

Co-relational Retrospective Study on Hand Hygiene Compliance among Health Care Worker in Sun Medical Research Centre, Thrissur

Shibilamol C Baby

Abstract

Introduction: Hand Hygiene is a general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis. Good hand hygiene is an important aspect of protecting yourself and others from infection transmission. It is one of the most effective ways to prevent hospital care associated infection rates. Failure to perform appropriate hand hygiene is considered to be the leading cause of healthcare associated infections and spread of multi-resistant organisms such as Methicilin Resistant Staphylococcus Aureus (MRSA) and has been recognized as a substantial contributor to outbreaks.

Methods and materials: The present study was undertaken to explore the hand hygiene compliance among health care workers. The main objectives of the study were to explore the hand hygiene compliance rate among health care workers focuses in 5 moments and to improve the hand hygiene practices among health care workers. In this study the variables were age, gender, education status of the subjects. Review of literature was discussed about the observational studies related to hand hygiene compliance. Quantitative approach was adapted for this study. The design used was co relational retrospective design. The setting of the study was selected as Sun Medical Research Centre, Thrissur. Convenient sampling technique was utilized to collect data from 872 subjects, who meet the inclusion criteria. The tool used for the study was observational checklist. The study was conducted from 1/10/2020 to 31/12/2020 in SMC, Thrissur. The collected data were analyzed on the basis of thematic analysis.

Results: The findings of the study revealed that the overall hand hygiene compliance of the hospital is gradually increased from 93%-99% in the 3 month duration. But doctors were found to be more compliant with hand hygiene practice compared to nurses and other HCWs. The study showed the lowest compliance rates were among ANM and other category which gradually decreased from 99.6% to 97% and 98%-96%.

Conclusion: Hand hygiene is the first line of defense against the spread of many infections. The study explored the hand hygiene compliance among health care workers. Findings of this study are useful for the health care workers to improve the awareness about hand hygiene in each unit and to protect themselves as well as patients. The study results are helpful to the quality department with the support from higher administration of the organization to enhance the compliance to 100% by Improving the availability, display of written hand hygiene protocols, supervision, feedback and quality improvement activities.

Keywords: Hand hygiene compliance, HCW, MRSA

AUTHOR'S AFFILIATION:

CNE Educator, Quality Department, Sun Medical and Research Centre, Thrissur, Kerala 680001, India.

CORRESPONDENCE AND REPRINT REQUESTS:

Shibilamol C Baby, CNE Educator, Quality Department, Sun Medical and Research Centre, Thrissur, Kerala 680001, India.
E-mail: shibilachirayath@gmail.com

Received on: 11.02.2025

Accepted on: 21.04.2025



Introduction

Background of the Study

Hand Hygiene is a general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis. Good hand hygiene is an important aspect of protecting yourself and others from infection transmission. It is one of the most effective ways to prevent hospital care associated infection rates. Failure to perform appropriate hand hygiene is considered to be the leading cause of healthcare associated infections and spread of multi-resistant organisms such as Methicilin Resistant Staphylococcus Aureus (MRSA) and has been recognized as a substantial contributor to outbreaks.¹

Washing hands with soap and water are recommended for visibly soiled hands and is the best way to get rid of germs in most situations. If soap and water are not readily available, we can use an alcohol based hand sanitizer that contains at least 60% alcohol. These sanitizers are the most efficacious agents for reducing the number of bacteria and viruses on hands and are recommended for routine decontamination of hands for all clinical indications (except when hands are visibly soiled). Clean hands are a simple effective approach to reducing the spread of infections from one person to another and throughout an entire community - from our home and workplace to childcare facilities and hospitals.²

Need and Significance of the Study

Most germs that cause serious infections in healthcare are spread by people's actions. Hand hygiene is a great way to prevent infections. This contributes to the spread of healthcare-associated infections that affect 1 in 31 hospital patients on any given day. Every patient is at risk of getting an infection while they are being treated for something else. Even healthcare providers are at risk of getting an infection while they are treating patients. Preventing the spread of germs is especially important in hospitals and other facilities.³ In 2002, the estimated number of HAIs in U.S. hospitals was approximately 1.7 million, with more than 98,000 deaths annually, according to the CDC. Hospitals prioritized the challenges, and hand hygiene ranked first on the survey. Many health care associated infections (HAIs) are transmitted by health care personnel, and hand hygiene is a primary means to reduce these infections.⁴ Hand washing is also one of the key

cornerstones of COVID-19 prevention. Now more than ever as we embrace the new normal and live with COVID-19, hand hygiene needs to become an integral part of our daily routine and our lives, as we live through this pandemic.⁵ We conducted this study to evaluate the awareness, and compliance of hand hygiene among the health care workers in Sun Medical and Research Centre, Thrissur. The result can help to increase the awareness among the staffs about the importance of hand hygiene and help to reduce the hospital associated infections.

