

The Correlation Between Role Of Family On Elderly's Physical Activity and Mental Health In The COVID-19 Pandemic Era

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Abstract

Background: The emergence of the COVID-19 pandemic has caused various changes in all aspects of life in various age groups, especially in the elderly group. In addition, the elderly are included in the group at risk of being affected by COVID-19 because when someone got into old age, various changes in conditions can occur. As a solution to this problem, the role of the family is needed in providing care for the elderly, both care for physical activity and mental health. This aims to keep the elderly both physically and mentally healthy during the pandemic. **Objectives:** The sample used in this study is the elderly's family who are members of BKKBN Surabaya City. This study aims to determine the relationship between the role of family on the physical activity and mental health of elderly in the COVID-19 pandemic era. **Methods:** This research uses a cross sectional approach. The sampling technique is cluster random sampling. The total sample in this study is 113 respondents who were determined based on inclusion and exclusion criteria. The dependent variable in this study is the role of the family, while the independent variables are the physical activity and the mental health of the elderly during COVID-19 pandemic. Analysis of the results of this study using the Chi Square test. **Results:** The results obtained there is no relationship between the role of the family to the physical activity of elderly (P value = 0.176) and there is a relationship between the mental health of the elderly (P value = 0.001). **Conclusion:** The role of the family of Bina Keluarga Lansia (BKL) Surabaya to the elderly was in the good category. Most of the elderly had light levels of physical activity and had good mental health state during COVID-19 pandemic era.

Keywords: family role, physical activity, mental health, elderly, COVID-19.

1. Introduction

At the beginning of 2020, the majority of the world's population felt the effects of a new virus named SARS-CoV 2 (severe acute respiratory syndrome coronavirus-2) and the condition it caused, Coronavirus Disease-19 (COVID-19), which was rapidly spreading. Wuhan, Hubei Province, China, was the location of the virus's initial discovery in December 2019 [22]. It is well known that this virus can spread from person to person. On March 12, 2020, the World Health Organization (WHO) announced COVID-19 as a global pandemic. This led to considerable activity limits during the pandemic, which had a significant impact on health, especially for the elderly and their physical and mental health.

The pandemic's social restriction policy severely restricted the elderly's physical activity [17]. A sedentary lifestyle is linked to insufficient physical activity. This is a result of the misconception that elderly people will spend a lot of time at home. The elderly will spend a lot of time sitting, lying down, watching television, and using their phones. Serious health issues will result from this habit of inactive lifestyle [5].

Elderly people's mental health may be affected by the COVID-19 pandemic, including stress and anxiety. Some people worry excessively about the pandemic circumstances, particularly because of their prejudices or misgivings toward those who exhibit symptoms, such COVID-19 patients [14]. Additionally, when considering the statistical data regarding the COVID-19 death rate, which is broadcast in the news on television and the internet, it is clear that this tends to raise the stress and anxiety levels in the elderly because they are afraid they will get COVID-19. The availability of different kinds of information on COVID-19, which causes the elderly to be confused when choosing information, is another cause of stress and anxiety in the

elderly [18]. The COVID-19 pandemic's quarantine impact made the elderly feel depressed and alone, which made them more susceptible to stress. Additionally, these stressful situations cause the immune system to weaken, which might worsen the effects on already compromised physiological processes [6].

By looking at these various problems, the success of the quality of life for the elderly cannot be separated from the influence of the family, who plays the role of being their companion in dealing with the COVID-19 pandemic situation. Even though the pandemic situation has caused the majority of the elderly to stay at home, the family can provide companionship for the elderly to ensure that their health is appropriately maintained. The family is responsible for providing care for the elderly, which is an important component of the health service sector. The meaning of family roles is that each family member holds a position or position to be responsible for managing other family members and interacting with each other. The role of the family is divided into 3, namely as a motivator, educator, and facilitator. These three roles are very important for the daily life of the elderly, especially during the COVID-19 pandemic when the elderly will be at home more often. As a motivator, the family provides encouragement and motivation so that the elderly know about how to take good care of their health. The role as an educator is that the family is able to provide education or information about the health of the elderly so that the elderly understand what to do and what not to do. In terms of facilitators, families are able to care for, assist, facilitate, and allocate resources to support the needs of the elderly [4]. Fulfillment of these three roles will reflect that the family can provide support for the elderly to live the rest of their life well and usefully [7].

