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REVIEW ARTICLE

**Factors Affecting the Sense of Life Worth Living  
and Cognitive Function for Older Caregiver;  
Current Situation and Issue based on Literature Considerations**

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**ABSTRACT**

As population ages rapidly, the need for caregivers will continue to increase. Family caregivers play an important role in delaying and possibly preventing institutionalization of older patients with chronic diseases. Caregiving by family members related to their subjective well-being and cognition. Especially, the sense of life worth living (ikigai in Japanese) is essential to maintaining their life-satisfaction and caregiving. However, there is a lack of research focusing on the sense of life worth living in older caregivers. The aim of this narrative review was to investigate the factors affecting the sense of life worth living and cognitive function for older caregiver. Two experimental studies were extracted: one qualitative study, and one quantitative study. There were no reports that evaluated the cognitive function in older caregivers. The sense of life worth living is associated with cognitive function and vice versa, it is possible to those factors that affect in life worth living also affect in cognitive function. In conclusion, this review suggest that intervention programs are associated with promoting the sense of life worth living of older caregivers. Further studies are needed to clarify the factor affecting this relationship between the sense of life worth living and cognitive function in older caregivers.

< Keywords >

The sense of life worth living, cognitive function, older caregiver, review

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## I. Introduction

With a rapid increase of the aged in Japan, there is a growing number of aged with chronic health problems in the community. Care for older adults would probably not be possible without the contributions of family caregivers. The person who most often takes on the role as caregiver is a spouse<sup>1)</sup>. According to a survey by the ministry of health, labor, and welfare in 2019, the majority of family members who care for older adults who need support or long-term care are spouses at 23.8%, and those who need long-term care of "70-79 years old" are cared by who are "70-79 years old" at 56.0% and 31.6% of those who are "80-89 years old" are caring for them<sup>2)</sup>. Current trends in family patterns including lower fertility, higher rates of childlessness<sup>3)</sup>, family caregiver was also getting older. Moreover, the numbers of caregivers with much burden of caregiving at home have recently increase<sup>1)</sup>.

Family caregivers may have reduced health, pain, cognitive function and impaired their quality of life (QoL) by their caregiving<sup>1)</sup>. On the other hand, caregiving also has positive impacts include affection from care recipients, often based on prior relationships, and encouragement from the wider local community<sup>4)</sup>. Although the impact of caregiving on QoL among older people has been observed in the literature<sup>1,4)</sup>, evidence remains insufficient as regards older family caregivers' well-being and cognitive health and its relation to caregiving.

Recently, the relationship between the sense of life worth living and QoL has been paid to attention in caregiving. The sense of life worth living is related to life-satisfaction, self-esteem, moral, happiness as well as evaluation towards meaning of one's life<sup>5)</sup>. It is essential to maintaining a healthy life and is an indicator of mental and physical well-being<sup>6)</sup>. In relation to dementia caregiving, positive aspects of caregiving are associated with better mental health, satisfaction with life, and competence/self-efficacy<sup>7)</sup>. However, those studies have investigated the positive mood of caregiving, there is a lack of research focusing on the sense of life worth living and cognitive function in older caregivers and what is affecting that relationship between the sense of life worth living and cognition.

