

RESEARCH ARTICLE

Understanding and comparing the medical tourism cancer patient with the locally managed patient: A case control study

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Abbreviations: KNH, Kenyatta National Hospital; MOH, Ministry of Health; MT, Medical Tourism; NHIF, National Health Insurance Fund; OR, Odds

Abstract

Introduction

Medical tourism is characterized by people seeking treatment abroad for various medical conditions due to varied reasons, many of whom benefit from specialized care for non-communicable diseases. Conversely, there are associated negative effects such as medical complications and weakened health systems. Currently, there is paucity of scientific evidence on patient-related factors influencing seeking treatment benefits abroad. This study sought to compare patient-related factors associated with choice of cancer treatment center locally or abroad, to understand reasons for seeking treatment outside Kenya.

Materials and methods

As a case-control study, 254 cancer patients were randomly sampled to compare responses from those who chose to receive initial treatment abroad or in Kenya. The cases were recruited from Ministry of Health while the controls from Kenyatta National Hospital and Texas Cancer Center. Data was analyzed using SPSS Software Version 21. Descriptive statistics, bivariate and multiple logistic regression analysis was carried out. Level of significance was set at 5%.

Results

Out of 254 respondents, 174 (69.5%) were treated for cancer in Kenya and 80 (31.5%) in India. We found that cost effectiveness was a significant factor for over 73% of all respondents. The study revealed independent predictors for seeking treatment in India were: monthly income higher than US\$ 250; every additional month from when disclosure to patients was done increased likelihood by 1.16 times; physician advice (Odds Ratio(OR) 66; 95% Confidence Interval(CI) 7.9–552.9); friends and family (OR 42; 95% CI 7.07–248.6); and perception of better quality of care (OR 22.5; 95% CI 2.2–230.6).

Ratio; TCC, Texas Cancer Center; QOC, Quality of Care; US\$, United States Dollars.

Conclusion

Reasons patients with cancer sought treatment in India are multifactorial. Several of these can be addressed to reverse out-ward bound medical tourism and contribute to improving the in-country cancer healthcare. It will require strengthening the health system accordingly and sensitizing the medical fraternity and general public on the same.

Introduction

Medical tourism is an emerging and rapidly growing industry globally, in both developing and developed countries. The term refers to clients or patients who specifically travel out of their country of origin (outward bound) or into a destination country to receive health care (inward bound) [1–3]. Most people seek treatment abroad for management of non-communicable diseases, like cancer. The Kenyan Ministry of Health reports also show that cancer is the 3rd highest cause of mortality [4] and the commonest health condition prevalent among medical tourists. Despite the benefits of medical tourism, the industry can negatively impact health systems in both source and destination countries to the disadvantage of vulnerable populations [2, 5–7]. Additionally, some patients acquire medical complications and multidrug resistant microorganisms [1, 8–17].

The reasons for the rapid growth of the industry are complex, multifactorial and augmented by globalization and reduced cost of travel. Often times the reasons are due to the fact that home healthcare systems may be inadequate, unavailable, unaffordable or proscribed [18]. Crooks et al categorize the motivation for travel into 3, namely: procedure based; cost-based and travel-based [19]. Medical tourism is also considered an attractive health commodity of high economic value by governments, middle men, facilitating entities and health facilities. Globally, the market turnover was cited as 24–40 billion US dollars (US\$) in 2014, with the potential to increase exponentially over the next decade [20]. The potentially high economic value attached to medical tourism has caused several developing and developed countries to focus on developing this industry [21], Kenya included [22, 23]. These countries need to have concerted efforts to increase funding to build and strengthen their healthcare systems to manage the potential influx of patients seeking specialized healthcare as well as for their citizenry [24]. For Kenya, this implies that even with a percent growth domestic product of 5% in 2019 [25], the government expenditure on health will have to increase from its stagnated position of between 6 and 9.2% [24, 26] to the intended 12% and above [24, 27].

Outward bound medical tourism is growing rapidly in Kenya, like in other developing countries, although it has not been well documented or scientifically researched. This study sought to identify patient-related factors that influence outward-bound travel for cancer treatment, compared with those who seek treatment in-country, and thus contribute evidence-based recommendations for reversing the ‘tide’.

Materials and methods

Research objective

To compare factors that influence patients’ choice of cancer treatment centers, located outside Kenya or those in the country, specifically at Kenyatta National Hospital’s Cancer Treatment Center (KNH) and Texas Cancer Center (TCC) in Nairobi, Kenya.

Study design

This is a case-control study that explored the patient related factors that influence choice of Cancer Treatment Centre, abroad or in-country

Target and study population

The case group comprised patients who obtained travel approval for cancer treatment abroad from Ministry of Health (MOH) and returned back into the country after the first cycle/round of therapy. The control group comprised patients who underwent the first cycle/round of treatment within the country at either KNH or TCC in Nairobi. Parents of minors provided the required data concerning their minors since they are the primary decision makers in relation to selecting the country in which to obtain treatment.

