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The Effect of Gymnastics on the Quality of Life of the Elderly at the Social Rehabilitation Center for the Elderly in North Maluku Province

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Abstract
Old age or old age is not a disease, but this condition can cause social problems. At the time of entering old age, body functions can no longer function properly, so the elderly need a lot of help in carrying out their life activities. Not to mention the various diseases that accompany the condition of the elderly that make them need extra attention from the people around them. Sports activities will help the body stay fit and fresh because it trains bones to stay strong, encourages the heart to work optimally, and helps eliminate free radicals that roam the body, in other words, have good physical fitness if the heart and blood circulation are good so that the whole body can run. Its function for a long time. Elderly exercise is a series of tone movements that are regular, directed and planned in the form of physical exercise that affects the physical exercise of the elderly. The purpose of this study was to determine the effect of elderly exercise on the quality of life of the elderly at the Social Institution for the Social Rehabilitation of the Elderly in North Maluku Province. Pre-experimental research design. The design used in this study is a one group pretest-posttest design with control group. In the independent statistical test the sample T test at the time after the intervention was given, it showed that the p-value (0.000) <0.05, which means that there is a difference in the average quality of life of the elderly between those who do exercise accompanied by an instructor and those who are not accompanied by an instructor. There is an effect of elderly exercise on the quality of life of the elderly.

Keywords: Gymnastics ; quality of life; elderly

Introduction

Old age is something that will definitely be experienced by everyone who is blessed with a long life, the aging process cannot be avoided by anyone. At the time of old age there will be various setbacks in the body's organs. But there is no need to be discouraged, you must always be optimistic, cheerful and try to always stay healthy in old age. So even though you are old, you have to keep your health.

Old age is not a disease, but the condition can cause social problems. In some countries, especially developed countries, life expectancy has increased so that the number of citizens aged over 65 years is also increasing (Widianti et al., 2010).

Currently, worldwide, the number of elderly people is estimated at more than 629 million people (one in ten people are over 60 years old), and by 2025, the elderly will reach 1.2 billion. In developed countries, the increase in the elderly population has been anticipated since the beginning of the 20th century, it is not surprising that developed countries are ready to face an increasing elderly population with various challenges. However, today, developing countries are starting to face the same problem. This phenomenon clearly brings a number of consequences, including the emergence of physical, mental, social problems, as well as the need for health and nursing services, especially degenerative disorders (Nugroho W, 2008).

According to the World Health Organization (WHO), the elderly are people who have entered the age of 60 years and over. WHO classifies the elderly into the following four criteria: middle age (middle age) is 45-59 years, elderly (elderly) is 60-74 years, old age is 75-90 years, very old age (very old). are over 90 years old.

In a preliminary study conducted at the Social Service Unit for the Elderly Social Rehabilitation Unit, South Maluku Province, it was inhabited by 68 elderly people, middle age (45-59 years old) 6 people, elderly people (60-74 years old) 44 people and elderly people. (75-90 years) 6 people.

Quality of life is a person's perception of his position in life in the context of the culture and value systems in which he lives and is related to their goals, expectations, standards and concentration (World Health Organization, 2015). There are four domains in quality of life, namely physical health, social relationships, psychological health, and environmental aspects (WHOQOL Group; Jackie Brown, 2004). Four quality-of-life domains were identified as behavior, existence status, potential capacity, and subjective perception or experience (WHOQOL Group, 1994). Ratna (2008) also added that if these needs are not met, problems will arise in the lives of the elderly which will reduce their quality of life.

At the time of entering old age, body functions can no longer function properly, so the elderly need a lot of help in carrying out their life activities. Not to mention the various diseases that accompany the condition of the elderly that make them need extra attention from the people around them. Sports activities will help the body stay fit and fresh because it trains bones to stay strong, encourages the heart to work optimally, and helps eliminate free radicals that roam the body, in other words, have good physical fitness if the heart and blood circulation are good so the whole body can run function for a long time.

