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Knowledge, attitudes and practices towards evidence based practice: A survey amongst radiographers

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ABSTRACT

Introduction: It is increasingly becoming a requirement for radiographers to use the concept of Evidence Based Practice (EBP) to inform their clinical practice. The purpose of this study was to assess knowledge, attitudes and practices towards the use of EBP as well as to establish factors that influence the use of EBP amongst radiographers in Uganda.
Methods: A total of 83 respondents participated in a cross-sectional survey conducted amongst qualified radiographers licensed to practice in Uganda. Data was collected using a self-reporting questionnaire that was accessed through the Bristol Online Survey Software. Using SPSS version 21, descriptive and inferential statistics were generated.
Results: The study revealed that 47 (57%) and 36 (43%) respondents scored themselves as having high and low knowledge of EBP respectively. However, 52 (63%) respondents scored themselves as having a negative attitude towards EBP. As regards use of EBP, 49 (59%) out of 83 respondents reported use of EBP in clinical practice. Using binary logistic regression, a significant association was found between a high knowledge level and the use of EBP (Adjusted OR, 95% CI: 9.89: 3.54–27.64).
Conclusion: Overall, majority of the respondents had high knowledge levels about EBP. However, a high proportion of them were found to have a negative attitude towards EBP. High knowledge levels of EBP were strongly associated with use of EBP in practice. This finding provides helpful insights for policy makers to consider a holistic approach towards improving the use of EBP among radiographers through devising interventions that strengthen both knowledge and attitude towards EBP.

Introduction

Evidence-based Practice (EBP) is the foundation of clinical practice by healthcare professionals globally.[1,2] EBP is the integration of research evidence with clinical expertise, patient values and circumstances while making decisions about patient care.[3] EBP is vital given the current healthcare context that is characterized by technological advancement, advanced diagnostic and therapeutic procedures, increasingly quality-conscious users, legislative, ethical and economical issues.[1] Although introduced by physicians, EBP has been embraced across other professions including radiography to ensure quality healthcare service delivery.[2,4]

When professionals like, radiographers provide healthcare in ignorance of the current available research evidence, they may miss the best decisions to benefit patients and instead cause significant harm.[5] The Sicily statement on EBP as published in 2005 emphasises the need for healthcare decisions to be made by the patients, informed by the current available research evidence and expertise of the healthcare professionals within the context of available resources.[6] However, there is increasing concern about the low research activity and publications among some healthcare professions like radiography.[1,5]

In developing countries the number of radiologists is limited compared to the increasing patient load, thus radiographers need to take on more tasks such as image interpretation, reporting, and

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research.[7,8] Role development requires the evidence base to continue evolving to support effective patient care among radiograhers.[9,10] Challen, Kaminski and Harris,[5] argue that radiographers should participate in research activities in order to develop themselves, the profession and for the benefit of their patients. However, EBP is not yet routinely used as established practice within this profession[1,11,12]

Radiography training in Uganda involves a range of imaging modalities including radiography, ultrasound, computed tomography, magnetic resonance imaging and radiotherapy. Therefore, a radiographer trained at basic level in Uganda is expected to work with a range of imaging modalities.[13] Furthermore, qualified radiographers work independently but can consult radiologists if the need arises. Most rural-based imaging facilities are manned by radiographers due to the limited number of radiologists.[7] The Ugandan government has put in place efforts to support the use of EBP among healthcare professionals but these tend to focus on medicine and nursing.[13] In order to promote the use of EBP among radiographers, it is necessary to be aware of their knowledge, attitudes and practices towards the use of the EBP concept as well as the factors that influence the use of EBP.

