Research on Physical and Mental State and Influence of the Elderly in Disaster Areas under the Background of Reverse Hollowing

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Abstract: Major natural disasters exert far-reaching and enduring negative impacts on affected regions, particularly on vulnerable demographics such as the rural elderly, who often have limited external resilience. This paper uses Wenchuan County in Sichuan Province as a case study. Following severe natural disasters, Wenchuan County has begun to exhibit a unique phenomenon of reverse hollowing, distinct from other common regions. In this context, the physical and mental health of the elderly is uniquely affected, with each aspect influencing the other. The physical condition of the elderly in disaster-stricken areas displays a bifurcation trend, showing a stark contrast between pre- and post-disaster states. Despite economic hardship, frequent geological disasters, and strained relationships between local cadres and groups, life satisfaction among the elderly is generally high. However, their psychological state reveals marked regional differences and an unbalanced distribution. Most elderly individuals in the affected areas are empty-nesters, typically experiencing a strong sense of loneliness. Based on these observations, the paper offers several suggestions for addressing these issues.

Keywords: Reverse Hollowing; Old People in Disaster Areas; Physical and Mental State.

1. Introduction

With the deepening aging of the population in contemporary China, people pay more and more attention to the quality of life of the elderly population and the way of supporting the elderly. At the same time, with the acceleration of the urban process in China, the gap between urban and rural has widened. The mode and quality of supporting the elderly in rural areas are still much less than those in urban areas, especially those areas affected by major natural disasters. It is more urgent to improve the lifestyle and pension mode of the local elderly. Take Wenchuan County as an example. On May 12, 2008, Wenchuan County of Sichuan Province was hit by a massive earthquake measuring 8.0 on the Richter scale, which damaged an area of more than 100,000 square kilometers. As of September 18, 2008, the earthquake had killed 69,227 people, injured 374,643, and left 17,923 missing. We selected Wenchuan County as the epicenter of the earthquake, for the time of the extremely serious disaster area. The elderly themselves are the vulnerable groups in society, with their own physiological and social weaknesses. In an earthquake, the number of elderly people in need of assistance is quite large. On July 10, 2013, Wenchuan County was hit by another massive mudslide disaster. 100 percent of the villages in the county were affected to varying degrees, and 90 percent of the people and villages were affected to varying degrees. Wenchuan County belongs to a typical disaster-prone area, earthquake, debris flow, landslide, and other natural disasters occur frequently, rural residents, especially the elderly brings quite a lot of negative impact, their physical and mental state is constantly affected by the disaster, at the same time, the economic situation is difficult to develop because of the disaster, the huge disaster area rural elderly residents living in trouble, lack of effective protection. Compared with the elderly in other areas, they need more attention and help from the society.

It is of great theoretical and practical significance to investigate the elderly in disaster areas. At present, there is much research on rural old-age care, and there is basically no investigation of the elderly in disaster areas. The research on disaster areas is mainly focused on post-disaster reconstruction and adolescent mental health. The local pension model encountered a major impact on the situation is more special, and has a strong theoretical research significance.

China has a large geographical area, northwest, and southwest areas are located in the Eurasian seismic belt, and geological disasters occur frequently, which has caused quite a lot of negative impact on local aspects. With the aging degree of the Chinese population becoming more and more serious, the number of elderly populations is increasing, the elderly as a socially vulnerable group should be paid attention to, and the elderly in disaster areas are facing more urgent and severe problems. At the same time, with the acceleration of urbanization, in order to obtain better and more employment opportunities and related resources, the main young and middle-aged rural labor force began to go to the big cities to seek development, leading to the obvious phenomenon of rural hollowing out, and the disaster areas caused by natural disasters led to a larger loss of young and middle-aged population, the traditional rural family pension model was seriously damaged. Their old age is not effectively guaranteed, and they need to suffer great economic and mental pressure. Therefore, it is more challenging and realistic to solve the problem of old-age support for the elderly in disaster areas.

