Research on State and Challenges of Introduction of Medical Tourism in Japan by Text Mining

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Abstract

The purpose of this research is to focus on medical tourism in Japan, clarify the current situation and issues from the perspective of medical professionals and discuss the reason for the slow spread of medical tourism. The authors conducted interviews with staff from various professions working at a hospital located in the central part of Tokyo. Next, the authors transcribed the interview results into text data and conducted a quantitative analysis using the User Local Text Mining Tool. The interview survey revealed that hospital (a) is systematically addressing the needs of foreign patients, while hospital (b) is facing challenges in providing such comprehensive support.

Keywords: Medical tourism, inbound tourism, interview survey, text mining.

1   Introduction

The purpose of this research is to focus on medical tourism in Japan and clarify the current situation and issues from the perspective of medical professionals. Medical tourism has become a global industry, with destinations around the world offering medical services to foreign patients. According to the World Health Organization (WHO) [1], medical tourism is defined as "the travel of people to another country to obtain medical treatment in that country." This includes a wide range of medical services, from elective procedures like cosmetic surgery and fertility treatments to more serious treatments like heart surgery and cancer treatment.

The term, medical tourism, was first used in the 1990s and has since become an increasingly popular trend in healthcare [2][3]. Medical tourism refers to the practice of traveling to another country for medical treatment, usually to save costs or to receive care that is not available in one's own country.

According to a report by Grand View Research, Inc.[4], the global medical tourism market size was valued at USD 44.8 billion in 2020 and is expected to grow at a compound annual growth rate (CAGR) of 21.1% from 2021 to 2028. The report also notes that increasing healthcare costs in developed countries, coupled with advancements in medical technology and infrastructure in developing countries, are driving the growth of the medical tourism industry.

The Japanese government had been actively promoting new tourism initiatives, such as the development of sustainable tourism, rural tourism, and experiential tourism, to diversify and enhance the tourism experience. Therefore, the Japanese government has been actively promoting

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medical tourism as a means of boosting the country's economy and attracting more foreign visitors, but the medical tourism industry in Japan is still relatively small size. Medical tourism can be effective means to recover the inbound tourism of Japan by attracting foreign visitors. This paper discusses the reason for the slow spread of medical tourism from the perspective of medical professionals.

2   Previous Studies

Medical tourism has had a historical association with health and well-being, with early forms of tourism such as visiting spas in Europe. By the 19th century, tourism extended to hill stations and beach resorts, and activities such as golf, cycling, walking, and mountaineering became popular ways to combine tourism and well-being. Today, health tourism remains popular, with people traveling to health spas to improve their health [5]. Medical tourism has been discussed from various viewpoints in previous studies. Smith and Puczko[6] argue that health tourism encompasses both medical tourism and wellness tourism, indicating that medical tourism is a component of health tourism. Bochaton and Lefebvre [2] point out that medical tourism combines the ideas of pleasure and disease, which is a contradiction. Medical tourism has experienced significant growth in recent years due to various factors, including high treatment costs in developed countries, lengthy waiting lists, particularly for non-priority surgeries, relatively affordable air travel, favorable exchange rates, and an aging, often affluent baby boomer generation [5].

Asian countries such as Thailand, India, Singapore, and Malaysia are popular destinations for medical tourists due to their advanced medical facilities, highly skilled doctors and surgeons, and relatively low treatment costs and are considered competitive for medical tourism, so there are previous studies have discussed the motivational factors that can attract tourists through medical tourism. Lee, Han, and Lockyer [7] investigated the intentions of Japanese tourists to engage in medical tourism in Korea. Structural equation modeling was used to analyze 237 responses and test two dimensions of medical tourism. The research highlights the need for industry practitioners to attract Japanese medical tourists and coordinate publicity efforts with professional bodies in both originating and destination countries. Yu and Ko [8] examine cultural differences among Chinese, Japanese, and Korean visitors to Korea regarding their perceptions of and potential participation in medical tourism by using a questionnaire survey. The results showed that significant differences were found in their views of choice, discomfort, and preferred treatments. Korean tourists placed the most importance on selection factors, while Japanese tourists were more concerned with inconveniences related to medical services and costs. Chinese tourists showed a high sensitivity to stay and cost and preferred light treatments, while Japanese tourists preferred more significant treatments and emphasized rehabilitation.

