

Awareness, Knowledge, Attitude and Practice of Blood and Body Fluid Precautions among Radiographers in Enugu, Nigeria

¹A.O. Okaro ¹C.U. Eze and ²C.C. Ohagwu

¹Department of Medical Radiography and Radiological Sciences,
Faculty of Health Sciences and Technology, College of Medicine,
University of Nigeria Enugu Campus, Nigeria

²Department of Radiography and Radiological Sciences,
Faculty of Health Sciences and Technology,
College of Health Sciences, Nnamdi Azikiwe University Nnewi Campus, Nigeria

Abstract: This study explores the awareness, knowledge, attitude and practice of Universal Precautions (UPs) among radiographers as well as their sensitivity towards the possibility of being occupationally exposed and extent of their exposure to infections. A total of 24 radiographers were assessed. The index used to assess the awareness was how they knew about universal blood and body fluid precautions. 20.8% (n= 5) of radiographers knew about universal precautions through books, 8.4% (n=2) knew through someone, 58.3% (n=14) through seminar/ symposium, while 12.5% (n=3) knew through mass media. Only 37.5% (n=9) was against recapping of needles and 29.2% (n=7) rated their knowledge very good. 45.8% (n=11) of the radiographers have received occupational training on UPs. The attitude radiographers towards patients with blood and body fluid-borne pathogens were positive. No radiographer was identified to have been occupationally infected.

Key words: Universal precautions • Radiographers • Awareness • Knowledge • Attitude • Practice

INTRODUCTION

Bodily fluids are liquids that are inside the body of animals. They include fluids that are excreted or secreted from the body as well as fluids that normally are not present in healthy status. Body fluids are a major vehicle for transmitting infections [1]. The fact that blood and other fluids from patients are becoming increasingly hazardous to those who provide care for them had become of great concern to public health professionals the world over. It has specifically necessitated the need for a preventive approach in protecting care providers from such infections particularly from their patients. Thus the practice of universal precautions as a way of safeguarding against possible infections in work places had become more and more widely accepted among various health workers [2].

There is a growing concern about the transmission of blood borne pathogens during medical procedures from patients to health care workers and among patients.

Over the last three decades, radiological services have undergone many changes with the introduction of new modalities. One of these new disciplines is interventional radiology (IR) which deals with procedures such as arteriography, image-guided biopsies, intravascular catheter insertions, angioplasty and stent placements. With these developments, the potential for accidental blood exposure and exposure to other potentially infectious body fluids is on the increase. Therefore, it is important for all health workers who perform invasive procedures to observe specific recommendations for infection control [3].

Universal blood and body fluid precautions encompasses a wide range of steps taken during regular work day by health care workers and must be adhered to strictly in order to protect self, patients and coworkers from infection. All health care workers should routinely follow these precautions at any time there is possibility of touching or being splashed with any person's blood or body fluids on their skin or mucous membrane [1].

Corresponding Author: A.O. Okaro, Department of Medical Radiography and Radiological Sciences, Faculty of Health Sciences and Technology, College of Medicine, University of Nigeria Enugu Campus, Nigeria
Tel: +2348037077960

In a study done among a random sample of residents, interns, nurses and technicians, it was observed that needle-stick injury (NSI) was the most common mode of occupational exposure. Index finger and thumb were the commonest sites of exposure [4]. Another study on medical personnel shows that the practices of nurses are safer in comparison to doctors. Frequency of needle stick injury was generally higher especially among doctors reflecting bad practice and careless attitude towards work [5]. Also, most final year medical students were at high risk of needle stick injury through hollow bore needles during their clinical training which put them at higher risk of blood-borne infection. The main reason for this was poor practice of Universal Precautions [6]. A study which targeted final year medical and nursing students of Obafemi Awolowo University Teaching Hospital Complex in Nigeria showed a higher level of knowledge among nursing students than medical students in terms of awareness of basic principles of universal precautions [2]. Lin *et al.* [7], observed that nurses in intensive care unit and operation theatre were better in both knowledge and compliance of glove utilization. A multicenter epidemiologic study conducted in radiology departments in France reported a high frequency of accidental blood exposure and high percentage of patients with hepatitis C virus who could possibly generate a risk of exposure to the virus for radiologists who perform invasive procedures with frequent blood contact [8].

