African Journal of Basic & Applied Sciences 2 (1-2): 1-6, 2010
ISSN 2079-2034

A Study of Research Awareness among Nigerian Radiographers

[1]C.C. Ohagwu, [2]M.C. Odo, [3]U.O. Ezeokeke, [1]J.C. Eze and [4]N. Chiaghanam

[1]Department of Radiography and Radiological Sciences, Faculty of Health Science and Technology, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria
[2]Department of Community Medicine, University of Nigeria Teaching Hospital, Enugu, Enugu State, Nigeria
[3]Radiology Department, Federal Medical Centre, Gombe, Gombe State, Nigeria
[4]Radiography Department, University of Calabar, Cross River State, Nigeria

Abstract: Research is a key component of evidence-based medical imaging and good knowledge and attitude towards research is important in implementing the paradigm shift from traditional model of practice to evidence-based practice. The aim of the study was to assess the research awareness of Nigerian radiographers. Two hundred and fifty 20-item self-completion questionnaires were sent to 250 fifty radiographers. The questionnaires were sent by post to the selected radiographers to collect data about their awareness and attitudes towards research. The radiographers were those in the academia and those in clinical practice. Two hundred and two questionnaires were filled out and returned within a period of 2 months (80.80% response rate). Data were analyzed using statistical package for social sciences (SPSS) version 14.0. Statistical tests were two-tailed with $\rho < 0.05$ to indicate statistical significance. The respondents were mainly, 92.1% (n=186) in clinical practice. Only 9.4% (n=19) possessed Master of Science (M Sc) degree. The proportion of M Sc holders was significantly higher among radiographers in the academia than those in clinical practice (75.0% Vs 3.8%; $\rho < 0.05$). Less than half, 45.0% (n=91) could define research correctly. The radiographers in the academia defined research better than those in clinical practice (68.8% Vs 43.0%; $\rho < 0.05$). Most of the respondents, 88.6% (n=179) were aware of role of research in evidence-based medical imaging. Only 36.1% (n=73) of the respondents had participated in or conducted research projects that were published. Radiographers in the academia had published more than those in clinical practice (81.3% Vs 32.3%; $\rho < 0.05$). Excessive workload was the commonest reason for non-participation in research (38.8%, n=50). About half, 50.5% (n=102) access research articles through the internet. Only 7.4% (n=15) of the respondents apply research results in their practice. Hindrances to adapting research results were: "lack of interest" (39.9%, n=74), "too heavy workload" (26.9%, n=50), "dangerous to try new things on patients" (13.4%, n=25) and "difficult to adapt to local conditions" (19.9%, n=37). The awareness of Nigerian radiographers about research was generally fair but their attitudes towards it were poor. The observed barriers to participation in research were excessive workload, lack of interest in research, lack of employer's encouragement and paucity of postgraduate training.

Key words: Research · Nigerian radiographers · Awareness · Attitudes · Evidence-based medical imaging

INTRODUCTION

Since the profession of radiography started, advances through implementation of research findings have come in leaps and bounds. The natural consequence of these advances has been a total transformation of clinical imaging practice. The past four decades have witnessed the expansion of the field of radiography with new imaging modalities such as computed tomography (CT) and magnetic resonance imaging (MRI) evolving. All these advancements in the radiography profession have come with increased responsibilities on the part of the modern day radiographer practitioner, more so now that evidence-based practice is being advocated. The modern day radiographer needs to be well trained and versed to function effectively in a diverse and rapidly changing health care sector. In order to cope with these increased responsibilities of modern day clinical imaging

Corresponding Author: C.C. Ohagwu, Department of Radiography and Radiological Sciences, Faculty of Health Science and Technology, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria Telephone: + 234 805 895 4638

practitioner, the National Health Service (NHS) of United Kingdom announced the creation of consultant radiographer practitioner status in 2000, along with other allied health professions [1]. One of the core functions of the consultant radiographer practitioner is research and evaluation [1]. Research is an important aspect of evidence-based medical practice [2,3] including radiography.