Research is being conducted on means of revitalizing inbound tourism in one's own country using medical tourism. Japan is also discussing the merits of introducing medical tourism because Japan is a country with the world's highest level of advanced medical technology and medical facilities, as well as the world's highest level of satellite environment. In addition, there are few country risks such as politics, economy, and military areas. From a tourist point of view, the city is rich in World Heritage Sites, natural environments such as seasonal scenery, hot springs, and international amusements and facilities such as Disneyland and Universal Studios Japan [3]. Much of the previous research on medical tourism thus focuses on the motivation of tourists, and there are very few papers on medical professionals. Therefore, this study clarifies what kind of views the medical staff has regarding medical tourism.

3   Method

The authors conducted interviews with staff from various professions working at a hospital located in the central part of Tokyo. Next, we transcribed the interview results into text data and conducted a quantitative analysis using the User Local Text Mining Tool (https://textmining.us-erlocal.jp/). Text mining has been used to analyze interview surveys. For example, Funahashi [9] conducted a quantitative and qualitative analysis of interviews with teachers using text mining.

The interviews were conducted on March 3, 2023. The interviewees were two individuals: a nurse (Nu) from a hospital (a) with over 1,000 beds located in the central part of Tokyo, and an administrative manager (Mn) from a hospital (b) with over 300 beds. Each interview lasted approximately 30 minutes, and a semi-structured interview method was used to discuss the hospital's policies, initiatives, and challenges regarding providing medical care to foreigners and medical tourism.

The interview contents were recorded using "Google Recorder" and then transcribed into text data. We corrected any typos or missing words in the data. Proper nouns such as names and hospital names were excluded from the analysis. The analysis was conducted using the "User Local Text Mining Tool" (https://textmining.userlocal.jp/).

4   Results

4.1 Word Cloud

To gain an overview of the overall trends, we first conducted an analysis using word clouds. Word clouds are graphical representations used to visually display the frequency of words included in text data. In a word cloud, words or phrases with a high frequency of appearance are displayed larger sizes, while other words are displayed in smaller. Word clouds are useful for analyzing the results of a survey as they provide a quick and visual way to grasp the frequency and importance of words within the text data.

In this analysis, we used the default "score order" setting, which displays words with a high score in proportion to their size, enabling us to observe the interviewees' trends of awareness. Figure 1 shows the word cloud for the nurse (Nu), while Figure 2 shows the word cloud for the administrative manager (Mn).

What is commonly noted in both Figure 1 and Figure 3 is the communication-related issues such as "language barriers" "telephone responses" and "unable to speak." They also feel challenged in communicating with foreign patients, which creates negative impressions.
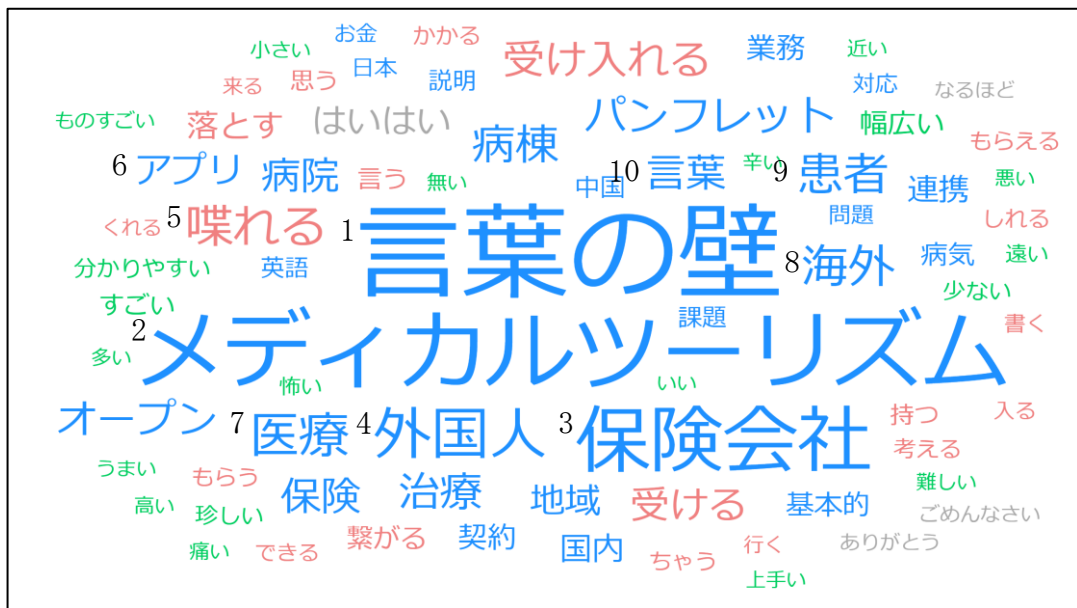
Figure 1: Word Cloud Analysis for Nurse (Nu)

