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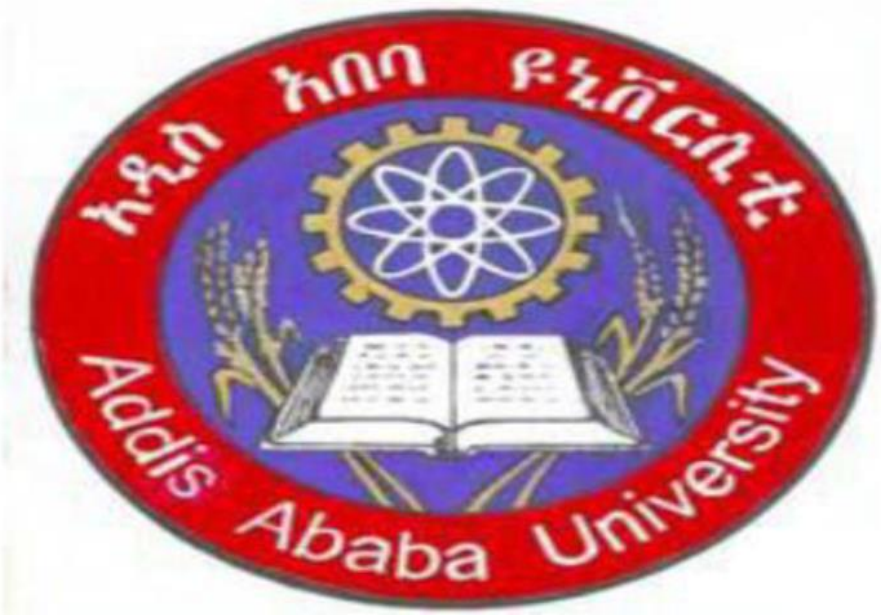

Knowledge, Attitude, and Practice Regarding COVID-19 Transmission among Health Care Workers at TASH Operating Theater, Addis Ababa, Ethiopia

By: Tsegay Gesesew (MD)

September 2020 Addis Ababa, Ethiopia

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APPROVED BY THE BOARD OF EXAMINATION

The thesis here, entitled "Knowledge, Attitude and Practice Regarding COVID-19 Transmission among Health Care Workers at TASH Operating Theater,2020" is accepted in its present form by the board of examiners as partial fulfillment of the requirement for specialty certificate in Anesthesiology Critical Care And Pain Medicine.

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Title of Research Project	Knowledge, Attitude And Practice Regarding COVID-19 transmission Among Health Care Workers At TASH Operating Theater
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Study Type	Prospective Observational Study(Cross-Sectional)
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Abstract

Background: The COVID 19 was announced to be a worldwide pandemic by the WHO on March eleven, 2020. It introduced serious work-related health risks to the HCPs owing to their frequent exposure to infected persons. Protection of HCPs and prevention of intra-hospital transmission of infection are important aspects in epidemic response and this requires that HCPs must have updated knowledge regarding the source, transmission, symptoms, and prevention of COVID-19. Having poor knowledge, poor practice and negative attitude toward the disease among HCPs could result in a negative impact in the supportive treatment and, worsen the spread of the pandemic

OBJECTIVE: The main purpose of this study was to assess Knowledge, Attitude, and Practice Regarding Covid-19 Transmission among Health Care Workers who work in TASH Operating Theater.

Methods: Cross-sectional study was conducted on September 2020 among 261 HCW who were selected by a stratified sampling technique. Pretested structured questionnaire was used to collect data. Data were entered and analyzed using SPSS version 26. Variables with a p-value < 0.05 were used as significantly associated with the dependent variable.

Result: A total of 261 HCW had participated in the study with a 100% response rate. The majority of the respondents were male (69.7%) with a median age of 30 (range 23-63) years. The mean knowledge score was 81.11 % (i.e. 11.3554 out of 14 with SD=1.52). The mean attitude score was 68 %(i.e. 6.8 out of 10 with SD=1.32) with sixty-five percent point five (65.5%) of the respondents have an overall positive attitude. the occupation was the only variable significantly associated with knowledge and attitude. The total mean practice score is 45.36% (i.e. 4.08 out of 9 SD= 1.6); with no statistically significant heterogeneity across socio-demographic, IP training status, knowledge, and practice. Most (54.8 %) of the respondents scored below the mean (45.36 %)

Conclusion: In this study, around half of HCWs have good knowledge and two-third of HCWs have a positive attitude score towards COVID-19 transmission. The total mean practice score and those who scored above the mean are both below 50% which shows having poor practice. The occupation was the only independent variable with a significant association with knowledge and attitude.

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Acronyms

AAU----------Addis Ababa University

ARDS ----------Acute Respiratory Distress Syndrome

CCDC ----------Chinese Centre for Disease Control and Prevention

COVID-19 -----**Co**rona **Vi**rus **Di**sease-2019

CVS---------- Cardiovascular system

ENT----------Ear, Nose, Throat

GI ----------Gastro-Intestinal

HCP ----------Health Care Professional

HCWs----------Health Care Workers

KAP---------- knowledge, attitude, and practice

MD----------Medical Doctor

OR ---------- operating theater

PPE---------- personal protective equipment

SARS-CoV-2 --Severe Acute Respiratory Syndrome Coronavirus 2

SPSS----------statistical package for social science

TASH ---------Tikur Anbessa Specialized Hospital

WHO ----------World Health Organization

1. Introduction

1.1background

In December 2019, twenty-seven patients with respiratory infection of unknown causes were found in Wuhan City, China [1]. These cases are mainly manifested by dry cough, dyspnea, fever, and bilateral lung infiltrates on radiology [1-2]. An organism was subsequently set apart from a throat swab specimen done by the Chinese center for disease control and prevention (CCDC) on the seventh January 2020, and at the beginning, it was named SARS-CoV-2. Later it was designated as COVID-19 by the World Health Organization (WHO) [1, 3]. On January 30th, 2020, the WHO declared the Chinese outbreak of COVID-19 to be a Public Health Emergency of International issues posing an imminent risk to countries with vulnerable health systems. The emergency committee stated that the spread of COVID-19 may be interrupted by early testing, early isolation, prompt treatment, and performance of a robust system to trace contacts [4].

The majority of the individuals presented with mild disease including dry cough, sore throat, and fever. In most patients, these symptoms were self-limited. On the other hand, few cases have manifested by severe life-endangering situations including organ failure, septic shock, pulmonary edema, severe pneumonia, and ARDS [1, 5]. More than half of those infected with SARS-CoV-2 are male with a median age of 56 years. Notably, patients who required intensive care support were older and had multiple co-morbidities including CVS, cerebrovascular, endocrine, digestive, and respiratory disease. Those requiring intensive care were also more likely to report dyspnea, dizziness, abdominal pain, and anorexia [6].

Currently, there are some papers that define the physiopathological features of COVID-19, and there are many unsettles regarding its way of transmission. Current knowledge is largely derived from similar coronaviruses, which are transmitted mainly from human-to-human by respiratory droplets and aerosolized particles [7]. Typically, respiratory viruses are most contagious when a patient is symptomatic. However, there is an increasing body of evidence to suggest that human-to-human transmission may be occurring during the asymptomatic incubation period of COVID-19, which has been estimated to be between 2 and 10 days [7–9]. As of written, there is no effective antiviral treatment or vaccine for COVID-19 although several are being investigated [1, 6]

1.2. Statement of the Problem

As of July 14th, 2020, over 13.46 million cases and 581,000 deaths from 213 countries have been reported globally [10- 11]. The Americas are the most affected with over a 6.89million cases and 290, 969 deaths [4]. The United States of America is the country with the highest number of cases globally (3,545,257 cases) and the highest number of deaths (139,145 deaths) [4]. The African region has so far been the least affected with 611,806 cases and 13461 deaths; however, the numbers continue to increase [4]. Ethiopia has confirmed 7969 cases and 139 deaths of COVID-19 as of June 19th, 2020[4, 11]. COVID-19 has posed a serious occupational health risk to the HCPs owing to their frequent exposure to infected individuals [12]. Protection of HCPs and prevention of intra-hospital transmission of infection are important aspects in epidemic response and this requires that HCPs have updated knowledge regarding the source, transmission, symptoms, and preventive standards [13].

