The Relationship Between Homebound Status and Occupational Competence, and Its Effects on Health-related Quality of Life

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Summary

Objective/Background: This study aims to develop a fuller understanding of health-related quality of life (HRQOL) outcomes for older adults who were homebound (either occupationally competent or not occupationally competent) and not homebound (either occupationally competent or not occupationally competent).

Methods: All the study participants were \( \geq 65 \) years of age (\( N = 5,135 \)) and lived in the city of Arakawa (Tokyo, Japan). Questionnaires were inclusive of the Short Form-8 for HRQOL and Occupational Self-Assessment (version 2.1), and were sent to participants by mail. The response rate was 38.7% (1,991/5,135) and the valid rate response was 66.1% (1,317/1,991). The participants were divided into four groups, namely, group A (not homebound/high occupational competence), group B (not homebound/low occupational competence), group C (homebound/high occupational competence), and group D (homebound/low occupational competence). This study analyzed the HRQOL using analysis of variance.

Results: Group A (not homebound/high occupational competence) had the highest HRQOL, whereas group D (homebound/low occupational competence) had the lowest HRQOL among the four groups. However, group C (homebound/high occupational competence) had higher HRQOL than group B (not homebound/low occupational competence).

Conclusion: Occupational competence is not dependent on homebound status. Having high occupational competence
supports higher HRQOL than not being homebound.

Key words
Health-related quality of life, homebound, occupational competence, older people
Introduction

Life expectancy at birth has been increasing internationally; this is particularly true for Asian, Latin American, and Caribbean countries where there has been a rapid increase in life expectancy (United Nations, 2012). In Japan, the percentage of the population that is 65 years or older is 23.1% and this is the highest percentage in the world (United Nations, 2010; World Health Organization Kobe Centre, 2005). Therefore, it is important for people to have healthier lives (United Nations, 2012). The “Healthy Japan 21” initiative (Ministry of Health, Labour and Welfare, 2000) is a health-promotion framework in Japan designed to prolong a healthy life expectancy, and to improve quality of life (QOL) (Ministry of Health, Labour and Welfare, 2000). Moreover, long-term care insurance (a national care system) added a primary prevention service for senior citizens in 2006. The purpose of this insurance programme is to maintain and/or improve the functional independence of the elderly. This programme defines being homebound as going outdoors less than once a week (Ministry of Health, Labour and Welfare, 2006).

The challenge for homebound elderly people is the potential to need care and/or support in their daily life in the future (Yasumura, 2006). The characteristics of homebound elderly people have been explained by three factors, namely, physical, psychological, and socio-environmental (Yasumura, 2006). Moreover, it has been recognized that the experience of homebound elderly
people is inclusive of limited locomotion, high incidence of falls (Ishibashi, Yamada, Kobayashi, Tanimura, & Kawamata, 2010), and a tendency to have lower self-efficacy (Imuta, Yasumura, Fujita, Arai, & Fukao, 1997; Yamasaki, Imuta, Hashimoto, Nomura, & Yasumura, 2010). The ratio of poor health among the homebound elderly has been much higher than for those who are not homebound (Shinkai et al., 2007).

It has been reported that homebound elderly tend to have lower QOL (Haraguchi et al., 2006). QOL is one of the domains of health promotion and it has many definitions (Bond & Corner, 2004). The World Health Organization defined QOL as “individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectation, standards and concerns” (1998, p. 1569). QOL can be an assessment and an outcome measure of health and well-being (Fukuhara, 2001; World Health Organization, 1998), and is not related to whether a person has a disease or not. Health-related QOL (HRQOL) is one of the components of QOL that allows for comparison of one person’s health condition with another.

According to Watson and Swartz (2004, p. 62), “occupational therapists (OTR) could and should be working towards the improvement of QOL for all people who would benefit from improved participation in meaningful occupations”. It can, therefore, be argued that engaging in daily occupation that promotes health and well-being (Canadian Association of Occupational
Therapists 2002, 2007; Christiansen, 1999; Crepeau, Schell, & Cohn, 2009, p. 217; Meyer, 1922) is related to QOL (Pizzi & Renwick, 2010). Within the model of human occupation (Kielhofner, 2008), the ability to sustain a pattern of occupational engagement that reflects one’s occupational identity is referred to as the occupational competence. Competence begins with organizing one’s life to meet basic responsibilities and personal standards and extends to meeting role obligations and then achieving a satisfying and interesting life (Kielhofner & Forsyth, 2001).