Regular physical activity has been shown to improve a person's physical and mental quality of life. Based on the results of research conducted by Wungouw in 2006 where the provision of physical activity in the form of aerobic exercise to the elderly can improve the quality of life as measured by Mac New Heart Disease Health Related QoL accompanied by increased strength and stamina and reduce anxiety and depression experienced by the elderly. These results are also in accordance with research conducted by Acree and Longfors (2006) measuring quality of life with the SF-36 in the high activity group and the low activity group. low activity.

Previous research conducted by Krieatansi Widayati and Dwi Sulisetyawati (2015) found that there was a significant effect of exercise on the level of quality of life of the elderly. Tera gymnastics can be used as a routine activity twice a week because it is beneficial for body fitness so that it can improve the quality of life of the elderly.

Elderly gymnastics is a series of tone movements that are regular, directed and planned in the form of physical exercise that affects the physical exercise of the elderly. Sports that are suitable for the elderly are gymnastics called elderly gymnastics. The definition of elderly gymnastics is a series of directed and regular name movements and then followed by the elderly whose implementation is intended to improve physical abilities functionally. In this study, the elderly gymnastics to be used was specifically designed to train the body, waist, legs, and hands to get stretch for the elderly, but the movement should not be excessive. If you pay attention, elderly gymnastics makes the participants not move much like aerobic exercise. All types of gymnastics and light sports activities are very useful for inhibiting the degenerative process or the aging process. This exercise is highly recommended for those who enter the elderly age of 46 years and over. Gymnastics for the elderly besides having a positive impact on improving the function of the body's organs can also have an effect on increasing immunity in the human body after regular exercise.

This study aims to analyze the effect of elderly exercise on the quality of life of the elderly at the Social Rehabilitation Center for the Elderly in North Maluku Province. In particular, this study aims to (1) identify the effect of elderly exercise on the physical activity of the elderly, (2) identify the effect of elderly exercise on the psychological health of the elderly, (3) identify the effect of elderly exercise on the social relations of the elderly, (4) identify the effect of elderly exercise on the psychological health of the elderly. environmental aspect

Method

Designs and samples

The design of this study used a pre-experimental research design. The design used in this research is a one group pretest-posttest design with control group. 60 elderly people were divided into 30 control groups and 30 intervention groups. The inclusion criteria in the study were elderly who fit the WHO criteria aged 60-90 years, still able to do light activities such as gymnastics. The exclusion criteria in this study were that the respondents had experienced knee trauma in the last 3 months and had neurological disorders

Ethical approval

Ethical approval was obtained from the Tanjung Karang Poltekkes Ethics Committee with No. 319/KEPK-TJK/X/2020. Permission for data collection was granted by the Head of the Elderly Social Rehabilitation Social Institution, where the research took place. Ethical principles are guaranteed not to be violated during the research process.

Measurement

The quality of life of the elderly is measured by The World Health Organization Quality Of Life- BREEF. Consists of 26 question items with a 5-point ordinal scale starting from never, rarely, quite often, very often and always. Of the 26 question items consisting of 4 domains, namely domain 1 about the physical elderly, domain 2 about the psychology of the elderly, domain 3 about social relationships and domain 4 about the environment of the elderly.

Data analysis

Data analysis at the univariate level. The data were analyzed by calculating the frequency and presentation in the intervention and control groups. At the bivariate level, the t-test was used to see the effect of exercise on the quality of life of the elderly.

Results

Characteristics of respondents

This study involved 60 people consisting of 30 people in the control group and 30 people in the intervention group. the number of female elderly in the intervention group as many as 20 people and the elderly male sex as many as 10 people. In the control group the number of elderly women were 16 people and 14 people were male. The number of elderly who are Muslim in the intervention group is 30 people while there are no Christians. In the control group, there were 28 Muslims and 2 Christians. (Table 1)

Table 1 Characteristics of Research Samples in the intervention and control groups (n=60)

Characteristics of Respondents	Intervention		Control	
	N	%	N	%
Sex				
Male	20	66,7	16	53,3
Female	10	33,3	14	46,7
Total	30	100%	30	100%
Religion				
Islam	30	100	28	93,3
Kristen	0	0	2	6,7
Total	30	100%	30	100%
reasons for living in a nursing home	22	73,3	20	66,7
own will	8	26,7	10	33,3
child's will				
Total	30	100%	30	100%

The influence of the quality of life of the elderly on elderly gymnastics

Table 2 shows that there is a difference in the average pre-intervention with post-intervention with a difference of 6.13 ± 0.66. While the average value of the pre-control with the post-control also experienced a difference with a difference of 1.67 ± 0.07. Although the two groups both have differences, the intervention group has more differences when compared to the control group. Based on the statistical test paired sample T test, the p value for both groups is 0.000 <0.05, which means that there is an influence of elderly exercise on the quality of life of the elderly.

