

Development and Validation of a Body Image Assessment for Patient after Lower Limb Amputation—The Chinese Amputee Body Image Scale-CABIS—

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Abstract: Rehabilitation professionals increasingly understand that psychological issue is an important key to achieve rehabilitation goals. Previous studies proved that body image has significant relationship with amputation rehabilitation, however, measurements on body image are not well stated. The aim of this study is to develop a Chinese version of Amputee Body Image Scale (CABIS). In this study, linguistic validity, content validity, test-retest reliability and construct-validity were examined. The 20 items CABIS showed with clear presentation and good content understandability. Expert panel agreed that CABIS covered major constructs in body image for patients after amputation. Moreover, test-retest reliability was found to be good ($\alpha = .857, p < .01$). A three-factor structure can be extracted from factor analysis. These three factors were personal factor, social factor and functional factor. Furthermore, the internal consistency of the three individual factors and the overall CABIS were .852, .826, .636, and .694 respectively. The moderate internal consistency further confirmed that the items within each factor of the CABIS measure the same construct. Some psychometric properties of CABIS were collected. Further research on criterion-related validity and improvement on factor stability are recommended.

Key words: amputation, body image, validation, professional trends

(*Asian J Occup Ther* 4: 1–11, 2005)

Introduction

Amputation of a limb may be needed to treat critical ischemia, severe tissue damage due to a trauma, or a life-threatening condition of a limb. Although amputation can be beneficial from a medical point of view, the loss of limb may have a

Received: August 19, 2004, Accepted: April 16, 2005

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considerable impact on patients' health-related quality of life as shown by Van der Schans *et al.* (2002). As shown by the work of Lerner, Esterhai and Polomano (1993) stated that patients after amputation were "mentally scarred", but it was also reported that these subjects showed only limited restrictions in lifestyle and activity. Smith, Horn and Malchow (1995) investigated a group of unilateral below knee amputees, and found that health-related quality of life in amputees was lower than in age-matched controls for the domains "physical function", "role limitation due to physical problems", and "pain".

Body Image can be defined as the picture that one has in his mind about the appearance (e.g. size and shape) of his body, and the attitude that he forms towards these characteristics of his body. There are two components of body image: the perceptual part (how one sees his own body), and the attitudinal part (how one feels about his perceived bodily appearance) as studied by Drench (1994). A negative body image can be in the form of mild feelings of unattractiveness to extreme obsession with physical appearance that impairs normal functioning as discussed by Rosen, Reiter and Orosan (1995). It is also understandable that body image involves perception, feelings, emotions and physical sensation about one's own body, which were summarized by Parker (1975), Price (1990), Van Deusen (1997), Salter (1988), Miller (1991), Moore & Malone (1989). Moreover, body image is not static, but ever changing; and is sensitive to changes in mood, environment and life experience as shown by the research works of Schontz (1990), Breakey (1997), Flannery & Faria (1999), Watanabe, McCluskie and Hakin (1999), Livneh, Antonak & Gerhart (1990). An important factor in the rehabilitation of amputees that is often overlooked is the individuals' responses to amputation, including the change in body image of amputee patients and the extent to which these changes influence functional outcomes. Assisting amputee to be successfully integrated into community necessitates that body image disturbances associated with amputation be addressed in rehabilitation as summarized by previous research works of Newell (1991),

Schultz, Williamson & Bridges (1991), Breakey (1997), Mitchell (1997), Crum *et al.* (1993), The Global Lower Extremity Amputation Study Group (1999), and Whyte & Niven (2001).

Conventionally, amputation rehabilitation service is mainly physically oriented, as physical assessment and ADL trainings are key components of most programs. Though in recent years, more and more psychological elements are incorporated in the program, i.e. counseling and assessment on psychological readiness of both patients and care-givers, however, the ratio is still comparatively lower than physical elements. In a recent study on effectiveness of a body image on amputation rehabilitation, Hanspal (1998) found that assessment on perceived body image is an essential component for amputation rehabilitation program planning and evaluation.

A valid body image measuring instrument is essential for amputation rehabilitation services. The development and validation of a socio-culturally appropriate Chinese Amputee Body Image Scale (CABIS) as shown in Fig. 2 can contribute to enhancement of the existing service standard.

Amputee body image scale

The Amputee Body Image Scale (ABIS) as shown in Fig. 1, is comprised of 20 items. The ABIS assesses how an amputee perceives and feels about his or her body experience as research works by Breakey (1997). Subjects have to indicate responses to the questions. This scale produces scores that range from 20–100, with high scores indicating high body image disturbance. Three questions (question 3, 12 and 16) are reverse-scored. This type of measurement scale is considered most appropriate to assess the kind of domain-specific concept of self as mentioned by Maurer & Pierce (1998).

Construct validity was studied by investigating the correlation of the ABIS with other well-known personality scales in the original study. The ABIS showed statistically significant correlation with Index of Self-Esteem (ISE) ($r=.56, p<.01$); Generalized Contentment Scale (GCS) ($r=.64, p<.01$); Clinical Anxiety Scale ($r=.57, p<.01$); Satisfaction with Life Scale

截肢者身體外型量度表

1.	___	我是一位截肢者，身處在社交場合時，我會更加憂慮我的外表。
2.	___	我在公眾場合不會穿短褲，因為免我的義肢外露。
3.	___	我喜歡自己穿上了義肢後的整體外表。
4.	___	失去肢體損害了我的身體機能及影響我的日常生活。
5.	___	我會避免用直身鏡子照鏡，因為我不想看到自己的義肢。
6.	___	我每天都在憂慮自己的外表，因為我是一位截肢者。
7.	___	我感覺到幻肢的存在。
8.	___	我感到有別於社會上健全的觀念，是因為我喪失了肢體，而且我感到困擾。
9.	___	我覺得我失去保護自己遠離危險的能力，是因為喪失了肢體。
10.	___	我會盡量避免在不穿義肢時到某些地方，以逃避別人注視的目光。(例如：避免到社交地方、在游泳池或沙灘上活動和作親密的身體接觸。)
11.	___	我喪失了肢體，使我覺得自己擠身於殘障人士之列。
12.	___	我喜歡不穿義肢時的外表。
13.	___	當我走路時，別人會留意著我有破步的步姿。
14.	___	我會盡量避免在穿義肢時到某些地方，以逃避別人注視的目光。(例如：避免到社交地方、在游泳池或沙灘上活動和作親密的身體接觸。)
15.	___	人們當我是殘障人士看待。
16.	___	我滿意自己餘肢的外觀。
17.	___	我會穿寬鬆的衣服以遮蓋義肢。
18.	___	我覺得四肢健全才會有吸引的外表。
19.	___	義肢的大小必需要與需要裝 義肢的殘肢相配合，就如與其它正常肢體一樣。
20.	___	我不想看到自己的餘肢，所以我會避免用直身鏡子照鏡。

這份問卷的目的是用來量度你對自己身體外型的看法與感受。由於這是一份問卷，這並不是一份測驗，所以並沒有絕對正確或錯誤的答案。請你仔細和準確地回答以下每一項問題，並把適當數字填在每一項問題旁邊的橫線上。

1 = 從來沒有, 2 = 甚少有, 3 = 偶然有, 4 = 大部份時間有, 5 = 每一刻都有。

Fig. 2. The Chinese Amputee Body Image Scale (CABIS)

(SWLS) ($r=-.58, p<.01$). The findings supported the interpretation of ABIS as a kind of instrument that measures personal and social related construct.

