

# Effects of Activity Participation of the Elderly on Quality of Life

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**Quality of life (QOL) and personality were examined in 2 groups of elderly subjects with and without activity participation (AP). A survey was conducted with 321 elderly subjects over 65 years of age using a 24-item questionnaire regarding personality and depressive inclination and the visual analogue scale-happiness to measure QOL. The AP group was involved in 5 types of activity: community center activity course, learning and lecture participation, club activity, elderly manpower service activity and other activities. The QOL of the AP group was significantly higher than the non-AP group as expected. The perceptual difference between the 2 groups obtained by the correspondence and cluster analyses was that although the elderly of the AP group were satisfied and not bored with their current life, this trend was not clear for the non-AP group. Among the 5 activity types, other activities, characterized as activities adhered to by participants over a long period, showed the highest QOL compared with the 4 other types. In conclusion, the AP of the elderly should be encouraged, and continuing AP might be an important factor in improving QOL of the elderly.**

**Key words:** activity participation; elderly; quality of life; personality questionnaire; visual analogue scale-happiness

The rate of aged persons in the Japanese population is rapidly rising, and it is estimated that it will reach 27.4% in 2025. As the life span of the elderly is lengthened, improvement in psychosocial satisfaction and quality of life (QOL) is becoming an important task as well as the maintenance of physical health. However, because of the variety of value levels and life styles of the elderly, it seems to be increasingly difficult to explain their psychosocial satisfaction and QOL only in the fixed frame of “elderly.” This variability of elderly people is seen in their activity preference also. Therefore, the municipal office of each community in Japan offers

opportunities to participate in many activities. Recently, there has been an increase in research for the elderly regarding activity participation (AP) and QOL, some focusing on factors for promoting AP (Sugai et al., 1996; Matsuda et al., 1998; Lindstrom et al., 2002) and some on factors for improving QOL such as health, family, personal relations, role function and recreational activity (Matsubayashi et al., 1992; Shibata, 1996). However, little is known about the association between the type of AP of elderly people and their QOL. In this study, the elderly living in Yonago City were surveyed in order to find out whether AP contributed to improv-

Abbreviations: AP, activity participation; C, Cramer association coefficient; GDS-15, 15 geriatric depression scale; QOL, quality of life; VAS-H, visual analogue scale-happiness

**Table 1. Twenty-four question items regarding the psychosocial condition of the elderly**

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- 1 Do you prefer to do things in an exact manner?
  - 2 Do you push yourself to your idea without compromising others?
  - 3 Do you like taking care of others?
  - 4 Do you look at the good point of the person rather than the bad point?
  - 5 Do you frequently suppress yourself without saying “no”?
  - 6 Are you influenced by family members or others rather than sticking at your idea?
  - 7 Do you prefer social gatherings?
  - 8 Do you frequently get upset over little things?
  - 9 Do you ask or talk to someone when you are puzzled?
  - 10 Are you basically satisfied with your life?
  - 11 Have you dropped many of your activities and interests?
  - 12 Do you feel that your life is empty?
  - 13 Do you often get bored?
  - 14 Are you in good spirits most of the time?
  - 15 Are you afraid that something bad is going to happen to you?
  - 16 Do you feel happy most of the time?
  - 17 Do you often feel helpless?
  - 18 Do you prefer to stay at home, rather than going out?
  - 19 Do you feel you have more problems with memory than most?
  - 20 Do you think that it is wonderful to be alive now?
  - 21 Do you feel pretty worthless the way you are now?
  - 22 Do you feel full of energy?
  - 23 Do you feel that your situation is hopeless?
  - 24 Do you think that most people are better off than you are?
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Cited from Yesavage and Brink (1983) and Sugita (1985).

ing their QOL or psychosocial condition and whether the type of AP was associated with their QOL or psychosocial condition.

