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Pre-Travel Health-Seeking Knowledgeā Gaps and Perceived Need Among International Travellers in East India, An Observational Study

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Abstract

Background: Various factors contribute to travellers developing medical conditions, making pre-travel health preparedness crucial. However, knowledge about travel health and vaccines is often poor, with informed travellers typically relying on friends or family for advice. Thus, we aimed to determine the pre-travel health-seeking knowledge and attitude of international travellers in East India.

Methods: We conducted a cross-sectional study in Bhubaneswar from December 2022 to November 2023. International travellers were included, while those unable to comprehend were excluded. Consecutive sampling was done until the desired sample size of 376 was reached. A pre-designed semi-structured questionnaire was used to assess participants' pre-travel health-seeking knowledge and attitude.

Results: Out of 376 participants, 276 (72.9%) were from the Yellow Fever Vaccination Centre (YFVC) of the institute, with a mean age of 34.4 ± 10.61 years. The majority were males (320, 85.1%), and 313 (83.2%) were from Odisha. Most participants (246, 66%) were travelling to the African Region. A total of 162 (43.0%) had previously travelled abroad. Of the 82 (21.8%) participants who sought travel health advice, 71 (86.5%) consulted non-medical sources. Most participants (303, 80.5%) agree using sanitisers while travelling, but only 71 (18.9%) were aware of the Government of India's travel health advisory.

Conclusions: Pre-travel health-seeking knowledge and attitude were poor, and travel-related illness was not considered a risk by the majority. Further research is required in this arena of travel health involving interventional studies in the Indian context.

Keywords: Pre-travel health, pre-travel health advice, travel health, travel health knowledge, travel health attitude, international travellers.

Introduction

Travellers cross international borders for various reasons like business, research, studies, employment, visiting friends and relatives (VFRs), and touristic purposes. Each traveller is as unique as their itineraries, age ranges, and pre-existing health concerns and conditions. A traveller is exposed to various

health hazards while travelling, and there is a range of factors that can render them at risk for developing a medical condition.[1] Therefore, disease prevention is a prerequisite for safe travel and maintaining good physical health while traveling especially in this era of rapid growth in international tourism.[1]

Studies conducted across the globe have shown that the health-seeking attitude among international travellers before a trip is poor, despite access to Travel health clinics and healthcare professionals. It was seen that the main reason for not seeking pre-travel advice (PTA) is a lack of concern; travellers often underestimate the risk of travel health hazards. Among those who seek travel health advice, the majority of travellers tend to seek advice from Internet sources, and some consult healthcare professionals or General Practitioners. And very few healthy individuals visit travel health clinics or travel medicine specialists. A few articles state that pre-travel health consultation is even poorer among Asian travellers,[2] particularly Chinese, Indian, and Malays.[3] Indian studies depict that knowledge of travellers regarding travel health or travel vaccines is poor.[4,5] Therefore, we aimed to assess pre-travel health-seeking knowledge and attitude among international travellers in East India.

Materials and methods

We did a cross-sectional study in Bhubaneswar from December 2022 to November 2023. We included participants from the Regional Passport Office (RPO), Nayapalli, and the Yellow Fever Vaccination Centre (YFVC) at All India Institute of Medical Sciences (AIIMS), Bhubaneswar. Using a study done by *Bhatia et al.*[6] where 57.3% of participants were aware of any travel vaccinations, taking Z^2 ((1-α⁄(2)) = 1.96, alpha error of 5% and absolute precision 5%, the sample size calculated was **376**. Individuals who were ≥18 years old and were scheduled to travel abroad were included. Individuals who failed to comprehend were excluded from the study. We did consecutive sampling till the desired sample size as per the eligibility criteria was reached.

A pre-designed semi-structured questionnaire was used to assess pre-travel health-seeking knowledge and attitude of the study participants. Data collection was interview-based using Odia/English language, as per the participants' preference and was entered in "Epicollect5 version 6.0.1". The data were imported into Microsoft (MS) Office Excel version 2021, and descriptive statistics were used to summarise participant characteristics and study variables. Continuous variables were reported as mean ± standard deviation (SD) for normally distributed data or median (interquartile range, IQR) for non-normal distributions, determined via Q-Q plots. Categorical variables were presented as frequencies and percentages. Normality was visually assessed using histograms and Q-Q plots. Data were analysed using IBM SPSS Statistics version 26.0 (Armonk, NY: IBM Corp), with statistical significance set at $p < 0.05$. No inferential statistics were performed due to the study's descriptive cross-sectional design. Ethical approval was taken from the Institute Ethics Committee (Reference number: IEC/AIIMS BBSR/PG Thesis/2022-23/55), and written informed consent was obtained from the study participants in their local language.