Study sites

The three study sites were selected because they formed central points of congregation of target populations in large enough numbers to allow for random selection of study respondents. Most health facilities in Kenya have clinicians who are able to suspect the possible occurrence of cancer but do not have the capacity and/or adequate equipment to fully diagnose the type of cancer, and determine staging. Additionally, provision of appropriate treatment is available in selected referral facilities in the country. Therefore, once a patient is diagnosed with a suspected cancer they are referred to tertiary centers like our selected sites. At each of the sites, partial or full financial support for medical treatment is sought from the National Health Insurance Fund (NHIF). Travel and non-health related costs remain the responsibility of the patient and their care giver. Our study sites included the following:

- a. **The Ministry of Health (MOH)** which is mandated to deal with health policy and regulation provides approvals for requests to seek treatment abroad. The latter is prerequisite to obtaining financial support from the National Health Insurance Fund. In the devolved system of Government, the Ministry also oversees the national referral health facilities in line with the Constitution 2010 [28];
- b. **The Kenyatta National Hospital (KNH)** which is the largest public referral hospital in Kenya, offers subsidized comprehensive treatment for cancer. It receives patients from all the health facilities in the 47 Counties. In 2019, the Centre had a high patient workload with 23,985 visits.
- c. **The Texas Cancer Centre** is a medium cost private comprehensive cancer treatment hospital that had a total workload of 15,214 patient visits in 2019. It was selected to be part of the study because of its high workload and the centrality of the site for management of cancer patients.

Sample size

A minimal sample size of 216 respondents (72 study subjects per site) was determined using the formula described by Fleiss et al [29], taking into account equal ratio of cases to controls, desired power of 80%, 20% non-response rate and 5% level of significance.

Data collection tools

The structured questionnaire was administered to eligible respondents who met the study objectives by research assistants. Although most of the questions were not open ended, the

tool included 11 instances where respondents were given opportunity to specify any other alternative answer.

The data collection tool was based on literature from key peer-reviewed journals [7, 19, 30–33]. The data elements included in the tool included socio-demographic characteristics, disease profile and medical treatment, treatment financing, factors influencing choice of health facility and country, perception of quality of care at chosen facility, and chosen treatment center and destination country.

We also noted there is lack of consensus on a standard definition of who a medical tourist is and a therefore a lack of globally agreed-upon methods of data collection [7].

Data collection procedures

At the MOH, a research assistant perused records of cancer patients who received approval for treatment abroad, while at KNH and TCC patient files were used to select those who fulfilled the inclusion criteria. At all sites, these records were serialized and subjected to random selection using a computer based program. The selected eligible study subjects were called, informed about the study and requested to participate. Thereafter appointments for consenting and researcher-assisted data collection were made with those that agreed to participate. Face-to-face or telephone interviews were conducted to collect the required data after consent were provided. The parents or guardians of minors participated on behalf of their children as they were the primary decision makers, and requested to provide written consent. Upon completion of the questionnaire, the forms were scanned for completeness and accuracy before storing them safely in a secure room.

Data management

Data from the structured questionnaires was cleaned manually and then electronically, using Statistical Package for the Social Sciences (SPSS) software version 21. Data analysis was carried out using the same software. Descriptive analysis was done using frequencies and cross tabulation to determine level of significance on the all variables. Measures of central tendency and dispersion were determined for continuous variables. Logistic regression models were used to identify independent predictors of country choice for cancer treatment we conducted bivariate analysis for each possible influencing factor on both cases and controls, followed by a multivariate regression for all factors that showed significant association with choice of country (primary outcome). Odds ratios and corresponding 95% confidence intervals(CI) were documented for the influencing factors in choice of country to show strength of association. Statistical tests were performed at 5% ($P < 0.05$) level of significance.

Ethical approval

The study was reviewed and approved by the Kenyatta National Hospital/University of Nairobi (KNH/UON) Ethics and Research Committee (ERC) in August 2018.

Results

Sociodemographic characteristics

A total of 254 patients were enrolled into the study with 174 (68.5%) seeking cancer treatment in Kenya at the Kenyatta National Hospital(KNH) and Texas Cancer Center(TCC) and 80 (31.5%) abroad from MOH records. All the study respondents who sought treatment abroad selected India as their country of choice. The study showed the mean age of respondents was 50 years (standard deviation(SD) 15.84), with 159(63.4%) being over 45 years of age (see

Table 1. Socio-demographic characteristics of the sampled study subjects.

