Acculturation stress of the Japanese Brazilian living in Japan.

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Abstract

The demographic data published in 2001 by the Ministry of Justice showed a massive influx of Japanese Brazilians and their families after 1990. Their numbers increased more than fourfold from 56,429 in 1990 to 254,394 in 2000 even though the Japanese economic recession had seriously deepened. Japanese Brazilians then accounted for 15.1 percent of the entire registered foreign population and comprised the third-largest group in this category.

Acculturative stress may be high among these migrants. An American anthropologist reported that many Japanese Brazilians, who lived in the most congested housing complex, complained of "stress," and they had problems of exhaustion, nervousness, and depressive symptoms such as difficulty in sleeping, fatigue and social withdrawal. However, there little research on mental health of JBJ, but labor sociology.

The purpose of this study was to examine whether the return-migration to Japan influenced the mental health of Japanese Brazilians in Japan (JBJ) and to identify psycho-social factors related to their acculturation stress. First, the ratios of JB with potential mental health problems, as identified by the General Health Questionnaire-12 score, were compared among the following three groups by gender and age brackets: JBJ (N=293), Japanese Brazilians in Brazil (JBB) who had experience of work in Japan (i.e., returnees, N=383), and JBB who did not migrate back to Japan (i.e., non-return migrants, N=930).

It is found that JBJ males had the highest ratios of potential mental disturbance among the three groups for all the age brackets. In contrast to the males, no significant differences were found among the three female groups. With the male sample, psycho-social risk factors for mental health problems were as follows: being in the "lower" group within the category of the self-evaluated economic conditions and living for "6 years and longer" in Japan. In addition, a tertiary education level appeared to be an ameliorating factor for mental health of JBJ males. Risk factors identified in the female sample were somewhat different from those in the male group. Risk factors were "lower" in the self-evaluated economic conditions, "6 years and longer" in the length of residence, and "not having health insurance." Accordingly, it might be possible to protect the mental health of JBJ by reforming Japanese immigrant policy, improving their working conditions, and changing the present social security and health insurance policies.

INTRODUCTION

Historically, high levels of economic growth have been achieved in Japan with minimal dependence on foreign workers, however this situation has changed. The aging society, a lower birth rate, and most of all distaste for manual labor among younger workers have created a serious labor shortage in manual and unskilled work. This is especially evident in small and medium firms throughout the manufacturing, construction, and service industries. The Japanese government responded by amending the Immigration-Control and Refugee-Recognition Act in 1989 to meet small and medium-scale employers' needs, while maintaining the old principle of an exclusive immigration policy, which preserved the myth of a racially homogeneous people and Japanese cultural heritage (Weiner, 1997). This law granted Japanese Brazilians (JB) a special residence status without restriction on activities in Japan because of their Japanese lineage.

However, they have limited opportunity for employment in anything other than menial jobs that Japanese people are reluctant to take. Most JB were employed as contract workers by brokers known as "hakengaisha" in Japanese (Kajita, 2001, Kawamura, 1999, Kitagawa, 1993, Linger, 2001 pp.50-55, Sano, 1996 p.163, Watanabe, 1995). Many of them who borrowed money from the brokers for their air tickets to Japan and accommodations are not free to change workplaces until their debts are repaid.

The demographic data published in 2001 by the Ministry of Justice showed a massive influx of Japanese Brazilians and their families after 1990. Their numbers increased more than fourfold from 56,429 in 1990 to 254,394 in 2000 even though the Japanese economic recession had seriously deepened. Japanese Brazilians then accounted for 15.1 percent of the entire registered foreign population and comprised the third-largest group in this category. Japanese Brazilians returning to Japan (JBJ) have concentrated in two regions: the Tokai region on the central Pacific coast, mainly in the Aichi, Shizuoka, and Mie prefectures and the Kanto region around the Tokyo metropolitan area, which includes Gunma, Tochigi, Saitama, and Kanagawa prefectures.

