

ASSESSMENT OF OPERATION THEATRE STAFF KNOWLEDGE, ATTITUDE, AND PRACTICES REGARDING THE PREPARATION OF COVID-19 POSITIVE PATIENTS FOR SURGICAL PROCEDURE: A CROSS-SECTIONAL SURVEY

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Abstract *Since its discovery in December 2019, coronavirus disease-2019 (COVID-19) has become an increasingly serious global health concern due to its sharp rise in cases and fatalities. Since occupational therapy staff members are the initial line of defence against the COVID-19 epidemic, having sufficient knowledge, practise, and attitudes (KPA) about the disease may improve their capacity to prevent self-infection, lower mortality, and deliver quality medical care during the pandemic. This study aimed to evaluate the OT staff at RMI's KPA toward COVID-19. This cross-sectional research was conducted at Rehman Medical Institute Peshawar using a questionnaire survey completed by OT staff members at various OTs. The research team physically distributed questionnaires. This 21-item survey is divided into four main sections to evaluate the respondents' demographics, practises, and attitudes regarding COVID-19. In all, 178 people took part in the research. Most were women. Males made up 51% (n = 90) and 49% (n = 88). To establish the overall score, we computed the average of all correct answers given by participants to the knowledge section questions. 92 (51.6%) participants had a solid knowledge of COVID-19 symptoms and high-risk patients, while the remaining 86 (48.4%) had a rudimentary understanding of the disease. Similarly, 149 participants (83.7%) reported good practises, and 29 (16.3%) reported poor practises. 92 (51.6%) participants had a solid knowledge of COVID-19 symptoms and high-risk patients, while the remaining 86 (48.4%) had a rudimentary understanding of the disease. Furthermore, after being in contact with the patient and colleagues, some of them became concerned about returning home and infecting their family members. According to the findings, 111 (62.3%) of the participants had a positive attitude toward COVID-19 positive patients, while the remaining 67 (37.7%) had a negative attitude. As the worldwide COVID-19 danger develops, OT Staff from Rehman Medical Institute Peshawar exhibits acceptable KAP regarding COVID-19. There was a considerable gap in OT Staff expertise and attitude. During this epidemic, institution policymakers and OT staff should continue ongoing education, training, and follow-up updates.*

Keywords: COVID-19, Operation theatre staff, Surgical procedure, Knowledge Attitude Practice

Introduction

Coronavirus is a large virus family that produces symptoms ranging from a simple cold to more serious illnesses like cancer (MERS-CoV) MERS and SARS-CoV are two Middle Eastern illnesses that cause damage to people (Galuska et al., 2002). So far, three types of potentially dangerous coronaviruses have been identified: SARS-CoV, MERS-CoV, and SARS-CoV-2. SARS-CoV-2 is an unidentified Beta coronavirus (Yang et al., 2020). Coronaviruses are transmitted from animals to humans (3). The COVID-19 virus can be transmitted in four ways: 1) Transmission of droplets 2) Transmission of contact 3) Airborne transmission 4) Oral faeces transfer (Huang et al., 2020). SARS-

CoV-2 is a highly contagious virus that may persist in the air for up to two hours. After infection, SARS-CoV-2 incubates for 4-8 days. SARS-CoV-2 can infect persons of any age. However, older people with comorbidities are more vulnerable (Hamid et al., 2023; Li et al., 2020; Rajgor et al., 2020; Ullah et al., 2023b). When seen under an electron microscope, coronaviruses appear to have features similar to crowns (Unchwaniwala and Ahlquist, 2020). They comprise positive-stranded RNA and an outer envelope (Rabaan et al., 2020). Coronaviruses have the biggest RNA genomes (27 to 32 kb). The host cell provides the glycoprotein spikes on the viral



