

Dental Tourism – A Tremendous Worldwide Industry Attracting International Patients Towards India – A Cross-sectional Study

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Abstract

Background: Dental tourism is considered as tremendous tourism industry worldwide where patients travel abroad for the sake of affordable and safe dental treatment without dental insurance. This study is conducted to assess the international patient satisfaction using a DTEX model in India. **Materials and Methods:** A cross-sectional questionnaire study was carried out among international patients ($n = 209$) traveled to India during the study period to private clinics and also among friends and relatives. The questionnaire contains 17 questions divided into two sections: Demographic details, knowledge, perception, and satisfaction levels. Data were analyzed using SPSS software and the Chi-square test was applied with a significance level set at 5% ($P < 0.05$). **Results:** A statistically significant difference was observed between males and females showing moderate satisfaction in factors such as treatment quality ($P = 0.017$), dental service quality ($P = 0.001$), dental tourism expenses, ($P = 0.016$), destination appeal ($P = 0.003$), and ease of access ($P = 0.043$). **Conclusion:** Better service quality will result in a positive impact toward the level of satisfaction experienced by the patient and the higher the affordability of treatment more will be the positive impact of patients toward the available services. Thus, it can be concluded that dental tourism is a tremendously highly budding opportunity worldwide.

Keywords: Dental tourism, DTEX model, Globalization, Level of satisfaction.

INTRODUCTION

Tourism contributes as huge economic industry and play an important role in global development. Recent studies considered that traveling is not a journey anymore, it is more about experience and memories.^[1] Many Patients travel abroad not only in search of excellent vacation experience but also for a good quality care treatment such as dental or medical, affordability due to lack of medical or health insurance in their respective countries, and less waiting hours. Hence, traveling abroad for any dental treatment as well as vacation calls for “Dental Tourism.”^[2]

Dental tourism is one of the tremendous industries over worldwide. Dental tourism or dental vacation means “the patients, or the tourists travel abroad for affordable, high-quality care, and save dental treatment.”^[3] Recent studies showed that majority of the showed that many patients from the USA, Australia, and Canada travel to other countries such as Indonesia, Thailand, Hungary, and India for affordable and quality treatment and care. Dental tourism constitutes 10% of the total medical tourism industry in India.^[3] Dental treatment in India is becoming very popular with foreign tourists. Dental

tourism leads to possibilities for international patients to cut down on their dental expenses while exploring India. Dental implants in India are a big attracting procedure for foreign tourists as they are far less expensive here.^[4]

India is “Dental tourism Hub” also known as the incredible India not only tourists as land known for its spices, rich culture, heritage, hospitality and but also for the famous Sanskrit saying “Athithi Devo Bhava” which means consider Guests as God and this place definitely stands on its words but also for high-quality care, affordability, and less consuming hour treatment.^[5] On estimation, India accounts the majority of dental tourists from the UK, Saudi Arabia (Qatar), Dubai, and the United States of America. According to research, it has been

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found that approximately 6,50,000 dental tourists have been estimated to travel to India for dental treatment till 2022 after COVID-19. Cost of dental procedures like root canal in India covers only \$ 70 to 100 as compared to USA where cost of root canal treatment covers \$3000 per tooth similarly different tooth filling procedures covers only charges \$ 20 in India while in USA tooth filling procedures covers \$ 300 to 400.^[7]

Tourists who have traveled to India are highly satisfied with the dental treatments they have received. Less the treatment cost greater will be the tourist's attraction towards dental tourism as the affordable or cost saving dental treatment is one the most driving factor for tourists to travel to India or other countries for seeking treatment.^[8]

Hence, factors such as treatment quality, affordable cost, proper sterilization, destination appeal, transport facilities, infrastructure, and less waiting hours are some of the factors related to dental tourism for India.^[10] Therefore, our study aims to evaluate the international patient satisfaction toward India based on their experience along with factors of satisfaction level and determinants using the DTEX model (Dental Tourism Model).^[11]

MATERIALS AND METHODS

A cross-sectional study was conducted among the international patients who traveled to India for treatment without dental health insurance coverage in their residing countries as well as for vacation to India and the study was conducted for 1 year 2 months from December 2022 to February 2024. Inform consent was obtained from the study participants and the ethical approval for the conduction of the research was obtained from the Institutional Ethical Committee of People's Dental Academy, Bhopal, India (IEC/2022/200/01). Prior permission was obtained from the concerned dental clinics authorities for conducting the study. The Google survey app was used to construct the questionnaire and a valid link was shared through social media. Data collection was done using a pre-structured, close-ended questionnaire consisting of 17 questions was forwarded to the international patients already visited India (past patients) for any dental treatment through social media and also questionnaire was filled by the international patients (present patients) with ongoing treatment in India during study period and also the questionnaire was forwarded to friends and relatives living abroad for the same. Pretesting of some was done questions as taken from previous studies with minor modifications. A pilot study was done 10% of the sample size to confirm the validity and reliability of remaining questions.

