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The impact of outbound medical (dental) tourism on the generating region: New Zealand dental professionals' perspectives

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HIGHLIGHTS

- Survey of 337 dental health professionals.
- Concerns about poor quality of dental treatment patients receive overseas.
- Concerns about lack of continuity of care between destination and 'home'.
- Dental tourism impacts upon dental care provision in the generating region.

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ABSTRACT

Travel overseas for dental treatment is said to be the most prevalent form of medical tourism. Medical tourism has been largely researched from the perspective of the patient, with a focus on their experience and on the outcomes for the destination country. This paper, however, reports on the perceived impacts of dental tourism on the generating region, drawing upon an email survey of New Zealand dental health practitioners (n = 337). The quantitative survey data is supported by a thematic analysis of responses to open ended questions in the survey. Collectively, our findings indicate that dental tourism is perceived by dental professionals as having profound impacts upon the provision of dental health in the generating region. Concerns centre on the poor quality treatment received by patients abroad, the lack of informed consent for patients, and lack of continuity of care between the destination region and the generating region.

1. Introduction

The intentional pursuit of dental treatment abroad ('dental tourism') constitutes just one of many health treatments being sought overseas and is part of an increasingly important industry, known more broadly as medical tourism. Medical tourism involves the intentional pursuit of medical treatment outside of one's own country in another health care jurisdiction and represents an individual solution to a problem that has been historically addressed by the health system 'at home' (Connell, 2011; Johnston, Crooks, Snyder, & Kingsbury, 2010; Lovelock & Lovelock, 2013, 2014; Pocock & Phua, 2011). Over the last two decades medical tourism in general has emerged as a multi-billion dollar industry that mainly involves people from high income countries seeking treatment in low income countries (Crooks, Kingsbury, Snyder, & Johnston, 2010).

Dental tourists are motivated to travel away from home for treatment for a range of reasons, including: those primarily centered around the treatment: e.g. long waiting lists for publicly funded treatment; prohibitively expensive costs for private treatment; the increasing availability of competent care abroad; and the non-provision of some services – e.g. because of costs or a lack of skills/technology or a willingness of dental practitioners at home to perform some procedures; and tourism and related reasons, namely relatively inexpensive air travel, and the internet which links patients with dental providers abroad (Adams, Snyder, & Crooks, 2017; Milosevic, 2009). Such travel has been assisted by the growth of low cost/budget airlines providing access to cheaper dental tourism destinations (Milosevic, 2009).

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The optimistic view of this phenomenon is that patients are simply taking inexpensive 'dental vacations' in exotic locales. The sceptical view is that patients risk receiving inferior care in regions with lower regulatory standards and limited oversight of dental clinics (Turner, 2008). Dental tourism often involves the provision of multiple procedures over an abbreviated period (Long, 2008; McConnell, 2006) after which patients return to their home communities. This compressed form of dental care could expose patients to complications. It can also leave local dentists back home wary of the legal ramifications of rectifying substandard care delivered by a dentist in another country. Thus continuity of care is also endangered by cross-border dental care (Turner, 2008).

Meanwhile, cross-border dental care is perceived to be growing, dental tourism companies are proliferating, and travelling for dental care is becoming commonplace in some regions (Calvasina, Muntaner, & Quiñonez, 2015). Dental tourism is reported to be the most common form of medical tourism, accounting for 60% of medical tourism revenue in some countries (Crooks et al., 2010), and while it attracts media coverage, the topic receives scant attention from researchers in dentistry, bioethics, health law, health economics or tourism. Internationally, some organisations are trying to better understand the significance of dental tourism. In 2006, the American Dental Association passed a resolution to investigate dental tourism and develop a policy response to cross-border dental care (Furlong, 2006). In 2008, the Council of European Dentists released a position paper on patient mobility within the European Union (Council of European Dentists, 2007). Notwithstanding this concern, researchers and professional associations are paying limited attention as dental care shifts from being a local service and enters a competitive global marketplace of cross-border economic transactions (Turner, 2008). There has been very little research that documents the practice and the implications for dental health tourists and for dental health care systems (Turner, 2009). Notably, there is an absence of research that addresses the business and financial implications for dental health practices back in the tourism generating regions.

Importantly, there is a need to expand the scope of medical (including dental) tourism research beyond the patients and their destination-level medical providers. Instead we need to adopt a tourism systems approach (Leiper, 1979) to medical tourism, one that includes the full range of stakeholders that are impacted by this phenomenon across all elements of the tourism system. As noted by Hall and Lew (2009, p. 10):

> The trip concept, and its representation via a tourism systems model, is important as it suggests that tourism may not just have impacts on a destination but also on the transit route, the wider environment and the tourist's home generating region. An insight which clearly has substantial implications for measuring and understanding the scale of the impacts of tourism.

Such a systems approach provides the underlying rationale for this study. To date, research on medical tourism has not taken a systems approach and in a piecemeal manner has tended to focus on the patients, or on the providers' experiences in/of the destination region. To date there is limited work that broadens the scope in such a way to address the wider impacts of medical tourism on the generating region. There has been little coverage of the views of those who provide regular treatment of the medical/dental tourist in the tourist generating region, and how home health systems may be impacted by medical tourism. Crooks and her colleagues in Canada provide one of the few examples of having done so- with their qualitative work with the family doctors of medical tourists (Crooks et al., 2015). For dental tourism, there has been no account of the impact of this phenomenon on dental health providers in the country of 'tourist' origin. This paper expands the scope of Crooks' and colleagues' work by considering the impacts of dental tourism on the dental tourist generating region- a hitherto neglected component of the medical/dental tourism system.

The aim of this research is to explore the implications of dental tourism for individual practitioners and their business practices, and for systems of dental health care. The study explores this through investigating the experiences and perceptions of New Zealand dental practitioners. Specific objectives of the study include:

(1) To document dental practitioners' understandings of how prevalent medical tourism for dental treatment is amongst New Zealanders and what the implications are for their profession and the dental health of New Zealanders.
(2) To explore the perceptions and attitudes of dental health practitioners towards dental tourism, and how this impacts upon their practice, the pre or post dental tourism advice they may provide to patients and their relationships with patients in general.

