

# Exploring the Knowledge, Attitude, and Practice of Community Pharmacists in Qatar: A Preliminary Quantitative Cross-Sectional Study

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## Abstract

**Introduction:** Community pharmacists play an important role in pre-travel preventive care and treating the conditions and diseases travellers may acquire during or post-travel. They provide travellers with medicines (preventive, prescription and over the counter), travel health advice, health supplies and vaccination based on their travel itinerary and individual health profile. The health of international and outbound Qatari travellers is an important area of practice and there is a dearth of studies on Qatari community pharmacists' knowledge and practice of travel health and travel medicine. This study aims to investigate Qatari community pharmacists' level of knowledge, attitudes, and practice (KAP) towards travel medicine.

**Methods:** In this study (Oct-Nov 2022), a cross-sectional study was conducted with 117 community pharmacists using a self-administered standardized questionnaire comprising of demographics and practice profile of pharmacists and questions covering knowledge, attitude and practice regarding travel medicine using Google Forms. Descriptive analysis of the collected data was performed using IBM SPSS 38.0.

**Results:** The survey showed that a significant portion of community pharmacists (56.4%) are aware of travel medicine but lack practical knowledge regarding the practice of travel medicine. Furthermore, most of these pharmacists (59%) recognized the significance of fundamental understanding of travel medicine and consider it their responsibility to provide travel health services. Yet only a small fraction of pharmacists provided travel-related medicines and health services to individuals visiting them.

**Conclusion:** Although the participants displayed a positive attitude towards travel medicine, a noticeable knowledge gap existed. This knowledge gap may have contributed to their attitude and the limited practice of travel medicine observed among them. Stakeholders should offer training, resources, and a supportive regulatory environment for Qatari community pharmacists to provide travel health services.

**Keywords:** community pharmacists, Qatar, pharmacists, travel medicine and travel health

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## Introduction

Qatar is a well-known tourist and commercial destination in the Middle East. Each year, two millions international travellers visit Qatar, and an equal number of Qataris travel outbound.<sup>1</sup> International travellers visit Qatar for cultural exploration, modern infrastructure, desert adventures, business conferences, sports and entertainment.<sup>2</sup> Qatari people travel out of Qatar for

business, holidays, family visits, pilgrimage, and other reasons. Qatar experienced a significant influx of international tourists due to the 2022 FIFA World Cup, which also brought about various business and trade opportunities.<sup>2</sup> Nevertheless, the health and well-being of both inbound and outbound travellers are crucial aspects of their journey, and the Qatari health system, including

community pharmacies, plays a pivotal role in providing travel health services to these travellers.

Travel medicine is a branch of medicine concerned with promoting health before, during, and after travel. It emphasizes pre-travel preventive care and addresses the health problems and diseases that may have been acquired during or post-travel.<sup>3</sup> The primary purpose of travel medicine is to prevent and protect travellers from the negative impact of environment on health, travel-related diseases, and accidents that may negatively affect their wellbeing. Pharmacists play an important role in delivering health services to travellers as they are the most accessible and frequently visited healthcare providers in the community. Pharmacists have been providing various kinds of health services such as preventive, prescription medication and over-the-counter medications for travel purpose, pre-travel health assessment and health advice, travel related health supplies and vaccinations.<sup>4</sup> They provide these services to travellers through travel health pharmacy services in countries such as Canada, the USA, the UK and as part of general health service in various other countries.<sup>4</sup>

Travel medicine is a specialised interdisciplinary practice run in hospital or primary care settings by healthcare professionals specialized and trained in travel medicine.<sup>3</sup> Travel medicine services are provided by physicians and nurses, and pharmacists (to a limited extent currently), with a particular focus on travellers with complex itinerary and healthcare need.<sup>5-7</sup> Practice of travel medicine requires a good knowledge of epidemiology, transmission and prevention of travel related diseases, requirements of vaccination for various destination and skills to vaccinate, pre-travel health risk assessment and recognition of major syndrome in returned travellers.<sup>8</sup> Travel medicine-related training and specialties are provided either by medical schools or by professional societies such as the College of General Practitioners, the International Society of Travel Medicine (ISTM) and/or the College/Faculty of Tropical/Travel Medicine.<sup>9</sup> Therefore, pharmacists providing travel health services needs to have the right knowledge, aptitude and competence in travel medicine that includes pre-travel risk assessment, spectrum of health advice for travellers based on their itinerary, travel related vaccination and health advice for travellers with special health needs.<sup>10</sup>

