

## RESEARCH ARTICLE

# Knowledge, Attitude, and Practices toward Evidence-Based Practice among Magnetic Resonance Radiographers in Klang Valley

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## Abstract:

Evidence-based practice (EBP) is defined as combining the best research evidence with clinical experience, as well as patient values and circumstances. In Malaysia, EBP implementation has not been addressed sufficiently among magnetic resonance (MR) radiographers. This study is aimed to assess the knowledge, attitude, and practices (KAP) toward evidence-based practice (EBP) among MR radiographers in Klang Valley. An online questionnaire survey was administered to MR radiographers (n=114) in selected public and teaching hospitals in Klang Valley via social media platforms. The data collected was analyzed using frequencies and chi-square test. Low level of EBP knowledge (n=61, 53.5%) was demonstrated in response to questions about formal training and search strategies, formal training in critical appraisal, the ability to view research critically, locate relevant research and unfamiliarity of the terminology. The MR radiographers (n=110, 96.5 %) had positive attitude and agreed that the use of EBP was required for the procedure. In addition, MR radiographers (n=75, 65.8 %) also had low use and practice of EBP in their daily clinical work. Although most MR radiographers' attitudes toward EBP appeared to be positive, however their knowledge, use, and practice of EBP were underwhelming.

**Keywords:** Attitude, evidence-based, knowledge, practice, radiographer.

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## 1. INTRODUCTION

Evidence-based practice (EBP) is defined as the combination of best research evidence, clinical experience and patient values (Nalweyiso, Dorothy Irene Kabanda, et al., 2017). Evidence-based radiology practice is developed as a tool for improving expertise and meeting the need for more information in the field (Malone & Van Beek, 2007). Instead of relying solely on clinical experience, the EBP can help support the decision to perform an imaging test. Furthermore, EBP has been linked to better patient outcomes and care while decreasing healthcare costs (Melnik & Fineout-Overholt, 2012). The EBP implementation process consists of five aspects: (1) posing a clinical question; (2) finding the best evidence; (3) evaluating the evidence for validity; (4) applying evidence with professional experience and patient values; and (5) evaluating or assessing the efficacy of the procedures (Arumugam et al., 2018; Brettle, 2020; Hafslund et al., 2008; Hsieh & Chen, 2020; Upton et al., 2014).

Several research conducted among various healthcare professionals identified insufficient time as the most significant barrier to implementing EBP (Lai et al., 2010; Yahui & Swaminathan, 2017). According to Weng et al. (2013), most healthcare workers have positive attitudes towards EBP but lack the necessary expertise and skills to

implement it. Similarly, Khammarnia et al., (2015) discovered that nurses in Zahedan have positive attitudes and beliefs about EBP; however, the nurses were unfamiliar with its principles, and they only use EBP to a limited extent (Farokhzadian et al., 2015; Melnyk et al., 2008). As per a study conducted by Yahui & Swaminathan (2017), Malaysia physiotherapists have good knowledge and understanding of EBP and show a positive attitude towards its implementation.

In United Kingdom (UK), radiographers have less knowledge of EBP than other healthcare professionals such as occupational therapists, physiotherapists, dietitians, psychologists, speech and language therapists (Upton & Upton, 2006). Several studies have identified a lack of time to collect and interpret data, as well as adapt patient results, as the primary reason why radiographer do not incorporate evidence into their practices (Dalheim et al., 2012; Khammarnia et al., 2015; Rojjanasrirat & Rice, 2017; Upton & Upton, 2006). Some radiographers have claimed that they were unable to determine the accuracy of the data and have limited knowledge of how to collect relevant information. In Malaysia, a limited studies were conducted, the majority of which focused on healthcare professionals in general, with no studies from the perspective of radiographers (Hasani et al., 2020; Lai et al., 2010; Yahui & Swaminathan, 2017).

Therefore, the purpose of this study was to ascertain knowledge, attitude, and practices toward evidence-based practice in magnetic resonance imaging (MRI) among radiographers in Klang Valley.