Research which can simply be defined as the process of arriving at dependable solutions to problems through the planned and systematic collection, analysis and interpretation of data [4] comes in handy in achieving the consultant practitioner status in Nigeria. Research is the most important tool for advancing knowledge, promoting progress and enabling man to relate more effectively to his environment, accomplishes his purpose and resolve his conflicts [4]. The main focus of evidence-based clinical imaging is research and for any progress to be made in the profession in Nigeria, Nigerian radiographers must acquire a sound knowledge of research. Good knowledge of research should be a key competency criterion for radiographers in the same way that evidence-based approach to medical care has been recognized as a key competency issue for doctors [5,6] Oral history has also been suggested as a unique and potential research method in radiography [7].

A very first important step in implementing these paradigm shifts in clinical medical imaging practice in Nigeria is to ascertain the attitude and level of awareness and knowledge of Nigerian radiographers about research.

MATERIALS AND METHODS

A twenty-item scale self- completion questionnaire was designed and 250 copies were sent by post to radiographers working in tertiary health institutions around Nigeria. The questionnaire (see appendix) consisting of two sections was systematically developed and validated by a senior colleague (research mentor). Questions 1-7 were concerned with demographic characteristics of the respondents while questions 8-20 were about the subject under study.

A pilot study was conducted before the questionnaires were sent out for data collection. Ten copies of the questionnaire were sent out to selected radiographers in the pilot study and all (100%) were returned. Based on the comments and suggestions received adjustments were made on the wordings and arrangement of the questions in the questionnaire.

A convenience sample of 250 radiographers we could reach by post was selected for the study. The radiographers were all registered and licensed to practice by the Radiographers Registration Board of Nigeria (RRBN). The sample also included radiography lecturers. The radiographers were working in various tertiary hospitals in different geographical zones of Nigeria and departments of radiography at University of Calabar, University of Nigeria, Nsukka, University of Maiduguri, Nnamdi Azikiwe University, Awka and University of Lagos. The questionnaires were sent by post to the selected radiographers and a two-month period was allowed for the return of the questionnaires. Two hundred and two questionnaires were filled out and returned giving a response rate of 80.8%.

Data Analysis: The radiographers were divided into two groups: those in the academia (group 1) and those in clinical practice (group 2). Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 14.0. Descriptive statistics were generated for the responses elicited from the two groups. Inferential statistics were used to test for differences in responses of the two groups. Statistical tests were two-tailed with $\rho < 0.05$ to indicate statistical significance.

RESULTS

The respondents consisted of 7.9% (n=16) radiographers in the academia and 92.1% (n=186) radiographers in clinical practice. There were 79.2% (n=160) males and 20.8% (n=42) females; and 73.3% (n=148) were married, 24.3% (n=49) unmarried and 2.5% (n=5) widowed. Most of the respondents; 87.1% (n=173) were between 30 and 59 years old and were vastly experienced in the practice of radiography. A little more than half of the respondents; 51.0% (n=103) had Bachelor of Science (B Sc) degree in medical radiography while 36.6% (n=74) had either diploma of the College of Radiographers (DCR), London or diploma of the Institute of Radiography (DIR), Nigeria. Only 12.4% (n=25) of the respondents had postgraduate qualifications with only 9.4% (n=19) possessing Master of Science (M Sc) degree. The proportion of M Sc holders was significantly higher among radiographers in the academia than those in clinical practice (75.0% Vs 3.8%; $\rho < 0.05$) as shown in Table 1.