## Subjects and Methods

In Yonago City, a survey was conducted in all 26 districts on 321 elderly persons, over 65 years of age and able to respond to a questionnaire. The welfare commissioner of each district was asked to

carry out the survey because of his/her familiarity with the elderly in his/her area. Because a lower reply rate was anticipated when the questionnaire was mailed, a home visit survey was used. A total stranger visiting a home more or less makes people take precaution against the visitor; thus, we thought a better method was to use a home visit survey done by a familiar person like a welfare commissioner who periodically visited the residents of his/her district. The questionnaire was delivered and collected by the welfare commissioner, and the elderly subjects responded to the questionnaire anonymously. Before starting the survey, written informed consent for conducting the survey was obtained, and the questionnaire was given only to the persons who agreed to the study.

The questionnaire consisted of question items on i) family make-up, that is, living with family or alone; ii) types of AP: community center activity, learning and lecture participation (*jinsei daigaku*), club activity, elderly manpower service activity (silver *jinzai haken* center) and other activities which were not included in the other 4 types of activity; iii) psychosocial condition and iv) QOL. For assessing the psychosocial condition of these elderly subjects, the 9 items of the ego-gram (Sugita, 1985) and the 15 geriatric depression scale (GDS-15) items (Yesavage et al., 1983) were used. In order to lighten the subjects' burden of having to answer so many questions, the 9 ego-gram items were selected from a total of 50 original ego-gram items by eliminating similar items. This item reduction was done with another 120 elderly who were not subjects for the present study but performed the ego-gram test. The total of 24 items, a combination of the 9 ego-gram items plus the GDS-15 items (Table 1), were answered by choosing one of 3 possible answers: “yes,” “neither yes or no” and “no.” The QOL of our elderly subjects was examined with the visual analogue scale-happiness (VAS-H) developed by Matsubayashi et al. (1992) as a QOL measure. The VAS-H is portrayed as a 100-mm horizontal line with “lowest QOL” on the left and “highest QOL” on the right. Elderly subjects were asked to mark an X on the line in response to each of the 7 VAS-H items: “Mark the degree you

feel i) you are healthy; ii) your feeling about life is good; iii) your family relations are going on nicely; iv) your friendships are going on nicely, v) your financial state is OK; vi) you are satisfied with your life and vii) you are happy. In the present study, AP was defined as the activity in which the subject was participating at the time of the survey.

### Statistical analyses

Statistical analyses used were the Ward method of cluster analysis, the correspondence analysis and the Cramer association coefficient ( $C$ ) for the 24 items from the ego-gram and depression scale, and the Mann-Whitney  $U$  test for the VAS-H data. The statistically significant difference was tested at a level of  $P < 0.05$ .

## Results

### Comparison of QOL between AP and non-AP groups

Subjects' characteristics are shown in Table 2 in terms of AP or non-AP, living with family or alone, sex and age. Effective respondents were obtained from a total of 300 elderly subjects, 154 activity

