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The Impact of Covid-19 Social Isolation on Mental Health and Physical Activity of Older Adults

Sari Kistiana✉[1)]

[1] National Research and Innovation Agency Jakarta, Indonesia
✉Email: sarikistiana@gmail.com

ABSTRACT

***Background**: The ongoing COVID-19 pandemic tends to affect older adults more severely, raising the need for social isolation in this age of the population. Social isolation is likely to impact older adults' social ties and quality of life, as well as risk for illness and health. **Objective**: This study is a narrative literature review to evaluate the potential effects of social isolation on mental health and wellbeing of older adults. **Methods**: A literature search performed between January 1, 2020 and January 13, 2021, comprised an electronic search on different online databases in PubMed and ScienceDirect using the keywords COVID-19 followed by generic terms older adults or older people or aging population or elderly. Excluding duplicates, a total of 376 articles were screened, of which 21 studies were included in the final review. **Results**: Many older people could be mentally well-equipped to deal with social isolation, but some experience a negative impact on mental health. Stress, anxiety and depression symptoms were reported during the self-isolation period. The physical activity also has declined among older adults amid COVID-19. Some elderly who are not moving much may lose significant muscle strength, flexibility, and aerobic capacity. **Conclusion**: If social isolation continues, policy responses such as proactively identifying and addressing COVID-19 for elderly who are experiencing negative consequences. An effective solution such as "distance connectivity" and create safe physical activity such at home exercise are recommended.*

***Keywords**: COVID-19, Mental health, Older adults, Physical activity, Social isolation.*

INTRODUCTION

COVID-19, a new virus first discovered in Wuhan China on December 2019, has triggered a global pandemic (WHO, 2020a). The World Health Organization (WHO) proclaimed the 2019 Coronavirus Disease (COVID-19) as a global pandemic on March 11, 2020, due to the pace and scale of transmission, (WHO, 2020b). As of 31 December, 2020, a total of 83,937,826 COVID-19 cases had been confirmed worldwide, resulting in 1,834,358 deaths (Worldometer, 2021).

COVID-19 is lethal in the elderly population, and older people are the most vulnerable in terms of infection risk, negative health effects, and the potential for negative consequences in a range of social, psychological, and economic context (Ahrenfeldt *et al.*, 2020; D'cruz and Banerjee, 2020; García-Fernández *et al.*, 2020; Liu *et al.*, 2020; Wang *et al.*, 2020). Due to physiological disability, immune function decrease, multimorbidities and the pre-existing diseases, elderly are at higher risk of COVID-19 (Centers for Disease Control and Prevention, 2020; Wang *et al.*, 2020). According to data, 80% of global COVID-19 deaths have occurred among adults age 65 and older, particularly those with prior illnesses (Sadruddin and Inhorn, 2020). Italy is the second highest number of older people in the world after Japan, and 87.9% of Italians who had died of COVID-19 through March 17 were older than 70, with the case fatality rates for those aged 80-89 years were 19.7% (Sadruddin and Inhorn, 2020; Wang *et al.*, 2020). In the United States, 14% of cases and 81% of deaths linked with COVID-19 occurred in people aged 65 and older, with the highest percentage of severe outcomes among persons age 85 and older, with the case fatality rate was 10% to 27% (Centers for Disease Control and Prevention, 2020; Wang *et al.*, 2020). In Spain, adults over 60 years account for 55% of COVID-19 cases and more than two thirds of all deaths (García-Fernández *et al.*, 2020).

Governments around the world have implemented movement restrictions through population isolation as a preventive approach to minimize the

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number of contagions, (Bobes-Bascarán *et al.*, 2020; García-Fernández *et al.*, 2020; Xia *et al.*, 2020). This new situation of massive changes in people's everyday routines might be challenging for most people, and they may find it difficult to adjust to this new lifestyles while also managing the fear of the virus (Xia *et al.*, 2020). Studies on COVID-19's quarantine have identified negative outcomes for mental health and physical activity, in both in general population and elderly (Bobes-Bascarán *et al.*, 2020; Dunton *et al.*, 2020). Older persons should isolate themselves by reducing social interaction, sheltering in place, and keeping a safe physical distance from others. These changes in behavior could have negative consequences for older adults' quality of life, social engagement, and ability to engage in acceptable amounts of physical activity (Callow *et al.*, 2020; D'cruz and Banerjee, 2020; Smith, Steinman and Casey, 2020).

