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Original Research

Travel-Health Behaviour and Self Reported Travel-Related Illness Among International Medical Students In A Tropical Destination: A Cross Sectional Survey From Indonesia

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Abstract. Background: *International travelers are at risk of travel-related illness (TRI), particularly when visiting tropical and developing regions such as Indonesia. Bali, as a major international destination, presents increased exposure to infectious diseases and environmental health risks. International medical students are especially vulnerable due to prolonged stays and high levels of social interaction.* ***Objective:*** *This study aimed to describe travel-health behaviour and the occurrence of travel-related illness among international medical students in tropical LMICs.* ***Methods:*** *This study employed a descriptive cross-sectional design conducted from January to September 2025, collected using a structured questionnaire administered through in-person and online interviews. A total 60 participants from international medical students, Udayana University using convenience sampling. The study assessed travel-health behaviour : pre-travel preparation, pre-travel advice–seeking behaviour, preventive practices during travel, and travel-health kit utilization. In addition, travel-related illness was evaluated, defined as any self-reported health problems experienced during travel.* ***Results:*** *Most participants showed good pre-travel health preparation (31-58,3%), including professional consultation, and possession of travel-health kits. Preventive practices during travel were generally good (68,3%) but did not consistently increase with higher preparation levels. Despite this, a high proportion of participants experienced travel-related illness (78,3%), mainly gastrointestinal (55%) and respiratory conditions (31,7%). Professional pre-travel advice and good preventive practices were associated with lower illness proportions.* ***Conclusion:*** *Despite high pre-travel preparation, travel-related illness remained common among international medical students, likely influenced by ongoing environmental exposure and situational behaviours during prolonged stays in tropical settings, reducing the effectiveness of pre-departure preparation.*

Keywords: *Bali; International Medical Students; Pre-Travel Preparation; Preventive Practices; Travel-Health Behaviour; Travel-Related Illness*

Key Messages

- Point 1 (Primary research finding): International medical students demonstrated high levels of pre-travel preparation; nevertheless, travel-related illness remained

common during prolonged stays in a tropical setting, predominantly involving gastrointestinal and respiratory conditions.

- Point 2 (Contribution to primary care science): This study shows that pre-travel preparation and reported preventive practices alone are insufficient to mitigate illness risk among long-stay student travelers, highlighting the influence of environmental exposure and context-dependent behaviours during travel.
- Point 3 (Policy or practice implications): Primary care services and host institutions should complement pre-travel counseling with structured, destination-based health orientation and ongoing context-specific preventive support for international students, beyond logistical preparation such as travel-health kits.

1. Introduction

Travelers are exposed to various health risks during travel, particularly travel-related illness (TRI), which includes infectious diseases, accidents, motion sickness, and travel-related fatigue. Previous studies have shown that approximately 6–87% of international travelers experience illness during or after travel, with a substantial proportion traveling to developing regions, especially Asia and Africa [1]. This pattern highlights travel health as an important and growing global public health concern, especially in tropical and resource-variable settings.

Travel-related illness refers to any acute or subacute health condition occurring during travel or after return that is temporally associated with travel exposure [1]-[3]. TRI is most commonly dominated by infectious diseases, particularly gastrointestinal infections, respiratory tract infections, and febrile illnesses, which account for the majority of morbidity among travelers to tropical destinations [1],[2]. Empirical evidence from Bali supports this pattern, as a local study reported that 25.5% of travelers experienced travel-related illness in the form of Bali Belly during their stay, indicating that such conditions are not merely theoretical risks but have been well-documented among visitors to this destination [4].

In addition to infectious causes, TRI also encompasses non-infectious conditions such as dehydration, heat-related illness, fatigue, and exacerbation of pre-existing medical conditions, especially during prolonged stays abroad [3]. The risk of TRI is influenced by destination-specific factors, duration of stay, environmental exposure, sanitation conditions, and individual preventive behavior, making long-stay travelers in tropical LMICs particularly vulnerable [5]-[7].

Infectious diseases remain the most common health problems among international travelers and are expected to increase alongside the growth of global tourism and cross-border mobility [2],[3]. Increased global mobility facilitates the cross-border transmission of infectious diseases, positioning travel as a significant global health concern [8],[9]. In tropical LMICs, travelers may be exposed to vector-

borne and zoonotic diseases such as dengue, Japanese encephalitis, and rabies, as well as environmental and sanitation-related hazard [5],[6]. These risks are further amplified by climatic conditions, infrastructure variability, and travel-related fatigue commonly encountered in tropical destinations. Environmental exposure, tropical climate, sanitation challenges, and travel fatigue further contribute to increased vulnerability among travelers visiting Bali [4],[10].

