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Transplant Tourism to China: The Impact on Domestic Patient Care Decisions

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Abstract

Organ procurement in China has been criticized because of its reliance on executed prisoners as donors. We aimed to assess the influence of perceptions about organ procurement practices in China on domestic patient care decisions.

Methods—An anonymous Internet administered case-based questionnaire was used to survey an sample of healthcare professionals with affiliations to hepatology and transplantation professional societies.

Results—Of 674 completed surveys, the vast majority (93%) of the respondents were physicians, surgeons or allied transplant professionals actively caring for liver transplant patients and 81% practiced in the United States (US). A strong majority believed procurement practices were ethically sound in the US and Europe (87% and 73%) but far fewer believed that procurement practices were ethically sound in China (4%, $p < 0.001$). In case-based questions, lack of confidence in the ethical standards of organ procurement in China predicted patient-care decisions. The majority would provide post-transplantation care for patients who underwent liver transplantation at another domestic center, in a foreign country and in China (90%, 78%, 63%, respectively, $p < 0.001$) yet respondents who suspected unethical procurement practices in China were more reluctant to do so ($p < 0.001$).

Conclusions—Transplant professionals expressed concern about organ procurement practices in China which influenced their patient care decision-making.

Keywords

Transplant tourism; medical ethics; liver transplantation; health policy; medical decision-making; Internet survey

Introduction

Organ transplantation is an established life-saving procedure. Globalization of medical and surgical technology has increased the capacity for countries worldwide to perform organ

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transplantation. Unfortunately, dramatic geographic variation in the availability of organs for transplantation (1) and a parallel discrepancy in financial resources for healthcare (2,3) have increasingly led desperate patients to transplant tourism—traveling abroad to purchase donor organs and undergo organ transplantation (4).

In 2005, the World Health Organization (WHO) reported the transplantation of 66,000 kidneys, 21,000 livers and 6,000 hearts, with approximately 10% of these procedures occurring via transplant tourism (5,6). Leading destination countries for transplant tourism include China, India, the Philippines and Pakistan (7–11). Globally, the number of organ transplant procedures in China is surpassed only by the United States (12). According to the WHO, in 2005 China had 348 transplant centers, which performed 8,204 kidney and 3,493 liver transplantations (12). Although policy actions by China's Ministry of Health aimed at curbing transplant tourism to China have been reported, their impact is unclear (13).

The practice of transplant tourism has been decried by numerous national and international healthcare organizations including the American Society of Transplantation (AST)(14), the United Network for Organ Sharing (UNOS)(15), The Transplantation Society (TTS)(16,17), the World Medical Association (WMA)(18), and the World Health Organization (WHO) (4, 19,20). These organizations cite serious concerns about clandestine international brokers, surreptitious payment, coercion of organ donors (and/or donor families) and substandard medical and surgical practices that may lead to lower success rates and higher risk for transmission of infectious disease.

Transplant tourism to China has been isolated as particularly controversial (4,6,21,22). Organ procurement from executed prisoners in China has been reported by the US Department of State (23), non-governmental investigative reports(10,24,25), and in the medical literature (21,22,26). These reports indicate that over 95% of organ donors in China are prisoners. Prisoners, particularly those slated for execution, are a vulnerable population particularly susceptible to coercion (17). For this reason, both live and deceased donor organ procurement from prisoners violates US professional guidelines (27,28) and international standards ratified by the World Medical Association Statement on Human Organ Donation and Transplantation (18).

The ethics of organ transplantation in the US emphasize fairness in organ allocation and transparency in the decision-making process. These attributes are important to those deciding to be donors (29,30) as well as to those working in the transplant field (30,31). In western Europe, similar values are held (31,32). The perception that organ transplantation in China involves a different set of ethics raises a host of clinically relevant issues for clinicians. Among these are whether to suggest China as a destination for transplant, to providing follow-up care for patients who have received a transplant in China. The goal of the present study was to survey the views held by transplantation professionals on organ procurement practices abroad and assess their impact on domestic patient-care decisions.