**2. MATERIALS AND METHODS**

**2.1. Study Design**

The online survey/self-administered questionnaire was distributed to Klang Valley magnetic resonance (MR) radiographers via email and Malaysian Society of Radiographers Facebook group. The online questionnaire, which was adapted and adopted from Jette et al., (2003) and Yahui & Swaminathan (2017), consists of three sections: section 1 contains sociodemographic data, section 2 contains knowledge about EBP and section 3 contains attitudes and beliefs about EBP, as well as its use and perceived benefits and limitations of EBP. The level of knowledge score was classified into three categories: high, moderate, and low. The attitudes and practices were classified as positive and negative attitudes toward EBP, as well as high and low use of EBP.

**2.2 Study Population**

This study included 114 MR radiographers, who have formal training of MRI, and working experience of minimum 3 months at radiology department of twelve public and teaching hospitals in Klang Valley. Medical imaging and radiology trainees were excluded from the study.

**2.3. Data Collection**

The data from the questionnaire were collected using Google Form, and the analyses were performed using the Statistical Package for the Social Sciences (SPSS) software version 23.0. The data were interpreted and statistically analyzed through descriptive statistics. The Chi-square test was used to determine relationship of EBP and sociodemographic variables. The statistical significance was set at  $p < 0.05$ , with a confidence interval of 95%.

**2.4. Validity and Reliability**

The questionnaire reliability was assessed in terms of consistency by using Cronbach's alpha for the response items, and variables measuring the knowledge, attitudes, and practice were 0.866. A pilot study was carried out with 11 MRI radiographers before actual data were collected to obtain the information to improve the survey questions' quality and effectiveness.

**2.5. Ethical Consideration**

This study was approved by the Universiti Teknologi MARA (UiTM) ethics committee with reference number: 600-TNCPI (5/1/6) and approval code was REC/12/2020 (UG/MR/295).

**3. RESULTS**

**3.1. Response rate**

100% response rate was obtained from the survey. The sociodemographic characteristics of the MR radiographers are presented in Table 1. The majority of MR radiographers (54.4%) were females between the ages of 30 and 39 (40.4%), and 56.1% were diploma holder. A small majority (33.3%) of MR radiographers had 11–15 years of work experience. Most of the MR radiographers reads the 2-5 articles per month and rarely apply the research findings in their daily working routine.

Table 1. The sociodemographic data.

| Characteristic   | n  | %    |
|--|----|------|
| <b>Gender</b>  |    |      |
| Male   | 52 | 45.6 |
| Female   | 62 | 54.4 |
| <b>Age</b>   |    |      |
| 20-29  | 30 | 26.3 |
| 30-39  | 46 | 40.4 |
| 40-49  | 33 | 28.9 |
| 50+  | 5  | 4.4  |
| <b>Working Experience</b>                                |    |      |
| 2 – 5  | 24 | 21.1 |
| 6 – 10   | 34 | 29.8 |
| 11 – 15  | 38 | 33.3 |
| >15  | 18 | 15.8 |
| <b>Highest Degree</b>                                    |    |      |
| Diploma  | 64 | 56.1 |
| Bachelor's degree  | 50 | 43.9 |
| Master's degree  | 0  | 0    |
| Doctoral degree  | 0  | 0    |
| <b>Read/Review research/literature in a month</b>        |    |      |
| <1 article   | 41 | 36.0 |
| 2-5 articles   | 47 | 41.2 |
| 6-10 articles  | 8  | 7.0  |
| 11-15 articles   | 5  | 4.4  |
| >15 articles   | 13 | 11.4 |
| <b>Use professional literature and research findings</b> |    |      |
| Never  | 26 | 22.8 |
| Rarely   | 51 | 44.7 |
| Sometimes  | 12 | 10.5 |
| Often  | 12 | 10.5 |
| Always   | 13 | 11.4 |

### 3.2. Knowledge of EBP

Overall, the study discovered that 61 (53.5%) of the 114 respondents rated themselves as having a low level of knowledge about EBP, 20 (17.5%) as having a moderate level of knowledge, and 33 (28.9%) as having a high level of knowledge about EBP. Table 2 depicted the frequency distribution of items in Section 2: Knowledge about EBP questionnaire. The respondents demonstrated poor level of knowledge in response to questions concerning formal training in search strategies (Q.8), formal training in critical appraisal (Q.10), the ability to critically review professional literature (Q.11), the ability to find relevant research articles (Q.12) and understanding research terminologies (Q13).