Among international travelers, university students particularly medical students represent a distinct high-risk subgroups. Their risk profile differs from that of short term tourists due to prolonged stays, intensive academic and social engagement and frequent interactions to local communities [11]. International student mobility has increased substantially over the past two decades, exceeding 5.6 million students worldwide [12]. This expanding mobility underscores the potential public health implications of international student travel.

International students share similarities with visiting friends and relatives (VFR) travelers, particularly in underestimating health risks, practicing suboptimal preventive behaviors, and demonstrating insufficient pre-travel preparation [11],[13]. Additional challenges include unpredictable academic schedules, engagement in high-risk behaviors, and limited access to vaccination or travel health services due to financial or logistical barriers [14],[15]. These factors collectively increase susceptibility to TRI during extended stays abroad. Despite these vulnerabilities, the travel health literature has largely focused on short-term tourists, with limited empirical evidence describing travel-health behaviour and illness patterns among long-stay international medical students in tropical LMIC contexts.

Indonesia, particularly Bali, represent relevant setting within this global landscape. As one of Southeast Asia's major international travel and academic destinations, Bali hosts a growing number of international students participating in long-term educational and medical training programs. Udayana University is a key host institution for such programs, enrolling international medical and health science students from diverse geographic backgrounds [16]. Despite the increasing number of international medical students and their potential health vulnerabilities, empirical data describing travel-health behaviour and the occurrence of TRI in this population remain scarce .

Travel-health behavior encompasses a range of actions aimed at reducing health risks during travel, including pre-travel preparation, seeking pre-travel advice (PTA), vaccination uptake, preventive practices during travel, and travel-health kit utilization [3],[11]. Understanding these behaviours among long-stay international medical students is essential for informing institutional preparedness strategies and improving health support within academic mobility programs. Therefore, this study aims to describe travel-health behavior and travel-related illness among international medical students undertaking study program in a tropical LMIC setting. The findings

are expected to contribute an exploratory evidence relevant to international student mobility, travel medicine practice and global health education.

2. Materials and Methods

This study employed a descriptive cross-sectional design to explore travel-health behaviour and the prevalence of travel-related illness among international medical students at Udayana University. Data were collected between January and September 2025 using a structured questionnaire administered through direct or online interviews. The study population comprised international students enrolled in the Bachelor of Physiotherapy program and the International Elective Study program at the Faculty of Medicine, Udayana University. A total of 60 participants were recruited using convenience sampling. The minimum sample size was calculated using the standard formula for populations of fewer than 10,000 individuals. Initially, the sample size (n) was estimated using the formula $n = Z^2pq/d^2$ with a 95% confidence level (Z = 1.96), p = 0.5, and d = 0.05, resulting in a value of 384.16. This value was then adjusted using the finite population correction formula $nf = n / [1 + (n/N)]$, yielding a minimum required sample size of 59 participants.

Travel-health behaviour was assessed using a structured questionnaire consisting of multiple items across predefined domains, including pre-travel preparation, seeking pre-travel advice (PTA), vaccination, travel-health kit utilization, and preventive practices during travel. Responses to individual questions within each domain were scored and aggregated to generate domain-specific scores, which were subsequently categorized to describe overall behavioural patterns. Pre-travel behaviours were defined as health-related actions undertaken before departure, namely vaccination uptake, PTA seeking, and preparation of a travel-health kit, whereas during-travel behaviours were operationalized as preventive practices performed while staying at the destination.

Travel-health kit utilization was categorized as poor or good based on five components: availability of medications, medical equipment, essential documents, insurance coverage including evacuation, and emergency contact information. The total travel-health kit score ranged from 3 to 5. Preventive practices during travel were assessed using nine items covering food consumption, insect bite prevention, sexual behaviour, and road safety practices, with selected items reverse scored to reflect protective behaviour. The total preventive practice minimum score is 3 and maximum score is 8, and due to non-normally distributed data, median values were used as cut-off points, with a median score of 4 for travel-health kits and 7 for preventive practices. In addition, travel-related illness was evaluated, defined as any self-reported health problems experienced during or after travel, including gastrointestinal, respiratory, febrile, dermatological, or other acute conditions. Data were analyzed descriptively.