Results

We included 376 participants, of which 276 (72.9%) were from YFVC. The mean age of the participants was 34.4 ± 10.61 years. Males were 85.1%, and 88.3% were Hindu by religion. As per the International Standard Classification of Education (ISCED), [7] 33.5%, 11.2%, and 3.2% were graduates, post-graduates, and PhD holders, respectively. As per the National Classification of Occupations,[8] 108 (28.7%) participants were unemployed, while 13 (3.5%) and 86 (22.9%) were homemakers and highly

skilled workers, respectively. Participants from Odisha were 83.2%, and 8.2% were from Andhra Pradesh (Table 1).

Table 1: Socio-demographic and travel characteristics of the study participants, N=376

Parameters		**Mean (2SD)**
Age (in years)		34.4 (10.61)
Parameters		**Frequency (Per cent)**
Gender	Male	320 (85.1)
	Female	55 (14.6)
Site	YFVC	274 (72.9)
	RPO	102 (27.1)
Education	Graduate	126 (33.5)
	Primary	95 (25.3)
	Secondary	85 (22.6)
	Post-graduate	42 (11.2)
	Diploma	12 (3.2)
	PhD	12 (3.2)
	Illiterate	4 (1.1)
Occupation	None	108 (28.7)
	Skilled	95 (25.3)
	Highly skilled	86 (22.9)
	Semi-skilled	70 (18.6)
	Homemaker	13 (3.5)
	Unskilled	4 (1.1)
Marital status	Married	240 (63.8)
	Unmarried	135 (35.9)
	Separated	1 (0.3)
Religion	Hindu	332 (88.3)
	Muslim	28 (7.4)
	Christian	13 (3.5)
	Others	3 (0.8)
Residence	Odisha	313 (83.2)
	Andhra Pradesh	31 (8.2)
	Bihar	8 (2.1)
	Jharkhand	6 (1.6)
	West Bengal	6 (1.6)
	Others (Maharashtra, Tamil Nadu, Uttar Pradesh, Chhattisgarh, Rajasthan)	12 (3.1)
Travel destination	African Region (AFR)	246 (66%)
	Eastern Mediterranean Region	40 (11%)

	(EMR)	
	American region (AMR)	19 (5%)
	European Region (EUR)	16 (4%)
	South East Asia Region (SEAR)	12 (3%)
	Western Pacific Region (WPR)	8 (2%)
	Multiple regions	35 (9%)
Purpose of travel	Employment	256 (68.1)
	Vacation	38 (10.1)
	Business travel	30 (8.0)
	VFRs	21 (5.6)
	Others	16 (4.3)
	Education	10 (2.7)
	Religious/pilgrimage	5 (1.3)
Travel companion	Traveling alone	231 (61.4)
	Team/academic group/crew	67 (17.9)
	Travelling with family	42 (11.2)
	Colleagues/business partners	20 (5.3)
	Travelling with friends	16 (4.3)
Duration of travel	< Two weeks	70 (18.6)
	Two weeks to three months	48 (12.8)
	> Three months	258 (68.6)
Travelers with comorbidity	Yes	27 (7.2)
	No	349 (92.8)

The majority, i.e., 246 (66%) of the participants were travelling to the African Region (AFR). Reasons for travelling were varied, where 68.1% of participants travelling for employment purposes. The duration of travel was more than three months for 68.6% of participants. Participants who were travelling with a comorbid condition (T2DM, HTN, Hyperthyroidism, anxiety disorder, depressive disorder, and chronic arthritis) was 7.2%.

