

Attitudes towards cross-border reproductive care among infertile Japanese patients

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Abstract

Objectives The attitudes towards cross-border reproductive care (CBRC) held by infertile Japanese patients have not been explored. The objective of the present study was to examine interest levels, preferred destinations, motivations, and sources of information related to CBRC. Our findings provide a general outline of CBRC and the future of reproduction and assisted reproductive technology (ART) in Japan.

Methods The study used a cross-sectional design. Data were collected from 2,007 infertile Japanese patients from 65 accredited ART clinics in Japan (response rate, 27.4 %) via anonymous questionnaires.

Results Most of the infertile Japanese patients who responded denied using CBRC. However, by group, 171 (8.5 %) patients in non-donor in vitro fertilization, 150 (7.5 %) in egg donation, 145 (7.2 %) in pre-implantation genetic diagnosis, and 129 (6.4 %) in surrogacy said that, depending on the situation, they might travel abroad in the future. Older respondents were more likely to express an intention to travel overseas for egg donation in the future. The most popular destination for CBRC was the United States. Popular reasons for interest in CBRC among those considering or planning using this approach to third-party reproduction were that egg donation or surrogacy was unavailable or that obtaining ethical approval takes too long in Japan, whereas these processes are legal and affordable overseas. However, high cost was the most

common reason for hesitancy regarding CBRC. Among the participants who were considering or planning to travel abroad for this purpose, TV, medical agencies, print media, and message boards on websites were popular sources of information, whereas doctors, friends, and patient self-help groups were not.

Conclusions Although CBRC among infertile Japanese patients is not at present common, the demand for and use of this approach may increase in the future in the context of the increasingly aging population. Lack of regulation and unavailability of third-party reproduction is a major cause of CBRC among Japanese patients. Health care provider faces an urgent need for giving useful information for patients regarding CBRC.

Keywords Cross-border reproductive care · Assisted reproductive technology · Third-party reproduction · Infertile Japanese patients

Introduction

Japan contains approximately 600 accredited in vitro fertilization (IVF) clinics, and these performed more than 200,000 IVF cycles in 2009 [1]. Recent demographic changes, such as marrying older and delaying childbearing, contribute to the increased demand for assisted reproductive technology (ART) in Japan, and it was estimated that more than 460,000 patients underwent this kind of treatment in 2002 [2]. However, no comprehensive legislation related to ART is in force in Japan. Several guidelines published by professional bodies have prohibited the use of several technologies and, overall, these guidelines are followed. Thus, pre-implantation genetic diagnosis (PGD) for sex selection and third-party reproduction procedures,

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except for sperm donation, are not readily available to infertile Japanese patients [3–5].

These regulations pertaining to the practice of reproductive medicine in Japan have forced infertile patients to travel overseas for certain procedures, and an increasing number of infertile couples seek fertility treatments overseas. The United States is the major destination of such couples because several states have legalized commercial third-party reproduction procedures, such as egg donation and surrogacy. However, more recently, Asian countries, such as India, Thailand, and Malaysia, also emerged as major destinations for infertile patients who seek infertility treatment abroad. This is because of the considerable competitive advantages of the ART industries in these countries due to liberal legislation and cheaper labor. Because of legal and economic advances, these countries are attracting increasing numbers of overseas patients, including those from Japan.

This phenomenon has been referred to in various ways, such as “reproductive tourism”, “reproductive travel”, “health travel”, “reproductive exile” [6, 7], and “cross-border reproductive care”. Among these terms, cross-border reproductive care (CBRC) is used in the present study to avoid stigmatization and to provide a neutral term. So, CBRC means transnational travel by patients to obtain particular infertility treatments.

Reasons for CBRC include: (a) prohibitions or restrictions on certain forms of treatment, such as third-party reproduction procedures and PGD, (b) exclusions in the availability of treatment to certain categories of people, such as same-sex couples or single females, (c) the high cost of treatment in the home country, (d) a lack of expertise in the home country, (e) a shortage of gamete donors or the seeking of anonymous donors, (f) long waiting lists, and (g) a desire for higher success rates or a higher quality of care abroad [8–11].