As per the Centers for Disease Control and Prevention (CDC, USA) international travellers for Qatar need routine vaccination for various health conditions including vaccines for COVID-19, Hepatitis A, Hepatitis B, measles, and medicines for common ailment and insect bites, avoiding contaminated water, special hydration, protection from sunstroke and other injuries.<sup>11</sup> As a travel

health service package they need preventive medications and travel-related vaccinations, special health advice and travel health related supplies and regular medicines for travellers with chronic diseases, older adults, and those with special health needs.<sup>11</sup> Qatari outbound travellers too need travel-related medications and preventive vaccinations, adequate stock of regular prescription medicines, health advice and health supplies based on where they are traveling. Qatari outbound travellers need to carry these medicines and health supplies with a valid prescription and dispensed labels to comply with the entry requirement regarding medications in the destination country. Community pharmacists in Qatar need a good understanding of these issues regarding travel health and gain competency in these areas to provide travel health-related services to individuals seeking these services.

There are plenty of studies capturing travel services and activities in community pharmacies all around the world, some of the studies assess the pharmacist's point of view,<sup>4,12-18</sup> while others look at the customer's point of view.<sup>19,20</sup> However, studies assessing travel medicine in community pharmacies in Qatar are scarce. A prospective descriptive study conducted among PHC physicians in the State of Qatar to capture the knowledge and practice of travel medicine showed that almost half (44%) of them provided head advice to travellers.<sup>21</sup> Another study by Al-Dahshan et al. showed that primary care physicians' knowledge score of travel medicine was 59.6%. These studies highlight the need to carry out travel medicine studies among healthcare professionals in Qatar, including community pharmacists.<sup>22</sup> Therefore, the current study was carried out to investigate the level of knowledge, attitudes, and practices of travel medicine among community pharmacists in Qatar.

## 2. Methods

### 2.1 Study tool and design

Based on literature reviews, we identified a survey tool conducted in Northern India<sup>23</sup> that closely aligned with our study objectives. After adapting the survey tool, we conducted a pilot study involving five community pharmacies to assess the initial questionnaire's effectiveness. After analysing the responses, we made necessary adjustments to the tool and finalized the questionnaire. Our evaluation focused on ensuring that the questionnaire was clear, easily self-administered, and that the responses collected aligned with the study's objectives.

The survey consisted of four sections: demographics and practice profile, knowledge, attitude, and practices.<sup>23</sup> The first part included 13 questions about Ministry of Public Health (MoPH) licensing, age, gender, nationality,

pharmacy degree, years of experience, and details about the pharmacy and patients they encounter.<sup>23</sup> The second section comprised 65 questions assessing knowledge related to travel medicine.<sup>23</sup> The third part consisted of 12 questions about attitudes, opinions, and perceptions concerning travel medicine.<sup>23</sup> The fourth section comprised 8 questions focusing on practice aspects of travel medicine.<sup>23</sup> We obtained ethical approval from the Qatar University Institutional Review Board (QU-IRB 2-CPH-2022-742) and the permission of community pharmacists.

## 2.2 Study population, sample size and study site

Our study was conducted between October 23rd and November 5th, 2022. To determine the sample size, we used the list of community pharmacists provided by the Ministry of Public Health in Qatar, with a specified margin of error of 5% and a confidence interval of 95%. Considering a 20% adjustment to account for potential non-responses, we calculated a required sample size of 388 pharmacists.

We reached out to a total of 400 community pharmacists registered with the Pharmacy and Drug Control Department at the Ministry of Public Health in Qatar. Initially, we sent them email invitations to participate in the study. Additionally, we contacted the pharmacists in charge of these community pharmacies, asking them to share the study questionnaire invitations with their colleagues.

As part of our follow-up process, reminder emails were sent in day eight and day fourteen to encourage participation. However, despite our diligent efforts, only 117 community pharmacists ultimately completed the survey. These respondents were employed in community pharmacies located across ten different municipalities in Qatar.

The inclusion criteria for this study encompass all registered community pharmacists listed in the Pharmacy and Drug Control Department. Conversely, the exclusion criteria included pharmacists working in private medical clinic settings.