Variables	Categories	Number	Percent (%)
Gender	Male	87	34.25
	Female	167	65.7
Age groups (years)	<14	5	2.0
	15–29	24	9.6
	30–44	63	25.1
	45–59	88	35.1
	60–74	57	22.7
	>75	14	5.6
Marital Status	Never married	26	10.3
	Currently married	197	77.9
	Separated or Divorced	8	3.2
	Widowed	15	5.9
	Declined to answer	7	2.8
Location	Urban area	97	38.3
	Rural area	156	61.7
Education background	No formal schooling	15	5.9
	Primary school	80	31.5
	Secondary/ High School	83	32.7
	College/ University	42	16.5
Occupation background	Government employee	28	11.0
	Non-governmental employee	29	11.4
	Unemployed	82	32.3
	Self-employed	77	30.3
	Farmer	31	12.2

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Table 1). Nearly two-thirds, 167 (65.7%) of respondents were female, and at least 205 (80%) had primary school education (**Table 1**).

Nearly two-thirds of the respondents, 165 (65%), were employed or had income generating activities. Out of these, 80 of them earned a median monthly salary of about US\$ 390 (minimum US\$ 7 to maximum US\$ 4,000) (**Table 4**). The length of time (duration) the study subjects knew they suffered from cancer ranged from 1 to 188 months, with a median time of 13 months (IQR 4–17 months).

The study respondents suffered various forms of cancers; reproductive tract cancers (126 cases, 49.6%), gastrointestinal tract cancers 46 (18.1%), blood related malignancies 30 (11.8%), and Ear, Nose and Throat cancers 24 (9.4%) (**Fig 1**).

The specific cancers respondents had were breast 59 (23.2%), cervix 50 (19.7%), oesophagus 16 (6.3%), prostate 10 (3.9%) and other types of cancers 119 (46.9%). One hundred and two (60%) participants had various laboratory tests, while 70 (28%) underwent a positron emission tomography (PET) scanning, and 40 (16%) respondents had other radiological tests performed on them. Study respondents were treated using chemotherapy, 221 (87.0%), radiotherapy, 72 (28%), surgery 53 (21.0%), 10 (4%) bone marrow transplantation and 2 respondents received brachytherapy.

Reasons given for choice of country to obtain cancer treatment

The majority, 210 (83%), of respondents indicated that advice from their physicians influenced their choice of country in which to seek treatment. Other key influencing factors included; cost-effectiveness (n = 185, 73%), advice from friends and family (n = 77, 70%), perceived

