

Nursing Staff Practices Regarding Infection Control Measures at Raparin Teaching Hospital for Children in Erbil City

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ABSTRACT

Background and objectives: Nosocomial infection is one of the main reasons of mortality and has significant financial costs due to elevated hospitalization and prognosis; thus, they should be prevented and controlled. This study aimed to assess the practice of the nursing staff regarding infection control measures at Raparin Teaching Hospital for Children.

Methods: A descriptive study was conducted in Raparin Teaching Hospital for Children in Erbil City, Kurdistan Region/Iraq. A purposive sample involving 81 nurses working in emergency, ICU, NICU, and surgical units at Raparin Teaching Hospital for Children who care for children was selected for the study. The researcher developed a checklist format developed by the researcher for data collection that included three parts: socio-demographic characteristics, vaccination history, and nurses' practice regarding infection control measures. The data were processed and analyzed using Statistical Package for the Social Sciences (SPSS), version 26.

Results: Most (77.8%) of the nurses were living in urban areas and they showed fair performance (81%). The results showed that 45.5% of ICU nurses outperformed their counterparts in terms of performance. The results also revealed that the younger nurses were better in terms of performance. Furthermore, the results revealed that 75.3% of the nurses have fair performance, 17.3% have good performance, and 7.4% have poor performance.

Conclusion: Based on the overall performance of the nurses, most of the nurses have fair infection control practices, and the minority of them have poor practices. Younger nurses showed better performance in comparison to others.

Keywords: Infection control; Children; Nurses; Practice.

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INTRODUCTION

Infection prevention and control (IPC) implies the policies, strategies, procedures, decisions, and activities applied to decrease or limit the spread of infections [1]. Nosocomial infection (NI) also known as a healthcare-associated infection is one of

the primary reasons of mortality and has great financial cost due to raised hospitalization and prognosis [2, 3]. Since NIs are serious problems, they should be prevented and controlled [4]. It has been demonstrated in the literature that these .

infections substantially influence patient safety. The many unfavorable results include raised hospital admissions days, increased healthcare expenditures, economic hardship for patients and their families, and sometimes even deaths [5, 6]. However, infections in any healthcare facility can be avoided if they are appropriately treated or when infection prevention and control measures are implemented [7]. As reported in a study, nurses play significant role in preventing and controlling infections. Some effective IPC procedures that a nurse can employ to prevent the spread of infection include hand hygiene, sterilization, and putting on personal protective equipment, such as gloves, gowns, face-masks, and head caps [3]. Since the caregivers and nurses are one of the major personnel who can lead to the spread of infections, solid knowledge of IPC theory and practice is essential for all healthcare providers and nurses to meet professional as well as governing regulations and protect themselves and their patients from preventable infections [4]. The risk of healthcare-associated infection is two to about twenty times higher in developing countries than in developed countries, with five percent to ten percent of patients admitted to hospitals in developed countries emerging these diseases [8]. Children in pediatric services and pediatric intensive care units, are more likely to contract NIs [9-11]. Extended stays in the hospital, invasive procedures, congenital abnormalities, and total parenteral nutrition are all variables that raise the risk of NIs in children. NIs prevention and related mortality rate minimization in pediatric patients require an understanding of the risk factors that cause healthcare-associated infections [9, 12, 13]. Understanding the nature of the interaction between organisms and the human host in hospital settings offers justification for control strategies to prevent

transmission and minimize the occurrence of hospital-acquired infections [14]. Hand cleanliness, including hand washing, antiseptics, disinfection, antiseptic wash, or antiseptic massage, is an important factor in preventing infection transmission [15]. Gonzalez and Goldfarb conducted a pediatric study of 149 children who received a living donor liver transplant. They discovered that bloodstream infection had developed in 21% of the patients within the first 30 days [11]. Kassim and colleagues conducted a cross-sectional study using an online survey sent to other medical staff in Nineveh to assess the adherence of healthcare professionals and nurses to IPC measures in Iraq. Healthcare professionals and nurses in Iraq have supposedly adhered to IPC measures [16]. However, the results showed that the percentage of healthcare providers and physicians following various IPC measures was ranged from 31% (wearing personal protective equipment) to 97% (washing and cleaning hands constantly). Recently, Dauly and co-workers conducted a study to examine the impact of infection control and prevention management on the compliance of nurses in adopting hand hygiene in Rantauprapat Hospital's in-patient rooms [17]. The results revealed a relationship between infection control and prevention management and nurses' compliance in adopting hand hygiene in Rantauprapat Hospital's in-patient rooms. Mainly speaking, infectious diseases remain a significant cause of illness and death in Iraq, according to information from the Centre of Communicable Disease Control in the Ministry of Health (MoH) [18]. There is no published study about the practice of infection control by nurses in children's hospitals in Erbil city; thus, it is an excellent opportunity to conduct a study concerning this topic. The main objectives of the study are to identify the association between the