No study has been done to assess awareness, knowledge, attitude and practice of blood and body fluid universal precautions among radiographers in this locality. The aim of this study is therefore to assess the level of knowledge, attitude and practice of blood and body fluid universal precautions among radiographers in this locality.

MATERIALS AND METHODS

A prospective design was adopted. All radiographers practicing in tertiary hospitals in Enugu metropolis namely, University of Nigeria Teaching Hospital (UNTH) Enugu, National Orthopaedic Hospital Enugu (NOHE) and Enugu State University Teaching Hospital (ESUTH), formed the target population. The sample size for the study was made up of 24 radiographers. The reason for the small sample size was due to the small number of practicing radiographers in tertiary hospitals of Enugu metropolis. There are not up to 1000 radiographers licensed and practicing in Nigeria [9] a country of about 150 million people. The data collection instrument was a

23-item semi-structured questionnaire designed in line with the objectives of the study. The researchers also adopted observation of the system in the centers to authenticate the responses on the questionnaires. A total of 24 questionnaires were distributed and all were duly completed and returned during the period allocated for data collection.

The data collected were analyzed with Statistical Package for Social Sciences (SPSS) version 14.0.

RESULTS

The respondents comprised both male and female radiographers aged between 25 and 45 years. Majority were males, 75 % (n=18). Eighteen radiographers (75%) had basic qualification to practice in Nigeria (Bachelor of Science degree) while the other 25 % (n=6) had acquired additional postgraduate qualification (Master of Science degree in Medical Imaging). The respondents had practiced for various numbers of years, from less than one year to over ten years as shown in Table 1.

The source of knowledge of universal blood and body fluid precautions is shown in Figure 1. Most of the respondents across the hospitals studied got their knowledge in clinical seminars and symposia. The respondents' knowledge of various aspects of universal precautions is shown in Table 2. Only 37.5% (n=9) of the respondents know that recapping of hypodermic needles after use was dangerous and should not be done as it is a common route of nosocomial infection. The respondents' self-rating of their knowledge of universal precautions is shown in Table 3. More than half, 58.3% (n=14) rated their knowledge good. Table 4 shows that less than half, 45.8% (n=11) had received occupational training on universal blood and body fluid precautions. All the respondents admitted having professional duty to care for patients with blood and body fluid borne infectious pathogens. Majority of them, 83.3% (n=20) believe that patients with blood and body fluid infectious pathogens are entitled to the same care as other patients as shown in Table 5. Table 6 shows how often the radiographers apply the principles of universal precautions. Ten respondents (41.7%) apply the principles to every patient they attend to.

Less than half, 37.5% (n=9) of the radiographers have ever received vaccination in their work places against blood and body fluid-borne infectious pathogens as shown in Table 7 while none of them have been occupationally infected as shown in Table 8.

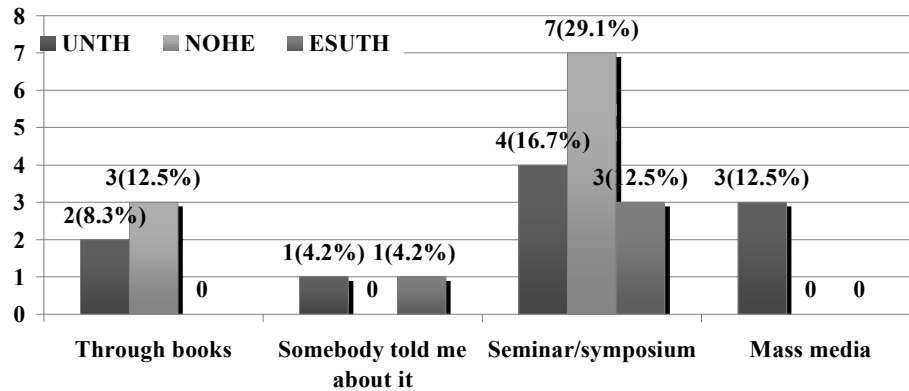


Fig. 1: How the respondents got to know about universal blood and body fluid precautions