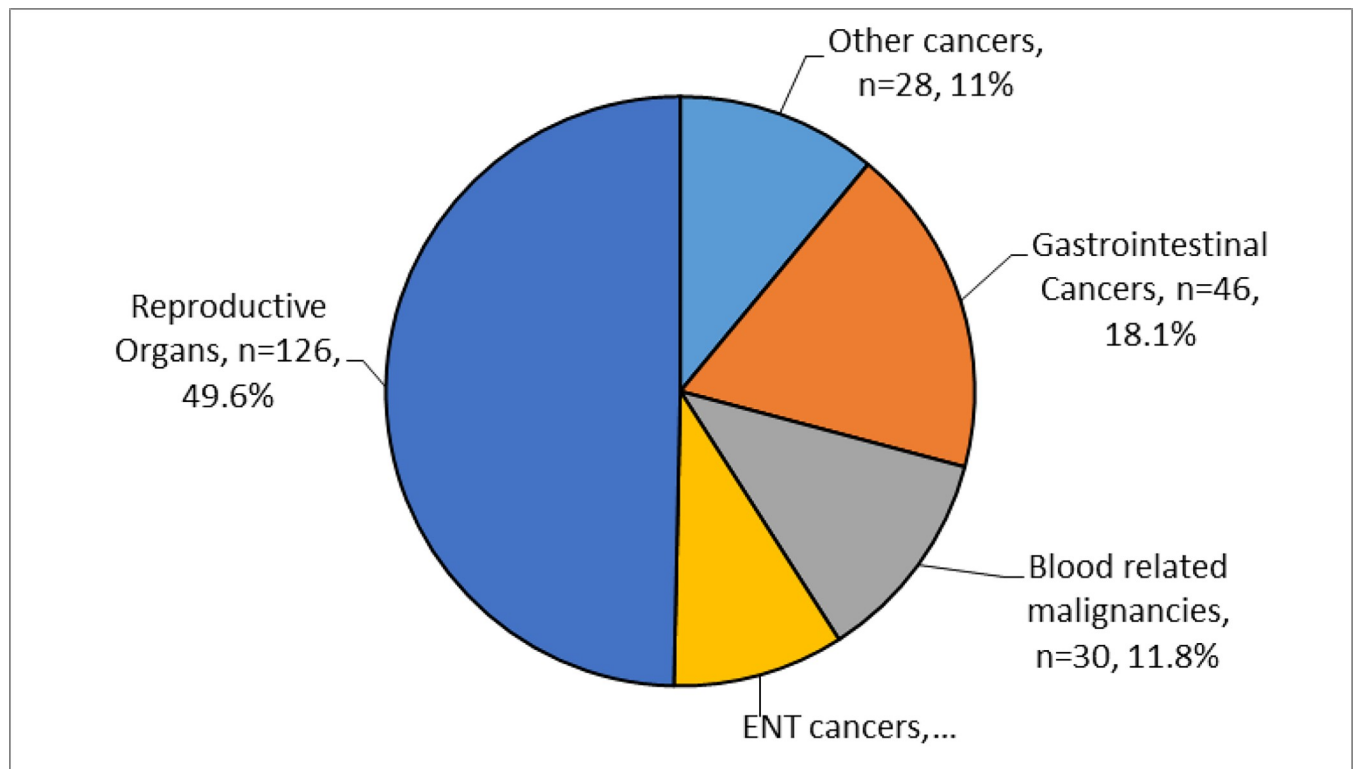


Fig 1. Types of cancers in categories.

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access to highly specialized health care services (n = 164 64.8%), perceived access to highly skilled and experienced health workers (n = 131 52%) and quality of care (n = 177, 70%) (Table 2 below).

Sociodemographic characteristics and their influence on choice of country

Bivariate analysis, using chi-square statistics, revealed significant differences between the cases and controls. With regard to the sociodemographic characteristics, we found that traveling to India was associated with the male gender ($X^2 = 5.4$, $p = 0.021$), urban dwelling ($X^2 = 83.3$,

Table 2. Reasons given for choice of country for cancer treatment.

Factor	Number	Percent
Physicians advice	210	83.0
Cost effectiveness	185	73.1
Friends and family	177	70.0
Quality of care	177	70.0
Perceived access to specialized health care services	164	64.8
*Reputation of the Country	156	61.9
Perceived access to highly skilled and experienced health workers	131	52.0
Other reasons	2	50.0
Combine treatment with sight-seeing	60	23.7
Combine treatment with business	45	17.8

*Perception that the Country has the reputation to offer the required specialized cancer treatment health services

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Table 3. Associations between sociodemographic characteristics and choice of country.

		Country Providing Treatment				p-value
		Kenya		India		
		n	%	n	%	
Age Groups (years)	<14	1	0.6	4	5.1	0.107
	15–29	17	9.9	7	8.9	
	30–44	39	22.7	24	30.4	
	45–59	62	36.0	26	32.9	
	60–74	44	25.6	13	16.5	
	>75	9	5.2	5	6.3	
Gender	Male	48	58.5	34	41.5	0.021
	Female	122	73.1	45	26.9	
Location	Urban area	34	35.1	63	64.9	<0.0001
	Rural area	140	89.7	16	10.3	
Marital status	Never married	20	11.5	6	7.6	0.267
	Currently married	135	77.6	62	78.5	
	Separated or Divorced	4	2.2	4	5	
	Widowed	12	6.9	3	3.8	
	Declined to answer	3	1.7	4	5.0	
Education Background	No Formal Education	14	8.0	1	1.2	<0.0001
	Primary School Education	74	42.5	6	7.5	
	Secondary/High School	67	38.5	16	20.0	
	College/University Education	13	7.5	29	36.2	
	Declined to Answer	6	3.4	28	35.0	
Occupation background	Self-Employed	59	33.9	18	22.0	<0.0001
	NGO Employee	10	5.7	19	23.8	
	Government Employee	6	3.4	22	27.5	
	Farmer	31	17.8	0	0.0	
	Unemployed / Retired	62	35.6	20	25.0	
	Other	6	3.4	1	1.2	

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$p < 0.0001$), higher education background ($X^2 = 105.9$, $p < 0.0001$) and government or NGO employment ($X^2 = 72.3$, $p < 0.0001$) (Table 3). We found that there was a significant association between occupation and choice of country. Of those that were treated in India, 22 (27.5%) were government employees, 18 (22%) were self-employed, 20 (9.7%) were retirees or unemployed ($p < 0.0001$) (Table 3).

The study showed that choice to travel to India was significantly associated with higher monthly income ($p < 0.0001$) and longer duration from the time the respondents were informed they had cancer ($p < 0.0001$). Study respondents who chose treatment in India had known of their diagnosis for an average period of 26.2 months (SD = 25.9, range 1–188 months), while those treated in Kenya had an average duration of 8 months (SD = 10.3, range 1–90 months) (Table 4).

Types of cancers, their management and their effect on country of choice

With regard to cancer categories, there was a statistically significant association between patient's knowledge of their blood related malignancies and provision of cancer treatment in India ($X^2 = 74.68$; $p < 0.0001$). The majority of respondents, 107 (84.9%) diagnosed with reproductive organ cancers were managed in Kenya (Fig 2).

Table 4. Factors associated with choice of treatment centre: Income and knowledge of diagnosis.

