Countries (SEA-ORCHID) project.

Furthermore, McDonald et al. (20 4) and Turner (2009) recorded barriers to the impleme 2 tion of EBP. Time constraints, major disparities in undergraduate education between health professionals, lack of capacity in discovering, appraising, and interpreting evidence, lack of access to relevant evidence, and difficulty arranging meetings and achieving consensus were reported in these studies.

The World Health Organization (WHO) suggested wider access to health care information to improve EBP (United Nations, 2015; WHO-SEARO, 2016). However, it is still insufficient (United Nations, 2015) and, retrieving information through Information and Communication Technology (ICT) is difficult for the majority of doctors and nurses in South East Asia region (Martis, Ho, & Crowther, 2008; McDonald et al., 2010; Turner, 2009). A national survey proved the majority of Indonesian people use internet (64.8%) with West Java people ranked first (Indonesian Internet Service Providers Association, 2018). However, only a small number of people using it for work-related information (11.5%).

Because little is known on how EBP is perceived by Indonesian doctors and nurses and how are their access to health care information especially in Depok West Java. This paper will report the perception of doctors and nurses on EBP and their access to ICT-based health care information.

## Methods

5

A quantitative research method was used in this study. It was conducted between November 2017 and January 2018 at health care providers in Depok City, West java, Indonesia. A proportional probability sampling was assigned to select the health care providers based on the number of nurses they have. The selected providers are five private hospitals, five private clinics, and eleven district primary health care providers (Puskesmas). The government city hospital was purposely selected because it is the only government hospital in Depok city. The sample size was calculated using z tests with the assumption of  $\alpha = 0,05$ , power level = 0.80, effect size = 0,5, and allocation ratio  $N2/N1 = 3$  for Pearson's correlation analysis. Accordingly, 85 doctors and 271 nurses with minimum 1 year working experience were determined proportionally and randomly for each providers and units within.

Most providers participated in this study (73.3%). Two private hospitals declined to participate in this study due to accreditation activities and 6 private clinics declined from this study due to their unavailability. Thus, another private hospital was asked to participate and the number of doctors and nurses in 6 hospitals were increased to meet the desirable number of sample. While the number of clinics remains 5 as it still covers the sample needed.

The questionnaires employed were developed from the WHO's building blocks of health systems (World Health Organization, 2010, 2017). Five WHO's health system components were set as a framework for this study which are service delivery, health workforce, health information, fund and leadership and governance in the context of ICT and EBP. Covering this framework, a self-designed ICT-based health information access and an adoption from the Upton & Upton's EBP Questionnaire (EBPQ) (2006) were assigned. Twelve questions about information and ICT's availability and access were asked in the ICT questionnaire (see table 1). 24 statements were stated to identify the doctors and nurses' practice (6 items), attitude (4 items) and knowledge (14 items) on their EBP. The Content Validity Index (CVI) of three experts in health rated mean Item CVI (I-CVI) as 1.00 and Scale-CVI (S-CVI) Average 1.00. This mean the EBPQ is acceptable. Internal consistency was also secured with Cronbach's alpha (0.92) which mean the questionnaire is reliable. The inter-rater agreement was reached as well.

Online self-completed questionnaires were shared to all nurses and most doctors. The nurses in three hospitals were gathered in a room at the same time for the survey while data collection at three other hospitals were obtained face to face at their wards. Most data were collected face to face from the doctors. Several doctors were given the paper-based questionnaire due to their time constrain and the completed questionnaires were collected several days later. All questionnaires were completed and analyzed. Ethical approval was attained from Faculty of Nursing, Universitas Indonesia. Participants were explained verbally about the study while gathered in the same room or face to face at their wards and they were provided with paper-based explanatory statement and informed consent prior to the data collection. Privacy was ensured with anonymity of the response.

Frequency distribution with mean, standard deviation and percentage was applied to describe univariate data. Subsequently, Pearson's correlation analysis was assigned to determine the relationship between numerical data and ICT and each EBP subscale (practice, attitude, and knowledge). The relationship's strength and direction were determined by correlation coefficient  $r$  at its critical values (Plichta & Kelvin, 2013).

## Results

The average age of doctors is 36 years old and with 7 years of experience, mostly female (78.8%), bachelor degree (72.9%), working as general practitioner (75.3%). The average age of nurses is 31 years old and with 8 years of experience., mostly female (90.0%), diploma degree (84.1%) working as nurse associate (77.1%). Most doctors and nurses were taught about research in their higher education program (98.8% and 80.4%, respectively). Most doctors (85.9%) but less than half nurses (40.2%) were taught evidence-based practice but only around 5% of each of them have the right conception of EBP. The minority of doctors (23.5%) and nurses (2.6%) search evidence from the right source.