Table 1: Number of years of practice of the respondents

Number of years of practice	Tertiary Hospitals			Total
	Unth	Nohe	Esuth	
Less than 1 yr	1	2	0	3 (12.5%)
1-5 yrs	6	2	1	9 (37.5%)
6-10 yrs	2	5	2	9 (37.5%)
More than 10 yrs	1	1	1	3 (12.5%)
Total	10	10	4	24 (100%)

Table 2: The respondents' knowledge of universal blood and body fluid precautions Which of these is NOT a universal blood and body fluid precaution practice?

Options	Unth	Nohe	Esuth	Total
The use of gown and apron	0	0	0	0 (0%)
Universal precaution institutional policy	0	0	0	0 (0%)
Use of gloves, surgical masks and face shields	1 (4.2%)	0	0	1 (4.2%)
Recap hypodermic needle immediately after use	3 (12.5%)	5 (20.8%)	1 (4.2%)	9 (37.5%)
Use of mouthpiece and resuscitation bags	6 (25%)	5 (20.8%)	3 (12.5%)	14 (58.3%)
Use of puncture-resistance container	0	0	0	0 (0%)
Total	10 (41.7%)	10 (41.6%)	4 (16.7%)	24 (100%)

Table 3: Response on how they rate their knowledge on universal blood and body fluid precaution

Options	Unth	Nohe	Esuth	Total
Poor	0	0	0	0(0%)
Moderate	1	2	0	3(12.5)
Good	5	5	4	14(58.3%)
Very good	4	3	0	7(29.2%)
Total	10	10	4	24(100%)

Table 4: Responses on whether the respondents have ever received occupational training on universal blood and body fluid precautions

Options	Tertiary Hospitals			Total
	Unth	Nohe	Esuth	
YES	5	4	2	11 (45.8%)
NO	5	6	2	13 (54.2%)
Total	10	10	4	24 (100%)

Table 5: Responses on whether patients with blood and body fluid borne pathogens are entitled to the same care as other patients

Patients with blood and body fluid borne pathogens are entitled to the same care as other patients	Response	Tertiary Hospitals			Total
		Unth	Nohe	Esuth	
	Yes	8 (33.3%)	9 (37.5%)	3 (12.5%)	20 (83.3%)
	No	2 (8.35%)	1 (4.2%)	1 (4.2%)	4 (16.7%)
Total		10 (41.6%)	10 (41.6%)	4 (16.7%)	24 (100%)

Table 6: Responses on how often they clean couch, cassette, wash hands or use protective barriers

Options	Tertiary Hospitals				
	Unth	Nohe	Esuth	Total	
How often do you clean couch, cassette, wash hands or use protective barriers?	After the days' job	0	1	0	1(4.1%)
	After examining each patient	1	3	0	4(16.7%)
	Only after examining patients with open wounds	5	2	3	10(41.7%)
	Before and after work	4	4	1	9(37.5%)
Total		10	10	4	24(100%)

Table 7: Response on whether radiographers have ever received vaccination against blood and body fluid infections as health care workers

Count	Tertiary Hospital			Total
	Unth	Nohe	Esuth	
Have you ever received vaccination against blood and body fluid infections as a health care worker?				
Yes	4 (16.6%)	4 (16.7%)	1 (4.2%)	9(37.5%)
No	6 (25%)	6 (25%)	3 (12.5%)	15(62.5%)
Total	10 (41.6%)	10 (41.7%)	4 (16.7%)	24 (100%)

Table 8: Response on whether they have ever being occupationally infected by blood or body fluid

Count	Tertiary Hospital			Total
	UNTH	NOHE	ESUTH	
Have you ever being occupationally infected by blood or body fluid? No	10	10	4	24 (100%)
Total	10	10	4	24 (100%)

DISCUSSION

Universal blood and body fluid precautions (UPs) are very vital measures that have been adopted to help prevent health workers from being occupationally infected. At present its knowledge is being aggressively disseminated by health authorities and it has been integrated into the curriculum for training of radiographers in Nigeria.

