

The new potential and prospects of leisure activities of older adults individuals during the COVID-19 pandemic in Japan on health-span: From the perspective of a scoping review

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Abstract

With the rapid increase in the number of older adults aged 75 and over by 2025, the importance of extending healthy life expectancy has been emphasized. This study focused on leisure activities of the older adults under social distancing due to the COVID-19 pandemic with the aim of obtaining new perspectives on leisure activities and suggestions for improving the healthy life expectancy of the older adults. A literature review by three Scoping Reviews was conducted to gain a comprehensive view of leisure activities of the older adults under social distancing. The three selected studies were based on questionnaires and involved older adults aged 75 years or older visiting specific areas or medical institutions. These studies focused on the effects of social distancing due to the COVID-19 on the leisure activities of the older adults and its negative impact on their health. Leisure activities that were not affected by the social distancing included games, exercise and gymnastics, video calls using smartphones and other devices, and e-mails. The leisure activities listed in the results are expected to be brought to the health of various older adults through the application of digital technology. In addition, the limited literature on leisure activities in the COVID-19 pandemic and the importance of analyzing the attributes of the older adults were noted. The importance of conducting a retrospective study on leisure activities in social distancing was suggested in order to broaden the multifaceted perspective on leisure activities among the older adults and to clarify the effects of such activities on the health span of the older adults.

Key words

leisure activities, COVID-19 pandemic in Japan, healthy life, social distancing, older adults

1. Introduction

According to the simplified life expectancy table released by the Ministry of Health, Labour and Welfare in July 2022, the average life expectancy in Japan in 2019 is 81.41 years for males and 87.45 years for females, indicating a difference of about 9 to 12 years from healthy life expectancy (Ministry of Health, Labour and Welfare, 2022). In the future, the older adults population is expected to increase, especially by 2025, with a rapid increase in the number of people aged 75 years and older (Shiizuka, 2010). Under these circumstances, in order for the population to lead healthy and happy lives, emphasis is being placed not only on extending life expectancy but also on extending healthy life expectancy.

Extending healthy life expectancy requires a wide range of approaches, including increased convenience, use of information and communication devices, social participation, prevention and diagnosis of dementia, diet, and exercise habits (Shiizuka, 2010). There is a view that leisure activities are particularly important for the health of the older adults (Yamamoto, 2022), and the enhancement of leisure activities that can be enjoyed by the older adults according to their own interests and abilities is an important issue in extending

healthy life expectancy.

However, with the spread of the COVID-19 infection in February 2020, people were urged to lead a life of social distancing, including voluntary isolation, such as avoiding unnecessary outings (Hidalgo-Andrade et al., 2021). While social distancing is an effective public health measure to prevent the spread of infection, it has also been pointed out as a social problem that causes major lifestyle changes and physical and mental effects, especially in the older adults, such as limitation of leisure activities (Silver et al., 2021).

On the other hand, the impact of these new coronavirus infections can also be seen in positive aspects. Specifically, the accelerated use of the Internet and the generalization of online usage (Hidalgo-Andrade et al., 2021). This has led to a shift from physical distance. This has enabled a different kind of social contact without taking physical distance into account. Cases have been reported in which the use of online has promoted self-management and improved mental health (Ichinohe et al., 2021; Kobayashi et al., 2023).

Overseas studies have also shown that these lifestyle changes have enabled people to spend more time with their families, discover new hobbies, engage in creative activities, read books, use social media, etc., and have contributed to increased satisfaction with their leisure time activities (Gonzalez-Bernal et al., 2021; Jaskulska et al., 2022). While there were various restrictions due to the social distancing lifestyle, it is

also suggested that the online spread brought about positive changes in our lifestyle, such as the discovery of new activities and hobbies (Hidalgo-Andrade et al., 2021).

