

Knowledge and Practice of Hand Hygiene Among Doctors and Health Care Workers

By

Alok Kumar

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



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The certificate is awarded to

ALOK KUMAR

In recognition of having successfully completed his
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QUALITY AND OPERATIONS

and has successfully completed his Project on

**KNOWLEDGE, ATTITUDE AND PRACTISE OF HAND HYGIENE
AMONG HEALTHCARE WORKERS IN EYE HOSPITAL**

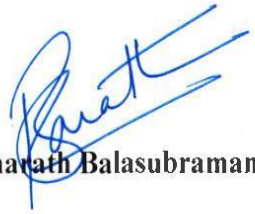
3RD FEBRUARY 2020 to 2ND MAY 2020

Organization: SANKARA EYE HOSPITAL, COIMBATORE

He comes across as a committed, sincere & diligent person who has
a strong drive and zeal for learning

We wish him all the best for future endeavours


Ms Srinji Karthikeyan
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Knowledge and Practice of Hand Hygiene among Doctors and Healthcare workers in Sankara Eye Hospital** and submitted by **Alok Kumar** Enrollment No **0710** under the supervision of **Dr. Susmit Jain** (Associate Professor and Guide) for the award of MBA in Hospital and Health Management of the University carried out during the period from **3rd Feb 2020 to 2nd May 2020** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Alok Kumar

Roll-0710

ABSTRACT

Knowledge and Practice of Hand Hygiene among doctors and healthcare workers in Sankara Eye Hospital

Submitted By: Alok Kumar
MBA HM-23, ROLL NO: 0710
Guided By: Dr. Susmit Jain

Introduction

Hand Hygiene is the most important measure to avoid the transmission of harmful germs and prevent healthcare-associated infections. 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-associated infection rates. hand hygiene is the action of cleaning hands with soap and water or antiseptic for removal of microorganisms.

Healthcare-associated infection (HAI) due to poor hand hygiene is a significant cause of increased morbidity, mortality, and health care costs among patients. It is affected by 1 in 20 hospitalized patients. Most of these infections are spread via health care workers' hands. Hand hygiene is the single most effective measure to prevent this spread.

Handwashing compliance among healthcare workers is unacceptably low in developing countries. Healthcare workers' hands are the main pathways of germs transmission during patient care.

This study Was undertaken to identify gaps in knowledge regarding hand hygiene practice among healthcare workers using the 'WHO' hand hygiene questionnaire to promote hand hygiene compliance.

Objective

- To determine the knowledge and practice of hand hygiene among doctors and Health care workers (Optometrist, Nurses).
- To assess 'WHO' my 5 moments of Hand hygiene" compliance rate among health care workers (Optometrist, Nurses).

Methodology

Research Type: A descriptive cross-sectional

Research Period: 3rd February 2020 to 2nd May 2020

Sample Size: Total -150 (35 Doctors, 81 Optometrist, and 34 Nurses).

Sample Technique: Non-probability convenience sampling.

Data Collection procedure:

The interview was taken through the WHO (World Health Organization) “Hand Hygiene Knowledge Questionnaire” and WHO hand hygiene practices observation form. The Knowledge questionnaire was administered to the doctors, Optometrist, and Nurses. and observation was done on nurses regarding hand hygiene practices.

Data Analysis: The collecting data was analyzed using Microsoft excel.

Results:

Hand Hygiene Knowledge- In this study total of 150 participants 104 was female and 46 were male. The total number of doctors was 35, an optometrist is 81, and the rest 34 was nurses. out of total participants, 61 % (92 of 150) of the participants had received the formal training in Hand Hygiene, of these, 28 (80%) were Doctor, 52 (64%) were Optometrist, and 12(35%) were Nurse. A total of 64% of the participants used the alcohol-based hand rub for hand hygiene during patients care. individual knowledge level of Hand Hygiene in each professional was different. total 57% of the participants had a moderate, 19% have poor and only 24% had a good knowledge score of hand hygiene.

Conclusion:

Hand Hygiene is a basic requirement for every healthcare setting. There are so many wrong answers given by the study participant and the knowledge of Hand Hygiene amongst healthcare workers is not adequate and there is room for improvement as it is the most important technique in infection control.

Training sessions are needed to be conducted regularly for healthcare workers with regular observation and performance feedback to follow correct practices. The study highlights the need of conducting frequent training of Hand hygiene awareness programs among health care workers that can be improved to a great extent.

Key Words: Hand Hygiene, Practice, Antiseptic, Healthcare Workers, Morbidity, Healthcare-Associated Infection.

ACKNOWLEDGMENTS

The dissertation opportunity that I had at Sankara Eye Hospital, Coimbatore was a great opportunity for me to gain professional learning and development about this industry.

Firstly, my gratitude and appreciation are extended to **Mr. Bharath Balasubramaniam** (President- Operations, and Administration), Sankara Eye Hospital Coimbatore for being my mentor as well as an industry guide in the organization. I would like to thank **Mrs. Srini Karthikeyan** (Human Resources) for constantly providing me valuable inputs, enlightening me, and giving me precious time for enhancing my dissertation project reports. Special thanks to all the supporting staff of this organization for all their cooperation.

I would like to take this opportunity to thank my faculty guide **Dr. Susmit Jain** (Associate professor, and Guide The IIHMR University, Jaipur) for providing me constant support, guidance and giving me his precious time for guiding me and helping me to prepare my report of my dissertation and being available for me always. Lastly, I would like to thank my parents for supporting me through the entire dissertation by providing me adequate mental and emotional support all along.