Table 1: 10 key words translations of Figure 1

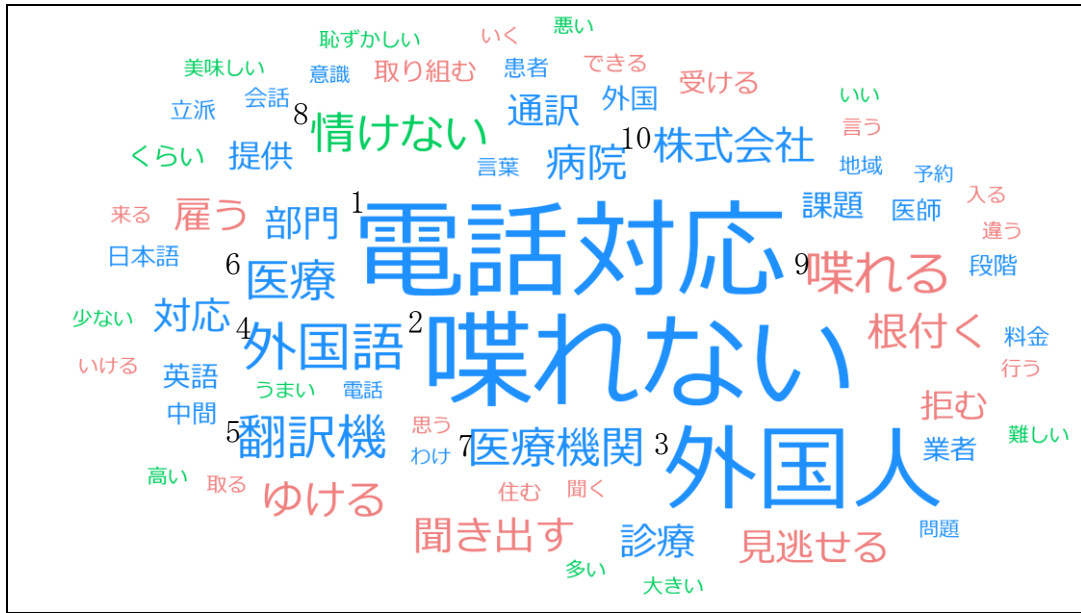| No.	Japanese	Japanese Pronunciation	English
1	言葉の壁	*kotoba no kabe*	Language barrier
2	メディカルツーリズム	*Medikaru tu-rizumu*	Medical tourism
3	保険会社	*hokenkaisha*	Insurance company
4	外国人	*gaikokujin*	Foreigner
5	喋れる	*shabereru*	Speak
6	アプリ	*apuri*	App
7	医療	*you*	Medical care
8	海外	*kaigai*	Overseas
9	患者	*kanja*	Patient
10	言葉	*kotoba*	Language