Currently, novel coronavirus infection has moved to category 5, and daily life is being restored to the way it used to be. In addition to the leisure activities that were commonplace before the coronavirus, it is important to focus on new leisure activities found during the period of social distancing in order to identify new factors that may affect the healthy life expectancy of the older adults in the future. The purpose of this study was to focus on new perspectives on leisure activities through a literature review on leisure activities during social distancing, and to obtain suggestions for improving the healthy life expectancy of the older adults in the future.

1.1 Leisure activities addressed in this study

In previous studies, leisure activities have been defined in a wide variety of ways. Leisure activities are defined as the effective use of time outside of work and household chores to enjoy a variety of activities according to individual interests and tastes, and the scope of leisure activities is extremely broad. The range of leisure time activities is extremely vast, from traditional hobbies, sports, art and culture to experiencing digital content using the latest technology. Against this background, in this study, in order to comprehensively understand leisure activities of the older adults and to explore the multifaceted nature of leisure activities, all activities that are expected to lead to the fulfillment of life and leisure time for the older adults were considered as leisure activities.

2. Subjects and methods

The purpose of this study was to examine the discovery of new leisure activities for the older adults in the COVID-19 and their potential impact on healthy life expectancy through a literature review. To eliminate as much bias as possible in the selection of literature and to ensure objectivity, this study used Scoping Reviews, a broad literature review method that provides a concise summary of key concepts, sources, available literature, and types of evidence in a particular research area. This provides a comprehensive picture of existing knowledge and enables the identification of knowledge gaps and challenges (Sukegawa & Ito, 2021).

2.1 Subjects

The target literature was defined as literature that mentioned leisure activities that older adults people engage in during the COVID-19 pandemic in Japan.

The eligibility criteria for the literature were: (1) the subjects were older adults (65 years old or older), (2) the activity was conducted in Japan, and (3) the article was an original paper. Exclusion criteria were as follows: (4) articles that were written for subjects other than the older adults, (5) articles that did

not refer to leisure time activities in the COVID-19 pandemic, (6) conference proceedings, (7) academic journals, and (8) case studies and case reports.

In the primary screening, we checked the titles and abstracts to see if they met the eligibility criteria, and papers that were not clear about whether they met the criteria or not were accepted. In the secondary screening, full texts were obtained and examined carefully.

2.2 Methods

The literature search was conducted using Ichushi-web and the National Institute of Informatics Academic Information Navigator (CiNii Article) to search for literature published by May 13, 2024. The search in the database was determined by discussion among three researchers to ensure validity, and the terms “(leisure time activity) and (older adults) and (corona disaster)” were used. The search resulted in 24 articles, of which 16 were from Ichushi-web and 8 from CiNii Articles, and 2 were duplicates of each other. In the first screening, 7 articles met the eligibility criteria based on the article titles and abstracts. In the secondary screening, we obtained the full texts of the seven articles and discussed them by three researchers. Three articles met the eligibility criteria. The process of these results is shown in a flowchart based on the Preferred Reporting Items for Systematic reviews and Meta-Analysis 2020 (PRISMA2020) (Figure 1). The contents of these references are listed in the Table 1.

3. Results

Three studies selected for this study (ID 1, 2, 3) (Kobayashi et al., 2023; Hase and Haraguchi, 2021; Onishi et al., 2021) were all surveyed by questionnaire. The subjects were older adults who were 75 years old or over in the specified area,

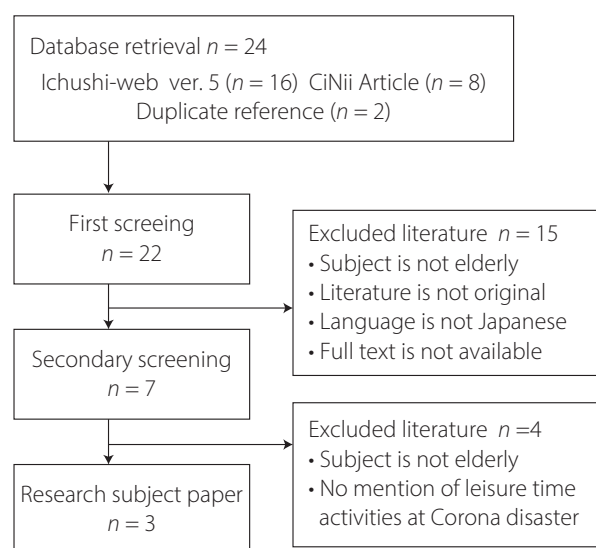


Figure 1: PRISMA flowchart Search results and literature selection process for this study

