

Highlights of the study and its contribution to the wider body of knowledge

- Historically, care of the patients was influenced by experiences and opinions of those involved in providing treatment.
- Currently, health care professionals(HCPs) who are involved in clinical decision making are expected to shift away from relying on expert opinions to the use of Evidence Based Practice (EBP) in delivery of patient care. This therefore requires high knowledge and positive attitudes towards EBP among HCPs.
- Little on EBP has been done in sub-Saharan Africa and previous global studies suggest that radiographers still lack knowledge needed for use of EBP.
- In this study, a significant proportion of radiographers had low knowledge levels of EBP and negative attitudes towards the use of EBP. Knowledge of EBP was strongly associated with EBP use.
- The implications of the study findings relate to policy makers and training institutions in sub-Saharan Africa. There is need to incorporate principles of EBP into radiography training curricular as well as institutionalizing mentorship programmes in places of work so that radiographers can actively get involved in not only applying EBP principles, but also participating in generating the much-needed evidence which in turn may improve the attitude of radiographers towards EBP use.

Abstract

Introduction

It is increasingly becoming a requirement for radiographers to use the concept of Evidence Based Practice (EBP) to inform their daily clinical practice. The purpose of this study was to assess knowledge, attitudes and practices towards 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-report questionnaire that was accessed through the Bristol Online Survey Software (BOS). Using SPSS version 21, descriptive (frequencies of responses) and inferential statistics (binary logistic regression) were generated.

Results

Overall, 57% of the radiographers rated themselves high on knowledge levels and 59% reported to use EBP. However, 63% scored themselves to have a negative attitude towards EBP. At binary logistic regression, a significant association was found between knowledge and use of EBP (Adjusted OR, 95% CI: 9.89: 3.54-27.64) in that participants who rated themselves to have high knowledge levels were about 10 times more likely to use EBP.

Conclusion

Overall, this study found high knowledge levels about EBP amongst the radiographers. Knowledge was a strong predictor of EBP use, however, the radiographers' attitude towards EBP was low. Negative attitude is associated with low EBP use, therefore, knowledge alone may not be enough to increase the use of EBP in clinical practice. It is also important to increase positive individual attitudes.

Key words: Evidence Based Practice; Knowledge; Radiographers; Clinical practice

KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS EVIDENCE BASED PRACTICE: A SURVEY AMONGST RADIOGRAPHERS

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Introduction.

Evidence Based Practice is defined as ‘the integration of best research evidence with clinical expertise and patient values and circumstances.’¹ Advocates of EBP believe that practitioners can use the best evidence as an integral part of their clinical decision-making because this results in many benefits including but not limited to better-quality of healthcare delivery and improved professionalism.² Therefore, healthcare professionals are now challenged to endorse the provision of care based on empirically established evidence, rather than traditional, assumptions.³

The Ugandan government has put in place intense efforts to support the use of EBP among health-care professionals but interventions in place emphasise medicine and nursing professions, they do not encompass Allied Health Professions (AHP). AHPs are those persons working within health-care domains different from medicine, dentistry and nursing’.⁴ To embrace EBP it is essential that all the domains in the healthcare professions are put into consideration because it may be difficult to generalise research results based on say nurses’ experiences to the radiographers because their work settings are different.⁵

Literature review

Historically, care of the patients was influenced by experiences and opinions of those involved in providing treatment.⁶ Currently, patient care has seen a shift among healthcare professionals from relying on expert opinions to an emphasis on evidence from prior research.⁷ Furthermore, practice based on evidence improves patient’s care as compared to traditional practices;⁷ and healthcare professionals like radiographers are increasingly more involved in clinical decision-making, therefore, it is important for them to utilise the best evidence to make effective and justifiable decisions.⁸

