Knowledge and Practice of Universal Precaution in a Tertiary Health Facility

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ABSTRACT

Background: *The increased risk of health workers to contract HIV, hepatitis B and C viruses in their work place led to the development of universal precaution or infection control policy. This policy where applied, has been found to reduce the risk of contracting these infections in the work place. The aim of this study is to determine the knowledge and practice of this policy in University of Nigeria Teaching Hospital (UNTH), Enugu.*
Methods: *This study was cross-sectional in design. Subjects were health workers likely to be exposed to body fluid. The study tool was a self administered pre-tested questionnaire. Statistical analysis was done using SPSS version 11.5 software.*
Results: *Two hundred and forty six health workers participated in the study, consisting of 150 females and 96 males. The male to female ratio was 1:1.6. Majority of the respondents were between ages 20-49 years.*
One hundred and twenty four (50.4%) of the respondents were aware of universal precaution, while 88 (35.8%) knew the correct definition of universal precaution. Thirty four (13.8%) had received training on universal precaution however no ward attendant was trained. On multiple regression (P = 0.049) and training (P = 0.006) were the variables that were predictive of correct definition of universal precaution.
Hands gloves were used by 86.6% of the respondents, 32.9% did not re-sheath needles and 43.9% practiced appropriate hand washing.
Conclusion: *The level of knowledge and compliance with precaution by health workers in UNTH Enugu is low. Low level of training and unequal training exposure among the various occupations contributes to this.*

KEYWORDS: Knowledge; Practice; Universal precaution

INTRODUCTION

The Centers for Diseases Control (CDC) in 1987 recommended that all hospital adopt the infection control policy Universal precautions[1]. This policy has been broadened and renamed standard precaution[2]. Under this policy, because of the high risk to contract HIV, Hepatitis B and C viruses in the work place, all health workers should be trained to protect self from all body fluids, as if such were HIV and hepatitis infected[1].

Components of the policy include barrier techniques, hand washing and sharps precaution[1]. studies have shown that training and implementation of these principles reduce the risk of contracting the infections[3,4]. The National HIV sero-prevalence sentinel reports show an exponential increase in the HIV prevalence rate in our environment[5]. Similar high rates have been reported on Hepatitis B and C[6,7]. Very few studies have attempted to assess or determine the level of awareness and practice of this policy among health workers in Nigeria[8,9]. We are also not aware of any report on the subject from the University of Nigeria Teaching Hospital, (UNTH) Enugu. This study is aimed at bridging the gap in knowledge and also providing the basis for formulating a plan of action that will promote its implementation.

MATERIALS AND METHODS

This cross-sectional study was carried out between June and August 2003, among staff of UNTH who have direct contact with patients and or their body fluids (Doctors, nurses, lab scientists, ward attendants, and others). Those unlikely to be so exposed were excluded. A 2-staged random sampling was done, using the distribution of the different occupations as a frame. Informed verbal consent was obtained from the subjects and the approval of the ethics committee of the hospital was obtained. A self administered, pre-tested questionnaire, designed using the CDC guidelines on Universal precaution[1], was the study instrument.

Analysis was performed using SPSS Version 11.5. Frequencies were compared with Chi-Square test while multivariate regression was used to determine variables with predictive effect on knowledge and compliance.

RESULTS

Two hundred and forty six health workers participated in the study. One hundred and fifty (60.98%) were females, while 96 (39.02%) were males. The male to female ratio was 1:1.6. One hundred and twenty-seven (51.6 %%) were married, 100 (40.7%) Single and 19 (7.6%) were widowed. Majority of the subjects were between ages 20-49 years.

The distribution of the respondents according to occupation is as shown in Table I. The mean of years of practice in the occupation were doctors (4.71years $\pm$ 4.15), nurses (11.45 years $\pm$ 9.28), medical laboratory scientists (9.22 years $\pm$ 7.70). Ward attendants (18.21 years $\pm$ 8.12) and others (6.71 years $\pm$ 8.10).