Table 2. Frequency distribution level of EBP knowledge.

| Item No. | Variables   | Yes       | No        |
|----------|---|-----------|-----------|
|          |   | n (%)     | n (%)     |
| 7.       | I learned the foundations for EBP as part of my academic preparation.                                       | 61 (53.5) | 53 (46.5) |
| 8.       | I have received formal training in search strategies for finding research relevant to my practice.          | 38 (33.3) | 76 (66.7) |
| 9.       | I am familiar with the medical search engines (eg, MEDLINE, CINAHL, mrimaster).                             | 57 (50.0) | 57 (50.0) |
| 10.      | I received formal training in critical appraisal of research literature as part of my academic preparation. | 54 (47.4) | 60 (52.6) |
| 11.      | I am confident in my ability to critically review professional literature.                                  | 38 (33.3) | 76 (66.7) |
| 12.      | I am confident in my ability to find relevant research to answer my clinical questions.                     | 37 (32.5) | 77 (67.5) |
| 13.      | Research terminology  |           |           |
|          | a) Relative Risk  | 44 (38.6) | 70 (61.4) |
|          | b) Absolute Risk  | 36 (31.6) | 78 (68.4) |
|          | c) Systematic Review  | 65 (57.0) | 49 (43.0) |
|          | d) Odds Ratio   | 47 (41.2) | 67 (58.8) |
|          | e) Meta-analysis  | 46 (40.4) | 68 (59.6) |
|          | f) Confidence Interval  | 44 (38.6) | 70 (61.4) |
|          | g) Heterogeneity  | 30 (26.3) | 84 (73.7) |
|          | h) Publication bias   | 54 (47.4) | 60 (52.6) |

On further analysis, the Chi-square test revealed a significant relationship between knowledge and age ( $\chi^2(6) = 28.758, p < .001$ ), knowledge and working experience ( $\chi^2(6) = 24.709, p < .001$ ), knowledge and qualification attained ( $\chi^2(2) = 31.212, p < .001$ ), knowledge and the numbers of articles read per month ( $\chi^2(8) = 85.929, p < .001$ ) and knowledge with decision-making ability ( $\chi^2(8) = 98.715, p < .001$ ). However, there was no significant relationship between EBP knowledge and gender ( $\chi^2(2) = 0.005, p = 0.997$ ).

### 3.3. Attitude towards EBP

The survey reveals that 110 (96.5 %) out of the 114 respondents had a positive attitude toward EBP, while 4 (3.5 %) had a negative attitude toward EBP. According to Table 3, the majority of the respondents (n=105; 92.1 %) agree that the use of EBP is necessary for the MRI procedure, 111 of respondents (97.4 %) are interested in incorporating EBP into their daily working practice, and 102 of respondents (89.5 %) agreed that literature and research findings are useful in day-to-day practice; and EBP can improve the quality of service and practices in MRI.

Table 3. Frequency distribution level of EBP attitudes.

| Variables   | Yes |      | No  |      |
|---|-----|------|-----|------|
|   | n   | %    | n   | %    |
| Application of EBP is necessary in the procedure of MRI.                                | 105 | 92.1 | 9   | 7.9  |
| I am interested in using EBP in my daily practice.                                      | 111 | 97.4 | 3   | 2.6  |
| Literature and research findings are useful in my day-to-day practice.                  | 102 | 89.5 | 12  | 10.5 |
| The adoption of EBP places an unreasonable demand on MRI procedure.                     | 11  | 9.6  | 103 | 90.4 |
| EBP improves the quality of service and practices in MRI.                               | 102 | 89.5 | 12  | 10.5 |
| EBP does not consider the limitations of my clinical practice setting.                  | 90  | 78.9 | 24  | 21.1 |
| My reimbursement rate will increase if I incorporate EBP into my practice.              | 16  | 14.0 | 98  | 86.0 |
| Strong evidence is lacking to support most of the interventions I use with my patients. | 98  | 86.0 | 16  | 14.0 |
| EBP helps me make decisions about the technical procedures and other practices in MRI.  | 102 | 89.5 | 12  | 10.5 |
| EBP does not consider patient preferences.  | 11  | 9.6  | 103 | 90.4 |

