

## Knowledge, Compliance and Factors Influencing the Compliance of Universal Precautions among Nurses

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**Abstract:** Universal Precaution (UP) is a set of guidelines which aims to protect health care workers from infections. Compliance to the UP is often minimal in low income countries, in spite of greater risk of infection. A cross sectional study was conducted to study the knowledge and compliance of UP and factors that influence the compliance among the nurses in the medical wards, Jaffna Teaching Hospital by a self administrated questionnaire. The first part assessed the knowledge, marked out of 100%. The degree of compliance was assessed through the second part and marked out of 100%. The third part inquired about the factors that influence the compliance. The data were analyzed by chi squared test. The mean for knowledge was 71.8% (SD±14.3), mean for males and females were 67% (SD±13.5) and 74.8% (SD±14.1) (p-0.24) respectively, mean of 20-30 year age group was 73.3%, 31-40 years was 74.6% and mean for older age group 41-50 and 51-60 were 65.6% and 66.8% respectively (p-0.72). Working experience did not show statistically significant relationship (p-0.259). The mean for compliance was 74.1% (SD±14.9). Age (p-0.987), Sex (p-0.921), and working experience (p-0.990) did not show statistically significant relationship. In this study 57% of Nurses had needle recapping habit, which is considered as an important factor that predisposes nurses for hospital infection. Regarding factors influencing the compliance of UP, fear of being infected (67%) influenced positively and poor material availability (67%), excessive work load (59%), psychological effect on the patient especially in using mask (45%), and emergency situations (40%) negatively influence the compliance of UP. To protect the health care workers and as well as the patients, 100% compliance is necessary. This study has identified that knowledge and compliance of nurses in the medical wards of the Teaching Hospital, Jaffna is not up to expected levels. Some factors that may be responsible for this also are identified. There is a need to review the nursing curriculum with greater emphasis on UP. In-service training programs for nursing staff on UP is also recommended as indicated by some respondents in the open comment.

**Keywords:** Compliance, Universal Precautions.

### I. INTRODUCTION

Infection is one of the most important problems in health care services worldwide and health care workers are at high risk of infection. All over the world there are 11 million nurses who are the first line health care workers, directly dealing with the patients and therefore, the nurses are the most susceptible for nosocomial infection [6].

The occupational exposure can occur in different modes such as direct and indirect contact, droplet, air borne, percutaneous and mucus membrane exposure. Many pathogens are capable of infecting through more than one way. The transmission of microorganisms from hands of nurses is an important source of infection in hospitals and can be prevented by hand washing. The most common form of occupational exposure to blood is needle prick injury.

Interventional measures have been proposed to minimize exposure of health care workers and patients to infection. In 1987, the Center for Disease Control and Prevention (CDC) proposed the concept of "Universal Precautions" (UP) originally designed to protect health care workers from exposure to blood-borne pathogens. In 1996, CDC recommended that UP be renamed standard precautions, which combine the major features of the UP and body substance isolation (BSI).

UP is designed to prevent health care workers from being exposed to potentially infected blood and body fluid by applying the fundamental principles of infection control, through hand washing, using gloves, mask, gown, and eye wear, cover the cut injuries or abrasions, no needle recapping, and safe collection and disposal of sharps.

In general, compliance means an act in accordance with or with request or command [5]. In health care settings, compliance is the extent to which certain behavior is in accordance with the physicians' instructions or health care advice [4].

UP is expected to be practiced in health care settings, but the effectiveness of compliance is questionable and there is no system to monitor compliance of UP among nurses [2]. It is doubtful whether the training to nurses is geared towards compliance of UP, particularly in developing countries.

Poor compliance of UP leads to infections which negatively influence the care of patient as well as the health of the nurse. The global nurse shortage plays a vital role on negligence of universal precautions as they have work load and work with speed clocks [1]. In the Teaching hospital Jaffna, cadre for nursing staff is 1350; but only 335 nurses are working resulting in massive shortage of nursing staff (Gathered from Matron). This unavoidably leads to considerable gap between recommended procedure and the practices.

A study was done on in China, to evaluate registered nurse compliance with standard precautions and to analyze the factors that affect compliance. Compliance with standard precautions was low among the surveyed nurses. Compliance for all nurses was 48.29 (upper quartile score 76.36, lower quartile score 28.07), which was occupied by 64.7% of the participants. The factors affecting compliance most were: inadequate standard precautions training and knowledge followed by hospital grade, availability of sharps disposal box in the department, general self-efficacy, exposure experience, and department in which the nurse worked [3].

## II. OBJECTIVES

To assess the knowledge, compliance of UP and factors that influence the compliance among nurses working in the medical wards of Teaching Hospital Jaffna.