Copious amounts of funding are increasingly being utilized to conduct quality research which has resulted into an enormous growth in healthcare related literature.⁹ There is also a variety of literature that has emphasized the importance of using evidence generated through research to inform healthcare practice.^{10,11,12} However, despite its importance and value, the uptake of research evidence in clinical practice remains limited.¹³

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64 In a study by Weng et al.¹⁴ majority of healthcare personnel had favourable beliefs and
65 attitude towards EBP. However, their knowledge and skills in EBP were limited. In the
66 same study there were significant differences in the way distinct groups of healthcare
67 professionals implemented EBP. These findings are in line with previous studies on
68 EBP involving multiple professional healthcare groups.^{15,16} Furthermore, Rochette et
69 al.¹⁶ also reported that best practices in post-stroke rehabilitation were not routinely
70 done amongst occupational therapists, physiotherapists and speech pathologists.
71 Significant differences between and within allied health disciplines in terms of their
72 knowledge and skills relevant to EBP were also reported in a study done by
73 Upton&Upton.¹⁷
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82 Although radiographers, who were the focus of the present study do participate in
83 generating evidence inform of research, the utilisation of this research evidence in
84 daily practice is not yet evident especially in Sub-Saharan Africa.¹⁸ In the country
85 where this study was conducted, there has not been a single empirical study
86 addressing this issue, yet the Allied Health Professionals Council assumes that all
87 radiographers should be able to use research findings in their practice. First, the
88 objective of this study was to assess knowledge, attitudes and practices towards the
89 EBP amongst radiographers in Uganda, and second, was to establish factors that
90 influence the use of EBP within the radiographers' professional practice.
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97 **Methods**

98 ***Study design***

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100 This was a cross-sectional descriptive quantitative study in which survey
101 questionnaires were distributed to practising radiographers. The study was conducted
102 in Uganda, a country located in Sub-Saharan Africa. The target population was all
103 radiographers licensed by the Allied Health Professionals Council of Uganda and
104 practising in Uganda at the time of the study. All retired radiographers and those
105 radiographers practising outside Uganda were excluded from the study.
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110 ***Sampling***

111 Volunteer sampling was employed to enrol registered radiographers. In total, 260
112 questionnaires were distributed. The sample size for this study was calculated using
113 a formula $N = Z^2 \cdot P \cdot Q / d^2$ by Leslie¹⁹ because this is a cross sectional survey. A sample
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of 100 participants was thus required. This sample size was considered to be large enough and representative of the target population. The assumptions taken into consideration in estimating this sample size included a power of the study of 80%, a moderate effect size and a significance level of 0.05. Basing on the assumption that the response rate was likely to be 40% or less, a total of 260 questionnaires were sent out.

131 ***Data collection***

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A self- report questionnaire (Appendix 3) to aid data collection was developed by the researcher. The questionnaire was a modification from the standard EBP questionnaire.¹⁷ In total, the questionnaire had 40 items; clear 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 demographic background information, personal attitudes towards EBP and personal knowledge about EBP.

142 ***Data Analysis***

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Using SPSS version 21, descriptive(frequencies of responses) and inferential statistics (odds ratio and binary logistic regression) were generated. The responses for each of the survey response items was scored on a Likert scale of 1-7 where 1 was the least score and 7 was the highest score. For each of the 3 major subsections, an aggregate of scores was generated and 2 categorical variables were created for each subsection. Regarding attitude levels, an aggregate score of 10 was used as a cut off to create 2 categories namely; “negative attitude” and “positive attitude”. The number and proportions of participants who scored an aggregate of 10 and more were considered to have negative attitude while those who scored less than 10 were considered to have positive attitude towards EBP.

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Regarding knowledge levels, an aggregate score of 55 was used as a cut off to create 2 categories namely; high knowledge and low knowledge. The number and proportions of participants who scored 55 and above were categorized as having high knowledge and the radiographers who scored less than 55 were categorized as having low knowledge. For measuring practices, a cut-off of 45 was used to categorize participants into 2 categories namely; high use of evidence-based practice and low use of evidence-based practice. Those who scored 45 and above were considered to have high use of EBP while those who scored less than 45 were considered to have low EBP.