International patients were briefed regarding the objectives of the study. Study participants who gave a voluntary informed consent to participate in the study were included in the study. About 300 parents were contacted, of whom 209 agreed to participate in the study. The study participants were selected by convenience sampling approach. The questionnaire was

formulated which comprised of two parts: the first portion included the questions related to the demographic information of participants, such as gender, age of study respondents, education level of participants, annual income, and dental insurance. The second portion of the questionnaire comprised 17 questions to assess, knowledge, perception, and satisfaction levels regarding dental tourism in India.

Statistical analysis

Data were entered into a Microsoft Excel spreadsheet and descriptive data were analyzed using SPSS software Version 25.0 (SPSS Inc., Chicago, IL, USA). Student's *t*-test and Chi-square test were used to analyze the results. For statistical purposes, a $P \leq 0.05$ was considered statistically significant.

RESULTS

Among 209 subjects, 112 (53.6%) were male and 97 (46.4%) were female and 45.6% were 30–39-year-old, while (41.1%) were 20–29-year-old 15 (7.2%) and (22.0%), study subjects belong to UAE (Dubai), followed by Qatar with subjects 20.1% rest from other countries such as USA and Canada. Based on education, majority of the participants 45.5% have master's degree and rest 8.6% have bachelor's degree and majority of the respondents are private employees 54.1% and rest 15.8% are government employees and 23.9% subjects earn above 100,000 and only 28.7% earn between 20,000 or below and rest between 80,000 and 60,000 while 46.4% subjects have dental insurance and 53.6% are without dental insurance (Figure 1). Based on the knowledge, out of 209 subjects, 84.2 % subjects considered high cost as one of the most driving factors towards India for dental treatment followed by 75.1% considered attractive tourism as most driving factors similarly 58.9% subjects considered improved technology and dental infrastructure as one of the driving factors based on their knowledge and 78.0% subjects considered India as popular destination international patients Similarly, half of the subjects 45.0% considered is India is the 3rd most country for dental tourism followed by half 44.5% had no knowledge regarding the same. Majority of respondents 63.2% considered dental implant as common procedure while 55.0% of study participants consider orthodontics treatment as common dental procedure and 46.9% dental bleaching as a common dental procedure. (Table 1).

Similarly, half of the subjects 45.0% considered is India is the 3rd most country for dental tourism followed by half 44.5% and rest had no knowledge and only 10.5% of subjects answered No. The majority of respondents 63.2% considered dental implant as a common procedure while 55.0% and 46.9% considered orthodontics and dental bleaching as a common dental procedure (Table 1).

Table 2 reveals the distribution of study subjects' answers based on both information access variables and level of satisfaction fall into the moderate category. The mean value of both is 2.81 and 2.57, respectively. Therefore, both variables are considered

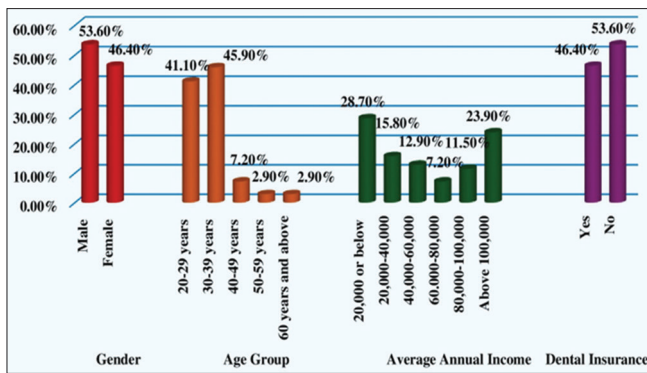


Figure 1: Demographic distribution of study participants (n=209)

Table 1: Distribution of subject's according to knowledge regarding dental tourism (n=209)