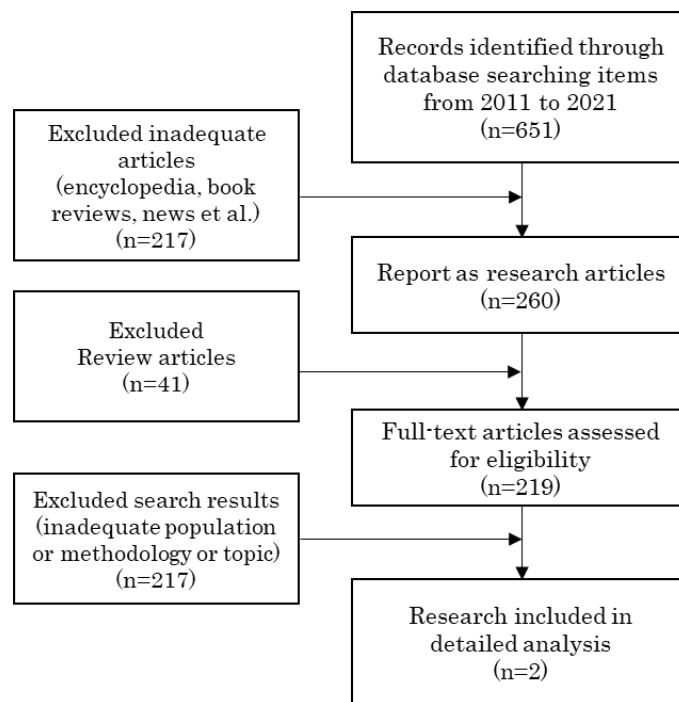
In Japan the life worth living is translated with *ikigai*, which roughly corresponds to 'purpose in life'<sup>8)</sup> and 'meaning of life'<sup>9)</sup>. However, it has been also argued that this word cannot be exactly translated in English and Japanese. In this study, we defined "the sense of life worth living" as the feeling that makes life worth of living because it is reported that the increase of the sense of life worth living may play an important role in the prevention of the development of caregiver burden<sup>5)</sup>.

The aim of this narrative review was to investigate the factors affecting the sense of life worth living and cognitive function for older caregiver and review the current situation and issue based on literature considerations.

## II. Methods

### 1. Search strategy and selection criteria

The search strategy consisted of a combination of search keywords related to the life worth living and cognitive function and family caregivers: “the life worth living” and “the meaning of life” and “the purpose of life” and “cognitive function” “caregivers” and “family caregiver”. The following electronic databases were searched for studies from January 2011 to September 2021 through the ScienceDirect. Science Direct (<http://www.science-direct.com>) is one of the greatest bibliographic and full text electronic collections about science, technology, and medicine<sup>10</sup>. To identify studies suitable for inclusion in this review, two reviewers separately examined the titles and abstracts of the studies in the search results. Only qualitative and quantitative studies were included as inclusion criteria, and those studies had to be research article published in only English. Figure 1 illustrates the literature search process.



<Figure 1> Flowchart of the search strategy

### 2. Study quality

The quality was assessed using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD). The QATSDD is a validated quality assessment tool for use with methodologically heterogeneous studies, using 14 items on a 4-point Likert scale. Indicator were rated on a 4-point Likert scale, with possible total scores ranging from 0 to 42; higher scores indicated higher quality reporting <sup>11</sup>.

### III. Findings

#### 1. Interventions affecting the sense of life worth living and cognitive function for older caregiver

As a result of searching articles by search strategy, two studies were extracted: one qualitative study, and one quantitative study. No paper achieved the maximum score on the QATSDD (table 1). One qualitative study performed face to face interview, and it is reported that informal care affected mental health in the total participants and in both sexes as well as cognitive well-being in women<sup>12)</sup>. One quantitative study performed music performances for 12 months, and it is reported that attending the music café promotes the self-reported and observable wellbeing of participants<sup>13)</sup>.

#### 2. The intervention affecting the sense of life worth living in caregivers

Interventions for caregivers of older adults are measures aimed at reducing the caregiving-related demands or stressors experienced by informal caregiver of older adults and/or improving the function of the caregiver such as stress coping, mental health<sup>14)</sup>. Many interventions have been developed to support caregivers of persons with cognitive impairment and enhance both caregiver well-being and ability to provide care<sup>15)</sup>. A variety of approaches as described in the following explanation have been implemented with older caregivers.