The Chi-square test reveals no statistically significant relationship between attitude toward EBP and gender ( $\chi^2(1) = 3.477, p = 0.124$ ), age ( $\chi^2(3) = 5.225, p = 0.211$ ), working experience ( $\chi^2(3) = 1.748, p = 0.63$ ), qualification attained ( $\chi^2(1) = 3.329, p = 0.13$ ), number of articles read monthly ( $\chi^2(4) = 7.381, p = 0.183$ ) and use of literature in decision

making ( $\chi^2(4) = 6.658, p = 0.25$ ).

### 3.4. Use of EBP

Table 4 shows the item frequency distribution in the use and practice of EBP. The study discovered that 75 (65.8 %) of the respondents had a low use and practice of EBP, while 39 (34.2 %) out of the 114 respondents had a high use and practice of EBP. The analysis, in conjunction with the individual elements evaluating the use of EBP, reveals varying levels of performance (Table 4). The study found that 77 (67.5%) of respondents did not use EBP in their daily clinical work, 67 (58.8%) did not use EBP by applying the information to practice and sharing ideas with other colleagues, and 76 (66.7%) did not disseminate current ideas about EBP to other colleagues. The study also revealed that respondents did not frequently monitor and review their colleague’s practices towards EBP (n=89; 78.1%), did not frequently critically appraise EBP against set criteria (n=76; 66.7%); and did not frequently track down relevant evidence after question formulation (n=73; 64.0 %).

As per Chi-square test finding, the variables that had a significant relationship with the use and practice of EBP were age ( $\chi^2(3) = 10.185, p = 0.015$ ), working experience ( $\chi^2(3) = 10.958, p = 0.012$ ), qualification attained ( $\chi^2(1) = 12.523, p < .001$ ), the number of articles read monthly ( $\chi^2(4) = 66.669, p < .001$ ), and the use of literature in decision making ( $\chi^2(4) = 90.216, p < .001$ ). Gender, on the other hand, was had no significant relationship with EBP ( $\chi^2(1) = 0.768, p = 0.381$ ).

Tabel 4. Frequency distribution level of EBP practices.

| Variables   | Yes |      | No |      |
|---|-----|------|----|------|
|   | n   | %    | n  | %    |
| I use EBP in my daily clinical work.  | 37  | 32.5 | 77 | 67.5 |
| I use the EBP by applying information to the practice and sharing ideas with other colleagues | 47  | 41.2 | 67 | 58.8 |
| I always disseminating current ideas about EBP to my colleagues.                              | 38  | 33.3 | 76 | 66.7 |
| I am monitoring and reviewing my colleague’s practices towards EBP.                           | 25  | 21.9 | 89 | 78.1 |
| I often critically appraised EBP against a set-criteria                                       | 38  | 33.3 | 76 | 66.7 |
| I often tracked down relevant evidence after question formulation                             | 41  | 36.0 | 73 | 64.0 |

## 4. DISCUSSION

### 4.1. Knowledge of EBP

Finding from this study depicted that MR radiographers in 12 selected public and teaching hospitals in Klang Valley

had low knowledge about EBP. These outcome is contrary to the previous studies that radiographers had high knowledge and skills of EBP (Ahonen & Liikanen, 2010; Nalweyiso et al., 2019; Ooi et al., 2012). The findings reveal that most MR radiographers over the age of 30 who hold diploma certificates had insufficient knowledge about EBP. It can be concluded that they did not receive formal training in search strategies for finding relevant research and critical appraisal of research literature. These findings were consistent with a study by Foo et al. (2011) found that nurses who had diplomas did not seem to have any evidence-based practice courses in their curriculum. Furthermore, older nurses who had gained their last academic qualification after 2005 reported less knowledge, less practice and fewer skills associated with EBP than younger nurses (Aburuz et al., 2017; Ammouri et al., 2014). Additionally, the study discovered that MR radiographers with more than six years of experience demonstrated inadequate knowledge of EBP due to the high workload they had to manage each day. This study supports evidence from previous studies that indicated that nurses had to face an increased workload and insufficient time to be involved in the evidence-based practice process due to the complexity of the process and work environment barriers themselves (Alqahtani & Oh, 2020; Atakro et al., 2020; Khammarnia et al., 2015).