HCW are at the frontline of COVID-19 pandemic response and are exposed to dangers like pathogen exposure, work overloads, psychological distress, fatigue, burnout and stigma, and physical damages [14-15]. Inadequate knowledge of the disease among HCWs can result in delayed identification and treatment, increased anxiety, and subsequent mistakes and panic in the workplace, contributing to the rapid transmission of infections [16]. More than 1,000 HCWs have died of COVID−19, a tragedy to the world and further obstacle to fight COVID-19 [16]. Health care workers in emergency wards, in intensive care and Operating Room Theater, especially anesthesiologists and anesthetists, are arguably at great risk because of exposure to aerosolized particles during airway manipulation [16].

1.3. Significance of the Study

Currently, there are few pieces of research that exist in Ethiopia regarding perception and knowledge of COVID 19 amongst health care workers and this study will add to the essential foundation and source of knowledge to researchers interested in COVID 19. Additionally, FMOH and other local agencies will benefit from the insight we can provide into health care workers' perception of the virus. By analyzing the gaps in knowledge and stressors HCWs experience, a step can be taken to improve deficits that may be present. The result of this study will serve as a good base or guide for future reference on the importance of studying healthy. Results may also provide relevant information on the mechanism of the spread of this disease. This study should be especially significant to the medical professionals who have risked their own health in caring for their colleagues and patients.

2. Literature Review

The coronavirus disease 2019 (COVID 19) was declared a pandemic by the WHO on March 11, 2020 [17]. The etiology of COVID-19 is SARS-CoV-2, a beta coronavirus. It is comprised of a single-stranded RNA structure that belongs to the Corona virinae subfamily [18]. Full genome sequencing and phylogenetic analysis on bronchial fluid obtained from alveolar lavage can confirm COVID-2019 infection [19].

It is believed that transmission of the disease among HCWs is associated with overcrowding, absence of isolation room facilities, and environmental contamination. However, the spread is likely compounded by the fact that some HCWs have inadequate awareness of infection prevention practices [20]. Knowledge of disease can influence HCWs' attitudes and practices, and incorrect attitudes and practices can directly increase the risk of infection [21].

The PPE taskforce From the Department of Surgery, Stanford University develop a decision tree algorithm describing their institutional guidelines for precautions for operating room group members. The inherent assumption was that everybody is likely infected with COVID-19 until proven otherwise. This assumption is based on a growing community as well as the asymptomatic spread of COVID-19, which placed the burden for ruling out infection on the healthcare team. The recommendation suggests that any provider performing high-risk procedures, especially those involving open aerodigestive tracts such as nasopharyngeal/oropharyngeal/ENT, trachea, lung/bronchoscopy, endoscopy of the GI tract, and surgery of the bowel with gross contamination, must have training in appropriate donning and doffing of personal protective equipment. Face shields are used over N-95 or surgical mask to allow for safe reuse on subsequent patients unless COVID is positive. [22]

A cross-sectional survey was conducted from February 4th to February 8th, 2020 HCWs across 10 hospitals in Henan, China. Among HCPs respondents 46.5% were nurses, and 36.48% were doctors. From these 89% of HCWs had good knowledge of COVID-19, 85% of the HCW feared self-infection by COVID-19, and 89.7% follow correct practices regarding COVID-19. In addition to the knowledge level, risk factors including work experience and job category influenced HCWs' attitudes and practice concerning COVID-19 [23].

Research published in March 2020 Knowledge and Perceptions: A Survey of Healthcare Workers regarding COVID-19 in UAE involved participants from different countries. From the participants HCW 51.6% were males, 32.1% were in 25-34 years of age, and 30.2% were doctors and 29.6% were medical students. The

majority (61%) of the participants use social media to get the source of information about COVID 19, and a majority of HCWs had poor knowledge of its transmission (61%) and symptom onset (63.6%) and showed positive knowledge of COVID-19 prevention and control. Elements like age and profession were associated with inadequate knowledge and poor perception of COVID-19[24].

A cross-sectional study conducted in Asian HCPs between January and February 2020 on knowledge, Attitude, and practice of health professionals found the means score of knowledge and attitude was 8.17±1.3 (range 4-10) and 1.86±0.43 (range 1-5), respectively. This indicates that HCPs had good knowledge and a positive attitude. But, only 2/3 of them knew the mode of transmission, isolation period, and treatment (67.0%, 65.8%, and 58.4%, respectively), and the majority of the respondents (82.3%and 79.8%, respectively) had a positive attitude regarding the risk of personal and family members getting the illness. 74.0% of the respondents were female, 70.9% nurses and the majority of them had <5year work experience (62.9%) [25].

Another online-based study was conducted during the month of March among healthcare professionals including physicians, pharmacists, and nurses in Pakistan. Health professionals usually use social media as a source of information. This study also indicated that HCPs have good knowledge (93.2%, n=386), a positive attitude, and good practice to COVID-19 transmission. HCPs assumed that the major obstacles in infection control are limited infection control material and poor knowledge regarding the spread of COVID-19. Factors such as age, experience, and job were significantly associated with good knowledge and practice [26].

A cross-sectional survey was conducted at the Department of Orthopedic Surgery HCWs in March 2020 in Pakistan about Knowledge, Attitude, and Practices of Healthcare Workers Regarding the Use of Face Mask to Limit the Spread of the new COVID-19 total of 392 participants with an average age of 42.37 ± 13.34 years composed of 341 males and 51 females were included in the study. The final results displayed high knowledge in 138 (35.2%), moderate in 178 (45.4%), and poor in 76 (19.3%). about 43.6% of HCWs knew about the right method of wearing the masks, the majority(68.9%) knew that there are three layers, nearly half(53%) stated that the middle layer act as a filter media barrier and most(75.5%) knew the suggested maximum duration of wearing it. 88.2% of participants knew that a cloth face mask is not very effective, while 79.8% knew that used face mask should not be re-used [27].

A cross-sectional study on physicians and medical students of Pakistan on Awareness of COVID 19 was conducted in April for two weeks. The study population consists of 200 physicians and 200 students. By evaluating the responses on the basis of profession, 46.9% responses of the physicians, and 55.3% responses of medical students were correct regarding COVID-19 transmission [28].

An additional cross-sectional survey was administered to Nepalese HCWs from different health institutions in Chit wan. The majority were nurses and females, HCWs had moderate to good knowledge and practice (n = 82.15%, 83.57%, respectively). Knowledge and practice were highly associated with occupation also higher practice scores and training on infection prevention were significantly was related to higher knowledge scores [29].

An electronic questioner surveying knowledge, attitude, and practice regarding COVID 19 were distributed in February 2020 to residents in Anhui, India, and scored psychological behavioral score. The study indicated that the female, urban population and the medical workers had poorer mental health than the male, the rural population, and the nonmedical workers [30].

A Cross-sectional study titled "COVID-2019: Knowledge, Attitude, and Practices of Health Care Workers" was performed in Uganda teaching hospital in April 2020. 62% were medical doctors and 125 (92%) had at least a bachelor's degree. 69% had sufficient knowledge, 21% had a positive attitude, and 74% had good practices toward COVID-19 transmission prevention and control. things related to increased knowledge were age >40 years and news media exposure. things related to good practices were Age 40 years or more and having a diploma [14].

A cross-sectional survey was done from March to April 2020: Knowledge and attitude regarding COVID-19 among HCPs in Northwest Ethiopia. Knowledge was 73.8%, attitude 65.7%. The level of education was associated with knowledge. Having good knowledge was positively correlated with attitude [31].

In eight referral and teaching hospitals of, Ethiopia a multicentre cross-sectional survey was done among HCW. 88.2% of them had good knowledge and 94.7% of them had a positive attitude towards COVID 19. Chronic medical illness, telecommunication, social media, and television/radio as a source of Information were highly associated with knowledge. But HCWs with chronic medical illness had a negative attitude towards COVID-19 transmission [32].

