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A comparative study of attitudes regarding digit replantation in the US and Japan

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Abstract

Purpose—To compare the societal preferences for finger replantation between US and Japan and to investigate factors influencing the preferences.

Methods—A sample of the general population without current hand disease or condition was recruited via flyers posted in public areas of 2 major academic centers in the US and Japan. The recruited subjects completed a survey presenting finger amputation scenarios and various factors that may affect treatment decisions. We performed univariate analysis using treatment preference as the outcome and all other factors as possible predictors using the chi-square test.

Results—The majority of respondents in both countries preferred replantation, and there was no significant difference between the US and Japan. Treatment preference was significantly associated with the importance of appearance, recovery time, and the chance of survival of the replanted digit. There was no association between treatment preference and attitudes on body integrity or estimate of stigma towards finger amputees. Japanese participants agreed more with statements of body integrity, and Japanese respondents rated appearance, sensation, and chance of survival of the replant as more important than American participants.

Conclusions—Patient preference is not driving the decrease in finger replantations in the US. The general public in both countries prefer replantation over wound closure for digit amputations.

Level of Evidence—Economic/Decision Analysis Level III

Keywords

finger replantation; preference; cross-cultural difference; stigmatization; body integrity

Introduction

Since Tamai performed a thumb replantation in 1968, finger and thumb replantation has been conducted with regularity in most regions of the world. (1) A notable exception is the United States. Finger and thumb replantation is performed by only a small number of hand surgeons in 15% of American hospitals.^{2,6} Moreover, most of those surgeons perform fewer than 10 replantation surgeries per year. (2,6) As a result, only 12% of finger amputation injuries in the US are treated with replantation and the rate is decreasing. (2,3,4,5,6,7) By contrast, in Japan, replantation is performed in 29% of finger amputation cases. (8) Although a variety of reasons for the decrease of finger replantation in the US have been postulated, including declining reimbursement, busy elective surgery schedules, inadequate technical confidence in performing finger replantation, lack of specialized microsurgery teams, and surgeons' assessments that results are often suboptimal, the differences between American and Japanese surgeon preferences or American and Japanese societal preferences have not been well-researched. (6)

Cultural difference may affect those preferences. Confucianism emphasizes protecting body integrity. (9,10) For instance, in this belief, one should end with a complete body at death if one is born with a complete body. This may lead many Asians (including Japanese) to prefer finger replantation. In addition to body integrity, finger amputation has a somewhat notorious connotation in Japanese culture. A gang called Yakuza, analogous to the American Mafia, has a special ritual of cutting off the small finger to atone for a variety of transgressions. (11,12) In Japan, someone with a traumatic defect of the little finger is often presumed to be a Yakuza by others and will encounter great difficulties securing legitimate employment, among other social problems. These two factors can result in stigmatization of those with finger and thumb amputations.

The disparate replantation rates in the US and Japan may be attributed to cultural differences resulting in opposing societal preference. However, it is also possible that surgeon preference is the driver of these differences in the absence of differing societal preference. If patient preferences were not understood and considered, the rate of replantation in Japan may be too high or the rate in the US may be too low. This study aimed to compare, via survey, the societal preferences for finger replantation between the US and Japan and to explore factors affecting preferences. We hypothesized that finger replantation would be more preferred over revision amputation in Japan than in the US and that the importance of appearance, body integrity, and stigmatization toward finger amputees were factors affecting these preferences.

Materials and Methods

Anyone 18 years of age or older was eligible to participate. Further inclusion criteria included the ability to read and complete the questionnaire in English or Japanese. Individuals with an injury or condition (other than healed fractures) influencing the movement or sensation of the fingers, hands, or wrists (e.g. arthritis, amputation, severe burn, neurologic conditions) were excluded from the study because they might have prejudiced preferences or opinions owing to their pain or abnormal appearance.

Participants were recruited from two large university hospitals. Flyers directing participants to the online survey were placed in heavily traveled areas of the hospital and medical school complexes and at local outpatient clinics. Paper surveys were placed in some additional clinical waiting areas to be completed and returned to the receptionist. The study was also posted on an online portal that allowed prospective participants to search and volunteer for studies for which they might be eligible and, likewise, allowed study teams to search for and contact prospective participants.