## 2.3 Statistical analysis

The statistical analysis is being conducted on IBM SPSS Statistics 28.0 (IBM Corp. Released 2021. IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp). Only descriptive analysis was performed. Categorical data were reported as frequencies and percentages, while the means (standard deviation), or medians (interquartile ranges) were used for continuous data.

## 3. Results

### 3.1 Study sample characteristics

Among the 400 community pharmacists that were contacted for this study, a total of 120 pharmacists have responded to our survey, of which 117 completed the survey and were eligible for the study. The demographic characteristics and practice profile of the community pharmacists are presented in Table 1. Almost half of the pharmacists (48.7%) who responded were under the age of 30 years old. The percentage of males to females was somewhat similar, with slightly more females (54.7%) than males (45.3%). The majority of pharmacists were Indian (97.3%), and majority have at least a bachelor's degree in pharmacy (84.7%). The median number of customers seen per week is 60. When asked about giving advice to travellers, 99 (84.6%) of the participants responded that they have previously indeed given health advice to travellers.

**Table 1.** Demographics and Practice Profile of Surveyed Qatari Community Pharmacists

Characteristics		N	%
<b>Age</b>			
	<i>Under 30</i>	57	48.7
	<i>30-39</i>	49	41.9
	<i>40-49</i>	9	7.7
	<i>50 or more</i>	2	1.7
<b>Gender</b>			
	<i>Female</i>	64	54.7
	<i>Male</i>	53	45.3
<b>Nationality</b>			
	<i>India</i>	114	97.3
	<i>Egypt</i>	1	0.9
	<i>Philippines</i>	1	0.9
	<i>Qatar</i>	1	0.9

Characteristics	N	%
<b>Pharmacy degree obtained</b>		
<i>Bachelor</i>	90	76.9
<i>Master</i>	16	13.7
<i>Bachelor; Master</i>	4	3.4
<i>Diploma; Bachelor</i>	3	2.6
<i>PharmD</i>	2	1.7
<i>Bachelor; PharmD</i>	1	0.9
<i>Diploma; Bachelor; Master</i>	1	0.9
<b>Gave advice to travellers</b>		
<i>Yes</i>	99	84.6
<i>No</i>	18	15.4
<b>Years of experience</b>	5 (4-8) *	-
<b>Average number of customers seen per day in the pharmacy</b>	60 (40-100)*	-
<b>Average number of customers asking about travelling-related issues or medicines per week</b>	5 (2-10)*	-

\*Median (interquartile range)

### 3.2 Knowledge aspect

Regarding the level of knowledge, only about half of the participants, 66 (56.4%), responded confidently that they are aware of travel medicine, and a slightly lower number, 53 (45.3%), were confidently aware about mortality and morbidity specifically associated with traveling. Only 11 (9.4%) participants were confident about predicting the health risks from knowing the travel journey. The majority of the participants (69.2%) rated their ability to make a differential diagnosis based on symptoms after traveling to a specific place as likely on a scale ranging from 'very unlikely' to 'very likely'. Regarding knowledge about contraindications to prolonged air travel for pregnant women, most of them scored between 2 (40.2%) and 3 (35.0%) on a scale from 0-4. More than half of the (64) pharmacists are somewhat aware of the health needs of infants and toddlers during travel. Most pharmacists rated their knowledge as 2 (42.7% and

39.3%) or 3 (31.6% and 36.8%) out of 4, on a scale from 0-4, about health risks associated with air and land travel, respectively. Likewise, most pharmacists rated their knowledge as 2 (35.9% and 33.3%) or 3 (37.6% and 36.8%) out of 4, on a scale from 0-4, about health risks associated with hot and cold climates, respectively. Only 9 (7.7%) of them were extremely familiar with the guidelines of heat stroke management. Most pharmacists rated their knowledge as 2 (32.5) or 3 (33.3) out of 4, on a scale from 0-4, about travellers' vaccination guidelines. Majority of 81 (69.2%) pharmacists knew what travellers' diarrhea is, and 17.1% of them were very confident in their ability to advise travellers about behaviour modifications to avoid getting travellers' diarrhea. Only 12.8% of pharmacists rated their ability as 4 when asked about giving advice about basic risk mitigation measures to avoid getting infected with COVID-19.

