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KNOWLEDGE, ATTITUDE, AND PRACTICES TOWARDS TYPHOID AMONG HEALTH CARE PROFESSIONALS WORKING IN PRIVATE CLINICS OF DISTRICT WEST KARACHI

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ABSTRACT

Background: Typhoid is a communicable disease that disturbs societies in developing countries, especially crowded population areas with poor sanitation are high risk where healthcare professionals are a major source for the prevention of typhoid, and therefore, good knowledge, attitude, and practices are essential for developing of a healthy society.

Objectives: The aim of this study is to analyze the knowledge, attitude, and practices towards typhoid among healthcare professionals working in private clinics of district west Karachi.

Methodology: This study was done by using quantitative research methods among Health care professionals (HCPs) working in private clinics of district west Karachi, data were collected from 116 HCPs on a questionnaire survey basis. After data collection, it was analyzed by SPSS v.21.

Results: Out of 116 respondents most of them were male having clinical experience of more than 10 years. A clear majority of general practitioners scored good knowledge while negative attitudes and practices were found.

Conclusion: The study concluded that respondents were having a good amount of knowledge about the phenomena under study however poor attitudes and practices of healthcare

professionals were found which shows the negligence of social health situation in slums by researchers, social workers, and authorities therefore, more focus should be needed for the improvement of a healthy society by concerned stakeholders. The study further concluded that there is a need for targeted interventions to improve the prevention practices of HCPs in the district west Karachi.

INTRODUCTION:

Typhoid remains the global health concern affecting both developed and developing countries with varying prevalence around the world ranging from 11 to 21 million cases and 200,000 mortalities annually(Centers for Disease Control and Prevention (CDC), 2023). The implementation of better living standards and the availability of antibiotics led to a significant decline in the morbidity and mortality associated with typhoid fever in developed countries (Yusoff, Khan, Mubeen, & Azam, 2013). However, developing countries are prone to this infection with higher incidence in Central Africa followed by countries from Asian continent (Antillón et al., 2017). The infection primarily associated with inadequate sanitation and a scarcity of clean drinking water, both in urban and rural areas. The fast growing process of urbanization with densely populated areas and insufficient water and sanitation infrastructure, coupled with the effects of climate change, have the potential to exacerbate it (*WHO*, n.d.-a). Typhoid fever is a bacterial infection that is transmitted through contaminated food and water, and it is a major public health problem in Pakistan.

Researchers reported in 'Typhoid' that typhoid fever is a life-threatening systemic infection caused by the bacterium Salmonella enterica serovar Typhi. Children and populations lacking access to safe drinking water and adequate sanitation are at highest risk. Approximately 2–5% of cases become chronic carriers. Travelers are at risk of developing typhoid fever in many typhoid endemic countries (*WHO*, n.d.-a).Typhoid risk is higher in populations that lack access to safe water and adequate sanitation (Mohamed et al., 2020). The typhoid (Sufyan & Khan., 2020) conjugate vaccine is recommended for use in children from 6 months of age and in adults up to 45 years or 65 years. (*WHO*, n.d.-b)

Social health is an important aspect of overall health and well-being, and it is particularly critical for healthcare professionals who are responsible for providing care to others. Knowledge, attitude, and practice towards typhoid fever are crucial for health care professionals working in private clinics in district west Karachi, as the disease is a major public health concern in Pakistan (*Who – Islamic Republic of Pakistan*, n.d.). Private clinics are an essential source of health care in Pakistan, particularly in urban areas, where they serve a significant proportion of the population. However, little is known about the knowledge, attitude, and practice of healthcare professionals towards typhoid fever in these settings (F. Khan, Asif, Hussain, Bashir, & Gul, 2021).

Several studies have highlighted the importance of social factors in the incidence of typhoid fever in slums. For example, a study conducted in Mumbai, India found that overcrowding and poor sanitation were significant risk factors for the transmission of typhoid fever in slum communities (Sudhinaraset et al.,

2013)(Khan., Rasli, & Zahra, 2020). Another study conducted in Nairobi, Kenya found that lack of access to clean water and inadequate sanitation facilities were major contributors to the incidence of typhoid fever in slum communities (Mbae et al., 2020)(Khan., Khan, & Naz, 2017).