STATEMENT OF THE PROBLEM

A co-relational retrospective study on hand hygiene compliance among the health care workers in Sun Medical and Research Centre, Thrissur.

OBJECTIVES

- To explore the hand hygiene compliance rate among the health care workers focuses in 5 moments.
- To improve the hand hygiene practices among health care workers

Operational Definition

Health care worker: Healthcare worker is one who delivers care and services to the sick and ailing either directly as doctors and nurses or indirectly as aides, helpers, laboratory technicians, or even medical waste handlers.

Hand hygiene compliance: It is defined by the World Health Organisation (2009) as 'an action of hand hygiene performed at 5 moments of patient care.'

Assumptions

Hand hygiene compliance may positively increase the percentage or negatively decrease the percentage during the 3 months.

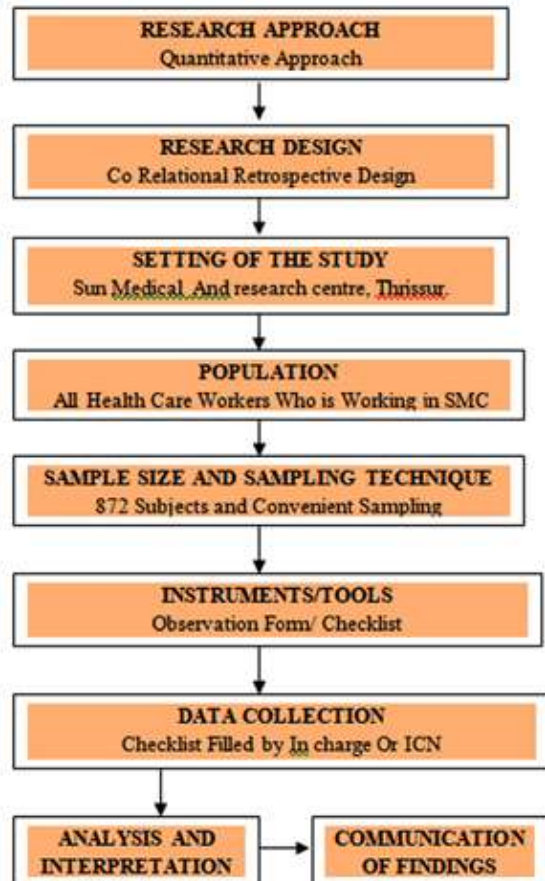
Review of Literature

An observational cross sectional study was conducted to explore hand hygiene compliance rate among HCWs focuses in the 5 moments. Convenience sampling was conducted to observe HCWs and a modified instrument adapted from the institute for Healthcare improvement with integration of 5 moments of hand hygiene. The study commence with observation from various units among all categories of HCWs (n = 699), nurses 56% (n=391), doctors 26% (n= 182) and 18% (n=126) of the

other categories. The compliance rate results showed in the moment 1 & 2 was 47% (n=328). In moment 3, 55 out of 165 (33.3 %) complied with hand wash which were doctors 6 % (n=10), nurses 19.4% (n=32) and 7.9 % (n=13) among other HCWs. In moment 4 and 5 were 74.2% compliance rate. Study concluded that there are needs to develop improvement plans by collaborating all the departments with support from administration to meet the 100% compliance rate as recommended by WHO.⁷

An observational study was conducted in hospitals from two southern states of India. The samples were assessed hand hygiene compliance during examinations by using tools adapted from internationally recommended checklists. The results shows that a greater proportion of contacts in private newborn units than public complied with all steps of hand hygiene (44% vs 12%, $p < 0.001$), and similarly in tertiary than secondary units (33% vs 12%, $p < 0.001$). But there was no evidence of a difference by case load of the facility (low load-28%; intermediate load-14%; high load- 24%, $p = 0.246$). The conclusion of the study offered that observed overall compliance with hand hygiene was low, although better in private than public facilities in both newborn units and labour rooms. Glove usage was a particular problem in newborn care units.⁶

Methodology



Research Approach

Research approach adopted for the study depends on nature of the problem. A quantitative approach was used in this study.