Less than half, 45.0% (n=91) of the respondents could define research correctly. The radiographers in the academia defined research better than their counterparts

Table 1: Comparison between radiographers in the academia and radiographers in clinical practice

Criteria	Academia	Clincal Practice	Statistical Significance
Postgraduate qualification	12 (75.00%)	7 (3.76%)	$P < 0.05$
Knowledge of research	11 (68.75%)	80 (43.01%)	$P < 0.05$
Awareness about role of research in evidence-based medical imaging	14 (87.50%)	165 (88.71%)	$P > 0.05$
Participation in research and publication	13 (81.25%)	60 (32.26%)	$P < 0.05$

Table 2: Hindrances to adapting research findings to clinical practice

Hindrance	Frequency	Percentage (%)
No interest in trying new things	74	39.78
Too much workload	50	26.88
Dangerous to try new things on patients	25	13.44
Difficult to adapt research results to local conditions	37	19.89
Total	186	100

in clinical practice (68.8% Vs 43.0%; $\rho < 0.05$) as shown in Table 1. Most of the respondents, 88.6% (n=179) indicated they were aware of the role of research in evidence-based medical imaging. There was no statistical difference between the two groups (87.5% Vs 88.7%; $\rho > 0.05$) as shown in Table 1. On the choice of research that will improve practice 48.5% (n=98) chose all forms of research, 17.3% (n=35) chose experimental research, 16.8% (n=34) chose surveys and 13.9% (n=28) chose audit and evaluation. Only 36.1% (n=73) of the respondents had participated in or conducted research projects that were published. Radiographers in the academia had published significantly more than their counterparts in clinical practice (81.3% Vs 32.3%; $\rho < 0.05$) as shown in Table 1. Among those who had not published, the reasons for non-participation in research were: poor knowledge of research- 11.6% (n=15), lack of finance-13.2% (n=17), lack of encouragement from employers- 8.5% (n=11), excessive workload- 38.8% (n=50) and lack of interest in research- 12.4% (n=16). All the respondents indicated they read research articles in radiography and related fields. Most of them, 50.5% (n=102) access research articles through the internet, 15.8% (n=32) by personal subscription for hardcopy journals, 17.3% (n=35) through the library and 8.9% (n=18) source them from colleagues. Only 7.4% (n=15) of the respondents apply the results of researches in their professional practice. Table 2 shows that 39.8% (n=74) of those who do not apply results of researches in their practice said they do not have interest in trying new things, 26.9% (n=50) said their workload was too heavy to try new things, 13.4% (n=25) were of the opinion that it was dangerous to try new things on their patients and 19.9% (n=37) thought it was difficult to adapt foreign research findings to local conditions. Majority of the respondents in clinical practice, 82.8% (n=154) admitted making deliberate efforts to audit or evaluate practice and do not depend solely on traditional model of practice. All the respondents in the academia (100%, n=16), indicated there was a system of monitoring their graduates to ascertain if they were fulfilling the needs of their employers.

DISCUSSION

Evidence-based medicine started about a decade ago and has since been embraced by other professions allied to medicine. It espouses among other things the use of current best research evidence in handling of individual patients. Thus, research is one of the fundamental requirements of evidence-based practice. With paradigm shift from traditional model of practice to evidence-based practice and the creation of consultant radiographer post by the National Health Service (NHS), UK in 2000, good knowledge and attitude towards research are essential to Nigerian radiographers if these advancements are to be realized in Nigeria.

The results of this study show that there is paucity of radiographers with relevant postgraduate academic qualifications. Only a small proportion of Nigerian radiographers have Master of Science degree, with most of them in the academia. The implication of low output at postgraduate level is inherent poor knowledge and attitudes towards research. Even though every radiographer with basic qualification to practice in Nigeria (DCR,DIR or B Sc) underwent some training in research as part of the requirements for graduation, such one-off undergraduate training cannot be enough to provide good knowledge and attitude towards research. This was reflected in the respondents' definition of research. More than half of the respondents were unable to correctly outline the basic steps in research when they defined research. Most of these respondents were in clinical practice and had not undergone any postgraduate academic studies.