**Table 2.** Responses of Qatari Community Pharmacists to Knowledge-Based Questions About Travel Medicine.

Items	Response, n (%)		
	0= No	1= Not sure	1= Yes
Are you aware of the existence of a branch of medicine called travel medicine?	12 (10.3)	39 (33.3)	66 (56.4)
Are you aware that there is mortality and morbidity specifically associated with travel?	18 (15.4)	46 (39.3)	53 (45.3)
Do you know the definition of travellers' diarrhea?	4 (3.4)	32 (27.4)	81 (69.2)

Items	Response, n (%)				
	0= not confident at all	1= slightly confident	2= somewhat confident	3= fairly confident	4= completely confident
How much confident are you in foreseeing travel related health risk from the itinerary?	2 (1.7)	12 (10.3)	56 (47.9)	36 (30.8)	11 (9.4)

  

Items	Response, n (%)				
	0= no knowledge	1= minimal knowledge	2= basic knowledge	3= adequate knowledge	4= superior knowledge
Are you aware of the absolute contraindications for long distance travel in case of a pregnant woman?	5 (4.3)	10 (8.5)	47 (40.2)	41 (35.0)	14 (12.0)
Are you aware of the specific health related issues that can arise as a result of prolonged air travel?	3 (2.6)	18 (15.4)	50 (42.7)	37 (31.6)	9 (7.7)
Are you aware of the health risks during travel by land?	2 (1.7)	11 (9.4)	46 (39.3)	43 (36.8)	15 (12.8)
Are you aware of the guidelines for vaccinations of travellers?	7 (6.0)	18 (15.4)	38 (32.5)	39 (33.3)	15 (12.8)
Are you aware of the health risk associated with hot climate?	3 (2.6)	14 (12.0)	42 (35.9)	44 (37.6)	14 (12.0)
Are you familiar with the management guidelines for heat stroke?	2 (1.7)	19 (16.2)	44 (37.6)	43 (36.8)	9 (7.7)
Are you aware of the health risks associated with cold climate?	1 (0.9)	16 (13.7)	39 (33.3)	43 (36.8)	18 (15.4)

### 3.3 Attitudinal aspect

With regards to attitudes, 59.8% and 59.0% of the respondents agreed respectively with the statements that it is the responsibility of practicing pharmacists to provide information on travel medicine to a traveller and that they need to have basic knowledge of travel medicine to serve travellers coming to pharmacies. The majority of the

respondents (69.2%) agree that knowledge of travel vaccines is important for a practicing pharmacist. Likewise, 62.4% of participants agree that there should be a training program on travel medicine for medications and infectious diseases in community pharmacies. Furthermore, 79.5% of pharmacists are interested in participating in a short course on travel medicine.

**Table 3.** Responses of Qatari Community Pharmacists to Questions Regarding Attitudinal Aspect of Travel Medicine.

Items	Response, n (%)				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
It is the responsibility of a practicing pharmacists to provide information on travel medicine to a traveler	33 (28.2)	70 (59.8)	11 (9.4)	3 (2.6)	-
Pharmacists need to have basic knowledge of travel medicine to serve travellers coming to pharmacies	36 (30.8)	69 (59.0)	8 (6.8)	1 (0.9)	3 (2.6)
There should be a training program on travel medicine for medicine and infectious diseases at your pharmacy	21 (17.9)	73 (62.4)	19 (16.2)	4 (3.4)	-
Knowledge on travel vaccines is important for a practicing pharmacist	22 (18.8)	81 (69.2)	12 (10.3)	2 (1.7)	-

  

Items	Response, n (%)		
	0 = No	1 = Not sure	1 = Yes
Are you interested in participating in a short course on travel medicine at your pharmacy?	3 (2.6)	21 (17.9)	93 (79.5)

### 3.4 Practice aspect

Regarding the practice aspect, almost a quarter (20.5%) of the pharmacists have never done a pre-travel assessment for a traveller in the past 12 months, and only 4.3% do it often. Likewise, 41% of pharmacists have rarely given

pre-travel advice for patients specifically for air travel in the last 12 months, and 39.3% of them did so sometimes. Surprisingly, 20.5% of pharmacists have never advised patients to get vaccinated for travel in the past year.