Alok Kumar

(Roll No-710)

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LIST OF ABBREVIATIONS

1	HAI	Healthcare-Associated Infection
2	HHC	Hand Hygiene Compliance
3	HCWs	Healthcare Workers
4	OTs	Operational Theatres
5	WHO	World Health Organization
6	CDC	Centres for Disease Control
7	IC	Infection Control
8	ABHR	Alcohol-Based Hand Rub
9	HH	Hand Hygiene
10	SD	Standard Deviation

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CHAPTER:1- INTRODUCTION

Healthcare-associated infections are one of the major problems in the hospital sector which results in high mortality. Hand hygiene includes cleaning hands with soap and water or hand rub with Alcohol BHR to remove germs. Most of the infections in the healthcare facilities are caused through the hands of workers, the major percentage of infections are transmitted in a hospital to a patient due to poor HH practices. any action of cleaning hands with soap and water or antiseptic for removal of microorganisms comes under the process of HH. Hand hygiene important for healthcare providers as well as for others and everyone must be practicing effective hand hygiene. Busy healthcare providers should have accessibility to hand hygiene products near the patient's environment. HH is important in all the critical department. Health care worker's hands are the more frequent carriers for responsible microorganisms. Providing alcohol-based hand rub at the point of care can improve hand hygiene practices in a hospital.

alcohol-based hand rub (ABHR) better than conventional handwashing as they require minimal time, acts quicker, is minimal irritating, and adds to continued improvement in compliance rate and decreases disease rates. The utilization of alcohol-based hand rub solution (ABHRs) in health services settings has been related to expanded hand cleanliness and compliance and reduce nosocomial disease. Hand Hygiene is an effective strategy for infection control in medicinal services. Appropriate cleanliness consistency relates to the decrease in HAI and results in the patient wellbeing.

1.1.WHO' my 5 moments of Hand Hygiene

Your 5 Moments for Hand Hygiene



Source: <https://www.who.int/gpsc/5may/outpatient-care.pdf?ua=1>

1.2.Purpose of observation of Hand Hygiene:

- The findings of the observation help in the implementation most suitable intervention.
- 3 aspects of HH-1. Promotion, 2 Education, and 3. Training
- The findings of observation help in, educate them to practice the proper way of HH in their healthcare settings and focus on the highlight of those aspects where need improvement.

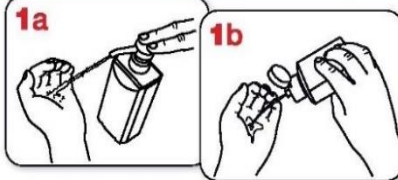
1.3 Aims and Objectives of the study

This study objective was; to assess the knowledge, of “hand hygiene”, identify the hand-hygiene methods commonly used by the Healthcare workers and doctors at the ophthalmic hospital, and what is the compliance rate of HH practices. The information collected through this study will help in identifying gaps in health providers associated with hand hygiene. it'll help the infection control unit in the hospital to successfully implement proper plans and policies for handwashing and reduce the infection rate.

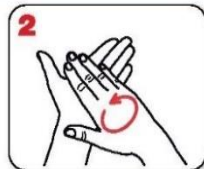
1.2 Steps of Hand Hygiene:

How to handrub?

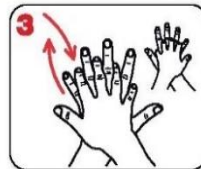
WITH ALCOHOL-BASED FORMULATION



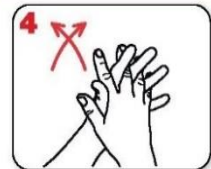
Apply a palmful of the product in a cupped hand and cover all surfaces.



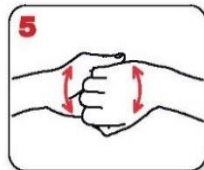
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



palm to palm with fingers interlaced



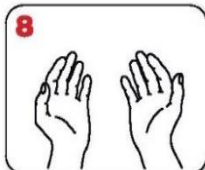
backs of fingers to opposing palms with fingers interlocked



rotational rubbing of left thumb clasped in right palm and vice versa



rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa



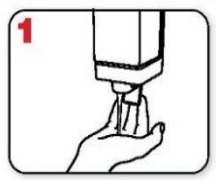
...once dry, your hands are safe.

How to handwash?

WITH SOAP AND WATER



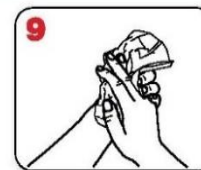
Wet hands with water



apply enough soap to cover all hand surfaces.



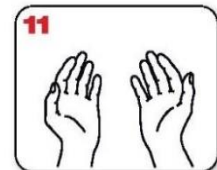
rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.

source: <https://www.who.int/gpsc/tools/GPSC-HandRub-Wash.pdf?ua=1>

CHAPTER: 2- LITERATURE REVIEW

2.1. A Study to Assess Knowledge Regarding Hand Hygiene amongst Medical Students in a Tertiary Care Hospital of West Bengal-August. 2018 (1)

A cross-sectional study was performed to selecting 95 MBBS students and their level of knowledge was assessed by using the WHO hand hygiene questionnaire. findings that only 38.95% of students had formal training in hand hygiene and only 49.47% of students routinely use alcohol-based hand rub. Out of the total of 27 questions, only 13 questions were answered correctly by more than 50% of students whereas 6 questions had correct responses by less than 30% of students. There is a gap in the knowledge regarding hand hygiene amongst medical students. It seems that the knowledge regarding hand hygiene amongst medical students is not adequate and there is room for improvement as it is one of the most important techniques in infection control practices.

2.3. Hand hygiene practices among doctors in a health facility in a semi-urban setting-January 2018 (3)

a cross-sectional study was conducted from September 2015 to November 2015 involving doctors at Federal Medical Centre Birnin Kebbi. There were 33 males and 12 females. All respondents believed hand washing reduces the risk of transmitting or contracting infections. Soap and water was the most common agent for hand cleansing, majority of the respondents (86.7%) had been taught on the technique of hand washing; however, only 19 (42.2%) of them wash their hands before examining patients; but all the respondents (100%) wash their hands after examining a patient or handling their secretions; similarly, they all reported washing their hands after using the restroom.

