Evidence-based Practice and Information and Communication Technology: Stakeholders' Insights

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Abstract : *Stakeholders' role to support evidence-based practice (EBP) and enhance the use of information and communication technology (ICT) for EBP is essential. However, how EBP is supported and how ICT is utilized in health care providers is unknown. Aim: This study aims to explore stakeholders' insights regarding the implementation of EBP and the use of ICT. A qualitative study with the semi-structured face-to-face interview was used to obtain the aim. Using purposive sampling, eleven management representatives from public and private hospitals, clinics, and health offices in Depok city, Indonesia were asked about EBP and ICT. Data were recorded, transcribed, and analyzed thematically. Five themes emerged from this study. EBP services availability and accessibility showed ICT sources were adequate, but still need improvement in the library and Education and Training Department (ETD); Healthcare workforce represented doctors and nurses who hardly generate research although permitted by the stakeholders; Health information systems such as clinical cases forums in hospitals were established, but current evidence was rarely discussed; Funding for research and training related to EBP were not allocated; Leadership and governance showed there were limited policies on EBP and clinical instructors available in hospitals but focused on supporting training and student practices. Although EBP implementation needs improvement, the stakeholders in this study mostly support EBP and enable ICT for EBP purposes. Advocacy on policy and resource arrangements is urged to support information initiatives.*

INTRODUCTION

Evidence-based Practice (EBP) with its benefits ensures high quality of care. High quality of care requires EBP (World Health Organization, Organisation for Economic Co-operation and Development, & The World Bank, 2018) as it is a systematic approach to a practice based on the best evidence, preference, and expertise (Dang & Dearholt, 2017). EBP is beneficial in bridging the gap between knowledge and practice (Rushmer, Ward, Nguyen, & Kuchenmüller, 2019), assisting decision-making (Rushmer et al., 2019; World Health Organization, 2015), increasing patient outcomes (Moreno-Poyato, Casanova-Garrigos, Roldán-Merino, Rodríguez-Nogueira, & group, 2020), and reducing financial expenses (Staffileno, Wideman, & Carlson, 2013).

Studies reported barriers to the application of EBP and access to information and communication technology (ICT). Doctors and nurses in the world especially in low-middle income countries (LMICs), shared common barriers which are inadequate time, expertise in EBP and research, and teamwork among healthcare professionals (Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014; Shayan, Kiwanuka, & Nakaye, 2019; Swennen et al., 2013). The same barriers were confirmed in China, Ghaza, Iran, and Saudi Arabia certain (Albarqouni & Elessi, 2017; Alqahtani, Oh, Kitsantas, & Rodan, 2020; Fu, Wang, Hu, & Muir-Cochrane, 2020; Naderkhah et al., 2016). Accessing information through ICT is also a challenge (United Nations, 2015) particularly for nurses in LMICs countries (Shayan et al., 2019). Indonesia is one of the LMIC countries and these challenges were also stated (Novrianda & Hermalinda, 2019).

The roles played by stakeholders are imperative for enhancing EBP. The World Health Organization (2017) considered information initiatives and EBP to help decision-making as strategies in establishing a health system. The quality of health services involves stakeholders such as managers and policy-makers (World Health Organization et al., 2018). The health providers' leaders and managers have the power to embed EBP through establishing policy and initiatives that support EBP. Therefore, it is imperative to understand EBP from the perspective of the stakeholders.

There is a lack of literature on how EBP has been established and how ICT has been used to

enhance EBP by Indonesian doctors and nurses, particularly from the stakeholders' point of view. This study's goals were to enquire about how EBP is supported and how ICT has been utilized from the perspective of the stakeholders in Indonesia.

METHOD

This study was conducted between November 2017 and January 2018 at health care providers in Depok city, Indonesia. Using a proportional probability sampling, a total of 11 providers were chosen. which are government and private hospitals, clinics, and Puskesmas (primary health care centers [PHC]) in the city. From those providers, managers with a minimum of one year of experience working at those providers were purposively selected for an interview. PHCs are managed by the Depok city health office, therefore, an interview was attended by the head of the health services department on behalf of PHCs.

A qualitative study with the semi-structured face-to-face interview was applied in this study. It enables discoveries of new information. The interviews followed a pre-interview protocol. Participants were provided with an explanatory statement about the purpose of the study and how it is going to impact evidence-based practice, and informed consent was obtained following the agreement of involvement. As well, the process of how the interview is going to conduct. Interviews were recorded with audio recorders. All interviews were conducted at the participants' hospital. This study was conducted under ethical approval from the Faculty of Nursing, Universitas Indonesia number 256/UN2.F12.D/HKP.02.04/2017.

