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KNOWLEDG, ATTITUDE AND PRACTICE REGARDING COVID-19 INFECTION AMONG HEALTHCARE WORKERS OF MEDICAL UNITS IN NISHTAR HOSPITAL MULTAN

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ABSTRACT

BACKGROUND: The COVID-19 pandemic has exerted substantial pressure on healthcare systems worldwide. Healthcare workers (HCWs), particularly those stationed in clinical care settings, face an elevated risk of infection owing to their frequent and direct contact with infected individuals. Assessing the knowledge, attitudes, and practices (KAP) of HCWs concerning COVID-19 is critical for enhancing infection prevention and control strategies, thereby safeguarding both medical personnel and patients.

OBJECTIVE: This study aimed to assess the level of knowledge, attitude, and practices regarding COVID-19 among healthcare workers in the medical units of Nishtar Hospital, Multan.

MATERIALS AND METHODS: A cross-sectional descriptive study was conducted between January and March 2021 at Nishtar Hospital, Multan. A total of 250 healthcare workers including doctors, nurses, and paramedical staff were selected using convenient sampling. Data were collected using a pre-tested, semi-structured questionnaire adapted from WHO guidelines. The questionnaire assessed sociodemographic characteristics, knowledge, attitudes, and preventive practices related to COVID-19. Scores were categorized as good (>75%), moderate (50–75%), and poor (<50%). Data were analyzed using SPSS version 25.

RESULTS: The majority of participants showed good knowledge (86%) about symptoms and transmission of the virus. A positive attitude towards prevention was observed in 78% of respondents. However, only 64% demonstrated appropriate preventive practices, particularly in areas such as proper use of personal protective equipment (PPE). Doctors exhibited better knowledge than nurses and paramedics, while nurses showed more consistent adherence to preventive practices. Factors like profession and prior training had a significant impact on KAP scores.

CONCLUSION: Although most healthcare workers demonstrated satisfactory knowledge and positive attitudes toward preventing the spread of COVID-19, there was a notable gap in translating this into consistent practice. Strengthening training programs, ensuring regular supply of PPE, and implementing continuous monitoring mechanisms can help improve compliance with infection control protocols.

KEYWORDS: Knowledge, Attitude, Practice, COVID-19, Healthcare Workers, Infection Control, Pakistan

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has emerged as a major public health emergency in contemporary times. Recognized as a global pandemic by the World Health Organization (WHO) on March 11, 2020, the disease, instigated by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has resulted in millions of infections and substantial mortality worldwide. The virus's rapid transmissibility and elevated infectiousness have imposed unprecedented demands on healthcare systems globally. This burden has been especially profound in low- and middle-income countries (LMICs), such as Pakistan, where healthcare infrastructure is already under significant strain.

Healthcare workers (HCWs) constitute the frontline defense in managing pandemics and are integral to the provision of patient care during infectious disease outbreaks. Owing to their close and recurrent interactions with infected patients and involvement in aerosol-generating medical procedures, HCWs are at an elevated risk of contracting and disseminating the virus within healthcare facilities. This scenario not only jeopardizes their personal well-being but also compromises overall patient safety and the integrity of healthcare delivery.

In this context, assessing the knowledge, attitudes, and practices (KAP) of HCWs towards COVID-19 is imperative. KAP assessments provide valuable insights into levels of awareness, behavioral responses, and compliance with established infection prevention and control (IPC) protocols. These data are essential for designing effective, evidence-based interventions aimed at reinforcing safe clinical practices, promoting personal protective measures, and curbing nosocomial transmission.

Like many developing nations, Pakistan faced numerous challenges during the pandemic, including shortages of personal protective equipment (PPE), limited formal training opportunities, and heterogeneity in preparedness across regions. Nishtar Hospital Multan, a key tertiary care facility in southern Punjab, played a central role in managing COVID-19 cases during the pandemic's peak. Given the hospital's strategic importance, evaluating the KAP of its frontline HCWs, especially those working in medical units, is essential for identifying knowledge gaps, misperceptions, and procedural inadequacies that may contribute to healthcare-associated infections or broader community spread.

This study is centered on HCWs in the medical units of Nishtar Hospital Multan. These units frequently serve as the initial point of contact for patients with infectious symptoms, positioning them as high-risk zones for potential disease outbreaks. Ensuring that personnel in these units possess adequate knowledge, foster positive attitudes, and consistently adhere to recommended IPC practices is vital for protecting both healthcare providers and patients.