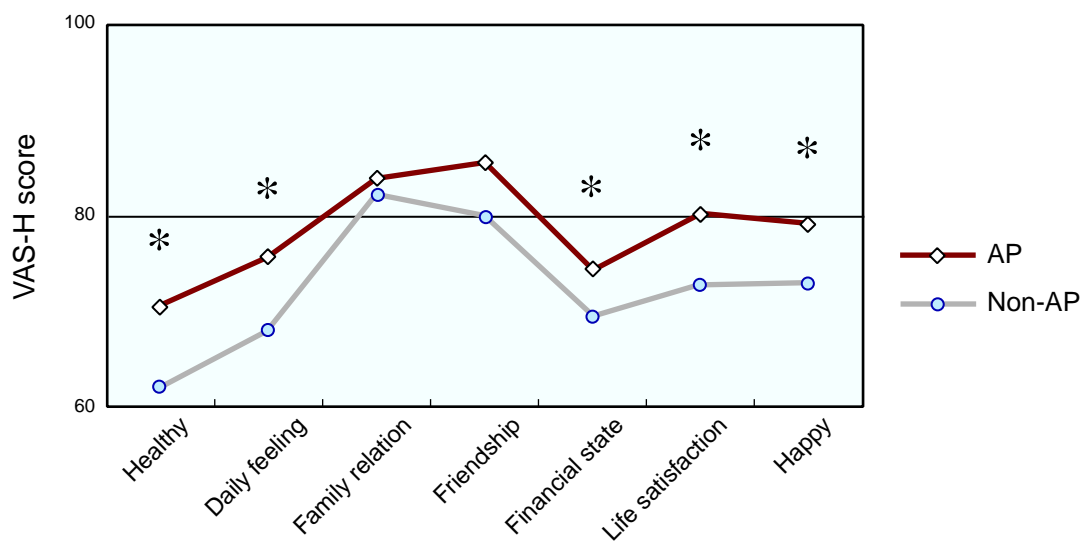
**Table 2. Subjects characteristics**

	AP group	Non-AP group
Number of subjects*	154	146
Living with family	106	85
Living alone	48	61
Age (mean $\pm$ SD)	73 $\pm$ 5	76 $\pm$ 6
Sex ratio (men/women)	63/91	57/89

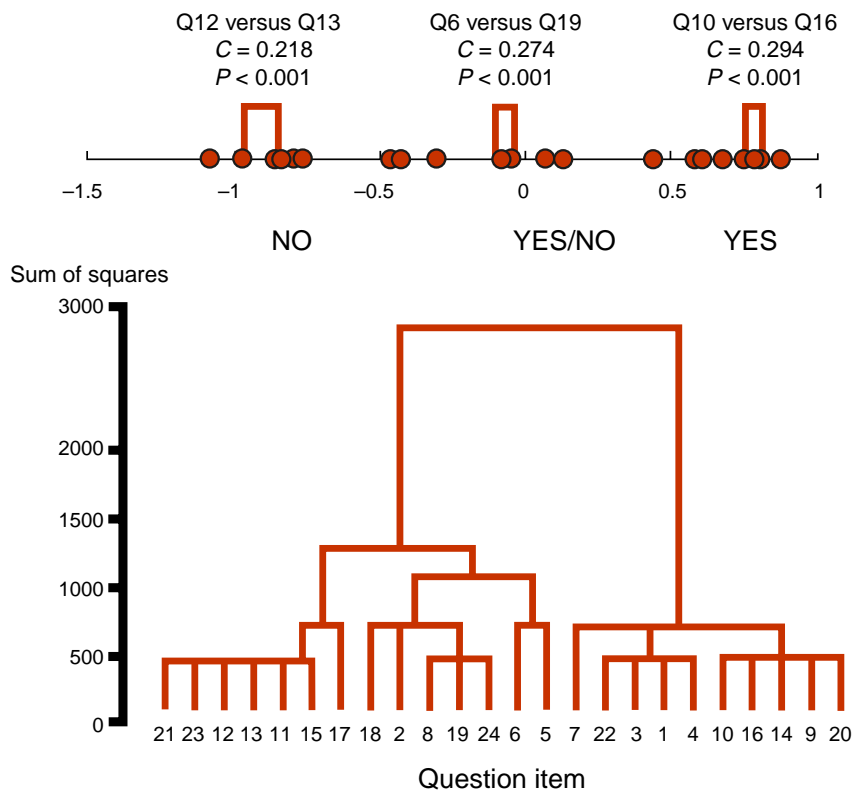
\*Total, 300.

AP, activity participation.

participants and 146 non-activity participants. Twenty-one of the 321 elderly subjects could not be included in this study because some of them did not answer to all the question items or answered them incorrectly. There was no significant difference between the AP and non-AP groups for "living with family or alone" and "sex." Results from the VAS-H data are shown in Fig. 1. For all 7 items, the AP group placed the mark at a point closer to the right end of the 100-mm line than the non-AP group, showing a higher VAS-H score in the AP group (Fig. 1). Especially for the 5 items, "health consciousness," "daily feeling," "financial state," "life satisfaction" and "feeling of happiness,"\* each VAS-H score was significantly higher in the AP group than in the non-AP group ( $P < 0.01$ ).



**Fig. 1.** The visual analogue scale-happiness scores analyzed by group with or without activity participation (AP). \* $P < 0.05$ .

