

The Growth of Foreign Medical Tourism in Pakistan: Understanding the Role of Health Literacy, Tourist Information Trustworthiness, Medical Tourism Risk, and Safety Information

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Abstract

Despite advancements in healthcare for international visitors, the medical tourism industry in Pakistan still needs to be explored in research. This study investigates the factors influencing Behavioural Intentions towards Medical Health Tourism (BIMT), incorporating predictor variables such as Safety Information (SI), Health Literacy (HL), and Trustworthiness of Tourist Information (TTI). Utilizing the Knowledge, Attitude, and Behaviour (KAB) model, the study examines the mediating role of Perceived Risk in medical tourism (PRMT). Grounded in the KAB model, data collected from 339 medical tourists in Pakistan revealed that SI, HL, and TTI decrease PRMT, influencing medical tourism behaviour. PRMT mediates the impact of SI, HL, and TTI on behavioural intentions towards medical tourism, providing valuable insights for stakeholders and researchers in understanding the dynamics of medical tourism in Pakistan.

Keywords: Safety Information (SI), Health Literacy (HL), Trustworthiness of Tourist Information (TTI), Behavioral Intentions towards Medical Health Tourism, Perceived Risk in medical tourism, knowledge attitude and behaviour (KAB) model

1 Introduction

Recent years have witnessed a significant increase in medical tourism, where individuals seek healthcare services globally, driven by cost, specialized care, shorter wait times, and personal preferences for specific doctors or facilities (Seow et al., [2022](#)). Medical tourism involves popular procedures like cosmetic surgery, dental work, fertility treatments, cardiac surgeries, and cancer treatments. Affordable and high-quality healthcare is often sought in destinations like Thailand, India, Mexico, Turkey, and Costa Rica (Wright & Zascerinska, [2022](#)). Several countries provide

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medical services to travelers, contributing to the growth of a global market that spans healthcare, tourism, and recreation (Javed & Tučková, [2020](#); Khan et al., [2023](#)). In the 1990s, transplant tourism in Pakistan grew, especially kidney transplants for international patients, showcasing significant potential in organ transplantation and fertility therapy (Qaisar et al., [2020](#)). Pakistan, known for its tourist attractions, is also gaining recognition as a destination for healthcare tourism (Nazir et al., [2021](#); Ullah et al., [2021](#)). The country's healthcare sector holds promise for medical tourism due to its skilled workforce, advanced technology, and successful public-private collaborations (Ali, [2022](#)).

The KAB Model elucidates the acquisition of medical tourism services. Individuals in Pakistan face heightened perceived risks in medical tourism, surpassing those associated with physical product purchases (Boguszewicz-Kreft et al., [2022](#); Su et al., [2022](#)). A thorough literature review reveals that many scholarly works have examined perceived risks in medical tourism (Liang et al., [2019](#)). However, no previous research study, as per the knowledge of researchers, has assessed the impact of Safety Information, Health Literacy, and Trustworthiness of Tourists' information on perceived risks as a mediator and Behavioural intentions towards medical tourism in the context of Pakistan (Seow et al., [2017](#); Dash, [2020](#)). This study aims to address this research gap by employing the KAB Model within the context of medical tourism in Pakistan (Chelliah et al., [2021](#)).

Additionally, there is a notable deficiency in inter-regional and inter-country studies on medical tourism (Khan et al., [2017](#)). The use of Knowledge, Attitude, and Behaviour (KAB Model) contributes significantly to existing literature, addressing research gaps in the Pakistani context (Kabani, [2015](#); Abbasi et al., [2021](#); Nazneen et al., [2022](#)). Despite being seen as an untapped market with great potential, addressing infrastructure and security issues is crucial for the further growth of medical tourism in Pakistan, where cities like Islamabad, Karachi, and Lahore boast modern hospitals and highly qualified medical professionals (Javed & Ilyas, [2018](#); Ghasemi et al., [2022](#)).