Questionnaire

We created a survey (Appendix 1) to assess preference for replantation versus revision amputation and to reveal important factors in decision-making, including attitude towards body integrity and stigmatization toward individuals with finger amputations. We included select questions from the Neuro-QOL Ability to participate in social roles and activities short form, the Neuro-QOL Stigma short form, and the Amputee Body-Image Scale (ABIS). (13,14,15,16) These surveys are validated to be taken by patients regarding their own experiences; we modified questions by changing select items to refer to others. For instance, the ABIS questions “My amputation makes me think of myself as disabled” and “People treat me as disabled” were combined and altered to “People with a single finger amputation are disabled.” The survey also collected demographic data (age, sex, and occupation).

Translation was done using the standard translation, back-translation technique. (17,18) The survey was written in English, then translated into Japanese by one of the authors, who is a native Japanese speaker. Another native Japanese-speaking researcher translated the Japanese version of the survey back into English. The two English versions of the survey were compared by a native English speaking research assistant to ensure that the translated survey questions were the same, or had the same meaning, as the original questions. The English survey was pilot-tested by staff members at the US hospital. Suggestions were sought for readability, survey flow, relevance of questions, clarity of illustrations, and technical issues. Changes were made according to their suggestions when necessary. A power analysis performed before the launch of the study indicated that in order to achieve a statistical power of 95% and alpha of 0.05 our survey would require at least 44 respondents from each country.

Statistical Methods

In this analysis the treatment preference following an amputated finger injury was the primary outcome variable. A case of finger amputation at the proximal interphalangeal (PIP) joint of the index finger of the dominant hand was described along with the advantages and disadvantages of the 2 treatment options (attempted finger replantation or revision amputation). (19,20,21) Participants were then asked to select the treatment they would want if they were to sustain the described injury. We assigned participants a stigma score by summing the responses for each of 10 stigma questions. Each question was a Likert scale from 1 (strongly agree) to 5 (strongly disagree). The range of scores was categorized into 3 stigma group by tertiles. Participants in the 1st – 33rd percentile were considered high stigma, those in 34th – 66th percentile were considered neutral, and those in the 67th – 100th

percentile were considered low stigma. Attitudes towards body integrity were derived from the survey item, “One’s body is received from one’s parents and therefore must be safeguarded.” Participants who responded “strongly agree” or “agree” were considered to agree with the idea of body integrity. Those who responded “disagree” or “strongly disagree” were considered to disagree. We asked the participants to rate the importance on a 5-point Likert scale of each of the following factors when deciding whether they would want to attempt replantation of an amputation injury or be treated with revision amputation: function, appearance, sensation of the finger, cost of the treatment, health insurance coverage, recovery time, risk of replant failure, and time away from work. Responses to each of these 8 variables were categorized into 3 levels: very important included “extremely important” and “very important”; important included “moderately important”; and not important included “of little importance” and “unimportant”. We also asked respondents to rate function, appearance, and sensibility 6 months after replant or revision amputation on a 5-point Likert scale, and responses were categorized into 3 levels: good included “excellent” and “very good”; moderate included “good”; and not good included “fair” and “poor”.

We first performed univariate analysis using treatment preference as the outcome and all above listed factors as possible predictors using the chi-square test. Then to determine the differences in responses between the US and Japan for items other than treatment preferences, another univariate analysis was performed.

Results

We enrolled 49 participants in the US and 83 participants in Japan. Two participants in Japan were excluded because they could not decide which treatment they preferred. Finally 49 participants from the US and 81 participants from Japan were assessed (Table 1). There were significantly more female respondents in the US than in Japan (71% vs. 50%, $P = 0.02$).

Of all 130 participants, 107 (82%) preferred finger replantation and 23 (18%) preferred revision amputation. This did not differ by country (US: 78% vs. Japan: 85%; $P = 0.34$). (Table 2) Treatment preference was significantly associated with perception of the importance of ‘appearance’, ‘chance of survival of the replant’, and ‘time of recovery’. This means that participants who rated one of these 3 factors as more important were more likely to select finger replantation than those who rated them as less important. Neither attitudes on body integrity nor estimate of stigma towards finger amputees was significantly associated with treatment preference ($P = 0.09, 0.83$, respectively). Estimate of function after replant or revision amputation was also not associated with treatment preference ($P = 0.26, 0.48$, respectively) Unrealistic expectations are a concern with reconstructive procedures, like finger replantation. However, most participants seemed to have realistic expectations since 29% of American respondents and 19% of Japanese respondents estimated function to be excellent or very good 6 months after replantation. There was no significant difference regarding expectation based on country ($P = 0.20$).