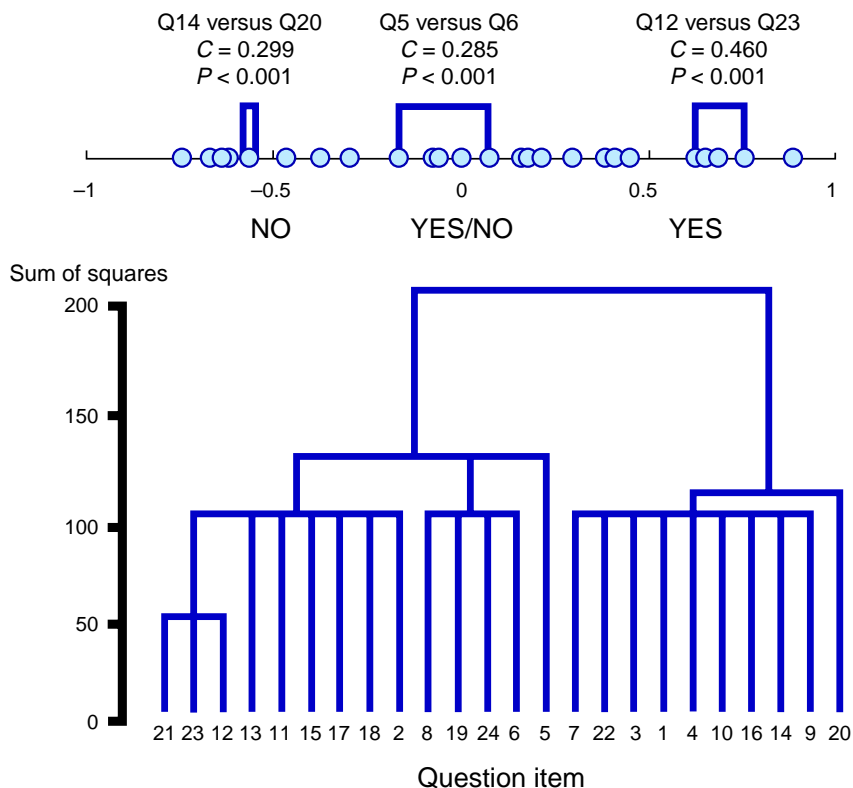


**Fig. 2.** Perceptual map and inter-item association for 24 items in the activity participation (AP) group. *C*, Cramer association coefficient.

### ***Comparison of psychosocial condition between AP and non-AP groups***

The 24 items were used to identify differences in psychosocial condition between the AP and non-AP groups. The upper part of each Fig. 2 and 3 shows the 24-item plotting of correspondence analysis for both groups. On the horizontal axis, all 24 items and the 3 answer types (“yes,” “neither yes or no” and “no”) were plotted in order to map a perceptual association between items and answer types. It was very revealing that the items closer to “yes” corresponded favorably with the “yes” answers, and the items closer to “no” corresponded favorably “no” answers. When 2 of the 24 items are closer to either of the 3 answer types, the Cramer association coefficient was calculated to confirm whether the 2 items had a valid perceptual association. For example, as shown on the correspondence analysis axis, for the

AP group items 10 and 16 were closer to “yes.” The questions for items 10 and 16 were “Are you basically satisfied with your life?” and “Do you feel happy most of the time?”, respectively. And these 2 items had a proximal distance to “yes.” This was also supported with a higher Cramer association coefficient between items 10 and 16 ( $C = 0.249$ ,  $P < 0.001$ ). Similarly, the answer “no” was associated with items 12 and 13: “Do you feel that your life is empty?” and “Do you often get bored?”, respectively. And these 2 items had a proximal distance to “no.” This answer pattern for items 12 and 13 was also supported with a significant association by the Cramer coefficient ( $C = 0.218$ ;  $P < 0.001$ ) (Fig. 2). Figure 3 shows the perceptual association result from the non-AP group. Item 14, “Are you in good spirits most of the time?”, and item 20, “Do you think it is wonderful to be alive now?”, were closer to “yes,” and item 12, “Do you feel that your life is empty?”, and item 23, “Do you often feel help-



**Fig. 3.** Perceptual map and inter-item association for 24 items in the non-activity participation (non-AP) group.  $C$ , Cramer association coefficient.

less?”, were closer to “no.” The lower part of each Fig. 2 and 3 shows dendrograms illustrated by obtaining the degree of dispersion of the 24 items by sums of squares (sum of squared deviations of the values from their mean). This was done by the Ward method. For the AP group, items 12 and 13 which were answered “yes” and items 10 and 16 which were answered “no” were located in the same cluster of the dendrogram. The same is seen in the dendrogram of Fig. 3 for the non-AP group. This answer pattern was finally validated by the fact that each of 3 statistical procedures (the Ward method, correspondence analysis and Cramer coefficient) led to the same results as described above.

