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Original Research Article

Hand Hygiene Compliance among Nurses in Newborn Babies' Units: A Case of Public Hospitals of Lahore, Pakistan

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Abstract: Hand hygiene is a primary measure to reduce the infection in neonates and reduces the rate of morbidity and mortality rate. Contrary to this, negation of the hand hygiene compliance among health care workers increases the morbidity and mortality rates in newborn babies. The purpose of this study is to determine hand hygiene compliances among the nurses about caring newborn babies among the government hospitals of Pakistan. The self-administered questionnaire was distributed to 110 nurses of public hospitals of Lahore, Pakistan through convenient sampling technique. The results of the study show that nurses of public hospitals have low to moderate perception regarding the benefits of the hand washing. Similarly, the nurses of public hospitals of Lahore, Pakistan perceived difficult to extremely difficult to follow the protocols of washing hands. Therefore, public hospital's management should emphasize on the education, skills development and training of the nurses regarding the hand washing protocols and make them accountable for the ignorance.

Keywords: Hand hygiene, Compliances and Neonates

INTRODUCTION

Hand hygiene is a primary measure to reduce the infection among neonates. Hand hygiene is a simple procedure and its ignorance can enhance the morbidity and mortality rates in newborn babies. However, infections are the major source of death in neonates. The solution to this challenge is to promote hand hygiene compliance among the nurses and the health care staff. Hand hygiene means washing the hands with soap or any antiseptic solution [1].

Thus, WHO presented the guidelines for hand hygiene practices in 2009 due to lack of hand hygiene compliance in between 2005 and 2009 [2].

Moreover, hand hygiene is a primary precaution to prevent from infection during invasive procedure in neonatal unit; therefore, nurses are liable to improve their knowledge regarding infection control measures and attitude towards hand hygiene compliance [3]. Adequate hand hygiene compliances among nurses will be help to reduce the number of acquired infections in the hospitals' environment [4]. Fashafsheh *et al.* [3] illustrates that the main cause of neonatal mortality in the developing countries is the hospital acquired infections. However, pre-term infants are at high risk in the nursery to catch the infection due to immature immune system. In addition, majority of nurses do not follow WHO guideline of hand hygiene compliance while attending babies. Likewise, the study noted that nurses do not have sound knowledge regarding hand hygiene protocols and pretend that they are busy and short of time [5].

Furthermore, non-compliance of hand hygiene becomes the reason of dispersion of the nosocomial infection and it develops in 1% neonates in the developed countries' hospitals [6]. Poor hand hygiene transmits the pathogen organism and other bacteria to the neonates. The nurses who do not wash hands before and after procedure on the same neonates' site helps in the transmission of dirty pathogen from infectious site to the clan site [7].

Health care related infections effect the patients of all the nations like 10% in the developed countries, 25% in the developing countries, thus, health

care related infection influence the quality of care and increases the morbidity and mortality rate of the neonates [1]. Contrary to this, infection can become the cause of death, so hand hygiene is the primary measure to break the chain of infection and other diseases. Gibson & Markovic [6] emphasizes that to avoid the infection it is necessary for every individual to wash hands before and after leaving the patient's room.

On the other hand, hand hygiene compliances rate is high among the nurses who think that hand washing is an easy procedure then the ones who think that is a difficult procedure [7]. Pakistan ranks third among the ten secondary trouble nations. The recent study noted that neonatal mortality is about 55 among every 1000 births due to poor hand cleanliness [8]. The study mentions that according to WHO, the infection rate due to non-compliance of hand hygiene is 2 to 20 times greater among the developing countries than the developed countries [9]. Similarly, the study noted that health care related infection effects the 5-15% hospitalized patients in the developing countries and it is higher in ICU and neonatal units [10]. Thus, it is necessary to investigate the practices of hand hygiene and its compliance among the nurses of public hospitals of Lahore, Pakistan due to the increasing rate of infection and mortality rate of neonates in Pakistan.