Pre-travel preparation was classified into four levels based on established literature. Level 1 indicated did not undertake any health-related preparation before travel, Level 2 comprised self-preparation measures, including seeking information on travel-related risks, carrying basic medications, practicing general prevention of travel-related diarrhea and mosquito bites (e.g., use of repellents, long-sleeved clothing, and bed nets), as well as carrying travel insurance and a basic first-aid kit. Level 3 involved consultation with a general practitioner or family physician to obtain travel-specific vaccinations, prescription medications, education on endemic diseases, and preparation for emergency situations, and Level 4 reflected consultation with a travel medicine specialist, including recommendations for advanced vaccinations, management of chronic conditions, prescription of specialized medications, and preparation for more complex medical risks [17]. Data were analyzed descriptively using univariate analysis in SPSS version 20. Ethical approval was obtained from the Ethics Committee of the Faculty of Medicine and RSUP Prof. dr. I.G.N.G. Ngoerah, Udayana University (No. 0640/UN14.2.2.VII.14/LT/2025) dated on 5th March 2025, and informed consent was obtained from all participants prior to participation.

3. Results and Discussion

Participant Characteristics and Travel-Health Profile

Table 1 summarizes the demographic profile, travel-health behaviour, and self-reported travel-related illness among international medical students participating in this study.

Table 1. Demographic Characteristics, Travel-Health Behaviour, and Self-Reported Travel-Related Illness among International Medical Students at the Faculty of Medicine, Udayana University (N = 60)

Characteristics	N (60)	%
Nationality		
Germany	35	57,4
Austria	6	9,8
Norway	4	6,6
Switzerland	3	5,0
Others	11	18,3
Age (Category)		
15 - 19 Years	6	10,0
20 – 24 Years	17	28,3
25 – 29 Years	31	51,7
30 – 34 Years	5	8,3
35 – 39 Years	1	1,7
Age (Statistics)		
Mean ± SD	24,83 + 3,42	
Median (Min-Max)	25 (19-35)	
History of Visiting ASEAN Countries		
Yes	31	51,7
No	29	48,3
Medical History		

Characteristics	N (60)	%
None	50	83,3
Present	10	16,7
Vaccination History in Childhood/Adolescence		
Very complete, > 9 types of vaccines	39	65,0
Moderate, 5–9 types of vaccines	19	31,7
Limited, < 5 types of vaccines	1	1,7
Unknown	1	1,7
Travel-Health Kit Category		
Poor	13	21,7
Good	47	78,3
Preventive Practices During Abroad Category		
Poor	22	36,7
Good	38	63,3
Travel-Related Illness Experiences During in Bali		
Yes	47	78,3
No	13	21,7
Types of Travel-Related Illness Experienced		
Acute Diarrhea	33	55,0
Respiratory Tract Disease	19	31,7
Acute Febrile Illness	18	30,0
Skin Disease	7	11,7
Traffic Accident	5	8,3
Pre-Travel Preparation Category		
Level 1	0	0
Level 2	7	11,7
Level 3	18	30,0
Level 4	35	58,3

Table 1 presents the population was dominated by students from Germany (57.4%), indicating a strong concentration of participants from Western Europe. Participants were predominantly young adults, with more than half aged 25–29 years (51.7%), reflected by a narrow age distribution (mean 24.83 ± 3.42 years; range 19–35). Prior travel experience within ASEAN countries was evenly distributed, with a slight majority reporting previous visits (51.7%). Most participants reported no underlying medical conditions (83.3%), suggesting a generally healthy baseline population.

Vaccination coverage during childhood and adolescence was notably high, with nearly two-thirds of participants reporting very complete vaccination histories (>9 vaccine types). Travel-health behaviour appeared favorable, as most participants reported good travel-health kit availability (78.3%) and good preventive practices during their stay abroad (63.3%). Despite these positive indicators, a substantial proportion of participants experienced travel-related illness during their stay in Bali (78.3%). Acute diarrhea emerged as the most prominent condition (55.0%), followed by respiratory tract disease (31.7%) and acute febrile illness (30.0%), while traffic accidents were reported less frequently (8.3%).

Pre-travel preparation was predominantly characterized by formal medical consultation, with the majority of participants consulting a travel medicine specialist

prior to departure (58.3%), and no participants reporting complete absence of preparation.