Of the six WHO's health system elements (World Health Organization, 2010), five were employed as a model for this study. They focused on (1.) how is the EBP supported by the providers? (2.) how do providers encourage nurses and doctors to conduct research? (3) how is the information system implemented? (4) how is funding designated? (5.) how do leadership and governance facilitate EBP?. A total of 22 open-ended questions derived from this framework were asked to the participants.

Data from interviews were transcribed by a transcriber. The transcript was analyzed thematically by researchers to identify the main themes. It began by reading the transcript repeatedly to better understand the contents of the transcript. Transcription results were also compared with the recorded data to confirm the accuracy of the transcription. Finally, the main themes were determined.

RESULT

Most of the managers agreed to be interviewed except for one clinic that was unavailable. A total of 11 participants participated in this study consisting of head of education and training or head nurse or medical committee managers. This research revealed six key themes: which are EBP services, healthcare workforce, health information system, EBP financial resource, leadership, and governance.

EBP Services: Availability and Accessibility

All healthcare providers provide ICT appliances, such as computers and the Internet. Even though there are some limitations regarding access to some websites and Internet outreach, they allow access to a wide range of evidence databases. As for the device, only two from eleven providers provide tablets, while nine providers is equipped with mobilephones. Nevertheless, they were frequently used for communication. One participant said:

"Every ward has at least a computer with the Internet accessible for doctors and nurses. However, it is used mainly for communication" (staff member at the Education and Training Department [ETD], hospital, male). It was further expressed by another participant, who said: *"… some sites are blocked, but article browsing is allowed"* (staff member at the ETD, hospital, female). The managers encourage nurses and doctors to beable to operate the computers, as suggested by a participant: *"… all doctors and nurses should have the ability to work with computers and the Internet"* (staff member at Health Care Services, Depok City Health Department, Female). Another participant said: *"We have computers and a tablet for everyone to use in the clinic. The Internet can be used to search articles"* (owner of a clinic, clinic, female).

Moreover, all hospitals have an ETD. The head of nurse department in the government city hospital explained that: *"We have an ETD for all professionals, in which the programs are planned by each affiliation …"* (nurse manager, Depok city hospital, female). However, none of the PHCs or clinics have an ETD. Most hospitals do not have a library, although they do have books. A hospital has adequate library furnished with infrastructures, such as books, e-books, and a computer with Internet access, although there was no librarian. Nevertheless, hardly any doctors and nurses have make use of the library and its services. Some PHCs have a library that contains children's books. The library was unavailable at all clinics. . *"We have numerous books, but we do not have a library"* (staff member at the ETD, hospital, female). *"We don't have books or a library"* (owner of a clinic, clinic, male). *"Some PHCs have libraries, but they contain books for children to read"* (staff member at Health Care Services, Depok City Health Department, female).

Health Care Workforce

All participants stated that they would assist and allow doctors and nurses in conducting studies. *"Our hospital would love to have doctors and nurses conducting research within our hospital …"* (staff member at the ETD, hospital, male). However, most doctors and nurses conduct research while undergoing their educational programs. The research was rarely conducted once they graduate. *"We allow doctors and nurses, however, there is hardly research done by staff"* (nurse manager, Depok city hospital, female). *"….. currently, none of the staff applying research activities. If there is any in the future, we will permit it"* (staff member at Health Care Services, Depok City Health Department, Female).

Health Information System

There are various forums for both regular and sporadic discussions of clinical cases across hospitals, such as case studies. One hospital organizes trainings for article writing and browsing. Another hospital has established specific meeting, forums for discussion and invites experts from other organizations to review the evidence. As well, there is a commitment to disseminate the information from the trainings to other colleagues. *"… the forums usually discuss cases that we think need to be audited …"* (staff member at the ETD, hospital, female). *"Pre-conferences on the ward are undergone every shift exchange to discuss cases. Then we also have inter-professional rounds once a month. For doctors, there are case discussions every Wednesday at the medical committee meeting. Or, if there is an urgent case, we will hold a meeting. For the latest scientific inventions, we seldom invite experts from outside the hospital to share or promote something new"* (nurse manager, Depok city hospital, female). *"There are several external invitations to seminars from professional associations or clinic associations or pharmacy companies"* (owner of a clinic, clinic, male).