Several studies have examined the prevalence and incidence of typhoid fever in Pakistan, as well as the risk factors associated with the disease. For example, a study conducted in Karachi found that the incidence of typhoid fever was highest in children under the age of 10, and that there was a high prevalence of drug-resistant strains of the bacteria that causes the disease (Khan et al., 2012). Muhammad Tahir and colleagues (2023) and (Q. Khan, Sultana, Bughio, & Naz, 2014) report that typhoid fever is a systemic infection characterized by fever, vomiting, and diarrhea caused by Salmonella typhi (S. typhi) (F. Khan, Yusoff, & Khan, 2014). The dire state of the sewage and water system along with low vaccination rates, non-compliance to treatment, and overcrowding are the major elements contributing to the spread of XDR typhoid within Pakistan. This study assessed the knowledge, attitude, and practices of the general population of Pakistan regarding TCV. S. typhi strains are resistant to antibiotics. This study calls for additional research focused on the population residing in rural areas and with low education levels.(Zaman et al., 2023). Public adherence to preventive measures is influenced by knowledge and attitude toward the vaccine. It is preventable through the typhoid conjugate vaccine (Naz, et al, 2019). This study investigates the knowledge, attitudes, and practices of the general population of Pakistan toward TCV (Tahir et al., 2023).

In ‘a study of typhoid fever in five Asian countries’, R Ochiai (2008) noted that a total of 21,874 episodes of fever were detected. Salmonella typhi was isolated from 475 (2%) blood cultures, 57% (273/475) of which were from 5-15 year-olds. The annual typhoid incidence among this age group varied from 24.2 and 29.3 in sites in Viet Nam and China, to 180.3 and 412.9 in the site in Indonesia. Study sites where typhoid was considered a problem by local authorities were established in China, India, Indonesia, Pakistan and Viet Nam (Ochiai et al., 2008).

Linda Kaljee et al. (2017) and Israr, et al, (2018), studied social and economic burden associated with typhoid fever in Kathmandu and surrounding areas. Data indicate that the nonspecific symptoms of typhoid fever result in delay in households seeking outside medical treatment. Physicians face challenges related to availability of diagnostic tools and increasing antimicrobial resistance. There are limited data regarding the social and economic burdens of typhoid fever on affected households and local challenges in relation to disease diagnosis, treatment, and prevention. Aspects of the results claim to confirm what was previously known about this area: “These findings are similar to a study conducted on healthcare utilization in Pakistan in which the primary criteria for selecting a clinic/hospital were proximity, familiarity with the provider, and responsibility of the staff,” Kaljee suggested(Kaljee et al., 2018). Muhammad Zarak et al. (2021) and Khan, Nazam, Anjum, Khan (2015) reported on association of clinical features of typhoid fever with socioeconomic status in Pakistan.Patients with low SES were more

susceptible to contracting typhoid fever due to poor health status and facilities. Infrastructure varies according to socioeconomic status (SES)(Samsoor Zarak et al., 2021). In 2021 'Association of clinical features of typhoid fever with socioeconomic status in Balochistan , Pakistan' that typhoid fever is a severe illness caused primarily by Gram-negative Salmonella enterica serotype Typhi.

Aspects of their conclusions appear to confirm prior work in this subject: "The dimensions of education and occupation were also included to gain a better understanding of the association. We observed that most of the patients diagnosed with typhoid fever were aged years, which confirmed previous findings," (*WHO EMRO, In Press*, n.d.). In slums of Karachi about 60 % of population lives where the immunization and knowledge towards communicable diseases was very low and many other conditions indicated and need of awareness about hygiene and healthy lifestyle (Aleemi et al., 2018)

Heasla Njoya et al. (2021) report that typhoid fever is a systemic infectious disease caused by the bacteria Salmonella enterica subspecies. It is a major cause of morbidity and mortality worldwide (Khan (F. Khan, Zahra, Bilal, Sufyan, & Naz, 2021), et al, 2015). This cross-sectional descriptive study aimed at determining the prevalence and awareness of the mode of transmission. Study aimed at determining the prevalence and awareness of the mode of transmission of Salmonella typhi among patients at the Saint Elisabeth General Hospital Shisong of Cameroon. The unawareness of the patients on typhoid fever and its contraction through contaminated water and food was positively correlated to the level of educations.(Njoya et al., 2021)