In general, mental health problems of ethnic minority groups have been increasing in host countries experiencing an influx of migrants. Especially, depression considered to be a pervasive mental health problem (e.g. Berry et al., 1997, Chun et al., 1998, Vega et al., 1991). However, very little attention has been paid to the mental health of ethnic minorities residing in Japan, not only to newcomers such as Japanese Brazilians, Japanese Peruvians, and Japanese returnees from Mainland China, but also Koreans and Chinese who have resided there for a longer period (e.g. Ebata et.al, 1996, Morioka et al., 2000, Otsuka et al., 1998, Tsuji et al., 2000).

Acculturative stress may be high among these migrants. Linger (2001, p46)

reported that many Japanese Brazilians, who lived in the most congested housing complex, complained of "stress," and they had problems of exhaustion, nervousness, and depressive symptoms such as difficulty in sleeping, fatigue and social withdrawal. In this study major risk factors for depression and other mental health problems include: length of residence, occupation, education level, type of health insurance, experience of sickness or injury, financial conditions, living with someone or alone, intention to return to Brazil sooner, Japanese language proficiency, and motivation for migration.

This study had two purposes: 1) To examine the mental health status of Japanese Brazilians who stayed in Japan (JBJ), in comparison to Japanese Brazilians residing in Brazil (JBB) who had experience of work in Japan (i.e., returnees), and Japanese Brazilians in Brazil who did not migrate back to Japan (i.e., non-return migrants), and 2) To identify mental health risk factors for JBJ by examining demographic, socioeconomic, and acculturation correlates of mental health.

SUBJECTS AND METHODS

Data Source

Two sets of data obtained from the different surveys were used. One was a data set from JBJ and the other was a data set from those who were living in Brazil. Thus, the participants are restricted to JB, i.e. Japanese descendants of Japanese immigrants to Brazil, or Nikkeijin, as in previous studies[1] (e.g., Lesser, 1999, pp.125-126).

Japanese Brazilians in Japan (JBJ). Data from 293 JBJ were collected from October to November 1998, mainly in the northern Kanto region, which has the second-highest concentration of JBJ. Geographically, it is located about 40 to 100 km north of the Tokyo metropolitan area where several large automobile and electronic plants, and also their small and medium-size manufacturing affiliates employ many JB (Yamamoto et al., 1995). We used key informants to distribute copies of the questionnaire; these were reliable people who had close contact with JBJ: Catholic clergymen, teachers of Japanese language classes, a JB director of a private nursery school, and a manager of an employment information agency which provided foreign workers with information on job opportunities. The author and some collaborators also asked people at a Brazilian shopping center to respond to the questionnaire. The proportions of participants by these routes were 38.6% at the Brazilian shopping center, 35.5% through the employment information agency, 12.3% from churches, 11.3% from Japanese language classes, and 2.4% at the private nursery school.

Japanese Brazilians in Brazil (JBB). To identify the mental health status of JBJ, we employed samples of JBB as reference groups, because they did have a similar Japanese immigrant background and all had lived in Brazil. The data from the JBB were collected through surveys in five regions in Brazil during 1994 and 1995, in

cooperation with the local Japanese-Brazilians Cultural Associations, schools in each area, and Japanese Brazilian professors in Maringá University and Londrina University. The survey sites were the cities of Bastos in São Paulo State; Assaí, Maringá, and Londrina in Paraná State; and Campo Grande in Mato Grosso do Sul State. These places are well known as Japanese Brazilian ethnic communities in Brazil, where many Japanese descendents continue to live today and many returned to Japan (see Kitagawa, 1993, São Paulo Jinbun Kagaku Kenkyujo, 2002, Mita, 2002).

Participants were recruited in the following ways; We informed the members of the JB associations about our survey through their officials and gathered voluntary participants at each "kaikan", i.e. a JB association's building; We visited major ethno-cultural events (e.g., Bon-Odori, Japanese week, "Kenshin", i.e. periodic health checks provided by JB medical staffs) and recruited participants face to face; visited classrooms in schools and asked JB students to hand a copy of the questionnaire to one of their guardians or adults at their home, then completed questionnaires were returned. To recruit younger generations, we asked two Japanese Brazilian professors to distribute copies of our questionnaire to Japanese Brazilian students through Japanese classes and Japanese Brazilian students' associations in their universities. The object of our survey was described to them as an inquiry of health and lifestyles of JB to find out how they had adapted in Brazilian society. Depending on circumstances, both a self-administered method and a collective instruction method were employed – the latter for people who lack literacy in Japanese or Portuguese or who were interviewed in groups. This JB in the Brazil sample was divided into two groups: JBB returnees who had returned to work in Japan but now resided in Brazil, and JBB non-returnees who had never worked in Japan and had remained in Brazil for the last ten years before our survey periods. To control for the age factor when comparing the JBB groups with the JBJ, the study used a substantial part of the JBB data for respondents who were of the same age range (i.e., 18 to 59 years) as the JBJ respondents. Consequently, the size of JBB sample in this study was 1,313 of the entire JBB sample (N= 1,765).