2. Material and Method

This study used observational research through a cross sectional approach. Sampling using cluster random sampling technique. The population in this study were families of the elderly assisted by the BKKBN (Badan Kependudukan dan Keluarga Berencana Nasional) namely Bina Keluarga Lansia (BKL) in Surabaya for the period May – July 2022. The number of samples in this study were 113 respondents. There were 3 kinds of instruments used in this study, namely the role of the family using a 4-category Likert scale questionnaire, the physical activity of the elderly using the Physical Activity Recall 1x24 hour questionnaire, and the mental health of the elderly using the DASS-21 questionnaire. The collected research data were analyzed using SPSS 25 statistical software. Analysis of the results of this study used the Chi Square test. This research was carried out after obtaining approval from the Health Research Ethics Committee of the Faculty of Medicine, Airlangga University number 11/EC/KEPK/FKUA/2022.

3. Results

Table 1. Characteristics of elderly's family

	Category	Frequency (N=113)	Percentage (%)
Sex	Men	19	16,8
	Women	94	83,2
Age	13-24	8	7,1
	25-34	14	12,4
	35-44	46	40,7
	45-54	23	20,4
	55-60	22	19,5
Education	Primary School	8	7,1
	Junior High School	23	20,4
	Senior High School	63	55,8
	College	19	16,8
Job	Civil Servant	2	1,8
	Private employees	21	18,6
	Businessman	12	10,6
	Housewife	65	57,5

	Other	13	11,5
Role of Family In The Elderly	Good	98	86,7
	Not good	15	13,3

Table 2. Characteristics of elderly

	Category	Frequency (N=113)	Percentage
Sex	Men	34	30,1
	Women	79	69,9
Age	61-75 (elderly)	96	85,0
	76-90 (old)	17	15,0
Education	Did not finish primary school / attend any school	7	6,2
	Primary School	51	45,1
	Junior High School	24	21,2
	Senior High School	24	21,2
	College	7	6,2
Job	Retired/not working	40	35,4
	Civil Servant	2	1,8
	Private employees	6	5,3
	Businessman	7	6,2
	Housewife	44	38,9
	Other	14	12,4
Presence of comorbid disease	Exist	66	58,4
	None/Health	47	41,6
Physical Activity Level	Low	93	82,3
	Moderate	19	16,8
	High	1	0,9
Mental Health State	Normal	71	62,8
	Depression	8	7,1
	Anxious	22	19,5
	Stress	12	10,6

Table 3. The correlation between family roles and elderly's physical activity in the COVID-19 pandemic era

Family Role	Elderly's Physical Activity Level						Total		P Value	r
	Light		Moderate		High					
	N	%	N	%	N	%	N	%		
Good	83	73,5	14	12,4	1	0,9	98	86,7	0,176	0,140
Not Good	10	8,8	5	4,4	0	0	15	13,3		

Table 4. The correlation between family roles and elderly's mental health in the COVID-19 pandemic era

Family Roles	Elderly's Mental Health								Total		P Value	r
	Normal		Depression		Anxious		Stress					
	N	%	N	%	N	%	N	%	N	%		
Good	68	60,2	6	5,3	17	15,0	7	6,2	98	86,7	0,001	0,347
Not good	3	2,7	2	1,8	5	4,4	5	4,4	15	13,3		

4. Discussion

Role Of Family On Elderly In The COVID-19 Pandemic

This research shows that most of the role of the family in providing care for the elderly during the COVID-19 pandemic is good. This is supported by the results of interviews with BKL (Bina Keluarga Lansia) cadres, who stated that BKL organizes several activities that are held regularly and these activities are supported by a good level of participation and activity from the respondents. We assume that the activeness and concern of respondents to participate in BKL activities is one of the factors that have an impact on the quality of family roles. Families can use the information they learn from BKL-sponsored activities to care for the elderly in their daily lives. This can bring up a family attitude to care more about the health of the elderly, both physically and mentally, especially during pandemic conditions [15].

