

Reducing the risk of transmission of nosocomial infections



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CHAPTER 1

INTRODUCTION

The standard precautions (SP), proposed by the United States Centers for Disease Control and Prevention (CDC) in 1996, are guidelines for reducing the risk of transmission of nosocomial infections in hospitals. It proposes that body fluid, patient blood, secretions, and excrement are infectious, hence preventive measures are necessary to protect both patients and medical personnel. These preventive measures include avoidance of direct contact with patients and air-borne particles, and require hand washing and sterilization, the use of personal protective equipment (PPE), the safe disposal of sharp instruments and waste management (Luo, He, Zhou & Luo, 2010).

1. 1Background of the Study

Standard precautions are specifically designed to reduce the risk of acquiring occupational nosocomial infections from both known and unknown sources in the healthcare setting. Awareness and compliance with these recommendations is crucial for the prevention of occupational nosocomial infections in healthcare personnel and patients (Abdulraheem, Amodu, Saka, Bolarinwa & Uthman, 2012).

Standard precautions include hand washing; use of personal protective equipment (gloves, gown, cap and mask); care with devices, equipment and clothing used during care; environmental control (surface processing protocols and health service waste handling); adequate discarding of sharp

instruments; and patient's accommodation in accordance to requirement levels as an infection transmission source. Hand hygiene is most important measures among the standard precautions advocated (Abdulraheem et al., 2012). Stringent observations of these measures protect the personnel against blood-borne viruses and to decrease transmission of cross infections among patients (Atif et al., 2013).

Nurses are the group of health care providers with the most direct contact with patients while providing care. Therefore, nurses' adherence to infection prevention precautions would have a profound effect on reducing nosocomial infection rates (Al-Hussami & Darawad, 2013). The causal agents that bring infections are transmitted mainly by hands, after failure to comply with hygiene procedures. Hand washing is considered the most important measure in preventing infections. However, according to Jusot et al. (2004), in their study in the southeast of France, compliance of healthcare workers (HCWs) with SP was variable and often poor. In terms of knowledge, Chan et al. (2002) reported that in Hong Kong, nurses' knowledge on SP was inadequate, in terms of applying precautions inappropriately and inadequately. In addition, Abdulraheem et al. (2012) in their study that conducted at North Eastern Nigeria also found that only a very small proportion of HCWs had a good knowledge on SP.

Different epidemiological characteristics of nosocomial infection in children results from the specificities of anatomy, physiology, medical conditions, therapeutic and surgical conditions and type of pathogens in pediatric populations. Besides that, the pediatric-hospitalized population is very heterogeneous, varying in age, diagnosis, and underlying illness, ranging <https://assignbuster.com/reducing-the-risk-of-transmission-of-nosocomial-infections/>

from infants with congenital anomalies to adolescents with multiple traumas. Consequently, even patients admitted to the same ward pose a different risk for hospital-acquired infections (Lopes et al., 2006). Pediatric cancer patients have an increased risk of potentially life-threatening infectious complications due to their underlying illnesses and intensive anticancer treatment (Simon et al., 2008). Thus, SP are very crucial in preventing these nosocomial infections.

It is clear that SP reduces the extent to which HCWs exposed to the blood of others, and, presumably, this in turn reduces their risk of occupational infections with blood borne pathogens. Although it has been routinely practiced in high-income countries for a long time, it is hard to achieve full compliance. Noncompliance has been associated with a range of factors, which include lack of knowledge, interference with work skills, risk perception, not wanting to offend patients, lack of equipment and time, uncomfortable PPE, inconvenience, work stress, and perceiving a weak organizational commitment to safety climate (Kermode et al., 2005).

1. 2Problem Statement

The reality of adopting SP within the hospital setting is far from what is recommended and had proved to be somewhat problematic (Gammon & Gould, 2005). Efstathoiu, Papastavrou, Raftopoulos and Merkouris (2011) also reported that adherence with SP among nurses in Cyprus in order to avoid exposure to microorganisms was low. More specifically, compliance was found insufficient regarding hand hygiene guidelines, use of gloves when exposure to body fluids was anticipated, eye protection, mouth and

nose protection (mask use), wearing a gown when required, avoid recapping the needle after it was used for a patient, and provision of care considering all patients as potentially infectious. According to Gammon, Samuel and Gould (2008), in United Kingdom, staff compliance to SP was generally deficient, and practice interventions to improve adherence were generally limited in their effect.

Hospital acquired infections (HAI) or nosocomial infections (NI), which pose a serious problem, threatening the health and safety of patients and medical personnel worldwide due to poor compliance towards SP. Nosocomial infections, defined as those occurring within 48 hours of hospital admission, three days of discharge or 30 days of an operation, affect one in every ten patients admitted to hospital. These infections affect the quality of medical care and increase medical care costs (Inweregbu, Dave & Pittard, 2005). According to the World Health Organization (WHO) (2009), hundreds of millions of patients develop HAI around the globe every year and as many as 1.4 million cases occur in hospitals alone each day.