3. Objective

3.1. General Objectives

- to assess the knowledge, attitude, and practice regarding covid-19 transmission among health care workers who work in the TASH operating theater, Ethiopia

3.2. Specific Objectives

- to assess the knowledge of health care workers who work in the TASH operating theater, Ethiopia regarding COVID-19 transmission based on their socio-demographic data
- to assess the attitude of health care workers who work in the TASH operating theater, Ethiopia regarding COVID-19 transmission based on their socio-demographic data
- to evaluate the practice of health care workers who work in the TASH operating theater, Ethiopia to prevent COVID-19 transmission based on their socio-demographic data

4. Methods and Materials

4.1. Study Setting

This study was conducted in TASH, Ethiopia. TASH is a multi-specialty tertiary care teaching hospital that opened in 1972 and become a university teaching hospital in 1998 via transfer by FMOH. TASH is now the main teaching hospital for the majority of clinical and preclinical training. It is an institution that offers specialized clinical services that are not available in other private or public institutions in Ethiopia**.** The hospital offers diagnosis and treatment for approximately 370-400,000patients a year and has around 800 beds.

TASH has approximately 474 doctors, 854 nurses, and 350 other health professionals dedicated to the provision of health care services. The hospital also has 900 professionals who support hospital activities**.** Furthermore, almost all regional and federal hospitals in Addis Ababa are affiliated with a school of medicine through its clinical services and training sites.

Currently, TASH has 14 functional operating rooms (Endo Urology, Open Urology, Emergency, Gynecology, GI, Pediatrics, Neuro, Cardiothoracic, ENT, Obstetrics 2 table, Orthopedics 3 table) of these, 10 tables are elective and the remaining 4 tables(Emergency, Neuro, One Obstetrics, and One Orthopedics tables) are available 24 hours of the day and two Post Anesthesia Care Unit (PACU) run by nurses. Health professionals currently working at these OR are anesthetist including BSc and MSc (83), nurses and midwives(134), anesthesiology dept (63), ENT(22) , neurosurgery (53),Ob/Gyn(124) , Ortho(92), Pedi(34) ,General surgery (200) , Uro surgery (33) .of these 107 year 1 residents , 97 year 2 residents ,129 year 3 residents ,110 year 4 residents ,27 year 5 residents , 6 fellow ,148 seniors.

4.2. Study Design

A cross-sectional study was conducted in September 2020. This type of study has been chosen due to its ability to analyze data collected from a group of subjects at a specific time frame. It is believed that this represents the best method to achieve the objectives of this study.

4.3. Source Population

- All Health Care Workers at TASH, Ethiopia

4.4. Study Population

- All Health Care Workers at TASH Working at Operating Theater.

4.5. Inclusion Criteria

- Health Care Worker at TASH Working at Operating Theater who present during the study time.

4.6. Exclusion Criteria

- Non-medical professionals such as Porters, Biomedical, Guards, Accountant, Administrative Professionals, Clerical Workers, Drivers, and Medical Waste Handlers
- Health Care Worker like Pharmacists, and who do not present in the study period.

4.7 Sample size

261 Health Care Workers

4.8. Sampling procedure and technique

The sample size was all Health Care Workers Working at Operating Theaters present during the study period. This involved consecutive sampling of Health Care Workers Working at Operating Theaters who met the inclusion criteria. The Sample size was determined by the following formula.

Part I; n = z2 x pq/m2

Part II; n f= n / (1+ n /N)

Where:-

n = required sample size.

tz= confidence level at 95% (standard value of 1.96)

p = prevalence of the characteristic being studied for this study was 69% which was taken from the maximum p values from researches done (maximum p-value from knowledge, attitude, and practice of all researches done regarding COVID-19

q = prevalence of the population without the characteristic being studied (i.e. 1-p)

m = margin of error at 5% (standard value 0.05)

So $n = z^2 \times pq/m^2$

$n = (1.96)^2 x0.69x0.31/(0.05)^2 = 329$

Part II

The population to be studied in the operating theater was less than 10,000 (In our case 841 Health Care Workers are currently working at the operating theater)

Part II of the formula which uses the required sample size got from part I of the formula was applied,

$nf = n/ (1+n/N) = 329/(1+329/841) = 237$

Description:

nf = was the desired sample size when the population studied is less than 10,000.

N= the sample size required if the population would have been less than 10,000(in our case 841)

Therefore: nf = 261 including that of 10% non respondent rate

Therefore: nf = 261 Health Care Workers

Sampling technique - Stratified random sampling was used, there are 83 anesthetists including BSc and MSc, 134 nurses and midwives, 476 residents, 148 seniors

With proportionate calculation (N/841) x261 N= Number of HCW

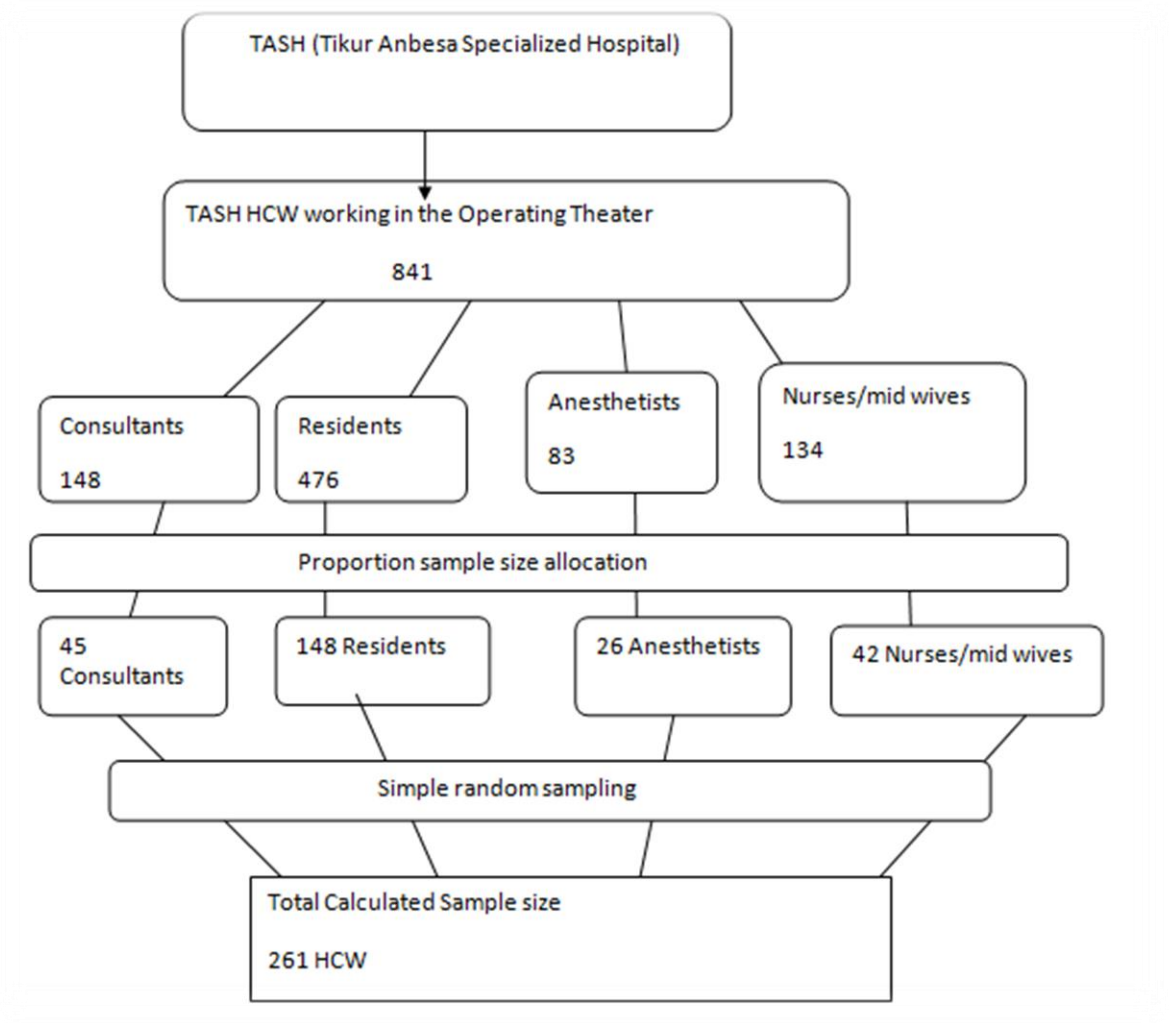

figure-1: flow chart representation of sampling procedure in health care workers working at operating theaters TASH, Addis Ababa, Ethiopia,2020

4.9. Data collection procedures & instrument

Data was collected through a structured questionnaire that was adopted from previous studies.