Research Design

Research design selected for this study was co relational retrospective design.

Variables

Variables are considered for this study was age, gender and educational status of the sample.

Setting of the Study

The setting of the study was Sun Medical and Research Centre, Thrissur. It is a 150 bedded hospital and around 500 staffs are working here. The study was conducted at 10 units in the hospital such as CICU, NMICU, NSICU, Casualty, Labour Room, OT, 238, 268, 363, 300 wards.

Population

Population of the study was all health care workers.

Target Population

In this study target population were all health care workers who are working in SMC.

Accessible Population

Accessible population were all health care workers who are working at 10 units in the hospital such as CICU, NMICU, NSICU, Casualty, Labour Room, OT, 238 ward, 268 ward, 363 ward, 300 ward.

Sample and Sampling Technique

In this study, sample was all staffs in 10 units in SMC who is fulfill the inclusion criteria. The samples were selected by using convenient sampling technique because of the duty schedule of the subjects. It is the selective sampling that involves the conscious selection by the researcher of certain subjects to include in a study for the convenient of the researcher.

Inclusion criteria

- Samples who are willing to participate in this study
- Samples who are available during data collection period
- Exclusion criteria
- Samples who are not willing to participate in this study

Tools And Technique

The tool of the study was adapted from original WHO observation form.

Section A: Information about facility, ward, department details of hand hygiene moment and observer name.

Section B : Observational checklist for 4 professional category codes.

Data Collection Process

The data collection was carried out for a period from 1/10/2020 to 31/12/2020. The formal

permission to conduct the study was obtained from NABH coordinator, SMC Thrissur. The same information was communicated to 10 units. Investigator introduced herself and explained the purpose of the study. Confidentiality was ensured to all subjects. Many methods are utilized to examine hand hygiene compliance, such as close observation, self reporting, monitoring of hand hygiene product utilization. The HCWs was observed by the in charges and ICN during their contact with the direct patient care. The ICN were selected and trained in charges to utilize the instrument effectively to enhance the reliability and validity of data collections to reduce bias. Each sample took 3 min to perform the each task.

Table 1: Frequency of action and opportunities of 4 professional category codes in October month

Category Moments	Nurse		ANM		Doctor		Other	
	Action	Opportunities	Action	Opportunities	Action	Opportunities	Action	Opportunities
1	6	6	5	5	6	6	6	6
2	5	5	7	7	4	4	6	6
3	5	5	6	6	4	4	6	6
4	4	4	8	8	4	4	5	5
5	7	7	7	7	6	6	5	5
6	8	8	7	7	6	6	4	4
7	10	10	9	10			8	10
8	10	10	9	10	-	-	9	10
9	10	10	10	10	-	-	8	10
10	9	10	9	10	-	-	8	10
11	10	10	2	2	2	2	1	1
12	10	10	5	5	4	4	1	1
13	10	10	3	3	3	3	1	1
14	10	10	6	6	3	3	2	2
15	10	10	4	4	4	4	3	3
16	10	10	4	4	5	5	2	2
17	10	10	10	10	5	5	4	4
18	10	10	4	4	5	5	4	4
19	10	10	10	10	8	8	4	4
20	10	10	10	10	8	8	4	4
21	10	10	4	5	4	5	5	5
22	10	10	5	5	5	5	5	5
23	10	10	5	5	5	5	5	5
24	10	10	6	6	7	7	2	2
25	10	10	6	6	6	6	4	4
26	10	10	7	7	6	6	3	3
27	10	10	6	6	5	5	4	4
28	9	9	9	9	9	9	8	8
29	10	10	7	7	10	10	7	7
Total	263	264	190	194	134	135	134	141

Plan For Data Analysis

The data analysis includes 2 sections – section A and section B.

1. Identify the setting (ward, service, and department) to allow analysis according to the scope of observation previously defined for the survey.
2. Record the number of each session undertaken during the current survey and related observation data by professional category, in the same line. This attribution of a session number validates the fact that data has been taken into account for compliance calculation.
3. Results per professional category and per session (vertical columns):
 - 3.1 Sum up recorded opportunities (“opp”) in the case report form per professional category and record the sum in the corresponding cell in the calculation form.
 - 3.2 Sum up the positive hand hygiene actions related to the total of opportunities above, distinguishing between handwash (HW) and handrub (HR), and record the sum in the corresponding cell in the calculation form.
 - 3.3 Proceed in the same way for each session.
 - 3.4 Total all sums for each professional category to calculate the compliance rate (given in percent)
4. The addition of the results of each line in the shaded right hand column will allow a

calculation of the overall compliance.

$$Compliance (\%) = \frac{Actions \times 100}{Opportunities}$$

Analysis And Interpretation

Organization of The Data

The data were collected from staffs. The data were analyzed and interpreted by using tabular and graphical presentation. Findings were organized under the following sections.