Pre-Travel Advice-Seeking Behaviour

As presented in on **Table 2**, nearly all participants reported seeking pre-travel advice (PTA) from healthcare providers prior to departure (96.7%). Vaccination was the primary motivation for seeking PTA (73.3%), followed by advice on personal protection measures (55.0%). Among the small proportion who did not seek PTA, prior experience visiting similar regions was the sole reported reason, suggesting perceived familiarity as a barrier to professional consultation.

Table 2. Pre-Travel Advice-Seeking Behaviour and Motivating Factors among International Medical Students

Characteristics	N (60)	%
History of Seeking Pre-Travel Advice (PTA) from Healthcare Providers		
Yes	58	96,7
No	2	3,3
Reasons for Seeking PTA from Healthcare Providers (multiple answers allowed)		
Vaccination	44	73,3
Personal Protection	33	55,0
Easy Accessibility	14	23,3
Family Concern	7	11,7
Home University Subsidized	6	10,0
University Requirement	3	3,3
Reasons for Not Seeking PTA		
Previous Experience Visiting Similar Regions	2	3,3

Table 3. Distribution of Preventive Practices During Travel Across Pre-Travel Preparation Levels and Travel-Health Kit Categories among International Medical Students

Variable	Preventive Practices During Travel			
	Poor		Good	
	N	%	N	%
Pre-Travel Preparation Category				
Level 1	0	0	0	0
Level 2	3	42,9	4	57,1
Level 3	6	33,3	12	66,7
Level 4	13	37,1	22	62,9
Travel-Health Kit Category				
Poor	4	30,8	9	69,2
Good	18	38,3	29	61,7

Preventive Practices and Pre-Travel Preparation

Table 3 shows that across all levels of pre-travel preparation, the proportion of participants demonstrating good preventive practices during travel consistently exceeded those with poor practices. Participants who consulted healthcare

professionals prior to travel (Levels 3 and 4) showed higher proportions of good preventive practices (66.7% and 62.9%, respectively) compared to those relying solely on self-preparation (Level 2; 57.1%). Notably, no participants were classified under Level 1. Across travel-health kit categories, good preventive practices were more frequent among participants with poor kits (69.2%) than those with good kits (61.7%). Overall, good preventive practices predominated in all subgroups.

Table 4. Distribution of Self-Reported Travel-Related Illness Across Pre-Travel Preparation Levels, Travel-Health Kit Categories, and Preventive Practices During Travel among International Medical Students

Variable	Self-Reported Travel-Related Illness			
	Present		Absent	
	N	%	N	%
Pre-Travel Preparation Category				
Level 1	0	0	0	0
Level 2	5	71,4	2	28,6
Level 3	13	72,2	5	27,8
Level 4	29	82,9	6	17,1
Travel-Health Kit Category				
Poor	11	84,6	2	15,4
Good	36	76,6	11	23,4
Preventive Practices During Travel Category				
Poor	16	72,7	6	27,3
Good	31	81,6	7	18,4

Travel-Related Illness and Travel-Health Behaviour

Based on **Table 4** shows the most striking finding was observed in the pre-travel preparation category, where participants who consulted a travel medicine specialist (Level 4) showed the highest proportion of self-reported travel-related illness (82.9%), markedly higher than those in Level 2 (71.4%) and Level 3 (72.2%). No participants were classified as having no pre-travel preparation (Level 1). In contrast, a higher proportion of illness was reported among participants with poor travel-health kits (84.6%) compared to those with good kits (76.6%). Preventive practices during travel showed a smaller contrast, with illness reported in 81.6% of participants with good practices and 72.7% among those with poor practices.

Discussion

Demographic Characteristics

The study population was dominated by students from Germany (57.4%) and consisted predominantly of young adults aged 25–29 years, with a narrow age range and a generally healthy baseline profile, as most participants reported no underlying medical conditions. This demographic pattern reflects the structure of international academic partnerships rather than the global distribution of international students,

particularly within medical elective programs involving European institutions. Previous studies have shown that students from Western Europe typically demonstrate high baseline vaccination coverage and proactive health-seeking behaviour prior to international placements [18],[19]. These characteristics are reflected in the high proportion of participants with very complete childhood and adolescent vaccination histories (>9 vaccine types). However, favourable baseline health characteristics and vaccination coverage did not preclude the occurrence of illness during the stay in tropical setting.

Travel-Health Behaviour and Self-Reported Travel-Related Illness

Most participants reported good travel-health kit availability (78.3%) and good preventive practices during their stay abroad (63.3%). In addition, no participant reported a complete absence of pre-travel preparation, and more than half consulted a travel medicine specialist prior to departure. This level of preparation appears higher than that reported among general student traveler populations and aligns with evidence that medical students are more compliant with pre-travel health recommendations due to curricular requirements and perceived professional responsibility [11],[18].