Questions	Responses	n	%
1) According to you common driving factor to India for treatment is?			
a) High cost of dental treatment is a driving factor to India for dental treatment?	Yes	176	84.2%
	No	18	8.6%
	Do not Know	15	7.2%
b) Is long queue at some treatment is a driving factor to India for dental treatment?	Yes	88	42.1%
	No	88	42.1%
	Do Not Know	33	15.8%%
c) Is Improvement of technology and dental infrastructure driving factor to India for dental treatment?	Yes	123	58.9%
	No	27	12.9%
	Do Not Know	59	28.2%
d) Is Attractive Tourism driving factor to India for dental treatment?	Yes	157	75.1%
	No	21	10.0%
	Do Not Know	31	14.8%%
2) Is India the Popular Destination?	Yes	163	78.0%
	No	21	10.0%
	Do not Know	25	12.0%
3) India is the 3 rd most country for dental tourism?	Yes	94	45.0%
	No	22	10.5%
	Do not Know	93	44.5%
4) According to you Common Dental Procedures done in India is?			
a) Dental Bleaching	Yes	98	46.9%
	No	48	23.0%
	Do not Know	63	30.1%
b) Dental Implant	Yes	132	63.2%
	No	39	18.7%
	Do not Know	38	18.25%
c) Orthodontic treatment	Yes	115	55.0%
	No	40	19.1%
	Do not Know	54	25.8%
Total		209	100.0%

very important. The mean satisfaction level for factors such as treatment quality ($P = 0.017$), dental service quality ($P = 0.001$), dental tourism expenses ($P = 0.016$), destination appeal ($P = 0.003$), and ease of access ($P = 0.043$) therefore is statistically significant for both male and female while the mean satisfaction level for dental tourism infrastructure

($P = 0.088$) and destination culture ($P = 0.076$) the difference is not statistically significant for both males and females (Table 3).

DISCUSSION

Dental tourism is one part of medical tourism characterized by tourists accessing expensive dental care outside their country. Factors such as affordable treatment, time-saving dental treatments, good quality treatment, proper sterilization protocols and proper well-developed infrastructure, systematic, proper availability of information, easy transportation, and destination beauty affect tourists' motivation to dental tourism.^[7,11]

The purpose of this study was to assess the levels and determinants of international patient satisfaction toward dental tourism in India. The present study showed that majority of the tourists were aged between 20 and 40 years with the annual income between 20,000 and 40,000 with no dental insurance according to previous studies.^[6,7,24] Affordability is considered very important category.^[15] The present study showed that the levels of satisfaction were moderate and positive in all factor's treatment quality, service quality, affordability, infrastructure, destination appeal, and ease of access except the destination culture based on the DTEX model. Hence, it can be assumed that international patients were satisfied with the whole experience of dental tourism in India.^[6-8,16] However, India needs to put more effort in all factors so that the patients become highly satisfied with the services and revisit to India for treatment as the previous studies like Thailand which showed that the levels of satisfaction were high in all factors and the patients were overall satisfied by dental tourism.^[6-8] Moreover, the previous studies showed that the availability of well-organized transport facilities, arrangements of maps or brochures of dental tourism, and also no communication barrier influenced the level of patient satisfaction significant that is similar to our study.^[17-20] Our study suggests that the majority of tourists visited India for treatment either through internet access or through mouth-to-mouth publications by other patients who already visited to India for treatment many times for either of treatment. Although the use of Internet showed an increasing trend, in several studies, it was found that mouth-to-mouth information is still regarded as the most prominent source of information.^[12-14]

The present study showed that patients had a moderate and positive feeling regarding the dental treatment quality in India as cost is not the main concern just, they need a safe, excellent, or better quality and effective treatment as lack of insurance and improper treatment may lead to many difficulties. Similarly, a previous study conducted in Hungary and Thailand, found India has less treatment cost and more output as compared to the US which has high treatment cost and less output.^[22-25] It was essential to deliver effective dental care within the patient's visit to India and this effectiveness will increase the satisfaction and enhance the revisit for the future.

Table 2(a): Distribution study subjects' information access regarding dental tourism (n=209)

Question	Strongly agree (1)		Agree (2)		Unsure (3)		Disagree (4)		Strongly disagree (5)		Mean	SD	Category
	n	%	n	%	n	%	n	%	n	%			
Dental treatment in your country is not good enough	3	1.4	24	11.5	58	27.8	66	31.6	58	27.8	3.72	1.03	High
Dental quality care in other country is better than in India	33	15.8	68	32.5	45	21.5	33	15.8	30	14.4	2.80	1.28	Moderate
I can get faster treatment without delay on dental tourism	33	15.8	106	50.7	43	20.6	18	8.6	9	4.3	2.34	0.98	Moderate
Dental tourism can be a solution to solve my dental problems	43	20.6	112	53.6	36	17.2	9	4.3	9	4.3	2.18	0.95	Low
Dental tourism can save a lot of money	71	34.0	87	41.6	30	14.4	15	7.2	6	2.9	2.03	1.01	Low
Dental Tourism have no benefits	0	0	18	8.6	45	21.5	107	51.2	39	18.7	3.79	0.84	High
Total											2.81	0.95	Moderate