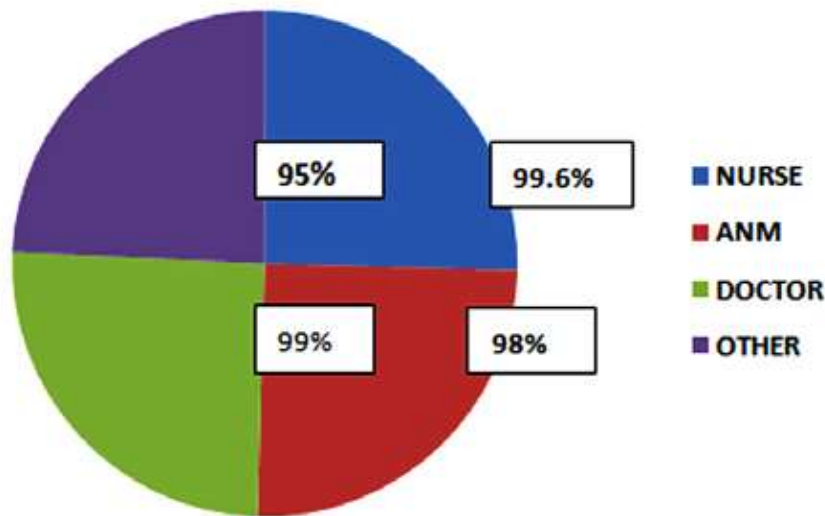
Table 2: Frequency of action, opportunities and percentage distribution of hand hygiene moment (compliance) of 4 professional category codes in October month.

Category	Actions	Opportunities	Compliance
Nurse	263	264	263x100/264=99.6%
ANM	190	194	190x100/194=98%
Doctor	134	135	134x100/135=99%
Other	134	141	134x100/141= 95%

The above table 1 exhibits the frequency of actions and opportunities in October month.

Table 2 displays the percentage distribution of hand hygiene compliance in October month.

In a view of hand hygiene compliance in October month, the largest group observed were in the category of nurses which consist 99.6%, 99% were in doctors category and followed by ANM 98%. The small group observed was 95% in the other category.



Graph 1: Compliance in October month

Table 3: Frequency of action and opportunities of 4 professional category codes in November month

Category Moment	Nurse		ANM		Doctor		Other	
	Action	Opportunities	Action	Opportunities	Action	Opportunities	Action	Opportunities
1	10	10	8	8	9	9	4	5
2	10	10	6	6	9	9	4	4
3	9	10	2	2	3	3	1	1
4	10	10	2	2	2	2	1	1
5	10	10	5	5	6	6	2	2
6	9	10	5	5	5	5	2	2
7	9	10	6	6	6	6	2	2
8	10	10	10	10	6	6	3	3
9	8	10	9	10	10	10	10	10
10	9	10	10	10	10	10	10	10
11	10	10	8	10	10	10	9	10
12	9	10	10	10	7	10	9	10
13	10	10	10	10	10	10	4	4
14	10	10	10	10	6	6	2	2
15	10	10	10	10	10	10	5	5
16	10	10	6	6	4	4	4	4
17	10	10	9	10	-	-	9	10
18	9	10	9	10	-	-	9	10
19	10	10	10	10	-	-	8	9
20	10	10	9	10	-	-	9	10
21	7	7	6	6	5	5	4	4
22	8	8	6	6	6	3	4	4
23	10	10	5	5	5	5	3	3
24	10	10	5	5	5	5	3	3
25	10	10	9	10	10	10	-	-
26	10	10	9	10	10	10	-	-
27	10	10	10	10	10	10	-	-
28	6	6	6	6	4	6	6	6
29	7	7	3	3	4	4	7	7
30	6	6	5	5	5	5	8	8
31	8	8	4	4	4	4	7	7
Total	284	292	222	230	181	183	149	156

