WHO Quality of Life and Its Related Factors in Rheumatoid Arthritis Patients

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Abstract   Rheumatoid arthritis has total or partial influence on the life situation of patients. A variety of outcome measures are used in evaluating disease activity, therapeutic efficacy, and the quality of life (QOL) in rheumatoid arthritis studies. This study was designed to explore QOL in patients with rheumatoid arthritis in Japan. Fifty-eight rheumatoid arthritis patients (9 male and 49 female, mean age 57.2±14.1) participated as subjects in this study and were interviewed using the World Health Organization's QOL assessment instrument (WHO／QOL-26) by a single interviewer. In addition, simultaneous surveys were made using the Modified Health Assessment Questionnaire (MHAQ) for functional disability, the Visual Analogue Scale for pain (VAS), assessment of patients' understanding of rheumatic disease, and appropriate questionnaires concerning social activities, social support, suffering in life, and demographic characteristics (i.e., age, sex, duration from onset, marital status, presence of other person(s) in household, other illness, having undergone arthritis-related operation(s), holding of physically disabled person's certificate, having hobby(ies), engaged in occupation). Social relationship was the only dimension found not to be correlated with the WHO／QOL-26. Predictors of the overall WHO／QOL-26 were studied by means of multiple regression analysis, with 17 explanatory variables. The factors that had a direct impact on WHO／QOL-26 were MHAQ, VAS, presence of other person(s) in household, and having undergone arthritis-related operation(s). These four factors explained 29.3% of the total variance in WHO／QOL-26 scores. It was suggested by the results that the QOL in rheumatoid arthritis patients is affected especially by pain and by the presence of other person(s) in the household.

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Key Words : WHO／QOL-26, VAS, MHAQ, Operation, Presence of other persons in household

Introduction

Rheumatoid arthritis is a chronic inflammatory systemic disease of unknown cause characterized by destruction and proliferation of the synovial membrane, resulting in joint desruction, ankylosis, and deformity. Nonsurgical intervention includes rest and physical therapy, with maintenance of joint function as the primary goal through the use of exercise, heat, and splints.[1]

Rheumatoid arthritis has total or partial influence on the life situation of patients. The most important point at issue awaiting solution for rheumatoid arthritis patients is therapeutic outcome, that is, a rise in the quality of life (QOL). A variety of outcome measures are used in evaluating disease activity, therapeutic efficacy, and the quality of life in rheumatoid arthritis studies[2-8]. Generally, reports that have attempted to measure quality of life are focused on either objective or subjective parameters. Subjective parameters refer to the person's evaluations of life satisfaction, self esteem, interpersonal relationships and social activities. Objective parameters refer to external and environmentally-based conditions, such as general health, physical functional status, socioeconomic status, and public safety.

The World Health Organization's QOL assessment (WHO／QOL-26) is an overall health-related and validated QOL scale that has recently been developed. Studies using the WHO／QOL-26 instrument have not been extensively reported in conjunction with rheumatoid arthritis patients. It is the purpose of this report to explore QOL and its related factors in patients with rheumatoid arthritis in Japan. A Japanese version of the WHO／QOL-26[9] was employed as a means of assessing the QOL for subjects. It is short, simple to complete, and could be suitable for surveys of rheumatic disease patients.

Methods

Design and subjects

The subjects were outpatients at a hospital located within Nagasaki prefecture in Japan. Subjects received both written and oral explanations concerning the aim of the study and their rights. After the patients agreed to participate in the study and were interviewd by a single interviewer, and the answers were received from the paticipants. Prior approval for the study was obtained from the director.

Fifty eight patients with rheumatoid arthritis (9 male and 49 female, mean age 57.2 ± 14.1) participated as subjects in this study. No outpatients declined to paticipate.

Data collection questionnaires

Data collected for each subject included the four sets of questionnaires and classification of 14 descriptive characteristics. The questionnaires, corresponding to scales for the WHO／QOL-26, the Visual Analogue Pain Rating Scale[10], the Modified Health Assessment Questionnaire for functional disability (MHAQ)[8] and understanding of rheumatic disease were incorporated in survey materials for research purposes. The descriptive characteristics were composed of age, sex, and responses on appropriate questionnaires concerning duration from onset, marital status, presence of other person(s) in household, other illness, having undergone arthritis-related operation(s), holding of physically disabled person's certificate, having hobbies, engaged in occupation, suffering in life, social activities, and social support in terms of oral encouragement and physical action.