CBRC gives rise to a series of ethical, legal, and social issues. However, little is known about this phenomenon. The Task Force on Cross-Border Reproductive Care set up by the European Society for Human Reproduction and Embryology (ESHRE) has conducted an extremely valuable study to gather reliable data on the number of patients who cross European borders to access assisted reproductive technologies and the reasons prompting them to travel for this type of care [12, 13].

Except for a few published reports [14–17], including that by the ESHRE task force, little is known about the extent, experience, or conditions of CBRC outside Europe and the United States. Further research is needed in non-Western countries about patients’ attitudes regarding CBRC.

It is necessary to understand the attitudes of infertile Japanese individuals towards CBRC. The present study

will thus provide a general overview of attitudes toward CBRC and facilitate the prediction of future reproductive and ART scenarios in Japan. The objective of the present study was to examine interest levels, preferred destinations, motivations, and informational resources related to CBRC among infertile Japanese patients.

Materials and methods

Data collection

A quantitative survey using a self-administered anonymous questionnaire was used. After obtaining approval from the Ethics of Committee of the Kanazawa Graduate School of Medical Sciences, we mailed a request for cooperation to 578 accredited ART clinics throughout Japan, and 65 clinics agreed to participate in our study. Each clinic was sent a number of questionnaires according their request. In all, we mailed 7,309 questionnaires for distribution to patients. The mean (\pm SD) number distributed by each clinic was 115 ± 32.9 , and the median was 50. Sample size was not determined before starting the study. The percentage of patients who received questionnaire was different in each clinic. The majority of ART centers in Japan belong to the private sector so they predominate in our study. The 65 clinics cover six major regions in Japan. Distribution according to region was as follows: 4/64 (6.3 %) in the Hokkaido and Tohoku regions, 21/174 (12.1 %) in the Kanto and Koshinetsu regions, 4/55 (7.3 %) in the Hokuriku and Tokai regions, 11/90 (12.2 %) in the Kinki region, 12/60 (20.0 %) in the Chugoku and Shikoku regions, and 7/52 (13.5 %) in the Kyushu and Okinawa regions. We asked each clinic to have their receptionist distribute the questionnaire to all patients for a certain period to avoid selection bias. Completed questionnaires were sealed in a white envelope and returned to the clinics or mailed directly to the researchers by each respondent. A total of 2,007 questionnaires were returned (response rate, 27.5 %) between November 2011 and March 2012. As respondents did not indicate the clinic they were attending, the response rate for each clinic is unknown.

Assessment

Data on demographic characteristics (age, marital status, education) were obtained from the questionnaires. To evaluate experience with infertility, data on variables related to infertility treatments were obtained (history of treatment, duration of use of the temperature method, number of AIH, number of IVF cycles, number of pregnancies). Major causes of infertility among the participants were also assessed.

To evaluate current attitudes towards CBRC in infertile Japanese patients, seven categories of reproductive technology were assessed, using five options. The seven categories of reproductive technology were: non-donor IVF, pre-implantation genetic diagnosis (PGD), sex selection, egg donation, sperm donation, embryo donation, and surrogacy. The latter four technologies are known as “third-party reproduction processes”. The five options were “have already done”, “have plans to do”, “have considered”, “would consider in the future”, and “would never consider”.

For those participants who would consider treatment abroad, preferred destinations were assessed for the seven reproductive technologies to assess demand and future trends surrounding CBRC. Preferable destinations were divided into five areas: United States, Europe, India, South Korea, and Thailand or Malaysia. Participants were allowed to choose multiple options.

Reasons for interest in and hesitation regarding CBRC were explored using 17 predefined options. Participants were allowed to choose multiple options. These included push factors, pull factors, and facilitating factors. Reasons for hesitation regarding CBRC were explored using 17 options. Participants were allowed to choose multiple options. These included legal factors, costs, and concerns over the child’s welfare. Information resources were assessed using eight options; participants were allowed to choose multiple options.