Methods

Setting and Survey Instrument

Our target survey population was the community of transplant healthcare professionals actively involved in the care of organ transplant patients. The anonymous Internet-administered survey (33,34) contained 20-item case-based survey items which were developed and piloted in 60 healthcare professionals attending a seminar on organ transplantation. Responses used a 5-point Likert scale of agreement ranging from “strongly agree” to “strongly disagree” (35). The survey first assessed the degree of i) confidence in the ethical standards of organ procurement practices in the United States, ii) fairness when patients seek listing at an alternative domestic

transplant center to shorten waiting list time, and iii) willingness to care for patients who underwent transplantation at a) a domestic transplant center different from that of the respondent, and b) a transplant performed at a transplant center in another country. Next, the survey used 2 brief clinical scenarios (Table 1) to further evaluate associations between opinions regarding organ procurement practices and patient-care decisions.

Case 1 assessed the likelihood the respondent would encourage patients to seek placement on a waitlist at i) another domestic transplant center, ii) a foreign transplant center, or iii) a transplant center in China. Additionally, Case 1 examined the likelihood that a respondent would provide post-transplant care for patients who underwent liver transplant at a center other than their own. Case 2 assessed i) the likelihood that a respondent would actively discourage a patient from seeking liver transplantation in China, and ii) attitudes toward care of a patient who underwent liver transplantation in China.

Two additional questions assessed the respondent's support of i) an embargo on scientific reports from countries suspected of unethical organ procurement and ii) an embargo on training physicians intending to practice in countries suspected of unethical organ procurement (Table 1). Additional demographic data included the respondent's country of birth, country of practice, type of healthcare professional, professional training outside of the country where currently practicing, level of involvement in care of transplant patients, and characteristics of their local transplant center.

Survey Administration

An experienced informatics center at the University of California San Francisco managed the Internet-based survey administration and data collection using Voxco Interviewer 5 (Voxco, Montreal, Canada). Following approval by our institutional review board, invitations to participate in the survey were emailed to health care professionals with affiliations to American hepatology and transplantation professional societies in November 2006. Respondents reporting that during the prior 3 months, they had provided care for either patients "awaiting organ transplantation" or patients who had "previously undergone organ transplantation" met our target population inclusion criteria. A single reminder email was sent 7 days later. Emailed invitations contained a link to the Internet-based questionnaire. To avoid multiple responses from a single respondent, unique single use, randomly assigned, 9-digit personal identification numbers were provided to invitees with embedded Web links to the Internet survey. No incentives were offered in return for participation. The anonymous nature of the survey was explicitly stated in the invitations.

Statistical Analysis

Descriptive analyses included medians and ranges for continuous variables and percentages for categorical data. The chi square test assess for associations when predictors and outcomes were both dichotomous. When responses were sparse, Fisher's exact test was used. When summarizing Likert scaled items, the 5-point Likert scale was collapsed into agree, neutral, and disagree categories. When assessing the relationship between dichotomous predictors and Likert-scaled items, we used ordered logistic regression without collapsing the Likert scale to calculate odds ratios (OR) and 95% confidence intervals (CI). A p-value ≤ 0.05 was considered a statistically significant result. All data were analyzed with STATA version 9 (STATA Inc, College Station, TX).

Results

Respondent Characteristics

There were 674 completed surveys from 3366 email invitations (20%). The vast majority (93%) of the 674 respondents were transplant physicians and/or surgeons or allied transplant professionals actively caring for liver transplant patients (Table 2). Self-reported race was 77% Caucasian, 16% Asian, 2% Black and 5% other races. Seventy-eight percent were male. Most respondents delivered patient care in the United States (81%). The percent delivering patient care in Europe/Scandinavia, Canada and Asia was 6.2%, 3.4% and 3.6%, respectively (Table 3). The percent with > 5 years and > 10 years in practice was 79% and 55%, respectively. One third (34%) received training in a country other than in which they currently deliver healthcare. Most respondents practiced at an academic medical center (87%). The percent at transplant centers performing < 50, 50 to 99 and ≥ 100 liver transplantations annually was 53%, 24% and 23%, respectively.

Comparison of Opinions of US and Non-US Respondents

US and non-US respondents differed in their opinions as to whether it was fair for a patient to seek liver transplantation at a domestic center with a shorter waiting list. A majority of US respondents (53%) did not think it was unfair for patients to seek listing at an alternative domestic center in an effort to shorten waiting times, however only 23% of non-US respondents answered similarly (Figure 1). While non-US respondents were less supportive of patients seeking listing at an alternative domestic center to shorten waiting time (OR 0.45, $p < 0.0001$) they were more likely than US respondents to support listing at an alternative foreign center (OR 4.7, $P < 0.0001$). Both US and non-US respondents had a much lower confidence in the ethical standards of organ procurement practices in China than the practices in either Europe or the United States ($p < 0.0001$) (Figure 2).

