

*Short Communication***Nurses' knowledge of hospital infections and sterilization methods of hands, equipments and surfaces in neonatal wards of Isfahan***Narges Sadeghi<sup>\*</sup>, Zahra Abdeyazdan<sup>\*\*</sup>, Adeleh Eslami<sup>\*\*\*</sup>***Abstract**

**BACKGROUND:** Hospital infections are a main cause of infant death among hospitalized infants in the neonatal wards. This research was conducted aiming to assess the medical staff's knowledge of hospital infections.

**METHODS:** This is a cross-sectional study, conducted in all neonatal in Isfahan hospitals wards. 65 nurses answered to a questionnaire.

**RESULTS:** Results showed that 66.7% considered septicemia as the commonest kind of hospital infections and 82.5% called it the most dangerous kind.

**CONCLUSION:** In general, findings showed that averagely 63.9% of nurses correctly answered questions related to hospital infections. These results support the need for more interventions to prevent hospital infections.

**KEY WORDS:** Hospital infections, newborn, disinfection, hand washing.

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In spite of progress in public health and medical cares, hospital infections of hospitalized patients happens in the world and is a main cause of death.<sup>1</sup> In the US, hospital infections are reported in 7% to 10% of hospitals and are cause of 88000 deaths per year.<sup>2</sup> Hospital infections are also one of the main cause of death in neonates and ICUs.<sup>3</sup> Neonatal death rate in Iran is 20 per 1000 live birth and the main cause is weakness of nursing and midwifery care during pregnancy as well as skipping to do various tests correctly and on time.<sup>4</sup> In a study on the most important ways of hospital infection transmission, 32% of medical staff said external factors such as invasive procedures and equipments, 31% said internal factors and 37% said that hands were responsible. Also, they believed that more than 40% of hospital infections are preventable.<sup>5</sup> Different studies have shown that hospital infections are not just related to the primary process of infant disease

and can be directly related to medical staff behavior and usual nursing intervention. There are various studies on the methods of washing hands, using antibiotics and vein catheters, care of neonatal skin and umbilical cord and their relationship with hospital infections.<sup>4</sup> But in Iran the subject is rarely studied. Considering the importance of the subject and the fact that infants and babies are among vulnerable groups of societies and reducing mortality rate of these groups is one of the main goals of health in every society, this research was conducted aiming to assess the medical staff's knowledge of hospital infections, methods of washing hands and sterilization of equipments and surfaces and to compare them with standards, hoping to reduce infant mortality rate by providing suggestions; because studies have shown that even the smallest appropriate change in these wards can deeply reduce the incidence of these infections.<sup>3</sup>

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## Methods

This is a descriptive, cross-sectional study conducted in one step. The area of study included all hospitals of Isfahan that have neonatal wards of NICU. Study population included nurses working in above hospitals. There was no special limitation in sample selection and the only entry criterion for nurses was working in neonatal wards or NICUs in Isfahan in 2006.

Data were collected using a questionnaire with 4 sections of knowledge of hospital infection, method of washing hands, sterilization method of equipments, surfaces, floors and walls. The questionnaire was used after its validity and reliability was approved. Sixty five nurses working in above mentioned centers entered the study by simple continuous method. Data were analyzed using descriptive statistics and the rate of correct answering was presented in frequency distribution tables.

## Results

Findings on nurses' knowledge of hospital infections are presented in table 1. In case of washing hands, findings showed that 54% of nurses emphasized on using water and soap as an effective and available substance to wash hands and 96.8% were aware of the importance of duration of hand wash before and after contact with newborn; 20.7% mentioned 2 to 3 minutes hand washing before entering neonatal ward and 44.4% mentioned 10-15 seconds hand wash before and after contacting with newborn.

Regarding the objective of the study, which was to determine nurses' knowledge of sterili-

zation method of consuming equipments, the results showed that 82.5% of nurses mentioned using separate thermometers for each infant and the necessity of washing with water and disinfecting with 70% alcohol; 93.7% mentioned using disposal hollow tubes and 87.3% mentioned using disposal pourand in case of not disposing hollow tubes, sterilizing by heat including steam or hot water based on the guidelines of the maker.

The findings of nurses' knowledge of correct methods of sterilizing equipments of neonatal wards are presented in table 2, showing that only 19% of people mentioned sodium hypochloride to be the best material for sterilization of cuts and 12.7% mentioned disinfecting period to be every 72 hours; 76.2% of the nurses knew the importance of time in cleaning oxyhood for newborns and 54% knew that neonatal masks should be disposable.

Regarding nurses' knowledge about method of disinfecting surfaces, the results showed that 41.2% of them knew that water and detergent was good for washing surfaces and 60.3% said that sodium hypochloride was the appropriate substance for that. Only 15.9% said that surfaces should be washed once every 24 hours and in 81% of cases instruments and equipments were cultured once every month.

Generally, the study findings showed that averagely 63.9% of nurses correctly answered questions related to hospital infections. In most cases, the source suggesting the application of above cases was the hospital health and in 52.4% of cases, the ward paramedic was responsible to disinfect equipments and in 90% of cases supervision of head nurse on above cases was mentioned.

**Table 1.** Frequency distribution of nurses' correct answers to questions on hospital infections

Items	Number	Percentage
Definition of hospital infections	63	100%
The most important factor initializing incidence of hospital infections	56	88.4%
The most dangerous kind of hospital infection	52	82.5%
Definition of septicemia	51	81%
The commonest organism causing hospital infections	50	79.4%
The commonest kind of hospital infections	42	66.7%
The commonest area for infections	24	38.1%
The area of staphylococcus aureus infection	15	23.8%
The area of pseudomonas aeruginosa infection	10	15.9%

**Table 2.** Frequency distribution of nurses' knowledge of sterilization methods of equipments

Items	Number	Percentage
Duration of cleaning oxyhood for each newborn	48	76.2%
Substance for disinfecting fumigation device	40	63.4%
Substance to disinfect laryngoscope	38	60.3%
Substance used to disinfect oxygen tent	35	55.6%
Frequency of changing water in fumigation device	34	54%
Substance used to clean and disinfect trawl and dressing tray	34	54%
Using a disposable infant mask	34	54%
Substance to disinfect ambo-bag	29	46%
Substance to disinfect nebulizer	28	44.4%
Frequency of changing sheets	26	41.2%
Disinfecting incubator once every few days	24	38.1%
The time to change trawl dressing	23	36.5%
The substance used for disinfecting incubator	21	33.3%
Disinfecting substance for disinfecting cut	12	19%
Disinfecting cut every few days	8	12.7%

## Discussion

In the current study, the number of correct answers to questions on the knowledge of hospital infections was less than other studies. In a similar study on 216 nurses most of them know the importance of inappropriate performing and the increasing danger of hospital infections and believed that there should be a suitable protocol to disinfect the existed equipments and then use them.<sup>6</sup> In another study also, an educational program was recommended for health personnel to control infections.<sup>5</sup> While more than 150 years ago it was showed that washing hands before contacting with patients with infective diseases decreased mortality rate to a great extent.<sup>7</sup> While controlling infections in the envi-

ronment around infants can decrease hospital infections.<sup>8</sup> In current study, the rate of correct answers to the methods of sterilizing consumable materials, equipments and surfaces was in agreement with a study by Berhe et al.<sup>9</sup> And in a study by Goodman et al, it was found that following a standard health program is weak in controlling infections.<sup>10</sup> Considering the above points, a good plan is recommended to increase knowledge of nurses on methods of preventing hospital infections based on the infection control standards and an appropriate supervision on usage standards.

The Authors declare that have no conflict of interest in this study and ethical committee approved the study.

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