An assessment tool for dialysis patients' satisfaction: exploring crucial satisfaction factors for Japanese patients

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Abstract. A questionnaire-based survey was conducted to extract a factor structure for assessing dialysis patient satisfaction. Japanese dialysis patients expressed their high satisfaction with the facility where they currently received therapy; they also wished to continue their treatment in the facility and recommend it to those who need dialysis therapy as patient loyalty. The overall satisfaction was critically determined by 5 satisfaction factors, and the following 2 were especially contributed: environment and equipment, and treatment and therapy. Patients who were more satisfied with the facility showed their stronger loyalty. In addition, patients' QOL level was significantly associated with their overall satisfaction.

Keywords. Patient satisfaction; dialysis; quality of life (QOL).

7. Introduction

The legitimacy of *patient satisfaction* as an outcome measure of healthcare originates from a tendency in Western societies to make the consumer the central figure of accountability in public services (Williams, 1994). It is related to outcomes such as higher compliance, but its relation with quality is complex (Williams, 1998). It actually measures the extent to which the clients' experience matches their expectation of how good (or bad) care will be (Donabedian, 1980). Differences in quality of care will not, therefore, necessarily lead to different levels of patient satisfaction.

However, there was few questionnaire actually measured patient satisfaction. Instead, quality of care from the patient perspective had often been measured as patient satisfaction (van Campen et al., 1995). Yet, one of the most well-known, widely used "satisfaction assessment" tools, SERVQUAL developed by Parasuraman et al. (1985) was neither designed to measure perceived health service quality nor to measure actual satisfaction. In addition, Patient satisfaction may not only be culturally dependent (Hofstede, 1984), but also be impacted by many factors such as laws, regulations and healthcare systems, in which there are differences between Japan and other countries. For example, expense for dialysis therapy may be a critically important factor for patient satisfaction in other countries, but it is not crucial in Japan because of the nation's health system (i.e., the same price for the same therapy in every hospital/clinic) and great financial support by the health insurance and municipality (patient should pay about 100 US dollars per month). Another factor which may differ across countries is accessibility. Connecting to this issue, patients have discretion in choosing any hospital/clinic for their consultation ("free access" policy) in Japan while patients will initially visit fixed medical doctors by the

"home doctor system" in many European countries. For these reasons, we need to develop a common assessment tool that can be used to measure patients' satisfaction in many countries with different health systems.

As characteristics specific to dialysis therapy (e.g., three times of four hour therapy a week), patient's quality of life (QOL) must be taken into consideration for assessing satisfaction like the CHOICE Health Experience Questionnaire (Wu et al., 2001) as one of the most frequently used assessment tools. There are 36 question items even in its short version which causes patients a great burden for completing it. Therefore, a small number of crucial items for appropriate assessment of patient's QOL are desirable.

With this background, the present paper has two primary objectives. One objective is to develop an assessment tool for dialysis patient satisfaction and acquire a factor structure for assessment. As the other objective, we seek to identify important satisfaction factors contributing to overall satisfaction with hospitals/clinics in which they receive dialysis therapy and to expose effects of patient's QOL on satisfaction.

8. Methods

8.1 Questionnaire

We developed a questionnaire for a survey on dialysis patient satisfaction. The questionnaire, which was originally written in Japanese, comprised of 3 sections with an additional demographic part. We extracted 32 satisfaction items for which a respondent was asked to rate his/her satisfaction level (I am satisfied with…) on a 7-point Likert-type scale from 1 (disagree strongly) to 7 (agree strongly) in the first section. If he/she had no idea of a particular item, he or she selected the "not relevant/do not know" response option. These satisfaction items were selected as follows: First, a number of items were obtained based on a literature survey (Gill and White, 2009; Wasserfallen et al. (2006); Argentero et al. (2008); Dagger et al. (2007)), and we tentatively selected a set of candidate items (47 items) on the basis of frequency of use and applicability to the dialysis setting. Then, a preliminary survey was performed, collecting responses to these items (in Japanese) and opinions from several dialysis patients. The final items were selected based on the results of the preliminary survey and interviews with about 10 dialysis specialists, including physicians, nurses and technologists to ensure face and content validity of the items. In the second section, patients were asked about degrees of the following 3 items on the same 7-point scale: overall satisfaction with the current facility, willingness to continue dialysis therapy in the same facility, and likelihood to recommend the facility to others. 4 extra items asked the respondent's QOL in the third section: current health from 1 (good) to 5 (poor); effects of physical or mental health problem on job or daily activities from 1 (yes, limited a lot) to 3 (no, not limited at all); frequency of interference in social activities from 1 (all of time) to 5 (none of time); and satisfaction with the current life in general from 1 (greatly dissatisfied) to 7 (greatly satisfied).