Measurements

A structured questionnaire was written in Japanese and translated into Portuguese. All items in the Japanese version, except for the General Health Questionnaire (GHQ), were translated into Portuguese by a bilingual Japanese Brazilian researcher and checked independently by another bilingual Japanese Brazilian medical doctor. For JB in Brazil the Japanese version was used with 19% of the JBB returnees and 8% of the JBB non-returnees, and Portuguese on other occasions. Only the Portuguese version was used for JB in Japan.

Mental Health Measure - Dependent variable. The General Health Questionnaire (GHQ), a self-administered instrument designed to identify non-psychotic psychiatric disturbance in the community (Goldberg, 1972), was used.

The GHQ has been used worldwide, and versions exist in a very large number of languages including both Japanese and Brazilian Portuguese (McDowell et al., 1996). The GHQ-12 Portuguese version was developed by Mari and Williams (1984) and the reliability and validity of this scale have been confirmed (Mari et al., 1985, Sen et al., 1986), along with the Japanese version that has also been validated (Kitamura, et al., 1989). The GHQ was coded as 0-0-1-1, which indicated each problem was present (1) or absent (0), according to Goldberg's recommendation. One more advantage of this method is that it can identify potential cases of psychological disturbance (i.e. depression, anxiety, and social impairment). Therefore, we consider that the GHQ can detect the psychological distress commonly experienced by JBJ (see Linger, 1999). For the GHQ-12, a score of 3 or more defines caseness[2] in both versions (Fukunishi, 1998, Mari et al., 1985).

The GHQ-12 showed high internal consistency in this sample (Cronbach's α=0.84). When only one item of the 12 was not answered, a mean value calculated by the completed 11 items was given to the missing item as its estimated value (Bowling, 1997).

Demographic and Independent Variables. The following demographic and independent variables were measured through self report: gender, age, nationality, socioeconomic factors including education level, self-evaluated economic conditions, presence of someone living with the respondent, occupation, having health insurance, immigration information such as the length of time residing in Japan, motivation for migration and intention to return to Brazil, experience of sickness or injury, and Japanese language proficiency. Each variable was categorized as 0 or 1. Additionally, in this study we examined their ethnicity in terms of self-perception, however, the distributions were radically skewed, and thus we did not use it as an independent variable in analyses.

Statistical Analyses

First, to compare the ratios of caseness among three groups, i.e., JBJ, JBB returnees, and JBB non-return migrants, by age and gender, chi-square tests were conducted. Second, because the dependent variable was dichotomous and linear relationships between the dependent variable and independent variables were not necessarily assumed as well, multiple logistic regression analyses were employed to determine the odds ratios (ORs) and 95% confidence intervals (CI) of the caseness for the independent variables. The models were simplified in a stepwise fashion by removing variables that had a p value of greater than 0.20. Due to the exploratory nature of this study, a stepwise procedure and a p value greater than 0.05 were employed to find effective variables. Validity and fitness of models were evaluated statistically by the Score test, and the Hosmer and Lemeshow test, respectively.

RESULTS

Characteristics of the Sample

Japanese Brazilians residing in Japan (JBJ)

First, in examining our JBJ sample population (N=293) through demographic and socioeconomic variables, 166 (56.7%) participants were male and 127 (43.3%) were female with the ages ranging from 18 to 59 years. The participants were then divided into three age range categories in order to compare similar sample sizes among the group: 18 to 25 years (32.4%), 26 to 34 years (36.9%), and 35 to 59 years (30.7%). Most of the participants (94.9%) were of Brazilian nationality; only 0.7% were naturalized as Japanese or Japanese nationality; dual nationality holders accounted for 2.7%; and the remaining 0.7% held other types of passports.