However, the findings of the study identified the significant association between the highest qualification attained and the knowledge regarding EBP. Therefore, most of the MR radiographers in this study that hold degree certificates as their highest qualification had high knowledge of EBP. It is because the radiographers had learned about the fundamentals for EBP as part of their academic preparation. The difference is due to greater exposure to theoretical knowledge among MR radiographers with bachelor’s degrees, as they were recruited from institutes that prepared students for academic writing instead of diploma certificate holders. These findings were consistent with few studies that stated that radiographers with a higher degree were considered more competent to conduct radiography research than those with a lower degree (Ahonen & Liikanen, 2010; Saukko et al., 2021). Furthermore, many studies had stated that nurses in high academic degrees were more knowledgeable than the lower degree curricula because higher degrees programs prepare their graduates to read and understand research findings, as compared to lower degree programs (Aburuz et al., 2017; Ammouri et al., 2014; Majid et al., 2011; Warren et al., 2016; Weng et al., 2013).

Furthermore, this study also demonstrated that younger radiographers with less than five years of experience possessed a greater knowledge of EBP. It is because they have limited experience with MRI procedures and thus seek strong evidence to support their patients' interventions. These results seem to be consistent with other research stated that the younger nurses that had less experience in implementing the EBP had greater knowledge of EBP due to being more recently trained to had better information technology and

literature searching skills (J.M. et al., 2001; Warren et al., 2016).

Findings from the study reveal that MR radiographers lacked a basic understanding of the technical terminology used in EBP. The lack of knowledge about EBP's technical terminology could be explained by the fact that most radiographers relied on clinical expertise rather than reading systematic reviews and ignorance of the fact that patient opinion is an essential component of EBP. In accordance with the present results, previous studies have discovered that healthcare practitioners did lack a basic understanding of the technical terms used in EBP and lacked knowledge about systematic reviews and EBP components (Azar et al., 2017; Bhor et al., 2019; Majid et al., 2011; Malik et al., 2015). The present study also found that a significant number of MR radiographers did not understand the term 'relative risk', 'absolute risk', 'odds ratio', 'meta-analysis', 'confidence interval', 'heterogeneity' and 'publication bias'. In accordance with the present results, previous studies have discovered that the healthcare providers had a low understanding towards 'odds ratio', 'likelihood ratio (LR)', 'confidence interval' and 'heterogeneity' (Azar et al., 2017; Chandramohan et al., 2013; HEIWE et al., 2011). However, the majority of MR radiographers also fully understood the term 'systematic reviews' completely. These results are in agreement with few studies that discovered that most of the respondents understood the 'systematic terms' and 'absolute risk' (Azar et al., 2017; Jette et al., 2003).

#### 4.2. Attitude towards EBP

According to the findings, MR radiographers had a positive attitude toward EBP, and their attitudes toward EBP were more positive than their knowledge and use of EBP. These findings were along with earlier studies explaining which indicates that the radiographers (Ahonen & Liikanen, 2010; Saukko et al., 2021) and other medical practitioners had a positive attitude towards EBP (Antwi WK, 2015; Chandramohan et al., 2013; Jette et al., 2003; Malik et al., 2015; Yahui & Swaminathan, 2017). As a result, it appears that MR radiographers' attitudes toward EBP differ from their ability to put EBP into practice. The positive attitude of the MR radiographer demonstrated that they believe that the literature aids them in their practice, decision-making, improves the quality of patient care and lowers healthcare costs. These findings are in line with previous studies who stated that EBP helps in decision-making and improves care to the patient (Aburuz et al., 2017; Eladawi & Abdelhady, 2020; Hsieh & Chen, 2020; Malik et al., 2015; Yahui & Swaminathan, 2017).