1.1 Theoretical Development

The global tourism industry, impacted by the Covid-19 pandemic, has sparked interest in medical tourism. Yet, individuals, despite their interest, show limited behaviours reflecting motivation and enthusiasm for medical tourism (Prasetyo et al., [2020](#)). There is a need to cultivate a knowledge base among individuals seeking medical care (Mahindaratne, [2021](#)). In addition, the industry's technological transformation and digitization have resulted in significant competition in the global market. This has compelled organizations to become more intelligent and technologically savvy to make informed decisions, establish trustworthiness, and compare (Sheikh et al., [2017](#); Khan et al., [2023](#); Zhang et al., [2024](#)). Concerns about health impact travel plans emphasise the need for a framework to clarify tourist intention changes (Chan, [2021](#); Ghasemi et al., [2021](#)). Despite improved healthcare for international visitors in Pakistan, the medical tourism sector needs to be explored more, with limited attention being paid to existing research (Irfan & Ali, [2020](#)). Additionally, studies have explored the effects of the COVID-19 pandemic overlooking the specific dynamics of medical tourism (Abbasi et al., [2021](#); Wang et al., [2022](#); Meo et al., [2023](#); Adnan et al., [2023](#)). Existing studies on medical tourism in Pakistan primarily focus on intellectual capital and innovation in the healthcare sector, with limited attention to behavioural intentions using the KAB model (Fukuda et al., [2021](#); Sarfraz et al., [2022](#)). Chua et al. ([2021](#)) used the KAB model to examine safety knowledge, revealing a positive link between knowledge, attitude, and behaviour in medical tourism (Fukuda et al., [2021](#)).

KAB model (The Knowledge, Attitude, and Behavioral) is used explicitly in health guiding, medical knowledge, and preventive risk studies (Zheng et al., [2018](#)). The KAB Model has three elements-built knowledge, attitude, and behavior. According to the KAB model, human behavior

and intentions are based on three connecting factors (Chatpinyakoo, [2017](#)). The knowledge, attitude, and behavior model aid in developing a knowledge foundation and assessing individuals' behavioral intentions in specific situations (Chuaychoo, [2021](#)). Attitudes are formed through knowledge, experiences, and others' responses, influencing subsequent behaviors (Kaur & Singh, [2017](#)). In the KAB model, knowledge serves as the key driver for changes in attitude and behavior, as exemplified in Sas's ([2021](#)) study on the physical security system (Sas et al., [2021](#)).

2 Literature Review and Hypotheses Development

2.1 Perceived risk and consumer behavior in medical tourists.

Consumer decision-making, evaluation, and behavior are significantly influenced by the concept of perceived risk (Hasan et al., [2017](#)). In the context of travel-related decision-making, the perception of danger or risk plays a crucial role (Dholakia, [2001](#); Kozak et al., [2007](#)), influencing intentions as well (Chaulagain et al., [2023](#)). Past research on risk perception within the realm of global tourism has explored various factors, including tourists' nationality (Mitchell & Vassos, [1998](#); Law, [2006a](#); Reisinger & Mavondo, [2006](#)), cultural elements (Mitchell & Vassos, [1998](#); Reisinger & Mavondo, [2006](#); Kozak et al., [2007](#)), beliefs (Huang et al., [2008b](#)), destination characteristics (Carter, [1998](#); Kozak et al., [2007](#)), and gender (Mitchell & Vassos, [1998](#); An et al., [2010](#)). Perceived risk can act as a deterrent to travel (Um & Crompton, [1992](#); Chew and Jahari, 2014), with medical tourists typically avoiding locations perceived as hazardous (Sonmez & Graefe, [1998](#); Law, [2006b](#); Chew & Jahari, [2014](#)).

In the context of medical tourism, individuals perceive heightened risks in both travel and treatment, stemming from unfamiliar healthcare environments (Khan et al., [2017](#)). Khan et al. (2017) identified health, travel, host country, medico-legal, and pre/post-operation risks in medical tourism. Previous studies on risk perception focused on nationality of the tourists, cultural aspects beliefs (Huang et al., [2008](#)), destinations (Carter, [1998](#); Kozak et al., [2007](#)), gender (Mitchell & Vassos, [1998](#); An et al., [2010](#); Mustafa, [2022](#)). The differences between first-time and repeat visitors refer to variations in behavior, expectations, and attitudes (Fuchs & Reichel, [2011](#); Jabbar et al., [2023](#)) and prior travel familiarities (Rittichainuwat and Chakraborty, 2009). Perceived risk can be a barrier to travel (Um & Crompton, [1992](#); Chew & Jahari, [2014](#)). Medical tourists typically stay away from dangerous locations (Sonmez & Graefe, [1998](#); Law, [2006](#); Chew & Jahari, [2014](#)). Tourists' reluctance to travel and their decision to delay their plans are often influenced by their perception of risk (Wong & Yeh, [2009](#)).