Studies focused on COVID-19 have identified negative consequences for mental health elderly population. Therefore, the aim of this review is to evaluate the potential effects of social isolation on the mental health and wellbeing of older adults. Furthermore, this study reviewed the recommendations and proposed activities to avoid mental and functional decline to carry out at home.

METHODS

This study was a narrative review. A literature search was performed in January 2021 to collect all articles published between January 1, 2020 and January 13, 2021, using the primary databases PubMed and ScienceDirect. To ensure greater coverage of literature, a complementary database such as Google Scholar was also used. The keywords COVID-19 were followed by the generic terms older adults or older people or aging population or elderly independently during the systematic search.

Following removal of duplicates, a total of 376 articles were screened at initial search on PubMed and ScienceDirect. Out of the 376 articles, the study excluded 123 articles without abstract and full text, eight review articles, one non-English article, 127 non aging articles (subjects <50 years old), and 96 articles were irrelevant to the review topic (unrelated subject matter). Thus, this study obtained a total of 21 articles for further discussion. The contents of the review were divided into two main areas: 1) impact of social isolation during COVID-19's quarantine on mental health and physical activity in older people, and 2) recommendations for mental health and physical activity of older adults during the COVID-19 self-isolation.

RESULTS AND DISCUSSION

Table 1 presents the 21 selected articles on mental health and wellbeing of older adults. The relevant articles were mostly cross-sectional study and online survey, with the number of the participants ranging from 142 to 7,236. The studies included the countries Spain (Bobes-Bascarán *et al.*, 2020; García-Fernández *et al.*, 2020; Ozamiz-Etxebarria *et al.*, 2020), China (Huang and Zhao, 2020; Lei *et al.*, 2020; Ping *et al.*, 2020; Xia *et al.*, 2020), USA (Callow *et al.*, 2020; Dunton *et al.*, 2020), Scotland (Corley *et al.*, 2021), Poland (Fabisiak, Jankowska and Kłos, 2020), UK (Brown *et al.*, 2020; Robb *et al.*, 2020), Czech Republic (Novotný *et al.*, 2020), Japan (Aung *et al.*, 2020), France (Goethals *et al.*, 2020), Finland (Taina *et al.*, 2020), Germany (Michalowsky *et al.*, 2020), Australia (Dawel *et al.*, 2020), Brazil (Lima-Costa *et al.*, 2020) and Paraguay (Rios-González and Palacios, 2020). Eight articles had participants of general population or aged 18 and over. All of the studies made clear distinction of the age of older adults.

Impact of social isolation on mental health and wellbeing in older people

Thirteen studies reported negative mental health impact of social isolation to elderly. Anxiety, depression and stress were three most common symptoms reported (Table 2).

One of the most typical unpleasant emotions during pandemic is anxiety (Bergman *et al.*, 2020; Coughlin, 2012). Anxiety symptoms were documented in eight studies ranged from 3.6% of older people in Spain (Bobes-Bascarán *et al.*, 2020) to 43.4% of adults in Paraguay (Rios-González and Palacios, 2020). According to Geriatric Anxiety Scale (GAS), 64.1% people aged 50 and over in North America

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have mild anxiety symptoms, 6.9% have moderate anxiety symptoms and 0.8% have severe anxiety symptoms (Callow *et al.*, 2020). Elderly over the age of 60 were nearly two times more likely than those between the ages of 30 and 44 (18.5% versus 8.8%)to experience anxiety in a study conducted in Beijing, China (Xia *et al.*, 2020). However, a study in Spain found no differences in anxiety levels of older adults aged above 60 years when compared to the younger group (<60 years of age) (García-Fernández *et al.*, 2020).