In the study conducted by Mulu et al., the prevalence of typhoid fever (TF) and the knowledge, attitudes, and practices (KAP) of febrile patients towards TF in Injibara General Hospital, Northwest Ethiopia, were investigated. The research findings reveal a high prevalence of TF compared to other regions in Ethiopia. Approximately 65.4% of participants demonstrated good knowledge, while 67.5% exhibited positive preventive practices towards TF.

This study underscores the global health significance of TF, which affects millions of individuals annually, particularly in Asia and sub-Saharan Africa. The authors highlight the importance of preventive measures such as food safety, safe water supply, sanitation, vaccination, and health education in combating TF (Mulu et al., 2021)

In 'Global Typhoid Fever Incidence', Christian Marchello et al. (2019) reported that contemporary incidence estimates of typhoid fever are needed to guide policy decisions and control measures and to improve future epidemiological studies. The researchers identified variation in the criteria for collecting a blood culture, and among multiplier studies they identified a lack of a standardization for the types of multipliers being used to estimate incidence. They identified Africa and Asia as regions with studies showing high typhoid incidence. More recent studies reported lower incidence compared to years prior to 2000(Marchello et al., 2019)

A team led by Vittal Mogasale at the International Vaccine Institute (2014) described burden of typhoid fever in low-income and middle-income countries. Risk-level heterogeneity is unaccounted for in previous global burden estimates. The estimated number of typhoid fever cases in LMICs in 2010 after adjusting for water-related risk was 11·9 million cases with 129 000 deaths. Scenario analyses indicated the risk-factor adjustment and updated diagnostic test correction factor were the drivers of differences between the current estimate and past estimates. No access to safe water is an important risk factor for typhoid fever, yet risk-level heterogeneity is unaccounted for in previous global burden estimates. Since WHO has recommended risk-based use of typhoid polysaccharide vaccine, they revisited the burden of Typhoid fever in low-income and middle-income countries (LMICs) after adjusting for water-related risk (Mogasale et al., 2014)

Virginia Pitzer and colleagues (2019) reported on the invisible burden. Recent efforts and partnerships between local and international researchers have helped to provide new data on the incidence and control of typhoid in parts of Asia and Africa. Pitzer and colleagues highlight examples from India, Nepal, Vietnam, Fiji, Sierra Leone, and Malawi that summarize past and present experiences with the diagnosis, treatment, and prevention. Measuring the burden of typhoid fever and developing effective strategies to reduce it require a surveillance infrastructure that is currently lacking in many endemic countries. They draw on specific examples from India, Nepal, Vietnam, Fiji, Sierra Leone, and Malawi to highlight how collaborations between researchers, local clinicians, and public health officials have helped to assess the impact of the disease (Pitzer et al., 2019).

John Crump (2019) reported on progress in typhoid fever epidemiology. Humans are the reservoir of Salmonella Typhi. Chronic carriers are known to be a major source of domestically acquired infections. Early 20th century data from large cities in Europe and North America repeatedly demonstrated a reduction in typhoid fever illnesses and deaths. The 2017 World Health Organization (WHO) recommendation for the introduction of typhoid conjugate vaccines (TCVs) for infants and children aged >6 months in typhoid-endemic countries is likely to require further improvements. The main drivers of relatively low typhoid incidence among neonates and infants include potential protection from maternal antibodies, and lack of exposure to fecally contaminated water and food vehicles(Crump, 2019).