After the literature review, it is found that there are more studies on rural pension problems under the hollowing state, but there are fewer studies on rural pension problems in disaster areas, which mainly focus on the psychological state of the affected population, especially the psychological state of teenagers. "Rural hollowing out” is a phenomenon of the decline of the whole rural economy, politics, family, and other social functions caused by the location flow of a large number of young and middle-aged people in rural areas, and the
The overall appearance of the hollowing out of rural areas begins to decline. The original pension model in rural areas will change greatly under the hollowing state, thus causing a series of social problems for the rural elderly under this state. These problems caused by the impact will hinder the progress of society. At present, the research object of the hollowing out of the rural elderly in China is mainly the left-behind elderly in this state.

Few studies have been conducted on old-age care in rural areas, and most of them focus on the mental health of children and adolescents or post-disaster reconstruction. Even few studies have suggested that older people have fewer symptoms of acute stress disorder, major depression, and anxiety disorder after disasters than younger people. Yin believes that the elderly and the young react differently to emergencies. After the earthquake, the elderly as a special age group, due to physical conditions, mental conditions, economic ability, and other factors, the earthquake often has a heavier impact on them, and the elderly often becomes a more unfortunate group. The earthquake has a strong impact on the physical and mental health of the elderly. After the disaster, they need long-term care and the economic environment has been seriously damaged. More social security is needed to solve the plight.

According to the literature, it is inferred that the hollowing phenomenon in rural areas is more serious than that in ordinary rural areas. In China's social development, the aging phenomenon is becoming more and more severe. In the rural areas to disaster areas, the probability of their children losing their lives due to disasters or other factors is greatly increased, which makes the proportion of empty nesters in the rural areas of disaster areas increase correspondingly compared with other areas. In the rural areas of the disaster areas, the life role of these elderly people has also changed. The life care needs of these elderly people can not only be met by their children but also have to meet the life care needs of their grandchildren and bear the heavy responsibility of raising their third generation. In a sense, their role as recipients of life care has changed to the role of providing life care. However, in order to help these elderly people, from friendly neighbors to rural grassroots organizations, although they have the best care and corresponding policies, the role is still very limited. In this case, the elderly, especially the elderly there is a big lack of basic living care.

The study will explore whether hollowing out exists in disaster areas, whether natural disasters have had such an impact on the physical and mental state of the elderly, and whether they continue to exist. And to make recommendations for the provision of better social services and social policies for local elderly people.

2. Methods

(1) Survey area and Survey Objects

After field investigation and suggestions from the local civil affairs bureau, a total of seven areas were identified as investigation areas: Xiuping community in Yingxiu Town, Huangjia Village, Huangjiayuan Village, Yuzixi Village, Sanguanmiao Village, Mianfeng Village and Qiangfeng Village in Mianju Town. The local area has frequent natural disasters and is located in an earthquake zone with a high frequency of earthquakes. Secondly, it is located in a mountainous area of high precipitation, resulting in a serious phenomenon of debris flow and landslide. Before the investigation, a large earthquake had just occurred in Jiuzhaigou Valley, which is adjacent to the local area. The planned survey area also included Laojie Village in Yingxiu Town. However, Laojie Village was highly likely to have a relatively large landslide disaster at that time, so the trip was not possible due to safety concerns. The survey was conducted among all the older people over 60 years old in the study area. Yingxiu Town is the epicenter of the 5.12 Wenchuan earthquake, while Mianju Town is the area most affected by the 7.10 debris flow disaster. The seven sites selected for the survey have all experienced severe natural disasters and caused far-reaching impacts, so the survey sites are quite representative.

A total of 201 people were investigated. However, due to the age or language difference of some respondents, they could not communicate with each other, so they could only learn about relevant information through their children, village cadres, or accompanying volunteers, and no questionnaire survey or direct interview was conducted. A total of 180 questionnaires were sent out and 180 were collected with a recovery rate of 100%, among which 160 were valid with an effective rate of 89.9%. There are 22 recorded interview materials. Except for the three subjects, they were all farmers by occupation. However, due to natural disasters such as earthquakes and mudslides, the government implemented the policy of "returning farmland to the forest" and "centralized resettlement." as well as the construction of public facilities such as highways, all the land was nationalized, so they became land-lost farmers, and all the houses they lived in were rebuilt under the unified planning of the government. Most of them bought social security and changed their hukou from rural to urban, but are still considered rural residents according to the actual situation.