Apart from the knowledge factor that the respondent has obtained, we also assume that the respondent's sufficient experience also influences a good role in caring for the elderly. Family experience in caring for the elderly requires more attention and time because the elderly experience a variety of changes, such as declining productivity as they age, psychological changes, and changes in other conditions. , families must understand and follow the patterns of habits of the elderly in order to provide care that meets their needs. The role of a good family will certainly bring up a positive attitude in caring for the elderly. The family's positive attitude comes from their experience in caring for the elderly, so that it creates good mindsets, beliefs, and emotions (Narayani et. al, 2009).

Elderly's Physical Activity In The COVID-19 Pandemic Era

Physical activity is any body movement that results in an increase in energy and energy expenditure. Physical activities that can be done by the elderly are walking, housecleaning, gardening, shopping, carrying grandchildren, and more. One of the things that affects the physical condition of the elderly and helps to improve physical health is physical activity [21]. The results of the analysis showed that most of the elderly assisted by Bina Keluarga Lansia (BKL) carried out light physical activities during the pandemic, namely 93 elderly people (82.3%).

Due to the ongoing COVID-19 pandemic condition, we assume that the majority of elderly in just light physical activity. We suppose that, due of the ongoing COVID-19 pandemic condition, the majority of elderly people engage in only light physical activity. To stop the spread of the Corona virus, the government adopted a policy of widespread social restrictions as a result of these circumstances. With this policy, the limits for physical activity and social activity are increasingly emphasized. This makes the elderly prefer to do more activities in the home environment. We also argue that if someone who has more physical activity at home becomes less free to move outside the home, so that the energy expended is also less. A lockdown policy caused an elderly population to become less physically active [21].

Additionally, we believe that the aging process, which typically results in a decline in organ function, may contribute to the variables that influence the elderly to do light physical activity during the COVID-19 pandemic. Reduced muscular mass and strength, maximal heart rate, reduced respiratory muscle strength, increased body fat, and diminished brain function are all signs of a decline in physical capacity in the elderly.

This results in a decrease in the ability to carry out physical activities so that the level of activeness of the elderly in physical activities also tends to decrease [10].

Elderly's Mental Health State In The COVID-19 Pandemic Era

The study's findings revealed that 71 elderly (62.8%) had good (normal) mental health. Researchers assume that the existence of good family support for the elderly during the COVID-19 pandemic affects the normal mental health of the elderly, such as the family maintaining social relations with the elderly so that the elderly do not feel too lonely. In addition, the family also provides an opportunity for the elderly to be able to communicate with relatives who live far away from the elderly using social media. During this pandemic, the role of the family is very important in preventing the occurrence of mental health problems for the elderly and reducing risk factors that can interfere with the mental health of the elderly by recognizing the vulnerabilities of the elderly and strengthening family resilience [13]. However, health problems in the elderly such as depression, anxiety, and stress also need attention. This can be influenced by several factors, including gender, recent education, and the presence of co-morbidities

1. Depression In The Elderly In The COVID-19 Pandemic Era

Based on gender, older women may tend to experience depression more than older men. This is caused by a decrease in the hormone estrogen which generally occurs in older women. Emotional equilibrium is impacted by estrogen reduction. As a result of the hyperactivity of the HPA-axis (hypothalamic-pituitary-adrenal axis), depression in older women also causes excessive CRH (Corticotropin-Releasing Hormone) secretion, which might affect depressive episodes [12]. Elderly women experience depression more quickly than men due to female hormones which are quickly unstable or cause depression so that their recovery is also slower because women tend to use their feelings in dealing with any problem [22]. We can conclude that depression in the elderly can be influenced by gender, even though older men have the possibility of being at risk of depression.