Symptoms of depression experienced by older adults were found from six studies. The corresponding values of depression were 12.8%, 25.6%, 28.1% and 48% (Bobes-Bascarán *et al.*, 2020; Callow *et al.*, 2020; Rios-González and Palacios, 2020; Robb *et al.*, 2020). Depression was classified as mild, moderate, or severe in studies conducted in the UK and North America. Almost 8% older adults in the UK met the criteria of major depression, while 1.4% matched the threshold for severe major depression (Brown *et al.*, 2020). In a North American online Qualtrics survey, 25.5% adults aged 50 and over were diagnosed with mild depression, 63.1% with moderate depression and 11.4% with severe depression (Callow *et al.*, 2020). However, a comparison study in Spain discovered that elderly (≥60 years old) are less likely to suffer depression than younger adults. The Beck Depression Inventory (BDI) scores in older groups were lower than the <60 group [3.02 (3.28) vs 4.30 (4.93)] (García-Fernández *et al.*, 2020). Furthermore, a study in Czech Republic found that the prevalence of moderate to high stress and the severity of depressive symptoms increased 1.4 and 5.5 times, respectively, during the COVID-19 lockdown, (Novotný *et al.*, 2020).

According to a study in Spain, roughly 11% of older people (60+) had stress symptoms (Bobes-Bascarán *et al.*, 2020). In the study, the assessment of symptoms of acute stress adapted clinical criteria for the diagnosis of Acute Stress Disorder Inventory (ASDI) of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The study reported that older age groups had lower stress levels than younger age groups (<60 group) [3.66 (3.20) vs 4.45 (3.06)] (García-Fernández *et al.*, 2020).

Loneliness affects older adults more than other age groups (Carragher and Ryan, 2020). Most all the time, loneliness was experienced by less than 5% of elderly aged between 76-97 (Brown *et al.*, 2020). Loneliness has been associated with variety of chronic illnesses, including heart disease, cardiovascular disease, hypertension, and obesity (Yanguas, Pinazo-Henandis and Tarazona-Santabalbina, 2018; Smith, Steinman and Casey, 2020).

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Table 1. List of Article.

No	Authors	Type of Study	Country	Participants	Number of Participants
1	Fernandez et al., 2020 (García-Fernández *et al.*, 2020)	Cross-sectional study	Spain	People aged ≥60 vs aged <60	1,639 (150 age ≥60 and 1,489 age <60)
2	Xia et al., 2020	A cross-sectional online survey	Beijing, China	Adults 18+	7,144
3	Dunton et al., 2020	A cross-sectional and retrospective methods	USA	Adults ≥60	268
4	Bascaran et al., 2020 (Bobes-Bascarán *et al.*, 2020)	Cross-sectional study	Spain	Adults ≥60	2,194
5	Callow et al., 2020	Descriptive cross-sectional study	USA & Canada	Adults >50	1,046
6	Corley et al., 2020 (Corley *et al.*, 2021)	Online survey	Scotland	Elderly 84 years	171
7	Fabisiak et al., 2020	Electronic survey	Poland	Adults 65+	1,150
8	Brown et al., 2020	Cross-sectional telephone survey	UK	older people 76-97	142
9	Novotny et al., 2020	Ad hoc study	Czech Republic	Adults 24-68 years	715
10	Robb et al., 2020	Cross-sectional	London, UK	Adults >50	7,127
11	Aung et al., 2020	Normative Study	Japan	Adults 65+	-
12	Goethals et al., 2020	Qualitative Survey	France	Professionals (managers); older adults	8 professional; 6 older adults
13	Taina et al., 2020	Cross-sectional and longitudinal	Finland	elderly 75, 80 or 85	809
14	Ping et al., 2020	Online-based survey	China	General population	1.139
15	Michalowsky et al., 2020	Cross-sectional observational study	Germany	Patients aged 65+	2,447,356
16	Dawel et al., 2020	Longitudinal study	Australia	Adults (≥18)	1.296
17	Lima-Costa et al., 2020	Longitudinal study	Brazil	Adults 50+	6,149
18	Lei et al., 2020(Lei *et al.*, 2020)	Cross-sectional	China	Adults (≥18)	1,593
19	Huang and Zao, 2020,	Web-based cross-sectional survey	China	6-80 years old	7,236
20	Ozamis-Etxebarria et al., 2020	Cross-sectional	Spain	Adults (≥18)	967
21	Rios-Gonzales and Palacios, 2020)	Cross-sectional	Paraguay	Adults (≥18)	1.180

Social isolation is generally linked with the reduced physical activity in older adults (Goethals *et al.*, 2020; Rios-González and Palacios, 2020; Taina *et al.*, 2020). According to a qualitative study conducted in France, older peoples' participation in group physical exercise is declining, with attendance rate at physical activity workshops dropping by 20% (Goethals *et al.*, 2020). Physical inactivity can cause older adults to lose flexibility, muscle strength, and aerobic capacity (Aung *et al.*, 2020), it can also raise the risk of injury due to a lack of knowledge about physical activities or lack of adapted equipment (Goethals *et al.*, 2020).