and there were more women than men. The subjects had various characteristics; a group of those who had strong interest in participating in volunteer and health enhancing activities (ID1), a group which had low ER (ID2), and a group of those who were currently outpatients at the clinics (ID3). The titles and research objectives of these studies focused on the negative effects of social distancing caused by the COVID-19. None of the literature examined specific leisure activities included in the questionnaire without explicit reference to the definition of leisure activities.

3.1 Literature ID1

Based on the premise that behavioral restrictions due to the coronavirus have adverse effects on health, ID1 investigated the adverse effects of leisure-time activity restrictions using a basic checklist developed by the Ministry of Health, Labour and Welfare for older adults who are at risk of requiring nursing care. The results of the study revealed that many people were restricted in their leisure activity options due to the outbreak of the COVID-19. Furthermore, the more people were restricted in their leisure activities, the more they tended to decline in various functions and conditions. On the other hand, games involving solitude and interaction with others were not negatively affected during the period of social distancing.

3.2 Literature ID2

ID2 was a research study aimed at clarifying the relationship between personality characteristics (Ego-Resiliency: ER), which are considered to be able to cope with and adapt to external stressors, and health maintenance activities and frailty tendency during a declared state of emergency, among community-dwelling older adults. The results of the study showed that the high ER group was significantly higher than the low ER group in the items of e-mail use, hobby activities, and exercise and gymnastics efforts. These activities were thought to facilitate positive emotions by promoting personal growth and improving self-confidence and psychological adaptability. The results also suggested that even in situations where direct contact with others is limited, indirect contact through e-mail can help maintain connections with others, indicating that e-mail is an important leisure activity that allows interaction with family and peers at one's own pace with few time and space restrictions.

3.3 Literature ID3

ID3 was a study to investigate how the frequency of daily activities changed under emergency restrictions in outpatients aged 75 years or older who regularly visited a medical facility in a community medical center. Results showed that the frequency of face-to-face communication, outdoor activities, walking, farming, outdoor and indoor exercise, and participation in community events decreased significantly compared to

life before the state of emergency was declared. On the other hand, there were no statistically significant differences in communication such as telephone and video calls with friends and distant family members. The possibility that telephone and video calls can be a new means of easy communication regardless of location was discussed, and it was also considered that the use of smartphones and video calls may be a hurdle for some older adults, especially those with hearing loss.

4. Discussion

The purpose of this study was to conduct a comprehensive analysis of leisure activities in the Corona Pandemic through a literature review, and to identify new perspectives on leisure activities and future research topics. In the following, we focus on leisure activities that took place during the period of social distancing in the selected literature. It is hoped that this will provide a new perspective on leisure activities and encourage a wide range of older adults to adopt fulfilling leisure activities. The potential future contribution of these activities to the health of the older adults is explored, and gaps in the current knowledge are identified and discussed in terms of upcoming research topics.

A search of the literature for this study yielded only three selected references, all of which focused on the potential health effects of behavioral restrictions of the coronavirus pandemic. The subjects were mainly old adults, aged 75 years or older, who visited a particular community or healthcare facility, and women tended to outnumber men in the study.

In these references, it was revealed that many leisure activities were restricted compared to the pre-Corona period. On the other hand, leisure activities during the social distancing period included games, exercise, physical exercises, e-mail, and phone and video calls using smartphones. The "hobby activities" listed in ID2 were omitted from this study because the specifics of these activities were not clarified.