Elderly with low levels of education, such as not graduating from elementary school and graduating from elementary school, may experience mild to severe depression compared to those with higher levels of education. We assume that elderly people with low education still do not receive much information and face life experiences so that the ability to make decisions when facing a problem is still considered lacking. The level of education influences a person's behavior in motivating attitudes and playing a role in health development. The higher a person's education, the easier it is to receive information so that the knowledge they have is also a lot. Conversely, the lower or lack of a person's education, it will hinder the development of one's attitude towards new values [8]. According to Beck's theory from 1997, the primary factor in cognitive development is generally the educational attainment level. Cognitive will act as a mediator between an experience and a person's mood [1].

Elderly with comorbid conditions are more likely to suffer from depression than older adults without comorbid conditions. Elderly who have had chronic illnesses for a long time are typically more susceptible to depression. The relationship between somatic disease and medication with depression in the elderly will become increasingly apparent with increasing age. Depression can be a direct manifestation of somatic illness or the effects of medication, a reaction to a diagnosis of a chronic illness, or it can coexist with physical complaints.

2. Anxiety In The Elderly In The COVID-19 Pandemic Era

Based on gender, older women may experience more anxiety. Women can experience higher anxiety than men because metacognitive thoughts about uncontrollable worries are more common in women [2]. The results of the study found that elderly people with low education experienced more anxiety. We suspect that this is because elderly people with low education have not received more new information to make decisions in solving problems and helping them manage their anxiety. Individuals who have a higher level of education tend to have the ability to search for new information better so as to reduce perceived anxiety. In addition, the better a person's level of education, the better the ability to understand the meaning of life and the better able to manage problems rationally [24].

The elderly with comorbidities may experience more levels of mild to severe anxiety. We assume that the relationship between comorbid factors and anxiety experienced by the elderly is because the elderly who have comorbidities pose a threat to them that they will be more susceptible to contracting COVID-19 and difficult to cure. In addition, there is a fear of excessive information about COVID-19, such as the high mortality rate experienced mostly by the elderly group, which can also cause anxiety in the elderly.

We also assume that the presence of elderly who have the comorbid factors above cannot be separated from the influence of age on one's anxiety. People who have entered the age of over 60 years may experience a decline in physical, psychological, and social conditions. This situation can cause health problems in general and mental health in particular in the elderly [3]. There are 4 diseases associated with the aging process, such as blood circulation disorders, blood vessel disorders in the brain and kidneys, hormonal metabolic disorders and joint disorders where all of these diseases require relatively long therapy or treatment and have a high risk of developing complications so that that is what can cause anxiety in the elderly [19].

3. Stress In The Elderly In The COVID-19 Pandemic Era

Based on gender, older woman may experience stress than men. Therefore, researchers assume that the gender factor can affect the presence of stress in the elderly. According to Culbertson's theory (1997) states that naturally, women experience more stress as a result of hormonal influences. In old age, women will experience a decrease in levels of the hormone estrogen which greatly affects emotional balance. Older women can also experience a more severe decline in self-esteem compared to men [1].

The elderly with the low level of education may experience moderate and severe levels of stress more than the elderly with the last high and middle education. This is because the elderly who have a higher level of education have better intellectual abilities so they are able to solve problems or stressors properly and minimize stress. Meanwhile, elderly people with low education lack sufficient knowledge to solve problems so they experience stress more easily [20].

The comorbidities of the elderly can also be a cause of stress. In this study, it was found that elderly people who had more illnesses experienced mild to severe stress. Elderly who suffer from the disease cause changes in physiological function in people who suffer from it. Changes in these physiological functions can affect a person's life and can cause stress in the elderly who experience them. Elderly who are prone to experiencing stress, for example elderly people with degenerative diseases, have chronic somatic complaints, and prolonged immobilization [11].