In the independent statistical test the sample T test showed that the p-value (0.000) <0.05, which means that there is a difference in the average quality of life of the elderly between those who do gymnastics accompanied by an instructor and those who are not accompanied by an instructor.

Table 2. Effect of quality of life of the elderly in the intervention and control groups.

Variable	Quality of life		*p*	Difference
	Pre	**Post**		
	Mean ± SD	**Mean ± SD**		
intervention (N=30)	95,23± 6,14	101,36± 6,80	0,000[a]	6,13 ± 0,66
Control (N=30)	92,23± 6,28	93,90± 6,35	0,000[a]	1,67± 0,07
p				0,000[b]

Physical influence of the elderly in the intervention and control groups

Table 3. Shows that there is a change in the physical mean of 30 elderly before and after doing gymnastics accompanied by an instructor (intervention) with an increase of 1.25 ± 0.02. Meanwhile, 30 respondents who did exercise without an instructor (control) also experienced a change with an increase of 0.67 ± 0.06. The results of the Wilcoxon signed test for both (intervention and control) showed that the value was 0.000 <0.05, which means that there is an effect of exercise on the physical appearance of the elderly.

The results of statistical tests with Mann Whitney get a p value of 0.042. The value of 0.042 <0.05 which indicates that there is a physical difference between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor.

Table 3. Physical differences in the elderly in the intervention and control groups.

Variable	physique		*P*	Difference
	Pre	**Post**		
	Mean ± SD	**Mean ± SD**		
intervention (N=30)	28,70± 3,282	29,93± 3,311	0,000[a]	1,25 ± 0,02
Control (N=30)	27,43± 3,339	28,10± 3,407	0,000[a]	0,67± 0,06
P				0,042[b]

Psychological influence of the elderly in the intervention and control groups

Table 4 shows that there is a change in the physical mean of 30 elderly before and after doing gymnastics accompanied by an instructor (intervention) with an increase of 2.1 ± 0.49. The results of statistical tests with the Wilcoxon signed test for the intervention group got a p value of 0.000 <0.05, which means that there was an effect of exercise on the psychology of the elderly. Meanwhile, 30 respondents who did exercise without a accompanying instructor (control) also experienced changes with an increase of 0.34 ± 0, 05. The results of statistical tests with the Wilcoxon signed test in the control group got a p value of 0.030 <0.05, which means that there is an influence on the psychology of the elderly.

The results of statistical tests with the Mann Whitney test get a p value of 0.030. The value of 0.030 < 0.05 which indicates that there is a psychological difference between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor.

Table 4. Psychological differences in the elderly in the intervention and control groups.

Variable	psychology		*p*	Difference
	Pre	**Post**		
	Mean ± SD	**Mean ± SD**		
intervention (N=30)	24,73± 2,420	26,83± 2,914	0,000[a]	2,1 ± 0,49

control (N=30)	24,93± 2,741	25,27± 2,791	0,038[a]	0,34± 0,05
P				0,030[b]

Social relations of the elderly in the intervention and control groups

Table 5 shows that there is a change in the average social relationship of 30 elderly before and after doing gymnastics accompanied by an instructor (intervention) with an increase of 1.67 ± 0.197. The results of statistical tests with the Wilcoxon signed test for the intervention group got a p value of 0.000 <0.05, which means that there is an effect of exercise on the social relationships of the elderly. Meanwhile, the 30 respondents who did exercise without an accompanying instructor (control) also experienced a change with an increase of 0.53 ± 0.249. The results of statistical tests with the Wilcoxon signed test in the control group got a p value of 0.001 <0.05, which means that there is an influence on the social relationships of the elderly. The results of statistical tests with the Mann Whitney test got a p value of 0.005. The value of 0.005 <0.05 which indicates that there are differences in social relations between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor.

