Health Status in Japanese Population : Results from Japanese EuroQol Study

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Abstract

The EuroQol (EQ-5D) is a generic measure of health status and its official Japanese version was developed in May 1998. We planned an interview survey to obtain data on the health status of Japanese general population. In this article, we present the summary results of the self-reported health status.

A total of 621 interviews were completed. The results showed that the response was skewed to "no problems" on all five dimensions. A "moderate problem" on at least one dimension was reported by a quarter of the respondents, but only 2.1 % reported any "extreme problem". The rates of reported problems tended to be higher for those who were aged, had experience of serious illness, received lower education, had retired, or were doing housework. Our results were basically similar to previous studies made in the UK and Kyoto.

As the age/sex norms have been established for the Japanese general population in this survey, the Japanese EuroQol can be used extensively in Japan for comparing the health status of patient groups with the norm, and through this process, evaluate the appropriateness of health services.

Keywords : EuroQol, Health-related quality of life, Self-reported health

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1. INTRODUCTION

The EuroQol is a generic measure of health status developed by the EuroQol Group and was originally standardized for use in England, the Netherlands, Norway, Finland, and Sweden (EuroQol Group, 1990). The original EuroQol classification, which included six dimensions, was revised to include just five dimensions in October 1991 (Brooks, 1996). This version is called the EQ-5D and is now used widely by an increasing number of clinical researchers as well as health services researchers. There are several reports on the validity of the EQ-5D in the published literature (Brazier *et al.*, 1993 ; Essink-Bot *et al.*, 1997). The reliability of the EQ-5D instrument has also been tested (Van Agt *et al.*, 1994), as has its application in various patient groups (Hurst *et al.*, 1994 ; Sculpher *et al.*, 1996 ; Hollingworth *et al.*, 1995). Translations have been undertaken into several languages including Spanish, Catalanian, French, German, Italian, and Danish, and the official Japanese version of the EQ-5D instrument was developed in May 1998 (Japanese EuroQol Translation Team, 1998).

The EQ-5D instrument defines health in terms of five dimensions : mobility, self care, usual activities (work, study, housework, family or leisure), pain/discomfort, and anxiety/depression. Each dimension is subdivided into three categories, that of no problem, a moderate problem, and an extreme problem. Combinations in the response to these categories define a total of 243 health states. Two additional states 'dead' and 'unconscious' are also included which gives a total of 245 states (Kind, 1996).

The 'clinical version' of the EQ-5D instrument comprises two pages ; on the first page respondents record the extent of their problem in each of the five dimensions (5D) and on the second page they record their perception of their overall health on a visual analogue scale (VAS). The end-points of the VAS are labeled 'best imaginable health state' and 'worst imaginable health state' anchored at 100 and 0, respectively. The clinical version is designed to be self-completed, and short enough to be suitable for use as part of battery of health-related quality of life (HRQOL) measures.

For the purpose of obtaining VAS valuations for hypothetical health states, an additional section is included in the 'full version'. The section includes descriptions of 16 additional health states, in 2 groups of 8, which are presented over two consecutive pages.

The objectives of the Japanese EuroQol Tariff Project were to obtain the data on the valuation of health status from the Japanese general population by an interview survey and to develop a Japanese social tariff where all possible 5D answers are listed together with their corresponding one-dimensional HRQOL (health-related quality of life).

Each interview consisted of the following :

- (1) the EuroQol full version, which consists of :
 - (a) self-reported health in the 5D,
 - (b) self-reported health on VAS,
 - (c) VAS evaluations of 14 hypothetical health states expressed in 5D, and
 - (d) socio-economic background questions ;
- (2) ranking of 19 hypothetical health states expressed in 5D, and

(3) TTO (Time Trade Off) evaluation of 17 of these 19 hypothetical health states.

In this paper, the summary results of the self-reported health is presented. Papers on the other aspects of this study will be published separately.

2. SUBJECTS AND METHODS

Those aged 20 and over in three prefectures, i.e. Saitama, Hiroshima and Hokkaido, were selected for interview. No upper age limit was stipulated. A two-stage random sampling was made by first selecting the smallest geographical unit within each municipality and then selecting individuals within each unit so that the total would reflect the demographic structure of the general population. In total, 336 in Saitama, 336 in Hiroshima, and 300 in Hokkaido were selected. Of those, interviews were made on 158 (47%), 199 (59%) and 148 (49%). Thus, in two of the three areas, the response rates failed to reach a majority. In these two areas, additional subjects were recruited by randomly selecting those living in the same geographical unit with the same age and sex characteristics as that of the non-respondents. These additional respondents totaled 45 in Saitama and 71 in Hokkaido. The analysis was made with these additional respondents so that the total number sampled would be 621. There was one missing answer concerning the age.

During the interview, respondents completed the EQ-5D questionnaire (self-reported health and hypothetical VAS) and provided information on their age, sex, experience of severe illness, education, employment status and smoking behavior. The interviews took place in August and September, 1998.