Problem Statement

Hand hygiene is necessary to prevent HCAI in neonates. Poor compliance of hand hygiene can lead to health care associated infection, nosocomial infection, sepsis and may lead towards death. The increasing rate of deaths due to non-compliance of hand hygiene is the critical issue among the nurses of the public hospitals of Pakistan. The administration focus on this issue and solution to the problem also lack in the current environment among the public hospitals. Therefore, it is need of the time to investigate the level of hand hygiene compliance and solution to the issue among the nurses of public hospitals of Pakistan.

Purpose

The purpose of this study is to assess the hand hygiene compliance among nurses regarding newborn babies in public hospitals of Pakistan.

Research Question

• Does nurses' compliance the hand hygiene protocols while attending newborn?

Significance of the study

There a lot of studies all over the world, however, there is scarcity of information related to hand hygiene in Pakistan. This study will help to provide information about nurse's compliance of hand hygiene while attending the new born babies. This study finding will help the organization to improve practices of hand hygiene in their setting. This study can be used to decrease the infection, mortality and morbidity rate of newborn in Jinnah and Services Hospital. In addition, the current study results can be helpful for the private healthcare institutes and policy makes to handle the issue of infection control.

LITERATURE REVIEW

A study was conducted in Siri Lanka and explore that 60% of physicians observe principle of hand hygiene [5]. The study was conducted in Iran to observe hand hygiene according to protocols and results show that 83% nurses do not perform hand hygiene according to protocols and mostly of them perform hand hygiene after contact with patient [11]. The study depicts that ICU nurses have poor knowledge and practice about hand hygiene [11].

In addition, study was conducted at Haemak Medical Centre in Northern Israel. The findings show that hand hygiene compliance of nurses before intervention is 68% and after intervention is 81% [6]. A similar study was conducted in Saudi Arabia to investigate the hand hygiene compliance rate after intervention. Nurse's practices about hand hygiene are increasing every year after [6].

The study noted that only 46% of physicians and 64% of nurses of Hong Kong have knowledge regarding hand hygiene [3]. The study conducted in university hospital of Cario to assess nurses knowledge, attitude and practices regarding hand hygiene, so the results show that 92% of the nurses stated that hand washing is one method to reduce HCAI rather that other infection control measures and 97.3% nurses stated that hand hygiene compliances can be improved through administrative observation and orders [7].

The study emphasizes that healthcare workers' hands contaminated during attending patient, so hand hygiene is the most effective procedure to avoid cross spread of health care associated infection [1]. However, noncompliance of hand hygiene leads to health care associated infection and the rate of new born babies' mortality and morbidity increases.

However, the present literature provides information about hand hygiene compliance rate in nurses. Mostly studies show that nurse's knowledge about hand hygiene is poor. Nurses do not perform hand hygiene according to protocols. Thus, the current study investigates the public hospital nurses' compliance of hand hygiene and provides the solution to overcome the issue as well.

RESEARCH METHODOLOGY

The current study is of quantitative and descriptive design. The self-administered questionnaire

of Philomène [7] was collected from 110 nurses of neonatal department of three public hospitals (Jinnah hospital, Services hospital and Social security hospital) through convenient sampling technique. Registered nurses working in neonates and pediatric department, willing to participate in study were included in the study. Nurses who were not willing to participate in study and nurses of other departments were excluded from the study. Participant's confidentiality was ensured and consent was taken. Time duration was March 2017- May 2017.SPSS 21 was used to analyze the frequencies of the current study.

RESULTS Demographics distribution Organization

	Table-1: Organization of participants								
		Frequency	Percent	Valid Percent	Cumulative				
					Percent				
	Jinnah	39	35.5	35.5	35.5				
	Services	47	42.7	42.7	78.2				
Valid	Social	24	21.8	21.8	100.0				
	Security								
	Total	110	100.0	100.0					

The tables # 1 show that 35.5% (39) nurses were from Jinnah hospitals, 42.7% (49) were from Services hospital and 21.8% (24) nurses were from Social security hospital.