**Table 4.** Responses of Qatari Community Pharmacists to the Practice Aspect of Travel Medicine.

Items	Response, n (%)			
	Never	Rarely	Sometimes	Often
How often have you done pre-travel assessment of a traveler before travel in the past 12 months?	24 (20.5)	45 (38.5)	43 (36.8)	5 (4.3)
How often have you given pre-travel advice for you patient planning specifically for air travel in the last 12 months?	14 (12.0)	48 (41.0)	46 (39.3)	9 (7.7)
How often have you advised travel vaccines in the last 12 months?	24 (20.5)	36 (30.8)	44 (37.6)	13 (11.1)

## 4. Discussion

This study, to the best of our knowledge is the first study done in Qatar or the middle- east region evaluating the knowledge, attitudes, and practices of community pharmacists regarding travel medicine. This study will add to the literature regarding KAP of travel medicine in the Middle East region. Overall, this study shows that community pharmacists in Qatar were aware of travel medicine, had positive attitude towards pharmacists providing travel health services but lacked knowledge and skills to provide travel health services. Likewise, the majority of the community pharmacists have not provided travel health services.

A study carried out with community pharmacists in Malaysia showed that pharmacists lacked formal training in travel medicine, which is similar to our case in Qatar; however, Malaysian community pharmacists reported providing general medicines and health advice to travellers.<sup>24</sup> In contrast, a study carried out with pharmacists in Australia reported good knowledge of pharmacists regarding travel health and showed a good ability to provide appropriate advice to travellers.<sup>25</sup> This study can guide stakeholders to take right approach towards expanding the role of Qatari community pharmacists in travel health.

Furthermore, our findings show that a lot of the pharmacists are not very confident in their knowledge or skills in terms of travel medicine as most of them opt for the neutral answer to most of the questions provided. The findings of our study need to be viewed in the broader context of the practice of travel medicine in Qatar and the middle east where travel medicine as a specialty is still developing and is limited mostly to medical doctors.

A study in Qatar has reported inadequacy in travel medicine services provided by physicians and their approach to travel medicine.<sup>21</sup> We noted better confidence of Qatari community pharmacists regarding health risks associated with land travel compared to air travel, and their knowledge of health risks in cold climates was better than that in hot climate. However, we found that community pharmacists in our study lack essential knowledge on infections and vaccinations, which may have been the reason why they do not advise travellers regarding vaccinations. The findings are similar to a study carried out with pharmacists in Italy, where only 1.8% answered correctly regarding travel related infectious diseases.<sup>26</sup> Nevertheless, the interesting contrast was regarding the competency, as pharmacists with more excellent experience felt that they could advice travellers regarding the infectious disease. Vaccination is an essential aspect of pre-travel risk assessment and service, and pharmacists have been recommending and administering various travel-related vaccines as a part of travel health services in the US, Canada, and the UK.<sup>24</sup> A lack of essential knowledge on infections and vaccinations of Qatari pharmacists showed a need to provide proper training on travel medicines that includes common destination's infectious diseases and health risks, necessary health preparation, medication and vaccination requirements as laid out by organisation such as the World Health Organization (WHO), ISTM, and the CDC.<sup>27</sup>

Despite a lack of formal training in travel medicine, a significant proportion of pharmacists (28.2%) agreed that travel medicine is a part of their pharmacist professional responsibilities. This shows pharmacists' professional

commitment and positive attitude towards the extended scope of practice to help travellers with their medicine and healthcare issues. A study by Polla et al. with community pharmacists also reported a positive attitude of the pharmacists towards providing travel health services, and those who were more experienced and knowledgeable about infectious diseases related to travel believed they could provide travel health service.<sup>26</sup> A practical difficulty for Qatari pharmacists is that they do not have authority to administer vaccines or any injection, measure a patient's blood pressure, or prescribe medicines in Qatar. There seems to be a dual need. Firstly, arranging a collaborative travel health practice agreement with the Qatari physicians so that pharmacist can deliver these services or work collaboratively with the physicians. Secondly, providing pharmacists with training and resources on travel health and upskilling their vaccination and other travel health risk assessment skills.