		N	Mean	Std. Deviation	Minimum	Maximum	p-value
Monthly income (US\$)	Kenya	28	136.79	123.59	7.00	500.00	
	India	52	701.54	689.99	100.00	4000.00	<0.0001
	Total	80	503.88	621.33	7.00	4000.00	
Duration Patients' knowledge of diagnosis (months)	Kenya	173	8.01	10.315	1	90	
	India	78	26.23	25.911	1	188	<0.0001
	Total	251	13.67	18.746	1	188	

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There was a statistically significant association between the referring health facility and the choice of treatment center ($X^2 = 105.6$, $p = <0.0001$). We found that private hospitals referred a higher proportion of respondents to India, 59 (73.8%), while government hospitals referred only 8 (5.6%) patients.

The study revealed the two main cancer management financiers were the NHIF and out-of-pocket house-hold funds; 146 (57.3%) and 140 (55%) respondents, respectively. Private insurance companies funded 7 (3%) of respondents and employers funded 2 (1%) of responders.

There was no association between the source of funding for treatment and the country chosen in which to receive treatment ($X^2 = 0.1$, $p = 0.79$). The NHIF funded 47(58.8%) of respondents that sought treatment in India while 98 (56.6%) respondents were funded receive treatment in Kenya.

Factors that influenced choice of country for cancer treatment

We found a statistically significant association between the country of choice and perception of the country's capacity to offer required cancer treatment ($X^2 = 25.6$, $p < 0.0001$), advice from respondent's physician ($X^2 = 5.64$, $p = 0.018$), perceived QOC ($X^2 = 19.0$, $p < 0.0001$), perceived

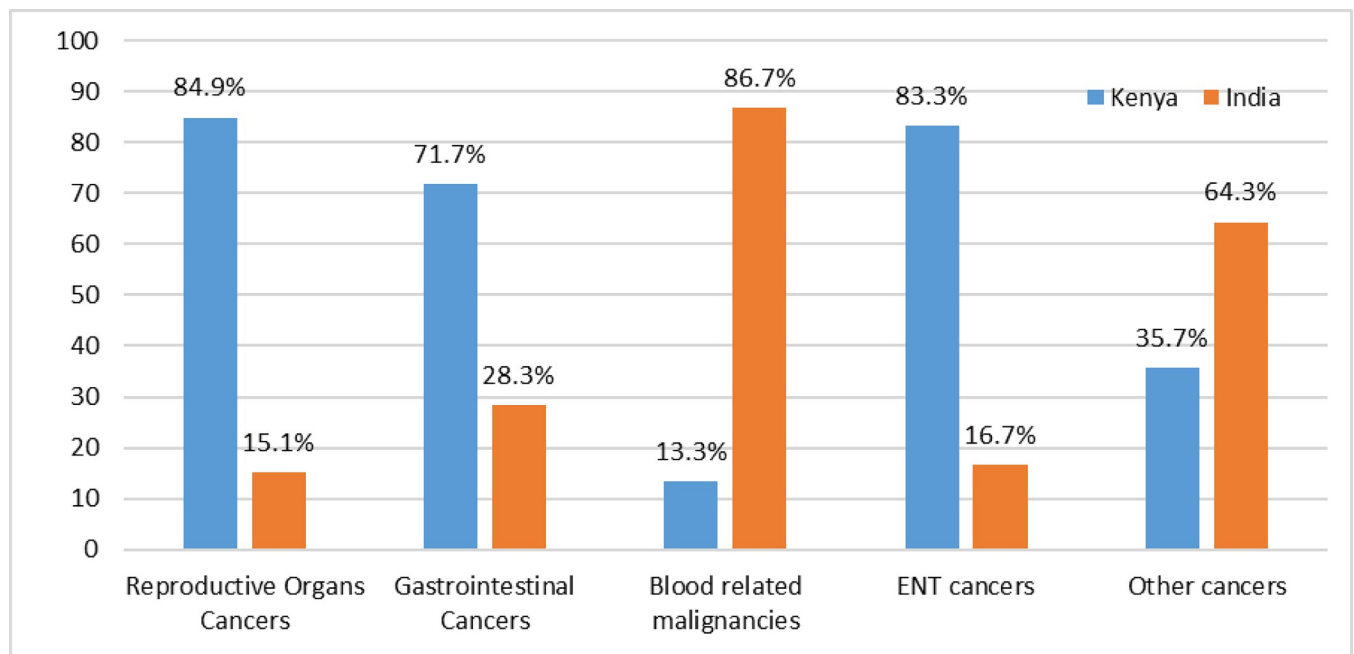


Fig 2. Proportion of study participants disaggregated by the type of cancers and the country in which they received treatment.