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Table 2. Impact of COVID-19 Quarantine on Mental Health and Physical Activity

Authors	Aim	Main Results
Anxiety		
Xia et al., 2020	To evaluate the prevalence of anxiety and identify risk and protective factors associated with the presence of anxiety symptoms in the face of COVID-19 among Beijing adults.	Participants over the age of 60 were nearly two times more likely than those between the ages of 30-44 to feel anxiety (18.5% versus 8.8%).
Bascaran et al., 2020	To ascertain the early psychological correlates of the COVID-19 pandemic and to determine if a current or past personal history of mental disorder influences those correlates.	Anxiety symptoms were reported by 3.6% of participants.
Callow et al., 2020	To determine the relationship between the amount and intensity of physical activity performed by older adults in North America (U.S. and Canada) and their depression and anxiety symptoms while currently under social distancing guidelines (SDG) for the COVID-19 pandemic.	GDS participants: 63.1% were classified as having mild anxiety, 63,1% as moderately anxious, and 11.4% as severely anxious. GAS Participants: 64.1% were categorized had mild anxiety symptoms, 6.9% had moderate anxiety symptoms, and 0.8% had severe anxiety symptoms.
Brown et al., 2020	To investigate the impact of COVID-19 lockdown measures on the lives of older people.	The majority of participants said they were in good health, with low levels of anxiety and depression. 52% said they did not worry about their health, while 76% said their health as 'good', 'very good' or 'excellent'. <10% met the criteria indicative of depression or anxiety. Before the lockdown, 42% participants were less active. 72% participants were felt lonely at least some of the time.
Robb et al. 2020	To investigate the impact of COVID-19 and associated social isolation on mental and physical wellbeing.	12.3% of participants said they felt worse on the anxiety components of the Hospital Anxiety Depression Scale (HADS), consist of 7.8% men and 16.5% women. Fewer participants said they were feeling improved (4.9% for anxiety).
Ping et al., 2020	To know the impact of the COVID-19 epidemic on the health-related quality of life (HRQOL) of living using EQ-5D	The result reported that Anxiety/depression as 23.7%.
Ozamis-Etxebarria et al.,2020	To analyze stress, anxiety and depression with the arrival of the virus.	Anxiety levels in people over the age of 61 are moderate (3.9%).
Rios-Gonzales and Palacios , 2020)	To determine the symptoms of anxiety and depression during the isolation period.	Anxiety symptoms were reported by 43.42% of people aged 50 and over.
Depression		
Fernandez et al., 2020	To assess COVID-19 outbreak related emotional symptoms, identify gender differences, and study the relationship between the emotional state and environmental features in the	Emotional distress among elderly has been demonstrated to be lower. The mean (SD) Beck Depression Inventory (BDI) levels among ≥60 group were 3.02 (3.28) compared to the <60 group 4.30 (4.93).