envelope. The nucleocapsid shields the viral DNA (Beniac et al., 2006). SARS-CoV-2 Causes COVID-19. WHO was notified of the first case of pneumonia with an unknown etiology reported in Wuhan, Hubei Province, China on December 31, 2019, and the emergence of further cases (Singhal, 2020). About 96,000 cases of coronavirus infection were reported in Wuhan, China, in 2019, and 3300 confirmed deaths occurred until March 2020 (Marton, 2022). From China, COVID-19 spread to Thailand; on January 13, 2020, the first case was discovered (Twinamasiko et al., 2021). Since then, it has spread to more than 200 nations, and on March 11, 2020, the World Health Organization proclaimed it a pandemic (Malik et al., 2020). It has killed over a million people and infected over 57 million people globally as of November 24, 2020 (Hayat et al., 2020). The population of Pakistan is 197.5 million. Its four provinces are Sindh, Punjab, Khyber Pakhtunkhwa (KPK), and Baluchistan. The first confirmed case of COVID-19 in Pakistan was reported on February 26, 2020, and originated in Iran (Abid et al., 2020). As of April 22, 2020, the Province of Punjab had 4,328 cases of COVID-19, indicating a severe outbreak. Among the government's novel techniques were isolation wards, social segregation, quarantine facilities, diagnostic labs, and partial social lockdowns. The numbers are rising by the minute despite these efforts (COVID). COVID-19 is becoming more common all over the world. COVID-19 risk exposure is common among healthcare professionals (including doctors and OT staff) and hospital non-COVID patients (Milambo et al., 2023). As a result, it is necessary to assess the KAP status of OT staff to prepare COVID-19 Positive Patients for Surgical Procedures. As more information and evidence about this disease becomes available, OT personnel must update their knowledge of effective COVID-19 prevention measures. For improved prevention, control, and management of emerging disorders like COVID-19, OT staff and other HCWs must be updated on the most recent research. This study aims to evaluate the knowledge, attitude, and behavior of OT professionals in the context of preparing COVID-19 positive patients for surgical operations.

Methodology

Design of the study

A descriptive cross-sectional study design was chosen.

Setting for research

The study was conducted at Rehman Medical Institute in Peshawar, Pakistan, focusing on the Department of Surgery. The three-month duration included a literature review, data collection, data entry and analysis, and thesis writing.

The study includes those willingly involved staff in surgical procedures, while exclusion criteria include those not actively involved or unwilling to participate.

Study population

The study's Target population was participants at the Operation Theater staff department of Rehman Medical Institute.

We computed 178 sample sizes using a non-probability sequential convenient sampling strategy based on a literature survey. The average sample size was divided by the number of articles and determined using a WHO sample size calculator with a 95% confidence interval and a 5% margin of error.

Ethical consideration

Institution consent was taken from OT Manager, RMI. Data was intended to be kept secret and strictly for educational purposes. Under the supervision of the supervisor, a Performa was constructed and approved for research. Informed consent was taken from all subjects on that Performa.

Data analysis

Percentage and distribution were calculated. Data was presented as graphs and charts analyzed using a social package for statistical software (SPSS Version 26).

Results

Data was entered on the social package for statistical software (SPSS) version 26. Variables were coded in a short form for ease of analysis. For gender, Male was encoded as "M" and female as "F".

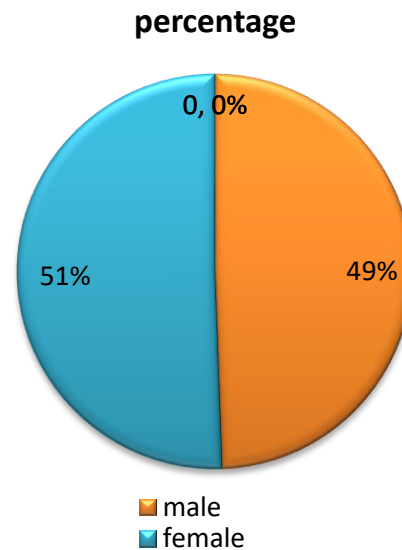


Figure 3.1: OT staff gender wise distribution

Figure 3.1 shows us the total number of 178 participants from different operation theaters involved in our research study. Of 178 participants, 88 (49 %) were males, while 90 (51 %) were females.