Jong Kim et al. (2019) studied a systematic review of typhoid fever occurrence in Africa. The current understanding of the burden and distribution of typhoid fever in Africa relies on extrapolation of data from a small number of population-based incidence rate estimates. They conducted a systematic review of Typhoon fever occurrence in Africa, published in PubMed, Embase, and ProMED. The number of reports on typhoid Fever has increased over time in Africa and was highly heterogeneous between countries and over time. At least one episode of culture-confirmed typhoid. fever was reported in 42 of 57 African countries during 1900-2018. (Kim et al., 2019)

In 'Revisiting typhoid fever surveillance in low and middle income countries', Vittal Mogasale et al. (2015) reported that the control of typhoid fever being an important public health concern in low and middle income countries. improving typhoid surveillance will help in planning and implementing typhoid control activities such as deployment of new generation Vi conjugate typhoid vaccines. The reported incidence and hospitalizations rates were heterogeneous as the study methodology across the sites(Mogasale et al., 2016).

Healthcare professionals play a critical role in the prevention, diagnosis, and treatment of typhoid fever, and their knowledge, attitude, and practice towards the disease can have a significant impact on its control. Understanding the knowledge, attitude, and practice of healthcare professionals towards typhoid fever is essential for developing effective interventions to prevent and control the disease.

There is a lack of research on the knowledge, attitude, and practice of health care professionals towards typhoid fever in Pakistan, particularly in the context of private clinics. This study aims to fill this gap by examining the knowledge, attitude, and practice of health care professionals working in private clinics in district west Karachi towards typhoid fever. By identifying gaps in knowledge, attitudes, and practices, this study can help to develop targeted interventions to improve the prevention, diagnosis, and treatment of typhoid fever in Pakistan.

METHODOLOGY

This quantitative research was conducted among Health Care Professionals (HCPs) employed in private clinics within the district West Karachi. The study participants comprised a diverse group of healthcare workers, including Consultants, doctors, nurses, midwives, allied healthcare professionals, and alternative medicine physicians practicing in private clinics. A total of 116 respondents were carefully selected for data collection through a structured questionnaire administered by trained staff.

The primary objective of this study was to assess the knowledge, attitudes, and practices of HCPs towards the prevention and control of communicable diseases, particularly typhoid, within society. West Karachi district houses a total of 156 registered Private Health care establishments, each attributed to a qualified HCP as per the guidelines of the Sindh Health Care Commission (SHCC). From this population, a random sampling technique was utilized to select the sample size for the current study.

The data collected from the respondents were analyzed using SPSS v.21, employing descriptive statistics and a five (05) point Likert scale for interpretation and evaluation. This comprehensive approach enabled a detailed exploration of the HCPs' perspectives and practices related to communicable disease prevention, especially typhoid, in their private clinic settings within the district of West Karachi.

RESULTS & DISCUSSION

The total of 116 HCPs included in this study (response rate=100%) A vast majority of the participants were male (n = 79, 68.1%) and female were (n=37,

31.9%), in this study below 50 years of age (n=111, 95.6%). Majority of participants were practicing as a general practitioner (n=44, 37.9%) where registered nurse practitioner were (n=26, 22.4 %) while 60.3 percent were from other mixed domain of health care professionals. Forty-eight (41.4%) participants were undergraduate, 39 (33.6%) were diploma holder and 29(25.0%) were postgraduate. Out of the 116 participants, 75(64.7%) had at least self-dependent and 41(35.3%) had salary person with the duration of experience below 10 years were (n=91, 77.7%).

Table.1 summarizes the Sociodemographic characteristics of the participants.

Table-I: Sociodemographic Characteristics

Variable	f	%
Age		
20-30 Years	44	37.9
31-40 Years	50	43.1
41-50 Years	17	14.7
more than 50 Years	5	4.3
Gender		
Male	79	68.1
Female	37	31.9
Qualification		
Diploma	39	33.6
Undergraduate	48	41.4
Postgraduate	29	25.0
Designation		
Consultant	8	6.9
General Practitioner	44	37.9
Nurse	26	22.4
CMW/LHV	9	7.8
Allied H.C.W	17	14.7
Any Other	5	4.3
Alternative Medicine Practitioner	7	6.0
Employment Status		
Salary Person	41	35.3
Self-Dependent	75	64.7
Clinical Experience		
1-5 Years	52	44.8
6-10 Years	39	33.6
More than 10 Years	25	21.6

Table II shows the association of participants' knowledge score with their socio-demographic characteristics. The mean knowledge score for participants who believed that typhoid is a marked sociological issue of slums (3.9623) was significantly higher than those who answered "No" (2.3636), "May be" (1.4857), or "Don't Know" (1.8824).