There were significant differences between the US and Japan on attitudes regarding body integrity and the importance of appearance. (Table 3) Japanese participants were more likely

to strongly agree or agree with the statement “One’s body is received from one’s parents and therefore must be safeguarded” than American participants (44% vs. 6%; $P<0.001$), and more likely to rate appearance as extremely or very important when deciding on treatment (62% vs. 35%; $P=0.001$). The 3 most important factors in decision-making for finger amputation injury treatment according to American respondents were function (selected as “extremely important” or “very important” by 80% of participants), chance of survival of the replant (65%), and insurance coverage (55%). The 3 most important factors for Japanese respondents were chance of survival of the replant (85%), function (84%) and sensation (75%).

Because there were significantly more female respondents in the US, we performed a subgroup analysis to determine if this affected preference or values. (Table 4) There were no significant differences between the responses of male and female participants in the US. However, there were significant differences regarding the importance of appearance between male and female respondents in Japan. Japanese women were more likely to rate appearance as an extremely or very important factor in treatment decision-making than Japanese men (85% vs. 39%; $P<0.001$).

Because our surveys were performed at academic medical institutions, there was a possibility that some of the respondents were members of the medical community. Medical professionals may express less stigma toward amputees than members of the general population; which might introduce bias. To assess this we compared the preferences of respondents who worked in medical professions and those who did not. Medical professions consisted of emergency medical personnel, hand/physical therapists, physicians, medical assistants, and nurses. Regarding estimation of the function 6 months after replant, there was no significant difference between medical professions and nonmedical respondents both in the US and Japan. (Table 5) Participants who worked outside of the medical field were significantly more likely to rate procedure costs as an extremely or very important factor in treatment decision-making than were medical professionals in both the US (0% vs. 29%; $P=0.04$) and Japan (15% vs. 46%; $P=0.02$). (Table 6) Moreover, in the Japanese sample, participants with nonmedical vocations were more likely to strongly agree or agree with the statement “One’s body is received from one’s parents and therefore must be safeguarded” than medical professionals (56% vs. 15%; $P<0.01$).

We also compared preferences between younger respondents and older respondents in both countries. Participants in each country in the 1st – 50rd percentile for age were considered the younger group; those in 51th – 100th percentile were considered the older group. There were no significant differences based on age for US participants. In Japan, younger participants were more likely to rate time away from work as an extremely or very important factor in treatment decision-making than older participants (54% vs. 25%; $P<0.01$). (Table 7)

Discussion

The results of this study did not support our hypothesis that finger replantation is more preferred over revision amputation in Japan than in the US. Appearance was a significantly

more important decision-making factor for Japanese respondents. Body integrity beliefs were held significantly more strongly by Japanese respondents as well. There were some differences observed in subgroup analysis. Female respondents were significantly more likely to rate appearance as extremely or very important than male respondents and respondents with nonmedical vocations were more likely to strongly agree or agree with body integrity than medical professionals. Multiple studies have observed that replantation is popular in Asian countries because there is Confucian moral values in the Far East, and appearance and bodily integrity are especially stressed. (22,23) Our results partially support this because there was significant difference in body integrity between the US and Japan, but only for nonmedical professionals. Conversely, there was no significant difference in estimate on stigma towards finger amputees, while Kojima pointed out that Japanese people exhibited strong stigma towards disability because of relative homogeneity and a general intolerance of difference. (13,24)

Further analysis revealed that people who put a greater emphasis on appearance preferred replantation significantly more, and those who put a greater emphasis on recovery time selected revision amputation significantly more frequently. In contrast to our hypothesis, body integrity and stigmatization towards finger amputees were not the factors that drove treatment preference. Although it was not significant, the importance of cost and of time away from work trended to be associated with treatment preference, suggesting that people who want lower treatment cost and shorter time away from work tended to prefer revision amputation.