Statistical analysis

Calculations were performed using “IBM SPSS Statistics (ver. 19.0 for Windows)”, a software package developed by the IBM Corporation (Armonk, N.Y., USA). Chi square tests were used to evaluate differences between two categories; *p* values <0.05 were considered to indicate statistical significance.

Results

Participant characteristics

Demographic and clinical characteristics of the participants (*n* = 2,007) are presented in Table 1. The mean age (\pm SD) of the participants was 36.3 \pm 4.9; 98.6 % were female, 95.5 % were married, 60.7 % were employed, 42.3 % were graduates of junior college or technical college, and 39.2 % were educated to university or graduate school.

The mean treatment history of participants was 31.43 \pm 29.07 months; 59.5 % had a treatment history of <3 years, 21.8 % had a history of 3–5 years, and 13.9 % had a history of >5 years. The mean number of IVF cycles

Table 1 Characteristics of respondents (*n* = 2,007)

	<i>n</i>	%
Sex		
Female	1,978	98.6
Male	15	0.7
Age (36.3 \pm 4.9)		
<29	179	8.9
30–39	1,261	62.8
40–49	548	27.3
>50	3	0.1
Marital status		
Married	1,917	95.5
Unmarried	37	1.8
Employment status		
+	1,218	60.7
–	731	36.4
Education		
Junior high school	9	0.4
High school	351	17.5
Junior college or technical college	849	42.3
University or graduate school	786	39.2
Treatment history		
<12 months	438	21.8
1–2 years	436	21.7
2–3 years	322	16.0
3–4 years	275	13.7
4–5 years	163	8.1
>5 years	279	13.9
Temperature method ^a (<i>n</i> = 1,549)		
<1 year	423	27.3
1–2 years	558	36
2–3 years	287	18.5
3–5 years	181	11.7
5–10 years	76	4.9
>10	24	1.5
Artificial insemination by husband (AIH; <i>n</i> = 971)		
1–3	410	42.2
4–5	231	23.8
4–10	289	29.8
>11	41	4.2
Number of IVF cycles (including ovum collection; <i>n</i> = 918)		
1–3	599	65.3
4–5	131	14.3
6–10	127	13.8
11–50	61	6.6
Number of pregnancies		
0	840	41.9
1	605	30.1
2–3	360	17.9
4–7	82	4.0

Table 1 continued

	<i>n</i>	%
Main cause of infertility		
Aging	447	22.3
Uterine/cervical abnormalities	288	14.3
Ovum/ovary-related factors	253	12.6
Fallopian tube-related factors	248	12.4
Sperm issues	233	11.6
Problems with sexual intercourse [‡]	68	3.4
Repeated miscarriages	42	2.1
Premature menopause	17	0.8
Not otherwise classified	208	10.4

^a Having sexual intercourse in the periovulatory period

^b Lack of intercourse or any coital problem

(from attempt to ovum collection) was 3.16 ± 4.58 . Regarding the major causes of infertility, “aging” was selected by 22.3 % of the respondents, “uterine/cervical abnormalities” by 14.3 %, “ovum/ovary-related factors” by 12.6 %, “fallopian tube-related factors” by 12.4 %, and “sperm issues” by 11.6 %; “not otherwise classified” was selected by 10.4 % of the respondents.

Current attitudes towards cross-border reproductive care and factors influencing in CBRC

Current attitudes towards each CBRC technology were assessed among infertile Japanese patients (Table 2). Almost 90 % of respondents chose “would never consider” with regard to each reproductive technology. The number of respondents who answered “have already done” for each technology was very low. However, the numbers of respondents who expressed any intention to travel abroad in the future (B + C + D in Table 2) ranged from 2.5 to 8.5 %: 171 (8.5 %) for non-donor IVF, 145 (7.2 %) for PGD, 77 (3.8 %) for sex selection, 150 (7.5 %) for egg donation, 50 (2.5 %) for sperm donation, 65 (3.2 %) for

embryo donation, and 129 (6.4 %) for surrogacy (Table 2). Thus, the percentage considering CBRC (B + C + D) was 2.5–8.5 %, depending on the treatment method. In total, 259 (12.9 %, B + C + D) patients intended to go abroad in the future for reproductive procedures. Of these 259 respondents, about three-quarters ($n = 192$, 74.1 %) were interested in third-party reproduction procedures, such as sperm donation, egg donation, embryo donation, or surrogacy.