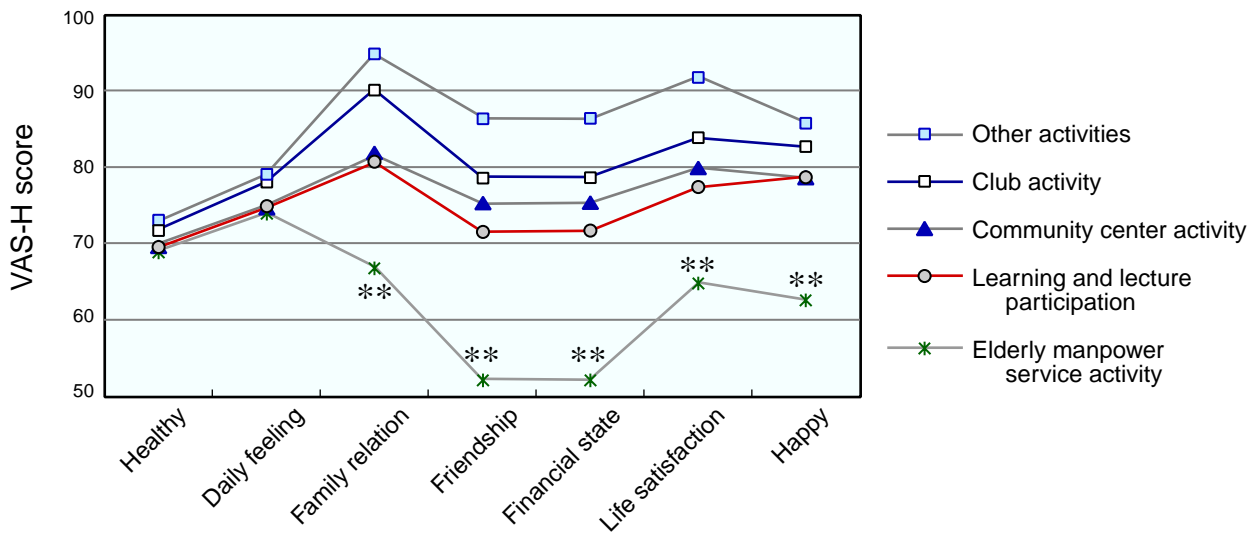
### VAS-H and activity types

In Fig. 4, the scores of the 7 VAS-H items are shown with activity types: community center activity, learning and lecture participation (*jinsei daigaku*), club activity, elderly manpower service activity and other activities. Community center activity consisted of gatherings of the elderly who had a similar taste to either of *haiku*, *shogi* and *igo*.<sup>\*</sup> Learning and lecture participation was mainly participation in lectures for the elderly, which were prepared by the Yonago Municipal Office. The elderly in the club activity participated in making handicrafts or playing musical instruments (mandolin, flute, etc.). The

\* *haiku*: a Japanese lyric verse form having 3 unrhyming lines of 5, 7 and 5 syllables, traditionally invoking an aspect of nature or the seasons.

*shogi*: a Japanese game similar to chess that is played on a board with 81 squares, each side having 20 pieces.

*igo*: a Japanese chess-like game played on a horizontally and vertically 19-lined board with 180 white and 181 black *go* stones.



**Fig. 4.** The visual analogue scale-happiness scores analyzed for each activity. \*\*\* $P < 0.01$ : compared with all other activities.

elderly manpower service activity refers to the one where the elderly register to obtain jobs. Activities not included in these 4 types were dealt with separately as “other activities”.

The VAS-H score was higher for the club and other activities. Elderly subjects whose relation with family went well and who were satisfied financially participated in these 2 types of activities. The lowest VAS-H score was seen in elderly subjects belonging to the elderly manpower service activity, and the score was significantly lower compared with the other 4 types ( $P < 0.01$ ) (Fig. 4).