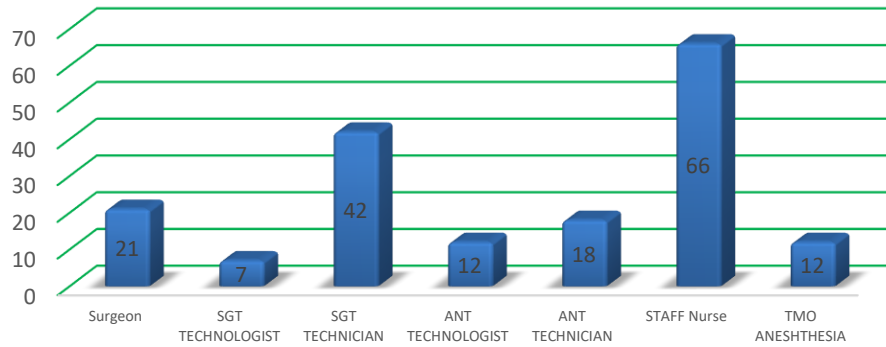


Figure 3.2: Distribution of OT personnel by designation

Figure 3.2 shows us that a total number of 178 participants were divided based on designation. The majority of the participant 66 (37%) staff nurses followed by surgical technicians 42 (23%) followed by surgeons 21(11%). The anesthesia technicians

included in our study were 18 (10%) followed by an anesthesia technologist (12(6.7%). The surgical technologist was 7 (3.9%). The number of anesthesia technologists and training medical officers were similar (6.7%).

Gender and Experience wise distribution

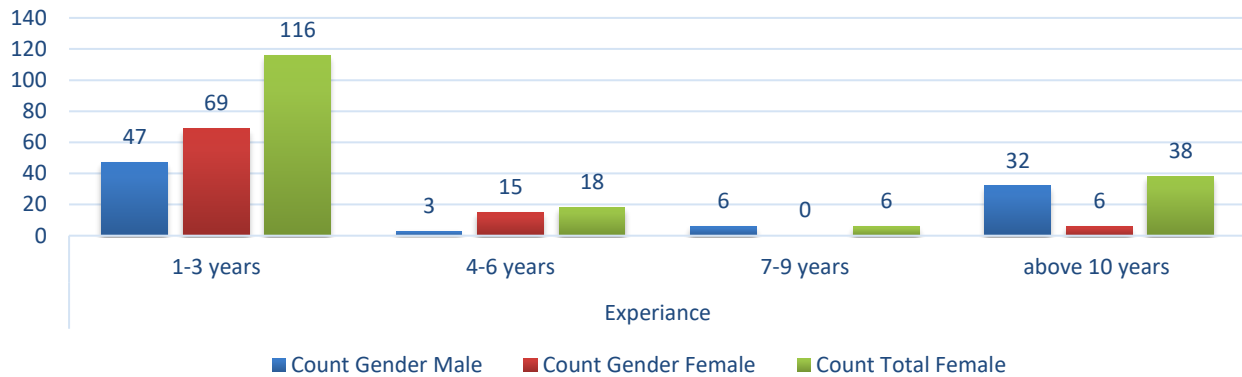


Figure 3.3: OT staff gender and experience distribution

One hundred and Seventy-eight participants were divided into three groups based on experience Group-I with age 1 to 3 years, group-II 4 to 6 years and Group III 7 to 9 years, and group IV over 10 years' experience. Group-1 contains total of 116 (65.4%) participants, group-II 18 (10.1%) cases and group three have 6 (3.5%), and group IV contains 38 (21%).

In group I 47 were male, 69 were female, in group II 12 were male 3 and 15 were female, in group III 6 were male, and no were female; in group IV 32 were male, and 06 were female. The group I contain most of the participant.

FREQUENCY OF OPERATION THEATER

■ Cardiac OT ■ Gynea OT ■ General OT

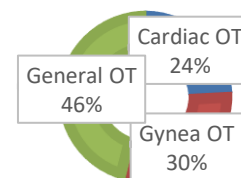


Figure 3.4: theatre operating frequency

Figure 3.4 shows that 30% of the participants belong to gynae OT, and 24% participate in cardiac OT while most belong to general OT, which is 46 %.