Confidence in Organ Procurement Practices and Clinical Decision Making

Less than 4% of all respondents (US and non-US) reported that they believed organ procurement practices in China to be ethically sound (Figure 2). To shorten liver transplant waiting times, 72% of respondents would encourage a patient to seek placement on a waiting list at another domestic center and 17% would encourage wait list placement at another foreign center, yet less than 7% in would encourage wait list placement in China ($p < 0.001$). After controlling for the respondents' degree of reluctance to counsel a patient to seek liver transplantation at a foreign center, respondents were still less likely to encourage patients to seek liver transplantation in China (OR 0.15, 95% CI 0.10 – 0.23, $p < 0.001$). When US and non-US respondents were analyzed separately, this association remained stable.

Of the 674 respondents, 23 (4%) felt that organ procurement practices in China were ethically sound. Of these 23, 17 practice in the US, 2 in Canada, 1 in Egypt, 1 in Columbia, 1 in South Korea, and 1 in Nigeria. All but 2 of these respondents were actively involved in the care of transplant patients. All but 1 were a physician and/or surgeon. Three were Asian and none were trained or practiced in China.

Using hypothetical patient case-based questions, we further examined the association between the respondent's opinions regarding organ procurement practices in China and clinical care decisions. Responses to case 1 revealed that respondents' lack of confidence in the ethical standards of organ procurement practices in China was associated with increasing reluctance to encourage patients to seek liver transplantation in China (OR 0.25, CI 0.18 – 0.36, $p < 0.0001$) but not at other foreign transplant centers (OR 0.88, CI 0.64 – 1.2, $p = 0.4$) or at domestic centers (OR 1.3, CI 0.93 – 1.74, $p = 0.1$) with shorter waiting times. This same pattern was also seen when US and non-US respondents were analyzed separately.

In case 2, nearly half of respondents (47% of US, 55% of non-US) would actively discourage a patient with a liver tumor exceeding standard US size limits from seeking liver transplantation in China. Lack of confidence in patient selection criteria and/or in organ procurement practices in China was associated with increasing reluctance to list a patient who had previously undergone liver transplant in China for an urgent repeat liver transplantation at the respondent's transplant center (OR 0.45, CI 0.33 – 0.61, $p<0.0001$). This pattern was also seen when US and Non-US respondents were analyzed separately.

In both case 1 and case 2, the majority of respondents would care for patients who had undergone liver transplantation in China and at other foreign transplant centers. However, lack of confidence in organ procurement practices in China was associated with increasing reluctance to care for patients who underwent liver transplantation in China (OR 0.46, CI 0.34 – 0.63, $p<0.0001$), but not at other foreign transplant centers (OR 0.77, CI 0.52 – 1.1, $p=0.2$). Again, this pattern was seen when US and non-US respondents were analyzed separately.

Support of policies designed to influence foreign organ procurement practices

The majority of both US and non-US respondents would support professional initiatives aimed at encouraging improved ethical standards in organ procurement practices. Sixty-six percent would support an embargo on scientific reports from countries suspected of unethical organ procurement practices. The proportion of respondents who were neutral or disagreed with an embargo was 12% and 21%, respectively. Fifty-six percent would refrain from participating in training of liver transplantation physicians and surgeons who intended to practice in countries suspected of unethical organ procurement practices. The proportion of respondents who were neutral or disagreed with such a training embargo was 16% and 28%, respectively.

Discussion

Globalization of healthcare (3) and the growth of transplant tourism (11) have outpaced the implementation of internationally accepted ethical standards for organ procurement. Nowhere is this more evident than in China. In a recent article by Dr. Jiefu Huang, Vice Minister of Health in China, he concedes that “ethical issues lag behind the rapid technical advances and legislation to govern [liver transplantation's] clinical application...” (26). Indeed, Dr. Huang reports that in China “apart from a small portion of traffic victims, most of the cadaveric organs come from executed prisoners,” (26) evidence that supports prior official statements from the US Department of State (23) and a recent non-governmental report (24).