Assessments of awareness of UPs among radiographers in Enugu metropolis was carried out in three selected tertiary hospitals. The findings in revealed that radiographers claimed to have awareness or recognition for Ups, with various proportions claiming different sources of awareness, the largest proportion being through clinical seminars or symposia.

The source of awareness may help to determine the level of knowledge one may have about UPs. Seminar/symposium is much better because it is normally an interactive forum in which questions and answers can come in. And of course, 58.3% have received awareness through this source. Assessment of knowledge of UPs among radiographers is very critical as without the ground knowledge, the awareness remains useless and void. Our finding shows that many radiographers practicing in the tertiary hospitals do not have knowledge of some aspects of UPs. Only a small proportion was right in their knowledge of not recapping needles. This finding is in line with the finding of the study by Hofmann *et al.* [10]. Health care workers could be at risk of infections with blood-borne pathogens resulting from occupational blood exposure through injuries

with sharp instruments and needle sticks if the standard precaution is not strictly adhered to. This calls for occupational training in this aspect. Some of the radiographers on grading themselves felt they their knowledge of Ups was sufficient even though they did not know some aspects of UPs. And of course, response to whether occupational training has been received is pertinent as it is a comprehensive and reliable medium to receive Ups ground knowledge. More than half have received the training. With this development in general, it means that more radiographers if provided with the opportunity would like to attend occupational training. This is in line with findings made by A. Mehrdad *et al.* [11].

The practice of Ups has an attitudinal influence or is related to personal opinions or feelings. There is a general positive attitude towards professional duty to care for patients with blood and body fluid infections. Only a small proportion showed negative attitude towards patients with blood and body fluid-borne pathogens. The act of exercising or carrying out UPs by radiographers does not match their attitude, knowledge and awareness. Our result shows that many radiographers do not clean couch, cassette and wash hands after every patient making spread of nosocomial pathogens likely. Disinfecting couch, cassette and washing of hands should be done after attending to one patient but before attending to the next. It must not be missed when contacted is made with body fluids and there must be thorough hand washing immediately after removing the gloves. The finding of our study is far from what can be acknowledged as standard practice of UPs. This similar to finding of Suchitra *et al.* [12]. Hand washing after interventions is mandatory.

Knowledge is not enough to prevent infection, but adequate skills during practice is very pertinent. This is very important radiographers have high tendencies of becoming potential vectors of nosocomial pathogens. This is in line to the findings made by Schalm *et al.* [13].

Our assessment of radiographers' occupational exposure to the risk of blood and body fluid infections no radiographer admitted having been occupationally infected. Even though none have occupationally infected the number that have received vaccination is quite low and may pose a heavy risk factor as those non- vaccinated may be at risk of exposure when not adequately practicing Ups as observed by Izegebu [14] and Cleveland *et al.* [15].

CONCLUSION

The issue of the level of awareness, knowledge, attitude and practice of Ups among radiographers, as well as their sensitivity towards the possibility of contracting blood and body fluid infections and the extent to which they could be occupationally exposed to infections cannot be overemphasized. This study shows that radiographers are really aware of UPs, but the soundness of their knowledge is quite poor e.g. lacking the knowledge that needles should not be recapped is a potential hazard. However, though the radiographers have insufficient knowledge of UPs their attitude towards providing services to patients with blood or body fluid-borne pathogens seem positive. This result of the study shows that most radiographers accept providing services to patients with blood and body infection as their professional duty. Radiographers still have a lot of work to do in the area of practicing UPs. Many are far away from guidelines which are meant to be followed e.g. in the area of washing hands, cleaning couch and cassettes. Though no radiographer have been occupationally infected, it is pertinent that UPs guidelines be strictly followed and should include vaccination against occupational infections.