Out of the total participants, 162 (43.0%) had a history of travel to other countries in the past, of which 58 (35.8%) had travelled more than once. The most common last travel destination was EMR with 124 (55.8%) participants, followed by the South East Asian Region (SEAR). The most common reason for travel in the past was employment. Out of 162 participants, 36 (22.2 %) had encountered episodes of illness/diseases during their past travels, and 32 of them sought medical help for the same while abroad. Of those who sought medical help, the majority of the participants sought medical consultation from a company dispensary/hospital, the rest sought consultation from a government hospital or private practitioner, and one individual took over-the-counter medication. The most common illness/disease was respiratory tract infection, which was encountered by 16 (44.4%) participants. Other illnesses encountered were acute febrile illnesses, malaria, acute gastroenteritis, myalgia, migraine, Road Traffic Accident (RTA), appendectomy, and COVID-19. (Table 2). Participants who had a history of taking travel vaccines[9] were 30, out of which 11 participants had taken the yellow fever vaccine, while 16 (53.3%) individuals could not recall the type of vaccine.

Table 2: Past travel and vaccination characteristics of the study participants

Parameters		Frequency (Per cent)
Travel history to other countries, N=376	Yes	162 (43.0)
	No	234 (62.2)
Travel destination, N=222	EMR	124 (55.8)
	SEAR	46 (20.7)
	AFR	18 (8.1)
	EUR	19 (8.5)
	AMR	9 (4.0)
	WPR	6 (2.7)
Reason for travel, N=181	Employment	110 (60.7)
	Official purpose	36 (19.8)
	Tourism	25 (13.8)
	Education	6 (3.3)
	VFRs	4 (2.2)
Any episode of illnesses* while abroad, N=162	Yes	36 (22.2)
	No	126 (77.7)
Any episode of Illnesses/diseases while abroad for which medical consultation was sought, n=36	Yes	32 (88.9)
	No	4 (11.1)
Place of medical consultation sought for illnesses/diseases acquired, n=32	Company dispensary/hospital/tie-up	20 (62.5)
	Government hospital	6 (18.7)
	Private practitioner	5 (15.6)
	Over-the-counter medication	1 (3.1)
History of taking travel vaccine†, N=376	Yes	30 (8.0)
	No	346 (92.0)

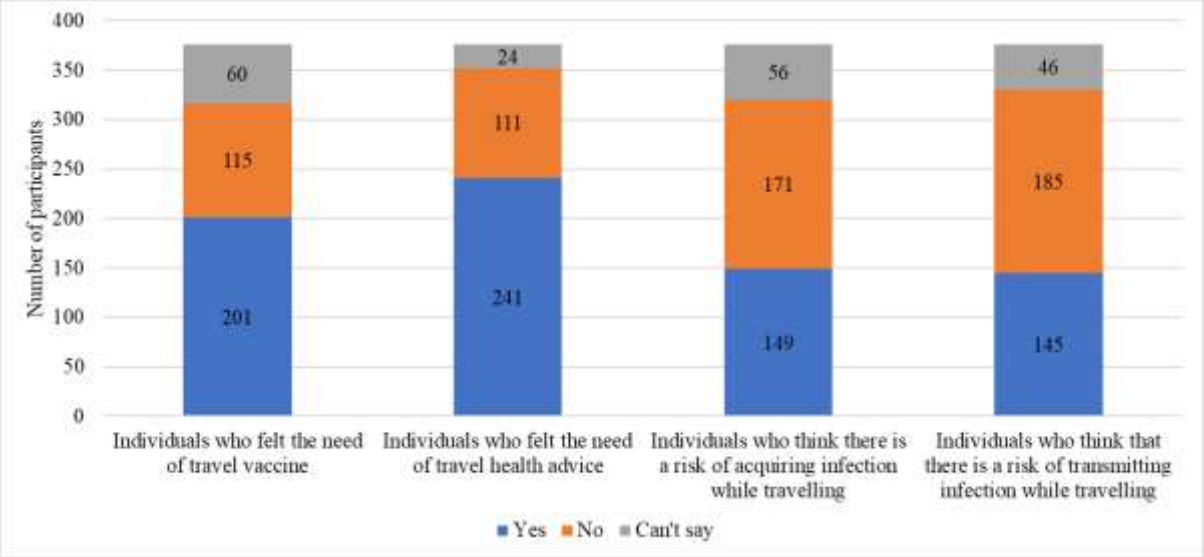
African Region (AFR); American Region (AMR); Eastern Mediterranean Region (EMR); European Region (EUR); South East Asia Region (SEAR); Western Pacific Region (WPR)

*Respiratory tract illness, febrile illnesses, malaria, acute gastroenteritis, myalgia, migraine, Road Traffic Accident (RTA), appendectomy, and COVID-19

†Travel vaccines are required, recommended, or mandatory vaccines for a given destination.[9]

Out of 82 (21.8%) participants who sought travel health advice before travelling, 71 (86.5%) individuals sought advice from a non-medical source (company advisory, travel agency, friend/family/acquaintance and internet sources). Among the total participants, almost half felt the need for travel vaccines, and 241 (64.1%) felt the need for travel health advice (Figure 1).