4.1 Games

In recent years, e-sports has gained popularity among the older adults, and studies have been conducted to examine the effects of e-sports on the health of the older adults (Onishi et al., 2022). This study found that e-sports activities at a communication center in which 25 older adults women participated led to positive mood improvement. Thus, e-sports has the potential not only as a new form of entertainment for the older adults, but also to have a positive impact on health. On the other hand, it has been suggested that prolonged game playing may have negative effects on health, such as inactivity, obesity, and unhealthy eating and drinking habits (Goodman et al., 2020). However, over the past decade, games have evolved into a more social and emotional entertainment medium, and there are signs of the uplifting and bonding effects that playing games can have on children (Lobel et al., 2017).

Table 1: List of selected references

| ID | Author (year) | Subjects | Research period | Specificity and characteristics of the survey subject | Survey question | Leisure activities | Methods of answers |
|----|----------------------------------|---|---|---|--|---|--|
| 1 | Akihiro Kobayashi et al. (2023) | 365 older adults (77.1 ± 4.6 years old) 280 women, 85 men | October 1, 2021-October 14, 2021 | Residents who have participated in a training session for frail prevention exercise instructors in a specific region. Older adults who are interested in participating in volunteer activities and health promotion activities. | Basic Attributes: Gender, age, number of persons who are younger than 75 and 75 or over, marital status, family member composition, with or without income-earning job, living conditions, living environment, final education, regular hospital visits, subjective view of health, frequency of going out. Outcomes: Contemporary older adults version of the leisure activity Scale, 11 items, Basic checklist 20 items | Use of Electronic Devices Community and social activities Socializing with friends Exercise Learning activities Cultural activities Travel Creative Arts Activities Taking care of plants Games played alone Games played with others | Basic checklist: 2-point scale (yes/no) Contemporary older adults version of the leisure activity scale: 4-pointscale (0: never, 1: mostly, 2: sometimes, 3: often) |
| 2 | Mayu Hase et al. (2021) | 447 older adults (75.2 ± 6.3 years old) 135 women, 130 men | Sent out on July 30, 2020, with a deadline of August 18, 2020 and the surveys were collected by mail. | The target population is limited to small, depopulated areas with an aging population higher than the national average. 70 % of this population is skewed toward the lower ER. | Basic Attributes: Age, gender, family structure, employment status, use of long-term care insurance services, frequency of outings during the state of emergency declaration. Outcome: ER score (14 items), The Tilburg Frailty Indicator(13 items), Methods of Interpersonal Interaction(5items), Health Promotion Efforts (2 items) | In person Phone, Email Videophone Implementation of hobby activities Movements/Exercise Implementation | ER:4-point scale from "very true: 4 to not true at all: 1" The Tilburg Frailty Indicator: 0 to 1 point scale Methods of interpersonal interaction: Number of choices Hobbies, movements/exercises: 4 items: 1: very much, 2: fairly much, 3: not much, 4: not at all |
| 3 | Takayoshi Onishiet et al. (2021) | 292 older adults 75 or older (75-95), 186 women and 94 men. | May 11, 2020-May 22, 2020 | Patients 75 years old or over who regularly visit a medical institution in a designated region. | Basic Attributes: Age, gender, number of family members living together, area of residence Outcome: Outings, walks, outdoor exercise other than walks, exercise at home, farm work, participation in community center gatherings, community salons, etc., direct conversation with family members, virtual conversation by phone or video call function via smart phone, etc. | Going out Walking Outdoor exercise other than walking Exercise at home Farm work Participation in community center gatherings, community salons, etc. Direct conversation with family members Virtual conversation by phone or smart phone with video call function | For leisure activities, frequency for each item in the 2 weeks prior to the hospital visit and in the same period of the previous year, using 4-point scale of "0 days", "1-2 days", "3-4 days", and "5 days to daily" per week |