professional characteristics of the participating nurses and their practice towards infection control at Raparin Teaching Hospital for Children and to find out the association between nurses' IC practice and some variables.

METHODS

This cross-sectional study was conducted in the emergency, NICU, ICU, and surgical units in Raparin Teaching Hospital for Children in Erbil City Kurdistan Region/Iraq. The population of the study was nurses caring for children. A non-probability purposive sample was selected for this study, which involves all the nurses who agreed to participate, working at Raparin Teaching Hospital for Children in Erbil City Kurdistan Region. The study was carried out from 1st September 2021 to 1st July 2022. A direct observation method checklist, which 11 experts validate, was designed for data collection. The checklist included three parts: i) socio-demographic data and professional background variables, ii) vaccination history, and iii) nurses' practice throughout infection control measures. Reliability was conducted by Cronbach Correlation ($r = 0.8$). Informed consent for participation was obtained from all 81 participants working at Raparin Teaching Hospital for Children in Erbil. Observation checklist of nurses' practice regarding infection control at emergency, NICU, ICU, and surgical units involved five domains: hand washing (4 items), personal protective equipment (8 items), environmental control (3 items), needles, and other sharps (6 items) and bloodstream infection (8 items). Each item in the observation was measured and scored on three rounds, and each round was scaled with Done and Not Done; (1) is given for Not Done and (2) is given for Done. If a nurse performs all the practices, he or she receives 58 scores, and if a nurse

does not perform all the practices, he or she obtains 29 scores. Based on this, the calculation of the overall nurses' practice regarding infection control measures was categorized into three groups: poor performance (29-38), fair performance (39-48), and good performance (49-58). The data were analyzed by using Statistical Package for the Social Sciences (SPSS), version 26, for calculating descriptive statistical analysis: frequency and percentage. Inferential statistical analysis (Chi-square and Fisher's exact tests) was used to determine the association between variables. The p-value is considered statistically significant if it is ≤ 0.05 which rejects the null hypothesis.

RESULTS

Table 1 demonstrates the distribution of the eighty-one participating nurses based on their socio-demographic characteristics and professional background. Based on their age group, 58.0% of the nurses were aged between 28 and 35, and only six of the participants were between 52 - 59 years of age. More than half (55.6%) of the nurses were male, 81.5% were married, 77.8% resided in urban areas, and 55.6% belonged to the medium class. A little less than half (48.1%) of the nurses were working in the emergency unit, 23.5% in NICU, 13.6% in ICU, and 14.8% in the surgical unit. Considering education level, slightly more than half (51.9%) of the nurses were institute graduates, and 32.1% were college graduates. More than half of the nurses (53.1%) had 1-10 years of experience and 27.2% had 11-20 years of experience. Among the total number of participating nurses, only 3.7% of them had attended training regarding infection control. Hand washing, personal protective equipment (PPE), environmental control, needles and other sharps, and bloodstream infection were the five domains of infection control practice that were observed in nurses.

Table 1: Distribution of nurses according to their socio-demographic characteristics and professional background (n=81).

Variables—Socio-demographic	F.(%)	
Age group	28 - 35	47 (58)
	36 - 43	15 (18.5)
	44 - 51	13(16)
	52 - 59	6(7.5)
Gender	Male	45(55.6)
	Female	36(44.4)
Marital status	Married	66(81.5)
	Single	14(17.3)
	Divorced	1(1.2)
Address	Urban	63(77.8)
	Suburban	14(17.3)
	Rural	4(4.9)
Economic status	lower class	14(17.3)
	medium class	45(55.5)
	high class	22(27.2)
Professional background		
Place of work	Emergency	39(48.1)
	NCU	19(23.5)
	ICU	11(13.6)
	surgical units	12(14.8)
Education level	Nursing school	13(16)
	Institute	42(51.9)
	College	26(32.1)
Years of experience	1- 10	43(53.1)
	11-20	22(27.2)
	21 -30	11(13.5)
	31- 40	5(6.2)
Attending training about IC	Yes	3(3.7)
	No	78(96.3)
Duration of Course	1-3 days	1(33.4)
	4- 6 days	1(33.3)
	7-9 days	1(33.3)

Table 2 displays the nurses' overall effectiveness practicing and implementing infection control measures. According to the findings, 44% of the nurses practiced hand washing, 27% used personal protective equipment,

26% applied environmental control measures, 72% disposed of needles and other sharps following appropriate guidelines, and 81% performed bloodstream infection control measures.