Regarding psychoeducational intervention, these interventions have been developed together with family caregivers experiencing different stressful situations across their care trajectory<sup>16)</sup>. It is a psychoeducational group program focused on cognitive appraisal of stressors, empowerment of family caregivers through a heightened awareness of their strengths and their capacity to change their perception of stress and exercise control over their environment and utilization of three coping strategies for dealing with stressful situations: problem solving, reframing, and stress symptoms management. This review reported that psychoeducational group program is related to perceived challenge of caregiver role such as motivation to find solutions<sup>16)</sup>.

Regarding the cognitive-behavioral intervention, these approaches apply techniques from cognitive-behavioral intervention to caregivers and focus on identifying and modifying related beliefs, developing a new behavior repertoire to deal with caregiving demands, and foster activities that may promote positive subjective well-being<sup>17)</sup>. Acceptance and commitment therapy is a recent approach in process-based cognitive-behavior therapy. This report suggested that the supported online ACT intervention produced significant effects on mental health over the duration of the intervention and the Acceptance and commitment therapy was effective to the comparison interventions<sup>18)</sup>.

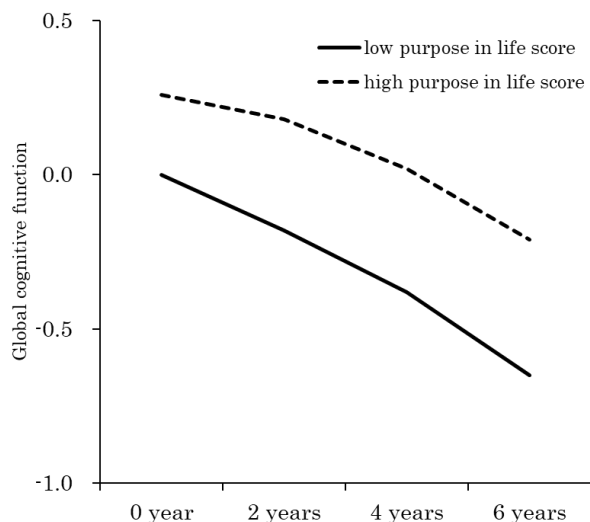
Moreover, there are encouraging preliminary data on music and art interventions, and these creative interventions are related with personal developments, such as learning new skills, welcoming the opportunity to gain cognitive and behavioral skills, and having opportunities to unload emotions in a safe space were important to caregivers<sup>19)</sup>.

<Table 1> Summary of the studies included in the review

Reference & Quality rating	Design and sample size	Methods	Outcome	Results
Hajek et al. (2015) <sup>12)</sup>  Quality rating score: 35	A population-based, representative survey of the community-dwelling population aged 40 and older 11,264 observations (mean age=59.1 years in save 2, 63.1 years in wave 3, 65.5 years in wave 4)	Individuals were interviewed at home by trained staff using a standardized questionnaire.	Life satisfaction (cognitive well-being) was quantified by using the Satisfaction with Life Scale (SWLS) and positive and negative affect (affective well-being) was assessed using the Positive and Negative Affect Schedule (PANAS). informal caregiving was replaced by self-reported average time per week for help/assistance	Longitudinal regressions showed that informal care affected mental health in the total sample and in both sexes and cognitive well-being in women. The effect of informal care on mental health was moderated by self-efficacy in the total sample. Furthermore, longitudinal regressions revealed that self-efficacy affected in mental health due to informal care.
Smith SK et al. (2001) <sup>13)</sup>  Quality rating score: 28	A qualitative study, 7 care partners and 3 former care partners ages ranged from 50-87 years	Twelve live music performances were hosted at a purpose refit facility at the author's institution, once a month for 12 months. Baseline semi-structured interviews explored the meaning of music and expectations of the upcoming music cafes. Dementia care mapping and unstructured observations were the observation methods used to capture 'in the moment' experiences of attending music café. Follow-up semi-structured focus groups explored the impact of music on subjective wellbeing.	Dementia care mapping which is originally designed to evaluate the quality of care and capture the mood and the level of engagement values. ME values range from + 5 indicating high positive mood and sustained engagement to -5 representing significant distress.	The findings demonstrate that attending the music café promotes the self-reported and observable wellbeing of participants in three ways: (1) by offering opportunities for peer support and a reduction in feelings of isolation through a shared love of music; (2) group interaction with music meets an unmet need for meaningful musical experiences in supportive enabling environments.