This study also reveals that younger radiographers with less than five years of experience showed a positive attitude and better knowledge of EBP as they previously developed an EBP project from their undergraduate program. These findings are in line with the results of Warren et al. (2016) that

younger nurses' with fewer years of experience and less stint have demonstrated more positive responses toward EBP. Positive attitudes toward EBP are associated with nurses with fewer years of experience and with greater knowledge of EBP (Dalheim et al., 2012; Patelarou et al., 2013; Smith et al., 2014). However, the study also found that radiographers with more than six years of experience also have a positive attitude towards EBP even though they have low knowledge of EBP. It can be proved from Chandramohan et al. (2013) that residents were aware of standard terms used in evidence-based literature but unfamiliar with many, and the majority of those who did not understand these terms were interested in learning them. On the other hand, the healthcare practitioners with more than 11 years' experience felt that original research papers were far more confusing than their less experienced colleagues (Hadley et al., 2008).

Furthermore, this study revealed that radiographers with diploma certificates also showed a positive attitude towards EBP because they were interested in using EBP in their daily practice. They also believed that literature and research findings are helpful in their daily routine. This finding is consistent with the results of Nalweyiso et al. (2019), who found that radiographers with at least a bachelor's degree were nearly three times more likely to have a positive attitude towards EBP. As previously reported, nurses with high level of education have more positive attitude, reported higher levels of knowledge and skill than nurses with lower levels of preparation (Aburuz et al., 2017; Brown et al., 2009; Majid et al., 2011).

The results indicated that radiographers working in 12 selected public and teaching hospitals in Klang Valley generally have a positive attitude towards evidence-based practice and believe that the use of evidence in practice is necessary. In similar studies conducted by Jette et al. (2003) and Yahui & Swaminathan (2017), the physical therapist believes that the EBP is necessary for their daily practice and that it is required to provide higher quality service for their patients. The findings of the study depicted that the respondents were varied in their thoughts that EBP might not take into consideration the limitations of their practice settings. Cranney et al., 2001, as cited in Jette et al., 2003, stated that qualitative statements by physician general practitioners in the United Kingdom have suggested doubts about the applicability of practice guidelines to specific patients in specific settings and the relevance of research findings to their practices. Therefore, the radiographers' responses could indicate a belief that the literature available might not be compliant for implementation.

Moreover, the respondents were also varied in their opinions regarding whether strong evidence existed to support the interventions they provided. The mixed reactions may be a sign that further research is required to support the radiological practice. In a similar study conducted by Freeman & Sweeney (2001), as cited in Antwi WK (2015), the respondents were interested in improving their skills that are

associated with incorporating evidence into training and that they are required to use more proof in practice. The findings of this study also show that respondents have different views about the application of EBP. A huge number of radiographers disagree that the use of EBP places an unreasonable request on MRI procedure, while a small proportion of radiographers agree. These results are in accord with recent studies indicating that the practices based on the best available evidence can decrease the inconsistencies in care and improve patient quality as well as safety and reduce the costs (Bahammam & Linjawi, 2014; Warren et al., 2016).

### 4.3. Use of EBP

The findings from this study demonstrated that MR radiographers had low use of evidence to support radiographer decisions. Although similar findings have been earlier reported by fewer studies that healthcare practitioners had poor practice in the use of EBP (Warren et al., 2016; Zhou et al., 2016). These findings are in line with previous studies who stated that radiographers involvement in research and utilization of research evidence in practice is low (Elliott et al., 2009; Ooi et al., 2012; Saukko et al., 2021). Attitude has been proven to be an important individual factor for the advantage of EBP in practice; however, it is realistic to expect a combination of factors outside of attitude that could affect the use of evidence in the clinical practice. Knowledge, education level, leadership, and workload are just a few of the major factors that have been identified as influencing healthcare professionals' use of EBP. It can be demonstrated with previous studies that workload, inadequate time, and lack of knowledge and skills were the most significant barriers to implementing EBP for healthcare professionals (Alqahtani & Oh, 2020; Atakro et al., 2020; Khammarnia et al., 2015; Ooi et al., 2012). As with previous research in Malaysia by Lai et al. (2010) found that inadequate infrastructure to access evidence, limited availability and poor training of information specialists such as the medical librarians were the major factors.