Lovelock and Lovelock's (in preparation) study of New Zealanders seeking medical or dental treatment abroad revealed that New Zealanders are travelling to Asian and other destinations for dental treatment. Typically, these New Zealanders seek this treatment abroad because the treatment is cheaper and they can also holiday in these destinations. While for some the dental treatment is successful and is combined with a satisfying tourist experience, we also know that for some the treatment fails and they are compelled to seek remedial work once back in New Zealand. We do not know, however, how prevalent failed treatment is, what the implications are for dental practitioners offering services to New Zealanders who return here with unanticipated health outcomes requiring intervention, nor do we have any indication of what the long-term implications might be for dental health care and health outcomes for New Zealanders. This study will generate data that will help us to address these issues, and provides a useful counterpoint to studies of dental tourism focused on dental tourism destinations.

2. Literature review

2.1. Scope and scale of dental tourism

Turner (2008) describes the key mobilities of dental tourism as being from the UK and Western Europe to Eastern Europe, from the US to Mexico or other destinations in Central and South America, and from Australia to Thailand. Each year about 40,000–50,000 dental patients from the UK seek dental care abroad, a significant portion of them travelling to Hungary, where Kovacs and Szocska (2013) report a twenty year history of dental tourism. In Hungary, Österle, Balazs & Delgado's (2009) survey revealed that between half and two-thirds of dental practices provide services to foreigners. There are also emerging dental tourism destinations in south and south-east Asia. In India10% of the medical tourism income is estimated to now come from dental tourism (Kamath et al., 2015).

While the broad geographic flows of dental patients may be somewhat similar to that of medical tourism in general, there are essential differences between medical and dental tourism. These rest mainly on dental tourism being largely less emergency oriented, with dental conditions not generally being life threatening, and also that many people consume the same or similar dental treatments on a regular basis over their lifetime (Österle et al., 2009). These characteristics give dental patients the time to learn

from their experience, and to collect and evaluate information and plan more freely the time and place of consumption – including a range of dental tourism destinations (Österle et al., 2009). Despite these characteristics, however, dental tourism remains a contested activity, on the grounds of quality of treatment, challenges to continuity of care, and ramifications for patients, and to dental providers and dental health systems in the patient's generating country. Understanding the local and global market and competing interests within these markets is also important if we are to understand why certain issues are more contested than others and why some people choose dental tourism and others do not. For example, what the implications might be if cost is a major driver of people travelling abroad for dental care, and the role played by private insurance companies in the local and global market place, and what the incentives are to take out this insurance, although in New Zealand, private health insurance for dental treatment is very limited.

2.2. Dental health outcomes

For medical tourism more generally, and for major surgical procedures (e.g. cardiothoracic and orthopaedic surgery) concerns about quality of care have been raised - and in some instances allayed through international accreditation processes and a growing recognition that many of the clinicians offering specialist treatment in some destinations are amongst the most experienced in the world (Meghani, 2011). However, little is known about the quality of care provided by dental surgeons, dentists and other dental practitioners abroad. There has been only one study undertaken of dental tourists' satisfaction (Jaapar, Musa, Moghavvemi & Saub, 2017). That study found dental tourists were highly satisfied with dental services received in Malaysia.

To date there is no accreditation process in place and no local research that has focused on the implications for dental professionals and dental health care when nationals return home with poor dental health outcomes. Limited international research (e.g. Conti, Delbon, Laffranchi, & Paganelli, 2014; Ortiz, 2011; Turner, 2008) warns of the potential implications of dental tourism for dental health, however, to date empirical research is lacking. Barrowman, Grubor and Chandu's (2010) Australian study, and Feltracco and colleagues', (Feltracco et al., 2013) Italian study are the only studies that have documented complications from dental tourism, focusing on small samples of patients ($N = 5$, $N = 2$, respectively) and documenting their experiences. Barrowman's study reports "significant issues for both clinician and patient" (p. 441), notably arising from different (inferior) training and the risk of nosocomial infections arising from "poor cross infection control" (p. 445). Feltracco et al. (2013) in their article entitled "Perils of dental vacation" pose a number of queries regarding dental tourism. These relate to the price/quality relationship (cheaper treatment arising from lower fixed and variable costs of operating a dental surgery in some dental tourism destinations may be associated with a lower quality of care); the difficulty of ascertaining the actual cause of "sub-optimal outcomes" from dental treatment abroad; liability for follow up care; and the difficulties posed by different legal systems for patients seeking compensation (p. 22).

Contrary to the often negative portrayal of dental tourism (particularly by authors from within the dental field), Carmagnola et al.'s (2012) survey of Italians seeking treatment abroad (approximately 25,000 to 30,000 Italians travel to Eastern Europe annually (Conti et al., 2014)), revealed that most were satisfied with their treatment. The main motivation is cost savings, and/or respondents having had negative experiences with Italian dentists. Similarly, Kovacs and Szocska (2013) based on a survey of Hungarian dentists providing treatment for dental tourists coming to Hungary report a complication rate of 5% - similar to the EU average. Contrary to much of the literature surveyed in this review, albeit from the perspective of dental tourism providers, they support the view that "patient mobility within European member states is beneficial for all affected parties and in particular for a positive patient experience" (p. 418). The above study contrasts strongly with that of Baulig, Weibler-Villalobos, Körner, and Krummenauer (2004) who studied the quality and cost-effectiveness of 60 German patients who received dental treatment abroad- in Eastern Europe and Turkey. They concluded that just one quarter of those patients "received sufficient quality" (p. 426) and that only simple dental treatments were evaluated as cost effective. Similarly a study of Swiss dental patients receiving treatment in Hungary revealed major quality concerns (Joss et al., 1999 (cited in Baulig et al., 2004)). Baulig et al. (2004) go on to note that dental care associations and/or consumer organisations in western Europe have raised concerns about quality of treatment, their emphasis being not on a general low level of quality, but on the range of quality levels along with a lack of systematic quality assurance. Arguably, though, these studies being 15–20 years old may reflect dental standards in those destinations at that time- but as Turner (2008) notes, "Quality of care is a serious concern. Some dental tourists will receive excellent care … others will receive substandard care" (p. 553). He attributes variation in quality of care to the "highly variable" education of dentists, training of dental assistants, regulation of dental practices, and accreditation and licensing of dentists around the world.

While quality of care may be an issue while still in the treating destination, it is also the case that some complications may not be immediately apparent until after the dental tourist has returned home or while in transit. Leggat (2009) cautions flying immediately after any major dental surgery can trigger complications resulting from trapped air in teeth, or untreated decay or dental abscesses.