Literature review

The radiography profession has expanded since the discovery of X-rays with newer technologies and responsibilities for radiographers.[14] Accordingly, radiographers need to learn new skills in order to remain relevant in healthcare. Furthermore, patient care has seen a shift among all healthcare professionals from relying on expert opinions to an emphasis on use of research evidence.[15] Consequently, radiographers need to incorporate EBP in their daily practice to provide high quality healthcare[3,14] However, studies have shown that the use of research evidence is still lacking among radiographers.[3,16]

Funding is increasingly being utilised to conduct quality research which has resulted in a growth of healthcare related literature.[16,17] There is also development of technology, increasing demand for quality diagnostic and therapeutic procedures.[5] Radiographers are also increasingly more involved in clinical decision-making, necessitating them to utilise the best evidence to make effective decisions.[4] Challen's study[11] reported a positive attitude towards EBP by radiographers, however, many barriers prevent them from using EBP in their practice.[11,17,18]

Lack of time and other resources has been reported as a common barrier to EBP use among radiographers; lack of training or support from colleagues or the organization; lack of a strong professional identity and image of the radiography profession and limited authority to implement research findings in imaging departments. Despite these barriers, the literature continues to emphasize the use of evidence generated through research to inform practice,[19–21] but, the uptake of research evidence among healthcare professionals' practice is still limited.[22]

In one study,[15] it was reported that majority of the respondents did not have the knowledge and skills necessary to apply EBP. Another study conducted in the UK[12] reported less knowledge of EBP among radiographers compared to other health professions. In this study, 68.6% of the radiographers rated their knowledge of EBP as being "poor" 22.9% rated it as "mid"point, and only 8.6% as "high". Significant differences between and within these allied health professions, in terms of their knowledge and skills relevant to EBP, were also reported. While EBP among radiographers is now taking shape in the more developed world, it is still in its early stages in Sub-Saharan Africa.[23]

In order to promote the incorporation of EBP in radiographers' practice, it is necessary to have interventions specific to the radiography profession. However, this needs to be preceded by investigating the radiographers' knowledge, attitudes and practices regarding EBP in their practice. There is a lack of recent published literature regarding EBP, specifically from radiographers. Thus, the present study aimed to assess knowledge, attitudes and practices towards EBP amongst radiographers in Uganda including an exploration of factors that influence the use of EBP within the radiographers' professional practice.

Methods

Study design

This was a cross-sectional descriptive quantitative study in which survey questionnaires were distributed to practising radiographers in Uganda.

Target population

The target population was 468 (all radiographers registered by the Allied Health Professionals Council of Uganda and practising in Uganda). The eligible radiographers were identified by a gate keeper (i.e. a person who has access to the contacts of registered radiographers) who also sent out the survey tool. A reminder e-mail was also sent by the gatekeeper 2 weeks after the initial e-mail to increase the response rate.

Sampling

Volunteer sampling was employed to enrol the radiographers. The sample size for this study was calculated using a formula $N = Z^2.P.(100\text{-}P)/d^2$ by Leslie.[24] In this formula, Z is the standard normal variate (1.96) at a significance level of 0.05; P is the estimated proportion of radiographers (8%) with knowledge about EBP[12]; d is the absolute error of precision (5%). Thus, a sample of 100 participants was computed i.e. $(1.96^2 \times 7 \times 93)/5^2$. Considering a response rate of 40%, a total of 260 questionnaires were distributed.

Data collection

Data was collected using a validated self-report questionnaire.[12] This is a generic questionnaire, but the bio-data section was slightly modified to fit into the context of the radiography profession. The rest of the questionnaire items were not changed. The questionnaire had 40 items; instructions were included on the front page and at the start of every section of the questionnaire. The questionnaire was broken down into 3 main sections namely, personal attitudes towards EBP, personal knowledge about EBP and a section with elements that measured practice (use). The questionnaire was piloted using five radiographers to ensure face validity before sending it out to the participants.

Data analysis

Using SPSS Version 21.0 (IBM Corp, Armonk, NY), descriptive and inferential statistics (odds ratio and binary logistic regression) were generated. For each of the 3 major subsections of the data collection tool, aggregate scores were generated, and 2 categorical variables were created. Regarding attitude levels, the subsection had 2 response items all measured on a Likert scale of 1–7 and for each of the response items, the authors considered a response of "5 and above" to have "Negative attitude" while "less than 5" was considered to have "positive attitude". Then, an aggregate score of "10 and above" for the 2 items that measured attitude was calculated and considered to be having "Negative attitude" while an

aggregate score of "less than 10" was calculated and considered to have "positive attitude". Subsequently, the number and proportions of participants who had Negative or Positive attitudes were analysed.