Figure 1 Pre-travel health needs perceived by the study participants, N=376



The majority of the participants, i.e., 303 (80.5%), use sanitisers as a health precaution while travelling, followed by carrying a First aid kit, immunisation against VPDs, obtaining travel health insurance, and avoiding street animals. Participants who said that raw/undercooked food of animal origin/seafood can cause illnesses while travelling were 162 (43.0%). Yellow fever disease was identified by 139 (36.9%) study participants who could tell that it had a vaccine that prevented the disease. Dehydration was identified by 19.9% of participants as an environmental health risk while travelling. The use of mosquito nets/screens was identified by 263 (69.9%) participants as a recommended preventive measure for mosquito bites (Table 3).

Table 3: Pre-travel health-seeking knowledge of study participants, N=376

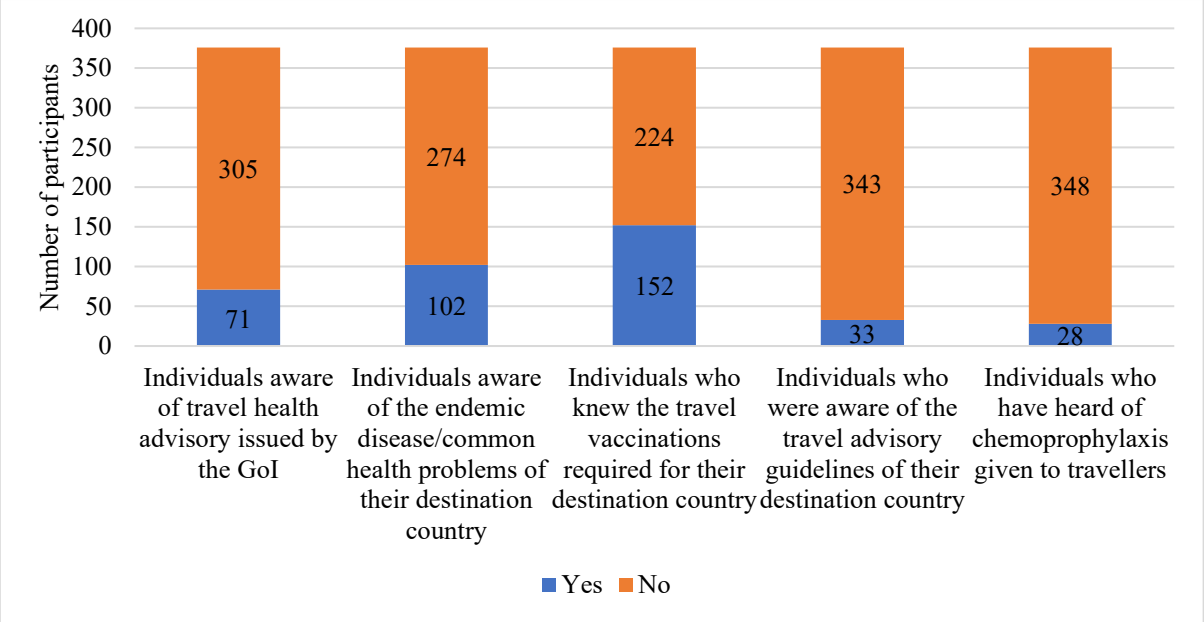
Parameters		**Frequency (Per cent)**
Health precautions taken by the participants while travelling*	Using sanitizers	303 (80.5)
	Carrying a first aid kit	197 (52.3)
	Immunisation against VPDs	125 (33.2)
	Having travel health insurance	117 (31.1)
	Avoid touching/caressing street animals	192 (51.1)
	None	45 (11.9)
Food items/drinks that can cause illness while travelling *	Raw/undercooked food of animal origin/seafood	162 (43.0)
	Unpasteurized milk	149 (39.6)
	Food from street vendors	126 (33.5)
	Unlabelled tap water	94 (25.0)
	Raw fruit/vegetable	69 (18.3)
	None	99 (26.3)
Knowledge of vaccine-preventable diseases*	Yellow fever	139 (36.9)
	Poliomyelitis	89 (23.6)
	Typhoid	89 (23.6)