2.3. Protection, legal and ethical obligations, advice and remedial treatment

Patients who seek treatment abroad are not protected by the "multiple levels of accountability" that exist in their home country: from state and federal legislation, dental boards/regulatory authorities, dental associations, and from compulsory clinician indemnity (Barrowman et al., 2010, p. 445). These authors point out that the relatively high costs of local dental care at 'home' arise not only from the costs of running a practice, but from the provision of "safe and effective dentistry" with the high degree of accountability noted above (p. 445). Where these protections don't exist, for the dental tourist, obtaining legal redress for cases of negligent care overseas is a significant risk and may come at a high cost (Turner, 2008).

Barrowman et al. (2010) believe that it is the clinicians role to "educate and advocate' to their patients regarding the risks of dental tourism. This is not clear-cut, however, and, in some jurisdictions, this role has been assumed, at least in part, by dental bodies. In the UK, the General Dental Council, the regulatory body for dental providers, has produced a booklet in conjunction with the British Dental Health Foundation "Going abroad for your dental care" which provides advice to consumers considering dental tourism (General Dental Council, 2017; Milosevic, 2009).

There are also complexities around the provision of treatment for the dental patient if they return with problems. Conti et al. (2014) describe the predicament of dentists in the home country treating returned dental tourists as being one in which they are "caught in a situation between the patient and the foreign dentist" (p. 209). In some cases there has been reluctance by local practitioners to provide remedial treatment (Barrowman et al., 2010).

Such concerns are shared within the medical sector, with Johnston, Crooks, Snyder, & Dharamsi's (2013) sample of Canadian family doctors also revealing reluctance towards clinically supporting treatments started abroad. Doctors in that study believed that their "true role is … within the confines of our own system" (p. 1317).

The Council of European Dentists note the risk that local dentist may refuse to correct complications arising from dental tourism "for fear of legal action against them if the complication becomes more severe" (Conti et al., 2014, p. 210). However the *Code of Ethics for Dentists in the European Union* states that "the dentist must facilitate continuity of care where a treatment of a patient ceases" (in Conti et al., 2014, p. 210). In the U.S. context, Asai and Jones (2007, p. 1019) note that regarding the treatment of patients' dental emergencies arising from treatment performed outside the U.S., practitioners are obliged to provide emergency care for their patients and others who have consulted them in an emergency. Failure to do so may raise potential ethical concerns under the American Dental Association Code Section 2.F, Patient Abandonment. Asai and Jones advise practitioners that "even though you may be offended by the patient's decision to seek dental care in a country outside the United States, you do not have an ethically valid reason to deny him further treatment, especially emergency care" (2007, p. 1019).

This highlights the importance of dentists informing their patients regarding dental care before they travel abroad for treatment (Conti et al., 2014; Leggat, 2009). On some occasions, however, this is impossible as experience from outside the dental health system, in this case family doctors in Canada, suggests that sometimes patients do not share with their doctors that they intend seeking care abroad (Crooks et al., 2015).

2.4. Dentist-patient relationship

While the dentist-patient relationship has not really been explored in relation to dental tourism, Crooks et al. (2015), have investigated how medical tourism has impacted the family physician-patient relationship in Canada. Broadly, while doctors trust their patients to act as decision makers about medical tourism, they are, however, conflicted when the information they are managing contradicts the best interests of the patient. Doctors describe how shame, fear and secrecy regarding patients' medical tourism intentions or experiences impacts upon the trust between doctor and patient. Doctors face tensions in terms of supporting patients' decision making while distancing themselves from actual decisions to engage in medical tourism. They also feel conflicted in their role as agents of the patients and of the domestic health care system – and have concerns regarding the impact of medical tourism on the home country e.g. from infection, and the burden of follow-up care. The authors report on studies of family doctors "declining to care for returning medical tourists or refusing to coordinate their follow-up care - citing both the weight on the personal-professional relationship, as well as the difficulty of integrating any acquired medical benefits or harms into the responsibilities they hold towards these patients" (Crooks et al., 2015, p. 25, citing; Snyder, Crooks, Johnston, & Dharamsi, 2013; Snyder, Crooks, Johnston, & Kingsbury, 2013; Runnels et al., 2014). This highlights the need for the development of responsive policy in relation to medical tourism, for example, regarding liability (Crooks et al., 2015).

2.5. Continuity of care

Follow up care has been cited as the main concern with dental tourism (e.g. Leggat, 2009). Lack of sharing of patient records can lead to a dental provider at home having little or no idea of what treatments were performed and/or what materials were used, leading to problems in providing ongoing or remedial treatment of the patient back home. This reflects studies undertaken more broadly in medical tourism. For example, Johnston et al. (2013) reporting on Canadian family doctors, highlight concerns around continuity of care, and information discontinuity (medical records), citing poor or non-existent documentation of treatments. Interestingly, however, doctors' concern about continuity of care for their patients did not extend to a desire to be involved in facilitating the provision of out-of-country care before a patient's travel - for example by prescribing prophylactic medicines for potential complications (Johnston et al., 2013, p. 1314).

In one of the few empirical studies of dentists, in this case a survey of dentists within a dental tourism destination (Hungary) Kovacs and Szocska (2013) report that 72% of dentists stated they provide aftercare for foreign patients. This included in some cases, opening up offices abroad where pre-consultation and aftercare can be offered without the need for the patient to return to Hungary. This also supported liability and redress issues.

In summary, a raft of concerns have been raised by researchers in the field of dental (or medical) tourism regarding the impact upon patients when they return home, and upon dental providers, their practices, and the dental health system. These include concerns about quality of care overseas; continuity of care for patients once they return home; uncertainty around ethical responsibility and legal liability for providing remedial care for returned patients; impact upon the professional-patient relationship; and the potential burden upon the practice and wider health system at home. While raised as concerns, these issues have largely remained unexplored, a worry considering the global growth of both dental tourism and medical tourism in general. Sectoral and geographically focused studies are essential to generate data on the scale of impacts of dental and medical tourism, and can be useful to inform health policy development in response to perceived impacts on health systems in the generating region. The next section describes the methods used to investigate these issues based upon exploring the perspectives of dental professionals in New Zealand.