The World Health Organization developed the

WHO／QOL-26 scale used here for assessing overall health-related QOL. It designed to measure the degree of five dimensions; physical domain, psychological domain, social relationship, environment, and general QOL-related questions. Respectively, these dimensions consist of 7 items, 6 items, 3 items, 8 items, and 2 items. The scale uses a five-step rating for each item. In this study, using a Japanease version of the test, Cronbach's α coefficient was 0.77 for the rheumatoid arthritis patients.

The Visual Analogue Scale for pain (VAS)[10] provides a simple way to record subjective estimates of pain intensity. A visual analogue scale is a straight line that presents the continuum of the symptom to be rated. The scale, conventionally 10 cm long, may be printed horizontally. Each end of the scale is marked with labels that indicate the p hrases "Violent pain" and "No pain". The distance of the respondent's mark from the lower end of the scale, measured in millimeters, forms the basic score.

The Health Assessment Questionnaire was developed by Fries et al.[2] Pincus et al.[8] proposed a shorter version of the Health Assessment Questionnaire, or the Modified Health Assessment Questionnaire (MHAQ). The MHAQ scale, consisting of 8 items, is designed to measure degrees of physical function. A four-step rating is used for each item, and a Japanese version of the test was used in this study[11].

We prepared the scale for assessing the degree of understanding of rheumatic disease. This scale, consisting of 5 items, was designed to measure fundamental understanding in relation to rheumatic disease, drugs, symptoms, therapeutic exercise, and matters that demand special attention in daily living. A four-step rating is used for each item.

Statistics

The reliability coefficient was calculated for the WHO／QOL-26 to determine its reliability using the internal consistency method (Cronbach's α). Peason's product-moment coefficients of correlation between the overall WHO／QOL-26 score and its five dimensional scores were computed. Multiple regression analysis was used to investigate mediation and moderation of variables on the relationship between explanatory variables and the dependent variable, and standardized regression coefficients (β coefficients) were then computed. All statistical analyses were performed with the Statistical Package for the Social Sciences

(personal computer version SPSS 6.1J).

A p-value of 0.05 or lower was considered to be statistically significant.

Results

Characteristic data of the rheumatoid arthritis patients are shown in Table 1. The mean age of the 58 patients was 57.2 years, and the range was 25 to 83 years with 18 of the 58 over the age of 65. The majority (84.5%) of the patients were women, 65.5% of the patients had spouses, and 86.2% of them had at least one other person in the household. Concerning disease-related characteristics, the mean duration from onset was 11.0 years, 53.5% of the patients had other illness(es), 27.6% had undergone arthritis-related operation(s), and 48.3% held a physically disabled person's certificate. With regard to life and social-related characteristics, 32.8% of the patients were engaged in an occupation, and 70% of them had hobbies, but only a few (6.9%) of the patients were involved in social activities. Those

Table 1. Characteristics of the Rheumatoid Arthritis patients ($n=58$)

Gender (%)	
women	49 (84. 5)
men	9 (15. 5)
Age (yrs old)	
mean ± SD	57. 2±14. 1
range	25 — 83
Duration from onset (yrs)	
mean ± SD	11. 0± 8. 1
range	1 — 34
Marital status (%)	
married	38 (65. 5)
single	20 (34. 5)
Presence of other person in household (%)	
present	50 (86. 2)
absent	8 (13. 8)
Having undergone arthritis-related operation (s)	
present	16 (27. 6)
absent	42 (72. 4)
Engaged in occupation (%)	
working	19 (32. 8)
not-working	39 (67. 2)
Social activities (%)	
present	4 (6. 9)
absent	54 (93. 1)
Having hobbies (%)	
present	40 (70. 0)
absent	18 (31. 0)
Holding of physically disabled person's certificate (%)	
present	28 (42. 3)
absent	30 (51. 7)
Other illness (%)	
present	31 (53. 5)
absent	27 (46. 5)
Suffering in life (%)	
present	27 (46. 5)
absent	31 (53. 5)
Social support using oral encouragement (%)	
present	48 (82. 8)
absent	10 (17. 2)
Social support using physical action (%)	
present	42 (72. 4)
absent	16 (27. 6)

suffering from matters in life numbered 46.5% of the patients, but they received support from surrounding persons using oral encouragement (82.8%) and physical action (72.4%).