	Hepatitis A	89 (23.6)
	Cholera	72 (19.1)
	Hib type B	49 (13.0)
	Japanese encephalitis	49 (13.0)
	Hepatitis B	67 (17.8)
	Pneumococcal disease	38 (10.1)
	Meningococcal disease	22 (5.8)
	Rabies	38 (10.1)
	Tickborne encephalitis	18 (4.7)
	Don't know any	65 (17.2)
Environmental health risk as per the participants in their destination country*	Dehydration	75 (19.9)
	Sunburns/UV radiation	60 (15.9)
	Heatstroke/heat syncope/hyperthermia	27 (7.1)
	Hypothermia/frostbite	15 (3.9)
	Mosquito bite/Insect bite	118 (31.3)
	Snakebite/Animal bite	72 (19.1)
	Altitude sickness	29 (7.7)
	Recreational accidents	18 (4.7)
	Muscle sprains/fractures/RTAs	14 (3.7)
	Radiation hazard	12 (3.1)
	Intestinal parasites/Leeches	18 (4.7)
	None/can't say	229 (60.9)
Recommended preventive measures for mosquito bites*	Use of mosquito nets/screens	263 (69.9)
	Insect repellents (EPA registered)	172 (45.7)
	Full-sleeved clothing	152 (40.4)
	Hotels with air conditioners/window screens	100 (26.6)
	Treat clothing and gear with permethrin	31 (8.2)
	None	36 (9.5)

Participants choose multiple options

Awareness regarding travel health advisories issued by the Government of India among the participants was 71 (18.9%). The majority of the participants, i.e., 274 (72.9%), were not aware of the endemic disease/common health problems of their destination country. Knowledge about travel vaccine requirements in their destination country was present in 152 (40.4%) participants. Awareness regarding travel advisory guidelines of their destination country was present among 33 (8.8%) participants, while 348 (92.6%) participants had never heard of chemoprophylaxis for travellers (Figure 2).

Figure 2 Pre-travel health-seeking knowledge of study participants, N=376



Discussion

We attempted to access pre-travel health-seeking knowledge and attitudes of Indian international travellers. We found that pre-travel health-seeking knowledge was poor; however, participants ' perceived need for pre-travel health-seeking was positive. The findings were similar among participants from YFVC and RPO. Around one-third of the participants in our study were travelling to African countries, which is consistent with other such studies.[6,10,11] However, travel duration, comorbid condition, and past travel were not assessed in other similar Indian studies.[6,10,12] In contrast to a statement quoted by Forbes magazine, i.e., "64% of global travellers being female, versus 36% male, according to RV and Playa", our study has fewer female participants, which could be an underrepresentation.[13] In Sweni et al.'s study, 32% faced gastrointestinal infections; this dissimilarity could be due to the differing sociodemographic characteristics of the participants.[14] Landge et al. study depicts 68.1% took pre-travel health advice from doctors and 42% had received the required vaccination, such a high percentage could be due to participants' medical background that exposes them to be better informed. A Nigerian study shows knowledge and good attitude regarding travel vaccines were 41.4% and 83.8%, respectively, much higher than our study findings. This could be due to Work/business-related travel reasons where participants might have been pre-informed by their work company/agency.[15] Another African study depicted 96.3% awareness of travel vaccines; such a higher percentage could be attributed to the educational background of participants, as they were doctors.[16] A Boston study showed that 54% of participants travelling to low- and Low-middle-income countries (LLMIC) and 25% of participants travelling to upper-middle-high-income countries (UMHC) pursued health information before travel. Individuals who didn't pursue health information were not concerned about travel health problems.[17,18] In contrast, our study showed participants perceive the need for travel health advice as relevant. Despite positive perceptions, it might be difficult to change their attitude due to the absence of travel health services and resources in our country.

Middle Eastern studies depict an inadequate level of travellers' knowledge and poor utilisation of travel medicine services; friends and relatives were the source of travel health information for the majority.[19–22]

Unlike our study, one-fourth of participants reported having sought a pre-travel consultation mostly from medical sources in Greece.[23] Another study showed 48% to 90% travellers sought pre-travel health consultation.[24] This difference could be due to the higher educational status of participants and their travel destination.