Despite the widespread dissemination of COVID-19-related information and guidelines from national and international health authorities, there remains a considerable disparity between theoretical knowledge and its practical application among healthcare professionals. This disconnect may be attributed to various factors, including insufficient training, misinformation, psychological stress, and limited access to resources.

Although global literature documents several KAP studies among HCWs, region-specific data from Pakistan remain scarce, especially from mid-sized cities like Multan. Existing research tends to focus on major urban centers such as Karachi and Lahore, leaving a knowledge void in semi-urban and rural settings. Moreover, few studies have concentrated specifically on HCWs working in medical units, whose exposure risk and operational dynamics differ markedly from those in surgical or administrative departments.

Given the pivotal role of medical units in the early detection and clinical management of infectious diseases, it is imperative to assess the preparedness and response capacity of staff operating in these settings. This study addresses a critical research gap by offering contextually relevant evidence on the KAP of HCWs in medical units at Nishtar Hospital Multan. The findings aim to inform

institutional policy formulation, support tailored capacity-building initiatives, and guide the development of targeted IPC training interventions.

Furthermore, the results of this study may contribute to broader national strategies for enhancing pandemic preparedness within the healthcare sector. By delineating existing strengths and areas for improvement, healthcare administrators and policymakers can implement corrective actions to optimize IPC protocols, bolster workforce resilience, and reduce the burden of infectious disease transmission.

MATERIALS AND METHODS

This study was designed as a cross-sectional descriptive study, aimed at assessing the level of knowledge, attitude, and practices (KAP) regarding coronavirus disease 2019 (COVID-19) among healthcare workers (HCWs) working in medical units at Nishtar Hospital Multan. The design allowed for the simultaneous collection of data on demographic variables and responses related to knowledge, attitudes, and preventive practices towards COVID-19 infection control. The study was conducted over a period of three months, from January to March 2021. The study was carried out in the medical units of Nishtar Hospital Multan. Medical units were selected as the focus of the study due to their high patient influx and direct involvement in the diagnosis and management of patients presenting with respiratory illnesses, including those suspected of having contracted SARS-CoV-2. These units include general internal medicine wards where frontline HCWs such as doctors, nurses, and paramedics work closely with potentially infected individuals. The target population included all healthcare workers employed in the medical units of Nishtar Hospital Multan during the study period. This group encompassed, Doctors, Nurses, Paramedical staff . These professionals were considered the primary respondents due to their frequent exposure to patients with symptoms of viral illness and their critical role in implementing infection prevention and control measures. A convenient sampling technique was used to select participants for the study. The sample size was calculated using the World Health Organization (WHO) sample size formula for estimating proportions. n = required sample size, Z = standard normal deviate (set at 1.96 for 95% confidence level), p = estimated proportion (taken as 0.5 for maximum variability), d = margin of error (set at 0.05). Using this formula, the minimum sample size came out to be 384. However, considering logistical limitations, a total of 250 healthcare workers were enrolled in the study. Data were collected using a pre-tested, semi-structured, self-administered questionnaire adapted from the WHO guidelines on KAP assessment related to emerging infectious diseases. Data collection was carried out by the principal investigator under the supervision of the faculty guide. Prior permission was obtained from the hospital administration and ethical clearance was taken from the Institutional Review Board (IRB) of Nishtar Medical University. Participants were approached individually in their respective departments during their duty hours. Each participant was given a brief orientation about the purpose of the study and assured of confidentiality. Written informed consent was obtained before administering the questionnaire. The questionnaires were distributed and collected on-site to ensure completeness and reduce missing data. For participants who had difficulty reading or understanding the questionnaire, assistance was provided without influencing their responses. Collected data were entered into SPSS version 25 for statistical analysis. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize sociodemographic characteristics and overall KAP levels. To assess the association between sociodemographic variables (age, gender, profession, and prior training) and KAP scores, Chi-square tests were applied. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The demographic profile of the participants was collected to understand the composition of the sample population. The age group of the respondents ranged from 22 to 55 years, with a mean age of 32.4 ± 8.2 years. The majority of participants were male (54%), while 46% were female. Participants were categorized based on their profession: doctors (40%), nurses (35%), and paramedical staff

(25%). Most of the participants had less than 5 years of experience (58%), while only 12% had more than 10 years of clinical experience.