Table 5. Differences in the social relationships of the elderly in the intervention and control groups.

Variable	**Social relations**		***p***	**Difference**
	Pre	**Post**		
	Mean ± SD	**Mean ± SD**		
intervention (N=30)	10,63± 1,771	12,30± 1,968	0,000[a]	1,67 ± 0,197
control (N=30)	10,20± 1,750	10,73± 1,999	0,001[a]	0,53± 0,249
p				0,005[b]

Elderly environment in the intervention and control groups

Table 6 shows that there is a change in the environmental mean of 30 elderly before and after doing gymnastics accompanied by an instructor (intervention) with an increase of 1.13 ± 0.405. The results of statistical tests with the Wilcoxon signed test for the intervention group got a p value of 0.000 <0.05, which means that there is an effect of exercise on the elderly environment. The 30 respondents who did gymnastics without an accompanying instructor (control) also experienced a change with an increase of 0.03 ± 0.249. However, the results of statistical tests with the Wilcoxon signed test in the control group got a p value of 0.206 <0.05, which means that there is no effect on the environment of the elderly.

The results of statistical tests with the Mann Whitney test get a p value of 0.018. A value of 0.018 <0.05 which indicates that there is a difference in the environment between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor.

Tabel 6. Perbedaan lingkungan lansia pada kelompok intervensi dan kontrol.

Variable	**Environment**		***p***	**Difference**
	Pre	**Post**		
	Mean ± SD	**Mean ± SD**		
intervention (N=30)	31,17± 3,384	32,30± 3,798	0,000[a]	1,13 ± 0,405
control (N=30)	29,67± 4,634	29,80± 4,664	0,206[a]	0,03± 0,249
p				0,018[b]

Discussion

1. The influence of the quality of life of the elderly on elderly exercise

Elderly gymnastics is one of the efforts to improve the physical fitness of the increasing number of elderly groups, so it needs to be empowered and carried out correctly, regularly, and routinely. Elderly exercise can help increase the strength of the heart pump, so that blood flow can return smoothly, because in old age the power of the heart pumping machine decreases, and various important blood vessels specifically in the heart and brain experience stiffness (Fitria, 2016).

Based on table 4.2. shows that there is a difference in the average value of pre-intervention with post-intervention with a difference of 6.13 ± 0.66. Meanwhile, the average value between pre-control and post-control also differed with a difference of 1.67 ± 0.07. Although the two groups both have differences, the intervention group has more differences when compared to the control group. Based on the statistical test paired sample T test, the p value for both groups is 0.000 <0.05, which means that there is an influence of elderly exercise on the quality of life of the elderly.Pada uji statistik independen sample The t test shows that the p value (0.000) < 0.05, which means that there is a difference in the average quality of life of the elderly between those who do exercise accompanied by an instructor and those who are not accompanied by an instructor.

This study is in line with research conducted by Fitria (2016) which says that the improvement in mental quality of life obtained through physical activity is a decrease in stress levels, an increase in enthusiasm and self-confidence, and a decrease in a person's anxiety and depression related to the illness they are experiencing. An increase in regular physical activity, in this case exercise, showed a decrease in two moods, namely anxiety and depression. Certain types of exercise can produce mood-enhancing substances in patients with major depression for a short period of time.

According to the WHOQOL Group (1994 Ayu Prawesti, et al, 2007) states that the quality of life is influenced by physical health, psychological health, social relationships, and environmental aspects. Four quality-of-life domains were identified as behavior, presence status, potential capacity, and subjective perception or experience (WHOQOL Group, 1994). If these needs are not met, problems will arise in the life of the elderly which will reduce their quality of life (Ratna, 2008). Based on the above theory, welfare is one of the parameters for the high quality of life of the elderly. This welfare can be achieved if the four factors that affect the quality of life, such as physical, psychological, social, and environmental factors can achieve a state of well-being. Quality of life is obtained when a person's basic needs have been met and there is an opportunity to pursue enrichment in his life (Rohmah, et al. 2012).