2.4 Hand hygiene knowledge and practices among healthcare providers in a tertiary hospital, South West Nigeria-2013 (4)

A cross-sectional study was conducted in August 2011. Simple random sampling was used to select 500 HCPs (250 doctors and 250 nurses). Data collection was done with self-administered structured questionnaires. 83% had good knowledge; 97.6% had a good attitude and 69.9% had good hand washing practices. Hand

washing after contact with the patient (97.7%) was better than before contact (61.4%). Nurses had better handwashing practices than doctors. Hospital management should provide proper hand drying facilities, reduce workload, and organize training on infection control regularly.

CHAPTER:3 - METHODOLOGY

3.1 Key Research Question-

1. What is the Knowledge, of HH techniques among health care workers in Hospital?
2. What are the factors for non-compliance of HH among health care workers in Hospital?

3.2 Research Type:

A descriptive cross-sectional study

3.3 Study duration:

3rd February 2020 to 2nd May 2020

3.4 Sample Size:

Total -150 (35 Doctors, 81 Optometrist, and 34 Nurses).

3.5 Sampling Method:

Non-probability convenience sampling.

3.6 Data Collection Technique:

The interview was taken through the WHO (World Health Organization) “Hand Hygiene Knowledge Questionnaire” and WHO hand hygiene practices observation form. The Knowledge questionnaire was administered to the doctors, Optometrist, and Nurses. and observation was done on nurses regarding hand hygiene practices.

3.7 Statistical Analysis- Data analysis was done using Microsoft excel.

CHAPTER:4 - RESULT

4.1. Demographic detail of sampling population

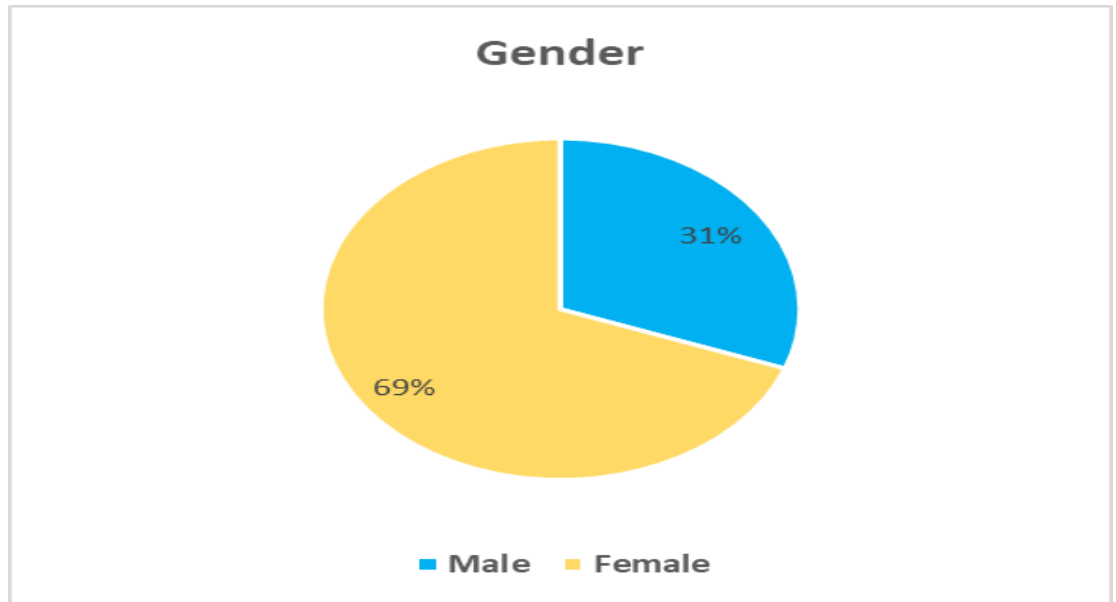
The demographic details for the 150 respondents given below

Table:1 - Demographic data of the study participants

Variable		Mean $\pm$ SD n (%)
Gender	Male	46(31%)
	Female	104(69%)
Job Title	Doctor	35(23%)
	Optometrist	81(54%)
	Nurse	34(23%)
Hospital Unit	Cataract Surgery	47(31%)
	Retina	19(13%)
	Glaucoma	20(13%)
	Oculoplasty	3(2%)
	Outpatient services	41(28%)
	Paediatric Ophthalmology Squint	20(13%)

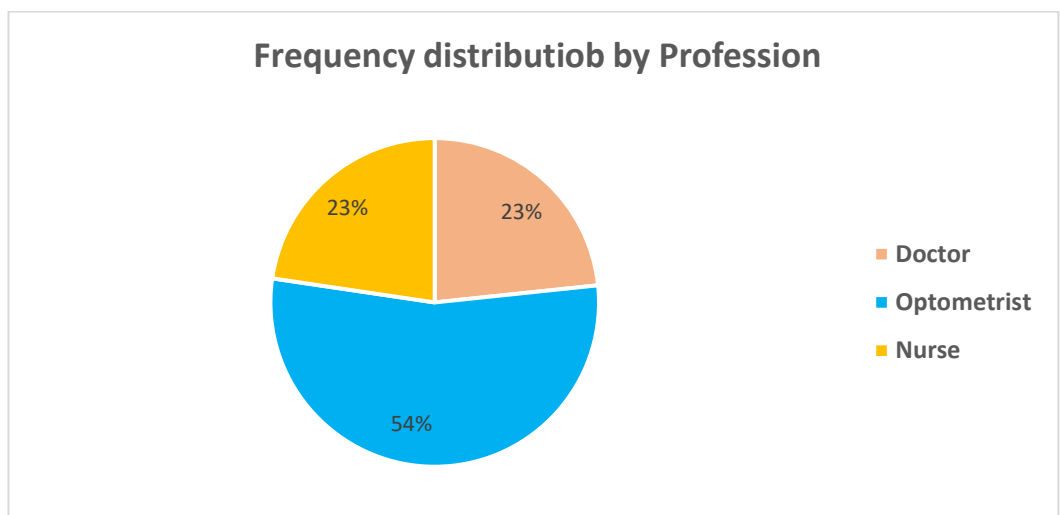
In 150 healthcare workers, the respondents included 35 Doctors, 81 Optometrist, and 34 nurses who were working in ophthalmic Hospitals. Out of a total 150 respondents, 69% was female and only 31% was male. 6 different department was the study area in a hospital