Figure 2: Word Cloud Analysis for Administrative Manager (Mn)

Table 2: 10 key words translations of Figure 2

No.	Japanese	Japanese Pronunciation	English
1	電話対応	*denwataiou*	Telephone response
2	喋れない	*shaberenai*	Unable to speak
3	外国人	*gaikokujin*	Foreigner
4	外国語	*gaikokugo*	Foreign language
5	翻訳機	*honyakuki*	Translator
6	医療	*iryou*	Medical care
7	医療機関	*iryoukikan*	Medical institution
8	情けない	*nasakenai*	Embarrassing
9	喋れる	*shabereru*	Able to speak
10	株式会社	*kabusikikaisha*	Company

4.2 Co-occurring keywords

Co-occurrence keywords for each interviewee are shown in Figure 3 and Figure 4. Co-occurrence keywords refer to the keywords that tend to appear together in the same context in a document. In other words, if multiple words frequently appear in the same context within a single document, those words are extracted as co-occurrence keywords.

Focusing on (1) in Figure 3 shows that "overseas" and "acceptance" are present, indicating a positive attitude to accepting foreigners. However, in (2), words such as "language barrier" and "fear" are used, indicating that foreign languages are a challenge, which was also confirmed in the interview. Next, (3) suggests that the respondent is addressing the issue of language by downloading a translation app. Furthermore, in the actual interview, it was mentioned that medical expenses are guaranteed by contracting with an "insurance company," although it is represented as a word in this co-occurrence keyword analysis, no relatedness could be found.
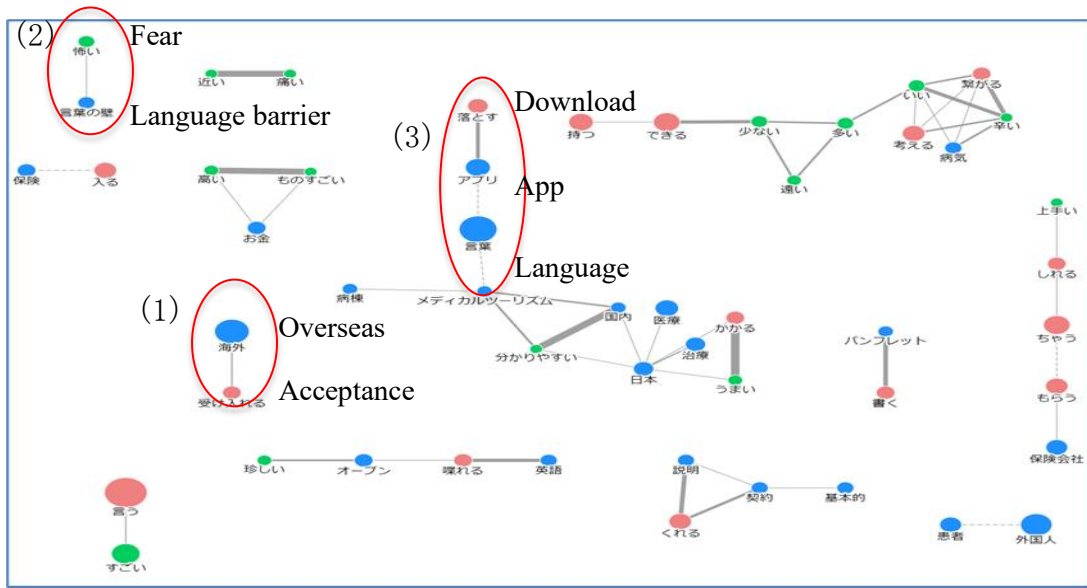
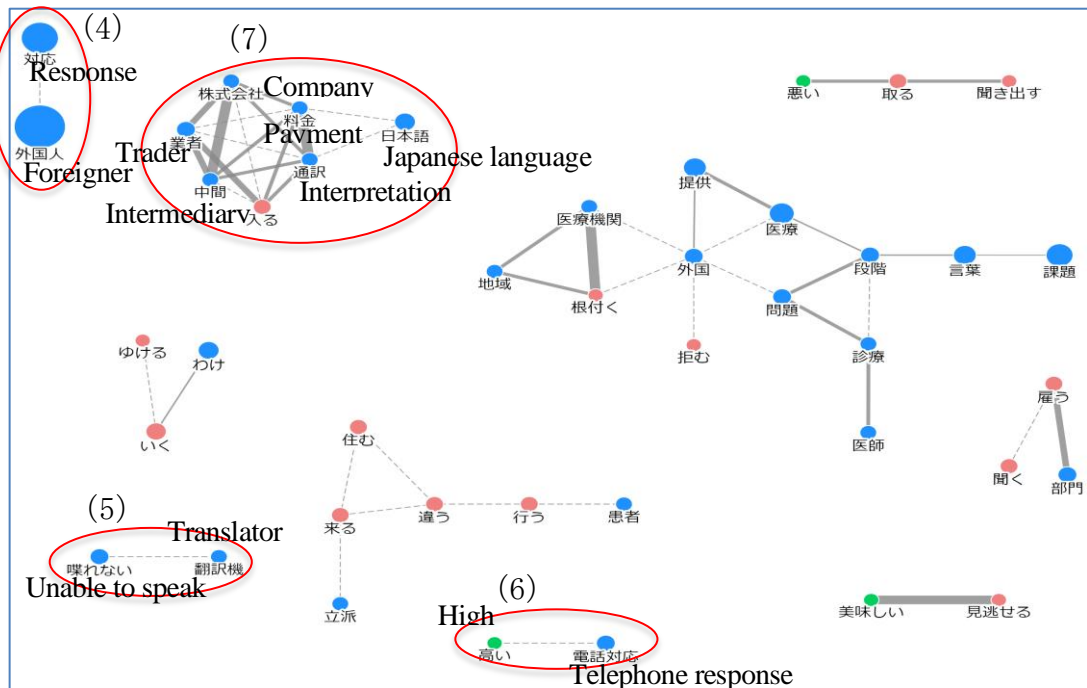Figure 3: Co-occurring Keywords for Nurses (Nu)

