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Research Article

**ASSESSMENT OF AWARENESS ON STANDARD
PRECAUTIONS AMONG AUXILIARY NURSE MIDWIVES**Irfana Kausar¹, Adeela Qayyum², Kashifa Rani³¹Charge Nurse, Punjab institute of Cardiology Lahore²Charge Nurse, Teaching Hospital D.G. Khan³Clinical instructor RN, School of General Nursing & Midwifery Dera Ghazi Khan**Article Received:** July 2019**Accepted:** August 2019**Published:** September 2019**Abstract:****Objective:** To assess of awareness on standard precautions among auxiliary nurse midwives.**Material and methods:** This cross-sectional study was conducted at Punjab institute of Cardiology Lahore from June 2018 to December 2018 over the period of 6 months. The study population were the auxiliary nurse midwives (ANMs) working in different centers. Total 138 subjects were studied.**Results:** In this study, it was observed that, out of 138 study subjects, the majority i.e. 57 (41.3%) were in the age group of 31-40 years. The mean age of the participants was 42.38 years (SD±8.4 years). Out of the total participants, 123 (89.1%) were Muslims. A total of 53 (38.4%) participants were graduates and above. As far as the socio-economic status was considered more than half the subjects i.e. 74 (59.4%) belonged to the upper class whereas 47(34.1%) and 20(14.5%) belonged to upper middle class and middle class respectively.**Conclusions:** It emphasized the importance of regular training on Standard precautions for ANMs.**Keywords:** Standard precautions, Auxiliary nurse midwives, Infection**Corresponding author:**

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INTRODUCTION:

Health personnel, due to nature of their occupation, are working in the midst of various pathogens and thus prone to develop diseases. Following some simple protective measures greatly reduce these occupational hazards. The United States Centers for Disease Control and Prevention (CDC) recommended certain precautionary measures while handling blood and body fluids of a suspected or confirmed infective patient for the first time in 1983.^{1,2} Later, in the year 1987, the CDC modified the recommendations stating that precautionary measures should be followed for all patients, irrespective of their infection status. Among health personnel, this was popularly known as “Universal blood and body fluid precautions” or “Universal precautions”.^{3,4} In 1996, CDC included the Universal precautions in a new concept of prevention, called standard precautions.⁵ Standard precautions are meant to reduce the risk of transmission of blood borne and other pathogens from both recognized and unrecognized sources in the care of all patients. The main aim of standard precautions is to protect health workers and patients from infection. They are based on a risk assessment and make use of common practices & personal protective equipment (PPE) use to protect healthcare providers from infection and also prevent the spread of infection. World Health Organization (WHO) recommended the key elements of standard precautions for health care facilities are performing hand hygiene, routine use of PPE, prevention of needle stick and injuries from other sharp instruments, performing respiratory hygiene and cough etiquette, environmental cleaning, handling, transport and processing of linens, handling and disinfection of patient care equipment and proper waste disposal.⁶

According to the WHO, globally, 37% of the hepatitis B among health workers was the result of occupational exposure and 10% of the HIV among health workers was the result of an exposure at work through needle-stick injuries.⁷ The cause of 95% of the HIV occupational sero-conversions, are preventable with practical, low-cost measures and have the co-benefit of preventing exposure to other blood-borne viruses and bacteria.⁷ An estimate by WHO in the year 2003 showed, sharp injuries resulted in 16000 hepatitis C virus, 66000 hepatitis B virus and 200-5000 HIV infections in health care workers worldwide.⁸ Awareness comes from acceptable knowledge which ultimately transforms to correct practices.