2.2 Safety Information, Perceived Risk, Attitude towards International Travel, and Behavioral intentions towards Medical tourism

Safety is crucial for medical tourists, especially during the pandemic, impacting their decisions due to health uncertainties and infection risks from travel (Mariani & Borghi, [2022](#)). Health uncertainties, like Covid-19 variations, impact medical tourists' travel choices and intentions for seeking healthcare abroad (Wang, [2019](#)). Safety information about Covid-19 risks and other tourists' experiences contribute to the perceived risks and fears of entering another state (John and Tran, 2021). This knowledge about uncertain events during international medical travel influences tourists' willingness to travel or not (Preko & Gyepi-Garbrah, [2021](#)). Positive safety information may boost behavioral intention in medical tourism, while negative information may have a detrimental effect (Dadgarmoghaddam et al., [2016](#)). Therefore, the following hypotheses have been developed.

H1: SI has a negative impact on PRMT

H1a: PRMT mediates the relationship between SI and BIMT

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Health literacy is an important factor that provides a stimulating force to medical care seekers for developing their behavioral intentions. In health literacy, Perceived risk plays a major role in defining behavioral intentions (Chua et al., [2021](#)). It shows that perceived risk could influence the relationship between health literacy and behavioral intention towards medical tourism (Godovykh et al., [2020](#)). Health literacy shapes attitudes and uncertainties in medical tourism, influencing the attitude-behavior relationship (Hu, [2022](#)). Above in view following hypotheses have been developed.

H2: HL has a NEGATIVE impact on PRMT

H2a: PRMT mediates the relationship between HL and BIMT

2.3 Trustworthiness of Tourism Information, Perceived Risk, and Behavioral intentions towards Medical tourism

Trustworthy information in medical tourism reduces uncertainties, shares others' experiences, and promotes proactive attitudes, lowering risk perceptions (Godovykh et al., [2020](#)). With the high level of trustworthiness, there comes a lot of self-confidence. For medical care seekers, trust in information sources of medical treatment and facility services is much important. Positive medical facility information fosters favorable attitudes and intentions for medical tourism, while negative tourist experiences heighten perceived health risks, resulting in avoidance of medical tourism (Godovykh et al., [2020](#)).

H3: TTI has a NEGATIVE impact on PRMT.

H3a: PRMT mediates the relationship between TTI and BIMT

Furthermore, perceived risk is related to the potential consequences of a behavior or decision, including potential negative long-term effects and the degree of voluntariness or control over the exposure to the risk (Fuchs & Reichel, [2011](#)). One significant factor that influences travel-related decision-making is the perception of danger or risk (Dholakia, [2001](#); Kozak et al., [2007](#)), like intentions (Chaulagain et al., [2023](#)). Previous studies have indicated that the risk assessments made by tourists are more significantly impacted by their subjective perceptions of peril rather than the objective hazards and tangible circumstances linked with specific travel destinations (Irvine & Anderson, [2005](#)). Hence, it is posited that;

H4: PRMT has a NEGATIVE impact on BIMT

2.4 Research Framework

Based on above given hypotheses a comprehensive research framework has been organized which is given below in figure. 2.1

3 Research Methodology

The researchers used a quantitative and cross-sectional technique in this study. The survey method was used to acquire data from the study respondents. This study examines medical tourism behavioral intentions of foreign tourists seeking medical treatment in Pakistan by using convenience sampling, the researchers engaged with this population through various methods such as airport interactions, hospital visits, and resort stays to collect relevant data for the study. To determine sample size, number of items were multiplied by 10 ($31 \times 10 = 310$) to get the number of minimum required responses for effective analysis as per thumb rule which resulted into 310 study responses (Saunders et al., [2007](#), [2009](#)).