Methods

The original English version ABIS was translated into Chinese and backwardly translated by two professional translators respectively. Then, a group of Chinese-speaking people of

various educational levels, ranging from primary to tertiary were recruited to complete a questionnaire to assess the linguistic validity of the CABIS. Respondents were required to rate both the degree of “clear presentation” and content “understandability” of the CABIS, which were presented in a 0 to 10 likert scale by the use of a questionnaire. The mean scores of each question were calculated, and 8.0 was selected as the cut-off score of a clear presentation and good content understandability. Comments from respondents

1	___	Because I am an amputee, I feel more anxious about my physical appearance in social situation than when I am alone.
2	___	I avoid wearing shorts in public because my prosthesis would be seen.
3	___	I like my overall physical appearance when wearing my prosthesis.
4	___	It concerns me that the loss of my limb impairs my body's functional capabilities in various activities of daily living.
5	___	I avoid looking into a full-length mirror in order not to see my prosthesis.
6	___	Because I am an amputee, I feel anxious about my physical appearance on a daily basis.
7	___	I experience a phantom limb.
8	___	Since losing my limb, it bothers me that I no longer conform to society's ideal of normal appearance.
9	___	It concerns me that the loss of my limb impairs my ability to protect myself from harm.
10	___	When I am not wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g. avoid social situations, swimming pool or beach activities physical intimacy).
11	___	The loss of my limb makes me think of myself as disabled.
12	___	I like my physical appearance when not wearing my prosthesis
13	___	When I am walking, people notice my limp.
14	___	When I am wearing my prosthesis, I avoid situations where my physical appearance can be evaluated by others (e.g. avoid any social situations, swimming pool or beach activities physical intimacy).
15	___	People treat me as disabled.
16	___	I like the appearance of my stump anatomy.
17	___	I wear baggy clothing in an attempt to hide my prosthesis
18	___	I feel I must have four normal limbs to be physically attractive.
19	___	It is important the size of my prosthesis and remaining anatomy of the affected limb are the same size as the other limb.
20	___	I avoid looking into a full-length mirror in order not to see my stump anatomy

Fig. 1. The original Amputee Body Image Scale (ABIS)

The questionnaire is designed to measure how you see and feel about your body image. It is not a test so there are no right or wrong answers. Please answer each item as carefully and as accurately as you can by placing the appropriate number inside each questions as follows.

1 = None of the time, 2 = Rarely, 3 = Some of the time, 4 = Most of the time, 5 = All of the time

were critically reviewed and questions were modified in syntactical or structural aspects.

Then, a group of bilingual expert panels whom should have at least 5 years of working experience in amputation rehabilitation were

invited to complete a questionnaire, which aimed at evaluating both face and content validity of the CABIS. The questionnaire was designed to study the adequacy, accuracy and ease of understanding of translation, face and content validity of the

CABIS. This questionnaire will be sent together with a covering letter and both CABIS and ABIS for reference. Panel members were invited to judge whether they agreed the translation of each question was accurate or not, by choosing “Agree” or “Disagree”. Qualitative comments for modification of translation were also requested if “Disagree” was rated for that item. The percentage of agreement in each question was calculated, and 85% agree was selected as the cut-off score for accurate translation. Comments from all panels were critically reviewed and descriptive statistics such as percentage of experts’ agreement on the accuracy of translation was also analyzed. Basing on the evaluation by the expert panels, professional translators then further modified and finalized the CABIS.

For test-retest reliability, a group of amputated patients would be recruited. Selection criteria should be below-knee amputated patients aged from 18 to 65, and average time after amputation should be within two months, should

have no previous major trauma history, and without mental function deficiency. They were asked to complete the CABIS on the day after admission and two days after their admission. Such a short interval can ensure there would be no significant difference in their perceived body image. The reliability of the CABIS is determined by intraclass correlation coefficient (ICC) and analyzed by the model of one way random. Through power analysis and effect size estimation, 50 subjects were required. And for further factor structure estimation, sample size of 50 was marginally satisfactory in factor analysis by principal component analysis for construct validation.

Results

Linguistic validity

Twenty Chinese-speaking respondents completed the linguistic validity questionnaire, which aimed at determining both the degree of

Table 1. Mean scores of linguistic validity of the 20 items of the CABIS

Item No.	Clear Presentation	Understandability	Relevancy to Concept
1	*7.85	*7.77	*7.08
2	*7.68	*7.58	8.78
3	*7.58	*7.07	8.90
4	8.47	8.53	8.67
5	8.47	8.53	8.13
6	8.02	8.35	7.83
7	*6.90	*6.88	8.23
8	*6.95	*6.85	*6.96
9	8.73	8.07	8.93
10	8.42	8.88	8.70
11	8.97	8.77	8.42
12	*7.30	*7.32	8.17
13	8.18	8.15	8.05
14	9.00	8.85	8.92
15	8.75	8.22	8.43
16	*7.68	*7.68	8.45
17	8.32	8.13	8.07
18	8.92	8.77	7.10
19	*7.17	*7.90	*7.72
20	*7.93	*7.92	*7.60

*: Mean value of clear presentation and understandability below the cut-off score of 8.00, and items required refinement to enhance questions’ clear presentation and understandability.

Table 2. Percentage of agreement by panel expert in the translation of 20 items of the CABIS

Item No.	Agree (number of panel member)	Disagree (number of panel member)	% of Agreement
1	7	0	100
2	6	1	85.7
3	6	1	85.7
4	7	0	100
5	6	1	85.7
6	6	1	85.7
*7	5	2	71.4
8	6	1	85.7
*9	5	2	71.4
10	6	1	85.7
11	7	0	100
*12	5	2	71.4
13	6	1	85.7
14	7	0	100
15	7	0	100
*16	5	2	71.4
*17	5	2	71.4
18	7	0	100
19	6	1	85.7
20	6	1	85.7

*: level of agreement in accurate translation below 85% of agreement, and these items need further modification by professional translator.

clear presentation and content understandability of the CABIS. A stringent mean score of 8.0 was selected as the cut-off score of a clear presentation and good content understandability. The results were summarized in Table 1, 9 questions in the CABIS (1, 2, 3, 7, 8, 12, 16, 19 and 20) showed with mean score of clear presentation and understandability below the cut-off score, which required refinement to enhance questions' clear presentation and understandability.