Although it is unknown whether the homebound elderly people experience actual limitations in daily occupations or not (Ishibashi et al., 2010), the daily occupations among homebound elderly people have been investigated (Ishibashi & Yamada, 2011). The Occupational Questionnaire (Smith, Kielhofner, & Watts, 1986), a tool developed to facilitate recording of an individual’s participation in occupations by half-hour intervals throughout the day, was used to clarify their time usage and meaning of occupation. It was recognized that homebound elderly had less meaning to their daily occupation than not-homebound elderly. Moreover, on follow-up after 1 year, people in the homebound group, who reported less meaning in their daily occupations, were found to have poorer health (Ishibashi, Yamada, Kobayashi, Tanimura & Kawamata, 2011). Furthermore, it has been reported that homebound elderly tend to have lower QOL (Haraguchi et al., 2006). These studies suggest that if
homebound elderly have limitations in their occupational engagement, then they are at risk of decreasing health and QOL. However, the relationship between being homebound, occupational competence and its effects on QOL is yet to be studied.

Study purpose

The purpose of this study was, therefore, to understand HRQOL outcomes for older adults who were homebound (either occupationally competent or not occupationally competent) and those who were not homebound (either occupationally competent or not occupationally competent).

Methods

Design and data collection
The participants in this study were all $\geq$ 65 years and lived in the city of Arakawa (Tokyo, Japan). The study questionnaires were sent to the participants by mail following the Tailored Design Method (Dillman, 2000) and Matsuda method (Matsuda, 2008). First, we described the research through the Arakawa-city government, and sent mail questionnaires with reply envelopes to potential participants (Figure 1). The questionnaire was re-sent 3 weeks after the first mailing. We indicated that a participant must answer each question as much as possible, and that another person could scribe for them if the
contributors could not do it themselves. In cases where a participant was an inpatient or had moved to a nursing home, we asked a person’s family to forward the questionnaire to him/her. The inclusion and exclusion criteria were based on the criteria for long-term care insurance (Ministry of Health, Labour and Welfare, 2002). Only those classified as “weak elderly persons” were included in the study. The details of inclusion and exclusion procedures are described in Fig. 1.

Demographic information
The data concerning age, gender, diagnosis, and frequency of going out were collected. Diagnostic information was collected (i.e., cerebrovascular accident, diabetes, joint disease, cardiovascular diseases, and other diseases). The data representing homebound/not homebound were based on items that described the frequency of going out, that is, (a) more than once a week, (b) one to three times a month; and (c) almost do not go out. Participants were reminded that going out included going out for shopping as well as going out to engage with the neighbourhood.

HRQOL
We used the Short Form-8 (SF-8) Health Survey to investigate HRQOLs. The SF-8 was developed based on SF-12 (Ware, Konsinski, & Keller, 1995, 1996). The MAPI Research Institute and Health Assessment Laboratory and translators conducted the cross-cultural translation. Translation and adaptation into Japanese was carried out
in co-operation with other 30 countries. After international translation process, Fukuhara and Suzukamo (2004) revised the SF-8 from the viewpoint of cultural adaptation, and examined its semantic compatibility with the Japanese language. The SF-8 has eight items, namely, physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). Fukuhara and Suzukamo (2004) delivered evidence that each of the SF-8 items adequately represents a separate distinct construct by examining correlation patterns of the SF-36 and SF-8. They also conducted a factor analysis (N =1,000), which supported the validity of the SF-8.

Occupational competence
The Japanese version of Occupational Self-Assessment (version 2.1) (OSA) was used to collect data on participants’ perceived occupational competence. The concepts of occupational competence include “participation in a range of occupation’s that provide a sense of ability, control, satisfaction, and fulfillment” (Kielhofner, 2008, p. 107). The OSA consists of questions about the person and his/her environment. This study used the occupational competence scale for the person (excluded the environment). The items include skills (Q1-11), habituation (Q12-16), and volition (Q17-21). There are four response choices for each question, namely, doing activity extremely well, doing activity well, doing activity
with some difficulty, experiencing a lot of problems while engaging in an activity. The semantic compatibility of the Japanese version of OSA (version 2.1) was examined and supported by Ishii, Yamada, and Nakamura (2007). The Japanese version of OSA has established psychometric properties of reliability and validity (Ishii & Yamada, 2008a, b). Moreover, Kobayashi, Yamada, Kawamata, Ishibashi, and Ishii (2010) demonstrated the validity for using OSA with healthy elderly people.