Table 2: Overall nurses' practices distributed in five domains of infection control measures (81 nurses).

NO.	Items of infection control measures	Done F.(%)	Not Done F.(%)
1	Hand washing	36(44)	45(56)
2	Personal protective equipment (PPE)	22(27)	59(73)
3	Environmental control	21(26)	60(74)
4	Needles and other sharps disposal	58(72)	23(28)
5	Bloodstream infection	65(81)	16(19)

Table 3 shows the association between several studied variables and nurses' infection control practice. The results showed that forty-seven of the nurses were aged between 28 - 35, corresponding to 58.0 % of the total number of

participants, fifteen nurses aged between 36 and 43, corresponding to 18.5 %, thirteen nurses aged between 44 and 51, corresponding to 16.0 % of the total number of participants, and only six of the participants were between 52 - 59 years of their age.

Table 3: Associations between nurses' infection control practices and the studied variables.

Variables	Levels of Practices			P-Value	
	Poor F.(%)	Fair F.(%)	Good F.(%)		
Age group	28 – 35	1(2.1)	35(74.5)	11 (23.4)	0.016 S
	36 – 44	1(6.7)	12(80)	2(13.3)	
	44 – 51	4(30.8)	8(61.5)	1(7.7)	
	52 – 59	0(0)	6(100)	0(0)	
Residence	Urban	6(9.5)	51(81)	6(9.5)	0.012 S
	Suburban	0(0)	8(57.1)	6(42.9)	
	Rural	0(0)	2(50)	2(50)	
Place of work	Emergency	2(5.1)	32(82.1)	5(12.8)	0.038 S
	NCU	1(5.3)	15(78.9)	3(15.8)	
	ICU	0(0)	6(54.5)	5(45.5)	
	Surgical unit	3(25)	8(66.7)	1(8.3)	

Figure 1 shows the breakdown of nurses' vaccination history. The results showed that 98.8% of the nurses had been vaccinated against bacilli Calmette-Guerin (BCG vaccine for tuberculosis disease), 64.2% had been vaccinated against hepatitis-B (HBs vaccine), and 75.3% had received one or two doses of the COVID-19 vaccine.

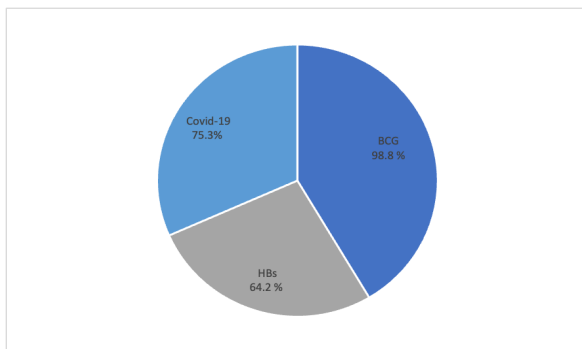


Figure. 1: Distribution of nurses according to their prevention measures of vaccination history (n=81).

The overall performance of the 81 nurses at Raparin Teaching Hospital for Children who participated in the study regarding infection control practices is shown in Figure 2. The results revealed that 7.4% of the nurses have poor performance, 75.3% have fair performance, and 17.3% have good performance.

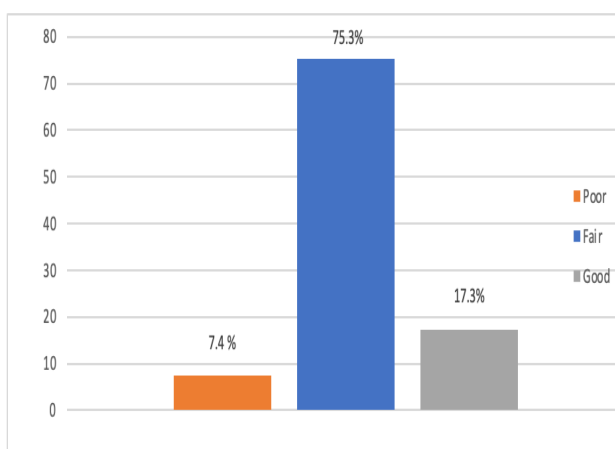


Figure 2: Distribution of nurses according to levels of infection control measures (n=81).