The mean value, SD, and range for the WHO／QOL-26, its five dimensions, MHAQ, VAS and the understanding assessment scale of rheumatic disease are shown in Table 2. Table 3 presents the correlation coefficients between the WHO／QOL-26 score and its five dimensional scores: physical domain, psychological domain, social relationship, environment, and general QOL-related questions. There were no significant correlations between the social relationship score and the others' scores.

Table 2. Total score for the WHO／QOL, its five dimensions, MHAQ, VAS, and understanding assessment scale of rheumatic disease

	mean	SD	range
WHO/QOL-26	80. 36	8. 61	60 — 98
Physical domain	21. 76	4. 33	11 — 32
Psychological domain	17. 55	2. 68	10 — 24
Social relationship	10. 76	1. 33	7 — 13
Environment	25. 40	3. 22	18 — 32
General QOL-related questions	4. 91	0. 88	3 — 7
MHAQ	5. 57	4. 52	0 — 24
VAS	41. 19	29. 48	0 — 100
Understanding assessment scale	10. 64	2. 85	5 — 18

Table 3. Matrix of correlations between WHO／QOL-26 and its five dimensions ($n=58$)

	WHO/QOL-26	Physical	Psychological	SR	Environment	General
WHO/QOL-26	——					
Physical	0. 797**	——				
Psychological	0. 775**	0. 507**	——			
Social	0. 174	-0. 127	0. 011	——		
Env	0. 702**	0. 273**	0. 413**	0. 188	——	
General	0. 659**	0. 526**	0. 508**	0. 085	0. 320*	——

* : $p <0.05$, ** : $p <0.0001$
SR= Social relationship, General= General QOL-related questions

Multiple regression analysis was performed adopting WHO／QOL-26 as the dependent variable, and MHAQ, VAS, understanding assessment scale of rheumatic disease, and 14 descriptive characteristics as explanatory variables. The result was significant; coefficient of determination (R^2)=0.504, adjusted R^2 =0.293, and F ratio=2.391 ($p<0.05$). On the basis of this result, β coefficients were then computed. The factors that had a direct impact on WHO／QOL-26 were MHAQ, VAS, presence of other person(s) in the household, and having undergone arthritis-related operation(s). These four factors explained 29.3% of the total variance in WHO／QOL-26 scores. (Table 4)

Table 4. Multiple regression analysis results for WHO/QOL-26 and related factors (n =58)

Age	−0.005
Sex	0.113
Duration from onset	0.024
Marital status	0.086
Presence of other person in household	−0.383*
Having undergone arthritis-related operation(s)	0.312*
Engaged in occupation	−0.095
Social activities	0.098
Having hobby	0.243
Holding of physically disabled person's certificate	−0.163
Other illness	−0.078
Suffering in life	−0.237
Social support using oral encouragement	0.030
Social support using physical action	0.020
MHAQ	−0.396*
VAS	−0.355*
Understanding of rthumatic disease	−0.095
R^2	0.504
Adjusted R^2	0.293
F ratio	2.391*

* : $p < 0.05$

Discussion

A white paper[12] on rheumatoid arthritis patients in Japan indicates that the majority of the patients are women (91.1%), and thirty-two point four per cent is over the age of 65 years. There was no great difference between this report and results of this study. Other characteristic were also generally similar to those identified in the white paper.