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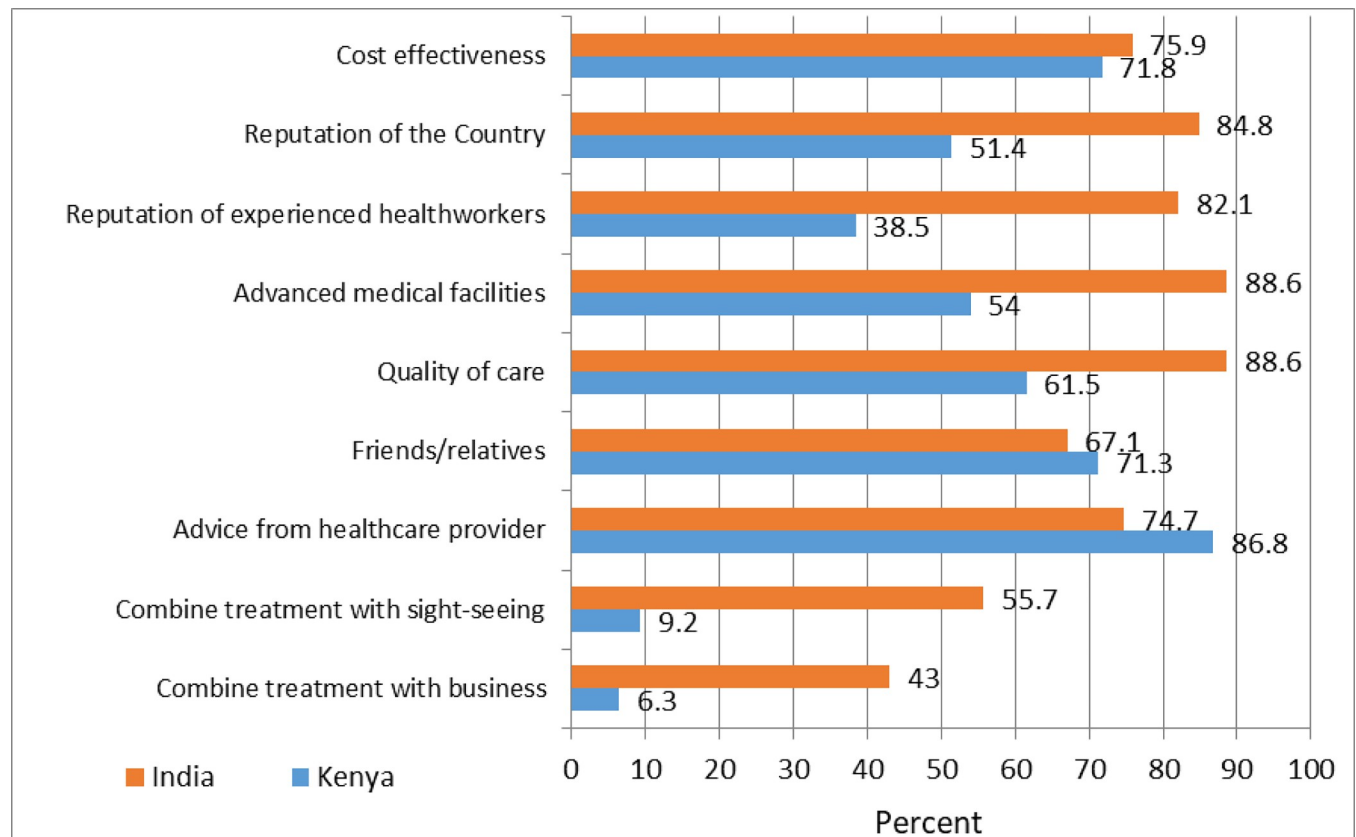


Fig 3. Proportion of study respondents and the influencing factors for choice of treatment center. NB: Reputation of the country refers to the respondent's perception that the Country has the reputation to offer the required specialized cancer treatment health services.

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access to specialized health care services ($X^2 = 28.5$, $p < 0.0001$), opportunity to combine sight-seeing ($X^2 = 64.9$, $p < 0.0001$) amongst others (Fig 3). Sixty-seven (84.8%) of the respondents treated in India were influenced by their perception of the country's facilities' capacity to provide cancer treatment. Similarly, 70 (88.6%) were influenced by perceived QOC to be provided, 59 (74.7%) by respondent's physician and 64 (82.1%) by availability of skilled and experienced health workers (Fig 3).

Independent predictors for choice country

Using logistic regression models we identified independent predictors for choice of country. When controlling for gender and other sociodemographic factors, monthly income and duration from the time patients' knowledge of their diagnosis (in months) were identified as independent predictors. The likelihood for choosing treatment in India was found to be 38.9 times higher for cancer patients who earned US\$ 250 monthly and above ($p < 0.0001$, 95% CI 7.5–201.3). Every additional month from the time patients' knew of their diagnosis was associated with increased likelihood of treatment in India by 1.16 times ($p = 0.005$, 95% CI 1.046–1.28).