Figure:1. Gender distribution of participants



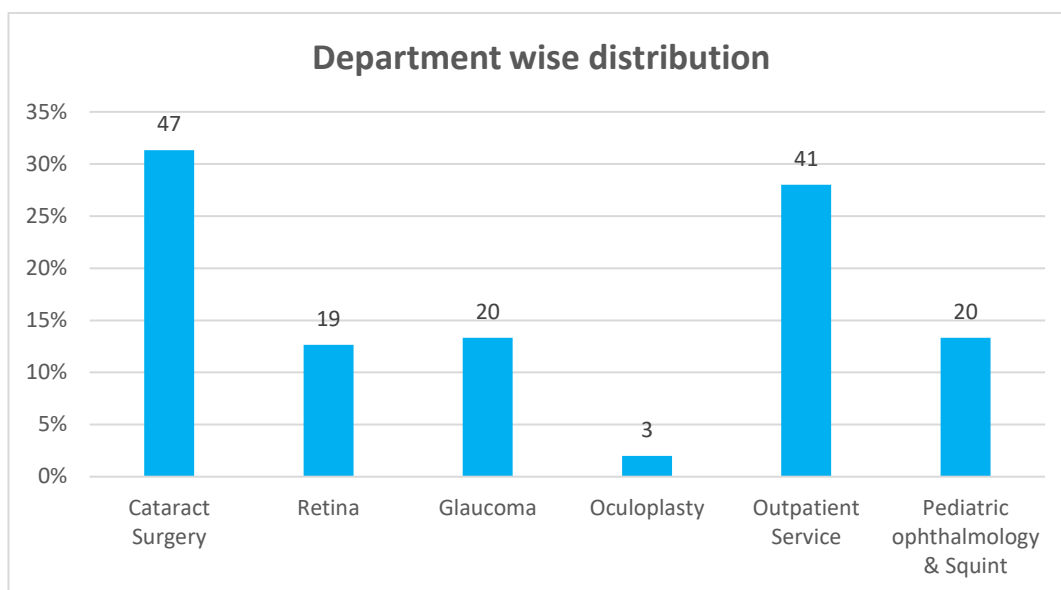
In 150 respondents, 104(69 %) were Female whereas 46(31%) of the respondents were male.

Figure: 2. Professional distribution of study participants



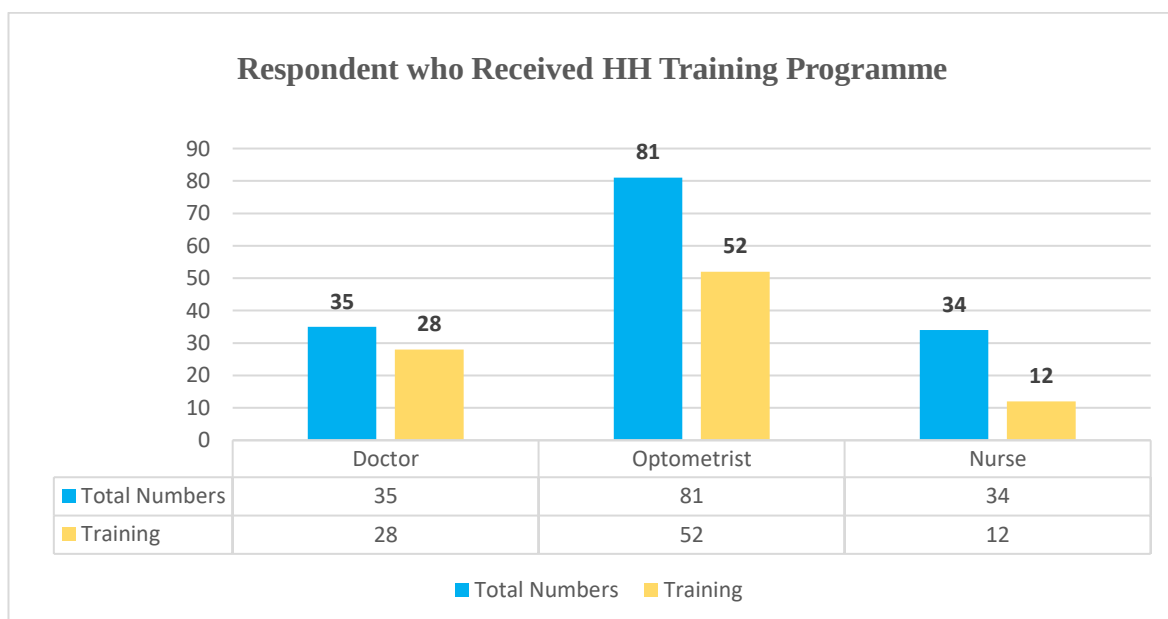
Out of the 150 respondents, 54% of the respondents were Doctor, 23% were Optometrist and 23% of respondents were Nurse.

Figure: 3. Department wise Distribution of participants.



Out of 150 respondents 47 respondents from Cataract surgery department, 19 from Retina department, 20 from Glaucoma, 3 from oculoplastic, 41 from outpatient Services and rest 20 from pediatric ophthalmology.

Figure: 4. Distribution of respondent who received HH Training program (Profession wise)



Findings of this analysis was the total percentage of respondent who attend Hand Hygiene training programme is 61% where doctors percentage was 80% which was better than other participants, The percentage of HH trained optometrist was 64% but the percentage of nurses was 39 which one was very poor .Use of alcohol based hand rub by overall among 3 group was 64% in which doctors percentage was 83% but use of hand rub by the optometrist group was only 58%. Only 61% respondent knows about required minimum time needed for hand rub to kill most germs in your hands, in which 80% doctors gives correct response but the responses of optometrist (56%) and nurses (47%) was very poor. also, knowledge level of optometrist and nurses was poor for question related to HH for in which procedure hand washing was requires or in which procedure hand rubbing is required.