EBP Funding

Nearly all providers have no budget invested in for studies, EBP training, health journal bulletins, and libraries. One hospital provided funds for research and another hospital for an article writing competition. Fortunately, most providers have financial resources for the provision of ICT. "Research is funded by the researcher … there are seminar invitations so seminar fees are usually waived by the organizer … We do not have any library, so there is no fund allocated for that, and it needs space … there is no fund for journal magazines … We have to use computers and the Internet, so we have funds for computer and Internet usage" (owner of a clinic, clinic, male). "Funds are filed from staff or units to ETD. We will consider giving research fund for those who ask … research is a personal matter, so there is no fund allocated yet" (staff member at the ETD, hospital, male). "We have funds allocated for ICT" (staff member at Health Care Services, Depok City Health Department, female).

Leadership and Governance

Of the six hospitals, five employed clinical instructors (CI), one in each hospital. Most CI duties are guiding the clinical experiences of students, discussing cases, and new evidence. In contrast, none of the clinics and PHCs have CI. *"Both doctors and nurses have clinical instructors working under the policy"* (staff member at the ETD, hospital, male). *"… clinical instructors have just recently appointed"* (staff member at the ETD, hospital, female). *"We do not have clinical instructors"* (staff member at Health Care Services, Depok City Health Department, female). *"CI is available for clinical practice, internship, and students … "* (nurse manager, Depok city hospital, female). *"CIs review case studies or other evidence"* (head of the medical committee, Depok City hospital, female).

Most of providers have few specific policies on EBP or research such as a policy for discussion forums. One hospital and the primary health care services linked EBP policy with clinical guidelines. *"We do not have a policy for evidence-based practice"* (head of medical committee, Depok City hospital, female). *"Our guidelines were based on evidence…"* (staff member at Health Care Services, Depok City Health Department, female).

DISCUSSION

This study explored evidence-based practice and the use of information and communication technology from the stakeholders' point of view. The role of stakeholders is important to ascertain EBP through their policies and optimize ICT for EBP purposes. We provide recommendations for the stakeholders to enhance EBP and ICT usage based on the five themes that emerged in this study.

Health care providers have made ICT available and accessible for health care workers. This study shows an advance in access to information compared to previous reports (Shayan, Kiwanuka, & Nakaye, 2019; United Nations, 2015). The ICT infrastructures in Indonesia are in place and they are accessible for doctors and nurses. Depok city is an urban area where the majority of people use internet (Asosiasi Penyelenggara Jasa Internet Indonesia, 2018), thus its availability in health care services is probable. As well, considering there's a rapid increase of around 30% in internet usage in Indonesia within 4 years (2014-2018) based on national surveys (Asosiasi Penyelenggara Jasa Internet Indonesia, 2014, 2018), it is not surprising that ICT and internet in Depok city are adequately provided and granted for doctors and nurses.

However, the readiness to utilize ICT in the health system, especially for EBP is still limited. Insufficient information technology implementation in the health system was reported in the Indonesian health system review (Mahendradhata et al., 2017). This inadequacy is still corroborated by this study which found that ICT is only used as a communication tool, and there were no training for online research proficiency. However, it has been demonstrated that leveraging digital devices for EBP improves access to information (United Nations, 2015; WHO-SEARO, 2016) and strengthens service delivery (Orton, Agarwal, Muhoza, Vasudevan, & Vu, 2018). Also, internet penetration and utilization for finding health information are high (Asosiasi Penyelenggara Jasa Internet Indonesia, 2017; CIGI-Ipsos, 2017). The stakeholders across health care providers should take these opportunities to enhance ICT utilization for EBP.

Other resources essential for EBP infrastructures that required to be expanded are the role of the ETD and evidence access. The provision of education and training and also article databases is more extensive in hospitals than in PHCs and clinics. Initiatives to increased hospitals' readiness embedding EBP by incorporating ETD programs into research generation, translation, and synthesis should be driven. Access to greater article journals or online databases suppose to be available for health care workers. These are common enablers identified in research by Turner and Short (2013). However, PHCs and clinics still need to be equipped with these infrastructures. ETD, article resources, and libraries should be provided in PHCs and clinics.