Knowledge Assessment analysis

Table 4.1 If we are preparing OT (Operation Theater) for COVID-19 positive patient, which pressure should we maintain in the OR?

	Frequency	Percent
Positive	48	27.0
Neutral	58	32.6
Negative	60	33.7
None of the above	9	5.1
Missing	3	1.7
Total	178	100.0

Table 4.1

Research participants were asked if we are preparing OT (Operation Theater) for COVID-19 positive patients, which pressure should we maintain in the OR? The correct option was negative pressure, answered by 60 (33.7%), and the near right option to negative was neutral 58(32.6%). 48(27.0%) responded to the answer positively, and 9 (5.1%) of the participants didn't know about this question. 3 of the participants didn't answer the question. The result shows the participants do not know negative and positive pressure.

Table 4.2 If the patient's family member PCR is positive for COVID-19, will the patient be considered?

	Frequency	Percent
Valid	Positive	21 11.8
	Suspected	78 43.8
	Negative	14 7.9
	Both positive and suspected	65 36.5
	Total	178 100.0

Table 4.2

The operation theaters staff were asked If the patient's family member's PCR is positive for COVID-19 the patient will be consider? The correct "suspected" option was given by 78(43.9%). The near correct options were "Both positive and suspected," answered by 65(36.5%), and "positive and negative," answered by 21(11.8%) and 14(7.9%) participants, respectively. The results showed that the majority of the participants knew about this question.

Table 4.3 For aerosol generating procedure of COVID-19 patient what should we wear/used?

	Frequency	Percent
Respirator	13	7.3
Face shield	4	2.2
n95 mask	30	16.9
all of the above	131	73.6
Total	178	100.0

Table 4.3

The research participants were asked about the for aerosol-generating procedure of COVID-19 patients and what we should wear/used? Most of the participants answered "all of the above" 131 (73.3%), which is correct. 13 participants (7.3%) think that respirator is the correct answer, while 30 participants (16.9%) think that n95 mask is the correct option. The result shows us that most of the research participants know the aerosol-generating procedure of COVID-19.

Table 4.4 If the patient's family member PCR is positive for COVID-19 the patient will be consider?

	Frequency	Percent
Positive	21	11.8
Suspected	78	43.8
Negative	14	7.9
Both positive and suspected	65	36.5
Total	178	100.0

Table 4.4

The research participants were asked if a patient family PCR positive for COVID-19 will be considered as? Most of the participants answered were "positive" 21 (11.8%), while 78 participants (43.3%) thought that they should be considered suspected 14 participants (6.9%) thought that they should be regarded as negative while 65 participants think that they should consider both positive and suspected.

Table 4.5 If negative pressure is not possible, what should we do?

	Frequency	Percent
Positive pressure should be turned off	41	23.0
Portable HEPA Filtration system	38	21.3
Maintain positive pressure	41	23.0
A and B	58	32.6
Total	178	100.0

Table 4.5

The research participants were asked If negative pressure is not possible and what they should do? Most of the OT staff answered "A and B" option 58(32.6%), which is the correct option. Some of them consider "positive pressure should be turned off" 41(23%), while other 38(21.3%) consider portable Hyperfiltration system. And some of them answered that we should maintain positive pressure, which is an incorrect option. Hence, most of the participants knew about the case of not possible arrangement.

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Table 4.6 If separate recovery room is not available for COVID positive patient, where will we do post-operative recovery?

	Frequency	Percent
OR bed	138	77.5
ICU	21	11.8
Common recovery room	19	10.7
Total	178	100.0

Table 4.6

The research participants were asked if the separate recovery room was unavailable where they do post-operative recovery? Most of them answered the correct option, which is “OR bed” by 138(77.5%), and some of them, according to their knowledge about this lethal virus they, consider ICU(11.8%) and CRR(10.7) as the wrong option.

Table 4.7 How can we prevent and manage aerosol dispersal during procedures? with the help of PPE.