Table 1

Demographic and Independent variables of the Japanese Brazilians residing in Japan (N=293)

Demographic and Independent Variables	Male (N=166)	Female (N=127)	Total (N=293)
	%	%	%
Age			
18-25	27.7	38.6	32.4
26-34	41.6	30.7	36.9
35-59	30.7	30.7	30.7
Nationality			
Brazil	95.8	93.7	94.9
Japan	0.6	0.8	0.7
Double	2.4	3.1	2.7
other	1.2	0.0	0.7
NA	0.0	2.4	1.0
Education level			
primary	39.2	37.0	38.2
secondary	47.6	45.7	46.8
tertiary	13.3	17.3	15.0
Self-evaluated economic conditions			
lower	53.6	53.5	53.6
middle or upper	46.4	46.5	46.4
Presence of someone living together			
living alone(no)	26.5	7.9	18.4
living with someone(yes)	64.5	89.0	75.1
NA	9.0	3.1	6.5

Table 1 (Continued)

Type of work			
factory or construction worker	48.2	40.2	44.7
others	48.2	55.9	51.5
NA	3.6	3.9	3.8
Having health insurance			
yes	58.4	66.9	62.1
no	38.0	29.1	34.1
NA	3.6	3.9	3.8
Length of residing in Japan			
＜3 years	36.7	34.6	35.8
3-5 years	25.3	29.1	27.0
6 years or longer	36.1	34.6	35.5
NA	1.8	1.6	1.7
Push motivation: Dissatisfaction to Brazil economy and social conditions			
yes	42.8	33.9	38.9
no	52.4	65.4	58.0
NA	4.8	0.8	3.1
Pull motivation: making money for a better life			
yes	56.0	50.4	53.6
no	39.2	48.8	43.3
NA	4.8	0.8	3.1
Return to Brazil as soon as possible			
yes	33.1	36.2	34.5
no	66.9	63.8	65.5
Experience of sickness or injury in Japan			
yes	43.4	42.5	43.0
never	56.6	57.5	57.0
Proficiency of speaking Japanese			
fluent or good	40.9	44.9	42.6
a little	38.0	26.0	32.8
incapable	21.1	29.1	24.6

Note1: NA= No Answer

Note2: The numbers in the table are percentages.

Level of education was a three-category classification: “primary,” i.e., junior high school or lower education level (38.2%); “secondary,” i.e., high school (46.8%); and “tertiary,” i.e., college, university, or higher education level (15.0%). In the Brazilian education system it ordinarily takes eight years to complete the primary level,

three to four years for the secondary, and four to six years for the tertiary. The economic condition of household was self-evaluated in degrees of economic strain. Five categories combined to a dichotomous-category classification because the distribution was skewed: “middle or upper” (46.4%), i.e. average, well-off, and better-off financial conditions, and “lower” (52.2%), i.e. tight and tighter financial situation. The presence of someone living with the respondent, such as family members, cohabiters, or relatives, was dichotomized: “living with someone” (75.1%) and “living alone” (18.4%). Health insurance coverage was a two-category classification: “Yes” (62.1%) and “No” (34.1%).

Concerning their occupations, the number of participants engaged in factory and construction work was 44.7% of the total. Those with jobs other than the above, for example sales work, clerical work, professional work, comprised 47.4% of the total.

Next, regarding the background of migration, the length of residence in Japan ranged from 0 (i.e., up to one month) to 199 months (average: 51.3+/-33.2 months) and was categorized into three groups: “less than 3 years” (35.8%), “3 to 6 years” (27.0%), and “6 years and longer” (35.5%). Asked if they migrated “with the purpose of making money to improve their standard of living”, a majority stated this was an attraction factor (55.6%). The other factor was a relatively passive motivation pushing them out of Brazil to Japan. They were asked if they migrated because of “dissatisfaction with the socio-economic situation in Brazil,” and respondents who agreed with this comprised 38.9% of the participants. However, these motivations were not mutually exclusive. In response to the question “Do you want to go home or stay in Japan?,” 34.5% of the participants answered that they “want to go home as soon as possible” and those who did not intend to return to Brazil in the near future comprised 65.5% of the participants. We inquired of their experience of sickness or injury in Japan because they tended to be exposed to dangerous occupational environment and acculturation stress. Then the response was dichotomized: “Yes” (43.0%) or “Never” (57.0%). The study employed a self-assessment of Japanese fluency based on speaking ability, with three categories: “fluent or good” (42.7%), “a little” (32.8%), and “incapable” (24.6%). In addition, as for perceived Brazilian ethnicity, 92.6% of the JBJ males and 94.3% of the JBJ females had awareness of their Brazilian ethnicity, apart from non-respondents in the question.