The majority of doctors and nurses have used and will use the internet, computers/laptops, and smartphones/tablets to read and search evidence. Over 70% internet and computers/laptops facilities each were available while smartphones/tablet slightly over 50% (Table 1). Most doctors use ICT for clinical practice while nurses use it for clinical practice and education. Nurses has less frequency using tablet/smartphone to search for evidence than doctors. Both nurses and doctors search evidence through computers/laptops sometimes.

**Table 1. Distribution of Health information access and availability through Information and Communication Technology**

No	Questions	Doctor N (%)	Nurse N (%)
1.	In the past year, have you use internet to search or read evidence?	79 (92.9%)	233 (86%)
2.	For the next one year, are you going to use internet to search or read evidence?	84 (98.8%)	260 (95.9%)
3.	Is the internet facility in this workplace available for you to use?	68 (80%)	202 (74.5%)
4.	In the past year, have you use computers or laptops to search or read evidence?	68 (80%)	182 (67.2%)
5.	For the next one year, are you going to use computers or laptops to search or read evidence?	78 (91.8%)	247 (91.1%)
6.	Is the computers and laptops facilities in this workplace available for you to use?	72 (84.7%)	217 (80.1%)
7.	In the past year, have you use tablets or smartphones to search or read evidence?	62 (72.9%)	173 (63.8%)
8.	For the next one year, are you going to use tablet or smartphones to search or read evidence?	77 (90.6%)	241 (88.9%)
9.	Is the tablet and smartphones facility in this workplace available for you to use?	46 (54.1%)	148 (54.6%)
10.	For what reason did you search for evidence?		
	Education	40 (47.1%)	140 (51.7%)
	Clinical practice	78 (91.8%)	148 (54.6%)
	Research (not as a part of educational activities)	19 (22.4%)	65 (24%)
	Others	24 (28.2%)	100 (36.9%)
11.	How often did you search for evidence through smartphones or tablet?		
	Never	6 (7.1%)	28 (10.3%)
	Sometimes	23 (27.1%)	181 (66.8%)
	Often	49 (57.6%)	50 (18.5%)
	Always	7 (8.2%)	12 (4.4%)
12.	How often did you search for evidence through computers or laptops?		
	Never	2 (2.4%)	39 (14.4%)
	Sometimes	50 (58.8%)	186 (68.6%)
	Often	28 (32.9%)	40 (14.8%)
	Always	5 (5.9%)	6 (2.2%)

An overview of EBP practices by doctors and nurses both in hospitals, Puskesmas, and clinics can be seen in Table 2. Doctors and nurses' perception of EBP was positive. Their perception of knowledge was higher than their practice and attitude.

Doctors' perception of practice was most positive in evaluating intervention delivered, searching for relevant evidence after formulating question, integrating evidence with their expertise. Doctors' perception of their

attitude was most positive on their practice being questioned and their perception of their knowledge was most positive on sharing evidence, applying knowledge to cases and evaluating their clinical practice.

Nurses' perceived most positively at their practice of sharing information with colleagues, searching evidence after formulating question. As well, positive attitude at being questioned of their practice and positive at their knowledge on sharing information, disseminating new ideas, and at their knowledge to evaluate their clinical practice.

**Table 2. Distribution of Doctors and Nurses Perceptions on Evidence-Based Practice**

No	Subscales	Doctors M ± SD	Nurses M ± SD
	Practice	10.47±3.33	8.91±2.68
	Attitude	7.56±1.09	7.10±1.12
	Knowledge	21.19±7.17	19.78±6.49

The Pearson's correlation analysis showed all factors related to the doctors' ICT but none related to their perception of EBP (Table 3). Doctors reported length of years since graduation as the highest score of relationship with their perception of EBP in the knowledge scale ( $r=0.20$ ), but it did not meet the minimum critical value of correlation coefficient for 85 doctors. ICT was related to age, length of years since graduation and working experience at  $p<0.01$ , although length of years since graduation related in the opposite direction ( $r=0.50, -0.35, \text{ and } 0.53$ , respectively). The relationship between ICT and EBP scored 0.18, -0.13, and -0.15. These scores nearly reach the minimum score of the relationship to occur.

Several factors related to the nurses' ICT access and EBP and meet the minimum critical value for 271 nurses. The nurses' knowledge was related to length of years since graduation ( $r=0.06$ ) and working experience ( $r=-0.11$ ), both at  $p<0.01$ . The nurses' ICT for evidence purpose was related to the nurses' age ( $r=-0.15$ ) and working experience ( $r=-0.14$ ) at  $p<0.05$ . In accordance to EBP, it was related to their EBP practice ( $r=-0.17, p<0.01$ ) and knowledge ( $r=-0.16, p<0.05$ ).