One hundred and twenty four (50.4%) of the respondents were aware of universal precaution while 88 (35.8%) were able to correctly define universal precaution Table II. Fifty one (20.7%) knew at least 3 of the 5 basic components of universal precaution, that is: assessment of task risk factor involved in their duty, wearing of appropriate protective clothing; avoidance of sharp and needle stick injury, maintenance of high level of hand hygiene and implementation of training programme for all health workers. Table III shows that on multiple regression analysis, only occupation (p = 0.049) and training (p = 0.006) were found to be significantly associated with correct definition of universal precaution by the respondents. as only thirty-four (13.8%) of the respondents had received training in universal precaution. Table IV shows the distribution of those trained according to occupation. No ward attendant was trained and this was highly significant. (X^2 = 23.40, d8 = 4, p = 0.00).

Hand gloves were used by 213 (86.6%) of the respondents, either alone or in combination with other protective methods. Eighty one (32.9%) of the respondents do not re-sheath a needle before disposal and 108 (43.9%) practice appropriate hand washing. Table V shows that on multiple regressions, occupation (P = 0.00) was the only variable with significant predictive effect on correct hand washing technique.

One hundred and twenty eight (52.0%) of the respondents had needle puncture injury in the course of their duty. Table VI shows that the incident of injury did not vary significantly among the various occupations (X^2 = 9.08, = 4, P = 0.06).

Table I. Distribution of Health workers According to Occupation

Occupation	No of Respondents	Percentage
Doctors	67	27.2%
Nurses	59	24.0%
Medical Lab Scientist	34	13.8%
Ward Attendants	55	22.4%
*Others	21	8.5%
Failed to indicate	10	4.1%
Total	246	100%

*Radiographers 8, Physiotherapists = 11 medical social workers = 2.

Table II. Distribution of Response to definition of Universal Precaution

Definition	No of Respondent	Percentage
Protection during sexual intercourse	4	1.6%
Avoidance of exposure to body fluid and blood of HIV infected people	39	15.9%
Wearing of gloves during contact with patients	11	4.5%
*protection of self from exposure to body fluid and blood of all patients	88	35.8%
Failed to indicate	104	42.2%
Total	246	100%

Table III. Multiple Linear Regression of Factors Associated with Correct definition of Universal Precaution among Health Workers

Variable	B	Std Error	Beta	'T	P
Age	- 0.039	0.051	- 0.085	- 0.77	0.44
Sex	- 0.039	0.08	0.006	0.07	0.94
Marital Status	0.089	0.065	- 0.13	- 1.31	0.17
Years of Practice	- 0.056	0.06	- 0.089	- 0.9	0.37
Occupation	- 0.065	0.033	- 0.17	- 1.98	0.049
Training	0.27	0.096	0.23	2.82	0.006

Table IV. Relationship between Occupation and Training in Universal Precaution of Health Worker

Occupation	Training		Total
	Yes	No	
Doctors	7	60	67
Nurses	11	47	58
Med Lab Scientist	12	22	34
Ward Assistants	0	55	55
Others	4	17	21
Total	34	201	23.5

X^2 = 23.40, df = 4, P = 0.00

* 11 health workers did not respond to the question

Table V. Factors Predictive of Proper Hand Hygiene Among Health Workers on Multiple Linear Regression Analysis

Variable	B	Std Error	Beta'	T	P
Age	- 0.02	0.05	- 0.04	- 0.37	0.71
Sex	0.01	0.08	0.11	0.17	0.87
Marital Status	0.01	0.07	0.01	0.12	0.90
Years of Practice	0.02	0.07	0.03	0.26	0.70
Occupation	- 0.12	0.03	- 0.31	- 3.74	0.00
Training	0.097	0.105	0.07	0.92	0.36