Of the evidence-based practice barriers, is the inability of the healthcare workers in research skills. This study found that there is low participation in research by doctors and nurses among all healthcare providers, especially to generate research. Demographic data also showed the proportion of doctors and nurses in Indonesia with a higher degree is much less than the diploma degree. Doctors reported a lack of research skills (Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014) while nurses

detailed the lack of guidelines, and training to conduct research (Shayan et al., 2019). Moreover, nurses reported a lack of time to conduct research, were unaware of research, and perceived it insignificant. Level of education also relates to EBP competency (Albarqouni et al., 2018; Fajarini, Rahayu, Felemban, & Setiawan, 2021; Melnyk et al., 2018). These barriers may be contributing to low participation in research in the clinical area. Efforts in supporting research generation as a part of EBP are needed. Some of the recommendations of the efforts to enhance EBP are decreasing workload, establishing research training, and research involvement (Alqahtani, Oh, Kitsantas, & Rodan, 2020; Zhou, Hao, Guo, & Liu, 2016). Therefore, building capacity in the practicing care based on evidence of doctors and nurses is imperative.

Health care information systems are more established in secondary health care than PHCs and clinics. In hospitals, health care information is disseminated continuously. Inspite of the fact that some stakeholders explained that these forums discuss evidence, most of them claimed that the forums were mainly concentrated on clinical cases. These forums are authorized by management and policy. However, healthcare information in primary healthcare settings depends on external assistance. Time constraints are one reason that hospitals do not have the opportunity to organize forums. Health care workers at Puskesmas do not only have to deliver care for patients within the venue, but they also have to deliver exceed programs.

Initiating a spesific forum where clinicians able to share and review evidence is essential. It will enable them to learn from others about the utilization of knowledge, and the challenges they may faced while implementing specific clinical interventions. As well, it would be advantageous in boosting the clinicians' confidence to implement evidence into clinical practice. EBP informs decisions (World Health Organization, 2015). Therefore, it is essential for the stakeholders to carry out this system.

The stakeholders in this study claimed will financially support EBP. However, EBP and research projects were hardly conducted and there has not been a measurement of costs in EBP implementation and its cost-effectiveness in Indonesia. Several high-income countries have accounted for the cost to maintain EBP (Lang & Connell, 2017; Roundfield & Lang, 2017). These reports showed the cost of EBP implementation such as training, supervision, implementation of research, and other activities. Some studies also measure the cost of a specific EBP-based intervention and its financial benefit (Avşar & Karadağ, 2018; Greenup et al., 2017; Staffileno, Wideman, & Carlson, 2013). It is evident that EBP efficiently reduces the cost of health expenditure. Many have recommended the support for funding EBP (Alqahtani et al., 2020; Barzkar, Baradaran, & Koohpayehzadeh, 2018; Fu, Wang, Hu, & Muir-Cochrane, 2020; Shayan et al., 2019). The budget should be viewed as a long-term investment that will be beneficial to increasing the health service quality and will contribute to positive patient outcomes in the end. Further evaluation of EBP cost and savings are needed. We also encourage stakeholders to support EBP in clinical practice financially.

There were limited policies related to EBP and clinical instructor (CI) in this study. Global initiatives co-developed with nations to obtain high-quality care through the implementation of evidence-based practice have been planted (World Health Organization, 2020). Group of nations such as LMICs or associations such as the Association of Southeast Asian Nations (ASEAN) work to enhance clinical practice by implementing EBP at the front line, and to inform the decision of the healthcare workers, managers, and policymakers (ASEAN, 2019; World Health Organization, 2015; World Health Organization, Organisation for Economic Co-operation and Development, & The World Bank, 2018). Improving information accessibility and application was also part of the information initiatives for managing knowledge. The stakeholders need to build EBP governance through policies and leadership.

This study found a scant number of Clinical Instructors with more tasks weigh on mentoring healthcare students. CI as leaders has the power to influence others to integrate EBP into daily activities and build a supportive environment (Bianchi et al., 2018; Kitson et al., 2021). Also, leaders may enhance knowledge dissemination (Jordan, Lockwood, Munn, & Aromataris, 2019). They may overcome resistance to change and other barriers with their leadership skills. Stakeholders determine the success of preceptor support systems (Goss, 2015) Overall, the stakeholder engagement for EBP for global health is imperative (Jordan et al., 2019) and it is possible in Indonesia.

CONCLUSION

Stakeholders hold the power to support EBP and especially by the utilization of ICT. The employment of EBP in health care providers in Indonesia has, to some extent, been sufficient. The stakeholders have expressed their support, even though more efforts needed to be taken to implement EBP. The ICT provision is adequate to encourage EBP. Several potential benefits of EBP enhancement were identified regarding ICT, specific forum such as scientific meeting, and the leaders' commitment to enhance EBP. Recommendation regarding policy and resource arrangements aresuggested so that health care workers can improve their practice based on the evidence.

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