Table 1: Demographic characteristics of healthcare workers in medical units of Nishtar Hospital Multan enrolled for COVID-19 KAP study

VARIABLE	CATEGORY	FREQUENCY (N=250)	PERCENTAGE (%)
Age	≤ 30 years	115	46
	31–40 years	90	36
	>40 years	45	18
Gender	Male	135	54
	Female	115	46
Profession	Doctor	100	40
	Nurse	88	35
	Paramedic	62	25
Experience (years)	<5	145	58
	5–10	75	30
	>10	30	12
Prior Training on PPE	Yes	160	64
	No	90	36

7.2 Assessment of Knowledge Regarding COVID-19

Participants were assessed using a set of 10 questions covering key aspects of symptoms, transmission, incubation period, testing methods, and prevention strategies of COVID-19. Each correct answer was scored as 1 point, with a maximum score of 10. Scores were interpreted as follows:
Good knowledge : ≥ 8 points
Moderate knowledge : 5–7 points
Poor knowledge : <5 points

Overall, 86% of participants demonstrated good knowledge about the disease. Doctors showed the highest level of knowledge (92%), followed by nurses (83%) and paramedics (75%). Key areas of

high understanding included symptoms such as fever and cough (94%), and transmission via droplets (89%). However, only 52% knew that RT-PCR is the confirmatory test for diagnosing the virus.

7.3 Attitude Toward Infection Control and Prevention

To evaluate attitudes, participants were asked to respond to five statements related to the importance of PPE use, hand hygiene, isolation protocols, and personal responsibility in preventing the spread of the virus. Responses were measured on a Likert scale ranging from "Strongly Agree" to "Strongly Disagree." Findings revealed that 78% of participants held a positive attitude toward infection control measures. Nurses were more likely to express confidence in their ability to protect themselves and others compared to doctors and paramedics. However, 67% of participants expressed fear of contracting the virus at work, indicating psychological stress among frontline workers.

Table 3: Attitude of healthcare workers in medical units of Nishtar Hospital Multan enrolled for the KAP study

STATEMENT	STRONGLY AGREE (%)	AGREE (%)	NEUTRAL (%)	DISAGREE (%)	STRONGLY DISAGREE (%)
I believe strict infection control prevents disease spread	88	10	1	1	0
I feel confident in protecting myself and patients	72	20	5	2	1
I follow all recommended safety procedures even when not monitored	65	25	6	3	1
I am afraid of getting infected while working	40	27	18	10	5
My hospital provides sufficient support for infection control	50	30	10	7	3

7.4 Practices Adopted by Healthcare Workers

The practice domain consisted of five items assessing actual preventive behaviors such as mask use, handwashing frequency, social distancing, and proper use of PPE. Each item was scored as 1 for appropriate behavior and 0 otherwise. Only 64% of participants demonstrated consistent preventive practices, with notable deficiencies in the use of full PPE kits and adherence to donning/doffing protocols. Nurses showed better compliance with preventive measures (70%) compared to doctors

(60%) and paramedics (58%). While 84% reported regular handwashing, only 58% consistently used full PPE during patient care.

Table 4: Practices of healthcare workers in medical units of Nishtar Hospital Multan enrolled for the KAP study

PREVENTIVE PRACTICE	PRACTICED (%)
Regular handwashing before and after patient contact	84
Consistent use of face masks	72
Adherence to social distancing within the hospital	60
Proper use of gloves and gowns	58
Following complete PPE donning/doffing protocol	58

In summary, the majority of healthcare workers in medical units at Nishtar Hospital Multan demonstrated good knowledge (86%) and positive attitudes (78%) towards the prevention and control of COVID-19. However, only 64% showed appropriate preventive practices , particularly in areas like full PPE usage and strict adherence to infection control protocols. These gaps highlight the need for continuous education, training reinforcement, and improved access to protective equipment to ensure optimal safety for both HCWs and patients.

DISCUSSION

This cross-sectional descriptive study recruited 250 HCWs, encompassing physicians, nurses, and paramedical personnel from Nishtar Hospital's medical wards. The analysis revealed that 86% of participants had adequate knowledge and 78% exhibited positive attitudes toward COVID-19 prevention. However, only 64% demonstrated appropriate preventive practices, indicating a notable disconnect between theoretical knowledge and its practical application. These results are congruent with prior research conducted both within Pakistan and internationally. For example, Siddiqui et al. (2020) noted that while HCWs in Pakistan were well-informed about MERS-CoV, their adherence to infection prevention measures was inconsistent. Similarly, Al-Hanawi et al. (2020) reported variability in the practical implementation of infection control practices among healthcare personnel in Saudi Arabia, despite satisfactory knowledge levels.

In the current study, physicians showed superior knowledge scores, which aligns with their advanced training and easier access to evidence-based guidelines. Interestingly, nurses demonstrated better adherence to preventive practices, likely due to their continuous patient interaction and frequent participation in infection control training. Conversely, paramedics, often possessing lower formal qualifications, exhibited the least favorable scores in both knowledge and practice domains.