In our survey, US and non-US transplant professionals expressed serious concern about organ procurement practices in China and this concern influenced their patient care. Further, the majority of transplant professionals responding to this survey would support actions to discourage unethical procurement practices in China. Two-thirds of respondents supported an embargo on scientific reports from countries suspected of unethical procurement practices and more than half would not participate in medical training of physicians or surgeons who intended to practice in countries suspected of unethical procurement practices.

Public trust in the fairness and transparency of organ allocation is paramount to ensuring continued organ donation (30,36). Adherence to medical, psychosocial and ethical standards throughout the organ donation process is a fundamental duty of the transplant professional (28,30,31,37–39). Physicians caring for patients in need of organ transplantation balance the duty to the individual patient versus the duty to society. The findings of this study suggest that transplant physicians' beliefs and practice patterns are consistent with the principles promulgated by the WHO, WMA, TTS and UNOS that oppose transplant tourism (4,15,16, 19,20) and organ procurement from prisoners (16,18,27). Acting as patient advocates, most transplant professionals were not opposed to patients seeking transplantation at alternative

centers to shorten waiting times. Yet, respondents who suspected unethical organ procurement practices in China would discourage patients from transplant tourism to China. Although the majority of respondents would care for patients who participated in transplant tourism to China, respondents who were suspicious of organ procurement practices in China were more reluctant to do so.

Scientific reports involving executed prisoners in China have also raised concern within the transplant community (21). One notable example is a manuscript investigating the limits of safe warm ischemic times for liver transplantation which reports the procurement of hepatic tissue from “unconscious patients dying of external brain injury whose other organic functions were normal” (40). International suspicion that these study samples were obtained from executed prisoners was aroused by the fact that China has no formal brain death policy and that firearms are a standard means of execution in China.

Guidelines published by the Transplantation Society, an international transplant professional organization, address the imposition of embargos on scientific reports from investigators transplanting organs from executed prisoners as well as on medical training of physicians from these countries. These guidelines mandate that scientific reports from transplant programs adhere to the Helsinki Declaration of the World Medical Association (41) and conclude that “presentation of studies involving patient data or samples from recipients of organs or tissues from executed prisoners should not be accepted” (16). These policies have since been adopted by prominent scientific journals (21,22).

On the issue of physician training, the Transplantation Society guidelines suggest a policy of engagement to open a dialogue with trainees from transplant centers that procure organs from executed prisoners (42). The guidelines advise that potential trainees in transplantation specialties should accept and comply with the TTS Ethics Statement which states “All countries should enact legislation prohibiting exploitation of donors by commercial trafficking in organs and tissues” and that “the decision to donate [organs] is voluntary, free of exploitation and coercion” (16). Respondents to our survey demonstrated support for an embargo on scientific reports from investigators and an embargo on medical training of physicians in countries using organs from executed prisoners for transplantation.

To our knowledge, this is the first survey assessing how provider perceptions on transplant tourism may influence domestic patient care decisions. The survey’s strength derives from its anonymous Internet-based design that allowed for candid responses from a large sample of our target population (43). In this survey, 93% of respondents met criteria for our target population of medical professionals actively caring for organ transplantation patients. However, as with any Internet-based survey, our study has a number of limitations. To reach our target population we sent 1 invitation and 1 reminder to 3,366 email addresses. The number of email invitations that did not reach the intended recipient because of spam filters and outdated or unused email addresses is unknown. As expected, most potential subjects who declined to participate in the survey did not return a response to the invitation (44). With 674 respondents from 3,366 invitations our response rate of 20% is within the range of 7 to 44% expected for Internet-based surveys (45). Self reported knowledge of ethical issues in transplantation was high in respondents (Table 2). Enrichment for an interest in ethics may exaggerate our findings. Higher response rates may have been possible by offering incentives to complete the survey, but may have also recruited more respondents outside our target population. Not all respondents met our target population criteria. However, repeat analysis excluding the 7% of respondents that did not meet these criteria did not qualitatively change our results. Other potential study limitations exist. Our survey focused on China, the most visited and controversial destination for transplant tourism and did not isolate specific effect of other destinations. Finally, the quantitative analysis of this survey study demonstrated associations between the transplant

professionals' perceptions on organ procurement practices and healthcare decisions. Future qualitative studies investigating the content of these perceptions are warranted.