In pediatric setting, HCWs always assumed that children are low-risk patients. Although it was acknowledged that the children can also carry contagious diseases, but they often do not implement SP (Efstathiou et al., 2011). Nosocomial infections are a crucial clinical complication in adult and children patients at the different hospital wards worldwide. Nosocomial infections bring considerable morbidity and mortality associated with prolonged hospital stay and increased health care costs (Nagliate, Nogueira, Godoy & Mendes, 2013). Kinnula et al. (2012) in their study at Finland and Switzerland found that 8.4% of children in a ward for pediatric infectious <https://assignbuster.com/reducing-the-risk-of-transmission-of-nosocomial-infections/>

diseases acquired a viral HAI during their hospitalization, although only 13% of the HAIs manifested themselves during hospitalization, the majority, 87%, occurring after discharge. So, from here can be proved that, SP are very important to be implemented in the clinical settings. Without these measures, NI will occur.

For Hospital USM, pediatric oncology ward, 6 Utara (6U) showed the highest rate of NI if compared to others pediatric ward (Unit Kawalan Jangkitan & Epidemiologi Hospital, 2013). This may be due to the low immune system of those children. Pediatric cancer patients are at an increased risk for specific HAI. These adverse events can result not only in significant morbidity and mortality, but also in an increased expenditure of limited financial and personnel resources (Simon et al., 2008). According to Unit Kawalan Jangkitan & Epidemiologi Hospital (2013), the average NI occurred per month from August 2012 to August 2013 was 3 cases, which contributed to 4.62% of total admission of the patient. This was quite a high number. Thus, interventions should be taken to investigate the compliance level of the pediatric nurses towards SP and thus to reduce the infection rates.

Table 1. 2. 1 Total nosocomial infection occurred per month at 6U from August 2012 to August 2013 (Source: Unit Kawalan Jangkitan & Epidemiologi Hospital, 2013)

Date	Total NI	Total no. of admission	Total % of admission in ward
August 2012	4	58	6.89

September 2012	3	47	6.38
October 2012	2	82	2.45
November 2012	0	50	0
December 2012	1	74	1.35
January 2013	2	65	3.0
February 2013	5	60	8.33
March 2013	3	62	4.84
April 2013	2	65	3.06
May 2013	4	71	5.6
June 2013	3	67	4.4
July 2013	1	76	1.31
August 2013	4	67	5.97
AVERAGE	3	65	4.62

Guidelines or policies that guide an individual's behavior exist in a variety of settings (including health care settings), but people do not always comply with them. In order to explain and understand the factors that influence an individual's adherence with certain guidelines, which consequently may bring to the adoption of certain behavior, a number of conceptual models or theories had been developed (Efstathiou et al., 2011).

Conceptual framework that used in this study in explaining the knowledge and compliance towards SP among pediatric nurses at Hospital USM was adapted from the Theory of Planned Behavior (TPB) by Ajzen (1991). The TPB provides a model that has potential benefits for predicting the intention to perform a behavior based on an individual's attitudinal, normative beliefs and perceived behavioral control. As for this study, the knowledge on SP, self-efficacy (attitude), awareness on the importance of standard operating procedures (SOPs), and some individual factors of nurses will influence their practice towards SP in healthcare setting.

1. 3Research Objectives

1. 3. 1General Objective

The general aim of this study is to identify the knowledge and compliance towards standard precautions among pediatric nurses at Hospital Universiti Sains Malaysia (Hospital USM).

1. 3. 2Specific Objectives

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1. To identify the level of knowledge regarding standard precautions among pediatric nurses at Hospital USM.
2. To identify the level of compliance with standard precautions among pediatric nurses at Hospital USM.
3. To determine the association between selected socio-demographic data (working ward, clinical working experience in years and highest nursing educational level) and level of compliance with standard precautions among pediatric nurses at Hospital USM.
4. To determine the association between levels of knowledge regarding standard precautions and level of compliance among pediatric nurses at Hospital USM.
5. To determine the association between self-efficacy and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 4Research Questions

1. What is the level of knowledge regarding standard precautions among pediatric nurses at Hospital USM?
2. What is the compliance level among pediatric nurses towards the application of standard precautions in the pediatric ward at Hospital USM?
3. Is there any association between working ward and level of compliance with standard precautions among pediatric nurses at Hospital USM?
4. Is there any association between clinical working experience in years and level of compliance with standard precautions among pediatric nurses at Hospital USM?

5. Is there any association between highest nursing educational level and level of compliance towards standard precautions among pediatric nurses at Hospital USM?
6. Is there any association between level of knowledge regarding standard precautions and level of compliance among pediatric nurses at Hospital USM?
7. Is there any association between self-efficacy and level of compliance with standard precautions among pediatric nurses at Hospital USM?