Quality Assurance

Computers used were programmed to detect errors during data entry as a measure of quality control. This was aimed at minimising errors during data entry. Soon after data entry, simple exploratory data analysis tests that can detect any inconsistent data entered into the software were run. These tests included: tests for frequencies to identify the categories for each of the variables. The Kolmogorov-Smirnov test was conducted first to identify the normality of the distribution for continuous variables, which enabled choice of either parametric or non-parametric tests.

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 in the United Kingdom (**Ethics approval number 039/17**). Permission was also sought from the Allied Health Professionals Council of Uganda. Informed consent was implied when the participants filled and returned the questionnaires.

Results

The data generated from the socio-demographic characteristics of the respondents is presented in [\(Table 1\)](#).

Knowledge of EBP

Overall, regarding level of knowledge on EBP, the study revealed that 47 (57%) out of 83 respondents scored themselves as having high knowledge. 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 3.79, 95% CI 1.50-9.42) and having post-graduate academic qualifications (OR 6.9, 95% CI 1.45-333.21).

Attitude towards EBP

In this study, only 37% of radiographers had a 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, long working experience 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([Table3](#)).

Use of EBP

The study revealed that 49 (59%) out of 83 respondents use EBP in the daily clinical work. Analysis along the individual elements that assessed use of EBP indicates varying levels of performance i.e. 88% reported to be applying information to the practice and sharing ideas with other colleagues; 83% reported to be always reviewing their own practice; 81% reported to be disseminating current ideas about EBP to colleagues and 70% reported to be monitoring and reviewing their own practice. On the other hand, only 46% and 16% reported to be often critically appraised against a set-criteria and often tracked down relevant evidence after question formulation respectively. In this study, knowledge was the only factor that had 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

Findings from this study showed that majority of the radiographers scored themselves as having high knowledge of EBP. This is in line with a survey carried out in Denmark by Oliveri et al.²⁰ which showed that the majority (89%) of hospital doctors felt they were competent in critical appraisal. Although, majority of 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 still lack some of the knowledge needed for evidence-based practice, and an evidence-based culture within the radiography profession has not yet been generally acquired.^{17,21} In this study, knowledge was strongly associated with EBP use, this finding is similar to previous research that showed a positive relationship between knowledge and implementation of EBP.³ 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.

This study suggested that radiographers generally held a negative attitude towards EBP, a finding that is inconsistent with some previous studies.^{17,22} However, these findings are not surprising as historically, greater emphasis has only been placed on