Group composition
Elders who were not homebound went out more than once a week. Homebound elders went out less than once a week. A nonhierarchical cluster analysis was used to classify the high and low occupational competence groups. Cluster analysis is an exploratory data analysis tool concerned with exploring data sets to assess whether or not they can be summarized meaningfully in terms of a relatively small number of groups or clusters of objects that resemble each other and that are different in some aspect from the objects in other clusters (Everitt, Landau, & Leese, 2001). This analytical procedure resulted in identification of four groups (Figure 1), which were named as follows: group A (not homebound/high occupational competence), group B (not homebound/low occupational competence), group C (homebound/high occupational competence), and group D (homebound/low occupational competence).
Data analysis
Statistical tests were chi-square test and analysis of variance, and statistical significance was set at \( p < .05 \). Effect sizes were ascertained using the general power analysis approach \( (1 - \beta \text{ error probability}) \). All of the data analyses were conducted using the SPSS version 18.0 (SPSS, Inc., Chicago, IL, USA).

Ethical considerations
Approval for this study was obtained from the institutional ethics committee at Tokyo Metropolitan University (2010, Approval No. 10070). A data sharing agreement was then put in place with the Arakawa-city government regarding personal data. We received an address label for each person from the Arakawa-city government.

Results

Response rate and groupings
Figure 1 shows the flow chart of collecting and analyzing data. Of the targeted 5,135 participants, 1,991 returned the questionnaire (response rate: 38.7%). People who were an inpatient or living in a nursing home, had been taken into care, or those who passed away were excluded from data analysis \( (n = 337) \). Gender and age of 45 people, and housebound status of 18 people, were unknown, and therefore they were excluded from the study. A further 231 people were excluded because the results of their OSA had
missing data and could, therefore, not be classified into groups by cluster analysis. The valid rate of response data was 66.1% (1,817/1,991). The result of nonhierarchical cluster analysis divided the participants into two groups, namely, (a) high occupational competence group, which included 1,145 persons, and (b) low occupational competence group, which included 172 persons.

Demographics
Demographic characteristics of the sample are presented in Table 1. There was a significant relationship in age between the four groups (p=.000). Group A (not homebound/high occupational competence) was the youngest group, and age increased in each subsequent group, i.e., group B (not homebound/low occupational competence), group C (homebound/high occupational competence), and group D (homebound/low occupational competence). There were significant differences in groups A and D, groups A and C, groups B and D in the multiple comparisons by Tukey's method. There were significant relationships in joint disease and hypertension between the four groups, but there were no relationships with cerebrovascular accident, cardiovascular diseases, and other diseases. There was also no significant relationship in the multiple comparisons with gender as well.

Comparison of occupational competence
The results of comparison of each component of the occupational competence are also presented in Table 1.
There was a significant relationship in occupational competence between the four groups (p=.000). In the subsequent analysis by Tukey's method, among the groups A and C, B and C there were no differences in occupational competence. However, groups A (not homebound/high occupational competence) and C (homebound/high occupational competence) were significantly higher than groups B (not homebound/low occupational competence) and D (homebound/low occupational competence) in all three components of occupational competences (effect sizes: volition = .729, habituation=.864, and performance capacity=.711).

Effect sizes were calculated for each of the significant findings. Despite unbalanced group sizes, power calculation resulted in high estimates, indicating the absence of type II errors.

Comparison of HRQOL
The results of multiple comparison of the HRQOL are displayed in Table 2. All items of the HRQOL were significantly different in the four groups, with small effect sizes. In the subsequent analysis by Tukey's method, group A (not homebound/high occupational competence) had significantly higher HRQOL than any other groups.

Group C (homebound/high occupational competence) had significantly higher BP, GH, VT, SF, RE, and MH of HRQOL than group B (not homebound/low occupational competence); however, PF and RP were not different between groups B and C.
All HRQOL indicators were significantly higher in group B (not homebound/low occupational competence) than in group D (homebound/low occupational competence).