Table 2(b): Distribution of study subject's according to level of satisfaction regarding dental tourism (n=209)

Level Of satisfaction	Extremely Satisfied (1)		Slightly Satisfied (2)		Dissatisfied (3)		Extremely Dissatisfied (4)		Not sure (5)		Mean	SD	Category
	n	%	n	%	n	%	n	%	n	%			
Treatment Quality	85	40.7	49	23.4	15	7.2	9	4.3	51	24.4	2.48	1.62	Moderate
Dental Service Quality	70	33.5	61	29.2	9	4.3	9	4.3	60	28.7	2.65	1.64	Moderate
Dental Tourism Expenses	64	30.6	58	27.8	15	7.2	6	2.9	66	31.6	2.77	1.65	Moderate
Dental Tourism Infrastructure	61	29.2	82	39.2	6	2.9	24	11.5	36	17.2	2.48	1.45	Moderate
Destination Appeal	46	22.0	82	39.2	18	8.6	12	5.7	51	24.4	2.71	1.49	Moderate
Destination Culture	112	53.6	61	29.2	0	0	0	0	36	17.2	1.98	1.44	Low
Ease of Access	56	26.8	57	27.3	9	4.3	15	7.2	72	34.4	2.95	1.67	Moderate
Total											2.57		Moderate

Table 3: Mean and standard deviation of satisfaction levels according to gender distribution

Level of satisfaction	Male Mean $\pm$ S.D.	Female Mean $\pm$ S.D.	P-value
1) Treatment quality	2.73 $\pm$ 1.69 (Moderate)	2.19 $\pm$ 1.49 (Low)	0.017*
2) Dental service quality	2.99 $\pm$ 1.72 (Moderate)	2.26 $\pm$ 1.47 (Low)	0.001*
3) Dental tourism expenses	3.02 $\pm$ 1.67 (Moderate)	2.47 $\pm$ 1.60 (Moderate)	0.016*
4) Dental tourism infrastructure	2.64 $\pm$ 1.46 (Moderate)	2.29 $\pm$ 1.41 (Low)	0.08
5) Destination appeal	3.00 $\pm$ 1.57 (Moderate)	2.38 $\pm$ 1.33 (Moderate)	0.003*
6) Destination culture	2.00 $\pm$ 1.46 (Low)	1.94 $\pm$ 1.43 (Low)	0.076
7) Ease of access	3.16 $\pm$ 1.65 (Moderate)	2.70 $\pm$ 1.66 (Moderate)	0.043*

*Statistically significant

The present study showed that patients have also moderate and positive perception regarding the dental service quality, dental infrastructure, and technology. The present study showed that patients have also moderate and positive perception regarding the dental service quality, dental infrastructure, and technology because the amount of good quality care without delay and kindness provided to patient by well-qualified and licensed dental professionals and staffs enhances their perception for

treatment and also dental clinics have accreditation and also follows all rules and regulations according to ethics and other factors such as caring for patients based on special need or personal care and proper sterilization standards were also taken as guided by NADH in India. That is similar to previous studies conducted where all the factors such as speed, kindness, humanity, interest in the course of the treatment, the feeling of ease conveyed by the environment and the personnel.^[1,2,6,7,26] India with its respect and interesting slogans “Incredible India,” “Atithi Devo Bhava” and “KUCH DIN TOH GUJARO GUJRAT MEIN” is a country with its attractive and peaceful architecture, beautiful culture, famous historical sites, beautiful sceneric view with thousands of lakes and beaches and a variety of delicious food of different cities influence patients' satisfaction to travel India enjoying and exploring alone or with their travel companions. Hence, our supported study is the previous literature where the patients travel to Thailand, Indonesia (Bali). Despite clinical factors, the level of dental tourist satisfaction is affected by the presence of tourist attractions, as due to its unique architecture, beautiful culture, ancient palaces, and delicious Thai food.^[6,7,10,24]

The presented study suggested that India needs more measures and take more efforts to highly influence international patient's satisfaction toward India as dental tourism destination and revisit India as compared to our dental tourism countries and through their experience motivate others to visit India for dental treatment with or without dental insurance. Hence, the

dental tourism cities in India along with the government and policymakers should make more efforts for highly satisfying the patients and increasing their interest to revisit India for dental treatments.

CONCLUSION

This study's results show that there is a significant relationship between information access and service satisfaction, between quality of service with service satisfaction and also between affordability and service satisfaction. Better service quality will result in a positive impact toward the level of satisfaction experienced by the patient and higher the affordability of treatment more will be the positive impact of patients toward the available services. Thus, it can be concluded that dental tourism is a tremendously highly budding opportunity worldwide.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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