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APPENDIX

This is a questionnaire for the ASSESSMENT OF AWARENESS, KNOWLEDGE, ATTITUDE AND PRACTICE OF UNIVERSAL BLOOD AND BODY FLUID PRECAUTIONS AMONG RADIOGRAPHERS IN ENUGU NIGERIA

INSTRUCTION: Please, tick [P] for any option(s) chosen or write in the space provided for additional answers

- 1 In which age group do you belong? (a) 20-24 yrs [] (b) 25-29 yrs [] (c) 30-34 yrs [] (d) 35-40 yrs [] (e) 40-44 yrs [] (f) 45 yrs and above []
- 2 What is your sex? (a) Male [] (b) Female []
- 3 What is your highest educational qualification?
(a) B.Sc. [] (b) M.Sc. [] (c) Ph.D [] (e) Others, specify.....
- 4 Number of years of practice (a) Less than 1 year [] (b) 1-5 years []
© 6-10 years [] (d) more than 10 years []
- 5 How did you know about universal blood and body fluid precautions?
(a) Through books [] (b) Somebody told me about it []
© Seminar/symposium [] (d) Others, specify.....
- 6 Which of these is not a Universal blood and body fluid precaution practice
(a) The use of gown and protective apron []
(b) Universal precaution institutional policy []
© Use of gloves, surgical masks and face shields []
(d) Recap hypodermic needles immediately after use []
(e) Use of mouthpiece and resuscitation bags []
(f) Use of puncture-resistant container []
- 7 Do you follow universal precaution rules in your daily patient care?
(a) Yes [] (b) No []

- 8 If no, why? (a) Inadequate facility for it (b) Large patient through put
(c) Not important (d) I am always careful (e) Others specify.....
- 9 How often do you clean couch, cassette or wash hands? (a) After the days' job (b) After examining each patient
 (c) Only after examining patients with open wounds (d) Before and after work (e) Others,
specify.....
- 10 How do you rate your knowledge about universal blood and body fluid precautions (a) Poor (b) Moderate (c)
Good (d) Very good
- 11 Have you ever received occupational training on blood and body fluid universal precautions (a) Yes (b) No
- 12 Are you confident in providing services to patients with blood and body fluid infections without being infected?
(a) Yes (b) No
- 13 If yes, why?
(a) My knowledge of universal blood and body fluid precautions is sufficient to give advice on the infection to
patient's families and friends
(b) I feel that I have adequate skills/ knowledge to manage contagious patients (c) I have colleagues who can
educate me on that (d) Others, specify.....
- 14 Do you think that you have professional duty to care for patients with blood and body fluid infections? (a) Yes
 (b) No
- 15 Do you think that patients with blood and body fluid infections are entitled to the same care as any other patients
(a) Yes (b) No
- 16 If no, why?
(a) Is there fault (b) They should be discriminated so as to teach other people lesson (c) Treating them takes
more time (d) Others, specify.....
- 17 What would be your reaction if you would have to attend to patients with blood and body fluid infections on a
regular basis? (a) Gladly accept
(b) Resign and leave the profession (c) Do it grudgingly
(d) Others, specify.....
- 18 Does your knowledge about universal blood and body fluid precautions affect your attitude towards patients with
blood and body fluid infections? (a) Yes (b) No
- 19 If no, why? (a) The body fluid infections develop some unknown forms
(b) The infections are mostly incurable (c) There is no point taking risk
(d) You can still be infected no matter how knowledgeable you are
(e) Others, specify.....
- 20 About how many patients with blood and body fluid infections can you examine daily? (a) 0 (b) 1-2 (c) 3-4
 (d) 5-6 (e) > 6
- 21 How do you communicate with patients with blood and body fluid infections in your care? (a) Signs (b) Relatives
 (c) Like other patients
© Public address system
- 22 Have you ever received vaccination against blood and body fluid infections as a health care worker? (a) Yes (b)
No
- 23 Have you ever been occupationally infected by blood or body fluid borne pathogen? (a) Yes (b) No

Thank you for your kind co-operation!!