Group B (not homebound/low occupational competence) had significantly higher PF, RP, GH, VT, and RE of QOL than group D (homebound/low occupational competence); however, BP, SF, and MH were not different between groups B and D.

Effect sizes were calculated for each of the significant findings. Despite unbalanced group sizes, power calculation resulted in high estimates, indicating the absence of type II errors.

Discussion

The response rate for the mailed questionnaire was 38.7%. The mailed questionnaire is an appropriate method when trying to cover a wide geography; however, it requires follow-up questionnaire to be sent out to maximize response rates (Forsyth & Kviz, 2006; Matsuda, 2008). Dillman (2000) argued that response rate can be over 70% if the researchers give prior notice of the questionnaire and send reminder post cards as a follow-up. In this study, the participants were given notice before starting the survey; however, as we only received one personal address label per person, in order to be compliant with data-protection procedures, a reminder post card could not be sent. Some Japanese studies that focused on homebound elderly had high response rate (Shinkai et al., 2005;
Watanabe, Watanabe, Matsuura, Kawamura, & Kono, 2005), as the researcher used personal contact with each participant instead of a reminder post card as a follow-up method. It could be argued, therefore, that this study could have had an increased response rate if the reminder post cards were sent or the participants were followed-up in person.

Demographics
This study identified that homebound groups had significantly higher age than those who were not homebound. This finding is consistent with the study by Imuta, Yasumura, Fujita, Arai, & Fukao (1997) who found that homebound elderly have advancing age. There were also significant relationships in joint disease and hypertension.

Group D (homebound/low occupational competence) had the highest rate of joint disease. The joint disease rate incrementally decreased across groups B (not homebound/low occupational competence), C (homebound/high occupational competence), and A (not homebound/high occupational competence). A previous study has indicated that joint disease was related to being homebound (Shinkai et al., 2007). However, our study indicates that joint disease may be more related to low occupational competence than to homebound status (i.e., chi-square test of independence between diagnosis and the four groups).

The highest rate of hypertension was identified within group A (not homebound/high occupational competence),
and then groups C (homebound/high occupational competence group), B (not homebound/low occupational competence group), and D (homebound/low occupational competence group). This result could also be interpreted as indicative of the relationship between hypertension and occupational competence rather than between hypertension and homebound status. Because groups A and C had higher ratios of hypertension than groups B and D, it would appear that hypertension did not hinder occupational competence as defined by the OSA.

Relationships between homebound and occupational competence
This study contributes a new knowledge about the relationship between being homebound, occupational competence, and its effect on HRQOL. The results indicated that there was no difference in occupational competence between group A (not homebound/high occupational competence) and group C (homebound/high occupational competence). Because both group A and group C were high-occupational competence groups, this result suggests that it is possible to have high occupational competence even if a person is homebound. However, there was also no difference between group B (not homebound/low occupational competence) and group D (homebound/low occupational competence), which supports the assumption that being homebound or not being homebound is not directly related to a person’s occupational competence. This is in line with the findings.
presented by Sanders, Polgar, Kloseck, and Crilly (2005) who reported that although older participants in their study experienced decrease in their involvement in occupations and access to the variety of environments, they were able to adjust by making changes to their occupations or environments to preserve their level of occupational performance.

Relationships between HRQOL and occupational competence
The relationship between the ability to engage in meaningful daily occupations and HRQOL in older people is supported by the literature (Ishibashi et al., 2011; Lawton, 1991; Rabins, Kasper, Kleinman, & Black, 1999; Smith et al., 2005) and is reflected in the results of the current study. In this study, group A (not homebound/high occupational competence) had higher results than group C (homebound/high occupational competence) in all HRQOL items. It suggests that not being homebound had positive impact on HRQOL among older people if they had high occupational competence. However, group C (homebound/high occupational competence) obtained higher scores than group B (not homebound/low occupational competence) on the following scales: BP, GH, VT, SF, and MH. In the same way, a comparison between groups C (homebound/high occupational competence) and D (homebound/low occupational competence) shows that group C had significantly higher results than group D in all items. The comparison between groups B and C indicates that HRQOL
would be high if a person had high occupational competence, even if this individual was homebound. Moreover, not being homebound (group B) would afford more opportunities for moving outdoors than being homebound (group C). However, there were no differences in the items of PF and RP. Because these two issues are physical items, it might suggest that there are no differences between physical factors of HRQOL and homebound status.