The analysis focused on comparing the differences among the population subgroups. χ^2 tests were used for the analysis of the descriptive profile data, and Student's t test and ANOVA were used to test for subgroup differences in the VAS data. Since we have followed the research design which was developed for the UK general population survey (Kind *et al.*, 1996), we report our findings in a similar manner.

3. RESULTS

The responses for 5D questions were skewed, with a median response of 'no problem' for all dimensions. A "moderate problem" on at least one dimension was reported by 25.0% of respondents, whereas only 2.1% of respondents reported any "extreme problem" (Table 1). Problems were most often recorded in the pain/discomfort dimension (20.0%). In subsequent analyses, moderate and extreme categories were combined for each dimension.

The mean state of health recorded on the VAS was 77.8 (SD 16.0).

Health and age

The rates of reported problems increased with age for each dimension with several exceptions (Table 2).

Figure 1 shows the mean VAS scores for each age group and the 95% confidence interval. Mean values did not differ significantly in the 20 to 69 age ranges but decreased significantly

Table 1 Numbers (percentages) of respondents reporting a problem in each EQ-5D dimension

5D	Problem		
	Moderate	Extreme	Any
Mobility	45(7.2)	0	45(7.2)
Self care	11(1.8)	0	11(1.8)
Usual activities	29(4.7)	3(0.5)	32(5.2)
Pain/discomfort	114(18.4)	10(1.6)	124(20.0)
Anxiety/depression	48(7.7)	5(0.8)	53(8.5)
Any dimensions	152(24.5)	13(2.1)	155(25.0)

n=621

Table 2 Numbers (percentages) of respondents reporting any problem by age group and sex

EuroQol dimension	Age group (years)						
	20-29	30-39	40-49	50-59	60-69	70-79	80 and over
Mobility							
All Respondents	1(1.1)	2(1.9)	1(0.8)	10(7.4)	12(11.1)	15(32.6)	4(36.4)
Men	1(2.5)	1(1.9)	0	4(7.4)	8(14.3)	5(25.0)	0
Women	0	1(1.8)	1(1.2)	6(7.3)	4(7.7)	10(38.5)	4(44.4)
Self care							
All Respondents	1(1.1)	0	1(0.8)	2(1.5)	2(1.9)	4(8.7)	1(9.1)
Men	1(2.5)	0	0	1(1.9)	0	1(5.0)	0
Women	0	0	1(1.2)	1(1.2)	2(3.8)	3(11.5)	1(11.1)
Usual activities							
All Respondents	2(2.2)	0	2(1.7)	7(5.1)	9(8.3)	9(20.0)	3(27.3)
Men	1(2.5)	0	1(2.5)	2(3.7)	5(8.9)	3(15.0)	0
Women	1(2.0)	0	1(1.2)	5(6.1)	4(7.7)	6(23.1)	3(33.3)
Pain/discomfort							
All Respondents	9(10.0)	8(7.4)	19(15.7)	33(24.3)	26(24.1)	24(52.2)	5(45.4)
Men	4(10.0)	2(3.8)	3(7.5)	7(13.0)	12(21.4)	6(30.0)	1(50.0)
Women	5(10.0)	6(10.9)	16(19.8)	26(31.7)	14(26.9)	18(69.2)	4(44.4)
Anxiety/depression							
All Respondents	6(6.7)	7(6.5)	9(7.4)	10(7.4)	10(9.3)	10(21.7)	1(9.1)
Men	1(2.5)	2(3.8)	3(7.5)	6(11.1)	3(5.4)	3(15.0)	0
Women	5(10.0)	5(9.1)	6(7.4)	4(4.9)	7(13.5)	7(26.9)	1(11.1)

n=620

for respondents aged over 70.

Health and sex

Women aged 70 and over tended to report higher rates of problems than did men of the same age (Table 2). This difference in rates was found across all age groups on the pain/discomfort dimension, with women reporting significantly higher rates than men. However, no significant differences were found in the VAS scores for men and women.

Health and experience of severe illness

The rates of problem reporting were significantly higher for the respondents who had experienced serious illness in all dimensions except anxiety/depression. Respondents who

Figure 1 Mean VAS scores for each age group

had experienced serious illness in their family reported significantly higher rates of problems with pain/discomfort and anxiety/depression. Those who had taken care of others reported a significantly higher pain/discomfort problem.

The mean VAS score of people who had experienced serious illness was significantly lower than for people who did not (70.8 and 79.1 respectively, $P<0.01$). The score of those who had experienced serious illness in their family was also significantly lower than for people who did not (75.8 and 78.9 respectively, $P<0.05$). There were no significant differences between respondents who had taken care of others and those who had not.

Health and education

Respondents who had received higher education reported significantly lower rates of problems in all dimensions than did those who had received no education after leaving junior high school. A similar pattern was seen on the VAS score, with significantly higher scores reported for those who had received higher education ($P<0.05$). There were no significant differences between respondents who had college or equivalent degree and those who had not in all dimensions except that of pain/discomfort.

Health and main activity

Higher rates of problems were reported by respondents who were retired or doing housework (Table 3). On the other hand, students reported no problems in all dimensions.