3.1 Measurement of Variables

The six-item scale of behavioural intention in medical tourism was adapted from Anderson and Agarwal's (2010) study by Seow (2021), which is also used in this study. Likewise, (Kim, [2022](#)) used a four-item scale for measuring perceived risk, originally developed by Laroche et al. (2004). These same items have been adopted in the present study. For safety information, the scale of the items was adapted from Yun and MacLaurin's (2006) study by Wan (2017), and the same has been adapted for the present study. The seven-item health literacy scale was also adapted from Yun and MacLaurin's (2006) study by Wan (2017), which has been adapted to the present study. Lastly, the 3 factors that measure the constructed trustworthiness of tourism information include trust in government information, scientific information and media information, which have been used in the study of Suess ([2022](#)) adopted from initial work. These six-item scales are also adapted for the present study. The current study selected a five-point Likert scale in the self-administered questionnaires for collecting the data. Questionnaires were distributed via in-person visits, email, courier services, and the involvement of medical tourism management to accommodate diverse locations and preferences.

3.2 Data Analysis

The present study used Smart PLS-SEM for robust and reliable statistical results, contributing to the credibility and significance of the research findings. To capture insights from tourists seeking medical treatment in Pakistan, 520 questionnaires were distributed, with an expected 70% response rate due to a self-administered survey questionnaire. 347 questionnaires were received. After careful selection, 310 complete questionnaires were selected for data analysis (Saunders et al., [2009](#)). The current study selected a five-point Likert scale for collecting the primary data responses. For a research model to possess internal consistency reliability, all constructs' composite reliability values must exceed a threshold of 0.7. Table 1 in the study describes the composite reliability values for the variables, which range from .845 to .893. The indicator reliability of the items is evaluated through factor loadings within the range of 0.5 to 0.7, indicating satisfactory reliability of the study constructs. The correlation between the items of the study variables is found to be significant due to factor loadings exceeding 0.5 (Hair et al., [2016](#)). Table 1 also describes VIF values study predictors, which are significantly below 5 (Hair et al., [2016](#)). Thus, we can conclude that the study has no issues with multicollinearity. The Cronbach's alpha and composite reliability remained above 0.7, demonstrating satisfactory reliability (Shrestha, [2021](#)).

Table 1: Reliability, AVE, Loadings, VIF

Construct	Items	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	VIF
Behavioural Intention to Medical Tourism	BIMT1	0.779	0.866	0.904	0.653	1.841
	BIMT2	0.857				2.346
	BIMT3	0.825				2.217
	BIMT4	0.854				2.428
	BIMT5	0.717				1.547
Health Literacy	HL1	0.699	0.77	0.84	0.513	1.433
	HL2	0.746				2.007
	HL3	0.737				2.03

	HL4	0.67				1.402
	HL7	0.727				1.275
	PRMT1	0.804				2.239
	PRMT2	0.864				2.9
	PRMT3	0.773				2.04
Perceived Risk in Medical Tourism	PRMT4	0.825	0.836	0.879	0.518	2.429
	PRMT5	0.621				1.384
	PRMT6	0.53				1.363
	PRMT7	0.534				1.372
	SI1	0.521				1.146
	SI4	0.661				2.098
Safety Information	SI5	0.79	0.823	0.874	0.544	1.981
	SI6	0.798				2.115
	SI7	0.779				1.899
	SI8	0.851				3.178
	TA1	0.63				1.216
Threat Appraisal	TA2	0.728	0.723	0.826	0.545	1.64
	TA3	0.763				1.282
	TA4	0.818				1.833
	TTI1	0.71				1.63
	TTI2	0.719				1.809
Trustworthiness of Tourist Information	TTI3	0.834	0.809	0.863	0.514	3.569
	TTI4	0.635				1.324
	TTI5	0.703				2.637
	TTI6	0.687				1.473

In conclusion, the study constructs demonstrate strong factor loadings, good internal consistency, acceptable convergent validity, and no significant multicollinearity issues.

Fornell and Larcker Criterion

The measures in this study surpass correlations with other constructs, demonstrating distinct aspects (Rönkkö & Cho, [2022](#)). Highest factor loadings support discriminant validity, confirming unique dimensions. The Fornell-Larcker Criterion in Table 2 illustrates study constructs' discriminant validity based on inter-factor correlations.