DISCUSSION

Regarding the socio-demographic characteristics of the nurses, less than 10% of the nurses who participated in our study aged 52 years or older, and about three-fifths are between the ages of 28 - 35. This agrees with the results of the studies by Hussin and Idaned [19] and AL-Kerity and Naji [20], in which the percentage of nurses who were 50 years or older were 4% and 12.9%, respectively. Another research done by Zenbaba et al. found that 51.27% of participants were male and 48.73% were female, which agrees with the participants' gender distribution in this study [21]. In the current study, fewer than 5% of participants were single, slightly more than 45% were married, and a small fraction were divorced nurses. This agrees with the results of the study by Kassim et al., in which 24%, 75%, and 1% of participants were single, married, and divorced/widowed, respectively. Most of the nurses living in urban areas showed fair performance (81%) [16]. Accounting for economic status of the participated nurses, the results of the current study revealed that 17.3% of the nurses were from low economic level. This result agrees with the result obtained by Salh and Turki where 11.8% of the nurses had an insufficient monthly income [22]. The professional background results showed that one-third of the nurses in current research had a college degree, which agrees with another study's findings of 26% [23]. The percentage of participants who are graduates of an institute is likewise in agreement: slightly more than half of the participants in the current study and 56% of the participants in Rounak's study are graduates of an institute. In terms of the number of years of experience the nurses had, more than half of the nurses who took part in the study

had 1 - 10 years of experience. Only a few nurses had taken part in infection control training, and this result is in disagreement with the result Rounak obtained in her study where 18% of the nurses had taken a course on infection prevention and control methods [23]. According to the present study, more than a quarter of the nurses had received an anti-HBs vaccination which agrees with the result obtained by Hussin and Idaned who evaluated the rate of needle stick and sharp object injuries among the Iraqi nursing staff at Kindy Teaching Hospital and found 36% of the nurses had received the hepatitis B vaccination [19]. According to Bonanni et al., widespread use of the hepatitis B vaccine has decreased hepatitis B virus infection in medical professionals in Italy from 48% to 18% over 10 years [24]. This percentage is considerable because hepatitis B is one of the sources of the spread of infectious diseases. According to the overall performance findings, 44% of the nurses generally practiced hand washing hygiene. Since hand washing is one of the main methods for preventing the spread of infectious diseases, this percentage should be higher. A little bit more than 25% of the participants used full personal protective equipment as require. On the other hand, in the study by Zenbaba et al., 70.10% of the participants donned the required personal protective equipment [21]. A little more than a quarter of the nurses used environmental control strategies. The findings also showed that slightly fewer than three-quarters of nurses appropriately disposed of needles and other sharps and followed bloodstream infection prevention procedures, respectively. The results in the current study showed that 28% of the nurses do not dispose of needles and other sharps which disagrees with the results acquired by Thazha et al. where only 5.1% of the nurses disagreed to dispose of

such materials [25]. Concerning the overall performance, less than a fifth of the nurses demonstrated good performance when it came to using the infection control measures. Perhaps it is because they do not have sufficient knowledge of the infection control measures or they do not pay attention to practice these measures. However, just over three-quarters demonstrated fair performance. The findings of Aljohani and Sulaiman supported our findings which revealed that 58.5% of participants demonstrated an adequate overall level of practice pertaining to standard precautions of infection control [26], as well as those of Fashafsheh et al., which found that 91.1% of the studied sample performed well when practicing infection control measures [8]. The study by Shrestha and Thapa indicated that more than half of the nurses had poor performance overall, whereas only 7.4% of the nurses who participated in the current study had poor performance overall regarding infection control procedures [27].

CONCLUSION

Around quarter of the nurses who took part in the study employed environmental control techniques, and many of them followed bloodstream infection control guidelines. It can be concluded that the overall performance of the 81 nurses who participated in the study regarding infection control practices was fair. It was also found that younger nurses performed better than elder nurses.

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