Japanese Brazilians residing in Brazil (JBB)

As for demographic information of the sample of JBB, who answered all three key variables such as gender, age, and experience of work in Japan (N=1,313), 47.9% of the total JBB participants were male; 52.1% were female (Table 2). Among them, 88.4% were of Brazilian nationality; 4.6% were Japanese nationality; dual nationality holders accounted for 4.1%. The proportions in the three age categories were 27.0% for “18 to 25 years”, 13.6% for “26 to 34 years”, and 59.1% for “35 to 59 years”.

"Primary" education level comprised of 20.6%; "secondary" was 18.0%; and "tertiary" level was 59.8%. Most of them (60.0%) engaged in a job for income. Major occupations in the working male sample (N=481) included: agriculture management (31.2%), an employee in a private company (11.2%), a public service (9.6%). On the other hand, 28.8% of the working female (N=306) were personnel in public services; the second highest was an employee in a private company (14.4%); and the third was a piecework at home (8.8%). Sixteen point four percent of the total JBB engaged in housework or household chores, however, the proportion was much higher in the females than in the males ($p<0.0001$). Concerning the cities where they lived, Maringá and Londrina in Paraná State had higher proportion corresponding to their large population of Japanese Brazilian (33.2% and 33.9%, respectively). JBB who had experience of work in Japan occupied 29.2%. As for perceived Brazilian ethnicity, fairly similar to the JBJ sample, larger parts of JBB males and females had self-awareness of being Brazilian: 89.2% and 88.5%, respectively.

Table 2

Background data of the Japanese Brazilians residing in Brazil (N=1,313)[1)].

Characteristics	Male (N=629)	Female (N=684)	Total (N=1,313)
	%	%	%
Nationality			
Brazil	87.4	89.3	88.4
Japan	4.6	4.5	4.6
Double	4.9	3.4	4.1
Other	1.6	0.6	1.1
NA	1.4	2.2	1.8
Age			
18-25	23.1	30.6	27.0
26-34	12.4	15.4	13.9
35-60	64.6	54.1	59.1
Education level			
Primary or lower	20.2	21.1	20.6
Secondary	19.1	17.0	18.0
Tertiary	58.7	60.8	59.8
NA	2.1	1.2	1.6

Table 2 (Continued)

Job			
Yes	76.6	44.7	60.0
Housework/Housewife	1.4	30.1	16.4
Student	16.4	22.5	19.6
No	0.6	1.8	3.2
NA	0.8	0.9	0.8
City			
Assaí	12.7	8.8	10.7
Bastos	21.0	12.7	16.7
Campo Grande	5.4	5.7	5.6
Maringá	31.2	35.1	33.2
Londrina	29.7	37.7	33.9
Experience of work in Japan			
Yes	32.4	26.2	29.2
No	67.6	73.8	70.8

Note: NA= No Answer

[1)] The number of Japanese Brazilians residing in Brazil (JBB) whose ages ranged from 18 to 60 and responded to three key variables, gender, age, and their experience of work in Japan, was 1,313.

Comparison of the ratios of caseness among three Japanese Brazilian groups

For the male respondents, JBJ had the highest ratios of caseness among the three groups in all the age brackets. In addition, there was no difference between JBB returnees and JBB non-return migrants with regard to ratios of caseness in every age bracket. In contrast to the males, no significant differences were found among the three groups of females in any of the age brackets (Table 3).