Table 2: Fornell-Larcker Criterion

	BIMT	HL	PRMT	SI	TTI
Behavioral Intention to Medical Tourism (BIMT)	0.808				
Health Literacy (HL)	0.152	0.717			
Perceived Risk in Medical Tourism (PRMT)	0.814	0.293	0.719		
Safety Information (SI)	0.364	0.494	0.618	0.737	
Trustworthiness of Tourist Information (TTI)	0.338	0.423	0.591	0.590	0.717

Heterotrait-Monotrait Ratio (HTMT)

HTMT ratios in Table 3 are significantly below the 0.85-0.90 thresholds, affirming discriminant validity. This indicates low correlations between constructs, reinforcing their distinctiveness.

Table 3: Heterotrait-Monotrait Ratios (HTMT)

	BIMT	HL	PRMT	SI	TTI
Behavioral Intention to Medical Tourism (BIMT)					
Health Literacy (HL)	0.178				
Perceived Risk in Medical Tourism (PRMT)	0.654	0.354			
Safety Information (SI)	0.440	0.600	0.727		
Trustworthiness of Tourist Information (TTI)	0.387	0.557	0.705	0.732	

F-Square (Effect Size)

Table 4 provides the effect size (F Square) values and significance levels for each variable, indicating their strength of impact and statistical significance on the dependent variable.

Table 4: F-Square (Effect Size)

	BIMT	PRMT
Behavioral Intention to Medical Tourism (BIMT)		
Health Literacy (HL)	0.061	0.064
Perceived Risk in Medical Tourism (PRMT)	1.955	
Safety Information (SI)	0.612	0.132
Trustworthiness of Tourist Information (TTI)	0.052	0.177

3.3 Hypotheses Testing Direct Relationships

Direct Hypotheses

This section employs PLS to test hypotheses, uncovering significant path coefficients and model fit. Tables 5 summarize statistically significant hypotheses, with R-square values indicating notable variances.

Table 5: Direct Hypotheses Testing

	B	Standard Deviation	T Statistic	P Values	Outcomes
H1: SI has a NEGATIVE impact on PRMT	0.22	0.086	2.57	0.005	Supported
H2: HL has a NEGATIVE impact on PRMT	0.1	0.052	1.91	0.028	Supported
H3: TTI has a NEGATIVE impact on PRMT	0.38	0.057	6.54	0	Supported
H4: PRMT has a NEGATIVE impact on BIMT	0.93	0.065	14.31	0	Supported

Results for H1 is statistically significant having T value of 2.572 and P value of 0.005, which means safety information has negative impact on perceived risk in medical tourism. Likewise, H2 is also statistically significant having T value of 1.911 and p value of 0.028, which results into negative impact of health safety on perceived risk of medical tourism. Similarly, H3 is statistically significant having T value 6.543 and p value of 0.000, which means that trustworthiness of tourism information also has negative impact on perceived risk in medical tourism. hypothesis H4 show that the relationship between perceived risk in medical tourism (PRMT) and behavioral intentions toward medical tourism (BIMT) is statistically significant (T statistic = 14.319, P = 0.000). This suggests that that concerns about risks can deter individuals from engaging in medical tourism.

Mediation Analysis

This study examines the mediating role of perceived risk in medical tourism (PRMT) between the predictor variables and the dependent variable, behavioral intentions toward medical tourism (BIMT). The summary outcomes of the mediation hypotheses and their test results can be found in Table 6 which confirms the existence of robust and reliable mediating role of PRMT between predictors SI, HL, TTI and BIMT due to significant level p-values, Tstatic values

Table 6: Mediation Hypotheses Results

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	5.0%	95.00 %	P Values	Results
H1a: PRMT mediates the relationship between SI and BIMT	0.206	0.083	2.473	0.055	0.327	0.007	Accepted
H2a: PRMT mediates the relationship between HL and BIMT	-0.091	0.048	1.914	-0.16	0.003	0.028	Accepted
H3A: PRMT mediates the relationship between TTI and BIMT	0.349	0.057	6.099	0.24	0.434	0	Accepted