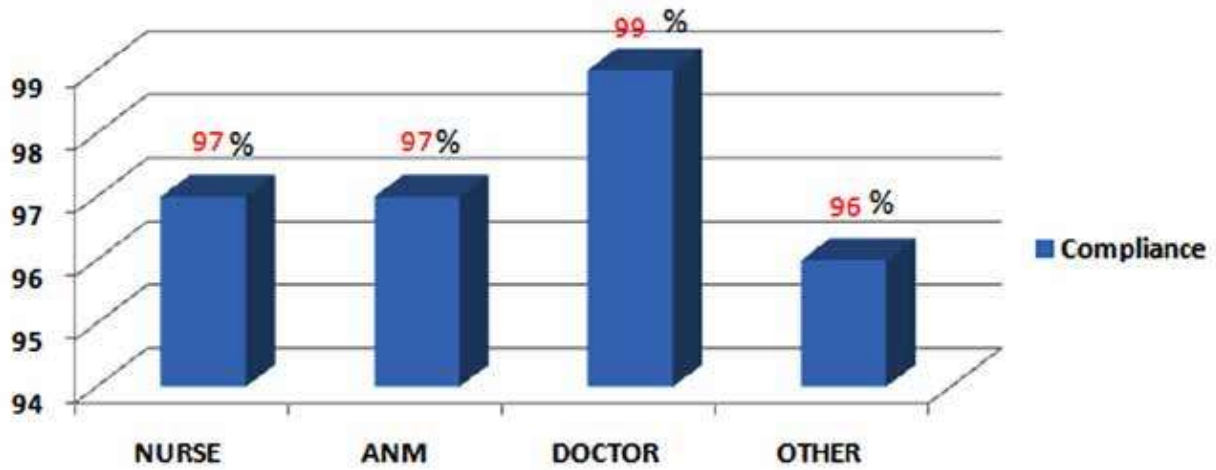
Table 4: Frequency of action, opportunities and percentage distribution of hand hygiene moment (compliance) of 4 professional category codes in November month

Category	Action	Opportunities	Compliance
Nurse	284	292	$284 \times 100 / 292 = 97\%$
ANM	222	230	$222 \times 100 / 230 = 97\%$
Doctor	181	183	$181 \times 100 / 183 = 99\%$
Other	149	156	$149 \times 100 / 156 = 96\%$

Table 3 reveals that the frequency of action and opportunities in November month.

Table 4 depicts that the percentage distribution of hand hygiene moment (compliance) in November month.

In accordance with the percentage distribution of hand hygiene compliance in November month, most percentage distribution 99% belongs to the category of doctor. There was an equal distribution among nurse and ANM category which was 97%, whereas the least percentage distribution 96% belong to the category of others.



Graph 2: Compliance in November month

Table 5: Frequency of action and opportunities of 4 professional category codes in December month

Category Moment	Nurse		ANM		Doctor		Other	
	Action	Opportunities	Action	Opportunities	Action	Opportunities	Action	Opportunities
1	10	10	6	6	6	6	4	4
2	9	10	7	7	6	6	3	3
3	10	10	5	6	5	5	2	2
4	10	10	7	7	5	5	4	4
5	5	5	3	3	5	5	7	7
6	7	7	3	3	6	6	6	6
7	6	6	4	4	5	5	6	6
8	7	7	4	4	5	5	6	6
9	9	10	10	10	-	-	9	10
10	10	10	9	10	-	-	10	10
11	10	10	2	2	3	3	2	2
12	10	10	7	7	9	9	5	5
13	10	10	3	3	3	3	1	1
14	10	10	9	9	10	10	8	8
15	10	10	7	7	4	4	3	3
16	10	10	4	4	6	6	5	5
17	9	10	-	-	9	10	10	10
18	10	10	-	-	10	10	8	10
19	10	10	9	10	10	10	-	-
20	10	10	10	10	6	6	4	4
21	10	10	10	10	7	7	4	4
22	10	10	10	10	10	10	6	6
23	10	10	10	10	-	-	9	10
24	9	10	9	10	-	-	8	10
25	9	10	9	10	10	10	9	10
26	8	10	6	10	10	10	10	10
27	9	10	10	10	9	10	8	8
28	10	10	10	10	10	10	-	-
29	9	10	5	5	5	5	5	5
30	10	10	5	5	5	5	5	5
Total	276	285	193	202	179	181	167	174