The medical decisions of healthcare professionals are not immune to the powerful influence of personal or societal beliefs. Patient preference and physician beliefs influence physician decision-making ranging from antibiotic prescription patterns to availability of emergency contraception (46–48). Medical tourism is increasingly common despite concerns about standards of care and limited regulation (2,3). Patients in need of organ transplantation can resort to desperate means to seek life-saving interventions including transplant tourism. Transplant professionals caring for these patients must balance the autonomy of and duty to the individual patient with the risk to the potential organ donor, donor family and professional ethical standards established by the WHO, WMA, TTS and UNOS. In this survey, transplant professionals expressed serious concerns about the organ procurement practices in China and these concerns influenced their patient care decision-making and support for actions to improve the ethical standards for organ procurement. These findings are consistent with the ethical guidelines of the WHO, WMA, TTS and UNOS which oppose transplant tourism (4,15,16, 19,20) and organ procurement from prisoners (16,18,27). Action by international regulatory and credentialing bodies, such as the Joint Commission International, may be required to ensure patient safety and adherence to internationally accepted ethical standards in organ transplantation (3).

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Figure 1. Opinions about the fairness of seeking liver transplantation at another transplant center to shorten waiting time

Likert Scale Responses to the statement “It is unfair for patients to seek liver transplantation at a different transplant center in an effort to shorten waiting times” for respondents practicing in and outside the United States.

Figure 2. Opinions about the ethical standards of organ procurement in US, Europe and China
Likert Scale Responses to the statement "I believe organ procurement practices are ethically sound in A) China B) Europe C) United States for respondents practicing in and outside the United States.

Table 1**Clinical Case Scenarios and Embargo Statements**

Clinical Case Scenarios	
Case 1	A 53 year old woman with hepatitis C related cirrhosis, refractory ascites and recent variceal bleeding, has an anticipated 12-month waiting time for liver transplantation at your medical center. She seeks your advice on options for shortening her waiting time.
Case 2	A 45 year old man with compensated hepatitis B cirrhosis and a single 8cm hepatocellular carcinoma has good social support and no significant comorbidities. He tells you he will travel next week to China to be evaluated for liver transplantation
Case 2 Follow-up	He travels to China and undergoes liver transplantation. Six months later, he returns to establish on-going post transplant care at your center. Upon your initial evaluation of the patient you discover that the patient has hepatic artery thrombosis and will require repeat transplantation.
Embargo Statements	
Scientific Reports	I would support an embargo on scientific reports generated from countries suspected of unethical organ procurement practices
Training	I would not participate in the medical training of liver transplant physicians or surgeons who intend to practice in a country suspected of unethical organ procurement practices.

Table 2

Characteristics of Survey Respondents

Primary profession (Number)	
Physician	381
Surgeon	237
Nurse/Social Worker/Coordinator	31
Other	25
Active in Transplant Care ^a (%)	
Physician	89
Surgeon	97
Nurse/Social Worker/Coordinator	100
Other	86
Years in Practice (%)	
Less than 5 years	21
5 to 10 years	24
Over 10 years	55
Training Abroad ^b (%)	
	34
Liver Transplant Volume (%)	
Less than 50 per year	53
50 to 100 per year	24
Over 100 per year	23
Informed about Ethical Issues in Transplantation ^c (%)	
Before completing the survey	83
After completing the survey	79

^aPercent of each profession providing care to patients awaiting or having undergone organ transplantation within the last 3 months

^bPercentage training in a country other than where they currently practice

^cPercentage mildly or strongly agreeing that they are adequately informed about ethical issues in transplantation

Table 3

Current Practice Location of Respondents

Region	Country	Number	%
North America			84.4
	United States	544	
	Canada	23	
	Mexico	2	
	Total	569	
Europe/Scandinavia			6.2
	United Kingdom	10	
	Germany	8	
	Italy	6	
	Spain	5	
	Belgium	4	
	Sweden	2	
	Netherlands	2	
	Other	5	
	Total	42	
Asia			3.6
	Japan	20	
	China	2	
	South Korea	1	
	Taiwan	1	
	Total	24	
South America			1.0
	Argentina	2	
	Brazil	3	
	Columbia	1	
	Venezuela	1	
	Total	7	
Middle East			2.1
	Israel	6	
	Egypt	5	
	Other	3	
	Total	14	
South Pacific			1.8
	Australia	11	
	New Zealand	1	
	Total	12	
Other		6	0.9
Total		674	100