| ID | Statistical methods | Leisure outcome statistics | Statistical analysis results |
|----|--|--|---|
| 1 | Spearman's rank correlation coefficient was used to examine the amount of change in each item of the Contemporary older adults version of the leisure activity scale and the Basic checklist. | Contemporary older adults version of the leisure activity scale Use of electronic devices Before Corona Pandemic 2.32 ± 0.67 Now 1.93 ± 1.02 Community and social activities Before Corona Pandemic 2.69 ± 0.54 Now 1.91 ± 0.97 Social interaction with friends Before Corona Pandemic 2.52 ± 0.59 Now 1.72 ± 0.89 Exercise Before Corona Pandemic 2.65 ± 0.56, Now 2.25 ± 0.78 Learning activity Before Corona Pandemic 2.27 ± 0.60, Now 1.77 ± 0.79 Cultural activities Before Corona Pandemic 1.97 ± 0.79, Now 1.23 ± 0.89 Travel Before Corona Pandemic 2.33 ± 0.64, Now 1.02 ± 0.83 Creative and artistic activities Before Corona Pandemic 1.80 ± 0.81, Now 0.92 ± 0.86at Takinf care of plants Before Corona Pandemic 2.57 ± 0.61, Now 2.41 ± 0.87 Games played alone Before Corona Pandemic 1.83 ± 0.77, Now 1.51 ± 1.02 Games played with others, Before Corona Pandemic 1.55 ± 0.73, Now 0.61 ± 0.77 Mean±standard deviation | Correlation coefficient with Basic checklist Use of electronic devices Women 75 and over 0.218* Community and social activities Men 75 and over 0.335** Women 75 and over 0.223** Social interaction with friends Men 75 and over 0.263* Women 75 and over 0.235** Exercise Women 75 and over 0.209* Learning activities Men 75 and over 0.341** Cultural activities Men 75 and over 0.271* Women 75 and over 0.221* Travel Men 75 and over 0.280* Creative and artistic activities Women 75 and over 0.254* Taking care of plants Women younger than 75 0.282** Women 75 and over 0.199* No significant correlation was found for games played alone or with others. Numbers: p |
| 2 | χ^2 test for comparison of low and high ER groups in Methods of Interpersonal Interaction Multiple logistic regression analysis using forced entry was conducted with the high ER group and the low ER group as dependent variables and the items for which significant differences were found in the Univariate analysis as independent variables. | Low ER group (n = 319) High ER group (n = 128) Methods of interpersonal interaction In person High ER group 51 (39.8) Low ER group 85 (26.6) Telephone High ER group 78 (60.9) Low ER group 187 (58.6) Email High ER group 42 (32.8) Low ER group 60 (18.8) Video phone High ER group 5 (3.9) Low ER group 13 (0.9) Number of questions selected (%) Engaging in hobby activities High ER group 2.3 ± 1.0 Low ER group 2.9 ± 0.8 Movements/exercise High ER group 2.3 ± 0.9 Low ER group 2.9 ± 0.7 Mean±standard deviation | Interpersonal interaction via e-mail 2.438** Hobby activities 2.004** Movements/exercise 2.973***. Age, subjective sense of health, fatigue, nervousness, anxiety, physical factors, and meeting in person were excluded by forced entry method. Numerator: odds ratio |
| 3 | A Wilcoxon signed-rank sum test was used to compare the number of responses at the time of response (2020) and the previous year (2019). | Frequency of going out including shopping, exercise, farm work, etc. 0 days: 11.3 (6.5) 1 to 2 days 37.3 (25.7) 3 to 4 days 21.2 (26.4) 5 to daily 27.4 (39.7) Walking frequency 0 days: 20.5 (16.8) 1-2 days 27.1 (26.7) 3-4 days 21.9 (25.7) 5- daily 19.5 (28.1) Frequency of outdoor exercise other than walking 0 days: 44.5 (39.0) 1 to 2 days 22.9 (26.0) 3 to 4 days 12.0 (15.8) 5 to daily 9.6 (13.0) Frequency of exercise at home (exercises and stretching) 0 days: 43.8 (35.6) 1 to 2 days 20.9 (27.7) 3 to 4 days 8.6 (12.3) 5 to daily 16.4 (19.2) Frequency of farm work 0 days: 25.3 (25.3) 1 to 2 days 15.4 (13.0) 3 to 4 days 19.5 (20.9) 5 to daily 30.1 (37.7) Frequency of attending gatherings and salons at community center 0 days: 71.6 (61.0) 1-2 days 15.4 (26.7) 3-4 days 19.5 (4.5) 5- daily 30.1 (2.4) Frequency of face-to-face conversations with friends or separated family 0 days: 20.9 (13.4) 1-2 days 38.0 (41.4) 3-4 days 18.2 (24.0) 5- daily 11.6 (19.2) Frequency of conversations with friends or separated family via phone or video call function via smartphone or other means 0 days: 30.1 (28.1) 1-2 days 34.6 (36.6) 3-4 days 14.4 (18.8) 5 to daily 11.3 (12.7) 2020 % (2019 %) Excluding unanswered questions | Frequency of going out including shopping, exercise, farm work, etc. $p < 0.001$ Frequency of walking $p < 0.001$ Frequency of outdoor exercise other than walking $p = 0.010$ Frequency of exercising at home (exercises and stretching) $p < 0.001$ Frequency of farm work $p = 0.001$ Frequency of attending meetings at community centers or salons $p < 0.001$ Frequency of direct conversation with friends or separated family $p < 0.001$ Frequency of talking with friends or separated family members via video call function by phone or smartphone $p = 0$. |