Multidimensional analyses are needed in order to accurately describe QOL in rheumatoid arthritis patients. We adopted WHO/QOL-26 to describe and analyze the overall health-related QOL in this study. Reliability of WHO/QOL-26 for patients with rheumatoid arthritis was confirmed using the internal consistency method (Cronbach's a), indicating that this instrument has statistical stability as a scale. The WHO/QOL-26 scale, consisting of five dimensions (physical domain, psychological domain, social relationship, environment, and general QOL-related questions) showed high correlation with four of the dimensions, with the exception of social relationship. Social relationship has been underestimated in QOL research for a long time[13], and it has been pointed out that social relationship does greatly affect QOL[9]. Sato et al.[14] have shown that the social aspects of QOL could be important factors affecting disease acceptance and life satisfaction. In an earlier report[9] using a multiple regression model, it became apparent during the course of the development of the WHO/QOL-26 that the physical domain is significantly relevant to the overall health-related QOL, while social relationship has the lowest relevance. It was therefore speculated that social relationship had no relevance to WHO/QOL-26 for oneself, but had relevance through interactions with other dimensions.

The results of multiple regression analysis indicated that four of 17 explanatory variables had significant correlation in contributing to the WHO/QOL-26. The factors that had a direct impact were MHAQ, VAS, presence of other person(s) in the household, and having undergone arthritis-related operation(s). These four factors explained 29.3% of the total variance in WHO/QOL-26 scores (Table 4). In general, it is stated that physical function is a QOL component[15]. It can thus be easily speculated that lowering scores on the MHAQ scale, which is designed to measure degrees of physical function, indicate a negative impzct on QOL. The Health Assessment Questionnaire, i.e.; the original version of the MHAQ, in accord with the reported study[16], is correlated with the depression score. It is speculated that MHAQ is also negatively correlated with QOL in terms of the previous report. There are many reports[17,18] using VAS for pain in patients with rheumatoid arthritis, and the VAS scale was also correlated negatively with the WHO/QOL-26 in this study. Increased pain contributes to reduced physical function, resulting in low QOL. It was presumed that our results, showing a significant positive relationship between having undergone arthritis-related operation(s) and the WHO/QOL-26, indicated patient satisfaction with operation results. In general, patients with rheumatoid arthritis have the hope that remission of pain can be achieved by undergoing operation(s)[19]. The three factors described above germane to QOL in patients, and it is viewed that pain, or lack thereof, is the key to high QOL, suggesting the importance of pain alleviation in rehabilitation for rheumatoid arthritis patients.

In this study, the presence of other person(s) in the household correlated negatively with WHO/QOL-26, and this was unexpected. Previous data on 12,046 rheumatoid arthritis patients in Japan indicates that the present conditions in home life are as follows. Some helping is necessary to live (22.7%), they cannot visit a hospital without assistance (34.3%); the family is cooperative in terms of daily living (multiple response: 49.4%); but there is reluctance to trouble family members (13.4%); and they have decreased going out with their family (28.1%). From these facts, we deduced

that many had come to choose absence of other person(s) in the household (that is, living alone) in accordance with Japanese national sentiment.

It was suggested by the results that the QOL in rheumatoid arthritis patients is especially affected by pain and by the presence of other person(s) in the household. Therefore, we must consider these results in therapeutic intervention in order to encourage desirable QOL. The findings in this study are limited by the small sample and should be interpreted with caution. However, the results are in large measure compatible with previous reports.

Acknowledgment

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慢性関節リウマチ患者における WHO／QOL とその関連要因

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要　旨　　慢性関節リウマチ患者58名を対象に世界保健機構開発のＱＯＬ調査票（WHO／QOL-26)を用いて，ＱＯＬとその関連要因について検討し，以下の結果を得た．

（1）今回の対象者の属性は，日本における慢性関節リウマチ患者のそれに類似するものであった．

（2）WHO／QOL-26 はその下位次元の一つである社会関係と関連を示さなかった．

（3）WHO／QOL-26 と有意に関連を示したのは，身体機能，痛み，手術経験の有無，同居者の有無の4要因であった．

以上より，社会関係は他の下位次元との交互作用を介してWHO／QOL-26に関連していると考えられる．また，身体面で痛みの軽減・寛解によって機能改善を図ること，及び生活面で同居者への気兼ねからむしろ同居者無しの方がＱＯＬを高めることが示唆された．