After those questions were linguistically refined by the translator, all 7 expert panels (4 were male and 3 were female; including 4 occupational therapists, 2 physiotherapists and 1 nurse working in a rehabilitation hospital) agreed the modification can increase the degree of clarity, comprehensiveness, and comprehensibility of the CABIS.

Content validity

Table 2 showed the level of agreement of the panel members on the translation of items of the CABIS, with ranged from 71.4% to 100%. As 85% agree was selected as the cut-off score for accurate translation, 5 questions (question 7, 9, 12, 16 and 17) with only 71.4% agreement in the CABIS were considered as not accurate enough, and needed to be further modified by professional translator.

For content relevancy, CABIS was evaluated to see whether the questions were relevant to body image for patients after amputation. As summarized in Table 3, results showed that panel members agreed that all items were relevant to the content area. The percentage of agreement ranged from 85.7% to 100%, and the median scores were ranged from 4 to 5 in the items. The 20 items in the CABIS can be regarded as good items. The content representativeness of the CABIS was

Table 3. Results of content relevancy of the CABIS

Item	% of Agreement			Measurement Median*
	Agree	Neutral	Disagree	
1	100	0	0	4.5
2	100	0	0	4.5
3	100	0	0	4.5
4	100	0	0	4
5	85.7	14.3	0	4
6	85.7	14.3	0	4.5
7	85.7	14.3	0	4.5
8	85.7	14.3	0	4
9	100	0	0	4.5
10	85.7	14.3	0	4.5
11	85.7	14.3	0	4
12	100	0	0	4.5
13	100	0	0	4.5
14	100	0	0	5
15	100	0	0	5
16	100	0	0	5
17	100	0	0	4
18	85.7	0	14.3	4
19	100	0	0	4
20	100	0	0	4

*: Degree of clear presentation and content understandability of the CABIS.

Table 4. Results of content representativeness of the CABIS

Items 1–20	% of Agreement			Median
	Agree	Neutral	Disagree	
	100	0	0	4

100% agreement was achieved in the content representativeness of the CABIS.

examined in terms of the 20 items as a whole to the measurement of body image for patients after amputation. The result was summarized in Table 4. The percentage of agreement was 100% and median score was 4, which indicated all panel members agreed that these 20 items cover the major constructs and could represent a person's perception on body image.

Test-retest reliability

In testing for the test-retest reliability, a group of 50 subjects (40 male and 10 female) were recruited by convenient sampling. Their age

ranged from 35–75 (with mean age 62.3). All were below-knee-amputated patients, and the time from amputation to first interview ranged from 1.32 to 1.48 months (with mean 1.42 months). They were asked to complete the CABIS on the day after admission (pre-data) and two days after their admission (post-data), and these pre-and-post CABIS data were collected for reliability testing. Reliability of the CABIS was determined by Intra-Class Correlation coefficient (ICC) and analyzed by the model of one way random. After statistically operation by SPSS 10.0, the test-retest reliability coefficient of CABIS was .857.

Table 5. Initial statistics for each factor of CABIS

Items	Communality	Factor	Eigenvalue	% of Variance	Cumulative %
1	.580	1	7.424	37.119	37.119
2	.384	2	2.197	13.985	51.104
3	.404	3	1.330	9.153	60.257
4	.541	4	.989	4.255	64.512
5	.500	5	.949	4.143	68.655
6	.500	6	.829	4.120	72.775
7	.289	7	.714	3.569	73.344
8	.393	8	.673	3.365	79.709
9	.555	9	.621	2.584	82.293
10	.561	10	.562	2.808	85.101
11	.392	11	.552	2.262	87.361
12	.624	12	.452	2.111	89.472
13	.515	13	.422	1.929	91.401
14	.636	14	.386	1.800	93.201
15	.485	15	.360	1.640	94.841
16	.712	16	.328	1.531	96.481
17	.652	17	.306	1.261	97.742
18	.309	18	.252	1.084	98.826
19	.647	19	.217	1.023	99.849
20	.477	20	.175	.151	100.000

3 factor structure was shown to have optimal eigenvalue, % of variance and cumulative %

Bartlett's test of sphericity: 925.18 ($p=.000$).

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .735.

Extraction method: Principal component analysis.

Factor analysis and construct validity

Factor structure of CABIS was examined by factor analysis. The result of the Bartlett's test of sphericity was 925.18 ($p < .000$), and the value of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .735. The Bartlett's test of sphericity can be used to test the hypothesis that the correlation matrix is an identity matrix. That is, all diagonal terms are 1 and all off-diagonal terms are 0. The current study obtained a value of 925.18 for the test of sphericity. Since the value is large and the associated significance level of 0.000 is small, it is unlikely that the population correlation matrix is an identity. If the hypothesis that the population correlation matrix is an identity cannot be rejected because the observed significance level is large, one should reconsider the use of the factor model (Norussis (1985)). The good Kaiser-Meyer-Olkin value obtained and the highly significant level of the test of sphericity,

were both very comfortable indications that the given set of data were adequate for factor analysis.

These good values supported further application of factor analysis to explore the latent structure of the CABIS. Principal component analysis method of factor extraction was used in this study. Table 5 reported the statistics of principal component analysis. In the initial analysis, a total of three factors could be extracted with the eigenvalue greater than 1.00. In terms of total variance, the three factors accounted for 60.26% of total variance, which can be considered as a reasonable factor number. Furthermore, the scree plot in Fig. 3 showed that the curve straightened out at the three factors. Therefore, the fitness of three-factor solution could be identified.