### III. RESEARCH DESIGN AND METHODS

This is an institutional based cross-sectional study among the nurses. Ethical clearance was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Jaffna. The data were collected by using the pre-tested self administrated questionnaire in English for Sinhala nurses because they agreed that they were knowledgeable enough to answer in English and translated in Tamil for Tamil nurses. The investigator visited every medical ward repeatedly and administered to the nurses who were on duty without affect their ward work. The knowledge was assessed by answers to questions in the first part, marks allocated for each question in first part out of 100. The following questions were asked to assess the knowledge: what do you mean by UP (12 marks), hand washing technique (20 marks), steps to wearing glove and removing glove (40 marks), benefits of wearing mask(6 marks), how to handle the sharps (10 marks), measures should be taken after exposure (12 marks). The degree of compliance also was assessed through self reporting in the questionnaire in the second part and marks allocated for each question and assessed by marking out of 100. There were 6 questions to assess the compliance: necessary situations for hand washing (25 marks), wearing gloves (40 marks), wearing mask (15 marks), situations for recapping (15 marks), exposure experience (5 marks). The third part of the questionnaire inquired about the factors that influence the compliance. The person performance related factors such as exposure experience, fear of being infected, risk taking personality, feeling of having good knowledge, knowledge of risk in hospital, inconvenience in nursing procedures, psychological effect on the patient especially in using mask, time shortage, and laziness were inquired. Working environmental factors such as poor material availability, workload, and emergency situation, also was inquired. The Privacy was ensured during questionnaire administration. The purpose of study was explained to the selected nurses, and then the informed verbal consent was obtained from them to get information. The data were analyzed by chi squared test to find the significant relationship by using Statistical Package of Social Science.

### IV. FINDINGS

Altogether sixty one nurses were working in the medical wards, but sixty nurses consented to participate in this study.

Table I: Distribution of demographic characteristics of the study sample

Characteristics of subjects	No.	Percentage
Age in years		
21-30	34	56.7
31-40	11	18.3
41-50	10	16.7
51-60	5	8.3
Sex		
Male	24	40.0
Female	36	60.0
Nationality		
Tamil	52	86.7
Sinhala	7	11.7
Muslim	1	1.7

In the study 55% of the population was junior nurses with less than five years of working experience. The knowledge was evaluated through the first part of the questionnaire and marks were allocated for 100. According to that, the mean for knowledge was 71.8% (SD±14.3), mean for males and females were 67(SD±13.5) and 74.8% (SD±14.1) respectively (p=0.24), mean of 20-30 year age group was 73.3%, 31-40 years was 74.6% and mean of older age group 41-50years and 51-60 years were 65.6% and 66.8% (p=0.72). Working experience did not show statistically significant relationship. Professional qualification shows statistically significance relationship with Knowledge of UP (p=0.01). The mean for compliance of UP was 74.1 (SD±14.9), Age, Sex, and Working experience did not show statistically significant relationship. In the study populations few nurses obtained 100 marks for knowledge and compliance. In this study 57% of nurses had needle recapping habit, which predisposes for hospital infection. But the younger age group nurses had no needle recapping habit.

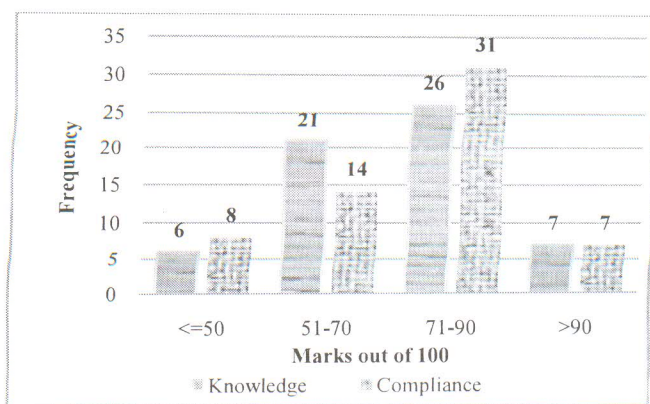


Figure 1: Distribution of marks for Knowledge and Compliance among the nurses

Regarding factors influencing the compliance of UP, fear of being infected (67%) positively influenced and poor material availability (67%) significantly negatively influenced. Other factors which influenced the compliance were identified as Excessive workload (59%), psychological effect on the patient especially in using mask (45%), emergency situations (40%), risk taking personality (27%), inconvenience in nursing procedure (23%), lack of fear being infected (15%), lack of risk knowledge about infection in hospital (8%), exposure experience (7%), laziness (5%), and personal opinion of lack of knowledge (2%). Other than the above factors the nurses reported that the following factors affected their compliance: poor distribution of latest medical updates to the nurses, working environment is not supportive, lack of sharp bins, irritation of the in-charge nurse, senior nursing staff not being strict and lack of supervision of junior staff. The knowledge and compliance of UP varied with demographical characteristics as well.

## V. CONCLUSION

According to this study the mean marks for knowledge and compliance of UP were 71.8 and 74.1 respectively. There was no significant difference between male and female for compliance. Poor material availability and fear of being infected were statistically significant associations with practice of compliance. Workload and emergency situation were the other factors that influenced on compliance. The study was conducted only among medical ward nurses, thus the findings cannot be generalized to all the nurses working in the Teaching hospital, Jaffna. But the factors affecting the compliance are common for all nurses and it may be expected to affect the compliance of UP.

## VI. RECOMMENDATIONS

The knowledge and compliance should be improved to 100%. Reviewing the nursing curriculum with greater emphasis on UP may improve the Knowledge and compliance. Introduction of In-Service training programs for nursing staff may be beneficial. Providing adequate materials related to UP and filling the vacancies will improve the level of compliance.

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