Concerning the association of depressive symptoms with gender, the ratios of caseness were slightly lower for the males than for the females in the samples of JBB returnees and JBB non-return migrants. The situation was reversed in the case of the JBJ, for all the ratios of caseness were slightly higher for the males compared to the females in all three age categories. However, none of these differences were statistically significant.

Multiple logistic regression analyses for JBJ

All the independent variables were evaluated by multiple logistic regression models with caseness as the dependent variable. As the significant variables related to mental health status were expected to be different by gender, the model was examined

by gender (Table 4).

Table 3

Comparisons of ratios of caseness identified by GHQ-12 among three Japanese-Brazilian Groups by age and gender.

Age		Male			Chi-square test
		JBJ	JBB returnee[1)]	JBB non-returnee[2)]	
Total	Caseness(%)	67(41.6%)	37(19.3%)	80(19.2%)	p<0.0001
	Total(%)	161(100%)	192(100%)	416(100%)	
18-25	Caseness(%)	22(47.8%)	9(24.3%)	32(30.5%)	p=0.048
	Total(%)	46(100%)	37(100%)	105(100%)	
26-34	Caseness(%)	27(40.3%)	4(13.8%)	11(22.4%)	p=0.015
	Total(%)	67(100%)	29(100%)	49(100%)	
35-59	Caseness(%)	18(37.5%)	24(19.0%)	37(14.1%)	p=0.001
	Total(%)	48(100%)	126(100%)	262(100%)	
Age		Female			Chi-square test
		JBJ	JBB returnee[1)]	JBB non-returnee[2)]	
Total	Caseness(%)	44(35.2%)	55(32.0%)	137(28.1%)	p=0.248
	Total(%)	125(100%)	172(100%)	488(100%)	
18-25	Caseness(%)	22(45.8%)	10(41.7%)	64(35.0%)	p=0.351
	Total(%)	48(100%)	24(100%)	183(100%)	
26-34	Caseness(%)	11(28.9%)	14(32.6%)	11(18.3)	p=0.225
	Total(%)	38(100%)	43(100%)	60(100%)	
35-59	Caseness(%)	11(28.2%)	31(29.5%)	62(25.3%)	p=0.699
	Total(%)	39(100%)	105(100%)	245(100%)	

[1)] JBB returnee indicates Japanese Brazilians in Brazil who have been to Japan for labor within the last ten years and staying in Brazil at the time of research.

[2)] JBB non-returnee indicates Japanese Brazilians who continue to reside in Brazil.

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In the male sample, after stepwise selection, “tertiary” in education level, “6 years and longer” in the length of residence in Japan, the “lower” category in the self-evaluated economic conditions, “yes” in the push motivation, and “incapable” in Japanese fluency retained in the model since the p values were smaller than 0.20. The

"type of work" factor was not retained in this model and therefore its effect on mental health was considered to be indirect. Table 4 indicated that the "lower" group in the self-evaluated economic conditions and the "6 years and longer" resident group were associated with statistically significant higher risks of caseness (ORs=3.88, p=0.0007, and ORs=2.46, p=0.028, respectively). In contrast, "tertiary" in education level might be an ameliorating factor to reduce mental health risk, but it was not statistically significant (ORs=0.35, p=0.067). As for validity and fitness of the model, the Score test showed that these four variables selected in this model could predict caseness well at a highly significant level (p=0.0002). In addition, the Hosmer and Lemeshow test indicated a good fit between estimates and observations in the dependent variable because it could not reject a null hypothesis (p=0.824).

Table 4

Odds ratios derived from stepwise multiple logistic regression analyses predicting GHQ-12 caseness by gender in the JBJ sample.

Variables	JBJ Male (N=137)		JBJ Female (N=113)	
	OR (95% CI)	p value	OR (95% CI)	p value
Education level				
primary or lower	1.00			
secondary	(dropped)		(dropped)	
tertiary	0.35(0.110,1.08)	p=0.067		
Length of residence in Japan				
＜3 years	1.00		1.00	
3-5 years	(dropped)		(dropped)	
6 years or longer	2.46(1.11,5.46)	p=0.028	3.40(1.32,8.78)	p=0.011
Having health insurance				
yes	(dropped)		0.37(0.14,1.01)	p=0.051
no			1.00	
Presence of someone living together				
living alone(no)	(dropped)		4.01(0.72,22.25)	p=0.112
living with someone(yes)			1.00	
Self-evaluated economic conditions				
lower	3.88(1.78,8.49)	p=0.0007	7.78(2.81,21.57)	p<0.0001
middle or upper	1.00		1.00	
Push motivation: Dissatisfaction to Brazilian economy and social conditions				
yes	1.69(0.78,3.67)	p=0.183	(dropped)	
no	1.00			

