



## A descriptive study to assess the knowledge regarding disinfection of hospital equipments among health personnels in a selected tertiary hospital, Jammu (J&K)

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### Abstract

Disinfection and sterilization in hospitals is a significant concern for both the medical and the general community. Disinfection is a process that reduced or completely eliminates all pathogenic micro-organisms. Very few studies have been done in India quoting the importance of CSSD in the prevention of infections and control. This study was under taken to assess knowledge regarding disinfection of hospital equipments among health personnel in a tertiary hospital of Jammu, J&K. The sample consisted of 100 health personnels. Purposive sampling technique was used to select the sample. Socio-demographic profile and Self structured questionnaire was used to collect data from the subjects. The results showed that that maximum subjects were having average knowledge (47%) followed by 26% were having very poor knowledge, 23% and 4% were having poor and good knowledge respectively.

**Keywords:** disinfection, hospital equipments and health personnels

### 1. Introduction

In 2008 in United States of America approximately 46.5 million surgical procedures and even more invasive medical procedures were carried out. These procedures involve contact of medical of surgical equipments with patient mucus membrane which cause risk of introduction of pathogen leading to infection. Failure to properly disinfect or sterilize the equipments carries not only risk to patient but also person to person transmission<sup>[1]</sup>. Sterilization and disinfection in hospitals is a significant concern for both the medical and the general community. There has been an increase in many infectious diseases such as Acquired Immunodeficiency Syndrome (AIDS) and Hepatitis B because of inadequate sterilization<sup>[2, 3, 4, 5]</sup> Kane, A. *et al* revealed that approximately 8-6 million HBV, 2.3-4.7 million HCV and 80,000 to 16, 0000 HIV infections may result every year from unsafe injections<sup>[6]</sup>.

Very few studies have been done in India quoting the importance of CSSD in the prevention of infections and control. Basu, Debabrata, *et al* conducted a study regarding the operation of CSSD in a 167 bed oncology centre in the eastern part of India and documented the importance of CSSD in control of nosocomial infections<sup>[7]</sup>.

Disinfection is a process that reduced or completely eliminates all pathogenic micro organism<sup>[8]</sup>. Decontamination of hospital environment and reusable of medical devices is a complex process that requires appropriate processing of equipments, adequate space, appropriately trained and competent personnel, continuous monitoring and auditing of decontamination practices<sup>[9]</sup>. Disinfection is classified into different categories i.e. physical agents are dry heat, moist heat, tyndallization, autoclaving, filtration and radiation chemical agents and surface active agents, alcohols, heavy metals, oxidizing agents. Vapour phase disinfectants i.e. Ethylene oxide, formaldehyde gas<sup>[10]</sup>. To reduce the

hazardous effects of unsafe infection practices on the populace, the World Health Organization (W.H.O) introduced the concept of infection safety which does not harm the recipient<sup>[11]</sup>.

This study was under taken to assess knowledge regarding disinfection of hospital equipments among health personnel in a tertiary hospital of Jammu, J&K, so as to enhance their knowledge regarding disinfection of hospital equipments.

### The objectives of the study

- To assess knowledge regarding disinfection of hospital equipments among health personnel.
- To determine the relationship of knowledge regarding disinfection of hospital equipments with selected socio-demographic variables.

### 2. Material and Methods

For the present study, non-experimental research approach was considered the appropriate. The research setting was Government Medical College, Bakshi Nagar, Jammu (J&K). Purposive sampling technique was used to collect the sample. Sample for the present study was 100 health personnels.

Socio-demographic profile and self-structured questionnaire were used to collect personal information. Socio-demographic profile included items like age (in years), education, experience and designation. Self-structured questionnaire included questions regarding knowledge on disinfection.

Data collection was done from 15 to 25 may, 2017. Before commencing the task of data collection, permission had been taken from ethical committee of the hospital. Prior giving the questionnaire to the subjects, investigator gave self-introduction to the subjects and explained the purpose of gathering information. A good rapport was established with the subjects. They were assured that their responses will be

used kept confidential and the information will be used only for research purpose. Formal consent was taken from the subjects. The data gathered was analyzed and calculated by descriptive statistics i.e. percentage, mean and standard deviation and inferential statistics i.e. chi-square test was used to assess relationship between the level of knowledge and socio-demographic variables among health personnels.

**Description of Tool**

**Part I: Socio-demographic profile**

Socio-demographic data was designed to get personal information of health care personnels including age (in years), education, experience and designation.