3. Methods

The aim of the study was to canvas dental practitioners' views on dental tourism, consequently a quantitative survey questionnaire was employed. In the absence of any existing instruments that could be drawn upon, the questionnaire was developed by the research team drawing upon relevant literature in the field of medical and dental tourism. The literature was reviewed by one of the authors, and this was shared with the other two authors. All three authors developed independent sets of questions that were combined into one coherent set. Content validity was sought through the above process, and it is relevant to note that one member of the above research team is a practicing dental academic who participates in regular clinical sessions, and maintains regular close links with practicing dentists. That author is also a member of the New Zealand Dental Association, and is familiar with industry issues in New Zealand. Face validity of the questionnaire was sought through pretesting with expert members of the New Zealand Dental Association. Items were assessed for their suitability and applicability for exploring issues surrounding dental tourism among public and private dental providers in New Zealand. Input from this 'expert panel' was integrated into the final version of the questionnaire.

The questionnaire comprised four main groups of questions in order to address the research objectives. The first section contained three items relating to participants' knowledge of dental tourism and its role. The next section had five items about the dental

tourists, asking who they are and in what circumstances they are encountered by participants. This section also addressed the type of treatments patients had sought and in which destinations. The third section addressed perceived issues arising from dental tourism, with two items on participants' views of the impact of remedial work, and a further two items addressing problems, impacts and benefits of dental tourism in general and for the participant's practice. Two open-ended questions asked respondents to expand on what problems, issues or benefits arise from their patients' overseas dental treatment, and sought their views on the impact of dental tourism on their individual practice. The final section sought information on participants' age, gender and ethnicity, and professional background.

A list of oral health practitioners was provided by the Dental Council (New Zealand) that included email addresses. A link to the questionnaire (hosted by Survey Monkey) was emailed to 1287 dental practitioners (dentists in general dental practice plus dental specialists) with valid email addresses. An incentive to participate was offered in the form of a prize to a randomly drawn respondent. Reminder emails were sent after a week and two weeks, with the survey remaining 'live' for three weeks. We received a total of 337 usable completed questionnaires, indicating a response rate of 26%. Amongst non-responders, some were no longer practicing dentistry (n = 2) and some of the email addresses were no longer functional (n = 14) and those who were away during the data collection period (n = 2). Descriptive statistics were undertaken within the Survey Monkey software package.

Responses to the two open-ended questions were analysed using an abbreviated version of Braun and Clarke's (2006) thematic analysis. Although there was a modest amount of data (95 responses to both questions in total) we felt that a systematic approach to this data would be beneficial to the overall analysis. Thematic analysis was chosen as a method because of its simplicity to apply and its flexibility in that it can work with a range of research questions, and it is suitable for dental tourism, where we explored both individual experiences and general perceptions of the phenomenon. And because the approach is not tied to any particular research ontology or epistemology (Braun and Clarke (2006), it could handily be used to analyse qualitative data within an overall quantitative research design. The approach generally comprises six-steps: 1) Familiarisation with the data; 2) Coding; 3) Searching for themes; 4) Reviewing themes; 5) Defining and naming themes; 6) Writing up. The open ended responses for the two items were all copied into two Word documents. All three authors undertook stages two and three independently, each generating a set of basic themes. These were then shared across all three researchers, and reviewed both collectively and then individually (by each author revisiting the data with these revised themes) in stages four and five. The final write up stage involved all authors.

There are a number of limitations to our study. The survey design did not include or address dentist perceptions of the local and international dental market, including the role played by private insurance companies (which is very limited in New Zealand). Exploring this would have been useful and given us some insight into motivations to travel for dental tourism and motivations for local providers that are shaped by market share and competition. There was also the potential for selection bias, either from dentists who have had experience of treating patients who have had treatment abroad; or dentists who had no experience of treating patients who had had treatment abroad. We also only surveyed dentists who were members of the association, so it is possible that there are practicing dentists who do not belong to this association and who may hold different views and have different experiences. The response rate of 26% may also be considered low and a limitation. Falling response rates, however, are an increasing reality for researchers and it is generally agreed that the fall in response rates is related to a decrease in volunteerism, disillusionment with science and research – being over-researched and time pressures of contemporary life (Morton, Bandara, Robinson, & Carr, 2012). We attempted to improve our response rate through the provision of a reward for participation, as this is generally accepted, yet poorly substantiated, as a means to improve participation (Morton et al., 2012). Some of the participants' feedback at the point of contact revealed that they were hoping to win the prize. The non-response rate included some on the dental association list that were no longer providing dental care (n = 2); those who were out of the country (n = 2) and some whose contact email address was no longer functional (n = 14), but other than this we have no other data on non-responders and it would have been useful to provide a closed choice question on the reasons for non-participation. There is a view that low response rates do not automatically mean that study results have low validity, however, rather they simply indicate a risk of this. For research that is largely descriptive and not contentious there is some evidence that there is not a direct correlation between response rate and validity (Holbrook, Krosnick, & Pfent, 2007; Mealing et al., 2010; Visser, Krosnick, Marquette, & Curtin, 1996) and some comparisons of surveys of the same population with vastly different response rates e.g. 20% compared to 60%, revealed consistency in response for key research questions (Morton et al., 2012) indicating that low response surveys are able to yield accurate results.

4. Results

4.1. Profile of respondents and their knowledge of dental tourism

The sample broadly reflects the profile of dental practitioners in New Zealand, dominated by males in the over 50 years age group, and commonly of New Zealand European descent – although just under 40% of our sample recorded 'other' ethnicity (Table 1). Over half of our sample had more than 20 years in practice. By far, most had completed their training in New Zealand. However, many had practiced overseas, primarily in the United Kingdom and/or Australia. A small percentage (13%) were dental specialists, primarily in orthodontics, periodontics, prosthodontics and restorative dentistry.

Most respondents had some knowledge of dental tourism. On an item that asked respondents to indicate their understanding of dental tourism, using a scale from 'little understanding' to 'in-depth understanding', just over half (57%) respondents assessed themselves as having 'moderate understanding'. Very few had in-depth knowledge (2.7%) and few had little knowledge (11%).

A further item explored respondents' sources of information about dental tourism (Table 2). Most respondents had heard about dental tourism and/or had read media articles about it. Many had learned about dental tourism through their patients telling them about it, and over half had discussed the topic with their colleagues. Only a few (13.1%) had read research/professional articles about dental tourism.

4.2. Encountering dental tourism patients

Most respondents had encountered dental tourists (96% had encountered dental tourists at least once or twice a year) (Table 3). However many had encountered them relatively infrequently; only about ten percent of respondents encountered dental tourists more than monthly. Very few participants had never encountered a dental tourist.

The most common way in which dental tourists were

Table 1
Profile of respondents.