4.2 Hand Hygiene Knowledge (based on correct response of every question) of study participant for each question in Doctor, Optometrist and Nurses wise based on ‘WHO’ HH Questionnaire

Table: 2. - HH knowledge score percentage of study participants (Data presented in (%)).

Question of Knowledge statements (correct responses)	Total Percentage (n=150)	Doctor (n=35)	Optometrist (n=81)	Nurse (n=34)
Did you receive formal training in hand hygiene in the last three years? (Yes)	61%	80%	64%	39%
Do you routinely use an alcohol-based hand rub for hand hygiene? (Yes)	64%	83%	58%	62%
Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility? (Healthcare workers hands when not clean)	68%	83%	62%	58%
What is the most frequent source of germs responsible for health care associated infections? (Germs already present on or within the patient)	60%	74%	47%	58%

Which of the following hand hygiene actions prevents transmission of germs to the patient?	Before touching a patient (Yes)	86%	91%	82%	84%
	Immediately after risk of body fluid exposure (Yes)	47%	71%	26%	43%
	After exposure to the immediate surroundings of a patient (No)	45%	63%	24%	49%
	Immediately before a clean/aseptic procedure (Yes)	91%	100%	88%	84%
Which of the following hand hygiene actions prevents transmission of germs to the health-care worker?	After touching a patient (Yes)	75%	74%	74%	78%
	Immediately after a risk of body fluid exposure Immediately after a risk of body fluid exposure (Yes)	85%	97%	76%	83%
	After exposure to the immediate surroundings of a patient (Yes)	69%	71%	68%	67%
Which of the following statements on alcohol-based hand rub and handwashing with soap and water are true?	Hand rubbing is more rapid for hand cleansing than hand washing (True)	84%	91%	79%	80%
	Hand rubbing causes skin dryness more than hand washing (False)	53%	74%	41%	43%
	Hand rubbing is more effective against germs than hand washing (False)	62%	80%	56%	51%
	Hand washing and hand rubbing are recommended to be performed in sequence (False)	39%	51%	35%	30%

What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands? (20 Seconds)		61%	80%	56%	47%
Which type of hand hygiene method (Rubbing/Washing) is required in the following situations?	Before palpation of the abdomen (Rubbing)	57%	66%	47%	59%
	Before giving an injection (Rubbing)	55%	60%	53%	52%
	After emptying a bed pan (Washing)	47%	71%	26%	44%
	After removing examination gloves (Rubbing/Washing)	72%	80%	65%	70%
	After making a patient's bed (Rubbing)	64%	77%	53%	60%
	After visible exposure to blood (Washing)	65%	69%	74%	53%
Which of the following should be avoided, as associated with increased likelihood of colonisation of hands with harmful germs? (Yes/No)	Wearing jewellery (Yes)	59%	77%	50.00%	51%
	Damaged skin (Yes)	94%	97%	91%	93%
	Artificial fingernails (Yes)	74%	83%	68%	70%
	Regular use of a hand cream (No)	64%	86%	47%	60%

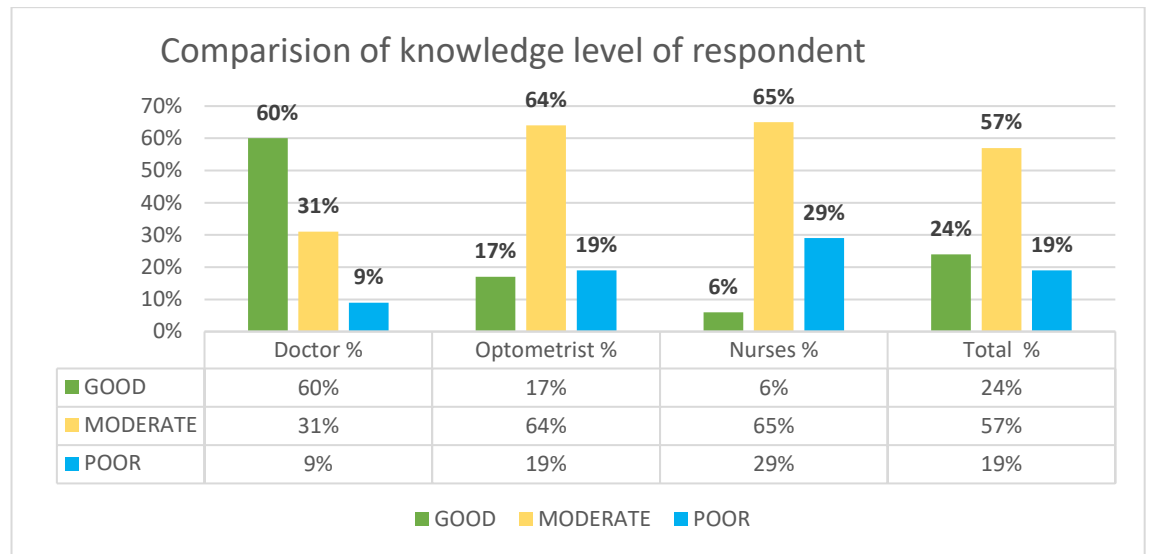
In 150 respondents, 61% (92 out of 150) participants had received the formal training in HH. Of these, 28 (80%) were Doctor, 52 (64%) were Optometrist and 12 (35%) were Nurse. Findings of this analysis were the total percentage of respondents who attend the Hand Hygiene training program is 61% where doctors percentage was 80% which was better than other participants, The percentage of HH trained optometrist was 64% but the percentage of nurses was 39 which one was very poor. Use of alcohol-based hand rub by overall among 3 groups was 64% in which doctors percentage was 83% but the use of hand rub by the optometrist group was only 58% and nurses was 62%. Only 61% respondent knows about the required minimum time needed for hand rub to kill most germs in your hands, in which 80% doctors give a correct response but the responses of an optometrist (56%) and nurses (47%) was very poor. also, the knowledge level of optometrist and nurses was poor for questions related to HH for in which procedure handwashing required or in which procedure hand rubbing is required.