**Part II: Structured questionnaire on knowledge regarding disinfection.**

It is composed of 28 multiple choice questions to assess the knowledge regarding disinfection. Each question has 4 options with one correct answer.

**Criterion Measures**

Total Score = 28

Knowledge regarding disinfection was divided into 4 categories.

**Table 1**

S. No.	Category	Total Score	Percentage
1.	Good	24-28	85.71-100
2.	Average	17-23	60.71-82.14%
3.	Poor	9-16	32.14-57.14%
4.	Very Poor	<9	<32.14%

**3. Results**

**Section I: Demographic Characteristics**

**Table 2:** Frequency & Percentage distribution of sample characteristics n=100

S. No	Variables	Frequency	Percentage (%)
1.	Age (in years)		
	20-25	29	29.0
	26-30	62	62.0
	31-35	08	8.0
2.	36-40	01	1.0
	Education		
	Secondary	4	4.0
	Diploma	17	17.0
3.	Degree	56	56.0
	Special Education	23	23.0
	Experience (in years)		
4.	0-5	20	20.0
	6-10	17	17.0
	11-15	33	33.0
	>15	30	30.0
4.	Designation		
	Staff Nurse	62	62.0
	Radio Grapher	8	8.0
	Pharmacist	17	17.0
	Laboratory technician	13	13.0

Table 2 shows the frequency and percentage distribution of characteristics of study subjects. Distribution of study subjects

according to age (in years) of the health personnels shows that majority 62% were in age group of 26-30 years followed by rest of three age groups i.e. (20-25, 31-35, 36-40) years, having percentage 29%, 8%, and 1% respectively. According to education, majority 56% of subjects were having degree, 23% were having special education, 17% were having diploma and only 4%. were having secondary education. In context to experience, 33% were 11-15 years' experience, 30% were having >15 years followed by 20% having 0-5 years and only 17% were having 6-10years experience. As per designation, 62% were staff nurses followed by 17% were pharmacist, 13% were laboratory technician and only 8% were radio graphers.

**Section II**

**Objective 1:** To assess the knowledge regarding disinfection of hospital equipments among health personnels

**Table 3:** Frequency and percentage distribution of level of knowledge among health personnels

Level of Knowledge	n	%
Good	4	4
Average	47	47.0
Poor	23	23.0
Very Poor	26	26.0

Maximum Score = 28

Minimum Score = 0

Table 3 depicts the frequency and percentage distribution of level of knowledge among health personnels. The findings revealed that maximum subjects were having average knowledge (47%) followed by 26% were having very poor knowledge, 23% and 4% were having poor and good knowledge respectively.

Hence, findings revealed that majority of health personnels were having average knowledge regarding disinfection.

**Objective 2:** To determine the relationship of knowledge regarding disinfection of hospital equipments with selected socio-demographic variables such as age, education, experience and designation.

**Table 3a):** Relationship of level of knowledge of disinfection among health personnels with age (in years) n=100

Age (in years)	Level of Knowledge				Total	df	χ <sup>2</sup>
	Good	Average	Poor	Very poor			
20-25	2(6.89%)	4(13.7%)	4(13.7%)	19(65.5%)	29	3	2.076 <sup>NS</sup>
26-30	1(1.61%)	39(62.9%)	18(29.0%)	4(6.45%)	62		
31-35	1(12.5%)	3(37.5%)	1(12.5%)	3(37.5%)	8		
36-40	0(0%)	1(100%)	0(0%)	0(0%)	1		

NS=Non-Significant

Table 3(a) shows the relationship of knowledge of disinfection among health personnels with age (in years). It shows highest percentage 65.5% of health personnels belonging to the age group of 20-25 years had very poor knowledge.

In order to explore relationship between level of knowledge and age of health personnels, chi square was computed. Chi square value of 2.076 at df 3 with p< 0.005 level.

Hence, it was summarized that there is no significant

relationship between level of knowledge to the age of health personnels.

**Table 3b):** Relationship of level of knowledge of disinfection among health personnels with education. n=100

Level of Knowledge							
Education	Good	Average	Poor	Very poor	Total	df	$\chi^2$
Secondary	0(0%)	0(0%)	1(25.0%)	3(75.0%)	4	3	5.194 <sup>NS</sup>
Diploma	0(0%)	2(11.8%)	12(70.6%)	3(17.6%)	17		
Degree	2(8.9%)	38(26.8%)	2(35.7%)	14(28.6%)	56		
Special Education	2(8.7%)	7(26.1%)	8(47.8%)	6(17.4%)	23		

NS=Non Significant

Table 3(b) shows the relationship of level of knowledge among health personnels with education. It shows highest percentage (75.0%) were secondary educated and had very poor knowledge.