The data collection instrument was developed in English. To evaluate the understandability and applicability of the instrument a pre-test was done on 5% of Health Care Workers at Operating rooms one week prior to the commencement of the primary data collection. Data were collected by three data collectors who were trained prior to the collection process.

4.10. Study variables'

4.10.1. Independent Variables

- Gender
- Age
- Occupation
- Work experience
- Training
- Number of hours worked per day: the number of hours worked per day variable will be used to determine if the HCW is 'overworked' defined as working greater than 8 hrs per day

4.10.2. Dependent variables

- Knowledge about COVID-19 transmission among HCWs working at operating theater
- Attitude about COVID-19 transmission among HCWs working at operating theater
- Practice towards COVID-19 transmission among HCWs working at operating theater

4.11 Operational Definition

Healthcare workers:-HCWs defined as one who delivers care and service to the sick and ailing either directly or indirectly [33] like health service providers (Doctors, nurses/midwives, laboratory technicians, and pharmacists)[14]; health management and support workers (accountant, administrative professionals, clerical workers, drivers, medical waste handlers and porters) [34]. For the purpose of this study, healthcare professionals in primary contact with Patients in OR were enrolled. These included nurses, midwives, anesthetists, residents, and Specialists

Knowledge: - awareness and understanding of HCWs regarding COVID 19.

Knowledge was assessed using a 14-item questionnaire adapted from previously done researches and modified to suit HCWs, each correct answer weighing one point and 0 for incorrect responses. For multiple response questions proportion of correct to total question number of options were added to give a percentage response out of 14. The questions were about clinical presentations, transmission, prevention, and control of COVID-19. The higher the points, the more knowledgeable the HCW is.

Good Knowledge: - about COVID 19: refers to those study participants who scored point greater than or equal to the mean score of knowledge questions about the COVID 19[25]

Poor knowledge: - about COVID 19: Refers to those study participants who scored point less than the mean score of knowledge questions about the COVID 19[25]

Attitude: - the beliefs, feeling, or opinion of the HCWs about COVID 19.

Attitudes were assessed using a 10-item questionnaire adapted from previously done researches and modified to suit HCWs, each correct answer weighing one point and 0 for incorrect responses. To calculate the mean some questions were reversed to eliminate biases of giving a single similar response in all the items.

Positive attitude: - Refers to those study participants who scored greater than the mean score of attitude [14]

Negative attitude: - Refers to those study participants who scored less than the Mean attitude score which is the average of response on the attitudinal questions [14]

Practice: - refers to the HCWs' actions to COVID 19 while they are treating the patient.

The practice was assessed with nine standard practice questions recommended by most researchers and guidelines were used to assess practice. Each correct response for one best answer questions having a weight of one and incorrect weighing zero; and for multiple response questions proportion of correct to total question number of options were added to give percentage response out of 9. HCWS with higher points have good practices.

Good Practice: - Refers to those study participants who respond to practice questions and score above the mean value [25]

Poor Practice: - Refers to those study participants who respond to practice questions and score mean value and below mean value [25]

4.12. Data Processing and Analysis

Each questionnaire was checked for completeness, missed value. Data were cross-checked for consistency and accuracy. The collected data was entered and analyzed by using SPSS 26 by the investigator. Bivariate and multivariable logistic regression analyses were used to identify variables associated with Knowledge, Attitude and practice towards COVID-19. Variables with p-value < 0.05 were taken as significantly associated with the dependent variable.

4.13. Ethical Consideration

The proposal was reviewed and approved by the research and ethics committee of the Department of Anesthesiology, Critical Care, and Pain Medicine AAU. The nature and purpose of the study were explained to the participant. The data collection instrument does not include names, addresses, or any other identifying information about the study participant. As part of the consent, process participants had the option of declining to participate for any reason and without repercussions.

4.14. Dissemination and Utilization of Results

The final result of the research will be submitted to AAU. Furthermore, the finding will be presented at appropriate seminars, conferences, and workshops. Publication in a scientific journal will also be considered

5. Result

A total of 261 health care workers who work at the operation room of TASH had participated in the study with a 100% response rate. Both Bivariate and multivariable logistic regression analyses were used to assess the effect of dependent variables on knowledge, practice and attitude towards COVID-19 transmission.

Socio-Demographic Variables and other characters

The majority of the respondents were male (69.7%) with the median age of respondents 30 (range 23-63) years with 91.5 % of them being below 40 years. Hundred ninety three (73.9%) of the respondents were medical doctors and 148 (56.7 %) were residents. (See table 1).

The main sources of information regarding COVID-19 include official sites (national & international), social media like Facebook, television/radio, and information from colleagues. Official sites were the main sources of information in 186 (71.3 %) of respondents and the majority (75.1 %) of respondents did not take any form of infection prevention training pertaining to COVID-19. (See table 2 and fig 2 below)

Table 1 Socio-demographic Characteristics in health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261)

Variable		**n(frequency)**	**%**
Sex	M	182	69.7%
	F	79	30.3%
Age	< 30	127	48.7%
	_>30	134	51.3 %
Qualification	Consultant	45	17.2%
	Resident	148	56.7%
	Anesthetist (BSC/MSC)	26	10%
	Nurses/Midwives	42	16.1%
Work experience	<5 years	150	57.47%
	5-10 years	74	28.35%
	>10years	37	14.18%
Overworked status	< 8 hours	27	10.3%
	8-16 hours	186	71.3%
	>16 hours	48	18.4%

Table 2 IP training status and source of COVID-19 information among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261

		Yes	**No**
IP training status		65 (24.9%)	196 (75.1%)
Source of information	Official National and international sites(FMOH,WHO &CDC)	186 (71.3 %)	75 (28.7 %)
	Social media (Face book and others)	165 (63.2 %)	96 (36.8 %)
	Newspapers and written media	51(19.5 %)	210 (80.5 %)
	Television and radio	170 (65.1 %)	91 (34.9 %)
	Colleagues	95 (36.4%)	166 (63.6 %)
	Academic trainings	56 (21.5%)	205 (78.5 %)