In the rotation phase of factor analysis, it aimed at achieving simpler and theoretically more meaningful factor solutions. Oblimin rotation was employed in further investigating the factor

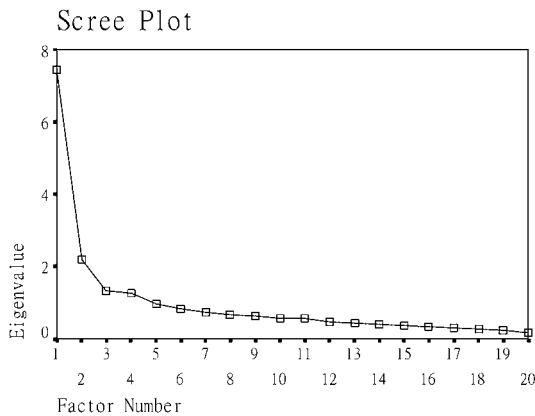


Fig. 3. Scree plot of the factors of the CABIS
The graph for the scree test is presented in Fig. 3. The scree diagram of the factors of the CABIS justifies the three-factor solution to the data. 3-factor structure was shown to have optimal eigenvalue as shown in this scree plot.

loadings. The result was summarized in Table 6. The three factors were labeled according to the items’ nature of construct. Factor 1 was personal factor; factor 2 was social factor; and factor 3 was functional factor. The value of factor loadings was the criteria to group the items in different factors respectively. Personal domain included 9 questions, i.e. question 3,5,6,7,12,16,17,18 and 20 (e.g. question 3: I like my overall physical appearance when wearing my prosthesis). Social domain included 7 questions, i.e. question 1,2,8,10,11,14 and 15 (e.g. question 1: Because I am an amputee, I feel more anxious about my physical appearance in social situation than when I am alone). Functional domain included 4 questions, i.e. question 4,9,13 and 19 (e.g. question 4: It concerns my that the loss of my limb impairs my body’s functional capabilities in various activities of daily living).

The relationships of these three factors were examined in terms of item description, internal consistency and correlation. Cronbach’s alpha was used to measure the internal consistency of the CABIS. In these three factors, the ranges of item-total correlation were .556 to .786, .348 to .653, and .482 to .658 respectively. They indicated a fair relationship of the questions to their respective

Table 6. Factor loadings of items of the CABIS after oblimin rotation

Items	Factor 1	Factor 2	Factor 3
5	.908		
6	.828		
3	.815		
12	.697		
20	.642		
7	.628		
17	.586		
18	.579		
16	.500		
14		.836	
8		.779	
2		.751	
1		.701	
10		.610	.467
11		.541	
15		.505	.358
4			.625
9			.619
19			.599
13			.395

Note. Extraction method: Principal component analysis. Rotation method: oblimin rotation.
Remark: Only showed factor loadings above .35

factors. The internal consistency of the three individual factors and the overall CABIS were found to be .852, .826, .636, and .694 respectively as shown in Table 7. The moderate internal consistency implied that the questions within each factor and the factors of the CABIS measured the same construct. Pearson correlation coefficients among the three factors were presented. As shown in Table 8, all factors were found to have good correlation with one another (ranged from $r = .532, p < .000$ to $r = .652, p < .000$). The factor 1 “Personal factor” and factor 2 “Social Domain” had the highest relationship ($r = .652, p < .000$). The

Table 7. Internal consistency of factors in CABIS

	Cronbach's Alpha	Alpha of CABIS if deleted
Factor 1–Personal Factor	.852	.432
Factor 2–Social Factor	.826	.597
Factor 3–Functional Factor	.636	.623
Overall CABIS	.694	

Table 8. Correlations among factors in CABIS

	Personal Factor	Social Factor	Functional Factor
Personal Factor	—	$r=.652$ $p<.01$	$r=.532$ $p<.01$
Social Factor		—	$r=.545$ $p<.01$
Functional Factor			—

reliability coefficients of ICC among three factors were .914, .900 and .800 as shown in Table 9, which was good and adequate evidence to substantiate the use of CABIS across different time.

Discussion

In this study, a number of modifications were made to questions in CABIS. The reasons for the necessity in modification of questions could be broadly classified into 5 categories: 1) use of specific terms in body image measures; 2) use of generic terms was difficult in psychosocial measurement of Chinese patients; 3) inaccurate translation from English to Chinese version; 4) sensation structure difference between ABIS and CABIS; 5) clarification of meaning in psychosocial construct and 6) grammatical reason in understanding.

When validating the ABIS to CABIS, factor structure between “Personal” and “Social” factors of CABIS might be different from the original study. It was possibly due to cultural difference between Western and Chinese, which created a different point of view on perceived body image.

Table 9. Reliability coefficient of factors in CABIS

	Reliability Coefficient
Factor 1–Personal Factor	.914
Factor 2–Social Factor	.900
Factor 3–Functional Factor	.800
Overall CABIS	.857

For example, the importance of social importance would be much more important than personal acceptance, potential overall estimation on the difficulty in social acceptance, personal characteristics such as acceptance in newly acquired body image and believe in fate and natural arrangements are often the Chinese patients’ concern rather than outcomes. Moreover, Chinese patients showed more concern over the “functional” aspect rather than “personal” importance after amputation was also a major factor for further consideration.

Further validation work was recommended to incorporate more “functional” related questions, to correlate if functional improvement could substantially improve body image and to cross-validate with other psychosocial instrument or quality of life measures for patients after amputation.

Conclusion

The CABIS was developed to assess a person’s perceived body image. The content relevancy and representativeness had been investigated with a high level of agreement. The test-retest reliability was estimated to be good in terms of ICC. The construct validity was analyzed by factor analysis. A three-factor structure was extracted. The factor loading of items was ranged from .395 to .908. The names of three factors were personal factor, social factor and functional factor. A moderate internal consistency was found between items, and the correlations between factors were considerably to be good. A confirmatory factor analysis across different subject groups was recommended in further study to increase the clinical utilities of CABIS.

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Analysis of the Factors Affecting the Quality of Life of Elderly in the “Senior Citizen Academies”

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Abstract: The purpose of this study is to improve the elderly’ quality of life examining the factors which influence their quality of life and related different components.

The main results of this research are as follows;

1. The relationship between the demographic characteristics and quality of life was analyzed, respondents who had higher educational background or standard of living showed higher level of quality of life.

2. The relationship between the health perception characteristics and quality of life was analyzed, the respondents who responded as “I am healthy.” or “I am healthier than same aged people.” showed higher level of quality of life.

3. The relationship between the physical and functional condition of the elderly and quality of life was analyzed. The results showed that male respondents had higher quality of life than female, and had higher educational background showed higher level of quality of life.

4. The relationship between the 6 factors’ viewpoint according to health perception characteristics and quality of life was analyzed, the respondents who responded as “I am healthy.” or “I am healthier than same aged people.” showed higher level of quality of life.

The results of this study showed that the influential factor affecting the elderly’ quality of life was the health perception factor. Therefore, it is required that the program of senior citizen academy should include systematic health promotion education reflecting the elderly’ demand.

Key words: elderly, quality of life, the senior citizen academies

(*Asian J Occup Ther* 4: 13–23, 2005)

Introduction

Korea entered the aging society in 2000 as its elderly population accounted for 7.2% of total population. In 2019, it is expected to be the aged society with over 14% of the elderly population. In 2026, it will be the hyper-aged society. Agricultural and fishery areas already entered the aged society in 2002, with 15.8% of 65 yrs and over population. (Korea National Statistics Office

Received: August 10, 2004, Accepted November 21, 2004

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(KNSO), 2003). The aging of population in Korea is much faster than in developed countries such as the United States, Japan and the United Kingdom (Ministry Health & Welfare (MHW), 2000).