As for the practices of community pharmacists, studies have shown that pharmacists can play a significant role in travel health either collaboratively or as a dedicated travel health service.<sup>4,28,29</sup> Travel health service is an accepted practice area in the UK, Canada, the USA and some European countries.<sup>4</sup> However, travel health as a practice for pharmacists has yet to fully evolve in the Low and Middle Income Countries (LMICs). Qatari community pharmacists can play a significant role in advising travellers about conditions, diseases, and infections that may occur with travel and giving suitable recommendations to help keep the vulnerable traveller in the best health status possible. This study indicated that only 4.7% of the Qatari community pharmacists had done pre-travel assessment and a small proportion of pharmacists have provided health services and medicine for travellers. Studies have reported mixed results about Qatari community pharmacists regarding standards of practice, competency, and extended area of practice.<sup>30-33</sup> For example, a study by Makhoul et al. has highlighted adequate self-perceived competency of Qatari Community pharmacists for the majority of common minor ailments.<sup>31</sup> In contrast, another study by Ibrahim et al. reports an inadequate standard practice regarding their response to the common cold and allergic rhinitis.<sup>30</sup> Nevertheless, Qatari community pharmacists' positive attitude towards travel health service, awareness regarding their need for training on travel medicine, eagerness to learn, and the resourcefulness of the Qatari health system showed that travel health service can be established and implemented in Qatari community pharmacies.

Qatar is a sprawling business hub in the Middle East and a major attraction for business and travel. Individuals travelling into and out of Qatar have varying health care

and medicines-related needs. Community pharmacies with position and outreach are ideally placed to help travellers with their health care and medications related needs. Stakeholders in Qatar need to support Qatari community pharmacies with training, resources and regulatory provisions in travel medicine so that community pharmacies can provide travel health services in collaboration with physicians.

### Limitations

Limited resources and time constraints hindered our ability to contact community pharmacies beyond the well-care establishment. Consequently, the sample size obtained for our study was below the required minimum, compromising the significance and generalizability of our results. Our sample primarily consisted of individuals from a single nationality, further limiting the representativeness of our findings. Another limitation arises from the online survey format, which exposes us to potential reporting bias. Participants may have responded dishonestly, overemphasizing desirable aspects, or downplaying undesirable attributes, and we need a mechanism to verify or address this issue.

### Recommendations

To improve the practice of travel medicine via community pharmacies in Qatar, some of the recommendations are:

- Developing a regulatory and practice framework for community pharmacy-based travel service. Creating regulatory provisions to allow pharmacists to administer vaccines and advise patients on travel health-related problems would enable the pharmacists to start the service.
- Building collaborative practice agreements with the physicians and nurses to deliver travel health services whereby a physician can prescribe medicine and pharmacists can dispense medications, health supplies and provide travel health-related advice can be a feasible model for the Qatari health system.
- To ensure that future pharmacists possess fundamental knowledge of travel medicine, incorporating this topic into the undergraduate pharmacy curriculum is advisable. Furthermore, introducing an accredited short course and training for pharmacists in travel medicine will help pharmacists gain the necessary knowledge, skills, and competency.

### 5. Conclusion

The survey shed light on the knowledge, attitudes, and practices of community pharmacists in Qatar concerning travel-health medicine. While community pharmacies in Qatar displayed a positive attitude towards travel medicine, there were noticeable knowledge gaps, and the provision of travel health services or practice of travel

medicine could have been more frequent. Nevertheless, community pharmacists expressed enthusiasm for receiving training in travel medicine and offering travel health services. Stakeholders should prioritize providing training and resources to empower these pharmacists to cater to the health needs of outbound Qatari travellers and international visitors, thereby contributing to the Qatari business and travel ecosystem.

## Research Highlights

### What Is Already Known?

The health of travellers is a crucial facet of public health in Qatar, given its status as an economic and business hub in the Middle East. Community pharmacies play a significant role in serving both outbound Qatari travellers and international travellers within Qatar through various means.

### What Does This Study Add?

Qatari community pharmacists demonstrated a positive attitude towards travel medicine. However, there was a noticeable gap in their knowledge, which could be a contributing factor to the observed limited practice of travel medicine among them.

### Conflict of interest

None

### Ethical Approval

This research was approved by the Qatar University Institutional Review Board (QU-IRB 2- CPH- 2022-742).

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### Author's Contributions

AJ, MIM and BKC contributed to the conceptualisation and design of the study, KV, KP to design and review of the study. AJ, KV and KP contributed to data collection, AJ, MIM, BKC, PL, KV, KP contributed to preliminary draft. BKC, MIM and PL contributed to review and

finalisation of the manuscript. All the authors contributed agreed to the final version of the manuscript.

### Consent For Publication

All the authors have consented for the publication of the manuscript.

### Ethics approval

Ethical approval for the study was obtained from Qatar University, Institutional Review Board.

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