4.3 Knowledge level of Hand Hygiene among participant

Table: 3.- Distribution of knowledge level of the participants (scores presented in percentage; so, score considered as >75% good, 50–74% as moderate and <50% as poor knowledge score respectively).

	DOCTOR (n=35)	%	OPTOMET RIST (n=81)	%	NURSE (n=34)	%	TOTAL PARTICIPANTS (n=150)	%
GOOD	21	60%	14	17%	2	6%	37	24%
MODERATE	11	31%	52	64%	22	65%	85	57%
POOR	3	9%	15	19%	10	29%	28	19%

Figure: 5. Distribution of Knowledge level of respondent



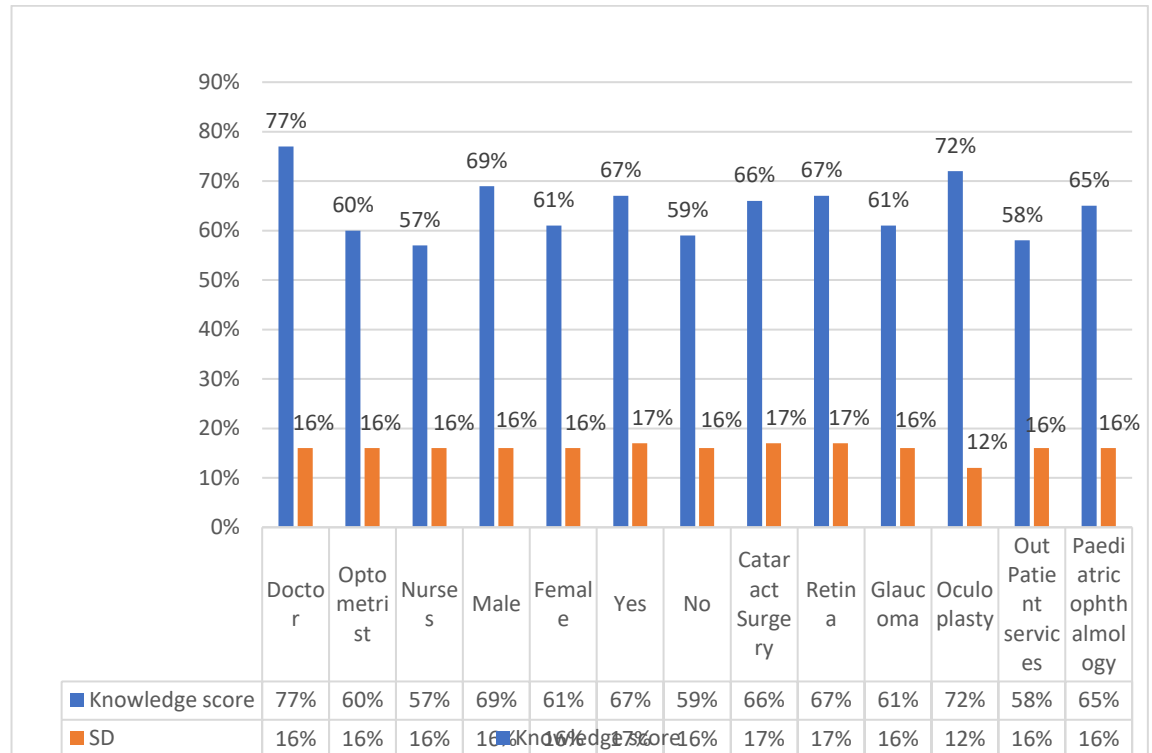
Out of 150 respondents, 57% of the participants had a moderate level, 19% had poor, and 24% had a Good knowledge score of HH of knowledge.

4.4. Mean/SD of knowledge Score of every participant

**Table:4 The comparison of mean knowledge score based on participants-
Job title, gender, HH training, department Wise.**

Variable		Knowledge Score (Mean $\pm$ SD)
Job title	Doctor	77% $\pm$ 16%
	Optometrist	60% $\pm$ 16%
	Nurse	57% $\pm$ 16%
Gender	Male	69% $\pm$ 16%
	Female	61% $\pm$ 16%
Hand Hygiene Training	Yes	67% $\pm$ 17%
	No	59% $\pm$ 16%
Department	Cataract surgery	66% $\pm$ 17%
	Retina	67% $\pm$ 17%
	Glaucoma	61% $\pm$ 16%
	Oculoplastic	72% $\pm$ 12%
	Outpatient services	58% $\pm$ 16%
	Pediatric ophthalmology	65% $\pm$ 16%

Figure: 6. Comparison of mean Knowledge score and SD (Standard deviation)



In this graph, The Knowledge score is calculated as a registered correct response by the participant in a questionnaire. Knowledge score calculated as a job title wise (Doctor, Optometrist, and Nurses) Gender wise (Male, Female), Hand Hygiene Training wise (HH training attend or not), and Department wise (Cataract Surgery, Retina, Glaucoma, Oculoplasty, Outpatient Services, and Paediatric Ophthalmology). To find out the knowledge score first calculated the total correct answer given by the respondent divided by a total participant from that group and multiply by 100 (example-for findings doctor's knowledge score first adds the correct answer given by total doctor / total Number of doctors* 100). So, according to findings Hand, Hygiene knowledge score of doctors was Good but the HH knowledge score of optometrists (60%) and nurses (57%) have moderate. The HH knowledge score of Male is better than female participants .in total participants who had to attend the hand hygiene training program in the last 3 years have a good knowledge score (67%) compare to those who had not to attend (59%) the any HH training program. Department wise healthcare worker's knowledge, in the oculoplasty department (72%) have a hand hygiene knowledge score compare to another department. the staff working in outpatient services

(58%) departments have the lowest hand hygiene knowledge score. HH knowledge score of the health care worker in other departments like Cataract surgery (66%), Retina (67%), Glaucoma (61%) and pediatric ophthalmology (65%)

4.5. Hand Hygiene Practice's Compliance rate:

4.5.1. The compliance rate of WHO my 5 moments of HH practice by health Workers:

To determine the HH compliance with the help of WHO Hand Hygiene moment observation form HH moment observed and recorded. healthcare worker required HH moment or practices during performing patient care or not- If they follow the HH moment this moment registered as a correct moment.