Questions are raised on who will pay for living expenses, medical and nursing care bills of the elderly and how various services are provided for them. The aging population and the subsequent longer senescence period pose large challenge to not only the elderly but also the nation (Ko & Joe, 1997; Koh, 2000). Furthermore, decreased labor productivity resulting from the aging society gives rise to slowdown in economic growth and growing burden of supporting old people. Accordingly conflicts between generations get fiercer. Increasing expenditure for the elderly such as medical expenses causes the government's financial balance to deteriorate. The government perceives a wide range of repercussions arising from the aging population as important challenge largely affecting families and the society as a whole. Therefore, it executes health and welfare polices, and the related institutions for the elderly. However, compared to developed countries, Korea lacks the development of elderly health and welfare systems (MHW, 2003; Ministry of Labor (MOL), 2004). Moreover, much more preparation for occupational therapy is required to respond properly to the policy direction with respect to healthcare, and welfare services (Jeong & Choi, 2003).

The quality of life deals with level of living conditions, and value of human life. It is comprehensive and multi-dimensional concept since different researchers approach the quality of life with different views, goals and methods. Johnson *et al.* (1982) defined it as subjective satisfaction an individual expresses or experiences with respect to physical, social and economic conditions. Homes and Dickerson (1987) said that the quality of life is an abstract and composite term indicating individual's reactions to mental, physical and social factors in normal daily life. Old people in Korea usually show low life satisfaction. The big issue of the elderly after retirement is financial problems in case of the lower class. On the other hand, those in the middle

and upper class face the issue of how they can spend spare time. It is reported that the range of leisure activities is limited for the elderly and their participation is also very low (Kim *et al.*, 1998; 1999).

Many scholars conduct researches ceaselessly to identify factors affecting the quality of life. The focus of these studies is on identifying what constitutes life and what affects life (Ro *et al.*, 1999). Analysis of previous researches suggests that factors influencing the quality of life include gender, age, education, occupation, income, and marital status, and religion, participation in the society, race, and health (Ko & Joe, 1997). As welfare services for the elderly, income guarantee, housing service, services from welfare facilities, health and medical services, and education and leisure services can be solutions to elderly problems, which ultimately improve the quality of life (Nam, 1992). Major elderly welfare facilities offering educational and leisure activities are educational organizations for the elderly, so-called "senior citizen academies" and elderly educational programs, so-called "Elderly Class". These organization and program provide lifelong learning programs related to hobby, health maintenance, income security, and other daily life-related activities (Jeong, 1998). It is known that old people in poor social and economic conditions are highly susceptible to dementia and depression. It implies that programs and services for those people should be developed and provided before anything else. Measures to improve the access of the elderly to medical treatment and services need to be sought (Jeong *et al.*, 2002).

Services including occupational therapy for old people are closely associated with not only individual treatment but also the government's policies since elderly population affects the overall society. Therefore, it is essential to set a direction for development of occupational therapy for the elderly in line with the government's policy direction.

This study is to examine old people in the "senior citizen academies", the place for life-long education to identify health perception features, closely related to the quality of their life, in line with the health and welfare policy direction for the

aging society. This study is intended to provide primary data for efficient preparation for occupational therapy aiming at increasing satisfaction and usage level with respect to planning and execution of programs. The planning and execution of the programs take into account approaches to improvement of the quality of life of the elderly in communities, and related factors.

Methodology

Subject & data collection method

The survey for this study was conducted on 200 old people in two “senior citizen academies” located in Gyeonggi-Do, Korea. These two senior citizen academies were selected because they were running educational programs in a systemic way. 200 surveys were chosen by random sampling. 19 of 200 respondents were not included for the survey analysis since their responses were insufficient, or had lacked information. Eventually 181 respondents were involved in the survey.

As far as data collection method is concerned, the researcher and two or three teachers obtained prior training for data collection worked as an interviewer using structured questionnaires. Man-to-man interview and self-filling-up of questionnaire were used. Data was collected from September 1 to October 30, 2003.

A measurement tool used for this study is questionnaire, which was developed by Ro (1988) for middle-aged adults in Seoul whose reliability was verified by Chae & Oh (1992) to use it for the elderly.

Variables definition

A dependent variable used for this study is the level of the quality of life. Independent variables are demographic characteristics, characteristics of “senior citizen academies”, and health perception characteristics.

Elements constituting the quality of life were dealt with in 39 questions. Factor analysis was conducted for these questions. The components were divided into 6 categories including health status, functions, psychological status, self-esteem, relationships with family and neighbors,

economic life, and periphery and leisure life.

Health status and functions were assessed by 7 questions (extent of activities, activity status, body status, urination and bowel movement, sleep, physical fatigue and discomfort). Psychological conditions were asked with 8 questions (anxiety, a feeling of depressed, fear, concerns, anger, mental hunger, a sense of failure, calmness). Self-esteem was measured by 8 questions (a sense of worthiness, life motivation, undertaking many tasks, clear goals, self-respect, adaptation to environmental changes, an ability to work, optimistic life). Relationships with family and neighbors were assessed by 6 questions (relationship with children, relationship with siblings and relatives, position in the family, relationship with neighbors, relationship with friends, mutual trust and support). Economic conditions were measured by 7 questions (monthly income, assets, preparation for post-retirement period, clothing, overall life, food, current job). Surrounding conditions and leisure activities were asked by 3 questions (home and periphery activities, leisure activities, appearance).

Scoring scale ranges from point 1 (very poor) indicating to point 5 (very good). Scores were combined for totalizations. The scope of score is between 7 and 35 for health status and functions, between 8 and 40 for psychological conditions, between 8 and 40 for self-esteem, between 6 and 30 for relationships with family and neighbors, between 7 and 35 for economic life, and between 3 and 15 for periphery conditions and leisure activities. The higher score is the higher quality of life is. Total scores range from 39 to 195. The higher scores are the higher quality of life is. The reliability level of the tool used was 0.89.

Framework and analysis method

Data analysis was carried out according to the purposes of this study as follows; first, t-test and distribution analysis were conducted to find out whether or not characteristics affect the quality of life of the surveys. Second, factor analysis on components of the quality of life was conducted to assess various factors related to the quality of life in a similar way. Moreover, t-test and distribution analysis were carried out to compare factors

extracted from the factor analysis with demographic characteristics, and health perception characteristics. Third, multiple regression analysis was conducted to figure out what is the important factors affecting the quality of life using demographic characteristics and health perception characteristics as independent variables.