	Frequency	Percent
Minimize scrub team	56	31.5
Maintain Negative pressure in the OR	27	15.2
Increase Air exchange number	7	3.9
all of the above	88	49.4
Total	178	100.0

Table 4.6

The research participants were asked How they should prevent aerosol dispersal during procedures? with the help of PP. The correct answer is all of the above answered by 88 (49.4%), and some of them consider that they answered the correct option, minimizing the scrub team, which is 56(31.5%). Results show that half of the population knows about managing aerosol dispersal during the procedure.

Practices assessment analysis

Table 5.1 Should assign an area for containment and disposal of OR attire including scrubs after an operation on a COVID-19 patient?

	Frequency	Percent
Yes	170	95.5
No	6	ID-19 3.4
May be	2	1.1
Total	178	100.0

Table 5.1 The research participants enquired about practice assessment; the facility should assign an area for containment and disposal of OR attire used specifically for COVID-19 positive patient. Majority of the participants answered “Yes” which is

170(95.5%) while some of them denied this area which is 6 (3.4%). Analysis shows that there should be an area for containment and disposal of OR attire used on COVID-19 positive.

Table 5.2 Should OR supplies and PPE designated for COVID-19 patient care only?

	Frequency	Percent
Yes	146	82.0
NO	26	14.6
MAY BE	3	1.7
Total	175	98.3

Table 5.2

The research participants were asked about the separate area for the OR supplies and PPE for COVID-19 patient? Most of them, 146 (82.0%), agreed about. This suggestion, while some of them were 26(14.6%) disagreed with this statement. Hence, there should be a separate room for OR suppliers and PPE regarding COVID-19 patients.

Table 5.3 Should we using a topical local anesthetic to minimize aerosolization from coughing during airway manipulation?

	Frequency	Percent
YES	104	58.4
NO	58	32.6
MAY BE	13	7.3
Total	175	98.3

Table 5.3

The research participants were asked whether we should use local anesthesia to reduce aerosolization from coughing during airway manipulation? Most of the participants agreed with this idea, which is 104(58.4%), while some disagreed with this idea 58(32.6%). Hence, we assure using local anesthesia to minimize the aerosol formation during coughing of the airway manipulation to COVID-19 patients.

Table 5.4 For COVID positive patient the staff should have to arrange separate surgical tray?

		Frequency	Percent
Valid	YES	147	82.6
	NO	28	15.7
	Total	175	98.3
Missing	System	3	1.7
Total		178	100.0

Table 5.4

The research participants enquired about whether, for COVID-positive patients, the staff should have to arrange separate surgical tray? Most of the research involves OT staff agreeing to ‘use separate trays’, which is 147(82.6%), while some do not agree to this 28(15.7%). 3 out 178(1.7%) participants didn’t share their idea.

Table 5.5 Should limit the number of people in the OR to essential personnel only?

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		Frequency	Percent
Valid	YES	175	98.3
	No	3	1.7
Total		178	100.0

Table 5.5

The research participants were asked whether the facility should limit the number of people in the OR to essential personnel only. Most of the research involve OT staff agreed to “limit people” which is 175(98.0%) while some of them not agreed to this which is 3(1.7%).

Table 5.6 Should designate special spaces for surgical treatments of COVID-19 patients?

		Frequency	Percent
Valid	YES	153	86.0
	NO	12	6.7
	MAY BE	10	5.6
	Total	175	98.3
Missing	System	3	1.7
Total		178	100.0

Table 5.6

The research participants were asked whether we should design special spaces for surgical treatments of COVID-19 patients? Most of the research involves OT staff agreeing to “design special space” which is 153(86.0%), while some of them do not agree to this, 12(6.7%). Three out 178(1.7%) participants didn’t share their idea.

Attitude assessment analysis

Table 6.1 I feel worried about being infected with COVID-19 during surgical procedure of COVID infected patient.