Associations between current attitudes towards CBRC and background variables were also explored. We found that attitudes towards undergoing egg donation abroad and age were strongly correlated. Older patients expressed more interest in travelling abroad for egg donation. For instance, 12.0 % ($n = 21$) of those aged younger than 29 years, 7.3 % ($n = 39$) of those aged 30–34 years, 9.8 % ($n = 68$) of those aged 35–39 years, 11.5 % ($n = 52$) of those aged 40–44 years, and 40.8 % ($n = 29$) of those aged older than 45 years answered they have already done or expressed any intention to travel abroad in the future for this purpose (data not shown in tables or figures).

Preferred destinations for CBRC

The preferred destinations of the 259 patients who intended to travel abroad for reproductive procedures were assessed (Fig. 1). Participants were allowed to choose more than one destination. The most popular destination for all seven categories of reproductive technologies was the United States (67.9–79.2 % of respondents). Regarding non-donor IVF, PGD, and sex selection, 33.6–40.5 % of respondents selected Europe after the United States. But, with regard to gamete and embryo donation, South Korea was the second most commonly preferred destination after the United States. Around 35 % of participants selected South Korea for gamete donation (36.1–38.9 % of respondents). Regarding surrogacy, 27.2 % of 129 respondents selected India as a possible destination; this percentage was higher than that for the other reproductive technology categories.

Table 2 Current prevalence of and attitudes towards CBRC among infertile Japanese patients ($n = 2,007$)

	A. Have already done	B. Have plans to do	C. Have considered	D. Would consider in the future	Any intention to go abroad in the future (=B + C + D)	E. Would never consider	N.A.	Total
Non-donor IVF	10 (0.5 %)	1 (0.0 %)	11 (0.5 %)	159 (7.9 %)	171 (8.5 %)	1,756 (87.5 %)	70 (3.5 %)	2,007
PGD	2 (0.1 %)	1 (0.0 %)	6 (0.3 %)	138 (6.9 %)	145 (7.2 %)	1,765 (87.9 %)	95 (4.7 %)	2,007
Sex selection	1 (0.0 %)	0	0	77 (3.8 %)	77 (3.8 %)	1,840 (91.7 %)	89 (4.4 %)	2,007
Egg donation	3 (0.1 %)	2 (0.1 %)	15 (0.7 %)	133 (6.6 %)	150 (7.5 %)	1,775 (88.4 %)	79 (3.9 %)	2,007
Sperm donation	1 (0.0 %)	1 (0.0 %)	2 (0.1 %)	47 (2.3 %)	50 (2.5 %)	1,870 (93.2 %)	86 (4.3 %)	2,007
Embryo donation	1 (0.0 %)	0	3 (0.1 %)	62 (3.1 %)	65 (3.2 %)	1,853 (92.3 %)	88 (4.4 %)	2,007
Surrogacy	1 (0.0 %)	2 (0.1 %)	4 (0.2 %)	123 (6.1 %)	129 (6.4 %)	1,790 (89.2 %)	87 (4.3 %)	2,007