A study on knowledge and practice of Universal precautions among nursing staff showed, out of 88 participants interviewed, almost all of them reported having awareness about universal precautions and use

personal protective equipment. Only 44.3% nurses mentioned all the correct measures for universal precautions.⁹

METHODS:

This cross sectional study was conducted at Punjab institute of Cardiology Lahore from June 2018 to December 2018 over the period of 6 months. The study population were the auxiliary nurse midwives (ANMs) working in different centers. Total 138 subjects were studied. The basic descriptive variables which were studied of the study subjects were age, educational qualification, religion, socio-economic status classified by Modified B.G. Prasad Scale (January, 2017), duration of service, training status regarding Standard Precaution, exposure to any needle stick injury (in last 3 months/6 months/ 1 year/ lifetime) and response to needle stick injury (NSI) (applicable to those who had exposure) and history of Hepatitis B vaccination. The variables assessing the knowledge of Standard precautions and its recommended key elements were studied.⁶

Data was collected using a pre-designed and pre-tested questionnaire, which was translated into Urdu. The questionnaire consisted of a total 24 questions. The basic background characteristics were assessed in the first 10 questions and knowledge part was assessed in the remaining 14 questions. As hand hygiene and PPE measures are very important precautionary measures, these two consisted of 3 and 2 questions respectively. Knowledge had been assessed by scoring each correct response by 1 and wrong response by 0. Hand hygiene score of more than equal to 2 and PPE score of 1 was taken as acceptable knowledge. The other elements were assessed by scoring 1 for every correct response, thus the minimum possible score was 0 & maximum score was 14. Acceptable knowledge in Standard precautions was assumed when the total score was equal to 10 or more out of a total score of 14 following median split method.¹² The study technique was self-administered questionnaire to be filled up by the study subjects.

The collected data were analyzed by using SPSS version 20. Numerical data presented as mean and SD and categorical data was presented as frequency and percentage. A binary logistic regression was done to determine the association between the socio-demographic characteristics and other background characteristics as independent variables and the knowledge as dependent variables.

RESULTS:

In this study, it was observed that, out of 138 study subjects, the majority i.e. 57 (41.3%) were in the age group of 31-40 years. The mean age of the participants was 42.38 years ($SD \pm 8.4$ years). Out of the total participants, 123 (89.1%) were Muslims. A total of 53 (38.4%) participants were graduates and above. As far as the socio-economic status was considered more than half the subjects i.e. 74 (59.4%) belonged to the upper class whereas 47(34.1%) and 20(14.5%) belonged to upper middle class and middle class respectively.

Most of the ANMs had working experience of less than twenty years. Out of the total subjects, 47 (34.1%) subjects had received hepatitis B vaccine, out of which 40 (85.1%) subjects had received in acceptable dose according to the vaccination schedule. Ever exposure to needle stick injury occurred in 100 (72.5%) participants; out of which, history of exposure during the preceding year was 28.98% and more than one year back was 43.47%; 12 subjects were exposed in the last 3 months, 11 in the last 3-6 months, 17 in last 6-12 months and 60 participants had history of exposure more than one year back. Only 24 (17.4%) participants had received any training on standard precautions (Table 1).

This study showed that, most of the participants i.e. 117 (84.8%) were aware that the standard precautions should be applied while handling all patients, and 122 (88.4%) participants correctly responded for which body fluids such precautions should be applied.

Table 1: Distribution of knowledge on standard precautions of study subjects by background characteristics (n=138).

	Unacceptable knowledge N=49	Acceptable knowledge N=89	P value
Age (years)			
≤30	01	11	0.020
31-40	11	24	
41-50	9	25	
51-60			
Religion			
Muslim	46	77	0.256
Non-muslim	3	12	
Educational qualification			
Secondary	18	23	0.277
Higher secondary	12	32	
Graduation and above	19	34	
Socio-economic status#			
Middle class	7	13	0.882
Upper middle class	18	29	
Upper class	24	47	