There are some limitations to this study. First, the amputation injury scenario was limited to the PIP joint of the index finger of the dominant hand, which may not be a prime candidate for replantation in the US. An index finger amputation at the level of the PIP joint is considered a candidate for replantation in Japan. We selected the index finger because it is the most frequently injured and because we felt it would be easiest for respondents to conceptualize. Furthermore, most of respondents in this study were lay people who did not know which specific injuries are good or bad candidates for replantation. (23) Also the survey was performed at one unique area of each country, and the results may not reflect total societal preferences or opinions of either country. Because we wanted to minimize respondent burden, there were possible confounders that we were not able to address, including income, insurance coverage, and baseline activity level. Finally, the questions we used to assess stigma were not validated. There are no existing validated questionnaires regarding stigma towards amputees. There are however validated surveys about amputees' experiences. We selected items with face validity and modified them to refer to a third party. This method has been used in previous studies. (25,26,27)

Japanese respondents rated appearance as more important in decision-making after finger amputation injury and had significantly stronger body integrity beliefs than American respondents. However, American respondents desired finger replantation just as much as Japanese respondents. Considering the lack of any significant difference in societal preference along with the fact that the rate of finger replantation is decreasing in the US in contrast to Japan, there may exist a difference in surgeon preference. If hand surgeons' and societal treatment preferences differ, this may result in patients being unhappy with their

treatment. Because surgeon preference for finger replantation may be lower in the US than Japan, the next logical step is the administration of a surgeons' survey in both countries.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

General Population Demographic Data

	United States	Japan	p-value
Mean age (SD)	44.5 (16.8)	39.0 (13.2)	<i>P</i> = 0.06
Sex (%)			<i>P</i>=0.02
Male	14 (29%)	41 (50%)	
Female	35 (71%)	40 (50%)	
Occupation			<i>P</i> =0.24
Non-medical	32	61	
Medical*	17	20	

* Medical occupations: emergency medical personnel, hand/physical therapist, physician, medical assistant, nurse.

Bolded values indicate statistical significance.

Table 2

Univariate analysis on preference for finger replantation vs. revision amputation

Treatment preference	Replantation	Amputation	P-value
Total	107 (82%)	23 (18%)	
Patient demographics			
Country			0.34
<i>US</i>	38 (78%)	11 (22%)	
<i>Japan</i>	69 (85%)	12 (15%)	
Gender			0.90
<i>Male</i>	45 (82%)	10 (18%)	
<i>Female</i>	62 (83%)	13 (17%)	
Importance of factors in decision			
Function			0.54
<i>Important</i>	89 (83%)	18 (78%)	
<i>Moderate</i>	16 (15%)	5 (22%)	
<i>Not important</i>	2 (2%)	0 (0%)	
Appearance			
<i>Important</i>	60 (56%)	7 (30%)	<0.01
<i>Moderate</i>	28 (26%)	4 (17%)	
<i>Not important</i>	19 (18%)	12 (52%)	
Sensation of the affected finger			0.55
<i>Important</i>	71 (66%)	16 (70%)	
<i>Moderate</i>	29 (27%)	7 (30%)	
<i>Not important</i>	7 (7%)	0 (0%)	
Cost of the procedure			0.31
<i>Important</i>	31 (29%)	10 (43%)	
<i>Moderate</i>	38 (36%)	8 (35%)	
<i>Not important</i>	38 (36%)	5 (22%)	
Insurance coverage			0.41
<i>Important</i>	61 (57%)	14 (61%)	
<i>Moderate</i>	25 (21%)	7 (30%)	
<i>Not important</i>	21 (21%)	2 (9%)	
Chance of survival of the replant			0.01
<i>Important</i>	87 (81%)	15 (65%)	
<i>Moderate</i>	19 (18%)	5 (22%)	
<i>Not important</i>	1 (1%)	3 (13%)	
Recovery time			<0.001
<i>Important</i>	29 (27%)	16 (70%)	
<i>Moderate</i>	46 (43%)	5 (22%)	
<i>Not important</i>	32 (30%)	2 (9%)	