Nevertheless, despite these positive indicators, a substantial proportion of participants still experienced travel-related illness during their stay, suggesting that preparedness alone does not fully mitigate health risks in tropical destinations.

The burden of travel-related illness in this study was high, with 78.3% of participants reporting illness during their stay in Bali. Acute diarrhea emerged as the most common condition, followed by respiratory tract disease and acute febrile illness. This pattern is consistent with global travel medicine literature identifying gastrointestinal and respiratory infections as the leading causes of morbidity among travelers to Southeast Asia [1],[20]. The persistence of these conditions despite high vaccination coverage and reported preventive practices indicates that non-vaccine-preventable exposures particularly food hygiene, sanitation, climate adaptation, and close social contact underscores the importance of these type of determinants during their extended stays in tropical LMIC settings.

Pre-Travel Advice-Seeking Behaviour

Based on **Table 2**, nearly all participants in this study sought pre-travel advice (PTA) from healthcare providers prior to arrival in Bali (96.7%), indicating a high level of engagement in travel-health preparation. This finding is consistent with the participants' educational background and institutional context, where pre-departure health consultations are commonly emphasized withing Western European medical training program before international clinical placements [18]. Vaccination was the primary motivation for seeking PTA (73.3%), followed by advice on personal

protection measures (55.0%), suggesting that pre-travel consultations were largely oriented toward biomedical prevention.

Other motivations, such as ease of access to healthcare services and family concern, were reported less frequently, while institutional requirements played a minimal role, highlighting the predominance of individual health awareness. Among the small proportion of students who did not seek PTA, previous experience traveling to similar regions was the sole reason, reflecting perceived familiarity as a barrier to professional consultation despite potential health risks [11]. Such patterns highlight the complexity of risk perception among mobile student populations and suggest that prior travel experience does not necessarily translate into sustained preventive engagement.

Preventive Practice in Relation to Pre-Travel Preparation and Travel Health Kit

As shown in **Table 3**, participants across all pre-travel preparation levels (Levels 2–4) predominantly demonstrated good preventive practices during their stay abroad. Participants who sought professional consultation prior to travel (Levels 3 and 4) showed higher proportions of good preventive practices compared to those relying on self-preparation alone (Level 2), indicating a positive contribution of structured pre-travel preparation. However, the proportion of good practices did not increase consistently with higher preparation levels, as Level 3 participants exhibited a higher proportion of good preventive practices (66.7%) than those in Level 4 (62.9%). This pattern suggests that more intensive or specialized pre-travel preparation does not automatically translate into better preventive behavior during travel. Similar findings have been reported by Steffen et al. and Hasler et al., who noted that although pre-travel consultation improves awareness and readiness, actual health behavior during travel is strongly influenced by situational exposure, perceived risk, and daily lifestyle adaptation in the destination setting [2],[18].

Across travel-health kit categories, good preventive practices were observed in both groups, including among participants classified as having poor travel-health kits. This finding indicates that possession of medical supplies alone is insufficient to ensure consistent preventive behavior during travel. Instead, preventive practices appear to be shaped by behavioral and contextual factors such as environmental conditions, travel activities, and individual risk perception. Studies among international students and young travelers have similarly shown that preparedness resources may support self-management but do not necessarily predict adherence to preventive behaviors during daily activities abroad [21]. Chen et al. further emphasize that health behavior during travel is context-dependent, with local cultural norms, environmental exposure, and perceived vulnerability exerting a stronger influence than pre-departure preparedness alone [7].

Pre-Travel Preparation, Travel-Health Kit, Preventive Practices During Travel , and Self-Reported Travel-Related Illness

Descriptive differences in the distribution of travel-related illness were observed across pre-travel preparation levels. Contrary to conventional expectations, participants who consulted a travel medicine specialist prior to departure (Level 4) reported the highest proportion of illness (82.9%), compared with Level 2 (71.4%) and Level 3 (72.2%). This pattern has been reported in previous studies, suggesting that individuals who seek comprehensive pre-travel consultation may represent a subgroup with higher perceived vulnerability, longer exposure duration, or increased health awareness, leading to higher symptom recognition and reporting rather than true increased risk [1],[18].