Age of participants

	Table-2: Age of participant									
Frequency Percent Valid Percent Cumulative Percent										
	20-25 year	9	8.2	8.2	8.2					
	26-30 year	70	63.6	63.6	71.8					
Valid	31-35 year	21	19.1	19.1	90.9					
	36-40 year	10	9.1	9.1	100.0					
	Total	110	100.0	100.0						

Table# 2 show that 63.04% (58) of the current study participants were from age group of 26-30 years, 16.30% (15) of the nurses fall in 31-35 years of age

group, 9.8% (8) were from age group of 20-25 years and 10.9% (10) were from 36-40 years' age group.

Stay in Organization

	Table-3: stay in organization							
		Frequency	Percent	Valid	Cumulative			
				Percent	Percent			
	< 01 year	16	14.5	14.5	14.5			
	1-5 year	66	60.0	60.0	74.5			
Valid	6-10 year	19	17.3	17.3	91.8			
vanu	Above 10	9	8.2	8.2	100.0			
	year							
	Total	110	100.0	100.0				

Table # 3 shows that 55.43% (51) nurse's job experiences was from 1-5 years, 17.30% (16) nurses' job experience was less than 10 years, 17.30% (17)

nurses had job experience of 6-10 years and 9.8% (9) nurses' job experience fall in above 10 years category.

Marital Status

	Table-4: Martial status of participant						
		Frequency	Percent	Valid Percent	Cumulative		
	Percent						
	Married	44	40.0	40.0	40.0		
Valid	un married	66	60.0	60.0	100.0		
	Total	110	100.0	100.0			

Table # 4 shows that 58.70% (54) study participants were unmarried and 41.3% (38) nurses were married.

Qualification

	Table-5: qualification of participant								
	Frequency Percent Valid Percent Cumulative Percent								
	G, nursing, Midwifery	64	58.2	58.2	58.2				
	PBSN/BSN	33	30.0	30.0	88.2				
Valid	MSN	1	.9	.9	89.1				
	Specialization	12	10.9	10.9	100.0				
	Total	110	100.0	100.0					

Table # 5 shows that 59.8% (55) nurses had nursing midwifery qualification, 26.1% (24) nurses have done the degree of PBSN/BSN, 913.0% (12) nurses have specialized and only 1.1% (1) nurses have qualified MSN.

Formal Training

Ta	Table-6: Have you received formal hand hygiene training after your basic education?							
	Frequency Percent Valid Percent Cumulative Percent							
	Yes	33	30.0	30.0	30.0			
Valid	No	77	70.0	70.0	100.0			
	Total	110	100.0	100.0				

Table # 6 shows that 70.0% (77) nurses have not received formal hand hygiene training and 30.0% (33) nurses received training after education.

Hand washing compliances

Question # 7: Hand washing is effective before direct contact with the newborn.

	Table-7: Before direct contact with the newborn						
	Frequency Percent Valid Percent Cumulative Per						
	not at all effective	26	23.6	23.6	23.6		
	moderately not effective	27	24.5	24.5	48.2		
	not effective	3	2.7	2.7	50.9		
X7.1'1	Neutral	9	8.2	8.2	59.1		
Valid	Effective	28	25.5	25.5	84.5		
	moderately effective	10	9.1	9.1	93.6		
	extremely effective	7	6.4	6.4	100.0		
	Total	110	100.0	100.0			

Table # 7 shows the results of the responsesregarding question that hand washing is effectivebefore direct contact with the new born. The resultsreveal that 25.5% (28) participants responded that it iseffective, 9.1% (10) participants responded as

moderately effective and only 6.4% (7) participants mentions that it is extremely effective.

Question # .8: Hand washing is effective after direct contact with newborn.