Regarding knowledge levels, the subsection had 11 response items all measured on a Likert scale of 1–7 and for each of the response items, the authors considered a response of "5 and above" to be "high knowledge" while "less than 5" were considered to have "low knowledge". So, an aggregate score of "55 and above" for the 11 items was calculated and considered to be having "high knowledge levels" while an aggregate score of "less than 55" was considered to have low knowledge. Then the number and proportions of participants who had high or low knowledge levels were analysed.

While measuring the use of EBP, this subsection had 9 items all measured on a Likert scale of 1–7. For each of the items, the authors considered a score of "5 and above" to have "high use of EBP" for each of the response items while "less than 5" was considered to have "Low use of EBP" for each of the response items. So, an aggregate score of "45 and above" for the 9 items that were included in the analysis, was calculated and considered to be having "High use of EBP" while an aggregate score of "less than 45" was considered to have "Low use of EBP". Then the number and proportions of participants who had "High use of EBP or Low use of EBP were analysed. The Cronbach's coefficient alpha for the response items and variables measuring attitude, knowledge and practice/use of EBP was 0.89. This indicated excellent internal consistency and reliability of the questionnaire items and variables generated in this study.

Ethical considerations

Ethics approval to conduct this study was granted by the Research Governance and Ethics Committee, School of Health and Social Care at Teesside University, UK (Ethics approval number 039/17). Permission was also granted from the Allied Health Professions Council of Uganda. Participants were sent an information sheet to explain the purpose of the study and informed consent was implied when the participants filled and returned the questionnaires.

Results

Response rate

The questionnaire was completed by 83 respondents out of 260 participants who were invited to participate in the study (response rate 32%). This low response rate could be attributed to the low use of e-mail most of the time by the radiographers in Uganda especially by radiographers in rural settings where connectivity is either non-existent or very limited. Out of the 83 who completed the questionnaire, 38 (46%) of the respondents were aged 20–29 years and 29 (35%) of the respondents were aged 30–39 years. Only 16 (19%) were aged above 40 years. The data generated from the socio-demographic characteristics of the respondents is presented in (Table 1).

Knowledge of EBP

Overall, regarding levels of knowledge on EBP, the study revealed that 47 (57%) and 36 (43%) of the respondents scored themselves as having high and low knowledge respectively. In this context, knowledge refers to cognitive awareness of EBP rather than application. The frequencies of the individual elements that were assessed for knowledge levels are presented in (Table 2). On further analysis, the factors that had a significant association with high knowledge levels of EBP included; attendance of professional meetings such as conferences or workshops (OR 2.45, 95% CI

Table 1
Illustrates the socio-demographic characteristics of participants.

Characteristic	Category	Total n = 83
		Frequency n (%)
Gender	Male	66 (79.5%)
	Female	17 (20.5%)
Length of radiographers' qualification (experience)	<5 years	40 (48.2%)
	5–10 years	21 (25.3%)
	11–15 years	14 (16.9%)
	>15 years	8 (9.6%)
Highest education level	PhD	3 (3.6%)
	Masters	9 (10.8%)
	Bachelors	35 (42.2%)
	Diploma	36 (43.4%)
Hold a valid license	Yes	69 (83.1%)
	No	14 (16.9%)
Registered with a professional body	Yes	81 (97.6%)
	No	2 (2.4%)
CME participation (at least once a year)	Yes	72 (86.7%)
	No	11 (13.3%)
Clinical certified specialist	Yes	25 (30.1%)
	No	58 (69.9%)
Location of facility where the participant works	Rural	19 (22.9%)
	Urban	64 (77.1%)
Type of facility where radiographers work	Research/teaching facility	15 (18.0%)
	Public hospital	37 (44.6%)
	Privately owned clinic	31 (37.4%)
Number of radiographers employed by the facility where participants works	<5	39 (47.0%)
	5–10	24 (29.0%)
	>10	10 (24.0%)
Radiographer's hours of practice per week	<40	32 (38.6%)
	>40	51 (61.4%)
Daily number of patients examined by radiographers	<15	6 (38.6%)
	>15	51 (61.4%)

Table 2
Frequencies of variables that were assessed for knowledge levels.