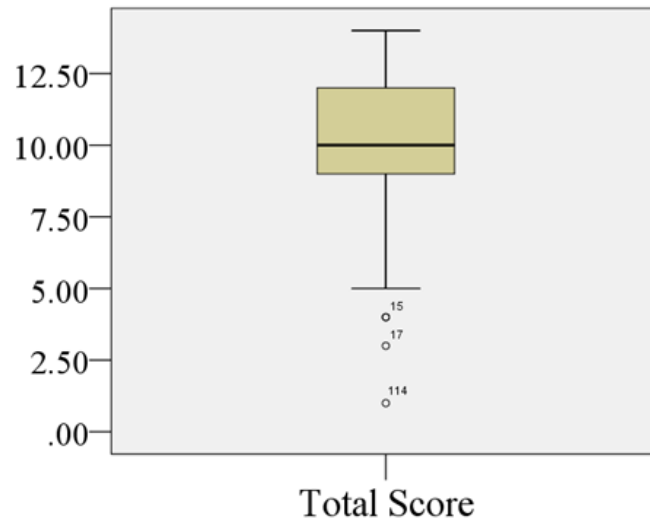
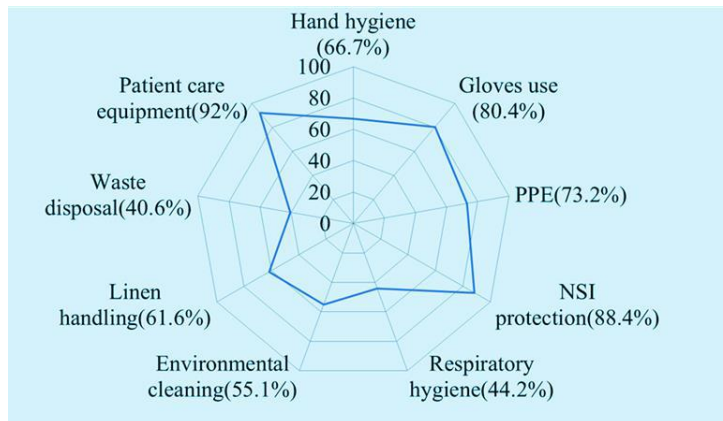
The mean of the obtained knowledge score of key elements was 9.86 and median (IQR) was 10 (9, 12) (Figure 1). Knowledge on handling and disinfection of patient care equipment was found acceptable in 92% of ANMs and proper waste disposal was 40.6% of ANMs respectively (Figure 2). This study revealed that more than half of the subjects, i.e. 64.5% had acceptable knowledge regarding standard precautions.

Age of the participants had a statistically significant association with acceptable knowledge in the bivariate analysis ($p < 0.026$). In the first model of the regression analysis, the independent variables were age, socio-economic status, religion and educational level; i.e., the non-modifiable factors. This model showed that only the age group of 41-50 years was statistically significant ($p < 0.026$). When total years of experience and training status (i.e., the modifiable factors) were included the explanatory power (R^2) of the model 2 increased to 19% from 15% of model 1 and the association between acceptable knowledge and the age group of 41-50 years became statistically non-significant. The model 2 showed that the association between training status and acceptability of knowledge was statistically significant ($p < 0.038$). On adjustment of age, educational level, training and vaccination status, it was found that needle stick injury was not related to acceptable knowledge on standard precautions [AOR-0.817(0.341-1.957)] (Table not shown).

Working experience (in years)			
<20	32	50	0.296
≥20	17	39	
Hep B vaccinated	16	31	0.796
Exposed to needle stick injury	36	64	0.844
Received SP training	5	19	0.098

Table 2: Binary logistic regression analysis predicting acceptable knowledge by background characteristics (n=138).

Background characteristics	Model 1		Model 2	
	AOR (95% CI)	P value	AOR (95% CI)	P value
Age (years)				
≤30	1		1	
31-40	3.636 (0.384-34.390)	0.260	3.330 (0.202-54.777)	0.40
41-50	0.314 (0.113-0.871)	0.026	0.234 (0.034-1.614)	0.140
51-60	0.722 (0.245-2.125)	0.554	0.702 (0.214-2.300)	0.559
Religion				
Muslim	1		1	
Non-muslim	0.344 (0.087-1.367)	0.130	0.388 (0.095-1.588)	0.188
Educational qualification				
Secondary	1		1	
Higher secondary	0.717 (0.292-1.764)	0.469	0.714 (0.283-1.803)	0.476
Graduation and above	1.117 (0.431-2.895)	0.820	1.100 (0.418-2.894)	0.848
Socio-economic status#				
Middle class	1		1	
Upper middle class	1.892 (0.568-6.300)	0.299	1.768 (0.501-6.241)	0.376
Upper class	1.013 (0.425-2.413)	0.977	1.031 (0.415-2.564)	0.947
Working experience (in years)				
<20			1	
≥20			0.888 (0.161-4.897)	0.891
Received SP training				
Yes			1	
No			0.304 (0.098-0.938)	0.038