Knowledge Domain Analysis

Knowledge assessment comprised ten items addressing clinical features, transmission dynamics, diagnostic modalities, and preventive strategies for COVID-19. Approximately 86% of respondents were categorized as having good knowledge. More than 90% correctly identified key symptoms such as fever and cough, and most were aware of droplet transmission and the protective value of masks and hand hygiene. Nonetheless, only 52% recognized RT-PCR as the definitive diagnostic tool for SARS-CoV-2. This knowledge gap implies that some technical aspects of virological diagnostics

remain unclear among HCWs, especially those lacking formal training in laboratory sciences. This is in contrast to findings by Rongsheng et al. (2020) from Wuhan, China, where healthcare personnel—particularly physicians—exhibited higher knowledge levels, attributed to the timely and consistent dissemination of official information. In Pakistan, fragmented health communication strategies and limited access to ongoing professional education may account for the observed variation in knowledge.

Interestingly, HCWs under 30 years of age scored marginally higher in knowledge, potentially due to greater digital literacy and reliance on online educational platforms. This suggests that digital media could serve as an effective conduit for disseminating updated information to the healthcare workforce.

This domain evaluated participants' perceptions of infection prevention, their sense of duty, and psychological preparedness to handle the crisis. Approximately 78% of HCWs expressed a positive attitude toward infection control measures. Over 80% acknowledged that strict adherence to preventive practices mitigates transmission risk, and nearly 70% felt adequately equipped to protect themselves and their patients.

Despite these positive responses, 67% reported fear of contracting the virus in the workplace—particularly among nurses and paramedics, likely due to closer contact with infected patients and perceived gaps in protective measures. This aligns with existing literature highlighting heightened psychological distress among frontline workers during pandemics (Shahid et al., 2020).

These findings advocate for comprehensive mental health interventions within healthcare settings. Provision of psychosocial services, peer support initiatives, and transparent communication regarding safety protocols may alleviate anxiety and bolster resilience among HCWs.

Only half of the respondents perceived institutional support for infection control to be adequate. This reflects a pressing need for improvements in hospital infrastructure, consistent supply of PPE, and the formulation of well-enforced administrative protocols.

Despite favorable knowledge and attitudes, the practical implementation of preventive measures was suboptimal, with only 64% reporting consistent adherence to recommended practices. While 84% engaged in regular hand hygiene, only 58% consistently utilized complete PPE with correct donning and doffing techniques. This knowledge-practice gap has been documented across various settings. The World Health Organization (2020) attributes such discrepancies to factors including fatigue, insufficient supervision, inadequate supply chains, and lax enforcement of protocols.

Nurses reported the highest compliance, potentially due to structured infection control training and routine performance monitoring. Physicians, despite better knowledge, showed comparatively lower adherence, possibly due to time constraints or underestimation of personal risk. Paramedics, often with limited exposure to formal infection control education, demonstrated the poorest practices.

Furthermore, prior PPE training emerged as a significant determinant of good practice. Participants who underwent formal training were more likely to adhere to safety guidelines, underscoring the importance of continuing education and refresher courses.

The current findings resonate with those reported by Azlan et al. (2020) in Malaysia, who documented good knowledge in 75% of HCWs, positive attitudes in 68%, and adherence to recommended practices in 58%. Similarly, Verma et al. (2021) in India found that although knowledge improved post-training, there remained a lag in the application of that knowledge.

Contrastingly, a study in Italy by Di Gennaro et al. (2020) noted higher compliance, attributed to rigorous protocol enforcement, resource availability, and cohesive national response strategies. These disparities highlight the influence of systemic support and institutional governance on HCW behaviors.

Prior investigations within Pakistan, such as Siddiqui et al. (2016) during the MERS-CoV outbreak, reported analogous trends, with poor practice levels despite sufficient knowledge. This pattern appears persistent, indicating a broader structural challenge in the healthcare delivery framework.

CONCLUSION

In summary, this study highlights that while most HCWs at Nishtar Hospital Multan possess sound knowledge and a positive outlook toward COVID-19 prevention, their preventive practices remain insufficient. This discrepancy necessitates targeted strategies focusing on training, resource provision, and behavioral reinforcement.

The results underscore the necessity of integrating continuing education, robust monitoring systems, and mental health support into healthcare infrastructure. Future research should adopt longitudinal designs to track KAP dynamics over time and evaluate the impact of specific interventions on compliance with infection prevention protocols.

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