Variable	Agree OR High Knowledge *n (%)*	Disagree OR Low knowledge *n (%)*
Ability to apply information to individual situations	73 (88%)	10 (12%)
Ability to identify gaps in own practice	71 (86%)	12 (15%)
Ability to determine how usefulness of the material	70 (84%)	13 (16%)
Ability to determine validity of the material	64 (77%)	19 (23%)
Having information technology skills	61 (74%)	22 (27%)
Awareness of major information needs	59 (71%)	24 (29%)
Having skills for monitoring and reviewing of own practice	58 (70%)	25 (30%)
Knowledge of how to retrieve evidence	58 (70%)	25 (30%)
Ability to analyse critical evidence against standards	57 (69%)	26 (31%)
Having research skills to enable use of EBP	44 (53%)	39 (47%)
Ability and knowledge to convert own information needs	41 (49%)	42 (51%)

1.66–2.87) and having a graduate academic qualification (OR 3.35, 95% CI 1.35–8.31) as shown in (Table 3).

Attitude towards EBP

Only 31 (37%) of the radiographers had positive attitude towards EBP. Compared to those with diploma qualifications, radiographers with at least a bachelor's degree were almost three times more likely to have a positive attitude towards EBP (OR 2.9, 95% CI 1.05–7.96). Also, a long experience of working within radiography was significantly associated with positive attitudes towards EBP (OR 3.4, 95% CI 1.31–8.52). Other factors like age, gender and workload had no considerable influence on radiographers' attitude towards EBP (Table 4).

Use of EBP

A total of 49 (59%) out of 83 respondents reported use of EBP in their daily clinical work. Analysis along the individual elements that assessed use of EBP indicates varying levels of performance i.e. 73 (88%) reported to be applying information to practice and sharing ideas with other colleagues; 73 (88%) reported to be always reviewing their own practice; 67 (81)% reported to be disseminating current ideas about EBP to colleagues and 58 (70%) reported to be monitoring and reviewing their own practice. On the other hand, only 38 (46%) and 13 (16%) reported to often critically appraise their decision against a set-criteria and often tracked down relevant evidence after question formulation respectively (Table 5). At bivariate analysis, the factors that had a statistically significant association with use of EBP included: having post-graduate education level (OR 2.25, 95% CI 1.12–9.03); attending to more than 15 patients daily (OR 0.78 95% CI 0.32–0.91); and having high knowledge on EBP (OR 10.7 95% CI 3.81–81.20) as shown in (Table 6). However, at multivariate level, knowledge was the only factor that had a significant association with use of EBP. As compared to radiographers with low knowledge, those with high knowledge were about ten times more likely to use EBP in their professional practice (OR 9.89, 95% CI 3.54–27.64).

Discussion

The majority of radiographers in this study scored themselves as having high knowledge of EBP. This is in line with a survey carried out by Oliveri et al.[25] which showed that the majority (89%) of doctors felt they were competent in critical appraisal. Although, many radiographers in this study scored themselves high on knowledge regarding EBP, a substantial proportion (43%) still rated their knowledge as low. Previous studies suggest that radiographers have limited knowledge needed for EBP, and an evidence-based culture within the radiography profession has not yet been generally acquired.[12,16]

The present study suggested that radiographers generally held a negative attitude towards EBP, a finding that is inconsistent with previous studies.[12,24] However, these findings are not surprising as historically, greater emphasis has only been placed on EBP in other professional areas including medicine and nursing and less in the radiography profession in Uganda.[13] To embrace EBP, it is essential that all domains in healthcare professions are put into consideration.[13] Furthermore, this study revealed that high academic qualifications had significant associations with positive attitude. However, the majority of respondents in the present study had a diploma as their highest qualification, which probably explains the negative attitude towards EBP. This finding is consistent with findings of Dugdall & Watson,[26] who reported that qualifications had an impact on attitude towards the application of EBP in clinical practice.