Most of the respondents in the academia and clinical practice were equally aware of the role of research in evidence-based medical imaging. The benefit of evidence-based practice cannot be over-emphasized as it ensures better outcome for every individual patient based on research evidence. The benefit of evidence-based imaging was demonstrated in the study by Goergen *et al.,* [8], which reported a reduction of cervical spine imaging in road trauma patients without any case of delayed diagnoses of cervical spine injury. They conducted a non-randomized clinical trial using historical controls to determine if an unvalidated imaging guideline can reduce the use of imaging in patients with cervical trauma. In the final analysis the benefit was cost reduction (financial and radiation) without any loss of diagnostic information, which would not have been possible without research.

Participation in research by Nigerian radiographers was not satisfactory as the results of our study show that only 36.1% (n=73) of the respondents had participated or conducted researches that were published. Interestingly, most of the published researches were conducted by radiographers in the academia. This is not unexpected since they have benefitted from postgraduate studies and have an additional incentive of being promoted based on their research output. The lower participation level of radiographers in clinical practice in research may be due to their deficiency in postgraduate studies. There is also the disincentive of not being promoted based on research output. Based on these two facts they are unlikely to take research seriously. The clinical radiographers who participate in researches may be doing so out of their natural interest or with the hope of going into academics in the future. The reasons for non-participation in research as shown by the results of our study were poor knowledge of research, lack of finance, lack of encouragement from employers, excessive workload and lack of interest in research. Similar studies have been carried out elsewhere in the past to determine the level of research awareness among clinical staff and the perceived barriers to integration of research findings into clinical practice. The identified barriers were poor attitude towards research, lack of knowledge, insufficient time, lack of support from peers, managers and other health professionals, lack of resources and resistance to change [9-16].

The results of this study show that all the respondents read research articles in radiography and related fields. These they access through the internet, library, personal subscription and colleagues. This good attitude was cancelled out by the fact that many of the respondents do not integrate the results of such researches into their practice. Various reasons were advanced for this but it is pertinent to note that the purpose of research in radiography is to improve practice and not to read the findings and keep them in the cooler. We recommend that radiographers and health care managers should make deliberate effort in ensuring that relevant research findings are integrated into clinical practice.

In view of these paradigm shifts, we recommend that research should be a key competency issue for radiographers. If this is implemented radiography profession will benefit from research and advance alongside other health professions.

REFERENCES

1. Hardy, M. and B. Snaith, 2007. How to achieve consultant practitioner status: a discussion paper. Radiography, 13: 265-270.
2. Sackett, D.L., W.M. Rosenberg, J.A. Gray and R.B. Haynes, 1996. Richardson WS. Evidence based medicine: what it is and what it isn't. BMJ., 312: 71-72.
3. Sackett, D.L., S.E. Strauss, 2000. Richardson WS, Haynes RB. Evidence based medicine: how to practice and teach EBM. 2nd edition. London: Churchill Livingstone Book.
4. Osuala, E.C., 2005. Introduction to research methodology. 3rd edition. Onitsha, Nigeria: Africana-First Publishers Limited.
5. World Federation for Medical Education 1994. In: H. Walton (ed). Proceedings of the world summit on medical education. Med. Educ., 28: 1-3.
6. Muller, S., 1984. Physicians for the twenty-first century: report of the project panel on the general professional education of the physician and college preparation for Medicine. J. Med. Educ., 59: 155-167.
7. Ugwu, A.C., F.U. Idigo and M.C. Okeji, 2007. Oral history: a tool for the development of radiography practice in Nigeria. Nigerian J. Medical Imaging and Radiation Therapy, 1(1): 11-13.
8. Goergen, S.K., C. Fong, K. Dalziel and G. Fennesy, 2006. Can an evidence-based guideline reduce unnecessary imaging of road trauma patients with cervical spine injury in the emergency department? Australasian Radiology, 50(6): 863-869.
9. Challen, V., S. Kaminski and P. Harris, 1996. Research mindedness in the radiography profession. Radiography, 2: 139-151.