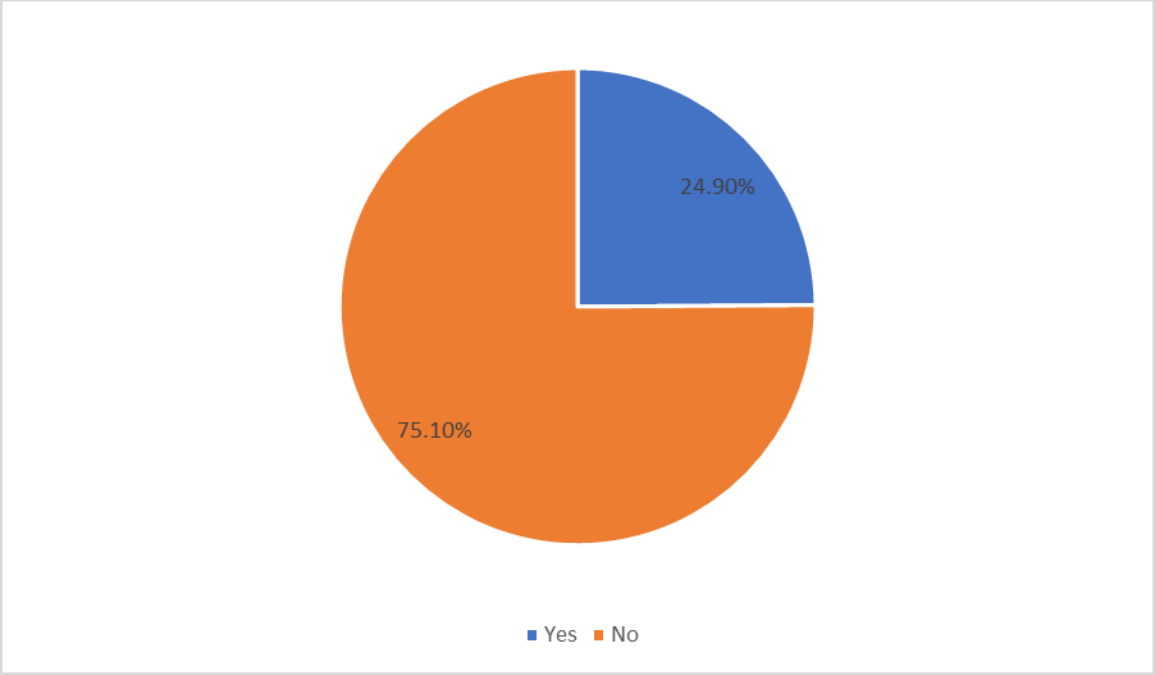

Fig. 2 Status of (in percentage) infection prevention training on COVID-19 among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261)

Knowledge

The mean knowledge score was 81.11 %(i.e. 11.3554 out of 14 with SD=1.52). Hundred thirty eight (52.9 %) of the total respondents had scores above the total mean. only four respondents scored below 50%. In this study occupation was the only independent variable significantly affecting knowledge with consultants (aOR = 8.944(3.126-25.590) 95% CI p=0.00), residents (aOR= 5.155(2.004-13.264) 95 % CI p= 0.001) and anesthetists (aOR = 4.606(1.435-14.788) 95 % CI p= 0.01) had good knowledge. Thirty five (83.3%) of nurses had poor knowledge scores. Male gender, work experience less than 5 years, workload less than 8 hrs and training were associated with higher mean knowledge score with no statistical significance with (aOR 1.708(0.937-3.114) p = 0.08, aOR 1.237(0.455-3.363)p=0.676, aOR 2.057(0.688-6.155) p=0.197) , aOR 0.758(0.404-1.425)P=0.39 respectively. (See table 3 below)

Table 3 Knowledge score according to socio-demographic characteristics and training among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261)

Variables		Mean knowledge score percentage	Proportion with good knowledge	Proportion with poor knowledge	aOR(range)	P value for 95%
occupation	Consultant	84.08%	30 (66.7%)	15 (33.3%)	8.944(3.126-25.590)	0.00
	Resident	83.22%	87 (58.8%)	61 (41.2%)	5.155(2.004-13.264)	0.001
	Anesthetist	80.75%	14 (53.8%)	12 (46.2%)	4.606(1.435-14.788)	0.01
	Nurse/midwife	70.75%	7 (16.7%)	35 (83.3%)	1	
Gender	M	82.59%	105 (57.7%)	77 (42.3%)	1.708(0.937-3.114)	0.08
	F	77.63%	33 (41.8%)	46 (58.2%)	1	
Age category	_>30	80.55%	67 (50%)	67 (50%)	1	
	< 30	81.69 %	71 (55.9%)	56 (44.1%)	1.112(0.594-2.082)	0.74
Work experience	<5 years	82.31 %	87 (58.0%)	63 (42.0%)	1.237(0.455- 3.363)	0.676
	5-10 years	79.77 %	34 (45.9%)	40 (54.1%)	0.907(0.346- 2.380)	0.843
	>10years	78.84 %	17 (45.9%)	20 (54.1%)	1	
Overworked status	< 8 hours	83.07%	19 (70.4%)	8 (29.6%)	2.057(0.688- 6.155)	0.197
	8-16 hours	80.67%	93 (50%)	93 (50%)	0.898(0.450- 1.791)	0.760
	. >16 hours	81.68%	26 (54.2%)	22 (45.8%)	1	
Training status	Yes	82.07 %	38(58.5%)	27(41.5%)	1	
	No	80.78 %	100(51%)	96(49%)	0.758(0.404-1.425)	0.39

Attitude

The mean attitude score was 68 %(i.e. 6.8 out of 10 with SD=1.32) and 171 (65.5%) of the respondents had an overall positive attitude. Compared to nurses, consultants and anesthetists had a statistically significant positive attitude with (aOR = 2.590(1.019-6.586) 95% CI p=0.046), (aOR = 4.346(1.292-14.621) 95% CI p=0.018) respectively. The other socio-demographic factors, training, knowledge, and practice had no significant impact on the attitude of the study participants.

With regard to getting infected or infecting a family member most (70.9 %) of the study participants constantly (often to always) worry. Around ninety-two percent of the respondents believed that hand washing and wearing masks was important to prevent transmission of the coronavirus. Most (87%) of the

respondents were not confident in the readiness of the hospital to handle the COVID-19 crisis and the availability of PPE. Most (80.1%) had a positive attitude towards a possible vaccine and willing to take it if available. (See table 4 below)

Table 4 Attitude score according to socio-demographic characteristics and training among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261)

Variables		**Mean Total attitude score**	**The proportion witha positive attitude**	**Proportion with negative**	**aOR(range)**	**P-value**
Qualification	Consultant	7.0667	31 (68.9%)	14 (31.1%)	2.590(1.019-6.586)	0.046
	Resident	6.7973	97 (65.5%)	51 (34.5%)	1.698(0.761-3.788	0.196
	Anesthetist	7.2692	21 (80.8%)	5 (19.2%)	4.346(1.292-14.621	0.018
	Nurse/midwife	6.3333	22 (52.4%)	20 (47.6%)	1	
Gender	M	6.8352	120 (65.9%)	62 (34.1%)	0.943(0.515-1.726	0.849
	F	6.7722	51 (64.6%)	28 (35.4%)	1	
Age category	_>30	6.8582	87 (64.9%)	47 (35.1%)	1	
	< 30	6.7717	84 (66.1%)	43 (33.9%)	0.965(0.510-1.827)	0.913
Work experience	<5 years	6.7600	99 (66.0%)	51 (34.0%)	1.809(0.686- 4.770)	0.231
	5-10 years	6.9189	51 (68.9%)	23 (31.1%)	2.185(0.862-5.535)	0.099
	>10years	6.8378	21 (56.8%)	16 (43.2%)	1	
Overworked status	< 8 hours	6.4815	13 (48.1%)	14 (51.9%)	0.433(0.158-1.192)	0.105
	8-16 hours	6.9032	128 (68.8%)	58 (31.2%)	1.227(0.615-2.449)	0.561
	>16 hours	6.6667	30 (62.5%)	18 (37.5%)	1	
Training status	Yes	6.7077	43 (66.2%)	22 (33.8%)	1	
	No	6.8520	128 (65.3%)	68 (34.7%)	1.198(0.635-2.261)	0.577