2. Physical changes in the elderly before and after doing elderly exercise.

Based on the results of the Wilcoxon statistical test sample test, both the intervention group and the control group each experienced an increase in the measurement results (pre post questionnaire). The mean physical condition of the elderly before the intervention group was 28.70 ± 3.282, while the post-intervention group average was 29.93 ± 3.311 with a difference between pre and post values of 1.25 ± 0.02 with a p value of 0.000 < 0.05. This shows that there is an influence of elderly exercise on the physical condition of the elderly. In the control group, the average physical condition of the elderly before exercise was 27.43 ± 3.339, while after (post) exercise without an instructor was 28.10 ± 3.407 with a difference of 0.67 ± 0.06 and a p value of 0.000 < 0.05. This also shows that elderly gymnastics without an instructor has an influence on the physical activity of the elderly.

Targeted and planned gymnastics in the form of physical exercise that affects the physical exercise of the elderly. Physical activity is the entire movement of the human body starting from competitive sports and physical exercise as a hobby or activity carried out in daily life. In this study, both the intervention group and the control group each performed routine elderly gymnastics with a duration of 30 minutes, so that these activities could have an impact on the physical fitness of the elderly to carry out daily activities. This is in line with the research by Silva Mariana Riberio, et al (2018) that water-based training (aerobic and combination) which includes physical activity is effective in providing functional capacity and quality of life for the elderly, which includes the physical elderly. In addition, Krieatansi Widayati & Dwi Sulisetyawati (2015) in their research on the Effect of Tera Gymnastics on the Quality of Life for the Elderly at the Hopeful Elderly Posyandu, Duku District, Salatiga City, showed that tera exercise can be used as a routine activity twice a week because it is beneficial for body fitness so that it can improve the quality of life.

elderly life. Both of these activities are part of gymnastics that can increase the physical activity of the elderly.

The results of statistical tests with Mann Whitney get a p value of 0.042. The value of 0.042 <0.05 which indicates that there is a physical difference between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor. Although both groups had an increase, the increase had a difference. The increase in the intervention group was higher than the control group.

Old age is experienced by people in different ways. There are elderly people who are able to see the importance of old age in the context of human existence, namely as a period of life that gives them opportunities to grow and develop. There are also older people who view old age with attitudes that range between passive resignation and rebellion, rejection, and despair. These elderly people become locked in themselves and thus accelerate their own physical and mental decline. The process and speed of decline in body functions that occur in these physical changes are very different for each individual even though they are the same age (Rohmah, et al. 2012).

3. Changes in the psychology of the elderly before and after doing elderly exercise

The results of the Wilcoxon statistical test sample test, both the intervention group and the control group each experienced an increase in the measurement results (pre post questionnaire). The mean value of the psychological state of the elderly pre-intervention group was 24.73±2.420, while the post-intervention group average was 26.83±2.914 with a difference between pre and post-intervention values of 2.1 ± 0.49 with a p-value of 0.000 <0.05. This shows that there is an influence of elderly exercise on the psychological state of the elderly. In the control group the average psychological state of the elderly before exercise was 24.93 ± 2.741 while after (post) exercise without an instructor was 25.27 ± 2.791 with a difference of 0.34 ± 0.05 and p-value 0.038 < 0.05. This also shows that elderly gymnastics without an instructor also has an influence on the psychology of the elderly.

The results of this study are in line with the research of Stefanus Mendes, et al. (2018) regarding Improving the Quality of Life for the Elderly (Elderly) in Depok City with Balance Training. The results of this study indicate that balance training can improve physical health, psychological health, social relationships and the environment. Elderly balance exercises can be used as an effort to improve the quality of life of the elderly in the community. Meanwhile, one of the efforts to balance the elderly is exercise for the elderly. In addition, elderly gymnastics is also useful in forming various psychological attitudes (building courage, self-confidence, self-preparation, and the ability to cooperate) (Widianti, 2010).

The results of statistical tests with the Mann Whitney test get a p value of 0.030. The value of 0.030 < 0.05 which indicates that there is a psychological difference between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor. Although both groups experienced an increase, the intervention group had more changes compared to the control group.