Attitude has been shown to be the individual main determinant factor for EBP by Estabrooks et al.[27] Attitude, desire for learning and highest degree held have also been identified as the three predictors for the prosperity to adopt EBP by Bridges

Table 3
Factors that influence Knowledge levels of EBP.

Variable	Variable category	High Knowledge levels	Low Knowledge levels	Unadjusted OR: 95% CI
Gender	Male	41	25	3.9 (0.2–12.5)
	Female	5	12	1.0
Age	30 yrs & More	22	16	1.2 (0.50–2.87)
	<30 yrs.	24	21	1.0
Attendance in CME (conferences and workshops)	Yes	42	30	2.45 (1.66–2.87)[a]
	No	4	7	1.0
Type of Facility	Rural	12	7	1.51 (0.53–4.33)
	Urban	34	30	1.0
Education	Graduates	32	15	3.35 (1.35–8.31)[a]
	Diploma	14	22	1.0

[a] Highlights a statistically significant association.

Table 4
Factors that influence attitude of radiographers towards EBP.

Variable	Variable category	Positive attitude (n = 31)	Negative attitude (n = 52)	Crude OR (95%CI)
Gender	Female	22 (71%)	44 (84.6%)	0.4 (0.12, 5.0)
	Male	9 (29%)	8 (15.4%)	reference
Age	≥30 years	16 (51.6%)	22 (42.3%)	1.5 (0.51,3.55)
	<30 years	15 (48.4%)	30 (57.7%)	reference
Education	Bachelors	21 (46.5%)	20 (25.4%)	2.9 (1.05,7.96)[a]
	Diploma	8 (20.20%)	22 (52.6%)	reference
Location of workplace	Urban	9 (29.00%)	10 (19.2%)	1.7 (0.61,4.83)
	Rural	22 (71.0%)	42 (80.0%)	reference
Experience (Years of license)	≥5 years	21 (57.9%)	20 (34.2%)	3.4 (1.31,8.52)[a]
	<5 years	10 (42.1%)	32 (65.8%)	reference
Hours of work per week	>40 h	10 (32.3%)	22 (42.3%)	0.64 (0.21,1.61)
	≤40 h	21 (67.7%)	30 (57.7%)	reference
Volume of patients seen daily	>15 Patients	13 (41.9%)	19 (36.5%)	1.25 (0.52,3.12)
	≤15 patients	18 (58.1%)	33 (63.5%)	reference
Facility Type	Public	19 (61.3%)	33 (63.5%)	0.91 (0.31,2.20)
	Private	12 (38.7%)	19 (36.5%)	reference

[a] Highlights a statistically significant association.

Table 5
Levels of use of EBP for each of the elements.

Practice item	Agree, n (%)	Disagree, n (%)
Applying information to the practice	73 (88%)	10 (12%)
Sharing ideas with colleagues	73 (88%)	10 (12%)
Always reviewing own practice	69 (83%)	14 (17%)
Dissemination of current ideas about EBPs to colleagues	67 (81%)	16 (19%)
Monitoring and reviewing of practice	58 (70%)	25 (30%)
How often shared information with colleagues	46 (55%)	37 (44.6%)
Often have evaluated the outcomes of your practice	45 (54%)	38 (46%)
Often critically appraise their decisions against a set criteria	38 (46%)	45 (54%)
Often tracked down relevant evidence after question formulation	13 (16%)	70 (84%)

et al.[28] Therefore, it is important to consider individual attitudes when aiming to increase the use of EBP among radiographers.