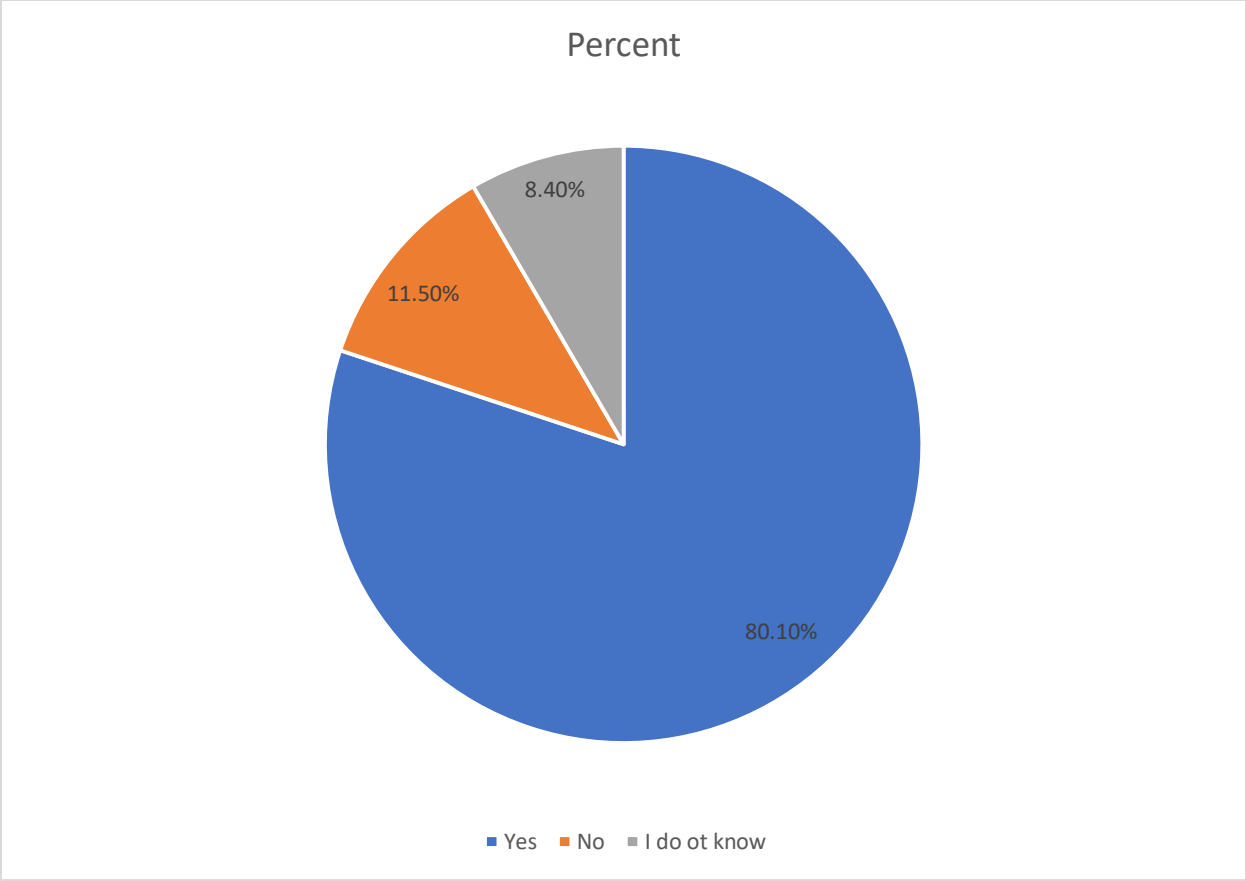

Fig- 3 proportion of respondents whether they will take COVID-19 vaccine if available among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261).

Practice

The total mean practice score was 45.36% (i.e. 4.08 out of 9 SD= 1.6); with no statistically significant heterogeneity across socio-demographic, IP training status, knowledge, and practice. Most 143 (54.8 %) of the respondents scored below the mean (45.36 %) and 164 (62.8%) of the study participants had a percentage practice score below 50%. Two-hundred-five (78.5 %) of respondents didn't practice the N-95 fitting test before they use it, and only 83 (31.8%) HCWs practiced a social distance at the workplace. Practice scores bear no relation with knowledge or attitude (See table 5 below)

Table 5 practice score according to socio-demographic characteristics and training among health care workers working at operating theaters TASH, Addis Ababa, Ethiopia, 2020(N=261)

Variables		Mean practice score & percentage	Proportion with good practice	Proportion with poor practice	aOR(range)	P value
Qualification	Consultant	51.25%	22 (48.9%)	23 (51.1%)	1.423(0.586-3.455)	0.436
	Resident	43.10 %	49 (33.1%)	99 (66.9%)	0.594(0.270-1.307)	0.195
	Anesthetist	43.73%	9 (34.6%)	17 (65.4%)	0.612(0.216-1.734)	0.356
	Nurse/midwife	47.90%	17 (40.5%)	25 (59.5%)	1	
Gender	M	44.74%	65 (35.7%)	117 (64.3%)	1.023(0.578-1.811)	0.937
	F	46.83%	32 (40.5%)	47 (59.5%)	1	
Age category	_> 30	46.22%	49 (36.6%)	85 (63.4%)	1	
	< 30	44.46 %	48 (37.8%)	79 (62.2%	1.248(0.680-2.292)	0.474
Work experience	<5 years	45.51%	58 (38.7%)	92 (61.3%)	1.088(0.434-2.726)	0.858
	5-10 years	41.92 %	22 (29.7%)	52 (70.3%)	0.645(0.269-1.548)	0.327
	>10years	51.73%	17 (45.9%)	20 (54.1%)	1	
Overworked status	< 8 hours	40.27%	8 (29.6%)	19 (70.4%)	0.686(0.243-1.937)	0.477
	8-16 hours	46.22 %	71 (38.2%)	115 (61.8%)	1.253(0.644-2.439)	0.507
	. >16 hours	44.92	18 (37.5%)	30 (62.5%)	1	
Training status	Yes	47.21 %	28 (43.1%)	37 (56.9%)	1	
	No	44.74 %	69 (35.2%)	127 (64.8%)	0.884(0.486-1.606	0.685

6. Discussion

Ethiopia is a highly populated country in Africa and Ethiopian authorities were doing many things to prevent COVID-19 spread like declaring a state of emergency, establishing COVID -19 response task force, mobilization of manpower and PPE, a daily update of conditions through a different source of information [31]. HCWS are responsible for managing pt with COVID -19so they are highly exposed to this pandemic [31].

In this study, the mean knowledge score was 81.1% indicating good knowledge among HCWs working at Operating Theater. This score is similar to the report in Uganda (82.4%) [14].this could be due to similarity in the age distribution (median was 30 vs 32 years), gender (majority were male) and occupation (most were medical doctors). The mean knowledge score decreases with increasing age, but the age category did not reach statistical significance unlike the study done in Uganda, UAE, and Pakistan [14, 24, 26]. Hundred-twenty-three (47.1%) of the respondents had an overall knowledge score below the total mean (poor knowledge score) which was lower than a study from UAE [24] (61% poor knowledge rate) but higher than a study done in Pakistan, where 93.2% of respondents had good knowledge [26]. unlike the study from Pakistan age and experience did not affect knowledge scores while occupation did. The proportion (52.9 %) of good knowledge was lower than from studies done in North and South Ethiopia, Henan China and Uganda with 74 %, 88 %, 89% and 69% good knowledge score respectively[14,23,31,32]. The possible knowledge difference might be due to some differences in the questionnaire, setup, source of information, and training.

Official sites are the main sources of information (71.3 %) followed by social media while social media is the main source of information in a study done in UAE and Asia [24-26]. The majority (75.1 %) of respondents did not take any form of infection prevention training pertaining to COVID-19.

In this study, the mean attitude score was 68 % and this mean score was the same with a study done in Uganda[14] which was 68 %(3.4 out of 5) and this could be due to socio-demographic similarity(age, gender, and occupation) and study setting (both conducted in referral and teaching hospitals). But 65.5% of the respondents have overall positive attitudes compared with Uganda [14] which was 21%. With regard to nurses, consultants and anesthetists have a statistically significant positive attitude with (aOR = 2.590(1.019-6.586) 95% CI p=0.046), (aOR = 4.346(1.292-14.621) 95% CI p=0.018) respectively.

Similarly, a study done in Asia occupation has a statistically significant correlation with attitude [25]. The other socio-demographic factors, training, knowledge, and practice had no significant impact on the attitude of the study participants but in a study done in Nepal, both good knowledge and good practice were associated with positive attitude [29].

Around ninety-two percent of the respondents believe that hand washing and wearing masks is important to prevent transmission of the coronavirus. This was higher than a report from Pakistan [27] and similar to a study in north Ethiopia [31]. Most (87%) of the respondents were not confident about the readiness of the hospital to handle the COVID-19 crisis and this was much higher than a study done in Uganda [14] and availability of PPE.