Treatment preference	Replantation	Amputation	P-value
Time away from work			0.17
<i>Important</i>	41 (38%)	12 (52%)	
<i>Moderate</i>	38 (36%)	9 (39%)	
<i>Not important</i>	28 (26%)	2 (9%)	
Estimate of function after replant			0.26
<i>Good</i>	27 (25%)	2 (10%)	
<i>Moderate</i>	26 (24%)	7 (33%)	
<i>Not good</i>	56 (51%)	12 (57%)	
Estimate of function after revision amputation			0.48
<i>Good</i>	26 (24%)	7 (33%)	
<i>Moderate</i>	32 (29%)	7 (33%)	
<i>Not good</i>	51 (47%)	7 (33%)	
Attitudes on Body integrity			
<i>Agree (it should be preserved)</i>	37 (35%)	4 (17%)	0.09
<i>Neutral</i>	38 (36%)	7 (30%)	
<i>Disagree (preservation is not important)</i>	32 (30%)	12 (53%)	
Estimate on Stigma towards finger amputees			
<i>Agree (there will be stigma)</i>	38 (36%)	6 (26%)	0.83
<i>Neutral</i>	34 (32%)	9 (39%)	
<i>Disagree (there will not be stigma)</i>	35 (33%)	8 (35%)	

Bolded values indicate statistical significance

Table 3

Univariate analysis by country

Country	US	Japan	P-value
Total (n)	49	81	
Patient demographics			
Sex			0.02
<i>Male</i>	14 (29%)	41 (51%)	
<i>Female</i>	35 (71%)	40 (49%)	
Importance of factors in decision			
Function			0.82
<i>Important</i>	39 (80%)	68 (84%)	
<i>Moderate</i>	9 (18%)	12 (15%)	
<i>Not important</i>	1 (2%)	1 (1%)	
Appearance			0.001
<i>Important</i>	17 (35%)	50 (62%)	
<i>Moderate</i>	12 (25%)	20 (25%)	
<i>Not important</i>	20 (41%)	11 (14%)	
Sensation of the affected finger			0.02
<i>Important</i>	24 (49%)	63 (75%)	
<i>Moderate</i>	21 (43%)	15 (21%)	
<i>Not important</i>	4 (8%)	3 (3%)	
Cost of the procedure			0.16
<i>Important</i>	10 (20%)	31 (38%)	
<i>Moderate</i>	21 (43%)	26 (32%)	
<i>Not important</i>	18 (37%)	24 (30%)	
Insurance coverage			0.96
<i>Important</i>	27 (55%)	47 (58%)	
<i>Moderate</i>	13 (27%)	20 (25%)	
<i>Not important</i>	9 (18%)	14 (17%)	
Chance of survival of the replant			0.03
<i>Important</i>	32 (65%)	69 (85%)	
<i>Moderate</i>	14 (29%)	10 (12%)	
<i>Not important</i>	3 (6%)	2 (3%)	
Recovery time			0.87
<i>Important</i>	16 (33%)	29 (36%)	
<i>Moderate</i>	19 (39%)	32 (40%)	
<i>Not important</i>	14 (29%)	20 (24%)	
Time away from work			0.14
<i>Important</i>	21 (43%)	32 (40%)	
<i>Moderate</i>	13 (27%)	34 (42%)	

Country	US	Japan	P-value
<i>Not important</i>	15 (31%)	15 (19%)	
Attitudes on Body integrity			
<i>Agree (it should be preserved)</i>	3 (6%)	36 (44%)	<0.001
<i>Neutral</i>	13 (27%)	31 (38%)	
<i>Disagree (preservation is not important)</i>	33 (67%)	14 (18%)	
Estimate on Stigma towards finger amputees			
<i>Agree (there will be stigma)</i>	19 (39%)	25 (26%)	0.13
<i>Neutral</i>	19 (43%)	24 (36%)	
<i>Disagree (there will not be stigma)</i>	11 (18%)	32 (38%)	