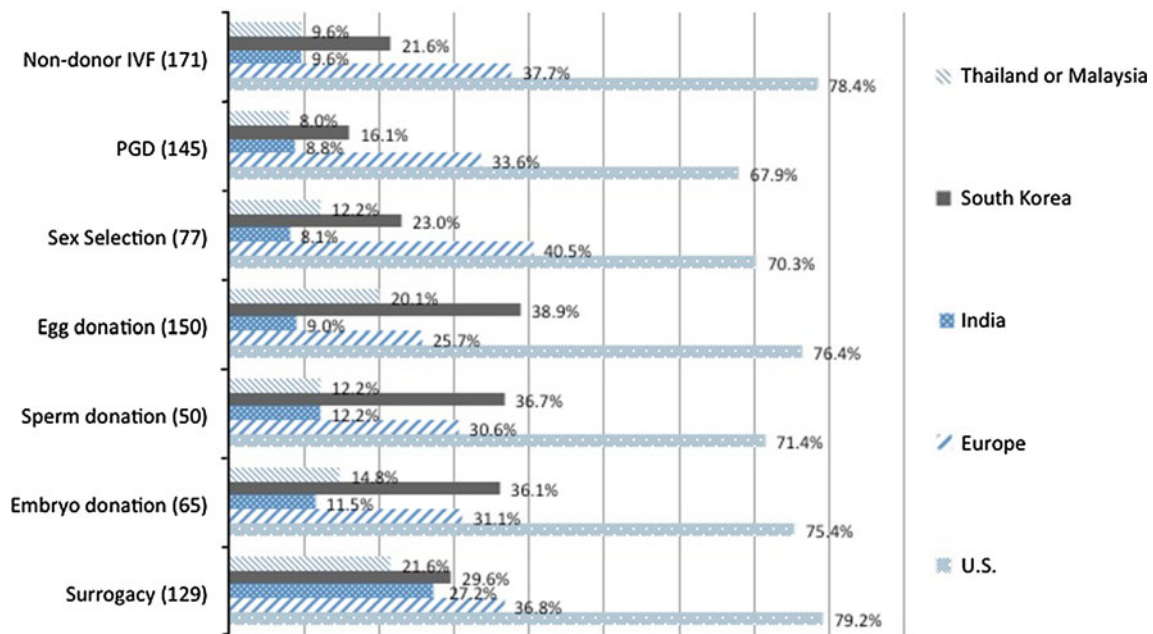


Fig. 1 Preferred destination for CBRC ($n = 259$)[‡]. [‡]Refers only to those patients who actually considered CBRC; the denominator of the percentage is also the number of patients who actually considered each category

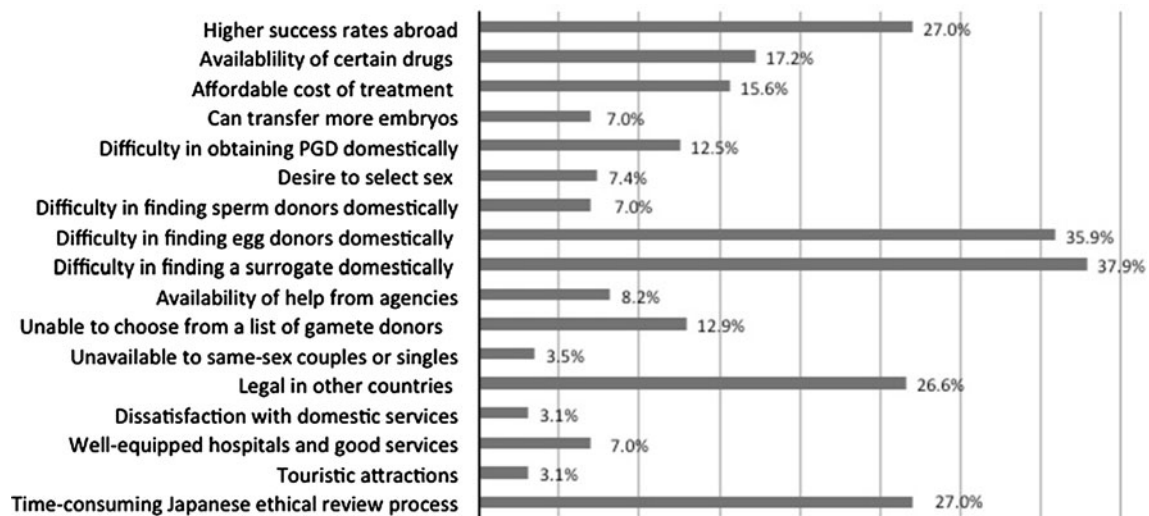


Fig. 2 Reasons for interest in CBRC ($n = 259$)

Reasons for and against CBRC

Reasons for interest in CBRC among respondents who intended to go abroad in the future were explored (Fig. 2).