The mean VAS scores of those in employment or self employment was significantly higher than those who had retired or were doing housework (80.4, 71.6 and 75.5 respectively, $P<0.05$ by Scheffe F test).

Table 3 Numbers (percentages) of respondents reporting problems, by employment

Employment	No. of respondents	EuroQol dimension				
		Mobility	Self-care	Usual activities	Pain/discomfort	Anxiety/depression
in employment or self employment	307	11 (3.6)	2 (0.7)	7 (2.3)	36 (11.7)	18 (5.9)
retired	52	12 (23.1)	1 (1.9)	6 (11.5)	21 (40.4)	4 (7.7)
housework	190	18 (9.5)	6 (3.2)	11 (5.8)	54 (28.4)	22 (11.6)
student	17	0	0	0	0	0
seeking work	6	0	0	1 (16.7)	2 (33.3)	1 (16.7)
other	49	4 (8.2)	2 (4.1)	7 (14.3)	11 (22.4)	8 (16.3)

n=621

Health and smoking behavior

Smokers reported a lower rate of mobility problem compared with non-smokers or ex-smokers. There were no significant differences among smokers, ex-smokers and non-smokers in other dimensions and mean VAS scores.

4. DISCUSSION

Our survey results show that the reported 5D and VAS values differ significantly according to the respondents' characteristics. In general, our results reflected that coming from the previous UK study.

Figure 2 compares the results for the 5D in our study, to that of the UK (Kind *et al.*, 1996), and of the mail survey made by Tsuchiya in Kyoto (Tsuchiya *et al.*, 1998), according to age and sex. Our results were similar to that obtained in Kyoto, apart from the pain/discomfort, anxiety/depression dimensions in the younger age groups. However, when compared with the UK study, both Japanese studies showed lower rates for mobility and usual activities. Whether the differences between the Japanese and UK results could be explained by, 1) a real difference in health states, 2) a selection bias of the survey, 3) subtle differences in the translated form, needs to be explored in the future.

Figure 3 compares the results of our survey to that of the Comprehensive Survey of Living Conditions of the People on Health and Welfare 1995 which is conducted every three years (Statistics and Information Department, 1997). The items of the national survey include the following health-related problems which impact on daily life: "Going outside (limitations in times and distance)", "Activities of daily living (getting up in the morning, dressing, eating, bathing etc.)", and "Work, housework and studying (limitations in times and distance)". These items are similar to "Mobility", "Self-care" and "Usual activity" of the EQ-5D. In this figure, the ratios of those responding "Yes" to these three problems in the national study are compared to the ratios reporting some problems in "Mobility", "Self-care", and "Usual activity", with the age groups adjusted to that of the former. For the aged, when the ratios for "Going

Figure 2 Disability rates from three EQ-5D surveys

Figure 3 Disability rates from our survey and 1995 National Basic Survey on Living Conditions

outside" are compared with "Mobility", "Activities of daily living" with "Self-care", and "Work, housework and studying" with "Usual activity", they are higher for the EQ-5D. This could be explained by the fact that whereas the EQ-5D has a rating scale of three categories, the national survey has a yes or no scale of two levels, which may have led to lower reporting rates.

5. CONCLUSION

Results of the survey using the EQ-5D on the Japanese general population showed that the response was skewed to "no problems". A "moderate problem" on at least one dimension was reported by a quarter of the respondents but only 2.1% reported any "extreme problem". The rates of reported problems tended to be higher for those who were aged, had experience of serious illness, received lower education, had retired or were doing housework. These trends were also reflected in the VAS scores. Our results were basically similar to previous studies made in UK and Kyoto. However, in some aspects there were differences which need to be explored in future studies.

Since the age/sex norms for the Japanese general population have now been established from this survey, the Japanese EuroQol can be used extensively in Japan for comparing the health status of patient groups with these norms, and through this process, evaluate health outcomes.

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日本人の健康状態：日本語版EuroQol 調査結果

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EuroQol (EQ-5D) は健康状態の包括的尺度であり、公式の日本語版は1998年5月に作成された。筆者らは、日本における一般集団から健康状態の価値付けに関するデータを得ることを目的として、面接調査を計画した。本論文では、自己の健康に対する評価に関する結果概要を述べた。

合計で621名に対する面接調査が実施された。本結果においては、5項目全てについて、「問題ない」との回答が多かった。少なくとも1つの項目について「中程度の問題」と回答したのは4分の1の対象者であったが、1つでも「重度の問題」と回答したのは、2.1%にすぎなかった。高齢者、重病の経験者、教育水準が低い者、退職者や家事に従事している者は、問題を訴える率が高かった。今回の調査結果は英国や京都におけるこれまでの調査結果と基本的に同様の傾向であった。

わが国の一般集団における性・年齢階級ごとの基準値が本調査から得られたことにより、今後、患者群の健康状態を基準値と比較し、それにより医療サービスの適切性を評価することを目的として、日本語版EuroQolが幅広く用いられることとなるだろう。

キーワード：EuroQol, 健康関連Qol, 自己評価健康度

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