Results

The quality of life by demographic characteristics

It was found that the quality of life was high if the survivors are high-school graduates, well off, or live together with children who are single. The different degree of the quality of life was statistically significant (Table 1).

The quality of life by health perception characteristics

Statistical significance was found in the degree of the quality of life if the respondents said, they were healthy, healthier than the same age group or diagnosed with diabetes (Table 2).

Regression analysis on factors affecting the quality of life

Multiple regression analysis was conducted on all variables to assess factors influencing the quality of life. After removing multicollinearity, correlation analysis was undertaken to remove variables whose correlation coefficient with sub-variables is low, among variables whose correlation coefficient between independent variables is 0.7 or more. Through these processes, demographic characteristics including age, living standards, allowance, health status, and presence or absence of a disease were used as independent variables for the regression analysis.

The results of multiple regression analysis are described in Table 3. Such independent variables as gender, educational level, living standards, and presence or absence of a disease were processed as dummy variable for the analysis.

As for demographic characteristics, higher quality of life was identified in those with high school degree or higher rather than those who are not, those who replied they were well off rather

than those who did not, those living with unmarried children rather than those who were not. Among health perception characteristics, those who are healthy or healthier than the same age group show higher quality of life than those who are not healthy. Factors selected for this model are 29.8% convincing.

Comparison of the quality of life components to demographic characteristics

As a result of factor analysis, factors affecting the quality of life were divided into 6 different categories including body condition and functions, psychological status, self-esteem, relationships with family and neighbors, economic conditions, periphery conditions and leisure activities.

The quality of life components were categorized into 6 groups and compared with demographic characteristics. The findings are depicted in Table 4.

The quality of life with respect to body status and functions was higher in male than in female and it was also better in those with college degree or higher than those with high school degree or lower. In terms of psychological status, the quality of life was higher in male than in female. If those who have high school degree or are living with unmarried children or others, the quality of life was higher.

As for self-esteem, those who replied they were well off or who responded children supported their living expenses seemed to have the higher quality of life.

Comparison with the quality of life components to health perception characteristics

The quality of life components were divided into 6 categories and compared to health perception characteristics as seen in Table 5.

As for the quality of life related to body conditions and functions, statistical differences were in those who do not suffer from diseases, are healthy or healthier than the age group compared. Their quality of life was higher than otherwise. In terms of psychological conditions, the quality of life was higher in those who are healthy or healthier than the age group compared. The differences were statistically significant.

Table 1. Comparison of the subjects by Quality of life and demographical characteristics Unit: Mean \pm SD

Category		Quality of life	t value or F value
Gender	Male	137.93 \pm 23.00	1.874
	Female	126.55 \pm 16.48	
Age	Under 66	125.28 \pm 19.32	0.607
	67–72	128.44 \pm 15.81	
	Over 73	128.37 \pm 17.21	
Religion	Christianity	120.00 \pm 15.70	0.947
	Buddhism	129.76 \pm 14.43	
	Roman Catholicism	128.01 \pm 17.66	
	None	122.24 \pm 18.45	
Education	None	126.19 \pm 13.70	4.212**
	Elementary school	127.17 \pm 14.77	
	Middle school	120.35 \pm 17.41	
	High school	137.33 \pm 22.70	
	college or higher education than college	135.67 \pm 22.09	
Marital status	Married	125.90 \pm 18.29	-1.377
	Parted by death	129.46 \pm 15.94	
Living standard	Poor	117.17 \pm 12.05	7.679*
	Average	127.30 \pm 16.88	
	Wealthy	146.88 \pm 19.00	
How to earn living expenses	By working	118.67 \pm 19.63	1.271
	On retirement funds	127.83 \pm 21.54	
	On savings	133.23 \pm 18.60	
	On children's support	128.01 \pm 16.92	
	On pension and living grants	126.14 \pm 11.49	
	Others	112.00 \pm 9.01	
Allowances (monthly)	Less than 100,000 won	124.85 \pm 15.93	1.892
	110,000–200,000 won	129.64 \pm 16.91	
	More than 210,000	130.04 \pm 19.75	
People living together	Son's family	127.67 \pm 15.08	3.701**
	Daughter's family	130.00 \pm 16.31	
	Unmarried children	140.59 \pm 21.43	
	Old spouse	123.71 \pm 18.65	
	Alone	124.48 \pm 11.73	
	Others	129.12 \pm 19.03	
The biggest problems	Health problems	127.50 \pm 17.18	2.256
	Economic problems	128.75 \pm 20.23	
	Separation with the spouse	126.12 \pm 16.63	
	Solitude and loneliness	122.00 \pm 16.21	
	Bad terms with children	157.67 \pm 26.55	
	Nothing to do	125.87 \pm 17.34	

* $p < .05$, ** $p < .01$

Table 2. Comparison of the subjects by Quality of life and health perception characteristics Unit: Mean \pm SD

Category		Quality of life	t value or F value
Disease	Absence	132.70 \pm 20.97	1.814
	Presence	126.46 \pm 16.39	
Diagnosis	Hypertension	124.20 \pm 17.81	4.850**
	Diabetes	137.25 \pm 17.01	
	Arthritis	128.79 \pm 13.97	
	Heart disease	113.58 \pm 12.10	
	Others	135.28 \pm 21.72	
Health status	Poor	119.05 \pm 15.37	23.956***
	Average	125.40 \pm 15.87	
	Healthy	145.38 \pm 14.27	
Same age group Healthy status	Poor	120.86 \pm 16.70	19.533***
	Average	123.73 \pm 15.01	
	Healthy	140.81 \pm 16.49	

p < .01, *p < .001

Table 3. Regression analysis on factors affecting the quality of life

Variable	Regression coefficient (β)	Standard Error	P-value
Demographic characteristic			
Age	0.3369	0.2038	0.0996
Allowance (monthly)	0.0151	0.0820	0.8532
Gender (female=1, male=0)	3.4660	4.9000	0.4812
Education (over high school=1, under middle school=0)	8.4353	3.3980	0.0142
Living Standard (wealthy=1, poor=0)	14.1284	5.4200	0.0102
Living together (unmarried children=1, others=0)	13.8344	3.8720	0.0003
Health perception characteristics			
Health status (healthy=1, poor=0)	11.4564	4.6626	0.0158
Same group aged (Healthy=1, poor=0)	8.3428	3.9944	0.0380
Disease (presence=1, absence=0)	2.2091	3.1410	0.4830
Constant	91.476	16.4061	0.0000

Adj R²=0.298

F value=9.498 (P= .000)

With respect to self-esteem, the quality of life was higher in those who are healthy or healthier than the age group than in those who are otherwise. Those who are healthy showed the higher quality of life in relation to relationships with family and neighbors.