Bolded values indicate statistical significance

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Table 4

Univariate analysis of sex

Sex	US		Japan		P-value
	Male	Female	Male	Female	
Total	14	35	41	40	
Treatment preference					0.34
<i>Replantation</i>	12 (86%)	26 (74%)	33 (81%)	36 (90%)	
<i>Revision amputation</i>	2 (14%)	9 (26%)	8 (19%)	4 (10%)	
Importance of factors in decision					
Function					0.34
<i>Important</i>	12 (86%)	27 (77%)	33 (80%)	35 (88%)	
<i>Moderate</i>	2 (14%)	7 (20%)	8 (20%)	4 (10%)	
<i>Not important</i>	0 (0%)	1 (2%)	0 (0%)	1 (2%)	
Appearance					<0.001
<i>Important</i>	3 (21%)	14 (40%)	16 (39%)	34 (85%)	
<i>Moderate</i>	3 (21%)	10 (29%)	14 (34%)	6 (15%)	
<i>Not important</i>	8 (57%)	11 (31%)	11 (27%)	0 (0%)	
Sensation of the affected finger					0.67
<i>Important</i>	8 (57%)	16 (46%)	31 (76%)	32 (80%)	
<i>Moderate</i>	5 (36%)	16 (46%)	9 (22%)	6 (15%)	
<i>Not important</i>	1 (7%)	3 (9%)	1 (2%)	2 (5%)	
Cost of the procedure					0.56
<i>Important</i>	2 (14%)	8 (22%)	14 (34%)	17 (43%)	
<i>Moderate</i>	5 (36%)	16 (46%)	12 (29%)	13 (33%)	
<i>Not important</i>	7 (50%)	11 (31%)	15 (37%)	10 (25%)	
Insurance coverage					0.57
<i>Important</i>	10 (71%)	17 (49%)	23 (56%)	25 (63%)	
<i>Moderate</i>	2 (14%)	11 (31%)	9 (22%)	10 (25%)	
<i>Not important</i>	2 (14%)	7 (20%)	9 (22%)	5 (13%)	
Chance of survival of the replant					0.29

Sex	US			Japan			P-value
	Male	Female	P-value	Male	Female	P-value	
<i>Important</i>	12 (86%)	20 (57%)		33 (80%)	36 (90%)		
<i>Moderate</i>	1 (7%)	13 (37%)		6 (15%)	4 (10%)		
<i>Not important</i>	1 (7%)	2 (6%)		2 (5%)	0 (0%)		
Recovery time			0.77				0.55
<i>Important</i>	4 (29%)	12 (34%)		13 (32%)	16 (40%)		
<i>Moderate</i>	5 (36%)	14 (40%)		15 (37%)	17 (43%)		
<i>Not important</i>	5 (36%)	9 (26%)		13 (32%)	7 (18%)		
Time away from work			0.34				0.55
<i>Important</i>	6 (43%)	15 (32%)		13 (32%)	19 (48%)		
<i>Moderate</i>	2 (14%)	11 (31%)		19 (46%)	15 (38%)		
<i>Not important</i>	6 (43%)	9 (26%)		9 (22%)	6 (15%)		
Attitudes on Body integrity							
<i>Agree (it should be preserved)</i>	2 (14%)	2 (6%)	0.69	21 (51%)	15 (38%)		0.47
<i>Neutral</i>	4 (29%)	10 (29%)		14 (34%)	18 (45%)		
<i>Disagree (preservation is not important)</i>	8 (57%)	23 (66%)		6 (15%)	7 (18%)		
Estimate on Stigma towards finger amputees							
<i>Agree (there will be stigma)</i>	4 (29%)	15 (43%)	0.71	9 (22%)	16 (40%)		0.22
<i>Neutral</i>	6 (43%)	13 (37%)		14 (34%)	10 (25%)		
<i>Disagree (there will not be stigma)</i>	4 (29%)	7 (20%)		18 (44%)	14 (35%)		

Univariate analysis by country comparing estimation of function after replantation and revision amputation between medical and nonmedical professionals.