Figure 4: Co-occurring Keywords for Administrative Management Staff (Mn)

Looking at Figure 4, (4) includes the words "foreigner" and "response," while (5) includes "translation machine" and "unable to speak," and (6) includes "telephone response" and "high (difficulty)," indicating negative emotions. In the interview, it was mentioned that "many staff cannot speak, so they use translation machines" and "face-to-face communication can be done with gestures or translation machines, but it is difficult for telephone communication, and sometimes we are at a loss."

On the other hand, (7) focuses on the fact that the use of intermediary traders needs to worry about foreign language interpretation and payment collection, making it a positive thing.

4.3   Hierarchical Clustering

The hierarchical clustering for each interviewee are shown in Figure 5 and Figure 6. In Figure 5, one large cluster can be observed, with the words "言葉" (language), "問題" (problem), "課題" (challenge), and "保険会社" (insurance company) as well as "お金" (money) being discernible. Additionally, in Figure 6, "喋れない" (unable to speak), "電話対応" (telephone support), and "英語" (English) can be identified as major issues or challenges.
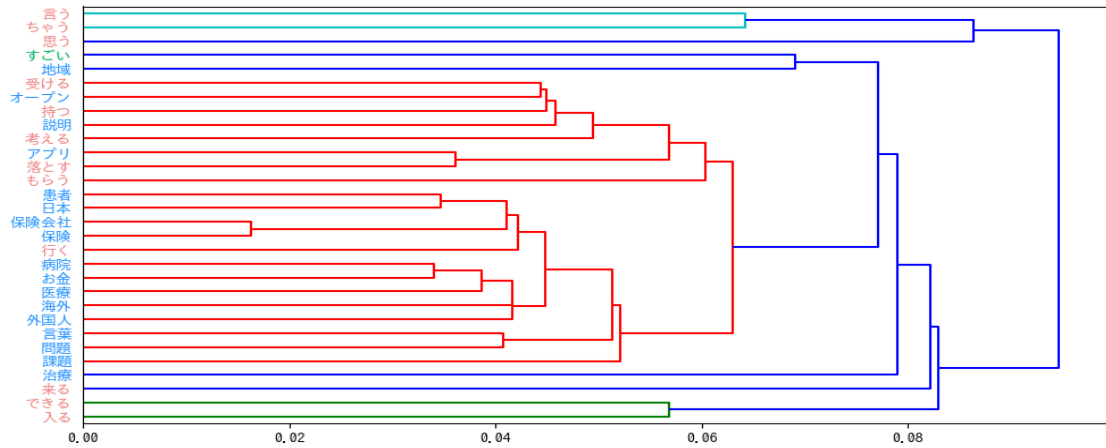