When controlling for other factors, we found other significant independent predictors for choice of country. The adjusted odds for seeking treatment in India were 66.2 (95% CI 7.9–552.9) and 42 (95% CI 7.07–248.6) times higher upon advice from physicians and from friends and family, respectively. Additionally, anticipation to receive better quality of care was another independent predictor, (OR = 22.5, 95% CI 2.2–230.6) (Table 5).

Table 5. Independent factors influencing of selecting country to receive treatment.

Variables	Coefficient	Standard Error of Coefficient	p-value	Odds Ratio	95% C.I. for OR	
					Lower	Upper
Advice of physicians	4.193	1.083	< .0001	66.209	7.929	552.85
Friends & Family (HF)	3.736	.908	< .0001	41.927	7.07	248.64
Better quality care at Health Facility	3.115	1.187	.009	22.526	2.2	230.63

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Discussion

There is paucity of systematically generated information about Kenya's outward-bound medical tourism, yet it is a growing industry locally and globally. This study sought to characterize selected aspects of medical tourism in Kenya by understanding the key patient-related factors that influence choice of treatment out of the country with specific reference to management of cancer.

Characteristics of study subjects and disease profile

Our study compared 80 study participants who received cancer treatment abroad, with 174 other participants who chose treatment in Kenya. In this case-control study, cancer patients treated in abroad formed the case group, while those treated in Kenya at KNH and Texas Cancer Center formed our control group. All 80 study respondents treated abroad chose to go to India as their treatment destination of choice. This is similar to other African patients who travel to Asia, the majority go to India in search of specialized quality, cost-effective health care and customer care that may not be available in their home countries [34].

Much like the Global Cancer Statistics 2020, cancer is a leading cause of mortality in Kenya, and an important barrier to increasing life expectancy [4, 35]. Hence cancer deprives the country of its most important productive segment of the population and development resource, the human workforce. The median age of the respondents was 50 years with nearly two-thirds being 45 years and older. Globally a larger proportion of cancer patients (70%) are 50 years and older [35], depicting slightly earlier onset of cancer in the Kenyan population. Most of the commonest cancers in the Globocan 2020, Kenya statistics report are similar with those of our respondents, namely; breast, cervix, esophagus, gastrointestinal and prostate cancer [36]. Additionally like Kenya, cancer is the commonest disease for which patients are referred from other southern Sub-Sahara countries into South Africa [37].

Irrespective of the country the respondents chose to receive treatment in, the majority received chemotherapy as the initial mode of therapy. Management of cancer was financed by the National Health Insurance Fund (NHIF) or using out-of-pocket household finances, without demonstrable statistically significant difference between those who sought treatment in Kenya or India. This implies that NHIF equally finances treatment in and out of the country. Interestingly, the biggest group that were supported to receive treatment in India by NHIF were government employees (41.9%) and the self-employed (30.4%) respondents. These respondents are among the 19% of the Kenyan population that have health insurance. Unfortunately, the insured are not equitably located across the country. As expected, the wealthy are more likely to have health insurance than the poorest quintile; 42% and 3% respectively [24, 27]. Thus financing for cancer care in Kenya may come from various sources. Further, anecdotal information reveals that fund raising for health care is often done among friends and relatives as a cultural norm in the country. Other probable sources include selling of assets such as land and livestock.

Patient related factors associated with medical tourism

Bivariate analysis of the socio-demographic factors demonstrated that the male gender, higher education background, urban dwellers, government employees were significantly associated with outward bound medical tourism. This is consistent with other studies which show that in addition to other factors, age and higher education are associated with choice of health facility for treatment of various conditions [38–40]. It is also not surprising that urban dwellers are associated with medical tourism, as 27% of the urban population are insured compared to the 12% of the rural population, implying the former have greater access to finances.

Upon subjecting the data to regression analysis we found that the sociodemographic factors in used our study were not independent factors for seeking treatment in India, with respect to cancer. Our study revealed that monthly income greater than US\$ 250 (OR 39) was an independent factor. This implies that initial significant sociodemographic factors were possibly indicators of increased access to required resources rather being independent influencers in the case of cancer therapy.

Other factors that influenced choice of treatment center in Kenya or India, included; perception that the country can provide required cancer treatment, availability of adequate treatment facilities, waiting time, advice from physician and friends or relatives, opinion of other patients, perceived quality of care [41], availability of specialized health care facilities, combining treatment with sight-seeing and business and cost-effectiveness of treatment. This is finding is comparable with other studies from other countries [42, 43].

When we scrutinized our data further for strength of association using logistic regression, we found that like other studies the independent predictors in relation to cancer included; longer duration from the time patients knew they had cancer (1.16 times with every additional month), advice from physicians (OR 66 times), opinion of friends and family (OR 42) and anticipated better quality of care at chosen facility (OR 22.5) [5, 19, 33, 42, 44–48]. Similar to our results, Crush and Chikanda [37] in their editorial article demonstrated the two key reasons why patients from African Countries sought treatment in South Africa were: recommendations by their physicians and non-availability of required medical treatment. This implies a significant proportion of cancer patients who seek treatment abroad are discontent with their own home health system like in other countries [49].