Group D (homebound/low occupational competence) had the lowest HRQOL among four groups. The results of group D were significantly lower than group B (not homebound/low occupational competence) in the items of PF, RP, GH, VT, and RE. This comparison showed that people who were not homebound had higher HRQOL than those who were homebound even when their occupational competence was low. In the same way, Green, Sixsmith, and Ivanoff (2005) found that although home environment was valued by older people as supportive of their familiar occupations, the ability to leave home to engage socially and to pursue chosen activities was enjoyed and nurtured.

These results indicate that occupational competence level has a greater influence on HRQOL than homebound status. Moreover, the outcomes of this study suggest that where people have the same degree of occupational competence, the ability to access outdoors and wider community has a positive influence on their HRQOL.

Implications for clinical practice
The results of this study indicate that HRQOL is more
strongly associated with occupational competence rather than homebound status. Therefore, in order to promote HRQOL, occupational therapy services should consider providing interventions aiming to maintain or increase occupational competence through engaging older people in roles and facilitating their social engagement. Nevertheless, the results also highlighted that those with low occupational competence who were not homebound (group B) reported higher HRQOL than those with low occupational competence who were homebound (group D). An examination of OSA scores between groups B (not homebound/low occupational competence) and D (homebound/low occupational competence) showed no statistical differences, and it would be plausible to infer that being not homebound may also contribute to increased HRQOL scores. This suggests that the services providing care to those with identified low occupational competence should also retain their focus on maintaining or facilitating community participation of their service users.

Limitation and direction for the future research

This study was carried out by mail, and the response rate was 38.7%. A total of 231 people were excluded because their OSA data were not sufficient for noncluster analysis. Because of the cross-sectional design of the study, the authors were not able to consider the impact of long-term health conditions on the level of occupational competence.
Moreover, the study was conducted in the city of Arakawa (Tokyo, Japan). According to Yasumura (2006), older people become homebound due to the interaction between physical, psychological, and socio-environmental factors (Yasumura, 2006). Because the city of Arakawa offers good facilities for going out, it would be useful to conduct similar study in a local smaller town to verify the impact of socio-environmental factors on the occupational competence.

Conclusion

Occupational competence is not dependent on homebound status. The results of this study indicate that high occupational competence supports a higher HRQOL as compared with not being homebound. Therefore, to improve HRQOL, occupational therapy services for the elderly should first consider providing interventions aiming to increase occupational competence through engaging in roles and/or improving social engagement.

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Figure 1. The flow chart of collecting and analyzing data

- Summary description of the survey in the city of Arakawa
- Information about the start of the survey to the participants

Collection of sample data by mail
- Sample size: 5,135
- Live in district 4, Arakawa City, Tokyo, Japan
- All ≥ 65 years
- January 21, 2011–February 14, 2011 (3 wk)

Response questionnaire: 1,991
Response rate: 38.7%

- 337 excluded: inpatient, passed away
  (Care level: 1–5; support required: 1,2)
- 45 excluded: unknown of gender or age
- 18 excluded: unknown of frequency of go-out

Classifying between two groups based on the results of occupational competence of OSA
- Calculated the median for each construct (volition, habituation, and performance capacity)
- Classified into high and low group based on the nonhierarchical cluster analysis

Valid response rate: 66.1%
(1,317/1,991)

- 274 excluded
These are the persons whose results of OSA were not sufficient, and therefore they could not be classified into the groups by cluster analysis of data.