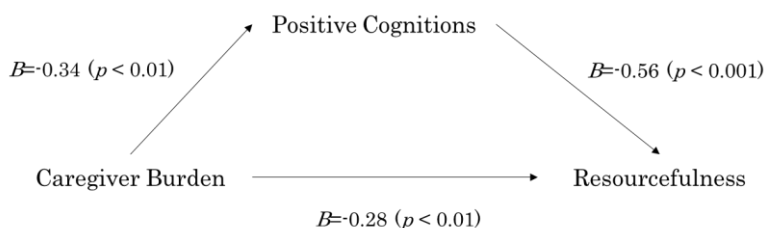
### 3. The sense of life worth living on risk of dementia and mild cognitive impairment (MCI) in healthy older adults

Boyle and his colleagues are reported that the sense of life worth living is associated with cognitive and psychological health in older adults. Figure 2 shows the trajectories of cognitive decline for participants with high vs low purpose in life. Persons with greater purpose started at a higher level of cognitive function than did those with low purpose but declined less rapidly than did those with low purpose<sup>20</sup>.



<Figure 2> Decline in global cognition for participants with high vs low scores on the purpose in life measure (Boyle PA et al., 2010, p.13)

Especially, Lewis and his colleagues reported that the purpose in life is associated with higher scores on overall cognitive function, as well as the domains of executive functioning and episodic memory in adults<sup>21</sup>. Positive cognition has also been reported to be involved in the relationship between caregiver burden and resourcefulness of their life as a mediator factor (Figure 3)<sup>22</sup>.



<Figure 3> Decline in global cognition for participants with high vs low scores on the purpose in life measure (Bekhel AK. 2012, p.4)

#### IV. Discussion

In this study, a small number of studies including qualitative and quantitative studies were extracted by the search strategies. There were no reports that investigated the factors affecting cognitive function in older caregivers, even though the search included cognitive function as one of the keywords. Our study suggests face to face interview and musical experience are related to the sense of life worth living in older caregiver<sup>12,13</sup>. In addition, psychoeducational interventions, cognitive-behavioral interventions, and creative interventions are also promote willing to caregiving and positive well-being<sup>16-18</sup>. Finally, the sense of life worth living is associated with cognitive health in older adults<sup>20</sup>.

The sense of life worth living was associated with cognitive function but also inverse relationship as mentioned by previous studies<sup>20-22</sup>, and it is possible to those factors that affect in life worth living also affect in cognitive function in older caregivers. On the other hand, it is reported that the human relationships were the factor for meaning in life and a source of strength in life more often by the persons with high cognitive functioning<sup>23</sup>. Social activities were most consistently associated with improvements on global memory measures, overall executive functioning, working memory, visuospatial abilities, processing speed and global cognition<sup>24</sup>. The participation in social activities substantially mitigated the negative impact of caregiving on mental health<sup>25</sup>. However, further research is needed to investigate whether social relationship or social activities affects the relationship between the sense of life worth living and cognitive function.

In considering the findings, some limitations of this review should be discussed. The study is based on a systematic search strategy, but we used only one database. In comparison to other review, the search strategy may be limited. Moreover, no review protocol was registered. However, the results in this review show the positive aspects in caregiving, focused on enhancing the sense of life worth living than the negative side. Therefore, we would like to suggest this review might be helpful to maintenance of family caregiving for the future.

#### V. Conclusion

This review shows that intervention program can be beneficial for promoting the sense of life worth living in older caregivers. Further studies are needed to clarify the factor affecting the relationship between the sense of life worth living and cognitive function in older caregivers.



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