Table VI. Distribution of Needle Puncture Injury Among the Various Occupation

Occupation	Puncture Injury		Total
	No	Yes	
Doctors	21	42	63
Nurses	18	35	53
Lab Scientist	14	19	33
Ward Assistants	31	23	54
Others	9	9	18
Total	93	128	221*

X^2 = 9.08   df = 4   P = 0.059

*25 Health workers did not respond to the question

DISCUSSION

The level of awareness of universal precaution among health workers in this report in UNTH Enugu is average (50%) and correct knowledge of the concept of universal precaution is even lower at 42.1%. Only 20.7% of the health workers had a fair knowledge of the basic components of universal precaution. This finding is higher than the level of 16% awareness reported in an earlier study in Lagos[8]. A recent study in Ibadan had a much higher level of awareness of 77.5% but a correct knowledge of the concepts of only 24%[9]. This figures are still much lower than the level of awareness of 89% and 91% reported in two different studies in the USA[3, 10].

Thirty three (13.8%) of the health workers received training on universal precaution. The training was unevenly distributed among the various occupations that were likely to be exposed to blood and body fluid thus no ward assistant received training in universal precaution. The positive influence of training on awareness, practice and compliance of universal precaution has been previously documented[3, 4]. Training and occupation were the factors that were predictive of correct definition of universal precaution in this study. In view of the unequal training exposure among the various occupations, this finding is not surprising.

The use of hand gloves was practiced by 86.6% of health workers in this study compares favourably with 97.1% usage reported recently in Ibadan[11], but is significantly higher than the 10.2% and 40% usage reported in another but earlier study in Ibadan[12] and Lagos[8]. The differences in findings may be partially explained by the differences in the timing of the studies. These appears to be an increasing use of hand gloves from 10.2% in 1995[12], to 40% in 2000[8] and 86.6% and 97.1%[11] in 2003 2004 when these studies were carried out. This trend is encouraging because of the known role of hand gloves in limiting contact of health workers to patients' blood and body fluid[13]. This may have been enhanced by the increasing awareness of the risk of contracting HIV/AIDS, which is showing increasingly prevalence[5].

Eighty one (32.9%) and 106 (43%) of health workers do not re-sheath needles before disposal or practice correct hand washing respectively. This is similar to previous findings in Lagos[8] and Ibadan[7]. It appears that compliance with Universal precaution has not improved, despite increased awareness and knowledge about it. Respondent's occupation was the only variable that was predictive of compliance. A similar finding was reported in Australia where dentist were more compliant than dental hygienists[14]. The reason for this occupational difference in compliance is not clear. However, the difference in educational levels may be contributory.

A high number (57.0 %) of UNTH health workers had needle puncture injury. This is much higher than findings of a study in Lagos.

In conclusion the level of knowledge of compliance with universal precaution by health workers in UNTH Enugu is low. Low level of training and unequal training exposure among the various occupational groups contributes to this.

It is recommended that all health workers who are exposed to patients and their body fluids should be trained on universal precaution. The compliance of these workers to the precautions should also be monitored. It is also suggested that the hospital administration should provide an enabling environment for its implementation.

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APPENDIX I
KAP of Universal Precaution in UNTH

Section 1. Socio Demographic Data
1. Age At last birth day
   a. 20 Yrs.
   b. 20-29 Yrs.
   c. 30-39 Yrs.
   d. 40-49 Yrs.
   e. 50-59 Yrs.
   f. 60-71 Yrs.
2. TRIBE:
3. SEX: MALE   FEMALE
4. MARITAL STATUS:
   a. Single
   b. Married
   c. Divorced
   d. Widowed
   5. EMPLOYMENT QUALIFICATIONS:
6. ADDITIONAL QUALIFICATION:
7. YEARS OF PRACTICE
8. PRESENT WORKPLACE:
9. OCCUPATION:
   a. Doctor
   b. Nurse
   c. Pharmacist
   d. Medical Lab. Scientist
   e. Radiographer
   f. Ward assistant
   g. Others specify:

Section 2. Knowledge
10. Are you aware of 'Universal Precaution'
    Yes   No
11. Have you received any training in Universal Precaution Yes   No
12. If No to 11 Why?
    a. There has not been any training organized by the institution.
    b. There was no time to attend the programme.
    c. Training is not necessary.
    d. All of the above
    e. Other reason specify.
13. If Yes to Question 11, who organized the training.
    a. Management of Institution
    b. NGO
    c. Church
    d. Others specify
    14. When was it organized?
15. What is Universal Precaution?
    a. Protection during sexual intercourse
    b. Avoidance of exposure to body fluids and blood from HIV infection people.
    c. Wearing of gloves during contact with patients.
    d. Protection of self from exposure of body fluid or blood from all patients.
16. Who should practice Universal Precaution? (You can tick more than one).
    a. Doctors
    b. Nurses
    c. Teachers
    d. Patient relative,
    e. Ward Assistant
    f. Every body.
17. Where should it be practiced?
    a. Homes
    b. Hospital
    c. Operating theatres
    d. Schools
    e. Play ground
    f. All of above
    g. None of above.
18. What are the principles involved in Universal Precaution? You may Tick more than one
    a. Avoidance of contact with patient.
    b. Assessing the task risk factor involved in your duty.
    c. Wearing of appropriate protective clothing.
    d. Exposing any body that is HIV positive.
    e. Avoidance of sharps and needle stick injury.
    f. Maintenance of high level of Hygiene
    g. Implementation of training programme for all health workers

h.   All of the above
i.   None of the above.

19. What body fluid transmits HIV and Hepatitis B? You may tick more than one
    a.   Blood
    b.   Stool
    c.   Saliva
    d.   Semen
    e.   Swort
    f.   All of above
    g.   None of above

20. What is task   Risk assessment in Universal Precaution?
    a.   Risk of transmitting air borne disease in the course of your work.
    b.   Risk of getting injured in the course of your duty.
    c.   Risk of getting in contact with body fluid in the course of your duty.
    d.   All of above
    e.   None of above.

    Attitude and Practice

21. What protective clothing do you put on while performing your duty?
    a.   Face mask
    b.   Hand gloves
    c.   Water repel tant gown and apron.
    d.   Protective eye wear
    e.   Protective Head wear
    f.   All of above.
    g.   None of above.

22. Do you re-cycle needles in your institution?
    Yes   No

23. Do you re-sheet needles before disposal?
    Yes   No

24. Did your institution provide puncture Resistant Bins for sharps and needles (If No skip Question 28)
    Yes   No

25. Do you use them?   Yes   No.

26. What is it used to dispose? You may tick one.

a.   Gloves
b.   Needles,
c.   Used gowns
d.   Scalpels
e.   Cotton wools
f.   Drugs
g.   All of above
h.   None of above.

27. Have you ever had a needle or other puncture injury? Yes   No

28. If yes to No. 27, what did you do? You may tick more than one
    a.   Took antibiotics
    b.   Was liberally with soap and water.
    c.   Allow blood to flow freely
    d.   Inform management of institution.
    e.   Determine the retroviral status of the patient.
    f.   Suck out the blood from the wound.
    g.   Others specify …………………..

29. Does your institution provide AZT for staff involved with HIV positive blood?
    a.   Do not know
    b.   Yes
    c.   No

30. Is free flowing water always available in your work place?   Yes   No

31. What hand Hygiene procedure do you adhere to? You may tick more than one
    a.   Hand washing with soap and water on entry and at exit from workplace.
    b.   Hand washing with soap and water before and after every clinical procedure and after handling contaminated or dirty materials.
    c.   Use of instant antibacterial gels.
    d.   Hand gloves are used so hand washing with soap and water is optional.
    e.   All of above.
    f.   None of above
    g.   Others specify.