Table 4 (Continued)

Proficiency of speaking Japanese			
fluent or good	1.00		
a little	(dropped)		(dropped)
incapable	2.18(0.83,5.72)	p=0.112	
Statistics			
Score test	p=0.0002		p<0.0001
Hosmer and Lemeshow test	p=0.824		p=0.791

Note 1. References were showed as 1.00. To display the results of both male and female in one table, some variables and categories which had a greater p value than 0.20 included.

Note 2. OR=adjusted odds ratio; CI= Wald confidence interval.

The risk factors of caseness clarified in the female sample were expected to be different, to some degree, from those of the males. Since the *p* values were smaller than 0.20, the four categories such as the "6 years and longer" in the length of residence in Japan, the "yes" in having health insurance, the "living alone," and the "lower" in the self-evaluated economic conditions were retained. Among these factors, the most influential in risk escalation of poor mental health was the "lower" in the self-evaluated economic conditions (ORs=7.78, p<0.0001), and this result was similar to that of the male sample. Furthermore, those who were in the category of "6 years and longer" in the length of residence in Japan had a significantly higher risk of disturbed mental health status (ORs=3.40, p=0.011), and the result was similar to that of the males. On the other hand, having health insurance was a positive factor that could reduce the risk of poor mental health (ORs=0.37, p=0.051). The significance of "experience of sickness or injury in Japan" found in the bivariate analysis disappeared in this model; its effect on their mental health was moderated by the other factors. Regarding the validity and fitness of the model, the results of the Score test (p<0.0001) and the Hosmer and Lemeshow test (p=0.791) showed that the model performance was satisfactory.

CONCLUSION

On the mental health problems of Japanese Brazilians in Japan, a mere handful of studies have been conducted, such as the ethnographic study by Linger (2001), and the psychiatric epidemiological studies by Otsuka et al. (1998) and Tsuji et al. (2001). Linger described some episodes of the mental stress, health problems, and injuries mostly due to the working conditions, but did not examine prevalence or causes of JBJ

mental health problems further owing to the nature of its qualitative methodology. For the latter studies, because of the simpler statistical analyses or lack of control for the confounding factors, these studies appeared not to extract conclusive results on differences of a depression scale between JBJ and JBB, and the risk factors for mental health problems of JBJ. As oppose to these studies, we provided the probable statistical evidence that more JB males in Japan in particular suffered from psychological disturbances or distress than the other JB male groups, but not females.

We also found some risk factors for mental health problems in JBJ by gender using the multiple logistic regression analyses. Hence, it might be possible to protect the mental health of JBJ by reforming Japanese immigrant policy, improving their working conditions, and changing the present social security and health insurance policies. However, we cannot deny a possibility of our missing other significant factors affected their mental health due to attrition bias. According to these results,

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NOTES

1. The amended Immigration-Control and Refugee-Recognition Act also permits non-Japanese Brazilians, such as spouses of Japanese nationals or permanent residents, to engage in any jobs without restriction in Japan. Therefore, a considerable number of Brazilians without Japanese ancestors entered Japan and secured employment. However, we excluded them from our survey primarily because of the differences of ethnic backgrounds. However, “nikkeijin” becomes an unclear concept as racially mixed Japanese Brazilians increase in number. According to the report of São Paulo Jinbun Kagaku Kenkyujo (1988, p.35), in general, ratios of mestiçagem or ethnic mixed people increased in the JBB population; i.e., 6.0% in the second generation and 42.0% in the third generation. We lack of such information upon the present study subjects.
2. The mental health measures that had established cutoff points were often employed to identify the individuals with the symptom level similar to those of the patients under treatment. According to Vega et al.(1991), those individuals identified by the standardized mental health measures, such as CES-D or GHQ, can be said to express “caseness.”

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