The increasingly old physical condition makes the elderly feel that their life is no longer meaningful and despairing of the life they are currently living. This is a sign of the low quality of life for the elderly there because they cannot enjoy their old age. Therefore, health services for the elderly population are very demanding of attention, so that their condition is not sickly in spending the rest of their life. This is where the importance of having a nursing home as a place for maintenance and care for the elderly, as well as long-stay rehabilitation that maintains community life. To obtain optimum aging physical activity of the elderly is very necessary, for example sports (Rohmah, et al. 2012).

4. Changes in the social relations of the elderly before and after doing elderly gymnastics

The results of the Wilcoxon statistical test sample test, both the intervention group and the control group each experienced an increase in the pre-post-experimental measurement results (questionnaire). The mean value of social relations between the elderly before the intervention group was 10.63 ± 1.771, while the post-intervention group average was 12.30 ± 1.968 with a difference between pre and post values of 1.67 ± 0.197 with a p value of 0.000 < 0.05. This shows that there is an influence of elderly gymnastics on the social relations of the elderly. In the control group, the average value of elderly social relations before exercise was 10.20 ± 1.750 while after (post) exercise without an instructor was 10.73 ± 1.999 with a difference of 0.53 ± 0.249 and p-value 0.001 < 0.05. This also shows that elderly gymnastics without an instructor also has an influence on the social relationships of the elderly

The results of this study are in line with Stefanus Mendes, et al (2010) regarding the improvement of the quality of life of the elderly (elderly) with balance training. The results of this study indicate that balance training can improve physical health, psychological health, social relationships and the environment. While one of the balance exercises is elderly gymnastics. Elderly gymnastics that is routinely carried out can improve the social relations of the elderly, both between the elderly and the instructor, the elderly with each other, and the elderly with other communities.

The results of statistical tests with the Mann Whitney test got a p value of 0.005. The value of 0.005 <0.05 which indicates that there are differences in social relations between the elderly who do gymnastics accompanied by an instructor and the elderly who exercise without an instructor. Although both groups experienced an increase after doing gymnastics, the intervention group experienced more improvement than the control group.

Social welfare for the elderly is a system of social life and livelihood, both material and spiritual, which is filled with a sense of safety, decency, and inner and outer peace that enables each elderly person to fulfill his physical, spiritual and social needs as well as possible for himself. family, and society by upholding human rights and obligations. Quality of life is known as an indication of the level of social functioning in mental health. This is important in supporting social relations (social belonging) and community relations (community belonging), which is the bond that a person has with his social environment, including being happy with friends, having social relationships, being active and not having difficulties in social relationships. Spiritual and social activities will provide the highest value for the elderly to find meaning and a sense of self-worth (Rohmah, 2012).

5. Changes in the elderly environment before and after doing elderly exercise

From the results of the Wilcoxon statistical test sample test, both the intervention group and the control group each experienced a change in the increase in the pre-post experiment. The mean value of the environment of the elderly pre-intervention group was 31.17±3.384, while the post-intervention group average was 32.30±3.798 with a difference between pre- and post-intervention values of 1.13 ± 0.405 with a p-value of 0.000 <0.05. This shows that there is an influence of elderly gymnastics with instructors on the elderly environment in the intervention group. While in the control group the mean environmental value of the elderly before exercise (Pre) was 29.67 ± 4.634 while after (post) exercise without an instructor was 29.80 ± 4.664 with a difference of 0.03 ± 0.249 and p-value 0.206 > 0.05. This also shows that elderly gymnastics without an instructor has no effect on the elderly environment.

The results of the research in the intervention group are in accordance with the research of Stefanus Mendes, et al. (2010) regarding Improving the Quality of Life of the Elderly (elderly) with Balance Exercise with the results of the study showing that it improves physical health, psychological health, social and environmental relationships. However, the control group did not show any effect on the elderly environment. This probably happened because there was no two-way interaction between the elderly because it was caused by gymnastics that was done without an instructor.

While the results of statistical tests with the Mann Whitney test get a p value of 0.018. A value of 0.018 <0.05 which indicates that there is a difference in the environment between the elderly who do exercise accompanied by an instructor and the elderly who exercise without an instructor.

Conclusion

In research conducted at the Social Rehabilitation Center for the Elderly in North Maluku Province, it can be concluded that there is an influence between the quality of life of the elderly and exercise.

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