The main reason was “difficulty finding a surrogate domestically”, followed by “difficulty finding egg donors domestically”, “higher success rates abroad”, and “time-consuming Japanese ethical review process”.

Reasons against CBRC were also explored (Fig. 3). Respondents were divided into two categories. The first was respondents who intended to go abroad in the future ($n = 259$), and the other was respondents who would never go abroad

($n = 1,709$). Among the 17 options shown, “cost-prohibitive” was selected by 58.0 % and 63.3 %, respectively; this was the most common factor. “satisfaction with domestic treatment” was selected by 49.4 % of respondents who would never go abroad, and this was higher than the comparable figure among respondents who had any intention of travelling abroad for this purpose. In contrast, “language barrier” (51.0 %), “scarcity of information” (47.0 %), “preparation is burdensome” (31.5 %), “preference for a Japanese donor” (19.9 %), “mistrust of agencies” (28.3 %), “no coordination of care with domestic and foreign caregivers” (19.1 %), and “lower-quality technology” (5.6 %), were selected more frequently by

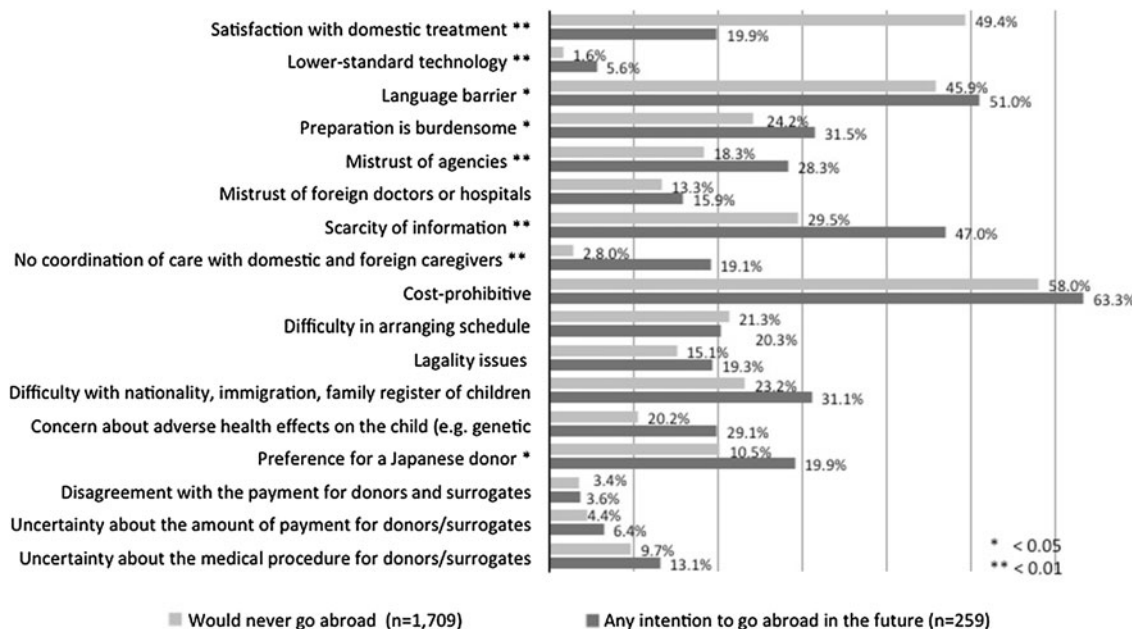


Fig. 3 Reasons for hesitation regarding CBRC

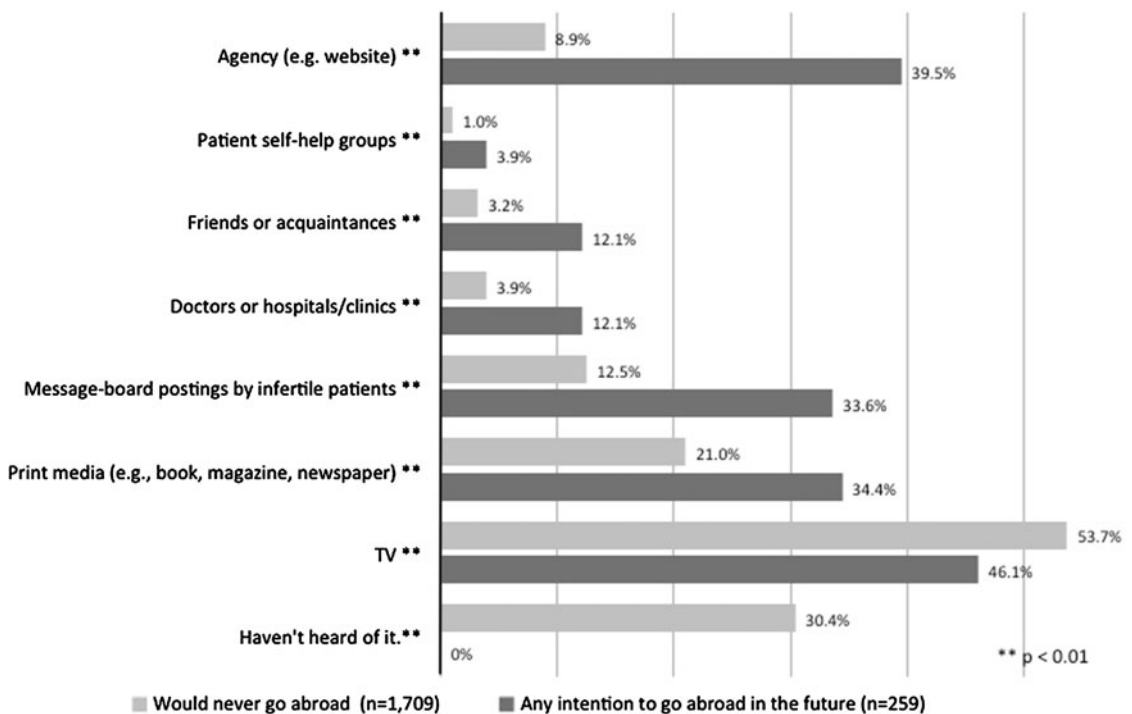


Fig. 4 CBRC information resources

respondents who had some intention to go abroad in the future than by those who would never go abroad.

CBRC information resources

CBRC information resources were assessed using eight options; multiple answers were allowed (Fig. 4). Among

respondents who would never go abroad ($n = 1,709$), information from TV was the most frequent answer (53.7 %). “Haven’t heard of it” was the next most common response (30.4 %). Respondents who intended to go abroad in the future ($n = 259$) had most frequently obtained information from an “agency” (39.5 %), “print media (e.g., book, magazine, newspaper)” (34.4 %), and