In terms of daily work, the present study discovered that the majority of radiographers stated they did not use EBP on a daily basis. In Malaysia, nurses who work in teaching hospital had poor utilization of evidence in their practice (Bashar, 2019). The lack of time, resources, ability to interpret research findings and to read and understand journal articles and support from colleagues or the organization were some of the commonly reported barriers (Byham-Gray et al., 2005; Davies et al., 2007; Elliott et al., 2009; Kuuppelomäki & Tuomi, 2005; Melnyk et al., 2004; Segrott et al., 2006) to research and evidence-based practice among healthcare practitioners, which indicated that with an adequate infrastructure and training opportunities, radiographers would be more likely to conduct research (Reid & Edwards, 2011; Wallin, 2009). Additionally, the study noted that a lack of use of EBP in putting information into practice and sharing information with other colleagues was a factor in the findings

of the study. The findings are in accordance with the study by Zhou et al. (2016) that poor practice in EBP, especially with regard to “critically appraising literature,” “evaluating the outcomes of own practice,” and “sharing information with colleagues.”

The other results in the study revealed that the majority of the radiographers with more than six years of experience had low usage of EBP due to some barriers such as lack of access to full-text articles, time constraints in implementing EBP into routine clinical practice, and a lack of skills in evaluating scientific journals. Therefore, they are unable to critically evaluate EBP using a set of criteria and track down relevant evidence for the procedures. In contrast to previous study, the study found that radiographers with longer work experience were more likely to be involved in research than those with less experience (Ooi et al., 2012). One possible explanation could be that more experienced radiographers wish to take on new responsibilities and challenges within imaging departments besides their routine clinical. This outcome is contrary to that of Dalheim et al. (2012) who discovered that younger nurses and nurses with fewer years of experience found time constraints to be a greater barrier to finding and managing research evidence than others.

Those with diploma certificates, on the other hand, may have received little academic exposure to EBP, resulting in a lack of professional knowledge. As previously reported, nurses who earned their last academic degree after 2005 reported less knowledge and fewer skills associated with EBP, as well as greater barriers to changing their practices, when compared to nurses who earned their last academic degree on or before 2004 (Ammouri et al., 2014). On the other hands, the findings from this research shows that MR radiographer with degree certificates had high use towards EBP. The Chi-squared test was used to identify a significant relationship between higher levels of education and the use of EBP. Thus, MR radiographers with a higher level of education were approximately twice as likely to have increased their use of EBP as those with a lower level of qualifications. The results are consistent with the previous studies found that healthcare practitioners with higher professional qualifications were better able to implement EBP in routine daily practice than those with lower academic degree (Majid et al., 2011; Weng et al., 2013). In a similar study by Ahonen & Liikanen (2010) stated that radiographers' with higher degree seems to increase the view of the significance of research activities and a research-oriented way of working. These findings could indicate that as radiographers advance in their education, they become more aware of, skilled in, and have more access to research literature.

Additionally, the current study discovered that a small number of MR radiographers that frequently used EBP with more than six articles per month exhibited a high level of EBP use. This is because they are constantly on the lookout for relevant and important research and evidence and utilizing it to justify the procedures performed on the patient. This is

supported by the findings of Melnyk et al. (2004) stated that, because learning and searching databases that contain high-quality systematic reviews and EBP guidelines is a critical step in EBP, this is unsurprising that individuals who were educated about these resources have had an opportunity to implement higher levels of EBP. In a previous studies conducted by (Byham-Gray et al., 2005; Segrott et al., 2006), as cited in Ooi et al. (2012), found that radiographers who read journal articles frequently are found to have a more positive attitude towards research, and similar trends. This suggests that frequent journal reading may be associated with higher research awareness and greater enthusiasm.

There are some limitations to this study that should be considered. As this study was limited to a single region, Klang Valley, the findings cannot be extrapolated to other regions. Moreover, the study population was restricted to public hospitals and universities.

## 5. CONCLUSION

This study presents the evaluation of EBP among radiographers in MRI practice in Klang Valley. The finding reveals that, although radiographers' attitudes towards EBP appeared to be generally positive, their knowledge and implementation of EBP were lacking. Implementing EBP is challenging due to a lack of skills for locating and managing research evidence, unfamiliarity with the search engine, and poor understanding of the jargon found in research articles. Furthermore, because radiographers are unfamiliar with the EBP principle and rarely apply it in their daily work, a lack of understanding of the research process impedes its implementation.

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