Age was also significantly associated with knowledge score, with participants who were more than 50 years old having a higher mean knowledge score (3.4000) compared to those in other age groups. Gender was marginally associated with knowledge score, with female participants having a higher mean knowledge score (3.2432) compared to males (2.5316).

Qualification was also significantly associated with knowledge score, with postgraduate participants having the highest mean knowledge score (3.6897) compared to undergraduate (2.6250) and diploma holders (2.2308).

Designation was significantly associated with knowledge score, with consultants having the highest mean knowledge score (4.6250) compared to general practitioners (2.1591), nurses (3.6154), CMW/LHVs (2.5556), allied H.C.W (2.5882), and others (3.4000). However, alternative medicine practitioners had the lowest mean knowledge score (1.4286).

Employment status was marginally associated with knowledge score, with salary persons having a higher mean knowledge score (3.3415) compared to self-dependent participants (2.4400). Finally, clinical experience was significantly associated with knowledge score, with participants having more than 10 years of experience having the highest mean knowledge score (3.6000) compared to those with 1-5 years (3.4038) and 6-10 years (1.3590) of experience.

Table-II: Association of mean knowledge score with sociodemographic characteristics

Variable	Mean	Mann-Whitney U/ χ^2	p-value
Age		28.899	<0.0001*
20-30 Years	3.3182		
31-40 Years	2.3200		
41-50 Years	2.4118		
more than 50 Years	3.4000		
Gender		1182.000	0.090
Male	2.5316		
Female	3.2432		
Qualification		10.803	.005*
Diploma	2.2308		
Undergraduate	2.6250		
Postgraduate	3.6897		
Designation		19.100	.004*
Consultant	4.6250		
General Practitioner	2.1591		
Nurse	3.6154		
CMW/LHV	2.5556		
Allied H.C.W	2.5882		
Any Other	3.4000		

Alternative Medicine Practitioner	1.4286		
Employment Status		1147.500	.021*
Salary Person	3.3415		
Self-Dependent	2.4400		
Clinical Experience		28.899	<0.0001*
1-5 Years	3.4038		
6-10 Years	1.3590		
More than 10 Years	3.6000		

The table III shows the responses of healthcare professionals regarding their preventive practices. The majority of respondents always drinks boiled water (24.1%) and apply disinfectant/antiseptic agents in their chamber daily (38.8%). However, only 37.9% always wash their hands after checking each patient, and 33.6% always wear gloves while examining patients.

In terms of educating patients about preventive measures, 37.9% always educate their patients to adopt preventive measures, and 36.2% always recommend boiling water for drinking to patients. On the other hand, only 26.7% always recommend disinfective agents to the public for applying common used surfaces, and 44.8% always educate their patients to wash fruits and vegetables before eating.

Overall, the findings from this table suggest that there is a need for targeted interventions to improve the prevention practices of HCPs in district west Karachi. This can include targeted training and education programs to promote best practices in typhoid prevention, as well as ensuring the availability of personal protective equipment and other necessary resources to support effective prevention practices in healthcare settings.