Q. How many days do you go out? Going out includes going outside, going out for shopping, etc.
1. One or more days a week.
2. One to three days a month.
3. Almost do not go out

Answer 1: Go out frequently
Data: 1,117

Go out frequently/high OC
Data: 983

Go out frequently/low OC
Data: 134

Answer 2/3: Homebound
Data: 200

Homebound/high OC
Data: 162

Homebound/low OC
Data: 38
Table 1. Results of Global Information, QOL, and OSA

| Gender, female (% group) | Go out frequently N=117 | Homebound N=200 | \( P \text{ value} \) (4 groups) | \( P \text{ value} \) (each groups) | Rank of groups | Effect size \( \eta^2 \) (Power \( 1-\beta \text{error prob} )

<table>
<thead>
<tr>
<th>Group A High O.C. n=88 $\text{mean(SD)}$</th>
<th>Group B Low O.C. n=134 $\text{mean(SD)}$</th>
<th>Group C High O.C. n=182 $\text{mean(SD)}$</th>
<th>Group D Low O.C. n=38 $\text{mean(SD)}$</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, female (% group)</td>
<td>558 (57.8%)</td>
<td>64 (48.5%)</td>
<td>84 (51.9%)</td>
<td>21 (56.8%)</td>
<td>0.141</td>
<td>—</td>
</tr>
<tr>
<td>Age</td>
<td>72.9 (5.98)</td>
<td>73.5 (6.72)</td>
<td>75.3 (6.27)</td>
<td>76.4 (7.35)</td>
<td>&lt;.001***</td>
<td>A:C = .002** (0.97 – 6.18)</td>
</tr>
<tr>
<td>Disease, number of yes (rate in group)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVA</td>
<td>12 (1.9%)</td>
<td>6 (6.0%)</td>
<td>4 (3.4%)</td>
<td>0 (0.0%)</td>
<td>.064</td>
<td>—</td>
</tr>
<tr>
<td>Diabetes</td>
<td>91 (14.1%)</td>
<td>17 (.7%)</td>
<td>16 (13.4%)</td>
<td>5 (17.9%)</td>
<td>.814</td>
<td>—</td>
</tr>
<tr>
<td>Joint Disease</td>
<td>94 (14.6%)</td>
<td>22 (22.0%)</td>
<td>21 (17.6%)</td>
<td>10 (35.7%)</td>
<td>.009**</td>
<td>—</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>62 (9.6%)</td>
<td>14 (.4%)</td>
<td>18 (15.1%)</td>
<td>4 (14.3%)</td>
<td>.206</td>
<td>—</td>
</tr>
<tr>
<td>HT</td>
<td>375 (58.1%)</td>
<td>48 (48.0%)</td>
<td>64 (55.8%)</td>
<td>9 (32.1%)</td>
<td>.015*</td>
<td>—</td>
</tr>
<tr>
<td>OSA (Occupational Competence)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volition</td>
<td>3.0 (0.48)</td>
<td>1.90 (0.43)</td>
<td>3.0 (0.56)</td>
<td>1.9 (0.73)</td>
<td>&lt;.001***</td>
<td>A:B = .001*** (0.97 – 1.24)</td>
</tr>
<tr>
<td>Habituation</td>
<td>3.1 (0.37)</td>
<td>2.1 (0.43)</td>
<td>3.1 (0.42)</td>
<td>2.0 (0.52)</td>
<td>.005**</td>
<td>A:B = &lt;.001*** (0.92 – 1.16)</td>
</tr>
<tr>
<td>Performance Capacity</td>
<td>3.1 (0.34)</td>
<td>2.30 (0.56)</td>
<td>3.09 (0.82)</td>
<td>2.20 (0.52)</td>
<td>&lt;.001***</td>
<td>A:B = &lt;.001*** (0.97 – 1.24)</td>
</tr>
</tbody>
</table>