8.2 Survey sample

The questionnaire survey was conducted between July and September 2013 after obtaining an approval from the ethics committee of university both researchers belong to. 22 facilities participated in the survey. We sent the questionnaires to a secretary general of each hospital/clinic by regular mail or courier. Hospital/clinic staff assisted data collection processes in each facility obtained informed consent by: explaining the purposes of the survey and that the patient's participation was at their discretion; the survey's anonymity and confidentiality; and the data collection procedure. Subsequently, a questionnaire

enclosed in an envelope was distributed to each patient who agreed to cooperate in the survey. When the patient completed the questionnaire, he/she sealed the envelope containing his/her response to assure confidentiality. The sealed response was returned to us directly by post mail. A total of 807 valid responses were collected from dialysis patients with 63% response rate. 83% of respondents were over 50 years old, and more than a half of respondents have received dialysis therapy shorter than 10 years.

9. Results

9.1 Patient satisfaction factors

Excluding 2 items related to shuttle service, to which a number of patients selected the "not relevant/do not know" response option, the principal component analysis with the Varimax rotation was applied to the responses to the 30 items in Section 1. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.976, and Bartlett's test of sphericity was significant at $p < 0.001$, indicating that the data was appropriate for factor analysis. The analysis yielded 3 principal components with 65% of cumulative variance accounted for. The analysis result is summarized in Table 1 in terms of factor label, component items, their factor loadings, and Cronbach's alpha for each principal component. Internal reliability, as assessed by Cronbach's alpha, was high enough for all the factors, i.e., > 0.70, which is a regular limit of acceptance level (Nunnaly, 1978).

As for the first principal component, items highly loaded were related to reliability and security of dialysis therapy. Accordingly, we labelled this factor satisfaction with "security in dialysis therapy". In this way, we interpreted all 3 factors by highly loaded items as follows: (1) security in dialysis therapy; (2) practical ability and requirements; and (3) practical comfort. Each of these dimensions can be further divided to several sub-dimensions which account more concretely for or rationale for their satisfaction as satisfaction factors. For instance, the security of dialysis therapy was composed of patient satisfaction with treatment itself, staff responsiveness and information received. Thus, the 7 satisfaction factors were labelled as follows: (1-1) treatment and therapy, (1-2) staff responsiveness, (1-3) received information and explanation, (2-1) staff skills and expertise, (2-2) interpersonal relations, (3-1) reception and (3-2) environment and equipment. For details, please refer to Table 1.

9.2 Overall trend of dialysis patient satisfaction

A mean score of each satisfaction factor was calculated over all component items for each respondent. The percentage of positive responses for a specific satisfaction factor is defined as a proportion of respondents having its mean score of 5.00 or greater. As an overall trend, dialysis patients expressed their high satisfaction in Japan. To almost all (26 out of 30) items, more than 70% of patients provided positive ratings of satisfaction except to physicians' consideration about concerns for troubles (Q1; 65%), relations with other patients (Q11; 60%), waiting time (Q21; 65%) and availability of physicians (Q27; 60%). Based on the positive percentages of satisfaction factors shown in Table 2, dialysis patients were highly satisfied with practical comfort, i.e., environment, equipment and reception within the facility. However, their satisfaction levels were relatively low with practical ability and requirements, i.e., staff skills, expertise and interpersonal relations.

More than 80% of patients expressed their positive overall satisfaction with the facility (81%) where they received dialysis therapy and wished to continue their treatment in the current facilities (85%). In addition, 68% of them were willing to recommend the facility to their family or friends who suffer from the same disease.

Table 1. Patient satisfaction factors elicited by principal component analysis

Dimensions (Variance [Cumulative variance]) (Cronbach's alpha) Satisfaction with	Sub-dimensions (Cronbach's alpha)	Item	Loading
1. Security in dialysis therapy (28% [28%]) (α = 0.948)	Treatment & therapy (α = 0.842)	Q18: Reliability of diagnose and treatment	0.738
		Q26: Security in dialysis therapy	0.701
		Q1: Physicians' consideration about concerns for troubles	0.631
		Q14: Health status after dialysis therapy	0.569
	Staff responsiveness (α = 0.833)	Q27: Availability of physicians	0.717
		Q23: Promptness responding to requests during dialysis therapy	0.552
		Q15: Privacy provided during stay	0.535
		Q6: Attitudes when treating or caring me	0.511
	1-3 Received information & explanation (α = 0.875)	Q29: Information upon the risks and benefits of treatment and medicine	0.731
		Q32: Instruction upon daily care	0.682
		Q5: Understandability of explanation	0.624
		Q3: Information about dialysis therapy	0.601
2. Practical ability & requirements (21% [49%]) (α = 0.934)	2-1 Staff skills & expertise (α = 0.874)	Q10: Technical skills of technologists	0.640
		Q13: Technical skills of nurses	0.588
		Q4: Consideration about pain of centesis	0.585
		Q16: Expert knowledge of dialysis staff	0.553
	2-2 Interpersonal relations (α = 0.882)	Q11: Relations with other patients	0.640
		Q7: Relations with dialysis staff	0.625
		Q9: Communication and cooperation among dialysis staff	0.611
		Q12: Dialysis staff's mental support	0.567
		Q17: Ease to consult dialysis staff	0.493
3. Practical comfort (17% [65%]) (α = 0.878)	3-1 Reception (mental comfort) (α = 0.806)	Q28: Clean-cut of dialysis staff	0.619
		Q30: Clerical procedures	0.566
		Q8: Flexibility of changing therapy schedule	0.551
		Q20: Attention paid to cleanliness	0.529
		Q21: Waiting time from arrival to getting on the machine or to get off the machine when finish	0.411
	3-2 Environment & equipment (physical comfort) (α = 0.746)	Q22: Opening hours for own convenience	0.689
		Q31: Recreational equipment during dialysis therapy	0.703
		Q19: Medical equipment for dialysis therapy	0.623
		Q2: Cleanliness and comfort	0.556