Table 5

Professions	US		Japan		P-value
	Medical	Non-medical	Medical	Non-medical	
Total	15	34	20	61	
Estimation of function 6 months after replantation					0.73
<i>Good</i>	3 (20%)	11 (32%)	2 (10%)	13 (21%)	
<i>Moderate</i>	6 (40%)	12 (35%)	1 (5%)	14 (23%)	
<i>Not good</i>	6 (40%)	11 (32%)	17 (85%)	34 (56%)	
Estimation of function 6 months after revision amputation					0.36
<i>Good</i>	7 (47%)	15 (44%)	5 (25%)	6 (10%)	
<i>Moderate</i>	7 (47%)	11 (32%)	7 (35%)	14 (23%)	
<i>Not good</i>	1 (6%)	8 (24%)	8 (40%)	41 (67%)	
					0.07

Univariate analysis by country comparing those with medical professionals with other vacations

Table 6

Professions	US		Japan		P-value
	Medical	Non-medical	Medical	Non-medical	
Total	15 (31%)	34 (69%)	20 (25%)	61 (75%)	0.16
Treatment preference					0.71
<i>Replantation</i>	11 (73%)	27 (79%)	15 (75%)	54 (89%)	
<i>Revision amputation</i>	4 (27%)	7 (21%)	5 (25%)	7 (11%)	
Importance of factors in decision					
Function					0.29
<i>Important</i>	11 (73%)	28 (82%)	16 (80%)	52 (85%)	
<i>Moderate</i>	3 (20%)	6 (18%)	3 (15%)	9 (15%)	
<i>Not important</i>	1 (7%)	0 (0%)	1 (5%)	0 (0%)	
Appearance					0.93
<i>Important</i>	4 (27%)	13 (38%)	13 (65%)	37 (61%)	
<i>Moderate</i>	6 (40%)	6 (18%)	5 (25%)	15 (25%)	
<i>Not important</i>	5 (33%)	15 (44%)	2 (10%)	9 (15%)	
Sensation of the affected finger					0.43
<i>Important</i>	7 (47%)	17 (50%)	17 (85%)	46 (75%)	
<i>Moderate</i>	5 (33%)	16 (47%)	2 (10%)	13 (21%)	
<i>Not important</i>	3 (20%)	1 (3%)	1 (5%)	2 (3%)	
Cost of the procedure					0.02
<i>Important</i>	0 (0%)	10 (29%)	3 (15%)	28 (46%)	
<i>Moderate</i>	8 (53%)	13 (38%)	7 (35%)	18 (30%)	
<i>Not important</i>	7 (47%)	11 (32%)	10 (50%)	15 (25%)	
Insurance coverage					0.16
<i>Important</i>	8 (53%)	19 (56%)	9 (45%)	39 (64%)	
<i>Moderate</i>	4 (27%)	9 (26%)	5 (25%)	14 (23%)	
<i>Not important</i>	3 (20%)	6 (18%)	6 (30%)	8 (13%)	

Professions	US		Japan		P-value
	Medical	Non-medical	Medical	Non-medical	
Chance of survival of the replant	0.25		0.07		
<i>Important</i>	8 (53%)	24 (71%)	14 (70%)	55 (90%)	
<i>Moderate</i>	5 (33%)	9 (26%)	5 (25%)	5 (8%)	
<i>Not important</i>	2 (14%)	1 (3%)	1 (5%)	1 (2%)	
Recovery time	0.86		0.29		
<i>Important</i>	4 (27%)	12 (35%)	5 (25%)	24 (39%)	
<i>Moderate</i>	6 (40%)	13 (38%)	11 (55%)	21 (34%)	
<i>Not important</i>	5 (33%)	9 (27%)	4 (20%)	16 (26%)	
Time away from work	0.58		0.43		
<i>Important</i>	5 (33%)	16 (47%)	10 (50%)	22 (36%)	
<i>Moderate</i>	4 (27%)	9 (26%)	6 (30%)	28 (46%)	
<i>Not important</i>	6 (40%)	9 (26%)	4 (20%)	11 (18%)	
Attitudes on Body integrity					
<i>Agree (it should be preserved)</i>	0 (0%)	4 (12%)	3 (15%)	34 (56%)	<0.01
<i>Neutral</i>	4 (27%)	10 (29%)	6 (30%)	25 (41%)	
<i>Disagree (preservation is not important)</i>	11 (73%)	20 (59%)	11 (55%)	2 (3%)	
Estimate on Stigma towards finger amputees					
<i>Agree (there will be stigma)</i>	8 (53%)	12 (35%)	6 (30%)	19 (31%)	0.17
<i>Neutral</i>	7 (47%)	11 (32%)	9 (45%)	15 (25%)	
<i>Disagree (there will not be stigma)</i>	0 (0%)	11 (32%)	5 (25%)	27 (44%)	