10. Conroy, M.C., J.A. Pascoe, G.B. Roder, 1997. Promoting research in the clinical setting; a local enquiry and a complementary literature review. Br. J. Occu. Ther., 60: 5-11.
11. Upton, D., 1999. Attitudes towards and knowledge of clinical effectiveness in nurses, Practice nurses and health visitors. J. Adv. Nurs., 29(4): 885-893.
12. McSherry, R., 1997. What do registered nurses and midwives feel and know about research? J. Adv. Nurs., 25: 985-998.
13. Olatunbosun, O.A., L. Edward, R.A. Pierson, 1998. Physicians' attitude towards evidence-based obstetric practice: a questionnaire survey. BMJ., 316(7128): 365-366.
14. McColl, A., H. Smith, P. White and J. Field, 1998. General practitioners' perceptions of the route to evidence-based medicine: a questionnaire survey. BMJ., 316(7128): 301-305.
15. Retas, A., 2000. Barriers to using research evidenced in nursing practice. J. Adv. Nurs., 31(3): 599-606.
16. Greenhaugh, T. and H. Douglas, 1999. Experiences of general practitioners and practice nurses of training courses in evidence-based health care: a qualitative study. Br. J. Gen. Pract., 49(444): 53.

APPENDIX
QUESTIONNAIRE

Instruction: Please mark "X" in the box or boxes corresponding to the appropriate option or options and fill out the blank spaces where applicable. You can make brief comments wherever necessary.

Q.1. How old are you? (years)

☐ Less than 30 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60 and above

Q.2. Gender: ☐ Male ☐ Female

Q.3. Marital Status: ☐ Single ☐ Married ☐ Widowed

Q.4. Qualifications:☐ ☐ DCR/DIR ☐ DMU ☐ ☐ B Sc ☐ PGD M Sc Ph.D
☐ Others, please specify

Q.5. Nature of work: ☐ Academics ☐ Clinical Practice

Q.6. Post-qualification experience: ☐ Less than ☐ 5 years ☐ 5-10 years ☐ 11-16 years

☐ 17-21 years ☐ 22-26 years ☐ 27 years and above

Q.7a. Rank (Academics): ☐ Technologist ☐ Graduate Assistant ☐ Assistant Lecturer

☐ Lecturer II ☐ Lecturer I ☐ Senior Lecturer ☐ Reader Professor

Q.7b. Rank (clinical practice): ☐ Intern ☐ Radiographer II ☐ Radiographer I

☐ Senior Radiographer ☐ Principal Radiographer ☐ Assistant chief Radiographer

☐ Chief Radiographer ☐ Assistant Director ☐ Deputy Director ☐ Director

Q.8. What do you understand by the term research as applied to medical imaging?

_____

_____

_____

Q.9. Have you heard about the role of research in evidence-based medical imaging practice?

☐ Yes ☐ No

Q.10. Do you think research can improve the current standard of practice

in Nigeria? ☐ Yes ☐ No

Q.11. What kind of research do you think will improve practice?

☐ Experimental ☐ Surveys ☐ Audit or evaluation ☐ Cohort studies

☐ Longitudinal studies ☐ All of the above ☐ Others, please specify.

Q.12. Have you conducted any research or participated in a research project that was published?

☐ Yes ☐ No

Q.13. If the answer to Q.12 is "No", what are your reasons?

Q.14. Do you read journal articles in Radiography and / or related fields?

☐ Yes ☐ No

Q.15. What is your main source of the articles?

☐ Library ☐ Internet ☐ Professional colleagues ☐ Personal subscription

Q.16. Do you apply the results of such researches in practice when

☐ the need arises? Yes ☐ No

Q.17. If the answer to Q.14 is "No", what are your reasons?

Q.18. If you are in clinical practice, do you make deliberate effort to audit or evaluate practice in

your place of work? ☐ Yes ☐ No

Q.19. If the answer to Q.18 is "No", do you rely solely on the traditional model of practice?

☐ Yes ☐ No

Q.20. If you are in the academia, do you make deliberate effort to assess the quality of your

Graduates to ascertain if they are fulfilling their employers' needs?

☐ Yes ☐ No

Thank you.