Figure 1: Box-Whisker plot showing knowledge score of participants (n=138).**Figure 2: Distribution of study subjects according to acceptable knowledge regarding elements of Standard precautions (n=138).**

DISCUSSION

The ANMs are always at risk to occupational exposure to various infectious diseases due to their working environment, place of service delivery and varied level of knowledge regarding preventive measures. Adequate and an acceptable level of knowledge on standard precautions thus have a good impact in day to day practice of ANMs. This study had revealed that more than half of the participants were having acceptable knowledge on Standard precautions which corroborates with the finding of another study done in West Indies, Jamaica among health care workers which showed that 64% of subjects had acceptable knowledge.¹³

Health care workers due to their nature of occupation are exposed to blood, blood products and other body fluids and injuries from needle stick and sharp

instruments, thus are exposed to constant risk of Hepatitis B virus infection. Injuries from needle stick and other sharp instruments are potential and very serious hazards in any healthcare settings. A major finding of this study was, although 88.4% of participants had acceptable knowledge regarding prevention of injury from needle and other sharp instruments, exposure to needle stick injury occurred in 28.98% of the participants which was much lower than 42.1% as found in a study conducted among health care personnel in a tertiary care teaching hospital.¹⁴ Gradual declining of this negative finding over time is heartening to note. Possible role of difference in study settings might be considered for further investigation in this regard. Another finding of this study showed that only 34.1% of the ANMs had received hepatitis B vaccine which was much lower in comparison to a study conducted in a tertiary care

hospital in Delhi, which reported 55.4% of health care workers were partially or fully vaccinated for Hepatitis B virus.¹⁵ This showed the lacuna present in the peripheral health care delivery system compared to a tertiary care institute. Every health care worker should be protected against a dreaded disease like hepatitis B. Inequitable distribution of protective measures depending upon the place of posting is a weakness of the health system. This may be improved by arranging Hepatitis B vaccination for all health care workers at the time of their service joining.

When the individual key elements of Standard precautions were considered separately, knowledge regarding hand hygiene, gloves use, PPE, NSI protection, linen handling and patient care equipment was found acceptable in more than fifty per cents of study subjects. Whereas, respiratory hygiene and waste disposal knowledge was acceptable in 44.2% and 40.6% of study subjects respectively as shown in the spider diagram (Figure 2). Hand hygiene (i.e., hand washing with soap and water or use of alcohol based hand rub) has been established as an important infection control measures to prevent many health care associated infections. In this study, we found that the majority of ANMs had correct knowledge regarding hand hygiene i.e. 92 (66.7%), but only 42 (30.4%) subjects correctly stated that the ideal hand hygiene is by hand washing with soap and water or use of alcohol based hand rubs.

This study clearly demonstrated that there was a definite association between acceptability of knowledge and having received any training on Standard precautions. The study revealed that the ANMs who had received any training related to standard precautions had lesser odds of having unacceptable knowledge regarding Standard precautions [AOR-0.304(0.098-0.938)].

Standard precautions are a practice oriented preventive approach. A limitation of this study could be that this study assessed the awareness regarding Standard precautions and its key elements through a self-administered questionnaire. Observational approach on day to day practice of the ANMs regarding Standard precautions would have strengthened this study. As in this study physicians were the evaluator, ANMs might have hesitated to express their real opinion in spite of the best efforts of the evaluators.

CONCLUSIONS:

It emphasized the importance of regular training on Standard precautions for ANMs.

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