Note. CI = confidence interval; OC = Occupational Competence; OSA = Occupational Self-Assessment; SD = Standard deviation, \*p < .05, \**p < .01, \***p < .001.
| Table 2. Results of Global Information, QOL, and OSA |
|---|---|---|---|---|---|---|
| | Go out frequently N=1117 | Homebound N=200 | \( P \) value (4 groups) | \( P \) value (each group) | Grouo: P (95%CI) Tukey methods | Rank of groups | Effect size (Power 1-bet prob) |
| **Health related QOL** | \[0.5pt] | \[0.5pt] | \[0.5pt] | \[0.5pt] | \[0.5pt] | \[0.5pt] | \[0.5pt] |
| Physical Function (FF) | 48.7(5.63) | 44.9(7.36) | 45.5(7.47) | 39.0(11.5) | <.001*** | A:B:<.001***(2.27 - 4.31) | D<B=C<A | .359 (<.99) |
| | | | | | A:C:<.001*** (1.78 - 4.60) | | | |
| | | | | | A:D:<.001*** (7.06 - 12.50) | | | |
| | | | | | C:D:<.001*** (2.96 - 6.01) | | | |
| | | | | | B:D:<.001*** (2.94 - 9.00) | | | |
| Role Physical (RP) | 49.1(5.97) | 44.2(8.37) | 46.0(8.20) | 40.2(10.7) | <.001*** | A:B:<.001*** (3.31 - 8.54) | D<B=C<A | .350 (<.99) |
| | | | | | A:C:<.001*** (1.62 - 4.62) | | | |
| | | | | | A:D:<.001** (0.01 - 1.87) | | | |
| | | | | | B:D:.008** (0.76 - 7.57) | | | |
| | | | | | C:D:.001** (0.62 - 0.90) | | | |
| Bodily Pain (BP) | 49.5(7.65) | 44.4(8.58) | 47.1(8.09) | 42.5(9.66) | <.001*** | A:B:<.001*** (3.23 - 8.90) | D=B<C<A | .346 (<.99) |
| | | | | | A:C: .003** (1.62 - 4.62) | | | |
| | | | | | A:D:<.001** (0.01 - 1.87) | | | |
| | | | | | B:C:.018** (0.33 - 5.10) | | | |
| | | | | | C:D:.008** (0.91 - 8.41) | | | |
| General Health (GH) | 50.4(6.58) | 45.5(6.91) | 48.6(7.27) | 41.4(8.39) | <.001*** | A:B:<.001*** (3.23 - 6.48) | D=B=C<A | .350 (<.99) |
| | | | | | A:C: .013** (0.27 - 3.26) | | | |
| | | | | | A:D:<.001*** (0.03 - 1.89) | | | |
| | | | | | B:C:.018** (0.33 - 5.10) | | | |
| | | | | | C:D:.008** (0.91 - 8.41) | | | |
| Vitality (VT) | 51.3(5.81) | 46.8(6.46) | 49.3(6.71) | 43.1(8.30) | <.001*** | A:B:<.001*** (2.99 - 5.38) | D=B<C<A | .358 (<.99) |
| | | | | | A:C: .001** (0.60 - 3.20) | | | |
| | | | | | A:D:<.001*** (3.32 - 9.10) | | | |
| | | | | | B:C:.003** (0.64 - 4.33) | | | |
| | | | | | C:D:.001** (0.32 - 1.10) | | | |
| Social Function (SF) | 49.6(7.37) | 42.6(9.50) | 46.9(8.74) | 40.0(10.09) | <.001*** | A:B:<.001*** (3.11 - 8.89) | D=B<C<A | .352 (<.99) |
| | | | | | A:C: .011** (1.04 - 4.55) | | | |
| | | | | | A:D:<.001*** (6.25 - 13.12) | | | |
| | | | | | B:C:.001** (1.81 - 6.61) | | | |
| | | | | | C:D:.001** (3.15 - 10.64) | | | |
| Role Emotion (RE) | 50.2(5.37) | 44.8(8.29) | 47.4(7.37) | 39.1(11.26) | <.001*** | A:B:<.001*** (3.00 - 6.89) | D=B<C<A | .352 (<.99) |
| | | | | | A:C: .003** (0.68 - 4.47) | | | |
| | | | | | A:D:<.001*** (3.34 - 11.33) | | | |
| | | | | | B:C:.003** (0.66 - 4.47) | | | |
| | | | | | C:D:.001** (2.72 - 8.82) | | | |
| | | | | | B:C:.001** (3.34 - 11.33) | | | |
| Mental Health (MH) | 51.2(5.58) | 45.5(6.30) | 49.1(7.21) | 43.5(7.6) | <.001*** | A:B:<.001*** (4.22 - 7.08) | D=B<C<A | .353 (<.00) |
| | | | | | A:C: .001** (0.78 - 3.88) | | | |
| | | | | | A:D:<.001*** (3.82 - 10.53) | | | |
| | | | | | B:C:.001** (2.64 - 8.42) | | | |
| | | | | | C:D:.001** (5.34 - 11.23) | | | |

Note. CI = confidence interval; OC = Occupational Competence; OSA = Occupational Self-Assessment; SD = Standard deviation
*p<.05, **p<.01, ***p<.001,
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