Profile (N = 337)	N	%
Gender		
Male	205	64.9
Female	111	35.1
Age		
21-29	54	17.1
30-39	55	17.4
40-49	57	18
50-59	84	26.6
Over 60	66	20.9
Ethnicity		
NZ European	189	61.8
Maori/Pacific Island	12	2.9
Chinese	46	15
Indian	29	9.5
Other	49	16
Years in practice		
0–5 years	52	16.5
5–10 years	33	10.4
10–15 years	31	9.8
15–20 years	24	7.6
20–30 years	66	20.9
30 years or more	110	34.8
Practiced overseas		
Yes	186	58.9
No	130	41.1
Where practiced overseas (N = 190)		
Australia	51	26.8
United Kingdom	107	56.3
Other	97	51.1
Where trained		
New Zealand	264	84.1
United Kingdom	25	8
India	15	4.8
Other	17	5.4
Dental specialist		
No	275	87
Yes	41	13

encountered was when they had required remedial treatment after treatment abroad. About 60 percent of respondents had at least occasionally encountered dental tourists in this manner, and had provided remedial treatment (Table 4). A slightly lower number recorded that they also encounter dental tourists when they come in for a routine checkup. A lower number of respondents recorded that they had more than occasionally encountered dental tourists when or after they had sought advice on treatment options (around 30–40 percent respectively). Very few respondents (3.1%) reported that they regularly or often encountered dental tourists seeking advice on overseas treatment options.

Generally, the dental tourists encountered were intermittent/occasional or casual patients. Only 17.3% were regular patients (Table 5).

Thailand was the most commonly noted country of treatment, with nearly 90 percent of dental patients encountered by respondents having been treated there (Table 6). This was followed by India and Indonesia. Few patients received treatment in Western countries. In the 'Other' category, many countries were noted, however China (N = 20) and Southeast Asian countries were common (Malaysia, Cambodia, Vietnam, Laos and the Philippines). A few respondents noted Central/Eastern European and South American destinations.

4.3. Treatment location, type and problems encountered

A wide range of treatments were observed by respondents (Table 7). The most common type of treatment sought was crowns, with over 90 percent of respondents reporting that their patients had sought this treatment abroad. Implants and bridges were other very commonly observed treatments. Veneers and endodontics (root canals) were somewhat less common, although still observed by 40–50% of respondents. Infrequently observed treatments were dentures, tooth coloured restorations, oral surgery, periodontics (gum treatments) and other types of restorations. Other treatments reported included orthodontics (braces and plates) and tooth whitening.

Respondents identified a range of issues arising from their patients receiving treatment abroad (Table 8). The most important issue was a lack of follow up maintenance, with over 80 percent of respondents noting that this as an issue. Similarly, the lack of availability of post treatment was considered to be a significant problem (73.7%). About half of the respondents identified lack of treatment planning, and lack of treatment records to be issues. A similar proportion noted the use of componentry in treatment abroad that may not be available in New Zealand. Some respondents felt that there was an absence of informed consent for their patients receiving treatment abroad. And while about a third of respondents acknowledged that dental tourism offered their patients affordable treatment, twice this number noted the problem of cost of travelling again to address any treatment problems arising.

When asked to rate the impact on dental care provision in New Zealand of proving remedial dental treatment for returned dental tourists, just over 60 percent considered this to be more than at least moderately significant (Table 9). About one-fifth felt that this was significant or very significant; conversely, a similar proportion felt that the impact on New Zealand dental care was insignificant.

4.4. Impact of remedial treatment

A large majority (85.6%) of respondents rated the impact of remedial treatment on their patients as being at least moderately significant (Table 10). About two thirds of respondents considered this impact to be significant or very significant.

A chi-square test of independence was performed to examine the pattern of responses among demographic/professional groupings in the sample, focusing on their perceptions of the impact of dental tourism. Values for the above two items (in Tables 9 and 10) were aggregated from five to three for each ('insignificant to moderately significant'; 'significant to very significant'; and 'don't

Table 2
Knowledge of dental tourism.

Knowledge (N = 337)	N	%
I have heard about it	244	72.4
I have read media articles about it	216	64.1
I have read research/professional articles about it	44	13.1
I am vaguely aware of the practice	29	8.6
I have discussed dental tourism with colleagues	182	54.0
A patient of mine told me about it	213	61.2
Other	42	12.5

*does not add to 100% as a multiple response item.

Table 3
Frequency of encounters with dental tourists.

Frequency of encounters (N = 327)	N	%
More than Weekly	5	1.5
More than Monthly	30	9.2
Less than Monthly	93	28.4
Once or twice a year	186	56.9
Never	10	3.1
Don't know	3	0.9

Table 4
How dental tourists were encountered.

How encountered (N = 322)	Rarely/never or seldom	Occasionally	Regularly or often	Don't know
After they have sought my advice on treatment and cost	185 (57.8%)	105 (32.8%)	20 (6.3%)	10 (3.1%)
When they have sought my advice on overseas treatment options	218 (68.1%)	78 (24.4%)	10 (3.1%)	14 (4.4%)
When they return from overseas dental treatment and require remedial treatment	121 (37.6%)	137 (42.6%)	57 (17.7%)	7 (2.2%)
When they come to the practice for a routine check-up	137 (42.5%)	133 (41.3%)	42 (13.1%)	10 (3.1%)
How often have you provided remedial treatment for treatment provided abroad?	128 (39.9%)	151 (47%)	37 (11.5%)	5 (1.6%)

Table 5
Who the dental tourists are.

Who the dental tourists are (N = 307)	N	%
Regular patients	53	17.3
Intermittent/Occasional	189	61.6
Casual	125	40.7
Don't Know	23	7.5

Table 6
Location of treatment.

Location (N = 321)	N	%
Australia	17	5.3
Indonesia	104	32.4
India	145	45.5
Thailand	287	89.4
United States	14	4.4
United Kingdom	34	10.6
Don't know	15	4.7
Other (please specify)	100	31.2

know') in order to increase the reliability of the chi-square test (i.e. to reduce the number of cells with expected count <5). No significant difference was found in the pattern of responses by gender, age, ethnicity, country where trained, overseas practice, specialist status for respondents' perceptions of the impact of remedial work on New Zealand dental care, or with their perceptions of the impact of remedial work on the individual patient.

Table 7
Types of treatment sought abroad.