“message-board postings by infertile patients” (33.6 %). However, “doctors or hospitals/clinics” (12.1 %), “friends or acquaintances” (12.1 %), and “patient self-help groups” (3.9 %) were selected by relatively few.

Discussion

In the present study, most participants denied the possibility of having or considering CBRC and very few had traveled abroad. This is in contrast to an online survey conducted in the United Kingdom in 2008 ($n = 339$ responses), in which 76 % of respondents indicated they would consider travelling abroad and 22 % reported having already done so [18]. CBRC among Japanese patients is currently not a mainstream issue. However, a considerable proportion of Japanese respondents ($n = 259$, 12.9 %) expressed the possibility of going abroad in the future, depending on the situation. Moreover, older patients expressed more interest in CBRC. Indeed, egg donation is known to be a particularly effective treatment for patients who are aging or lacking ova. Recently, the number of Japanese infertile patients travelling to Asian countries such as Thailand and Malaysia for egg donation has increased. This suggests that the number of infertile patients seeking CBRC may increase in the future as the population ages and the number of infertile patients increases. Of particular relevance is the continuing trend to marry and have children later in life, which increases the likelihood of seeking an egg donor. For example, the mean age of Japanese women at the birth of their first child has shifted from 25.7 years in 1975 to 30.1 years in 2012 [19]. “Aging” was the most common cause of infertility, cited by 22.3 % of the participants.