		Frequency	Percent
Valid	YES	130	73.0
	NO	36	20.2
	Total	166	93.3
Missing	System	12	6.7
Total		178	100.0

Table 6.1

The research participants were asked if they felt worried about being infected with COVID-19 during the surgical procedure of COVID infected patient. Most of the research participants answered that they “feel worried about being infected patient” which is 130(73.0%) while some of them answered that they fell not worried about this situation, which is 36(20.2%). 12 out 178(6.7%) participants didn’t share their idea.

Table 6.2 I will refrain from dealing with COVID-19 suspected patients.

		Frequency	Percent
Valid	YES	62	34.8

	NO	107	60.1
	Total	169	94.9
Missing	System	9	5.1
Total		178	100.0

Table 6.2

The research participants were asked if they refrain from dealing with suspected COVID-19 patients. Most of the research participants answered that they “will not refrain about the suspected patient” which is 107(60.1%) while some of them answered that they will hold back to this situation, which is 62(.34.8%). 09 out 178(5.1%) participants didn’t share their idea. Most of the staff showed positive responses towards suspected COVID-19 and serves Humanity.

Table 6.3 I am afraid from contracting COVID-19.

		Frequency	Percent
Valid	YES	97	54.5
	NO	72	40.4
	Total	169	94.9
Missing	System	9	5.1
Total		178	100.0

Table 6.3

The research participants were asked if they were afraid of contracting COVID-19. Most of the research participants answered that they “afraid from contracting,” which is 97(54.5%), while some of them answered that they will not afraid of this situation, which is 72(40.4%). 09 out 178(5.1%) participants didn’t share their idea. Most of the staff showed that they are afraid of suspected COVID-19.

Table 6.4 I am afraid from transmitting the disease to the family members.

		Frequency	Percent
Valid	YES	136	76.4
	NO	33	18.5
	Total	169	94.9
Missing	System	9	5.1
Total		178	100.0

Table 6.4

The research participants were asked about their fear of transmitting COVID-19 to family members. Most of the research participant answered that they “afraid of transmitting,” which is 136(76.4%), while some of them answered that they were not afraid of transmitting this situation to family, which is 33(18.5%). 09 out 178(5.1%) participants didn’t

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share their idea. Most of the staff showed that they were afraid of transmitting COVID-19 to their family

Table 6.5 I am afraid of dying from COVID-19.

		Frequency	Percent
	YES	87	48.9
	NO	82	46.1
	Total	169	94.9
Missing	System	9	5.1
Total		178	100.0

Table 6.5

In the last question of the questionnaire, the participants were asked about their fear of contracting COVID-19. Most of the research participants answered that they “afraid from dying COVID-19” which is 87(48.9.%) while some of them answered that they were not afraid of dying, which is 82(46.1%). 09 out 178(5.1%) participants didn’t share their idea. The result shows us that they are confused.

Discussion

In March 2020, Saqlain M et al. conducted a cross-sectional survey-based study in Pakistan(Saqlain et al., 2020). They assessed healthcare personnel' knowledge, attitudes, and behaviour using an online questionnaire delivery approach. HCWs had strong knowledge (93.2 percent, N=386), a favourable attitude (mean 8.43 (standard deviation 1.78), and good practice (88.7 percent, N=367) about COVID-19, according to their results. In their study, HCWs identified a lack of infection control materials (50.7 percent, N=210) and a lack of understanding regarding transmission (40.6 percent, N=168) as important impediments to infection control. In the current study, our research participants (51.6 percent, N=92) demonstrated sound knowledge, (83.7 percent, N=149) demonstrated good practice, and (62.3 percent, N=111) demonstrated a positive attitude toward preparing COVID positive patients for surgical procedure. In which OT staff have limited knowledge (33.7 percent, N=60) of pressure in the operating room for COVID patients (AIMarshad et al., 2021; ULLAH et al., 2023a). They indicated that the majority of the participants, 73 (91.2%) and 78 (97.5%), displayed strong understanding of COVID-19 concerning symptoms and highrisk individuals, respectively. In their study, 78 (97.5 percent) participants reported that regularly washing their hands with soap and using alcohol rub can lower their risks of getting COVID-19. 68 orthopaedic physicians disputed the necessity to wear the N95 mask at work all the time (80.0 percent). Almost all (79; 98.8 percent) believed