	Table-8: After direct contact with the newborn.								
	Frequency Percent Valid Percent Cumulative Percent								
	not at all effective	26	23.6	23.6	23.6				
	moderately not effective	18	16.4	16.4	40.0				
	not effective	7	6.4	6.4	46.4				
X7 1·1	Neutral	3	2.7	2.7	49.1				
Valid	Effective	22	20.0	20.0	69.1				
	moderately effective	24	21.8	21.8	90.9				
	extremely effective	10	9.1	9.1	100.0				
	Total	110	100.0	100.0					

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Table # 8 shows the results of the responses regarding question that **hand washing is effective after direct contact with the newborn.** The results reveal that 20% (22) participants respond that it is effective, 21.8% (24) participants responded as moderately effective and only 9.1% (10) participants mentions that it is extremely effective.

Question # 9: Hand washing is effective immediately before touching a clean site during newborn care (e.g. manipulating IV apparatus)

Tabl	Table-9: Immediately before touching a clean site during newborn care (e.g. manipulating iv apparatus).						
		Frequency	Percent	Valid Percent	Cumulative Percent		
	not at all effective	20	18.2	18.2	18.2		
	moderately not effective	23	20.9	20.9	39.1		
	not effective	11	10.0	10.0	49.1		
X7 1·1	Neutral	13	11.8	11.8	60.9		
Valid	Effective	22	20.0	20.0	80.9		
	moderately effective	16	14.5	14.5	95.5		
	extremely effective	5	4.5	4.5	100.0		
	Total	110	100.0	100.0			

Table # 9 shows the results of the responses regarding question that hand washing is effective: Immediately before touching a clean site during newborn care (e.g. manipulating iv apparatus). The results reveal that 20% (22) participants responded that it is effective, 14.5% (16) participants responded as moderately effective and only 4.5% (5) participants mentions that it is extremely effective.

Question	#	10:	Hand	washing	is	effective	after
exposure	to 1	the n	ewborn	s body flu	id.		

	Table-10: After exposure to the newborns body fluid.							
		Frequency	Percent	Valid Percent	Cumulative Percent			
	not at all effective	29	26.4	26.4	26.4			
	moderately not effective	16	14.5	14.5	40.9			
	not effective	6	5.5	5.5	46.4			
** 1.1	Neutral	10	9.1	9.1	55.5			
Valid	Effective	30	27.3	27.3	82.7			
	moderately effective	18	16.4	16.4	99.1			
	extremely effective	1	.9	.9	100.0			
	Total	110	100.0	100.0				

Table 10 shows the results of the responses regarding question that **hand washing is effective after exposure to the newborns body fluid.** The results reveal that 27.3% (30) participants responded that it is effective, 16.4% (18) participants responded as

moderately effective and only .9% (1) participants mentions that it is extremely effective.

Question	#	11:	Hand	washing	is	effective	after
removing	glo	ves	used for	newborn	ca	re.	

Table-11: After removing gloves used for newborn care.								
	Frequency Percent Valid Percent Cumulative Perc							
	not at all effective	26	23.6	23.6	23.6			
	moderately not effective	26	23.6	23.6	47.3			
	not effective	4	3.6	3.6	50.9			
X7 1· 1	Neutral	11	10.0	10.0	60.9			
Valid	Effective	31	28.2	28.2	89.1			
	moderately effective	10	9.1	9.1	98.2			
	extremely effective	2	1.8	1.8	100.0			
	Total	110	100.0	100.0				

Table # 11 shows the results of the responses regarding question that **hand washing is effective after removing gloves used for newborn care.** The results reveal that 28.2% (31) participants responded that it is effective, 9.1% (10) participants responded as moderately effective and only 1.8% (2) participants mentions that it is extremely effective.