Treatment (N = 319)	N	%
Crowns	295	92.5
Bridges	246	77.1
Veneers	157	49.2
Tooth coloured restorations	94	29.5
Implants	254	79.6
Oral Surgery	44	13.8
Endodontics	133	41.7
Periodontics	19	6
Partial dentures and/or complete dentures	71	22.3
Other types of restorations	13	4.1
Other (please specify)	25	7.8

Table 9
Impact of remedial work on NZ dental care.

Impact	N	%
Insignificant	74	23.1
Moderately significant	128	39.9
Significant	57	17.8
Very Significant	12	3.7
Don't know	50	15.6

Table 10
Impact of remedial work for individual requiring it.

Impact	N	%
Insignificant	16	5.0
Moderately significant	60	18.8
Significant	107	33.4
Very Significant	107	33.4
Don't know	30	9.4

A chi-square test of independence was also performed to compare responses based on how often respondents encountered dental tourists in their practice. For the analysis the five original values for frequency of encounters with dental tourists were collapsed into three; weekly to monthly; less than monthly to once or twice a year; never. A significant difference was found in that those respondents who encountered dental tourists more frequently were more likely to rate the impact of dental tourism on New Zealand dental care as significant to very significant ($X2$ (4, $N = 321$) = 27.01, $p < .001$) and on the individual patient as significant to very significant ($X2$ (4, $N = 320$) = 13.19, $p = .01$).

4.5. Impacts of dental tourism

Respondents were given a range of statements regarding the impact of dental tourism on their practice, and were asked to identify those statements with which they agreed (Table 11). About two thirds of respondents considered that dental tourism can endanger patient's health, while half agreed that it challenges the continuity of care for their patients. Many considered dental tourism to impact upon the trust relationship between dentist and patient.

While about half the respondents acknowledged that dental

Table 8
Problems, issues or benefits of treatment abroad.

Issue (N = 315)	N	%
Lack of treatment planning	157	49.8
Lack of availability of practitioner post treatment	232	73.7
Use of componentry which may need replacing but is not available in New Zealand	144	45.7
Cost of travelling again if the work is problematic	199	63.2
Lack of follow up maintenance	266	84.4
Absence of informed consent	90	28.6
Lack of records	166	52.7
Affordable treatment	103	32.7
Other (please specify)	44	14.0

Table 11
Views on Dental Tourism and its impact upon dentist and practice.

(N = 316)	N	% agree
It can endanger patient's dental health	210	66.5
Dental tourism challenges the continuity of care of my patients	160	50.6
It provides patients the opportunity to access affordable dental treatment	152	48.1
I am unsure about my legal position regarding corrective treatment for dental misadventure overseas	120	38.0
I am unsure about my ethical position regarding giving advice for dental treatment overseas	106	33.5
Dental tourism challenges the trust between me and my patients	79	25.0
It enhances my understanding of dental treatment in other countries	74	23.4
It should be discouraged as a practice for New Zealanders due its negative impact on the dental health care system	69	21.8
It enhances my own professional experience through exposing me to new challenges	51	16.1
It deprives my practice of income	48	15.2
It enhances the dental health outcomes of my patients	19	6.0
It increases the income of my practice	16	5.1
I would recommend it to my patients	6	1.9
Other (please specify)	50	15.8

tourism does provide access to affordable dental treatment, very few (6%) felt that dental tourism enhances dental health outcomes for their patients, and even fewer (1.9%) would recommend it to their patients. A considerable number (21.8%) agreed that dental tourism should be discouraged due to its negative impact upon New Zealand's dental health care system.

Regarding the provision of pre-travel advice or post-travel remedial treatment, a considerable number of respondents were unsure about their legal or ethical standing. Some respondents agreed that providing remedial treatment does enhance their professional skills, and their understanding of dental treatment practiced overseas.

Some respondents (15.2%) considered dental tourism to derive their practice of income - while a few felt that it increases the income of their practice.

Respondents were asked to indicate their level of agreement with a number of statements about dental tourism in general (Table 12). Respondents were in general agreement (93.6%) that dental tourism is a personal choice of patients. Further, three-quarters of respondents agreed that dental tourism is a normal and expected outcome of globalization. Over 80 percent of respondents agreed that the increasing costs of dental treatment forces patients to seek treatment abroad. On the question of whether dental tourism should be actively discouraged because of the risk to the New Zealand dental health system, respondents were more evenly divided, with marginally more favouring active discouragement. However, on the question of whether dental tourism should be actively discouraged because of the risk to individuals, respondents more strongly agreed with active discouragement (77.3%).

4.6. Responses to open-ended questions – problems, issues or benefits of medical tourism

There were two open ended questions, the first of which asked respondents what problems, issues or benefits arise, if any, from their patients' overseas dental treatment. Forty-four respondents provided comments in response to this question. A thematic analysis of these responses identified four themes. The first theme related to the poor quality of treatment that patients received overseas. While one or two respondents noted that some work is of high standard, generally the view was that much treatment was low quality; *Poor quality of restorative result*; *'cheap and fast' patient's best interests ignored*.

Also, respondents commonly expressed concern that some treatments were inappropriate, *for example bridges placed on teeth with poor endodontics* or that some patients were 'over-treated': *Extensive treatment in a mouth/person unsuitable to maintain it (high caries rate etc); Overtreatment especially root canal therapy.*

Linked with inappropriate treatment was a concern over the componentry used in dental work overseas; respondents noted poor quality components used, but also that they were unfamiliar with some components and lacked information about them. One respondent reported a case where the overseas dental provider *Promised to use one brand in adverts but place other cheaper brands with no company warranty.*

The next theme addressed a concern that informed consent for patients was lacking, and that patients were not informed about the long term-consequences of their treatment, nor about proper follow-up personal dental health maintenance. This lack of control over the long term outcomes of overseas treatment was a source of frustration for some respondents.

Table 12
General Views on Dental tourism.

Statement (N = 327)	Strongly Agree	Mod. Agree	Mod. Disagree	Strongly disagree	Don't know
Dental tourism is normal and an expected outcome of globalisation	27 (8.3%)	218 (66.7%)	56 (17.1%)	14 (4.3%)	12 (3.7%)
Dental tourism should be actively discouraged because of the risk to the dental health system in New Zealand	41 (12.5%)	130 (39.8%)	128 (39.1%)	13 (4.0%)	15 (4.6%)
Dental tourism should be actively discouraged because of the risk to those individuals who travel abroad for treatment	98 (30.1%)	154 (47.2%)	62 (19.0%)	5 (1.5%)	7 (2.2%)
Increasing costs of dental treatment forces patients to seek dental treatment overseas	92 (28.1%)	175 (53.5%)	50 (15.3%)	4 (1.2%)	6 (1.8%)
Dental tourism is a personal choice some patients make based on cost, quality of care and or a value judgement	130 (39.8%)	176 (53.8%)	14 (4.3%)	1 (0.3%)	6 (1.8%)

The third theme concerned patients' lack of awareness of the poor standard of treatment that they were receiving overseas; *Patients have no concept of the standard of care they have received.* At times this manifested in patients' refusal to accept that they had received poor treatment- and refusal to understand or accept the long term consequences of their overseas treatment choices.