Table: 5. The compliance rate of 'WHO' My 5 moments of HH practices by healthcare workers

	Before touching a patient	Before clean/aseptic procedures	After body fluid exposure/risk	After touching a patient	After touching the patient's surroundings.	Overall
Correct moments	45	33	55	51	31	215
Observed moments	80	80	80	80	80	400
Compliance Rate	56.25%	41.25%	68.75%	63.75%	38.75%	53.75%

(HHC) = Total no of correct moments/Total number of Observed moments×100

Total Hand Hygiene Compliance rate =215/400×100 = 53.75.

The total number of observed moments and the correct moment recorded individually. After touching patients surrounding 38.75% recorded as the poorest compliance rate moment and after body fluid 68.75% moments observed as maximum compliance rate moment. In Other moments compliance rate recorded as Before clean aseptic procedure observed 41.25%, Before touching patient 56.25% and after touching patient 63.75%.

CHAPTER:5- Discussion

Hand Hygiene Knowledge-In 150 respondent doctors have good knowledge of HH other study groups optometrist and nurses had moderate knowledge of HH. The results of this study showed that the mean knowledge level of optometrist and nurses who had received formal training in Hand Hygiene was good compared to those who had not to attend HH training program. That means training had a good effect on the knowledge level. The mean HH knowledge level of the optometrist was higher compared to nurses but optometrist knowledge level is lower than the Doctors. Results reflected that HH knowledge should more serious for nursing curriculums. the mean knowledge level was different in every department in the ophthalmic hospital. also, it may suggest that hospitals should design the education program to focus on that department where the chance of Hospital Acquired Infection is high. The motivation of healthcare workers for HH is a very important concern. There is a difference between male and female knowledge of HH. In this study, it was found that the healthcare worker was not aware that hand-rubbing is a good method of hand hygiene.

Hand Hygiene Practices- Findings of a study that HH compliance was inadequate at only 53.75% despite healthcare workers having good Hand Hygiene knowledge compare to hand hygiene practices

CHAPTER:6- CONCLUSION

A significant gap between knowledge and practice of response observed. due to the close relationship between HH and microbes, need to improve the compliance rate of HH. There are so many wrong answers given by the study participant so the knowledge regarding hand hygiene amongst healthcare workers is not adequate and there is room for improvement as it is one of the most important techniques in infection control practices. there is no curriculum set with hand hygiene concepts and skills, might end up developing faulty HH practices. Hence need to frequently organize HH training sessions and regular monitoring and performance feedback are required for healthcare workers to encourage them for correct HH. Hand hygiene awareness amongst healthcare workers can be improved to a great extent just by conducting awareness programs frequently.

CHAPTER:7- Suggestion for future

- Ensuring availability for Handwashing dispensers at every care point to fulfill the need.
- Provide required education and continuous training related to Hand Hygiene by the innovative educational method.
- Evaluating healthcare workers' knowledge related to hand hygiene and use the result to future improvement.
- Continuous monitoring of ABHR and handwashing soap consumption and monitor seven steps of HH was followed or not.
- Hand hygiene reminder on workplace display posters and leaflets related to hand washing in the working area.
- During the serving of the patient, the safety measures should be followed by the healthcare worker for a low rate of infection.
- Hand Hygiene related Study material should design for Healthcare workers, nursing staff by the hospital.
- Awareness related to Hand Hygiene should be participating with the community for celebrating HH day (5 May).

Annexure:1

Hand Hygiene Knowledge Questionnaire for Doctors and Health-Care Worker (Optometrist, Nurses) (Designed by 'WHO')

1. **Gender:** ☐ Female ☐ Male
2. **Age:** ☐☐ years
3. **Profession:** ☐ VCT Staff ☐ Optometrist ☐ Doctor ☐ Other
4. **Department** (please select the department which best represents yours):
☐ Cataract Surgery ☐ Retina ☐ Glaucoma ☐ Paediatric ophthalmology &
☐ Oculoplasty ☐ Outpatient Services ☐ Other
5. **Did you receive formal training in hand hygiene in the last three years?**
Yes ☐ No ☐
6. **Do you routinely use an alcohol-based hand rub for hand hygiene?**
Yes ☐ No ☐
7. **Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility? (tick one answer only)**
- a. ☐ Health-care workers' hands when not clean
 - b. ☐ Air circulating in the hospital
 - c. ☐ Patients' exposure to colonized surfaces (i.e., beds, chairs, tables, floors)
 - d. ☐ Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients
8. **What is the most frequent source of germs responsible for healthcare-associated infections? (tick one answer only)**
- a. ☐ The hospital's water system
 - b. ☐ The hospital air
 - c. ☐ Germs already present on or within the patient
 - d. ☐ The hospital environment (surfaces)
9. **Which of the following hand hygiene actions prevents transmission of germs to the patient?**
- a. Before touching a patient ☐ Yes ☐ No

- b. Immediately after the risk of body fluid exposure ☐ Yes ☐ No
- c. After exposure to the immediate surroundings of a patient ☐ Yes ☐ No
- d. Immediately before a clean/aseptic procedure ☐ Yes ☐ No