Question # 12: Hand washing is effective between

touching 2 patient sequentially (e.g. delivering

		mother and care of newborn).								
	Table-12: Between touching 2 patient sequentially (e.g. delivering mother and care of newborn)									
		Frequency	Cumulative Percent							
	Γ									
	not at all effective	27	24.5	24.5	24.5					
	moderately not effective	32	29.1	29.1	53.6					
	not effective	8	7.3	7.3	60.9					
* * 1' 1	Neutral	4	3.6	3.6	64.5					
Valid	Effective	18	16.4	16.4	80.9					
	moderately effective	13	11.8	11.8	92.7					
	extremely effective	8	7.3	7.3	100.0					
	Total	110	100.0	100.0						

Table 12 shows the results of the responses regarding question that **hand washing is effective between touching 2 patients sequentially (e.g. delivering mother and care of newborn).** The results reveal that 16.4% (18) participants responded that it is effective, 11.8% (13) participants responded as moderately effective and only 7.3% (8) participants mentions that it is extremely effective.

Question # 13: Hand washing is effective after touching an object in the vicinity of the patient (incubator)

	Table-13: After touching an object in the vicinity of the patient (incubator)							
		Frequency	Percent	Valid Percent	Cumulative Percent			
	not at all effective	21	19.1	19.1	19.1			
	moderately not effective	30	27.3	27.3	46.4			
	not effective	7	6.4	6.4	52.7			
X 7.1'1	Neutral	11	10.0	10.0	62.7			
Valid	Effective	11	10.0	10.0	72.7			
	moderately effective	27	24.5	24.5	97.3			
	extremely effective	3	2.7	2.7	100.0			
	Total	110	100.0	100.0				

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Table # 13 shows the results of the responses regarding question that hand washing is effective after touching an object in the vicinity of the patient (incubator). The results reveal that 10% (11) participants responded that it is effective, 24.5% (27) participants responded as moderately effective and only

2.7% (3) participants mentions that it is extremely effective.

Question # 14: Hand washing is effective between touching a newborn groin (femoral pulse) and subsequently examining stomach contents (nasogastric tube manipulation)

Table-14: Between touching a newborn groin (femoral pulse) and subsequently examining stomach contents (naso-gastric tube manipulation)								
		Frequency	Percent	Valid Percent	Cumulative Percent			
	Not at all difficult	25	22.7	22.7	22.7			
	Difficult	13	11.8	11.8	34.5			
37.11.1	Neutral	29	26.4	26.4	60.9			
Valid	Moderately effective	33	30.0	30.0	90.9			
	Extremely effective	10	9.1	9.1	100.0			
	Total	110	100.0	100.0				

Table 14 shows the results of the responses regarding question that hand washing is effective Between touching a newborn groin (femoral pulse) and subsequently examining stomach contents (nasogastric tube manipulation). The results reveal that 30% (33) participants responded that it is moderately

effective and 9.1% (10) participants responded that it is extremely effective.

Hand washing compliances Question # 15: Hand washing is easy before direct contact with the newborn.

Table-15: Before direct contact with the newborn							
		Frequency	Percent	Valid Percent	Cumulative Percent		
	Extremely difficult	14	12.7	12.7	12.7		
	quietly difficult	18	16.4	16.4	29.1		
	Difficult	12	10.9	10.9	40.0		
** ** 1	Neutral	6	5.5	5.5	45.5		
Valid	Easy	29	26.4	26.4	71.8		
	quietly easy	23	20.9	20.9	92.7		
	extremely easy	8	7.3	7.3	100.0		
	Total	110	100.0	100.0			

Table # 15 shows the results of the responses regarding question that **hand washing is effective before direct contact with the newborn.** The results reveal that 12.7% (29) participants responded that it is extremely difficult, 16.4% (18) participants responded it

as quiet difficult and 10.9% (12) nurses responded it as difficult.

Question # 16: Hand washing is easy after direct with the newborn.