social isolation would reduce their chances of developing COVID19 or infecting others. Furthermore, 69 (86.2%) of their respondents claimed that aerosol-generating operations including intubation and extubating, electrocautery, and power tools enhance the risk of COVID-19 infection in health-care personnel. Furthermore, 69 (86.2 percent) claimed they knew about the hospital's pandemic preparedness preparations. In the current study, most participants (N=138, 77.5 percent) were aware that post-operative recovery will occur in the OR bed if a separate recovery room is not provided. Furthermore, 131 (73.6 percent) participants demonstrated a strong awareness of preventative measures for aerosol-generating operations.

It has been stated regarding practice toward COVID-19, 65 (81.25%) of their participants had been practicing social distancing and avoiding going out unnecessarily. Furthermore, 30 (37.5%) of their participants claimed to have been fitted for a N95 mask (Rymarowicz et al., 2021). In the current study, our participants demonstrated good practice (83.7 percent, N=149) when preparing COVID 19 positive patients for surgical procedures. 147 (82.6 percent) participants reported using a separate surgical tray for covid positive patients. Furthermore, most of the research involved OT staff who agreed to "design special space," which is 153. (86.0 %). In addition, research participants were asked about a separate area for OR supplies and PPE for covid patients. The majority of them, 146 (82.0 percent), agreed. Moreover, the research participants were enquired about practice assessment that facility should assign an area for containment and disposal of OR attire used specifically for COVID-19 positive patient. Majority of the participant answered “Yes” which is 170(95.5%) while some of them denies this area which is 6 (3.4%).

A similar study was conducted on the attitudes of the participating orthopaedic surgeons toward COVID19, and 68 (85 percent) of them were concerned about returning home and potentially infecting their family members after having contact with patients and colleagues at the hospital. Another study looked at general surgeons' attitudes toward COVID19; nearly half of them expressed fear for their lives while treating COVID19 patients. Approximately 90% were concerned about spreading the disease and infecting their family members (Twinamasiko et al., 2021). In the current study, the majority of research participants (130 (73.1 percent) said they "feel worried about being an infected patient," while 36 said they were not concerned about the situation (20.2 %). 12 out of 178 (6.7%) participants did not share their idea. Furthermore, 107 (60.1 percent) of the research participants responded that they "will not refrain about suspected

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patient," while 62 responded that they would hold back in this situation (34.8 %). 09 out of 178 (5.1%) participants did not share their idea. Most staff responded positively to the suspected COVID-19 and served humanity. Furthermore, 136 (76.4 percent) of the participants stated that they are "afraid of transmitting," while 33 stated that they are not afraid of transmitting this situation to family (18.5 %). 09 out of 178 (5.1%) participants did not share their idea. The majority of the staff expressed concern about transmitting COVID-19 to their families. Furthermore, 97 (54.5 percent) of respondents stated that they are "afraid of contracting," while 72 stated that they were not afraid of this situation (40.4 %). 09 out of 178 (5.1%) participants did not share their idea. The majority of the staff appeared to be terrified of the suspected COVID-19.

Conclusion

Our findings indicate that the OT Staff at Rehman Medical Institute have enough knowledge, as evidenced by favorable attitudes and behaviours about COVID-19. Knowledge about the disease is the first step toward implementing any health education program. Knowing the reasons and sources of a disease's transmission enhances the possibility that people will become more aware of the spread of infectious illnesses and take preventative steps to decrease transmission. According to the findings of this study, greater attention should be given on less educated employees. The findings might assist policymakers in identifying target populations for COVID-19 prevention and health education. To successfully manage virus transmission, the institute must implement well-structured training programmes for all types of OT Staff.

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Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Ethical approval was given from Ethical Review committee of department.

Consent for publication

The consent form was approved from Ethical Review committee of department.

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Conflict of Interest

Regarding conflicts of interest, the authors state that their research was carried out independently without any affiliations or financial ties that could raise concerns about biases.



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