Therefore, if games have the same effects on the older adults as they have on children, they could be considered a beneficial leisure activity for the older adults. Furthermore, the games discussed in ID1 are played on computers and smartphones, and could be practiced by a wide range of people without limiting time and place.

While interpreting the effects of games with caution, it is necessary to comprehensively examine the effects of leisure time activities spent by the older adults through games on their health from various perspectives, including physiological data, and to clarify future health effects and points to keep in mind.

4.2 Exercise and gymnastics

Exercise is essential for maintaining and improving health, and it is easy to imagine that the social distancing lifestyle in the Corona Disaster is a cause of inactivity. Research studies have shown that the amount of physical activity decreased and the prevalence of locomotive syndrome increased in the older adults (Watanabe et al., 2021; Yamada et al., 2020). On the other hand, even before Corona, it has been pointed out that it is difficult for older adults to continue participating in care prevention classes, and the low rate of exercise practice among the older adults has been an issue (Demura et al., 2010; Kohashi, 2024). Nagaya et al. (2010) found that depression and anxiety were improved by introducing walking and exercises to 131 older adults people with dementia, but 80 of them gave up participating in the exercise program halfway through. This situation is thought to be due to low motivation to exercise, although they understood the benefits of exercise (Kohashi, 2024). On the other hand, research studies have shown that it is important for the older adults to have bond and connections with the community and to interact and build networks in order to increase their motivation to exercise (Inui et al., 2014). In addition, prior research suggests that interaction with others tends to maintain high ER (van den Berg et al., 2017). A study on satisfaction with leisure activities during social distancing (Hidalgo-Andrade et al., 2021) showed that higher levels of self-control, self-esteem, and self-control were linearly related to leisure time satisfaction. These reports support ID2's report that the high ER group was connected to others through e-mail and other means.

The results of ID2 suggest that the older adults with high ER may have been able to continue their leisure time activities during their social distancing lifestyle. It can be inferred that it is necessary to provide opportunities for interaction with others in order to improve the lack of exercise among the older adults in the future.

By the way, in recent years, studies have shown the effectiveness of self-administered digital exercise interventions (Pettersson et al., 2020). This program, like the aforementioned game, provides opportunities for older adults to exercise at their own convenience. This program, similar to

the aforementioned games, provides opportunities for older adults to exercise at their own convenient time and place, and it has been shown that the number of older adults people participating in this program via smartphones and tablets is gradually increasing. Although the literature obtained in this study did not mention such technology-based exercise and gymnastics, the introduction of programs that encourage interaction with others in addition to such new technology may provide an opportunity to introduce exercise as a leisure time activity. This could have various effects, such as reducing the lack of exercise among the older adults and improving their sense of loneliness through interaction with others, and further verification is awaited.