Table-16: After direct contact with a newborn.							
		Frequency	Percent	Valid Percent	Cumulative Percent		
	Extremely difficult	15	13.6	13.6	13.6		
	quietly difficult	26	23.6	23.6	37.3		
	Difficult	6	5.5	5.5	42.7		
Valid	Neutral	12	10.9	10.9	53.6		
vanu	Easy	14	12.7	12.7	66.4		
	quietly easy	28	25.5	25.5	91.8		
	Extremely easy	9	8.2	8.2	100.0		
	Total	110	100.0	100.0			

Table # 16 shows the results of the responses regarding question that **hand washing is effective after direct contact with a newborn.** The results reveal that 13.6% (15) participants responded that it is extremely difficult, 23.6% (26) participants responded it as quiet difficult and 5.5% (6) nurses responded it difficult.

Question # 17: Hand washing is easy immediately before touching a clean site during newborn care (e.g. manipulating iv apparatus).

Tabl	Table-17: Immediately before touching a clean site during newborn care (e.g. manipulating iv apparatus)							
		Frequency	Percent	Valid Percent	Cumulative Percent			
	Extremely difficult	14	12.7	12.7	12.7			
	quietly difficult	21	19.1	19.1	31.8			
	Difficult	26	23.6	23.6	55.5			
Valid	Neutral	21	19.1	19.1	74.5			
v allu	Easy	9	8.2	8.2	82.7			
	quietly easy	16	14.5	14.5	97.3			
	extremely easy	3	2.7	2.7	100.0			
	Total	110	100.0	100.0				

Table # 17 shows the results of the responses regarding question that **hand washing is effective immediately before touching a clean site during newborn care (e.g. manipulating iv apparatus).** The results reveal that 12.7% (14) participants responded that it is extremely difficult, 19.1% (21) participants responded it as quite difficult and 23.6% (26) nurses responded it difficult.

Question # 18: Hand washing is easy after exposure to the newborns body fluids.

Table-18: After exposure to the newborns body fluids.								
		Frequency	Percent	Valid Percent	Cumulative Percent			
	Extremely difficult	21	19.1	19.1	19.1			
	quietly difficult	18	16.4	16.4	35.5			
	Difficult	11	10.0	10.0	45.5			
Valid	Neutral	3	2.7	2.7	48.2			
vanu	Easy	25	22.7	22.7	70.9			
	quietly easy	26	23.6	23.6	94.5			
	extremely easy	6	5.5	5.5	100.0			
	Total	110	100.0	100.0				

Table # 18 shows the results of the responses regarding question that **hand washing is effective after exposure to the newborns body fluids.** The results reveal that 19.1% (21) participants responded that it is extremely difficult, 16.4% (18) participants responded it

as quite difficult and 10% (11) nurses responded it difficult.

Question # 19: Hand washing is easy after removing gloves used for newborn care.

Table-19: After removing gloves used for newborn care.							
		Frequency	Percent	Valid Percent	Cumulative Percent		
	Extremely difficult	14	12.7	12.7	12.7		
	quietly difficult	22	20.0	20.0	32.7		
	Difficult	5	4.5	4.5	37.3		
Walid	Neutral	9	8.2	8.2	45.5		
valid	Easy	25	22.7	22.7	68.2		
	quietly easy	21	19.1	19.1	87.3		
	extremely easy	14	12.7	12.7	100.0		
	Total	110	100.0	100.0			

Table # 19 shows the results of the responses regarding question that **hand washing is effective after removing gloves used for newborn care.** The results reveal that 12.7% (14) participants responded that it is extremely difficult, 20% (22) participants responded it as quite difficult and 4.5% (5) nurses responded it as difficult.

Question # 20: Hand washing is easy between touching 2 patients sequentially (e.g. delivering other and care of newborn)

Table-20: Between touching 2 patients sequentially (e.g. delivering other and care of newborn)							
		Frequency	Percent	Valid Percent	Cumulative Percent		
	Extremely difficult	19	17.3	17.3	17.3		
	quietly difficult	20	18.2	18.2	35.5		
	Difficult	23	20.9	20.9	56.4		
Walid	Neutral	13	11.8	11.8	68.2		
vand	Easy	18	16.4	16.4	84.5		
	quietly easy	14	12.7	12.7	97.3		
	extremely easy	3	2.7	2.7	100.0		
	Total	110	100.0	100.0			

Table 20 shows the results of the responses regarding question that hand washing is effective between touching 2 patients sequentially (e.g. delivering other and care of newborn). The results reveal that 17.3% (19) participants responded that it is extremely difficult, 18.2% (20) participants responded it

as quite difficult and 20.9% (5) nurses responded it as difficult.