For economic life is concerned, the quality of life was better in those who are healthy or healthier than the age group than in those who are

otherwise. In terms of periphery and leisure activities, the quality of life was also better in those who are healthy or healthier than the compared age group than in those who are otherwise.

Discussion

As for demographic characteristics, the

Table 4. Comparison of the subjects by Quality of life components and demographical characteristics Unit: Mean

Category		Factors 1		Factors 2		Factors 3		Factors 4		Factors 5		Factors 6	
		t/F		t/F		t/F		t/F		t/F		t/F	
Gender	Male	25.20	4.300***	30.40	2.556*	28.27	0.678	18.80	0.386	24.80	0.745	10.47	1.075
	Female	20.52		26.10		27.22		19.17		23.78		9.75	
Age	Under 66	21.64	1.906	26.53	0.084	26.89	0.436	18.53	1.418	22.47	3.045*	9.23	3.313*
	67–72	21.04		26.63		27.16		19.62		24.24		9.75	
	Over 73	20.12		26.18		27.85		19.13		24.68		10.40	
Religion	Christianity	18.33	1.483	25.11	0.433	26.22	0.390	18.78	0.418	22.44	0.706	9.01	0.630
	Buddhism	21.00		25.57		28.29		19.38		25.14		10.38	
	Roman Catholicism	21.15		26.75		27.30		19.22		23.80		9.78	
	None	21.00		25.41		26.54		18.15		23.54		9.56	
Education	None	21.48	6.857**	25.45	6.242**	26.19	1.755	19.29	0.736	23.45	0.620	10.32	1.170
	Elementary school	20.34		25.73		27.58		19.13		24.37		10.01	
	Middle school	19.03		24.65		25.91		18.62		22.88		9.26	
	High school	23.46		31.50		28.83		20.04		24.21		9.29	
	Higher education than college	24.56		29.89		29.89		18.22		23.44		9.67	
Marital status	Married	20.68	-0.819	25.93	-1.233	27.06	0.653	18.89	1.049	23.79	0.228	9.55	1.598
	Parted by death	21.20		27.10		27.62		19.44		23.96		10.14	
Living standard	Poor	20.50	1.771	24.75	0.491	25.42	4.905**	17.75	1.771	19.42	13.063**	9.33	3.167*
	Average	20.81		26.55		27.17		19.16		23.87		9.75	
	Wealthy	23.63		27.13		33.00		20.75		30.50		11.88	
How to earn living Expenses	By working	21.25	0.785	25.83	1.779	24.08	2.342*	18.58	0.638	21.83	1.940	8.08	2.178
	On retirement funds	20.33		31.00		25.67		18.58		22.92		9.33	
	On savings	21.72		26.97		28.03		19.56		25.41		10.54	
	On children's support	20.41		26.20		28.17		18.97		23.37		9.89	
	On pension and living Grants	21.71		24.57		25.24		19.95		25.29		9.38	
	Others	22.00		24.21		23.42		18.00		21.50		9.48	
Allowances (monthly)	Less than 100,000 won	20.29	2.120	26.31	0.244	26.87	0.975	18.82	0.648	23.13	1.884	9.42	2.295
	110,000–200,000 won	21.82		26.98		27.14		19.48		24.24		9.98	
	More than 210,000	21.07		26.15		28.30		19.35		24.83		10.35	
People living together	Son's family	20.80	1.440	25.34	2.677*	28.19	2.091	19.28	2.029	23.87	2.637*	10.09	1.159
	Daughter's family	23.00		26.70		25.70		19.90		24.40		10.30	
	Unmarried children	22.65		31.00		29.12		21.00		27.29		9.54	
	Old spouse	20.35		26.40		26.32		18.20		23.13		9.32	
	Alone	20.36		25.88		26.16		19.32		22.68		10.08	
	Others	22.50		32.50		34.50		20.50		29.00		12.00	
The biggest problems	Health problems	20.40	1.948	26.25	1.170	27.46	1.417	19.19	1.054	24.37	2.131	9.83	1.817
	Economic problems	22.65		26.40		27.40		20.35		22.35		9.60	
	Separation with the spouse	21.43		27.57		26.14		18.43		23.00		9.43	
	Solitude and loneliness	21.60		24.87		27.20		18.13		21.27		8.93	
	Bad terms with children	25.67		33.67		34.33		20.33		30.33		13.22	
	Nothing to do	20.87		27.80		25.20		18.20		23.53		10.27	

*p < .05, **p < .01, ***p < .001

†Factor 1: factors related to physical conditions and functions,

Factor 2: factors related to mental status,

Factor 3: factors related to self-respect,

Factor 4: factors related to the relations with family/neighbors,

Factor 5: factors related to economic life,

Factor 6: factors related to activities around and leisure activities.

Table 5. Comparison of the subjects by Quality of life components and health perception characteristics Unit: Mean

Category		Factors 1	t/F	Factors 2	t/F	Factors 3	t/F	Factors 4	t/F	Factors 5	t/F	Factors 6	t/F
Disease	Absence	22.70	2.578*	28.57	2.012*	27.53	0.235	19.13	-0.008	24.40	0.630	10.37	1.353
	Presence	20.56		26.03		27.26		19.14		23.76		9.70	
Diagnosis	Hypertension	20.75	5.714**	26.62	0.891	26.09	3.136*	18.67	2.597*	22.49	3.529**	9.58	0.940
	Diabetes	21.83		30.00		27.38		21.63		25.50		9.88	
	Arthritis	20.44		26.02		27.90		19.53		24.89		10.02	
	Heart disease	16.67		25.00		24.75		17.17		21.33		8.67	
	Others	22.93		27.07		29.93		19.76		25.52		10.07	
Health status	Poor	18.70	26.393***	25.63	2.977*	26.73	11.933***	19.00	5.199*	22.78	9.283**	9.20	9.463**
	Average	21.13		26.18		26.28		18.64		23.48		9.68	
	Healthy	24.79		29.00		31.76		21.00		27.34		11.48	
Same age group health status	Poor	18.79	21.651***	26.69	3.980*	26.81	9.132***	18.33	3.820*	22.95	6.550*	9.29	7.505*
	Average	20.46		25.40		26.18		18.96		23.23		9.51	
	Healthy	24.07		28.64		30.43		20.36		26.26		11.05	

*p< .05, **p< .01, ***p< .001

†Factor 1: factors related to physical conditions and functions,

Factor 2: factors related to mental status,

Factor 3: factors related to self-respect,

Factor 4: factors related to the relations with family/neighbors,

Factor 5: factors related to economic life,

Factor 6: factors related to activities around and leisure activities.

higher education level is and the higher living standards are, the higher quality of life was. Such finding was matched with the findings from studies of Kim *et al.* (1999), Park (1998) and Kim (2003) that the quality of life for the elderly seemed better as their education level is higher or their living standards are higher.