10. Which of the following hand hygiene actions prevents transmission of germs to the health-care worker?

- a. After touching a patient ☐ Yes ☐ No
- b. Immediately after the risk of body fluid exposure ☐ Yes ☐ No
- c. Immediately before a clean/aseptic procedure ☐ Yes ☐ No
- d. After exposure to the immediate surroundings of a patient ☐ Yes ☐ No

11. Which of the following statements on alcohol-based hand rub and handwashing with soap and water are true?

- a. Hand rubbing is more rapid for hand cleansing than handwashing ☐ True ☐ False
- b. Hand rubbing causes skin dryness more than handwashing ☐ True ☐ False
- c. Hand rubbing is more effective against germs than handwashing ☐ True ☐ False
- d. Handwashing and hand rubbing are recommended to be performed in sequence
True ☐ False ☐

12. What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands? (tick one answer only)

- a. ☐ 20 seconds
- b. ☐ 30 seconds
- c. ☐ 60 seconds
- d. ☐ 10 seconds

13. Which type of hand hygiene method is required in the following situations?

- a. Before Touching the patient eye ☐ Rubbing ☐ Washing ☐ None
- b. Before giving an injection ☐ Rubbing ☐ Washing ☐ None
- c. After Patch Removal from eye ☐ Rubbing ☐ Washing ☐ None
- d. After removing examination gloves ☐ Rubbing ☐ Washing ☐ None
- e. After making a patient's bed ☐ Rubbing ☐ Washing ☐ None
- f. After visible exposure to blood ☐ Rubbing ☐ Washing ☐ None

14. Which of the following should be avoided, as associated with an increased likelihood of colonization of hands with harmful germs?

- a. Wearing jewellery ☐ Yes ☐ No
- b. Damaged skin ☐ Yes ☐ No
- c. Artificial fingernails ☐ Yes ☐ No
- d. Regular use of a hand cream ☐ Yes ☐ No

Annexure:2

Observation Form – Optional Calculation Form

(Indication-related compliance with hand hygiene)

	Facility:						Period:			Setting:					
	Before touching a patient			Before clean/ aseptic procedure			After body fluid exposure risk			After touching a patient			After touching patient surroundings		
Session N°	Indic (n)	HW (n)	HR (n)	Indic (n)	HW (n)	HR (n)	Indic (n)	HW (n)	HR (n)	Indic (n)	HW (n)	HR (n)	Indic (n)	HW (n)	HR (n)
1															
2															
3															
4															
5															
6															
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14															
15															
16															
17															
18															
19															
20															
Total															

Bibliography:

1. Mukherjee T "A Study to Assess Knowledge Regarding Hand Hygiene amongst Medical Students in a Tertiary Care Hospital of West Bengal."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 8, 2018, pp 24-28.
2. Shinde, Mahadeo & Mohite, Vaishali. (2014). A Study to Assess Knowledge, Attitude, and Practices of Five Moments of Hand Hygiene among Nursing Staff and Students at a Tertiary Care Hospital at Karad. International Journal of Science and Research (IJSR). 3. 311-321.
3. Aliyu I, Lawal TO, Olawale W, Monsudi KF, Zubayr BM. Hand hygiene practices among doctors in a health facility in a semi-urban setting. BLDE Univ J Health Sci 2018;3:43-7
4. Asma F AlKheraiji, Bashayer B AlMalki, Nuha S AlHammad, Nada K AlOdhilah, Ibrahim Gosadi, Shabana Tharkar. Assessment by WHO's My 5 moments of Hand Hygiene Shows Inadequate Knowledge and its Translation into Practices for Hand Washing Behavior Among Saudi Medical Students. International Annals of Medicine. 2018;2(1)
5. Majeed, Peshtewan & Ali, Salah & Hawezy, Aumed. (2018). Hand hygiene practices among health care workers in Rizgary teaching hospital Hand Hygiene Practices among Health Care Journal of Polytechnic. 8. 190-202.
6. [https://www.journalofhospitalinfection.com/article/S0195-6701\(05\)00521-9/abstract](https://www.journalofhospitalinfection.com/article/S0195-6701(05)00521-9/abstract)
7. Allegranzi B, Pittet D. Role of hand hygiene in healthcare-associated infection prevention. J Hosp Infect. 2009;73(4):305-315. doi:10.1016/j.jhin.2009.04.019
8. Creedon SA. Healthcare workers' hand decontamination practices: compliance with recommended guidelines. J Adv Nurs. 2005;51(3):208-216. doi:10.1111/j.1365-2648.2005.03490.x
9. D. C. E. Hunt, A. Mohammudaly, S. P. Stone, and J. Dacre, "Hand-hygiene behavior, attitudes and beliefs in first-year clinical medical students," Journal of Hospital Infection, vol. 59, no. 4, pp. 371-373, 2005.

10. Khaled M, Abd elaziz, Iman. Assessment of knowledge, attitude, and practice of handwashing among HCWs in Ain-Shams University Hospital In Cairo. *The Egyptian Journal of Community Medicine*.2008;26(2)
11. Bukhari SZ, Hussain WM, Banjar A, Almanimani WH, Karima TM, Fantani MI. Hand hygiene compliance rate among health care professionals. *Saudi med J*.2011; 32(5): 515-9.
12. Creedon S A. Health care workers hand decontamination practices: compliance with recommended guidelines. *Journal of advanced nursing*. 2005; 51(3): 208-16
13. Lipsett P A, Swoboda SM. Hand washing compliance depends on Professional status. *Surg Infect*.2011; 2(3): 241-5.
14. Erasmus V, Brouwer W, van Beeck EF, Oenema A, Daha TJ, Richardus JH, et al. A qualitative exploration of reasons for poor hand hygiene among hospital workers: lack of positive role models and of convincing evidence that hand hygiene prevents cross-infection. *Infect Control Hosp Epidemiol*. 2009;30(5):415–9. doi: 10.1086/596773.
15. Day M. Doctors attack Gordon Brown's plans to regulate the medical profession. *BMJ*. 2007;335(7611):113. doi: 10.1136/bmj.39279.396273.BE.