Question # 21: Hand washing is easy after touching an object in the vicinity of the patient (incubator)

Table-21: After touching an object in the vicinity of the patient (incubator)							
		Frequency	Percent	Valid Percent	Cumulative Percent		
	Extremely difficult	16	14.5	14.5	14.5		
	quietly difficult	38	34.5	34.5	49.1		
	Difficult	17	15.5	15.5	64.5		
Valid	Neutral	13	11.8	11.8	76.4		
v allu	Easy	12	10.9	10.9	87.3		
	quietly easy	13	11.8	11.8	99.1		
	extremely easy	1	.9	.9	100.0		
	Total	110	100.0	100.0			

Table # 21 shows the results of the responses regarding question that hand washing is effective after touching an object in the vicinity of the patient (incubator). The results reveal that 14.5% (16) participants responded that it is extremely difficult, 34.5% (38) participants responded it as quite difficult and 15.5% (17) nurses responded it as difficult.

Question # 22: Hand washing is easy between touching a newborn groin (femoral pulse) and

subsequently examining stomach contents (naso-

gastric tube manipulation

Table-22	Table-22: Between touching a newborn groin (femoral pulse) and subsequently examining stomach contents (naso-								
	gastric tube manipulation)								
		Frequency	Percent	Valid Percent	Cumulative Percent				
	Extremely difficult	16	14.5	14.5	14.5				
	quietly difficult	31	28.2	28.2	42.7				
	Difficult	22	20.0	20.0	62.7				
Valid	Neutral	11	10.0	10.0	72.7				
vand	Easy	12	10.9	10.9	83.6				
	quietly easy	16	14.5	14.5	98.2				
	extremely easy	2	1.8	1.8	100.0				
	Total	110	100.0	100.0					

Table # 22 shows the results of the responses regarding question that hand washing is effective between touching a newborn groin (femoral pulse) and subsequently examining stomach contents (naso-gastric tube manipulation). The results reveal that 14.5% (16) participants responded that it is extremely difficult, 28.2% (31) participants responded it as quite difficult and 20% (22) nurses responded it as difficult.

DISCUSSION AND CONCLUSION

The purpose of this study was to assess hand hygiene compliance among the nurses in the newborn babies' units of public hospitals of Lahore, Pakistan. Table no.7 to table no.14 depicts the perception of the nurses regarding effectiveness of hand washing to reduce the healthcare associated infections in different situations. The results in table no.7 to table no.14 reveal that most of the nurses' perception is weak regarding the effectiveness of the hand washing to avoid the infections.

On the other hand, table no. 15 to table no. 22 shows the responses of the nurses' perception of the difficulty or ease to clean the hands in the different situations. The results reveal that nurses find it difficult to clean the hands while working in their units.

Thus, perception of the nurses regarding benefits of hand washing is low as well as they perceive it is difficult to clean the hands in the unit before and after exposure to all babies and in the other situation as well. The attitude of nurses should be changed through the management encouragement, awareness and training regarding the hand washing and its outcomes. The hospital administration should emphasize on the nurses' knowledge and make them responsible for the control of infection in the units, so that the infection rate can be controlled in the public hospitals of Lahore, Pakistan.

Limitation and Recommendation

• The current study considered only public hospitals due to lack of enough time. Further

studies should consider the private hospitals as well.

• This study does not investigate the factors which can influence the hand hygiene habit and attitude of the nurses. Further studies should emphasize on the factors which may ave relationship with nurses' attitude and behaviors towards the protocols.

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