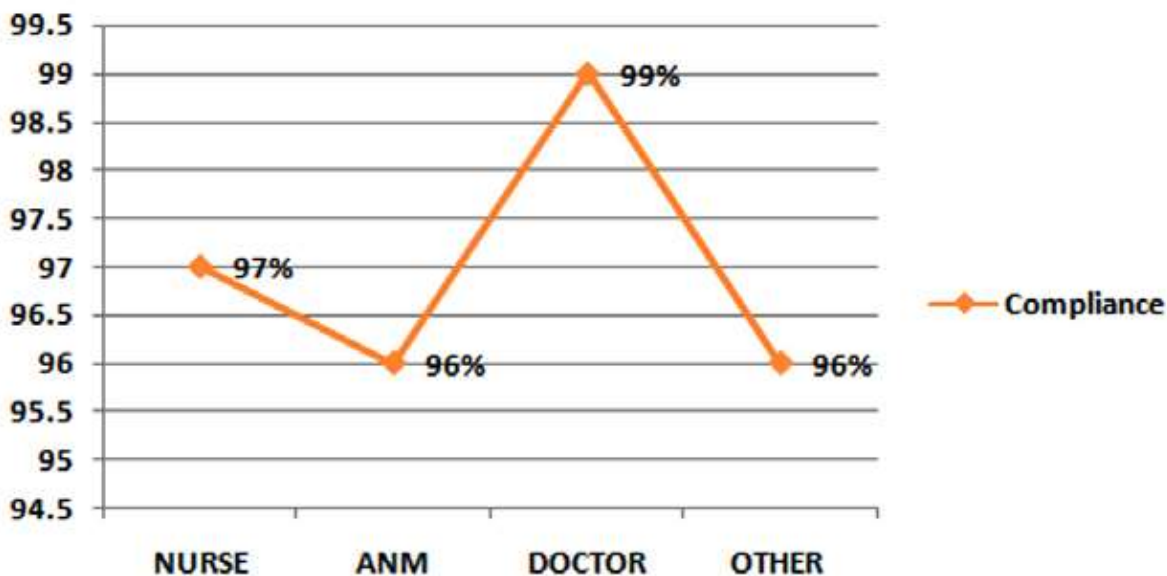
Table 6: Frequency of action and opportunities and percentage distribution of hand hygiene moment (compliance) of 4 professional category codes in December month

Category	Action	Opportunities	Compliance
Nurse	276	285	$276 \times 100 / 285 = 97\%$
ANM	193	202	$193 \times 100 / 202 = 96\%$
Doctor	179	181	$179 \times 100 / 181 = 99\%$
Other	167	174	$167 \times 100 / 174 = 96\%$

The above table 5 shows that the frequency of action and opportunities in December month.

Table 6 illustrates that the percentage distribution of hand hygiene moment (compliance) in December month.

Regarding the professional category codes, it implies that majority of hand hygiene compliance belong to the category of doctor 99%, 97% of hand hygiene compliance were in the professional category of nurse and 96% were equally distributed to the category such as ANM & others.



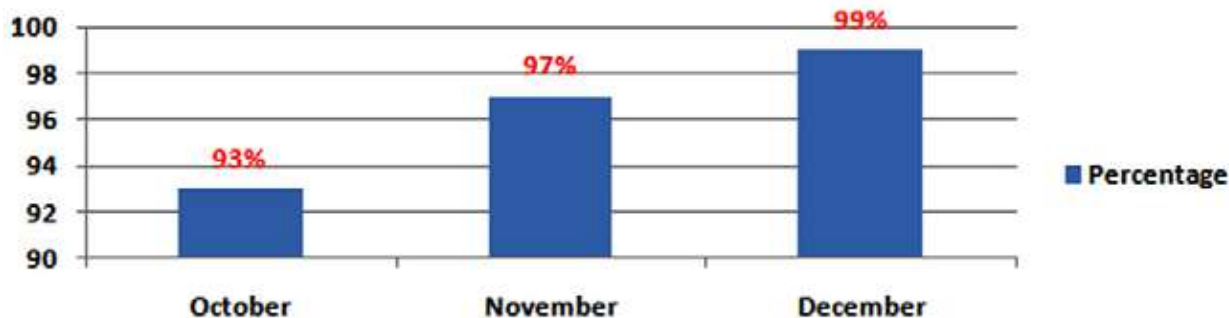
Graph 3: Compliance in December month

Table 7: Percentage distribution of hand hygiene moment (compliance) during 3 months.