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	elderly.	
Bascaran et al., 2020	To ascertain the early psychological correlates of the COVID-19 pandemic and to determine if a current or past personal history of mental disorder influences those correlates.	Depression symptoms were found in 25.6% of participants.
Callow et al., 2020	To determine the relationship between the amount and intensity of physical activity performed by older adults in North Amerika (U.S. and Canada) and their depression and anxiety symptoms while currently under social distancing guidelines (SDG) for the COVID-19 pandemic.	28.1% of GAS participants were categorized as having minimal depression like symptoms.
Novotny et al., 2020	To measure changes in mental health during the COVID-19 induced lockdown in order to probe for age-related changes and potential risk factors.	During the COVID-19 lockdown, the prevalence of moderate to high stress and the severity of depressive symptoms increased 1.4 and 5.5 times, respectively.
Robb et al., 2020	To investigate the impact of COVID-19 and associated social isolation on mental and physical wellbeing.	A total of 12.8% of participants, 7.8% men and 17.3% women, reported feeling worse on the depression components of the Hospital Anxiety Depression Scale (HADS). Fewer participants said they were feeling improved (1.5% for depression)
Rios-Gonzales and Palacios , 2020)	To determine the symptoms of anxiety and depression during the isolation period.	Depression symptoms were reported by 48.04% of those aged 50 and over.
Stress		
Fernandez et al., 2020	To assess COVID-19 outbreak related emotional symptoms, identify gender differences, and study the relationship between the emotional state and environmental features in the elderly.	Acute Stress Disorder Inventory (ASDI) scores among ≥60 group were lower than the <60 group. The mean (SD) 3.66 (3.20) vs 4.45 (3.06).
Bascaran et al., 2020	To ascertain the early psychological correlates of the COVID-19 pandemic and to determine if a current or past personal history of mental disorder influences those correlates.	Stress symptoms were reported by 11% of participants.
Physical activity		
Goethals et al., 2020	To evaluate the impact of this quarantine period and on the physical and mental health of older adults ; and to discuss alternatives to physical activity programs to avoid a sedentary lifestyle.	Attendance of physical activity workshop has decreased by roughly 20%.
Taina et al., 2020	To describe the changes that took place in life-space mobility, active aging and quality of life during social distancing in Finland. To assess whether changes in life-space mobility and active aging coincided with parallel changes in quality of life.	Life-space mobility, the active aging score and the quality of life score were lower during COVID-19 social distancing than two years prior.

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Rios-Gonzales and Palacios (Rios-González and Palacios, 2020)	To describe the psychological and social implications as well as health-related behaviors as a result of the lockdown in community dwelling older adults.	33.7% of participants continued to engage in activities that promote healthy aging, while 65.7% did less physical activity and 25.6% increased their intellectual activity.

Recommendation for mental health and physical activity in older people during COVID-19 social isolation

There are several recommendations for how older adults can cope with social isolation. interaction with other people, for example, phone and video calls by friends, family members, or care givers regularly; availability of helplines; availability of distance connectivity through telephone, computer, or other smart devices; and gardening, would help mitigate feelings of disconnectedness and could check elderly's general wellbeing, identify needs, engage them cognitively, offer an opportunity for socializing, and connect them to available services and resources (D'cruz and Banerjee, 2020; Smith, Steinman and Casey, 2020; Corley *et al.*, 2021).

To improve the resilience of the older population, efforts to deliver adequate information are needed, for example Information, education and communication (IEC) campaigns on media platforms promoting a healthy diet, journaling, sleep hygiene, relaxation techniques, physical activity, and meditation (D'cruz and Banerjee, 2020).

Maintaining or improving physical activity by providing home workout video; online physical activity support systems; and a clean, safe and attractive public area (Aung *et al.*, 2020; Callow *et al.*, 2020; Fabisiak, Jankowska and Kłos, 2020; Goethals *et al.*, 2020).

The COVID-19 pandemic has brought attention to the fact that social isolation is a major public health concern, and that staying physically separated from others can be both protective and dangerous to elderly. Anxiety, stress and depression are psychological challenges that many older adults face, with the prevalence ranging a from 3.6% (Bobes-Bascarán *et al.*, 2020) to 43.4% (Rios-González and Palacios, 2020) for anxiety; 12.8% (Robb *et al.*, 2020) to 48% (Rios-González and Palacios, 2020) for depression; and 11% (Bobes-Bascarán *et al.*, 2020) for stress. These are similar to earlier studies conducted during pandemics, for example, a study about SARS in 2003 found that perceived-related risk level during the outbreak increased the odds of having a high level of depressive symptoms three years later (Liu *et al.*, 2012) and the rates of suicide among older adults in Hong Kong (Cheung *et al.*, 2020). After more than a year of Ebola outbreak in 2015, 48% of general public reported anxiety symptoms (Jalloh *et al.*, 2018). During the influenza A outbreak, 16% of the public felt anxiety (Bults *et al.*, 2011). About 39% of residents reported anxiety symptoms during avian influenza in France (Saadatian-Elahi *et al.*, 2010). In the context of COVID-19 pandemic, older adults are more vulnerable psychologically, due to aging process, decreasing functional capacity, and separating from family members (Robb *et al.*, 2020; Susilowati *et al.*, 2020; Schorr, Yehuda and Tamir, 2021).