Almost half of the respondents in Sydney airport sought some form of travel health advice, which is higher than our study, and travel vaccines were more commonly recalled by respondents travelling to Bangkok.[25] Foreign backpackers in Thailand frequently faced traveller's diarrhoea and commonly sought over-the-counter medication or self-recovery.[26] This dissimilarity could be due to participants' socio-demographic profile and travel characteristics, as they were short-term leisure travellers, while our study participants were mainly long-term travellers as migrant employees. Another study among foreign backpackers showed 62.41% of the participants sought pre-travel health information frequently from internet sources, and 58.65% of backpackers had insufficient travel health knowledge. This difference could be attributed to the participants' socio-demography, as the majority of them were students travelling for tourism purposes. Most backpackers disagree (69.18%) that they are prone to the risk of acquiring disease/health problems when travelling.[27] Similarly, a Malaysian study showed that 34.1% thought travelling doesn't increase the risk of getting an infection, while 52.2% think that getting vaccinations is very important before travelling. Pre-travel health-seeking attitude was significantly associated with knowledge about vaccines in this study.[28] A study done in Taiwan showed that 83% of respondents were willing to have a pre-travel consultation. A higher level of education, concern for travel-related illnesses, and a plan for travel health insurance were significantly associated with a good attitude toward pre-travel health.[29] A study among university students showed that approximately one-third of the participants have sought pre-travel health-seeking from a professional source, unlike our study.[30] Wilder-Smith et al. did a study including seven airports, where it was found that 32% of participants sought travel health advice before travelling, and the most common source was a general doctor/family physician.[31] Namikawa et al studied KAP infectious disease and immunisation uptake among Japanese participants, where they found travel health information was sought by 38.7%, and the internet was the most common source of information, which may have been due to the lack of availability of professional travel health services. About 50% believed that vaccinations are highly protective.[32] Paudel et al. studied pre-travel health-seeking practices among 180 individuals with notified infections, and they found 25% of them sought health advice before travel from a professional. Of those who did not seek advice, the most common reasons given were not perceiving themselves to be at risk (55, 41%) and previous 'healthy travel' (49, 36%).[33]

In another instance, Japanese travellers in India were studied, and it was seen that 66.3% of them had sought information regarding travel health and safety, and the most common source of information was travellers' blogs/websites.[34] Another study among Western Australians found that 32% of individuals sought pre-travel health advice, of which 16% sought it from a medical professional. The most common reason for not seeking advice was frequent travel to the destination country.[35] Hung et al. studied travel health risks and perceptions and found that 12.1 % consulted a family doctor/general practitioner (level 3 preparation) and 2.8% Consulted a travel health specialist (level 4). Factors responsible for higher levels of preparedness (levels 3&4) included non-Hong Kong residency, Caucasian ethnicity, older age, retired occupational status, lower self-perceived health, higher travel frequency, and longer length of travel were associated with medical consultation before travel.[36] Another study showed that risk perception for travel-related illness was generally low, and individuals relied on the Internet, social media, parents, and

friends for travel health advice, as depicted in a qualitative study of Chinese international students.[37]
Our study is likely to be the first in the nation to assess pre-travel health-seeking knowledge and attitude among international travellers, and participants taken from YFVC and RPO better represent the travelling population. For the purpose of feasibility, we did consecutive sampling, which would have introduced selection bias. Furthermore, travel health practice couldn't be assessed due to the nature of the study design.

Conclusion

Travel health is an emerging concept, and pre-travel health KAP is less studied in our country. We tried to assess pre-travel health-seeking knowledge and attitude among international travellers; our findings showed that pre-travel health-seeking knowledge and attitude were poor. Various aspects of travel health-related KAP, preparedness, and behaviour have been studied globally among different groups like university students, foreign backpackers, tourists, pilgrims, individuals with chronic illness, etc., and results also differed according to socio-demographic and travel characteristics of these groups. Overall, it was found that travel-related illness or health hazard was not considered a risk by healthy travellers, and only a small number of individuals prefer to get travel health consultation from a professional.
Globally, travel health-related websites, mobile applications, and electronic modules are numerous and readily available. However, in the Indian context, these platforms are lacking and therefore, there is a need for travel health-related services in the country. More research is required in this arena of travel health involving interventional studies in the Indian context.

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