4.3 E-mail, video phone calls using smartphones

E-mail exchange and video call by smartphones is a form of information and communication technology (ICT) that is widely used as a means of exchanging information and communicating, and has become indispensable in modern society. In addition to e-mail and smartphones, web conferencing tools that allow meetings to be held online like video conferences have been introduced in people's lives. A study explored ways to improve the psychological well-being of cancer patients (Erfani et al., 2016) found that communication via social networking sites provided the experience of social connectedness and brought about a sense of psychological well-being. Regarding the effectiveness of ICT-based communication methods during social distancing, there is a study that found that the use of voice calls and text messages on SNS with family and friends alleviated feelings of loneliness (Arakawa et al., 2023; Landmann and Rohmann, 2022), and studies have shown a similar trend among the older adults (Choi and Lee, 2021; Corti et al., 2023; Llorente-Barroso et al., 2021; Sekikawa et al., 2023) have been found in several cases. These findings suggest that many people, including the older adults, who are adversely affected by the social isolation and loneliness imposed by social distancing, can benefit from the use of ICTs, as reported in ID2 and ID3.

4.4 Gaps in current knowledge

As mentioned earlier, only three references were selected for this study, and the literature on leisure activities in the coronavirus disaster was limited in number. Since these references focused on the negative aspects of forced social distancing in the face of the pandemic, the possibility cannot be denied that the researcher's bias may have influenced the subjects. In the future, a retrospective study that examines both positive and negative aspects will provide a broader perspective on the leisure activities of the older adults. The subjects tended to be aged 75 years or older in a particular region, and more women than men. In addition, the subjects had various characteristics; a group of those who had strong interest in participating in

volunteer and health enhancing activities (ID1), a group which had low ER (ID2), and a group of those who were currently outpatients at the clinics (ID3). It can be considered that those unique characteristics were possibly affecting the leisure time activities. In order to examine the nature of leisure activities based on the characteristics of the older adults, it is necessary to analyze the attributes of the subjects in more detail, such as age, gender, region, family structure, and economic status. Therefore, the findings of this study may be limited to a small number of older adults, because the research targets cover a wide range of cases and are not well organized. Survey research on happiness by age group (Wettstein et al., 2022) found that changes in perception of happiness varied with age. The same is true for leisure activities. The impact of leisure activities on the older adults is not uniform, and its criteria are considered to be extremely complex and diverse. In the future, it is necessary to analyze the attributes of the subjects and to use objective indicators in order to verify the nature of leisure activities among the older adults.

5. Limitations of this study

A limitation of this study is that the review was limited to domestic literature. We have not been able to compare the trends and differences of those in the studies conducted in other countries. In the future, it is necessary to expand the scope of the review to include foreign literature and to deepen the consideration of new perspectives on leisure activities of the older adults in Japan. The present study also revealed that the level of satisfaction with leisure time activities varies greatly depending on the way each individual perceives leisure time activities. Therefore, simply listing the items of leisure activities is not sufficient to discuss the health and future of the older adults, and the findings of this study cannot be generalized at this time.

In addition, although the process of this study was thoroughly examined together with the co-researchers, the interpretations and judgments regarding the focus on the positive aspects of leisure activities may contain arbitrary views. In the future, it is necessary to examine the potential of leisure activities for the older adults, using a variety of indicators and taking into account both objective and negative perspectives.

6. Conclusion

In this study, we conducted a literature review on leisure activities in the COVID-19 pandemic among older adults people in Japan. Specifically, the leisure activities identified were games, exercise, physical exercises, and telephone calls and e-mails using smart phones. The significance of this study is that it suggests that the application of ICT technology to these activities may enable a wide range of older adults people to discover leisure activities that they could not do before. However, the satisfaction levels and perceptions of leisure activities

varied widely, and further validation is needed to generalize the findings of this study. It is expected that more multifaceted perspectives on leisure activities will be obtained in the future by increasing the number of subjects, analyzing each attribute, and pursuing relationships with other indices.

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