9.3 Crucial satisfaction factors for Japanese dialysis patients

Factors contributing to Japanese dialysis patients' overall satisfaction were examined by applying stepwise regression analysis to respondents' mean scores of 7 satisfaction factors as independent variables. The overall satisfaction was critically determined by 5 satisfaction factors (see Table 3; adjusted R^2 = 0.628; F = 256.394, $p < 0.001$). In

particular, the two factors, environment and equipment ($\beta = 0.349$; $p < 0.001$), and treatment and therapy ($\beta = 0.259$; $p < 0.001$), were critically influential to dialysis patients' overall satisfaction.

Table 2. Percentage of positive responses to patient satisfaction factors

Satisfaction factors	Positive responses
1 Treatment & therapy	75%
2 Staff responsiveness	72%
1-3 Received information & explanation	73%
2-1 Staff skills & expertise	70%
2-2 Interpersonal relations	70%
3-1 Reception	78%
3-2 Environment & equipment	81%

Table 3. Stepwise regression model of overall patient satisfaction

		95% Confidence interval		
Satisfaction factors	Beta	Lower	Upper	*p*
Constant	0.339			
1-1 Treatment & therapy	0.259	0.167	0.350	0.000
1-3 Received information & explanation	0.126	0.033	0.220	0.008
2-2 Interpersonal relations	0.110	0.025	0.195	0.011
3-1 Reception	0.131	0.035	0.227	0.008
3-2 Environment & equipment	0.349	0.268	0.431	0.000

Adjusted $R^2 = 0.628$

9.4 Correlation between overall patient satisfaction and patient loyalty

Applying Spearman's rho to patient-based data, a highly significant correlation was identified between overall patient satisfaction and their willingness to continue receiving dialysis therapy in the current facility ($\rho = 0.744$, $p < 0.001$). Similarly, a significant correlation ($\rho = 0.705$, $p < 0.001$) was also extracted between overall patient satisfaction and their likelihood to recommend the facility to their family and friends. It is suggested that patients who are more satisfied with the facility are more likely to wish continuation of dialysis therapy in the current facility and to recommend the facility to those who suffer from the same disease.

9.5 Effects of QOL on patient satisfaction

Spearman's rho was computed between patient overall satisfaction and each of QOL-related patient states. Results showed that patients' QOL levels were significantly associated with their overall satisfaction: the higher the patient's QOL level be, i.e., better health status ($\rho = 0.216$, $p < 0.001$), less restriction of their daily life ($\rho = 0.098$, $p < 0.01$), that of social activities ($\rho = 0.172$, $p < 0.001$), and stronger satisfaction of current life ($\rho = 0.338$, $p < 0.001$), the greater overall satisfaction he/she exhibited with the hospitals/clinics.

10. Discussion and Conclusion

Satisfaction factors of Japanese dialysis patient elicited from survey using this tool are partly composed common factors proposed by other studies, e.g., interpersonal issues including interpersonal relations and communication between staff and patients to provide

information and explanation; staff skills and expertise as technical concern; administrative aspects such as staff responsiveness and reception; and environment and equipment (Dagger et al., 2007; Gill and White, 2009). One of the factors elicited, dialysis treatment and therapy is unique for dialysis patients' satisfaction as they regard it as a source of their survival.

Crucial satisfaction factors behind dialysis patients' overall satisfaction were environment and equipment, and treatment and therapy. It may be determined by characteristics of dialysis therapy that patients must typically receive three four-hour dialysis therapies per week, which are conducted mainly by dialysis equipment. Therefore, environment and equipment becomes much more important than non-dialysis patients.

In conclusion, we developed an assessment tool for dialysis patients and acquired a 7 satisfaction factor structure. Japanese dialysis patients in general expressed their strong satisfaction with the hospitals/clinics where they currently received dialysis therapy, and especially with clinical environment, equipment and reception. A large part of patients wished to continue their treatment in the current facilities, and would recommend the facility to those who need dialysis therapy. The overall satisfaction was critically formulated by satisfaction with treatment and therapy, and environment and equipment. Patients who had higher overall satisfaction showed their stronger loyalty to the current hospitals/clinics. In addition, it may be suggested that higher overall patient satisfaction is also contributed by their greater QOL levels.

Based on the results obtained in this study, we would like to suggest leaders/managers in the dialysis facility/department to pay special attention to security in dialysis treatment and therapy which is a critical factor for patient satisfaction and enhance interpersonal relationship for healthcare performance.

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