In order to explore relationship between level of knowledge and education of health personnels, chi square was computed. Chi square value of 13.117 at df 3 was statistical non-significant at  $p < 0.05$ .

Hence, it was summarized that level of knowledge was not related to education of health personnels.

**Table 3c):** Relationship of level of knowledge of disinfection among health personnels with experience. n=100

Level of Knowledge							
Experience	Good	Average	Poor	Very poor	Total	df	$\chi^2$
0-5 years	1(5.0%)	1(5.0%)	3(15.0%)	15(75.0%)	20	3	26.12 <sup>NS</sup>
6-10 years	0(0.0%)	7(41.2%)	5(29.4%)	5(29.4%)	17		
11-15 years	2(6.06%)	19(57.57%)	7(41.2%)	5(15.15%)	33		
>15 years	1(3.3%)	20(66.6%)	8(26.6%)	1(3.4%)	30		

NS=Non Significant

Table 3(c) shows relationship of knowledge of disinfection of health personnels with experience. It show highest percentage of 75% with 0-5 years' experience had very poor knowledge.

In order to explore relationship between level of knowledge and experience of health personnels. Chi-square was computed. Chi square value of 26.12 at df 3 was statistically non-significant at  $p < 0.05$  level.

Hence, it was summarized that level of knowledge was not related to experience of health personnels.

**Table 3(d):** Relationship of level of knowledge of disinfection among health personnels with designation. n=100

Level of Knowledge							
Designation	Good	Average	Poor	Very poor	Total	df	$\chi^2$
Staff Nurses	2(3.3%)	27(43.5%)	14(22.6%)	19(30.6%)	62	3	0.4319 <sup>NS</sup>
Radiographers	0(0.0%)	4(50.0%)	2(25.0%)	2(25.0%)	8		
Pharmacist	1(5.9%)	9(52.9%)	5(29.5%)	2(11.7%)	17		
Laboratory technicians	1(7.6%)	7(53.9%)	2(15.3%)	3(23.07%)	13		

NS=Non-Significant

Table 3(d) shows relationship of knowledge of health personnels with designation. It shows highest 53.9% were Laboratory technicians and had average knowledge.

In order to explore relationship between level of knowledge and designation of health personnels Chi square was computed. Chi-square value of 0.4319 at df 3 was statistically non-significant at  $p < 0.05$  level.

Hence, it was summarized that knowledge was not related to designation of health personnels.

#### 4. Discussion

**Objective 1:** To assess the level of knowledge regarding disinfection hospital equipments among health personnels.

The findings depicts that maximum 51% health personnels had good and average knowledge regarding disinfection. The above findings in consistent with the study conducted to assess the knowledge and practice of staff nurses on infection control measures and the relationship between knowledge and practice at main hospital, AIIMS. A self-structured questionnaire comprising of 3 sections was used to collect the data. The study revealed that mean knowledge of nurses regarding infection control measures was 73.1%<sup>[12]</sup>.

**Objective 2:** To determine the relationship of knowledge regarding disinfection of hospital equipments with selected socio-demographic variables: age, education, experience and designation.

In order to find the association of knowledge regarding disinfection with socio-demographic variables revealed that there was no significant association between level of knowledge regarding disinfection with selected socio-demographic variables such as age (in years), education, experience and designation of health personnels at  $p < 0.005$  level of significance. These findings were supported by a study conducted to assess the knowledge regarding standard precautions among neuro nurses in Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. A self-made questionnaire was used to collect data which showed that is no significant relationship between level of knowledge and socio demographic variables age (in years), Qualification, experience etc<sup>[13]</sup>.

#### 5. Conclusion

Based on the findings of study, the following conclusions were drawn. More than half of subjects (51%) had good and average knowledge regarding disinfection. There was no significant difference between knowledge of health personnels regarding disinfection with regard to their age, education, designation and experience. Moreover, the study also revealed an positive attitude of health personnels towards learning about disinfection procedures. Control education and training programmes are required to address shortfalls and to improve knowledge for patient safety and for the reduction of infections

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