The quality of life was higher in those who are between 67 and 72, have religion, or whose spouse was dead than those who are otherwise. These differences were insignificant. In the previous study, Park (1998) suggested that those with religion showed higher satisfaction with their life than those without religion. The study of Ko & Joe (1997) unveiled that religion was a powerful variable in improving the quality of life.

Among the old people under the focus of this study, those who replied they were healthy and healthier than the compared age group had the high quality of life, which was statistically significant, regarding health perception characteristics. This finding is line with the results of researches by Byun (1998), Park (1998), Kim *et al.* (1998). As the previous studies suggested that

health is a very crucial factor influencing the quality of life of the elderly, improvement of health play a very important role in enhancing the quality of life of the elderly. With the objective of ensuring stable, healthy and lively life of the elderly, the health and welfare policies in 2004 in response to the aging society pursue the introduction of public nursing care insurance for the old people, and expansion of infrastructure such as nursing facilities and human resources. In this regard, more occupational therapists should be nurtured to secure professionals to help the elderly to maintain their health in order to improve health and the quality of life of the elderly. Furthermore, we need to consider the adoption of occupational therapy in development of the elderly health programs. Life-long education should be provided systematically to create sound leisure culture.

Studies on needs for mental health services for the elderly point out those residents in communities perceive dementia as a mental health problem of the elderly and therefore, projects for the related health service need to be reinforced (Jeong, 2001). Programs should be developed and

applied to the reality with consideration of the elderly health conditions and the needs for the elderly health and welfare service.

This study takes a look at components of the quality of life by demographic characteristics and health perception characteristics. The quality of life with respect to body conditions and functions was higher in male than in female. It was also better in those with college degree or higher than those with high school degree or lower. The gap in the quality of life was statistically significant. In terms of psychological status, the quality of life was higher in male than in female. When old people have high school degree or are living with unmarried children or others, the quality of life was higher.

Such results showed that male, high educational level, living together with unmarried children, and high living standards are demographic characteristics having positive impacts on components of the quality of life. Rhee (1999) suggested in comparison of the quality of life by demographic characteristics that serious and obvious differences between population groups in different aspects of life are shown between men and women. The gap between old men and old women is created not simply in senescence period but it has been accumulated socially through the periods of the whole life. Therefore, such gap occurs more obviously in senescence period.

The high quality of life of the elderly who are living with single children or others suggests that old people may be proud of themselves as supporter of children by providing financial assistance to their children who are grown-ups. It also implies that the largest satisfaction with life to the elderly stems from love that they feel while living together with their children and grand children. Kim *et al.* (1999) proved that family cohesion is an important variable in a sense of subjective well-being. Given all, family members need to strive to sustain good family relationship to help the elderly enjoy the high quality of life.

As for the quality of life related to body conditions and functions, statistical differences were in those who do not suffer from diseases, are healthy or healthier than the age group compared.

Their quality of life is higher.

These findings show that the perception that the elderly themselves are healthy or healthier than others in the age group compared is a variable influencing 6 components of the quality of life. Health perception characteristics are the most powerful factor in the quality of life of the elderly.

Limitation and Suggestion

This study was aimed to analyze variables affecting the quality of life for the elderly by assessing the quality of their life. However, this study has limitations with respect to methodology; First, the tool used for this study was developed by Ro (1988) for middle-aged people in Seoul. Chae & Oh verified its reliability for the elderly (1992). Therefore, it should be prudent to expand and interpret the findings. Second, old people under the focus of this study were selected by random sampling among those from the senior citizen academies, living in Gyeonggi-Do, Korea. Hence, it is difficult to see them representing the entire elderly population in Korea.

In line with priorities and action plan with respect to the government's health and welfare policies in response to the aging society; first, this study finds that health perception characteristics are the most powerful factor influencing the quality of life of old people in senior citizen academies. Therefore, professional staffs for the elderly health and welfare services need to develop health-related educational programs to help old people maintain and improve physical and psychological health to ensure that the quality of life for the elderly is enhanced. Second, since factors affecting the quality of life differ between old people in senior citizen academies and old people in communities, further study should be undertaken on the elderly in communities to compare those factors between the two groups. Third, we can hardly find measurement tools recently developed regarding the quality of life of the elderly. Accordingly, development of measurement tool is required for the quality of life of the elderly.

In order to deal with problems arising from the aging population efficiently, the elderly health and welfare facilities, and the related human

resources need to be prepared to have balance in demand and supply so that more opportunities should be provided for healthy old people to participate in the society. Therefore, the role of occupational therapists needs to be expanded for national development and improvement in the quality of life. There is the hope that occupational therapy for the elderly will drive such social changes.

Conclusion

This study aimed at providing primary data for improvement of the quality of life for the elderly by assessing the quality of life of old people in the senior citizen academies. 181 old people in the senior citizen academies were under the focus of this study to identify what constitutes the quality of life, and figure out differences between those components. Unit for the analysis of this study was individuals. An interview on the elderly in the senior citizen academies was used for data collection.

The findings of this study are as follows:

First, in terms of demographic characteristics, the elderly with high educational level and high living standards had the high quality of life, which is statistically significant.

Second, as for health perception characteristics, statistically significant differences were found in the degree of the quality of life if the elderly are healthy or healthier than the compared age group.

Third, among demographic characteristics, the quality of life with respect to body status and functions was higher in male than in female and it was also better in those with college degree or higher than those with high school degree or lower. The gap in the quality of life was statistically significant. In terms of psychological status, the quality of life was higher in male than in female. If those who have high school degree or are living with unmarried children or others, the quality of life was better. When it comes to economic conditions, the quality of life was higher in those who are well off, or live together with others.

Fourth, the quality of life in relation to its 6

components by health perception characteristics was higher in those who replied they were healthy or healthier than the age group compared than those who replied otherwise. The differences were statistically significant.

This study concludes that education level and living standards are important demographic characteristics affecting the quality of life of old people in the senior citizen academies, and the perception of being healthy or healthier than others in the compared age group is important health perception characteristics. Ultimately, health perception characteristics are the most powerful factor influencing the quality of life of the elderly studied.

Accordingly, this study strived to identify important factors affecting the quality of life of old people in the senior citizen academies, and analyze characteristics of the old people under the focus of this study, quality of life components, and related variables. It is significant that by doing so, this study was intended to provide primary data for development and application of community health improvement programs to enhance the quality of life of the elderly.

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