4 Discussion

The key findings and analyses, indicate the significance of the study in the medical tourism context. Health literacy (HL) negatively influences Perceived Risk in Medical Tourism (PRMT), implying that individuals with higher health literacy perceive lower risk. This suggests that those with enhanced health-related knowledge view medical tourism as less risky. Higher health literacy (HL) correlates with lower Perceived Risk in Medical Tourism (PRMT), indicating reduced risk perception for individuals with greater health-related knowledge. Trustworthiness of tourist information (TTI) negatively influences Perceived Risk in Medical Tourism (PRMT), highlighting the role of information trustworthiness in shaping risk perceptions. The supported hypotheses enhance understanding of factors influencing individuals in medical tourism. Emphasizing participatory factors, these findings align with existing literature. Therefore, the perceived risk cognized through the predictor variables of the study, has proven to have impact on consumer behavioral intentions, and these findings are in line with those of prior studies regarding its impact on consumer decisions related to travel (Mitchell & Vassos, [1998](#); Reisinger & Mavondo, [2006](#); Kozak et al., [2007](#)), and their behavioral intentions (Floyd et al., [2004](#); An et al., [2010](#); Çetinsöz & Ege, [2013](#)). Since, the perceived risk is a subjective construct, therefore, different respondents assess and perceive it differently, the same was discovered in the past studies by (Adam, 2015; Karl and Schmude, 2017). Moreover, the past studies have shown that the geographic area or country that tourists are visiting, lead to difference in their risk perceptions (Carter, [1998](#); Kozak et al., [2007](#)). Furthermore, the tourists naturally do not choose the destinations with higher levels of risk (Sonmez & Graefe, [1998](#); Law, [2006](#); Chew & Jahari, [2014](#)) and their own risk tolerance level.

4.1 Implications

Theoretical Implications

The study significantly advances the theoretical understanding of the Knowledge, Attitudes, and Behavior (KAB) Model within the realm of medical tourism. It emphasizes that individuals' acquisition of knowledge about healthcare facilities, coupled with the development of specific attitudes, directly influences their subsequent behaviors. Notably, safety information, health literacy, and the trustworthiness of tourist information emerge as pivotal factors in mitigating perceived risks and fostering positive behavioral intentions toward medical tourism. This enriches the theoretical framework by establishing key connections between knowledge, attitudes, and behavior in the context of healthcare tourism decisions.

4.2 Practical Implications

The study offers actionable insights for healthcare managers and industry practitioners in the medical tourism sector. By emphasizing the significance of safety information, health literacy, and

the trustworthiness of tourist information, the findings guide managers in enhancing their services and marketing strategies. Practitioners can leverage this knowledge to address and alleviate perceived risks, making their destinations more appealing to potential medical tourists. The practical implications extend to strategic decision-making, allowing industry professionals to tailor their approaches and better cater to the specific needs and concerns of their target audience, ultimately contributing to the growth and success of the medical tourism industry.

Medical tourism, while not a new phenomenon, has gained popularity due to the Covid-19 pandemic as individuals seek medical assistance (Szromek et al., 2023). South-East Asia's prominent medical tourism destinations include Malaysia, Thailand, India, and Singapore (Seow et al., 2021). Pakistan has emerged as a rapidly developing hub for health and medical tourism, driven by factors such as cost-effectiveness, expertise of medical professionals, and geographical proximity (Mariani & Borghi, 2022). The growth of Pakistan's healthcare sector has positioned the country as an attractive destination for medical tourism, offering affordable treatments and procedures (Neelakantan, 2023).

4.3 Limitations of the Study and future recommendations

The study's limitation lies in its cross-sectional design, hindering the capture of longitudinal data and differentiation between public and private healthcare sectors. Future research should employ longitudinal studies to grasp dynamic attitudes toward medical tourism over time, and investigate sector-specific factors for tailored strategies in both public and private healthcare organizations. Moreover, the study suggests potential improvements, including qualitative methods for deeper insights, larger sample sizes for better generalizability, and multi-country studies to explore variations across cultural and economic contexts. Addressing these recommendations in future research can advance understanding and strategies for the sustainable growth of the medical tourism industry.

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