In this study, the most popular CBRC destination for Japanese infertile couples was the United States. Several agencies for US CBRC exist in Japan. We can also assume that the United States is a popular destination for CBRC due to familial ties and/or a large population of Japanese-Americans as potential gamete donors. Additionally, the potential for having caregivers of Japanese descent is higher in various parts of the United States. Moreover, several TV stars have publicized their experiences of CBRC, seeking egg donation and surrogacy in the United States, possibly influencing patient perceptions and responses and, therefore, our findings. It is noteworthy that India was selected as a destination for those seeking surrogacy and South Korea for those seeking gamete donation. This might reflect the fact that India is a well-known low-cost destination for commercial surrogacy and that South Korea has physical and genetic proximity to Japan. With regard to seeking third-party reproduction procedures in emerging Asian countries, there is great concern regarding

the exploitation of women who belong to socioeconomically vulnerable populations [20]. Medical tourism in emerging Asian countries is attracting increasing numbers of patients from around the world because of attractive pricing. Issues regarding CBRC should be discussed among authorities in various fields, including medical practitioners and researchers.

Factors influencing interest in CBRC may include institutional barriers to access to several reproductive technologies in Japan due to guidelines and reports published by professional bodies and the government that ban third-party reproduction and PGD for sex selection. If infertile Japanese patients seek such technologies, they have no choice but to go abroad. However, a major reason for hesitancy regarding CBRC was the economic barrier; indeed, this was the most popular answer among study participants. Medical insurance does not cover infertility treatment domestically, and treatment abroad may result in enormous costs. Other studies have also reported that the cost of treatment abroad was a negative factor for CBRC [12, 21]. Another negative factor indicated by some participants was the language barrier affecting the collecting of information and hindering communication with medical staff (51.0 %). However, this situation may differ from that in Western countries. Shenfield et al. [12] reported that over 90 % of participants received satisfactory information in their own language. Other factors may stimulate or inhibit CBRC; these may differ by country.

We also found that the internet has become the major source of information for Japanese patients seeking CBRC. Respondents who intended to go abroad in the future were seeking information on CBRC primarily via the internet, including the websites of medical agencies and internet message boards. Another major source was printed media. Similar results were reported by Shenfield et al. [12], who noted that the internet was the main source of information for Swedish, German, and British patients. Other sources included friends, relatives, and patient organizations; however, these were less important [12, 22]. At the same time, a large number of study participants felt that they lacked information (41.0 %). Although the internet is a valuable information source for patients, the quality and validity of the information may be questionable. Patients should be provided with valid and adequate information regarding CBRC, including information on its negative aspects.

Our study has several limitations. Data were self-reported anonymously; thus, it is not possible to guarantee the accuracy of the information provided. This study is cross-sectional and therefore could not explore causal relationships. The percentage of patients who received questionnaire was different in each clinic and there was selection bias. Moreover, participants in the present study were currently undergoing infertility treatment in domestic

clinics/hospitals. This is somewhat incompatible with seeking or considering CBRC at the same time, which could have led to underestimation of CBRC and may have reduced the validity of this study to some extent. The percentage of missing data in each questionnaire ranged from 0.9 to 10.1. Therefore, the relatively low response rate and large amount of missing data might have caused bias: more people who would never consider CBRC completed the questionnaire, whereas patients who had undergone CBRC left several items of the questionnaire blank. It is important to recognize that generalizations from such data should be made with caution. As experience with CBRC is currently very rare among infertile Japanese patients, it is necessary to use a qualitative approach to studying patients who have undergone CBRC to obtain more detailed information. Although this study is limited in the aforementioned ways, it is also the first and only published study using a large sample ($n = 2,007$) drawn from throughout ART clinics in Japan ($n = 65$) to investigate the general situation with regard to CBRC. Such a large sample enabled the exploration of overall attitudes towards CBRC in average infertile Japanese patients. Specifically, no other study has examined such a large sample of infertile patients.

Based on this initial study, further research on CBRC using appropriate designs and more reliable and valid indicators should be conducted. More comprehensive and systematic data collection is required before any clear conclusions can be drawn about the global picture regarding CBRC.

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