Findings from this study suggest that there was high use of evidence to support radiographer decisions in practice. Although similar findings have been previously reported by Brown et al.[29] this finding is surprising, as the majority of the radiographers had low attitude towards the use of EBP. Attitude has been shown to be the individual main determinant for the use of EBP in practice,[27] however, it is reasonable to expect that there exists a mix of factors beyond attitude that might influence the use of evidence in clinical practice. Knowledge, education level,

Table 6
Illustrates the results from the bivariate analysis to describe factors that influence use of EBP.

Characteristic	Category	Use of Evidence Based Practices (N = 82)		Unadjusted OR 95% CI
		High use (n = 49 (59%)	Low use (n = 33 (41%)	
Gender	Male	42 (85.7%)	23 (69.7%)	2.6 (0.87,7.77)
	Female	7 (14.3%)	10 (30.3%)	1.0
Age	≥30 years	25 (51%)	13 (39.4%)	1.60 (0.65,3.92)
	<30 years	24 (49%)	20 (60.6%)	1.0
Hold valid license	Yes	43 (87.8%)	25 (75.8%)	2.29 (0.71,7.37)
	No	6 (12.2%)	8 (24.2%)	1.0
Experience in years	5 or more	28 (57.1%)	12 (36.4%)	2.3 (0.94,5.78)
	<5 years	21 (43%)	22 (64%)	1.0
Education	Postgraduate	9 (18.4%)	3 9.1%)	2.25 (1.12,9.03)[a]
	Graduate	40 (81.6%)	30 (90.9%)	1.0
Weekly work hours	>40 h	20 (40.8%)	11 (33.3%)	1.37 (0.55,3.47)
	≤40 h	29 (59.2%)	22 (66.7%)	1.0
Facility Location	Urban	38 (77.6%)	26 (76.5%)	0.93 (0.33,2.73)
	Rural	11 (14.3%)	7 (11.8%)	1.0
Daily Patients	≥15 patients	18 (36.7%)	14 (41.2%)	0.78 (0.32,0.91)[a]
	<15 patients	31 (63.3)	19 (57.6%)	1.0
Type of facility	Public	31 (63.3%)	20 (60.6%)	1.12 (0.45,2.77)
	Private	18 (36.7%)	13 (39.4%)	1.0
Knowledge of EBP	High Knowledge	38 (77.6%)	8 (24.20%)	10.7 (3.81,81.20)[a]
	Low Knowledge	11 (22.4%)	25 (75.8%)	1.0

[a] Highlights a statistically significant association.

leadership and workload, are some of the main factors that have been documented to influence the use of EBP among healthcare professionals.[29] We do recommend further research exploring more factors that influence radiographers to use EBP beyond just knowledge.

Bivariate analysis showed several factors (education level, volume of patients seen daily and knowledge levels) that were associated with use of EBP. However, at multivariate level, knowledge remained the only factor with a significant association with use of EBP. This has also been demonstrated in previous research.[29] In addition, health workers have frequently reported knowledge as a facilitator to implementing EBP. Therefore, if knowledge has been found to have a positive association with use of EBP in this study, education and training programs on EBP that support the general understanding of EBP may help to increase the attitudes regarding EBP, and ultimately, EBP use in radiographers' practice.

Conclusion

Overall, the majority of respondents had high knowledge levels about EBP. However, a high proportion of them were found to have a negative attitude towards EBP. High knowledge levels of EBP were strongly associated with use of EBP in daily practice in this study. This finding provides helpful insights for policy makers and training institutions to consider a holistic and a comprehensive approach towards improvement of use of EBP among radiographers through devising interventions for strengthening both knowledge and attitude towards EBP.

Limitations

- First, the study used a survey to collect data. According to Walling and Larsson (2009), surveys use self-report measures, which are potential to measurement bias and under reporting.
- Secondly, the study used the volunteer sampling technique, there is likely to be a degree of self-selection bias which might have led to the sample of participants not being representative of the population being studied or exaggerated some findings from the study. However, it was an effective sampling strategy in the present study, where the researcher had very little time to search for appropriate participants at a low cost.

Declarations of interest

There is no conflict of interest that has been expressed by any of the authors' and the authors institutions.

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