The Correlation Between Family Roles and Elderly's Physical Activity In The COVID-19 Pandemic Era

The results of the Chi Square test obtained a value of $P = 0.176$, indicating that there is no correlation between the family's role and the elderly's level of physical activity during the COVID-19 pandemic. These results also obtained a correlation coefficient (r) = 0.140 which indicates that the correlation between the role of the family on the physical activity of the elderly during the COVID-19 pandemic has a strength that is included in the no correlation category so that the correlation can be ignored. This makes us assume that the family knows that in old age they have experienced limitations in doing physical activity, so the family provides support in the form of monitoring, educating, and motivating the elderly to do physical activity according to their abilities. The average of elderly has limitations on their ability to carry out their activities because they experience a decline in their physical, psychological, and social conditions, which are interconnected so that families can properly monitor every activity carried out by the elderly at home. The existence of a good family role will improve the quality of life of the elderly because the physical activity needs of the elderly can be fulfilled and they will feel happy in life.

There has been a decline in physical activity among the elderly since the COVID-19 pandemic and the implementation of social constraints. The inability to engage in more physical exercise was a result of the pandemic period's widespread closures of public and recreational spaces. Therefore, to maintain their physical activity, the elderly must perform different physical activities in different environments. During the pandemic, the elderly carried out more physical activities at home. In addition, in the elderly group there is a decrease in

the ability to carry out physical activities caused by the aging process which results in a decrease in muscle strength and contraction, muscle elasticity and flexibility, physical endurance, and speed of movement [11].

As a result of the COVID-19 pandemic, most of the elderly carry out their physical activities in the home environment. Researchers assume that this can have a positive impact on the elderly who live with their families, namely the relationship between the elderly and their families becomes closer and the elderly can feel better support from their families. Elderly who live with their family members, including spouses and children, will get attention and various sorts of support to make them feel loved and cared for [21].

The Correlation Between Family Roles and Elderly's Mental Health In The COVID-19 Pandemic Era

Test results regarding the relationship between the role of the family and the elderly's mental health during the COVID-19 pandemic obtained a value of $P = 0.001$ ($P < 0.05$), indicating that there is a relationship between the family's function and the elderly's mental health during the COVID-19 pandemic. These results also obtained a correlation coefficient (r) = 0.347 which indicates that the correlation between the role of the family on the mental health of the elderly in the era of the COVID-19 pandemic has a strength that is included in the weak category. Therefore, researchers can reach the conclusion that the elderly mental health is positively correlated with how well their family plays that role.

In terms of maintaining the mental health of the elderly during a pandemic, the role of the family is really needed because at that time the family is the shelter for the elderly. The family has roles and functions, one of which is as a caregiver. This can bring up the role of the family in providing support to the elderly. With this support, the elderly feel their lives are meaningful, they feel loved, cared for, valued, and valued [16].

There were four different types of family support in this study, including emotional support, appraisal support, instrumental support, and informational support, that were used to care for the elderly's mental health. Emotional support can include showing affection for the elderly, inviting the elderly to chat, taking time to gather with the elderly, providing touch and comfort when the elderly are experiencing problems, entertaining the elderly, providing a comfortable and calm atmosphere when resting, and inviting the elderly to do activities spiritual like worship. Appraisal support respecting the opinions that the elderly make, giving praise to the elderly when they have carried out certain activities well. Instrumental support includes providing the elderly with enough meals, suitable sleeping arrangements, medications and vitamins, and financial resources to meet their needs. Families can provide informational support for the elderly by giving advice and reminding them not to eat foods that can cause illness, sharing information about activities the elderly can do based on their conditions, and accompanying the elderly to health facilities for routine health checks. The majority of respondents said in the results that they frequently give the elderly this support.

5. Conclusion

The results showed that most of the role of the family of Bina Keluarga Lansia (BKL) Surabaya to the elderly was in the good category. during the pandemic, most of the elderly had light levels of physical activity and had good mental health state. The results of the correlation analysis found that there was no correlation between the role of family and elderly's physical activity and there was a correlation between the role of the family and elderly's mental health during the COVID-19 pandemic.

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