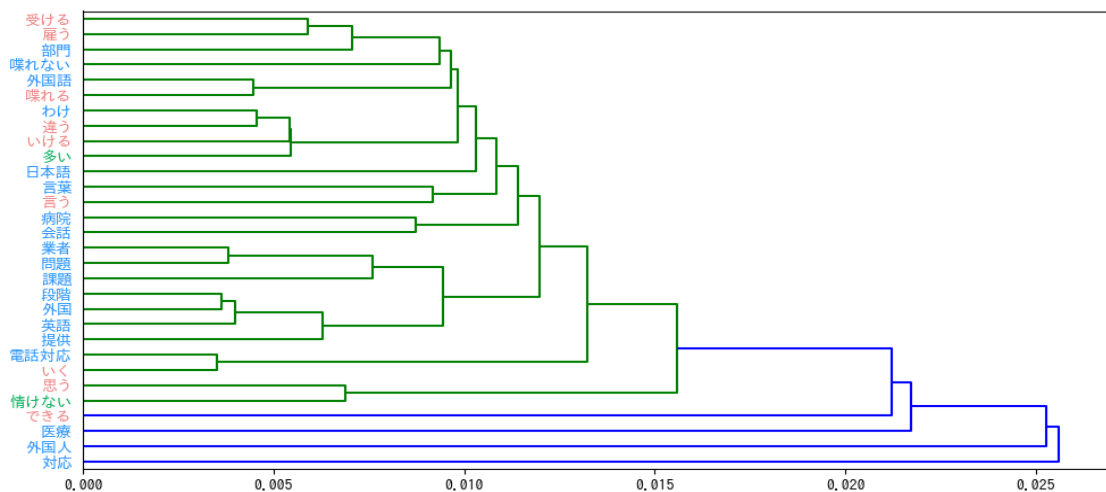Figure 5: Hierarchical Clustering for Nurse (Nu)

Figure 6: Hierarchical Clustering for Administrative Manager (Mn)

5   Discussion

In this study, both qualitative analyses based on interviews and quantitative analysis using text mining were conducted to analyze the characteristics and initiatives regarding the healthcare of foreigners and medical tourism in hospitals. The current situation of addressing medical tourism by using services for interpretation and medical expense recovery through insurance companies or intermediaries was understood. Furthermore, the interviews revealed that Hospital (a) is systematically addressing the needs of foreign patients, while Hospital (b) is facing challenges in

providing such comprehensive support. Qualitative analysis was more effective in understanding specific details and contents of the responses.

One common challenge identified in both hospitals was the issue of language support for foreign patients. The study also found that hospitals are addressing medical tourism by using intermediary companies to handle medical fee collection and interpretation services. Additionally, interviews revealed that hospital (a) has a more organized approach to foreign patient support, while hospital (b) faces challenges in providing the same level of support. Using text mining for quantitative analysis helped visualize context and characteristics, and complemented qualitative analysis, leading to more convincing explanations. However, it was also found that it is important to be creative and experiment to achieve the expected results using analysis tools.

In future research, the goal is to expand the number of surveyed hospitals, aiming to clarify the challenges of medical tourism and contribute to regional revitalization by proposing suggestions to the hospitals and the local community.

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