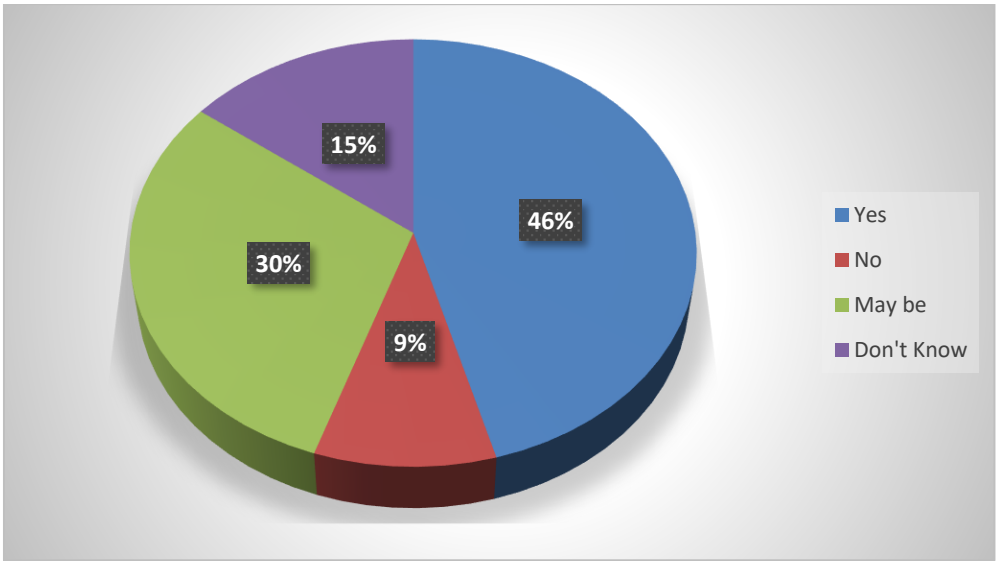
Table-III: Practice towards typhoid prevention among HCPs

Response	**Never f (%)**	**Rarely f (%)**	**Sometimes f (%)**	**Most of the time f (%)**	**Always f (%)**
Do you drink boil water	21 (18.1)	26(22.4)	23 (19.8)	18 (15.5)	28 (24.1)
Do you apply disinfective /antiseptic agents in your chamber daily?	45(38.8)	15(12.9)	11(9.5)	17(14.7)	28(24.1)
Do you wash your hands after checking each patient	35(30.2)	18(15.5)	8(6.9)	11(9.5)	44(37.9)
Do you wear gloves while examining the patient	31(26.7)	18(15.5)	11(9.5)	17(14.7)	39(33.6)
Do you educate your patients to adopt preventive measures?	32(27.6)	16(13.8)	6(5.2)	18(15.5)	44(37.9)
Do you recommend boil water for drinking to patients	18(15.5)	27(23.3)	7(6.0)	22(19.0)	42(36.2)

Do you recommend disinfective agents to public for applying common used surfaces?	37(31.9)	9(7.8)	6(5.2)	33(28.4)	31(26.7)
Do you educate your patients to washing fruits and vegetables before eating?	40(34.5)	7(6.0)	2(1.7)	15(12.9)	52(44.8)

Figure-I of the study suggest that there is a lack of awareness or understanding of the role of proper sanitation in the spread of typhoid fever among participants. Only 46% of participants believed that improper sanitation is a cause of typhoid fever, while 54% did not believe that improper sanitation is a cause of the disease. These findings highlight the need for educational interventions and public health campaigns aimed at raising awareness about the importance of proper sanitation practices in preventing the spread of typhoid fever and other infectious diseases. Additionally, efforts to improve sanitation infrastructure and practices in the slum community could have a significant impact on reducing the burden of typhoid fever and other related illnesses

Figure-I: Attitude towards typhoid spread in slum.



SUMMARY

This study aimed to analyze the knowledge, attitude, and practices towards typhoid among healthcare professionals (HCPs) working in private clinics in district west Karachi. Most of the study respondents were general practitioners. The results showed that HCPs had good knowledge of typhoid, while negative attitudes and practices were observed. Study highlights the need for interventions to improve the prevention, diagnosis, and treatment of typhoid fever in Pakistan, with a particular focus on the attitudes and practices of HCPs. The study concluded that there is a need for more focus on the improvement of a healthy society, and social workers and sociologists can contribute to this effort.

STUDY LIMITATIONS

The study's limitations include the limited number of respondents that accessed for current research which limits the generalized ability of the findings to the broader population of HCPs in district west Karachi. Moreover, the study only focused on private clinics, and the results may differ in public healthcare facilities.

CONCLUSION

This study highlights the importance of understanding the knowledge, attitude, and practice of HCPs towards typhoid in Pakistan. By identifying gaps in knowledge, attitudes, and practices, targeted interventions can be developed to improve the prevention, diagnosis, and treatment of typhoid fever in Pakistan. Social workers and sociologists can contribute to this effort by raising awareness and promoting healthy lifestyles and hygiene practices in the community.

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