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298 EBP in other professional areas including medicine and nursing and less in the
299 radiography profession in Uganda.⁴ To embrace EBP it is essential that all the domains
300 in the health-care professions are put into consideration.⁴ Radiographers may
301 probably have many features that are different to other health-care professions.
302 Furthermore, this study revealed that high academic qualifications had significant
303 associations with positive attitude. However, majority of the respondents in the present
304 study had a diploma as their highest qualification, which probably explains the
305 negative attitude towards EBP. This finding is consistent with findings of Dugdall &
306 Watson,²³ who reported that nurses' qualifications had an impact on their attitude
307 towards the application of EBP in clinical practice, where nurses with diplomas were
308 less likely to have a positive attitude towards EBP compared with nurses with degrees.
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317 Attitudes have been shown to be the individual main determinant factor for EBP by
318 Estabrooks, et al.²⁴ Attitude, desire for learning and highest degree held have also
319 been identified as the three predictors for the prosperity to adopt EBP by Bridges et
320 al.²⁵ Therefore, it is very important to consider individual attitudes when aiming to
321 increase the use of EBP among radiographers. However, in the present study, majority
322 of the respondents held a negative attitude to the use of EBP, furthermore,
323 radiographers who had a longer working experience were more likely to have a
324 positive attitude towards use of EBP and this is supported by the findings of
325 Ferguson&Day,²⁶ who reported that new nurses, due to limited practical knowledge
326 and experience, felt less confident and willing to engage in EBP.
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334 Findings from this study suggest that there was high use of evidence to support
335 radiographer decisions. Although similar findings have been previously reported by
336 Brown, et al.³ this finding is surprising, as majority of the radiographers had low attitude
337 towards the use of EBP. Attitude has been shown to be the individual main determinant
338 for the use of EBP in practice,²⁴ however, it is reasonable to expect that there exists a
339 mix of factors beyond attitude that might influence the use of evidence in clinical
340 practice. Knowledge, education level, leadership and work load, are some of the main
341 factors that have been documented to influence the use of EBP among health care
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357 The bivariate analysis identified a significant relationship between higher levels of
358 education and the use of EBP. Thus, radiographers with postgraduate education were
359 about 2 times more likely to have high use of EBP compared to radiographers with
360 lower levels of qualifications. These findings may reflect an increased awareness of,
361 increased skill and greater access to the research literature as the radiographers attain
362 higher education levels. In addition, those without advanced practice degrees may not
363 have had academic exposure to EBP, which could have led to low professional
364 knowledge. These findings substantiate recent studies by Underhill et al.²⁷ and
365 Thorsteinsson,²⁸ which also reported comparable results.
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372 373 **Conclusion**

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375 Majority of radiographers in the study, have high knowledge of EBP while few
376 radiographers have a positive attitude towards EBP. Use of EBP by radiographers in
377 Uganda is modest. Knowledge on EBP has been identified as one crucial factor that
378 influences use of EBP amongst the radiographers. The implications of the study relate
379 to policy makers and training institutions. There is need to incorporate principles of
380 EBP into radiography training curricular as well as institutionalizing mentorship
381 programmes in places of work so that radiographers can actively get involved in not
382 only applying EBP principles, but also participating in generating the much-needed
383 evidence. This is particularly useful if the radiography profession is to advance. There
384 is also need for training of radiographers at degree, master's and doctoral levels so
385 that they can form a critical mass of individuals that can drive the agenda of generating
386 evidence and advancing the radiography profession which in turn may improve the
387 attitude of radiographers towards EBP. **(2378 words)**
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Table 1

Illustrates socio-demographic characteristics of the radiographers

Characteristic	Category	Total N=83	
		Number	Percentage (%)
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%

Table 2

Shows the frequencies of the individual elements that were assessed for knowledge levels.

Variables	Agree OR High Knowledge	Disagree OR Low knowledge
Ability to apply information to individual situations	88%	12%
Ability to identify gaps in own practice	86%	15%
Ability to determine how usefulness of the material	84%	16%
Ability to determine validity of the material	77%	23%
Having information technology skills	74%	27%
Awareness of major information needs	71%	29%
Having skills for monitoring and reviewing of own practice	70%	30%
Knowledge of how to retrieve evidence	70%	30%
Ability to analyze critical evidence against standards	69%	31%
Having research skills to enable use of EBP	53%	47%
Ability and knowledge to convert own information needs	49%	51%

Table 3

Illustrates the results from the bivariate analysis to describe factors that influence attitudes of radiographers towards use of EBP

Variable	Variable category	Positive attitude (n=31)	Negative attitude (n=52)	Crude OR(95%CI)
Sex	Female	22(%)	44 (%)	0.4 (0.12, 5.0)
	Male	9 (%)	8 (%)	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)*
	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)	≥5years	21(57.9%)	20(34.2%)	3.4(1.31,8.52)*
	<5 years	10(42.1%)	32(65.8%)	reference
Hours of work per week	>40 hours	10(32.3%)	22(42.3%)	0.64(0.21,1.61)
	≤40 hours	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	33	0.91(0.31,2.20)
	Private	12	19	reference

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Declarations of interest

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