The total mean practice score is 45.36% (i.e. 4.08 out of 9 SD= 1.6); with no statistically significant heterogeneity across socio-demographic, IP training status, knowledge, and practice. Most (54.8 %) of the respondents scoring below the mean (45.36 %) and 62.8% of the study participants had a percentage practice score below 50%. This proportion of poor practice is worse than studies from Uganda, Pakistan, south Ethiopia and Nepal with 74%, 88.7%, 67% and 83.5% good practice respectively [14,26,32,29].difference in study areas (operating theater vs other), poor preparedness of the hospital and lack of PPE may had an impact on poor practice in our set up. Practice scores bear no relation with knowledge or attitude but in Uganda [14] age >40 and having a diploma, and in Nepal [29] occupation and attitude were significantly associated with the practice.

7. Strength and limitation of the study

Strength:

The response rate was very good (100%) and this study was a prospective study in nature which makes it reliable. Data were collected at an appropriate time and respondents were given enough time (can take home and fill when they are free if they were busy). The questionnaire was developed from a similar previous study and was tailored to our setup.

Limitation:

The pandemic is new and there are no adequate researches done locally and abroad to compare these study findings with others that make the discussion shallow. Open-ended questions were not included to reduce information bias. This study is a cross-sectional study and some participants were filling the questionnaire at home, this may be subject to recall Bias.

8. Conclusion and Recommendation

Conclusion:

In this study, around half of HCWs had good knowledge and two-third of HCWs have a positive attitude score towards COVID-19 transmission. The total mean practice score and those who scored above the mean were both below 50% which shows having poor practice. The occupation was the only independent variable with a significant association with knowledge and attitude. Most (87%) of the respondents were not confident in the readiness of the hospital to handle the COVID-19 crisis and the availability of PPE.

Recommendation:

Maintaining the wellbeing of the health care workforce is essential in the middle of a pandemic. To give good care to patients health workers should stay healthy themselves. In this study, all knowledge, attitude, and practice were seen to be low. The researcher recommends continuous training and awareness creation to health care workers with the involvement of PPE focal person at OR and hospital administrators to check adherence to protocols of infection prevention practices and mobilization of resource to high-risk areas.

9. Reference

1. Sohrabi C., Alsafib Z., O'Neill N., Khan M., Kerwanc A., Al-Jabirc A., Iosifidisa C., Aghad R. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19), International Journal of Surgery 76 (2020). 71–76.
2. H. Lu, C.W. Stratton, Y. Tang, Outbreak of pneumonia of unknown etiology in Wuhan China: the mystery and the miracle, J. Med. Virol. (2020) 25678.
3. World Health Organization, WHO Director-General's Remarks at the Media Briefing on 2019-nCoV on 11 February 2020, (2020) https://www.who.int/dg/speeches/ detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncov-on-11-february-2020.
4. World Health Organization, Novel Coronavirus (2019-nCoV), Situation Report – 12 (2020).
5. N. Chen, M. Zhou, X. Dong, et al., Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study, Lancet (2020), https://doi.org/10.1016/S0140-6736(20)30211-7.
6. D. Wang, B. Hu, C. Hu, et al., Clinical characteristics of 138 hospitalized patients with 2019 novel corona virus-infected pneumonia in Wuhan, China, J. Am. Med. Assoc. (2020), https://doi.org/10.1001/jama.2020.1585.
7. Centers for Disease Control and Prevention, 2019 Novel Coronavirus, (2020). https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html.
8. C. Rothe, M. Schunk, P. Sothmann, et al., Transmission of 2019-nCoV infection from an asymptomatic contact in Germany, N. Engl. J. Med. (2020) NEJMc2001468. Epub ahead of print.
9. Q. Li, X. Guan, P. Wu, et al., Early transmission dynamics in Wuhan, China, of novel corona virus-infected pneumonia, N. Engl. J. Med. (2020) NEJMoa2001316. Epub ahead of print.
10. John Hopkins University. Coronavirus COVID-19 Global Cases by the Center for Systems Science and Engineering (CSSE). (2020).
11. World meter. COVID-19 Coronavirus Pandemic. Dover, Delaware: Worldometers.info. (2020). (accessed May 16, 2020).
12. GAN WH, LIM JW, KOH D. Preventing intra-hospital infection and transmission of COVID-19 in healthcare workers. Saf Health Work 2020.
13. Nemati M, Ebrahimi B, Nemati F. Assessment of Iranian Nurses' Knowledge and Anxiety Toward COVID-19 During the Current Outbreak in Iran. Arch Clin Infect Dis 2020.
14. Olum R, Chekwech G, Wekha G, Nassozi DR, Bongomin F. Coronavirus Disease-2019: Knowledge, Attitude, and Practices of Health Care Workers at Makerere University Teaching Hospitals, Uganda. Frontiers in Public Health. 2020; 8:181. https://doi.org/10.3389/fpubh.2020.00181 PMID: 32426320
15. World Health Organization. Coronavirus Disease (COVID-19) Outbreak: Rights, Roles, and Responsibilities of Health Workers, Including Key Considerations for Occupational Safety and Health. (2020).
16. Medscape. In Memoriam: Healthcare Workers Who Have Died of COVID-19. (2020).

17. World Health Organization. Coronavirus disease (COVID-19) Pandemic, Available at https://www.who.int/emergencies/diseases/novel-coronavirus-2019
18. A.R. Fehr, S. Perlman, Coronaviruses: an Overview of Their Replication and Pathogenesis, (2015), pp. 1–23.
19. N. Zhu, D. Zhang, W. Wang, et al., A novel coronavirus from patients with pneumonia in China, 2019, N. Engl. J. Med. (2020) NEJMoa2001017.
20. Wu Z. and McGoogan J. M., Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72314 Cases From the Chinese Center for Disease Control and Prevention. JAMA, 2020.
21. McEachan R, Taylor N, Harrison R, Lawton R, Gardner 2, Conner M.., Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors. Ann Behav Med, 2016. 50(4): 592-612.
22. Forrester D J., Nassar K A., Maggio M P., Hawn T M., Precautions for Operating Room Team Members, during the COVID -19 Pandemic.2020
23. Zhou M, Tang F, Wang Y, Nie H, Zhang L, You G, Zhang M, Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan, China, Journal of Hospital Infection, https://doi.org/10.1016/j.jhin.2020.04.012.
24. Bhagavathula S A, Aldhaleei A W, Rahmani J, Mahabadi A M, Bandari K D.Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey of Healthcare Workers. https://doi.org/10.1101/2020.03.09.20033381.
25. Giao N ., Han N T., Khanh V T., Ngan K V., Tam V, Le An P. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pacific Journal of Tropical Medicine 2020; 13
26. Gulzar A., Naz S., Ahmed Z., Tahir H A., Mashhood M., Knowledge, Attitude, and Practice among Healthcare Professionals regarding COVID-19: A cross-sectional survey from Pakistan. https://doi.org/10.1101/2020.04.13.20063198.
27. Kumar J, Katto M, Siddiqui A, et al. (April 20, 2020) Knowledge, Attitude, and Practices of Healthcare Workers Regarding the Use of Face Mask to Limit the Spread of the New Coronavirus Disease (COVID-19). Cureus 12(4): e7737. DOI 10.7759/cureus.7737
28. Shehzad SM., Shah JS, Khan U M., Uhammad Wais Sultan A M, Khan H, Javed A, Haider M S.AWARENESS AMONG PHYSICIANS AND MEDICAL STUDENTS OF PAKISTAN REGARDING COVID-19(2020): DOI: 10.13140/RG.2.2.28186.18886
29. Sapkota K, Adhikari K, Paudel P, Adhikari B, Paudyal N, Sapkota K. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Chit wan, Nepal (2020).
30. Chen Y., Jin YL., Zhu LJ., Fang ZM., Wu N ., Du MX., Jiang MM., Wang J., Yao YS.the network investigation of knowledge, attitude, and practice about novel coronavirus pneumonia of residents in Anhui province.DOI:10.3760/ccma.j.issn.02539624.2020.0004
31. Kassie BA, Adane A, Tilahun YT, Kassahun EA, Ayele AS, Belew AK(2020) Knowledge and attitude towards COVID-19 and associated factors among health care providers in Northwest Ethiopia. PLoS ONE 15(8):e0238415

32. Jemal B, Ferede ZA, Mola S, Hailu S, Abay S, Welde GD, Tilahun A, Tesfaye B, Knowledge, attitude and practice of healthcare workers towards COVID-19 and its prevention in Ethiopia: a multicenter study. (2020)

33. Joseph B., Joseph M., The health of the healthcare workers. Indian J Occup Environ Med .2016; 20(2):71-72.
34. Center for disease control and prevention .recommended vaccine information for adults. (2020).