All in all, we found that cost effectiveness was a significant factor for 76% of the respondents treated in India and 72% of those treated in Kenya. This is one factor the is constantly cited in most literature as a key factor for medical tourism[31, 33, 49–51]. In our study, we found that cost was an important factor for both groups, those treated in Kenya and those in India. So there was no significant difference between the two groups. However, we also found that private hospitals referred a higher proportion of respondents to India, 59 (73.8%), than public facilities, 8 (5.6%) patients, indicating the high cost of out of care is an important 'push' factor [52]. Therefore, most of the respondents in our study, probably chose their facilities because they were more likely to get cheaper cancer care than the Kenyan private sector hospitals.

Several other studies have demonstrated that long waiting periods, online information, marketing, opportunity to combine sightseeing with treatment and distance were important influencing factors for medical tourism [1, 7, 53]. These factors did not out stand out as independent factors in our study. It is possibly due to several factors such as, marketing/promotion of healthcare is controlled and regulated [54]. Second, in the recent past, there have been concerted efforts at improving the healthcare infrastructure for cancer care with the installation of linear accelerators for radiotherapy [4], which in turn has reduced waiting time and long queues. Third, most respondents required chemotherapy for reproductive health cancers, a

mode of therapy which is available in Kenya's tertiary health facilities, like KNH. Fourth, our study focused on cancer therapy only at the exclusion of other conditions such as cardiovascular and renal disease. Investments and improvements into the health sector for management of these conditions is still lagging behind. Medical tourism is contingent on the capacity in home country to provide specialized health care with key resources being, highly skilled medics and advanced medical equipment [2].

In light of the findings of this study, and in a bid to reverse outward bound medical tourism to cancer patients and strengthen the health system, the country will need address several elements for the provision of specialized cancer care. First, institutionalize strategies to increase early diagnosis and early initiation into comprehensive cancer care (including psychosocial support for patient and family), since those who knew their diagnosis over a longer period time were more likely to travel abroad. Second, focus on health system strengthening elements such as increased training and/or recruitment of highly skilled health workers, continual upgrading of services to offer cutting edge procedures (for example bone-marrow transplant), and offer cost effective packages for cost containment. Third, develop partnership with hospital chains in India to provide cancer treatment in Kenya in the short term. Fourth, continually sensitize of physicians, in private and public health facilities, and the general public on the availability of comprehensive, specialized and cost effective cancer care within the country. This will increase the confidence of health worker in the capacity of in-country health facilities to provide highly specialized cancer care.

Strengths and limitations of the study

The study derived its data from patients themselves and not unverified media reports or private consultancies [1], making it authentic. Further, we were able to compare those who travelled and those who were treated in Kenya from centrally and focused sites which had large enough numbers to allow for randomization.

There were a number of limitations to this study. Foremost, it was conducted within a short period of time, due to resource constraints and used recalled data which is known to introduce limitations in terms of accuracy due to recall bias in specific areas such as cost. Determining and analyzing the cost of care was not possible because of lack of verifiable documents and the use of recall bias, and as such further studies on the same are recommended.

Recommendations for future research

There will be need for additional research to study other probable influencing factors such as customer care, hospital accreditation, language, climate, expected long-term outcomes of care, attitude of host country citizenry, religious accessibility and food, demonstrated in other studies [5, 19]. In-depth qualitative studies are also likely to provide additional information such as patient related factors perception of quality of care, and customer care. Additional studies on physicians' motivation factors for referrals abroad, cost-effectiveness, cost analysis, long term outcomes, impact on health systems will also be important to conduct and contribute to the body of knowledge. There will also be need for additional research to explore the reasons for the independent factor that showed that longer duration from the time patients were notified of their diagnosis to seeking treatment was associated with medical tourism. Possible reasons could entail early denial of diagnosis, seeking religious intervention or other alternative therapies such as traditional medicine coupled with late recognition of disease progression.

Conclusion

Medical tourism in Kenya is a growing and important phenomenon making it imperative to seek evidence-based recommendations on several issues, including patient-related motivation factors.

The study identified key independent predictors of outward-bound travel that will contribute to providing evidence-based recommendations for reversing the medical tourism 'tide', and establishing competitive access to specialized quality care nationally. The key factors that influence outward bound medical tourism from Kenya are increasing duration in months from when patients were knew about on their cancer, higher monthly income, advice from physicians, opinion of friends and family, perception of quality of care to be received, lack of adequate cancer treatment services at their local facility, and anticipation to receive better quality of care at chosen facility.

Supporting information

S1 File. Medical tourism Kenya- questionnaire in English.

(PDF)

S2 File. Medical tourism Kenya- questionnaire in Kiswahili.

(PDF)

S3 File. Medical tourism Kenya- SPSS data.

(SAV)

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