Univariate analysis by country comparing those with younger participants with older ones

Table 7

Age	US		Japan		P-value
	Younger	Older	Younger	Older	
Total	24 (49%)	25 (51%)	41 (50%)	40 (50%)	1
Treatment preference					1
<i>Replantation</i>	21 (87%)	21 (84%)	34 (83%)	33 (83%)	
<i>Revision amputation</i>	3 (13%)	4 (16%)	7 (17%)	7 (17%)	
Importance of factors in decision					
Function					0.58
<i>Important</i>	18 (75%)	21 (84%)	35 (85%)	35 (88%)	
<i>Moderate</i>	5 (21%)	4 (16%)	5 (12%)	4 (10%)	
<i>Not important</i>	1 (4%)	0 (0%)	1 (3%)	1 (2%)	
Appearance					0.94
<i>Important</i>	9 (38%)	8 (32%)	26 (63%)	24 (60%)	
<i>Moderate</i>	6 (25%)	6 (24%)	10 (24%)	10 (25%)	
<i>Not important</i>	9 (38%)	11 (44%)	5 (12%)	6 (15%)	
Sensation of the affected finger					0.60
<i>Important</i>	13 (54%)	11 (44%)	33 (80%)	30 (75%)	
<i>Moderate</i>	8 (33%)	13 (52%)	6 (15%)	9 (23%)	
<i>Not important</i>	3 (13%)	1 (4%)	2 (5%)	1 (2%)	
Cost of the procedure					0.78
<i>Important</i>	5 (21%)	5 (20%)	17 (41%)	14 (35%)	
<i>Moderate</i>	9 (38%)	12 (48%)	13 (32%)	12 (30%)	
<i>Not important</i>	10 (42%)	8 (32%)	11 (27%)	14 (35%)	
Insurance coverage					0.86
<i>Important</i>	16 (67%)	11 (44%)	25 (61%)	23 (58%)	
<i>Moderate</i>	4 (17%)	9 (36%)	10 (24%)	9 (23%)	
<i>Not important</i>	4 (17%)	5 (20%)	6 (15%)	8 (20%)	

Age	US		Japan		P-value
	Younger	Older	Younger	Older	
Chance of survival of the replant					0.75
		0.14			
<i>Important</i>	15 (63%)	17 (68%)	36 (88%)	33 (83%)	
<i>Moderate</i>	9 (37%)	5 (20%)	4 (10%)	6 (15%)	
<i>Not important</i>	0 (%)	3 (12%)	1 (2%)	1 (2%)	
Recovery time		1			0.63
<i>Important</i>	8 (33%)	8 (32%)	16 (39%)	13 (33%)	
<i>Moderate</i>	9 (38%)	10 (40%)	14 (34%)	18 (45%)	
<i>Not important</i>	7 (29%)	7 (28%)	11 (27%)	9 (22%)	
Time away from work		0.31			<0.01
<i>Important</i>	13 (54%)	8 (32%)	22 (54%)	10 (25%)	
<i>Moderate</i>	5 (21%)	8 (32%)	16 (39%)	18 (45%)	
<i>Not important</i>	6 (25%)	9 (36%)	3 (7%)	12 (30%)	
Attitudes on Body integrity					
<i>Agree (it should be preserved)</i>	0 (0%)	4 (16%)	18 (44%)	19 (48%)	0.38
<i>Neutral</i>	9 (37%)	5 (20%)	14 (34%)	17 (43%)	
<i>Disagree (preservation is not important)</i>	15 (63%)	16 (64%)	9 (22%)	4 (10%)	
Estimate on Stigma towards finger amputees					
<i>Agree (there will be stigma)</i>	8 (33%)	11 (44%)	13 (32%)	12 (30%)	0.10
<i>Neutral</i>	10 (42%)	9 (36%)	16 (39%)	8 (20%)	
<i>Disagree (there will not be stigma)</i>	6 (25%)	5 (20%)	12 (29%)	20 (40%)	