An inverse and counterintuitive pattern was observed in the travel-health kit category, where participants with poor kits showed a higher proportion of illness (84.6%) than those with good kits (76.6%). This finding supports evidence that possession of medical supplies alone does not adequately protect against illness if exposure risks remain high and behavioral adherence is suboptimal [21],[22]. Travel-health kits function primarily as tools for self-management rather than prevention, particularly for non-vaccine-preventable conditions such as gastrointestinal and respiratory infections [2]. Preventive practices during travel demonstrated a modest and inconsistent protective pattern, with participants reporting good practices still experiencing a high proportion of illness. This finding aligns with literature indicating that preventive behaviours are highly context-dependent and may be compromised by environmental exposure, social interaction, and lifestyle adaptation in tropical destinations [3],[18]. Importantly, this pattern may also reflect a methodological limitation, as not all preventive practice items assessed were directly aligned with the predominant illnesses reported, particularly gastrointestinal and respiratory conditions. As a result, preventive practices relevant to specific exposure pathways may not have been fully captured, introducing potential misclassification bias [7].

This study has several limitations. First, its descriptive cross-sectional design does not allow causal inference between travel-health behaviour and travel-related illness, and the findings should be interpreted as exploratory. Second, the study was conducted at a single host institution with a relatively small sample size and convenience sampling, which may limit generalizability to other international student populations or settings. Third, travel-related illness and preventive behaviours were self-reported and may be subject to recall and reporting bias. In addition, participants were predominantly from Western European backgrounds, which may not reflect the diversity of international medical students globally. Nevertheless, the study provides valuable descriptive insights into travel-health behaviour and illness patterns among long-stay medical students in a tropical low- and middle-income country context, a population that remains underrepresented in the travel medicine literature.

4. Conclusion

This study demonstrates that international medical students undertaking long-term study programs in a tropical host institution exhibited a high level of pre-travel preparation, including extensive vaccination coverage, frequent pre-travel consultation, and widespread availability of travel-health kits. Despite these favorable baseline characteristics, a substantial proportion of participants reported travel-related illness during their stay, with gastrointestinal and respiratory conditions predominating. These findings indicate that strong pre-departure preparation does not necessarily translate into reduced illness occurrence in tropical low- and middle-income country settings. Rather, illness risk appears to persist despite high awareness and preparation among this population.

Descriptive analysis revealed non-linear and, in some cases, counterintuitive patterns between travel-health behaviours and self-reported illness. Participants who sought comprehensive pre-travel consultation demonstrated the highest proportion of reported illness, suggesting that higher preparedness may reflect increased risk awareness, longer exposure duration, or greater symptom recognition rather than elevated biological risk. Similarly, possession of a good travel-health kit was not consistently associated with lower illness prevalence, reinforcing that such resources primarily support illness management rather than prevention. Preventive practices during travel also showed inconsistent when considered alongside illness, underscoring the complexity of real-world exposure in tropical environments.

Collectively, these findings highlight that travel-related health risks among international medical students are shaped by an interaction between individual preparedness and contextual factors encountered during prolonged stays abroad. Environmental exposure, daily lifestyle adaptation, food hygiene, sanitation, and social contact likely play a central role in sustaining illness risk, even among well-prepared travelers. Self-reported preventive behaviours may not fully capture the intensity or consistency of adherence under destination-specific constraints. As such, preparedness should be viewed as a necessary but insufficient component of risk mitigation.

The study underscores the importance of sustained, context-sensitive travel health support beyond pre-departure preparation. Institutional engagement at the host destination, including structured health orientation, accessible healthcare pathways, and continuous reinforcement of risk-aware behaviours, is essential to complement individual preparedness. These measures may help bridge the observed gap between preparation and real-world health outcomes among international medical students in tropical settings. Overall, the findings contribute valuable descriptive evidence to the limited literature on long-stay educational travelers in LMIC contexts.

Future studies may benefit from involving a larger and more diverse population to enhance representativeness; however, recruiting participants with tourist-like travel patterns can be challenging due to their temporary and mobile nature. Refinements in study design are also needed, particularly through more specific definitions of travel-related illness to better reflect clinically relevant conditions. In addition, the use of clearly defined and context-specific risk factors may allow for a more nuanced understanding of travel-health behaviour patterns. These improvements could help future research better capture the complexity of real-world travel in tropical LMIC settings.

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Author`s Declaration

Authors' contributions and responsibilities

All authors contributed equally to the study conception, data collection, data analysis, manuscript drafting, and final approval of the manuscript.

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