5. Research Hypothesis

1. 5. 1Hypothesis 1

- H_0 : There is no significant association between working ward and level of compliance with standard precautions among pediatric nurses at Hospital USM.
- H_A : There is a significant association between working ward and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 5. 2Hypothesis 2

- H_0 : There is no significant association between clinical working experiences in years and level of compliance with standard precautions among pediatric nurses at Hospital USM.
- H_A : There is a significant association between clinical working experiences in years and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 5. 3 Hypothesis 3

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- H_0 : There is no significant association between highest nursing educational level and level of compliance with standard precautions among pediatric nurses at Hospital USM.
- H_A : There is a significant association between highest nursing educational level and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 5. 4 Hypothesis 4

- H_0 : There is no significant association between level of knowledge and level of compliance with standard precautions among pediatric nurses at Hospital USM.
- H_A : There is a significant association between level of knowledge and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 5. 5 Hypothesis 5

- H_0 : There is no significant association between self-efficacy and level of compliance with standard precautions among pediatric nurses at Hospital USM.
- H_A : There is a significant association between self-efficacy and level of compliance with standard precautions among pediatric nurses at Hospital USM.

1. 6 Definition of Operational Terms

Knowledge - Knowledge is defined as the level or degree of information acquired in a

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particular field. It is a basic requirement so that the positive changes in behavior can be developed.

Knowledge can further bring into awareness and in turn leads to action. To develop nursing knowledge, it comes from both theoretical and practice perspectives. By gaining knowledge, it raises awareness of personal and professional accountability and the dilemmas of practice (Ndikom & Onibokun, 2007).

In this research, it was referred to the knowledge regarding SP and its application.

Compliance –
e

Compliance is defined as the extent to which certain behavior (for example, following physician's orders or implementing healthier lifestyles) is in accordance with the physicians' instructions or health care advice.

can be influenced or controlled by a variety of factors such as culture, economic and social factors, self-efficacy, and lack of knowledge of means (Efstathiou et al., 2011). In research, it was referred to compliance or adherence toward to prevent NI.

Standard -
precaution
s

The standard precautions are defined as guidelines to reduce the risk of transmission of blood-borne and pathogens in hospitals. It proposes that body fluid, patient blood, secretions, and excrement are infectious. Hence these measures are necessary to protect both patients and HCWs (Luo et al., 2010). Standard precautions include hand washing, use of personal protective equipment (e.g., gloves, gown, cap, mask); careful use of devices, equipment and clothing used during care; environmental control (e.g., surface processing protocols, health service waste handling); and adequate discarding

sharp instruments including needles (Vaz et al., 2010). In this research, it was referred to those policies that protect patient and HCWs such as hand washing, use of PPE, safe sharp disposal and waste management.

Nosocomial Infections -

Nosocomial infections are defined as infections that occur within 48 hours of hospital admission, three days after discharge or 30 days of an operation (Inweregbu, Dave & Pittard, 2005). In my research, it was referred to the infections that acquired within the period of hospitalization.

Self-efficacy -

Self-efficacy is defined as the confidence to control and guide one's own activities. General self-efficacy is a general confidence when the individual deals with changeable environments and faces new experiences (Luo et al., 2010). In my research, it was referred to the self-confidence in implementing SP to

prevent NI.

1. 7Significance of the Study

Nosocomial infections control requires a combination of interventions, including knowledge about the use of SP, rational use of antimicrobials, hand washing and compliance with SP and manuals for prevention and controlling microorganisms. Health professionals' low compliance with and difficulties to use SP had been demonstrated in some research though (Efstathiou et al., 2011; Luo et al., 2010). Hence, in view of application and even compliance failures that compromised patient and professional safety (Sax, Uckay, Richet, Allegranzi & Pittet, 2007), it is necessary to assess nurses' knowledge and compliance about SP (Nagliate et al., 2013). By assessing the knowledge and compliance level toward SP among the nurses, interventions could be taken to improve the quality of health care services as well as provide a holistic nursing care to reduce the morbidity and mortality worldwide.

In order to reduce HAI and protect the health of patients and HCWs, the relevant authorities and hospital infection control departments should pay more attention to nurse compliance towards SP, strengthen SP training, and provide sufficient practical PPE. Through learning, the attainment of knowledge and skills, and the formation of health beliefs and attitudes, health activity habits can be formed. Only when individuals are familiar with the content and meanings of the SP, with strengthening of the individual's health concepts, can individual practice change so as to improve compliance with SP. For nurses, the study on adherence towards SP and factors

impacting compliancy should be strengthened in order to improve concepts of health and self-efficacy, to increase compliance with the SP and hence reduce the chances of NI (Luo et al., 2010).

The reason that the researcher wished to conduct this research was because from the researcher's observation during clinical posting, it was observed that, the nurses often neglected the importance of SP. For example, they did not apply the proper ways in implementing SP, some even did not adhere to it at all due to time saving and other reasons. On the other hand, the reason that this study been conducted at pediatric ward was because children is having low immunity if compared to adults, they are at high risk of acquiring NI, so the implementation of SP is very important to ensure a quality health care.

In addition, no research on the knowledge and compliance towards SP had been done at Hospital USM before this. Thus, this study is crucial to assess the knowledge and compliance level towards SP among pediatric nurses at Hospital USM to provide a preliminary data that is crucial for the hospital. This study can provide a better insight into the magnitude of the problem of infection control in this hospital. By knowing all these, interventions can be taken if the knowledge and compliance level are disappointing to increase the knowledge and compliance towards SP among the pediatric nurses to reduce the morbidity and mortality rate.