This review suggests that COVID-19 appears to have a deleterious impact on the physical health of older adults when they are socially isolated. Performing physical activity has been shown effective to alleviate depressive symptoms and function as a counter-measure to immunological senescence or age-related immune deficiency (Nieman, 2000; Carriedo *et al.*, 2020; Moro and Paoli, 2020). According to earlier studies, inactive aging population have a higher risk of all-cause mortality, fractures, recurrent falls and functional limitation than their active peers, (Cunningham and O' Sullivan, 2020). It is critical to assist older adults to integrate simple, safe ways to stay physically active in limited space that does not require specific settings and/or devices during a period of social distance.

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Table 3. Recommendations of the Literature for Maintaining Mental Health and Physical Activity among Older People during COVID-19 Quarantine

No	Authors	Aim
1	D'cruz and Banerjee, 2020	The availability of helplines would allow elderly to seek assistance in time of distress. Providing simple written instructions and/or recorded messages may aid the transition to digitization of services. Friends, family members and care workers making phone and video calls frequently to check in on elderly as channels for interaction that might help to mitigate isolation and feelings of disconnectedness. IEC campaigns on media platforms to encourage beneficial health and wellbeing practices such as eating a balanced diet, sleep hygiene, physical exercise, journaling, meditation and relaxation techniques.
2	Callow et al,, 2020	Performing lights physical activity during self-isolation in time of COVID-19 pandemic may help ease some of negative mental health consequences.
3	Corley et al,, 2020	When compared to pre-lockdown, elderly who spent more time in the garden during COVID-19 reported significantly better physical health, emotional and mental wellbeing, and sleep quality.
4	Fabisiak, Jankokowska and Klos, 2020	Providing clean and pleasant public spaces, with the provision not only antibacterial but also antiviral surface properties as well as practical application in furniture.
5	Aung et al., 2020	Older adults can download a home exercise video from the primary healthcare service provider's webpage. The exercise was three times a day, for 10 minutes of each training. Stretching, squatting and strengthening exercises for arms, legs and trunks are all part of home version exercise.
6	Robb et al., 2020	The necessity to tract, identify and implement early interventions among individuals who are at increased risk of developing loneliness as a result of social isolation. To address the maladaptive conditions associated with loneliness, the need to facilitate engagement in meaningful and satisfying group activities. The use of technologies, such as applications, may continue to be a useful tool.
7	Smith, Steinman, and Casey, 2020	The necessity for clinical and community-based organizations to collaborate and form inter-sectoral partnerships in order to continue to provide services and programs that engage and support older adults. The aging social services network is critical infrastructure for reaching older adults who are underserved and/or marginalized. Distance connectivity through telephone, computer, or other smart devices, such as telephonic reassurance and engagement efforts where community health workers, social workers, clinicians and other personnel make telephone calls to older adults to check on their general well-being, identify needs, engage them cognitively, provide an opportunity for socialization, and link them to available services and resources. The Engagement of older adults as volunteers and crisis support to assist themselves and others. Virtual service delivery.
8	Carragher and Ryan,2020.	Age-friendly programs involving local stakeholders from multiple sectors. Communities join together to form support networks and to connect with elderly in innovative ways.
9	Brown et al., 2020	Proactively identifying and addressing COVID-19 related mental health problem for those who are experiencing negative impact. Strategies to promote safe physical activity should be considered to mitigate the negative effect of current and future COVID-19 restrictions.
10	Goethals et al., 2020	Maintaining physical activity at home is critical for older adults. Several online physical activity support systems are available online.

CONCLUSION

In conclusion, this review reveals that social isolation for COVID-19 has a negative impact on older adults' mental health and physical activity. Anxiety, depression, stress and loneliness were the most common mental outcomes reported. Furthermore, many people were not exercising as much as they had been prior to the pandemic. Thus, if social isolation continues, traditional practice programs must be rapidly altered and translated to facilitate connectivity serve, support and engage older adults.

Based on the review, the study recommends that policy responses such as

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proactively identifying and addressing COVID-19-related mental health and physical activity for elderly who are experiencing negative consequences. Public health strategies to promote safe physical activity should be considered to mitigate the negative impact of current and future COVID-19 restrictions.

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