The final theme related to the long term consequences noted above, with respondents noting that patients would, in the long run, pay more for their dental treatment as a result of their going overseas for what appeared to be cost-effective treatment. This is because of the need for more (expensive) invasive remedial treatment.

> *Patients generally cite that initial cost of treatment [is] more affordable, but this doesn't take into account that frequently work [is] of poor quality with huge overhangs etc [this] either dooms tooth to extraction or in the very least risks retreatment in a short time frame (couple of years) - then it's not such a great deal after all …*

4.7. Responses to open-ended questions — impact upon patients and practice

The second open-ended question asked respondents how they felt about dental tourism and the impact on them and their practice. Fifty-one respondents provided made comments in responses to this question. The thematic analysis of these responses revealed three main themes. The first theme related to patients' personal choice, with many respondents acknowledging that they respected their patients' right to seek overseas treatment.

> *I believe patients should have options about where they seek treatment. The key element is going to the right overseas practitioners and by doing so increasing the chances that the care provided will be quality care.*

Some respondents likened this choice to that of individuals doing online shopping; *A reality which we have to live with as do retailers with online shopping. I have nothing against but there are risks which patients need to understand fully.* So while respondents felt that it was important that patients have choice, it was also important that they *understand the risks associated with treatment overseas*.

Furthermore, along with this came a caveat that while such choice is a right, patients may forego other rights as a consequence; as one respondent noted in their comment *patients' choice and patients' risk,* enhanced choice for patients is sometimes accompanied by greater risk. Specifically, respondents referred to the risk of foregoing protection under local (New Zealand) statutory or professional provisions - for example Accident Compensation Corporation (ACC) coverage. (ACC administers New Zealand's universal no-fault accidental injury scheme. The scheme provides financial compensation and support to citizens, residents, and temporary visitors who have suffered personal injuries). Patients also forgo protection from the Health and Disability Commissioner Act (an Act of Parliament in New Zealand to promote and protect the rights of health consumers and disability services consumers), the Dental Council (New Zealand) and from the New Zealand Dental Association. Some respondents commented that they were within *their* rights to refuse treatment of patients who had received treatment overseas. One respondent commented:

> *I saw a patient who presented with pain, who had had full mouth crowns and bridges - I wasn't prepared to treat the patient as the quality of work was absolutely appalling. They elected to return to Thailand to have more work done. The dentition had been absolutely wrecked and I wanted nothing to do with it.*

Respondents observed that *Patients choose price over quality*, and as a consequence, some noted that they have decided that they will not treat or maintain patients who have dental treatment overseas.

The second theme related to risk - and that the variable outcomes from dental treatment overseas that they had observed or were concerned about, came down to choosing the right provider. This was expressed variously as a risk or gamble on the part of the patient. Much of the work encountered was described pejoratively as 'third world'.

> *It's a gamble and I'm not sure what to say to patients about it sometimes, there may be good dentists but certainly in India a lot of poor quality work is done*

This consequently impacted upon respondents' practices in presenting difficulties for them to 'fix' such poor treatment. This was exacerbated by a lack of coordination between the overseas provider and the New Zealand dentist.

The third theme related to patients' lack of awareness of this risk, lack of knowledge about what is good (or bad) treatment, and lack of awareness about what the maintenance needs are following their overseas treatment. This *Often leaves the New Zealand clinician to sort problems and deal with difficult maintenance situations*.

Associated with this was 'unscrupulous marketing' of overseas dental treatment and unethical or simply wrong 'over-treatment' of patients.

> *Patients are unaware of the poor quality of the work they receive and the difference in standard of care compared to NZ dentistry. Patients are over-treated and inappropriately treated with irreversible damage to their teeth and no apparent discussion or awareness of treatment options*

Counter to this generally pessimistic narrative evident in the responses to both open ended questions ran a thread which acknowledged that dental treatment in some destinations was of good standard. Respondents particularly noted this from developed destinations such as the UK, USA, Germany and France.

5. Discussion and conclusions

As stressed by Hall and Lew (2009) a tourism systems approach is necessary in any comprehensive analysis of the impacts of tourism. To date, most of the empirical research addressing the impacts of medical tourism has focused on the destination region - the experiences of the medical tourist, the impacts upon medical providers and health systems there, and the associated economic outcomes for the destination. While such research is essential, a systems approach as espoused above, necessitates expanding the scope of our work to also consider the impacts on providers and health systems within the medical tourist generating region.

This study has focused upon dental tourism, reported as the largest component of medical tourism globally (Crooks et al., 2010), and gives an overview, from the perspective of dental health providers, of how outbound dental tourism is perceived to impact upon the provision of dental care in the dental-tourist

generating region of New Zealand. Few such studies are available, and those that exist indicate a degree of pessimism on the part of health professionals in the tourist generating region about medical tourism in general (e.g. Johnston et al., 2013) and about dental tourism specifically (e.g. Turner, 2008; 2009). This study also indicates a level of unease about dental tourism, and concerns held about its negative impacts upon patients, practices and New Zealand's dental health system. The survey results in this study, from a representative sample of New Zealand's dental practitioners, clearly indicate concerns over the impact of overseas treatment on the dental care of their patients, and to a lesser degree, upon their own practices. They perceive that current dental tourism often results in poor quality treatment, and does not contribute to a planned approach in which consideration is given to post-treatment needs, ongoing dental maintenance and long-term outcomes. Respondents expressed concern that the price-over-quality decision making that drives dental tourism is leading to poorly considered choices with negative dental health outcomes, which may ultimately lead to greater expenditure for patients than anticipated because of the need for expensive remedial treatments. While respondents recognised the motivations for individuals to seek dental treatment abroad, very few respondents would recommend it to their patients.