## Discussion

### Comparison of VAS-H between AP and non-AP groups

The VAS-H score for health consciousness was higher in the AP group than in the non-AP group, suggesting that the elderly who participated in activities had a better health status leading to a higher QOL. This finding is supported by several studies in which most elderly subjects were healthy in the state of AP (Sugai et al., 1996; Lindstrom et

al., 2002). Though it is believed that being healthy is one of the conditions for participating in an activity, participation in the activity itself also helps people to feel better and healthier. When the elderly stay at home with no daily routine, few of them have a sense of being healthy; however, participation in daily activities may produce a sense of health by the recognition of their ability to move or even create something. The VAS score for daily feeling was also higher for the AP group. There is one report which showed that by making friends, having conversation, going on hot spring tours and making handicrafts, stress was alleviated and depression lowered considerably (Shibata, 1996). Thus, it can be inferred that stress divergence also is an effect of AP brought about by improving an elderly persons' daily feeling. The VAS-H score on life satisfaction of the elderly scored higher in the AP group, indicating that AP works to make the elderly feel satisfied with their life. Some reports say that AP sometimes brings the person to a new and impressive discovery in daily life, and this helps him/her to be interested in something and to avoid isolation (Barkay et al., 2002; Holahan et al., 2002). However, in the elderly subjects of this study, better financial condition of the AP group might have

influenced their daily feeling or life satisfaction in a positive way.

### ***Comparison of psychosocial condition between AP and non-AP groups***

Between the 2 groups there was a different response pattern for the 24 items from the personality and depression scale. As seen in Figs. 2 and 3, for the AP group, the “yes” and “no” items were clearly separated with higher dispersions. However, for the non-AP group, dispersions between the “yes” and “no” items were lower than the AP group. This shows that the AP group distinctly responded to some items by saying “yes” and some other items by saying “no,” but for the non-AP group, a distinction between the “yes” and “no” answers was not well clarified compared with the AP group. It seems that the AP group clearly agreed that they felt happy and satisfied with their life, and clearly disagreed that their interests in activities were fading out or they often got bored. On the other hand, the non-AP group showed a positive response to the question by a general expression like “being alive is wonderful” or “things should be done in an exact manner.” However, their responses were vague to the question of whether or not their life was going happily or satisfactorily.

### ***QOL and AP***

Among the 5 activities (community center activity, learning and lecture participation, club activity, elderly manpower service activity and other activities), other activities had the highest QOL score on the VAS-H. Also, other activities included elderly persons who had been participating in an activity for more than 3 years or even several elderly persons who had been adhering to one for more than 30 years. Some elderly who participated in other activities mentioned that their activities became a big part of their life; therefore, it was easy for them to keep going at it without any trouble. It is not easy for one to find something like a hobby or an interest at an older age. However, the result of this study

indicated that if one participates in an activity which one can adhere to for a longer time, his/her QOL improves when he/she gets older. Other activities and club activity occupied the highest and second highest scores in the QOL measure on the VAS-H. Since the elderly persons participating in the 2 activities had good family relations and financial state, these factors have to be considered as a great influence on the higher QOL of the 2 activities.

The lowest QOL was found for elderly persons who were members of the elderly manpower service activity, and interestingly, this was true for all 7 items of the QOL measure. Especially, the QOL score for financial state and friendship was much lower than the other 4 activities. The reason why the elderly register in this service was to obtain a job and income, and no subject registered for a hobby or an interest or to maintain their health. For the elderly in a lower financial state, it was suggested that AP was still a means of earning income and they could not afford to enjoy AP.

In conclusion, the AP group had a high QOL in all items on the VAS-H QOL measure than the non-AP group as expected. For the items of health consciousness, life satisfaction, feeling in daily living and happy feeling, these were shown to have significant differences. The 24 items for assessing psychosocial condition also resulted in the AP-group being satisfied with their current life and living with less boredom; however, this trend was not clear in the non-AP group. Among the activities of the AP group, a longer-kept activity was shown as relevant to a higher QOL. However, the elderly in a job activity had a lower QOL on financial condition, and seemed to have the disadvantage of not being able to enjoy activities due to a lack of sufficient funds.

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