Month	Compliance
October	93%
November	97%
December	99%

Table 7 reveals that the percentage distribution of hand hygiene moment during 3 months.

With the reference to the percentage distribution of hand hygiene compliance, 93% was noted in October month and the percentage was gradually increased to 97% in November month and 99% in December month.



Graph 3: Compliance

Results

The results of the study were discussed with the reference to the objectives of the study. The findings of the study were summarized below.

- In a view of hand hygiene compliance in October month, the largest group observed were in the category of nurses which consist 99.6%, 99% were in doctors category, followed by ANM 98%. The small group observed was 95% in the other category.
- In accordance with the percentage distribution of hand hygiene compliance in November month, most percentage distribution 99% belongs to the category of doctor. There was an equal distribution among nurse and ANM category which was 97%, whereas the least percentage distribution 96% belong to the category of others.
- Regarding the December month hand hygiene compliance, it implies that majority of hand hygiene compliance belong to the category of doctor 99%, 97% of hand hygiene compliance were in the professional category of nurse and 96% were equally distributed to the category such as ANM & others.
- With the reference to the percentage distribution of hand hygiene compliance, 93% was noted in October month and the percentage was gradually increased to 97% in November month and 99% in December month.

Discussion

The findings of the study are discussed below, The overall hand hygiene compliance of the hospital is gradually increased from 93%-99% in the 3 month duration. That is the greatest achievement by the quality control department of the hospital. But in this study, doctors were found to be more compliant with hand hygiene practice compared to nurses and other HCWs. The study showed that the lowest compliance rates were among ANM and other category which support the finding of this study & indicates that many of them are unable to act as role models. The hand hygiene compliance of nurses and ANMs were gradually decreased from 99.6% to 97% and 98% - 96%, which is clearly point out the importance of awareness program and in service education among the nurses, ANMs and other staff category.

Summary

The present study was undertaken to explore the hand hygiene compliance among health care workers. The main objectives of the study were to explore the hand hygiene compliance rate among health care workers focuses in 5 moments and to improve the hand hygiene practices among health care workers. In this study the variables were age, gender, education status of the subjects. Review of literature was discussed about the observational studies related to hand hygiene compliance. Quantitative approach was adapted for this study. The design used was co relational retrospective design. The setting of the study was selected as Sun Medical Research and Centre, Thrissur. Convenient sampling technique was utilized to collect data from 872 subjects, who meet the inclusion criteria. The tool used for the study was observational checklist. The study was conducted from 1/10/2020 to 31/12/2020 in SMC, Thrissur. The collected data were analyzed on the basis of thematic analysis. The findings of the study revealed that the overall hand hygiene compliance of the hospital is gradually increased from 93%-99% in the 3 month duration. But doctors were found to be more compliant with hand hygiene practice compared to nurses and other HCWs. The study showed the lowest compliance rates were among ANM and other category which gradually decreased from 99.6% to 97% and 98%-96%.

Conclusion

Hand hygiene is the first line of defense against the spread of many infections. The study explored the hand hygiene compliance among health care workers. Findings of this study are useful for the health care workers to improve the awareness about hand hygiene in each unit and to protect themselves as well as patients. The study results are helpful to the quality department with the support from higher administration of the organization to enhance the compliance to 100% by Improving the availability, display of written hand hygiene protocols, supervision, feedback and quality improvement activities.

References

1. <https://www.physio-pedia.com>
2. <https://www.cdc.gov>
3. Clean Hands Count for Safe Healthcare, CDC 24/7:cdc.gov

4. <https://www.patientcarelink.org>
5. <https://www.who.int>
6. Mukta Tyagi, Claudia Hanson, Joanna Schellenberg, An observational study in hospitals from two southern states of India, Tyagi et al. BMC Public Health, (2018) 18:1299, 1-9.
7. Mohidin, S, Al-Hazmi, Al-Tabsh, observational study on compliance to hand hygiene among health care workers at teaching hospital, research, January 2016; 1-7. DOI: 10.13140/RG.2.1.4616.2963
8. Best Practices from Hospitals Participating in the Joint Commission Center for Transforming Healthcare Project, Chicago, Health Research & Educational Trust, November, 2010; 1-15.
9. <http://www.hret.org/hand-hygiene/index.shtml>
10. http://www.who.int/gpsc/5may/tools/training_education/en/index.html
11. <https://www.researchgate.net/publication/291831439>