10. ANNEX

ANNEX: Consent

ADDIS ABABA UNIVERSITY SCHOOL OF MEDICINE

DEPARTMENT OF ANESTHESIOLOGY, CRITICAL CARE AND PAIN MEDICINE

Informed Consent Form for Qualitative survey questionnaires:

Date_____ Code number of the checklist----------

Hello!

My name is ---------- We are a research team member of AAU, Department of anesthesiology, critical care, and pain medicine. Today we are here to collect data on the assessment of the knowledge, attitude, and practice regarding covid-19 among health care workers at TASH operating theater which will be done by Tsegay Gesesew who is a member of anesthesiology, critical care, and pain medicine resident.

The objective of this questionnaire is to assess the knowledge, attitude, and practice regarding covid-19 among health care workers at TASH operating theater. We would like to assure you that the study is confidential. We will not keep a record of your name and address. You have a right to skip any question that you do not want to answer. Your correct answer can make the study to achieve the goals. Therefore, you are kindly requested to respond genuinely and voluntarily with patience. The questions may take about 10-15 minutes.

Do you have any questions?

Are you willing to participate in the interview?

If Yes, Go to the next page

If No, Thank

Signature of the consenting interviewer----------

A. Questionnaires responded

1. Completed
2. Partially completed
3. The interviewee refused
4. Others----------

Data collector's Name: 1. --------Signature ---- 2. ---------- Signature ----

Supervisor's name---------- Signature ----------

ContactIf you have a question at any time about the study, you may contact Tsegay at tsegay6444@gmail.com or via phone at +251931587734

I.Demographic variables

Questioner ID ————

1. Gender Male —— Female ——

2. Age in years ————

3. Occupation

Consultant ————————

Resident ————————

Anesthetist (BSC/MSC) ————————

Nurses/Midwives ————————

4. Work experience A. <5 years B. 5-10 years C. >10years

5. Overworked status (average in a day) A, < 8 hours B. 8-16 hours C. >16 hours

6. Have you received any training on infection prevention related to COVID-19? □ Yes □ No

II.Knowledge **(Tick the answers – multiple tick marks allowed where suitable)**

7. What is/are the source of infection of COVID − 19?

□ infected person □ Animals/Birds □ Both of them □ I don't know

8. What are the possible modes of transmission of COVID-19?

□ Droplets during coughing, sneezing from an infected person

□ Close contact with an infected person

□ touching contaminated surfaces

□ airborne transmission

□Consuming meat products □ I don't know

9. Do you know in which group the disease is found to be more severe?

□ Neonates and children

□ Young and middle-aged adults

□ Elderlies

□ Patients with underlying chronic diseases □ I don't know

10. What is the incubation period of COVID- 19 believed to be?

□ Less than 7 days □ About 14 days □ About 21 days □ I don't know

11. Which of the following complications do you think COVID-19 could cause?

□ acute kidney injury □ acute respiratory distress syndrome □ myocarditis

□ multiple organ failure □ death □ I don't know

12. Do you think asymptomatic carriers in a subclinical stage can spread the disease? □ Yes □ No

13. Do you think mild cases of COVID-19 that improve in a few days on their own; need to be isolated?

□ Yes □ No □ I don't know

14. Are there antiviral treatment /vaccines for COVID − 19? □Yes □ No □ I don't know

15. Do you think COVID-19 cases can be treated at home? □ Yes □ No □ I don't know

16. Do you think antibiotics are a treatment of choice for COVID- 19? □ Yes □ No □ I don't know

17. the most common clinical symptoms of COVID-19 is/are

A. Fever, Cough, and tiredness

B. Headache, Myalgia (muscle pain), and Smell disturbance

C. Sore throat, Runny nose, and Sneezing

D. Diarrhoea, Confusion, and skin rash

E. I don't know

18. Which of the following tests should be done for diagnosing COVID − 19 infections?

□ Real-time PCR with respiratory material (Oro/nasopharyngeal swab, tracheal or BAL)

□ Real-time PCR with a serum sample

□ I don't know

19. Which of the following procedures are most aerosol-generating (circle only one)

A. Nebulizer administration, high flow oxygen delivery, tracheotomy, and flexible laryngoscopy

B. Open suction of airway secretion, sputum induction, CPR, intubation, and bronchoscopy

C. Nasal suction, metered-dose inhaler, oral and nasal swab

D. I don't know

20. For how long can you wear surgical mask A. 4 hr B. 8 hrs C. 24 hrs D. I don't know

III. Attitude **(Tick the answer – multiple tick marks allowed where suitable)**

21. How often do you worry about getting COVID-19? Never Rarely Sometimes Often Always

22. Do you worry that you might infect your family members?

Never Rarely sometimes often Always

23. May your daily life been affected by the COVID-19 pandemic?

Strongly Agree Agree Disagree Strongly Disagree

24. Frequent handwashing with soap and water and practicing respiratory etiquette would protect you from the virus? Strongly Agree Agree Disagree Strongly Disagree

25. wearing a mask helps protect you from the virus?

Strongly Agree Agree Disagree Strongly Disagree

26. wearing a mask helps protect others around you from the virus?

. Strongly Agree Agree Disagree Strongly Disagree

27. If a vaccine for COVID-19 becomes available you plan to take it? □ Yes □ No □ I don't know

28. Do you follow the news regarding COVID − 19 regularly? □ Daily □ Sometimes □ Never

29. Which of the following sources have you used for COVID − 19 information?

□ Official National and international sites

□ Social media (Face book and others)

□ Newspapers and written media

□Television and radio

□ Colleagues

□ Academic training

□ None of the above

30. I feel confident my institution is sufficiently organized to manage the COVID 19 outbreak?

Strongly Agree Agree Disagree Strongly Disagree

31. I feel confident that current medical supplies and PPE are sufficient for the possible COVID-19 outbreak in my country?

Strongly Agree Agree Disagree Strongly Disagree

IV. Practice (Tick the answer – multiple tick marks allowed where suitable)

32. How often do you cover your mouth and nose with elbow or tissue or handkerchief during coughing and sneezing?

Never Rarely Sometimes Often Always

33. How often do you wash your hands or use alcohol-based sanitizer?

□ Only when I feel it's dirty like I have always been doing

□ When I feel I have touched contaminated surface and objects

□ after touching or shaking hands with others

□ At least every hour

34. Which of the following have you been practicing to prevent transmission of COVID-19 infection in your setup?

□ Frequent hand washing and use of alcohol-based sanitizers

□ eating well-cooked foods

□ putting masks on suspected COVID 19 patients

□ Protective clothing and masks to health staff

□ Routine disinfection of surfaces that comes in contact with suspected COVID-19 cases

□ placing suspected patients inadequately ventilated single rooms

□ avoiding unnecessary moving of patients

35. Do you dispose of your mask when it becomes moist or after 8 hours of work? □ Yes □ No

36. Do you practice fitting test before you use your N-95? □ Yes □ No

37. If you have flu-like symptoms, do you avoid normal activities? □Yes □ No

38. Do you notify a suspected COVID − 19 case to authority? □ Yes □ No

39. Are you practicing social distancing of at least 1 meter at your workplace? □ Yes □ No

40. Have you been following a protocol for triage and isolation of suspected COVID-19 cases in your workplace? □Yes □ No □ I don't know