The open-ended questions in the survey, in which respondents elaborated on the issues associated with overseas treatment, provided further data that strongly supported that from the closed-items. Within this data, frequent mention is made of the risks of dental treatment abroad, with many examples given of poor treatment, over treatment, and the disconnection between the treatment provided abroad and the long term dental health maintenance needs of patients. Problems were cited with the use of poor componentry and the lack of record sharing between home and destination providers which may lead to poor treatment decisions abroad and problems with follow up treatment back home. Again, these concerns mirror those reported in the limited studies of the outcomes of dental tourism (Barrowman et al., 2010; Baulig et al., 2004; Feltracco et al., 2013).

Our findings, however, and those of the authors listed, must be considered in relation to other research that reports a generally high level of satisfaction that dental tourists express about their treatment (Carmagnola et al., 2012; Jaapar, Musa, Moghavvemi, & Saub, 2017). It appears that dental tourists feel that they are receiving good treatment, but that dental practitioners/researchers think otherwise - that treatments received overseas often have poor outcomes and are not particularly good value for money. These disparate messages may be reflective of who undertook the research and what the research motivations may have been. But they are also likely to be reflective of the variability of dental care, associated not only with location, but, as Turner (2008) notes, the highly variable education of dentists, training of dental assistants, regulation of dental practices, and accreditation and licensing of dentists around the world. This local-global variability is supported by data which suggests that the dental procedure complication rate experienced within dental tourism destinations may be similar to that for the wider region, which includes the generating region (Kovacs & Szocska, 2013). The variation between patient and practitioner perspectives is perhaps not unexpected as the patient lacks the clinical knowledge required to fully assess the quality of the dental work undertaken - a view commonly expressed by the participants in this study.

Our findings also reflect issues raised in general medical practice, where the lack of continuity of care is a recurring theme (e.g. Crooks et al., 2013; Johnston et al., 2013; Leggat, 2009, Turner, 2008). Our respondents also expressed concern about the lack of informed consent for the dental tourist in deciding upon treatment options. While a shared treatment decision-making model, which emphasizes informed consent, has increasingly been advocated as providing improved health outcomes (Joseph-Williams, Elwyn, & Edwards, 2014) it may be the case that the transnational nature of medical/dental healthcare adds to the current systematic and attitudinal barriers to the operationalization of such a model. Current conceptualisations of informed consent (e.g. Reid, 2017) and shared treatment decision-making (e.g. Joseph-Williams et al., 2014) are yet to explicitly address the transnational challenges of dental/medical tourism where there are at least two different health providers in two different international multiple settings, each with a different professional, ethical and legal relationship with the patient.

Thus confusion is reflected in responses to both parts of our survey (open and closed items) where concerns are evident about dental professionals' legal and ethical responsibilities in regard to providing remedial treatment for patients – to the extent that some indicated that they were unwilling to provide such treatment. Some respondents also raised the question of whether or not remedial treatment should be covered within the medical misadventure provisions of New Zealand's Accident Compensation insurance system. These issues are largely reflective of questions being asked in a number of other jurisdictions - where medical and dental associations are debating the nature of the responsibilities that their members may or may not have in relation to remediating botched treatments received abroad (e.g. Asai & Jones, 2007; Conti et al., 2014).

The accusation may be made by some that the responses of dental providers in studies such as this are simply indicative of professional protectionism, or indeed, of a resistance to dental care provision by 'outsiders'. The medical profession is renowned for the structural barriers faced by 'foreign' immigrant health professionals, including dentists from non-English speaking backgrounds (Allegations of Discrimination, 2008), manifested in a lack of recognizing foreign qualifications (Sweetman, McDonald, & Hawthorne, 2015), and New Zealand is no exception to this (Elkin, 2015). These barriers to registration exist despite medical workforce shortages in those countries, with the main reason given by registration authorities being the need to ensure competence and safety standards in medical or dental practice (Mpofu & Hocking, 2013). Mpofu and Hocking in their 2013 study of New Zealand immigrant health professionals describe this as a form of "occupational apartheid" (p. 132). The rationale for raising this issue here is that, to a degree, the practice of dental tourism - where the patient travels abroad to be treated by a 'foreigner' - can be likened to that of the patient being treated at home by a practitioner with a 'foreign' qualification. In this sense the resistance to foreign or 'third world' treatment (as described by respondents) may be reflective of a general fear (or at least misunderstanding) of the nature and quality of dental treatments that may be provided by foreigners-whether abroad or at home. The sample of dental practitioners in this study are largely European New Zealanders (62%), so not that ethnically diverse. However the negative perceptions of and attitudes to dental tourism were not restricted to this group, but were reflected across all ethnic groupings in the study – including the approximate 25% Chinese and Indian respondents, and the 16% of 'Other' ethnicity.

While this degree of unanimity across respondent ethnicities in this study may to some extent discount any concern that transnational ethnic stereotyping is in practice here, there is still the perceived issue of professional protectionism. While such protectionism is largely considered from a domestic perspective (Sweetman et al., 2015), the growth of transnational healthcare provision through medical tourism means that professional protectionism now also needs to be observed from a transnational perspective i.e. what will be the impact upon 'our' practices at home by the provision of healthcare abroad by the 'other'. To investigate this question, albeit in a simplistic way, we asked our respondents specifically what the perceived impacts were of dental tourism on the incomes of their practices. While a number of respondents (about 15%) did consider that dental tourism would impact negatively on the incomes of their practices, a small number (6%) felt that dental tourism would actually *increase* their practice's income – due to the increase demand for remedial treatment.

In conclusion, while the overall tone of the findings from this study does little to encourage one's desire to travel abroad for dental treatment, we must remind ourselves that not all respondents were negative about dental tourism - and that there was a counter-narrative evident in the data that some overseas treatment is of comparable high quality to that available at home. There are limitations to this study in terms of the moderate response rate for the survey, and also in the self-selected nature of the sample. These could be addressed in future research, which should also investigate the extent to which dental tourists are aware of the inherent risk involved in choosing a provider overseas, and how they address this risk. We also need to explore what a shared treatment decision making model may look like, within a transnational healthcare setting, that could address many of the concerns raised by this study's participants around treatment options and continuity of care for dental tourists.

Authors' contribution

The three co-authors contributed equally to conceptualising this research and bringing it to publication. All authors contributed to developing the questionnaire, while Dr Kirsten Lovelock took the lead role in managing the logistics of the survey and undertaking the statistical analysis. Professor Karl Lyons took charge of collaborating with our dental sector partners in obtaining their input to the questionnaire and accessing participants. Associate Professor Brent Lovelock drafted the article, which was critically commented on by both Kirsten and Karl.

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