**Table 3. Factors Related to Doctors and Nurses Perception of Evidence-Based Practice in Depok City**

Characteristics	Doctors				Nurses			
	Practice	Attitude	Knowledge	ICT	Practice	Attitude	Knowledge	ICT
Age	0.14	0.15	-0.12	0.50**	-0.02	-0.01	-0.13	-0.15*
Length of Years since graduation	0.04	-0.05	0.20	-0.35**	-0.03	0.05	0.06**	0.10
Working Experience	0.07	0.01	-0.11	0.53**	0.01	0.01	-0.11**	-0.14*
ICT	0.18	-0.13	-0.15		-0.17**	-0.10	-0.16*	

\* $p<0.05$

\*\* $p<0.01$

### Discussions

ICT for evidence purpose is within reach for doctors and nurses. All health care systems, both secondary and primary, have complete infrastructure in terms of ICT, especially internet and computer / laptop facilities. Doctors and nurses can also use these facilities freely in most health services. This is similar to internet-related surveys where internet penetration and use is very high especially in urban areas (CIGI-Ipsos, 2017; Indonesian Internet Service Providers Association, 2018). Some health services place restrictions on certain sites, but there are no restrictions on journal databases or other scientific article sites. ICT has been made available and accessible by health care providers in Depok city to search evidence although it is used more



for communication and coordination between units or between professions. The availability and accessibility of this facility is a potential for increasing access to health information.

In addition, readiness to seek health information is also very positive. Most doctors and nurses have searched for scientific articles online in the past year. They sometimes search for scientific articles online via computer / laptop. Doctors also often search for scientific articles through tablets or smartphones. Doctors and nurses reported enthusiasm for searching scientific articles. This is also similar to the research of the (Indonesian Internet Service Providers Association (2018) and CIGI-Ipsos (2017) where respondents use the internet to search for articles and health information. In terms of education, 88.24% of S2 / S3 graduates and 79.23% of S1 / Diploma graduates use the internet. The respondents can be said to represent doctors and nurses. The majority predicted that they would need scientific articles in the coming year. This readiness and availability is an excellent opportunity to maximize the use of ICTs to obtain scientific articles and accelerate the implementation of EBP in the area.

Doctors report positive practices and attitudes on all question items and most knowledge question items. The doctors have a positive perception, especially in terms of knowledge dissemination. However, the average doctor reports negative knowledge related to the literature / scientific evidence. This is consistent with their EBP practices. Although the doctor's practice is positive, the items above are the lowest compared to the others.

Similarly, the nurses' reported a positive attitude on all items. Nurses have positive perception in terms of knowledge dissemination. The average nurse expressed their knowledge positively in sharing knowledge and ideas with coworkers. More than half of the nurses said they had good knowledge in disseminating even though in practice they did not often do it. This proves the findings of Gerrish, K., Ashworth, P., Lacey, A., & Bailey (2008) where nurses rely heavily on communication with colleagues. Similar to doctors, nurses also report negative knowledge related to evidence. However, these positive perceptions should take into account of the doctors and nurses' misconception about EBP and evidence sources.

In relation to the problem analysis of the 4 EA-ORCHID project (McDonald et al., 2010), several similar root problems were found in this study. The low participation in research synthesis, the lack of EBP skills in S1 and S2 education curriculums, the lack of priorities for research and research skills were also found in this study. In addition, it was also found that the lack of funding and policies related to EBP in clinical areas. However, ICT access and literacy in this study is very good, in contrast to the findings of the SEA-ORCHID project. This might be because the project took place more than 5 years ago where the development of ICTs was very rapid during this period.

The doctors' characteristics relates to ICT but not their EBP. Age, length of years since graduation and working experience were not related to their perception of EBP, but related to their ICT. The relationship between ICT and both age and working experience were substantial and positively inline. The more age and experience gained, the more likely ICT was used and potentially used for evidence purposes. ICT was moderately related to length of years since graduation but in the negative direction which means that the longer they were graduated from their degree the least likely they would access ICT for evidence. Unfortunately, there is no relationship between ICT and EBP amongst doctors.

Several characteristics were related to the nurses' ICT and EBP. The relationship between ICT age and working experience was weak and in the negative direction, as well as the EBP practice and knowledge. These data show that the older and more experience the nurses, the less likely the nurses use ICT for evidence purposes. Also, ICT for evidence purpose were less likely used and will be used amongst nurses to enhance their practice and knowledge. This finding does not corroborate with the recommendation of the United Nation & WHO to utilize ICT to enhance EBP. Considering ICT facilities for evidence are available and accessible through out most providers, its usage to maximize EBP and to meet the UN and WHO's recommendation is highly potential. The nurses' knowledge was related to length of years since graduation in positive direction which means that the longer they graduated from the nursing degree, the more likely they would have positive perception of their EBP knowledge. However, the more experience the nurses, the more likely they have negative knowledge perception of EBP.

## Conclusions

This study showed that doctors and nurses had more positive knowledge and practices compared to attitude. However, there are misperceptions related to EBP and several factors negatively related to EBP and ICT of nurses. Fortunately, ICT facilities are available and accessible at all health care providers. Future research and efforts to improve information systems to maximize EBP practices through nurses-friendly ICT needs to be conducted.

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