The survey results showed that among the 160 respondents, 79 were male and 81 were female, accounting for 49.4 percent of males and 50.6 percent of females, respectively. The age of the respondents ranged from 60 to 94, with an average age of about 72. The level of education is generally low. The proportion of those who have not received education and those who have received primary education or below accounts for 39.4% and 49.4% respectively. Only three people have received higher education in junior college. There are two forms of marriage status of the local elderly: married and widowed, among which the main causes of widowed are the direct and indirect effects of disasters. Only 11.3 percent of the elderly actually live with their children, and most of them are empty-nesters.

(2) Research Methods

The intended research method is mainly to collect quantitative data, supplemented by stereotypical data, and to combine quantitative and qualitative research. However, with the development of field investigation, we found that the collection of formatted quantitative data may cause secondary damage to the survey objects, so the proportion of quantitative data was reduced, and the collection of quantitative data and qualitative data was carried out simultaneously. Ensure that data collection is thorough and protects the subject.

1) Questionnaire Survey Method

The self-compiled questionnaire on pension Problems in hollowing out rural areas in earthquake-stricken areas is adopted, which has good reliability and validity after testing. Two data are collected by sending questionnaires, and relevant data are summarized and analyzed by the analysis software.

2) Unstructured Interview Method
Qualitative research was introduced on the basis of quantitative research. In order to avoid secondary damage to the survey objects, unstructured interviews were conducted with the survey objects, their relatives, local volunteers, and government workers, and finally, interview records were sorted out to collect qualitative data.

3) Field Research

Through field investigation and participatory observation, the interior of the region is investigated deeply to make up for the insufficient data collected before.

3. Survey Results and Analysis

(1) Age Fault and Reverse Hollowing State

The victims of the Wenchuan earthquake are mainly primary and secondary school students. With the passage of time, they should have grown into young people who lost their lives due to natural disasters. As a result, the current youth population in Wenchuan lost its supplement, and the main population structure is mainly children, middle-aged and elderly. After the earthquake, most of the parents who lost their children chose to continue to have children. With the passage of time, the surviving population of the earthquake grew older and gave birth to new lives, and the population structure of the whole survey area developed into a two-tier development trend, lacking people who could support the backbone force. Regional development has also been affected to a certain extent.

Although the hollowing state of rural areas is generally significant in China, especially in Sichuan, a large labor-export province, where young and middle-aged rural workers are concentrated in urban areas, field investigation shows that Wenchuan County has a very special phenomenon of "reverse hollowing". After experiencing natural disasters, migrant workers began to move back gradually. The reason for this phenomenon is that after major natural disasters, the influence of traditional family values in China is more obvious than in other regions. After more or less losing relatives or friends, migrant workers began to pay more attention to the company of family members, and the attractiveness of economic income declined, so a large number of migrant workers no longer go out. Secondly, the centralized resettlement and reconstruction work after the disaster is another important factor affecting the relocation. The laborer who lost the original residence must move back to rebuild the housing and related hardware facilities. Those who have lost children need to have children again. Education also limits the mobility of a large number of workers, especially women, when their children are young. Moreover, the age of the young and middle-aged people at that time gradually increased, which made it difficult for them to adapt to the migrant work life with a strong labor force at that time, so they turned to Wenchuan County to make a living. Therefore, Wenchuan County, which was originally in a significant hollowing state, began to produce a state of reverse hollowing and this state would continue for a long time until the phenomenon of age fault was completely improved. The local shortage of young and middle-aged labor force is also a kind of abnormal "age fault", not the true sense of hollowing, it can also be said that the current state of reverse hollowing is the product of age fault.

Due to the reverse hollowing state of Wenchuan County and the abnormal age fault of the population system, resulting in Wenchuan County family structure compared with other areas more complicated, family structure in a variety of incomplete, such as the absence of a parent, the absence of children, parents and children age vertical gap is too large. This situation will have a certain impact on the psychological state of local residents and economic development. The loss of loved ones caused by natural disasters will have a negative psychological impact on people's life, which may appear in various aspects. At the same time, the transformation of family structure such as raising new children and forming new families will generate new economic pressure. At present, such problems cannot be solved by effective means immediately, but can only be solved by increasing local jobs. Reducing the cost of children's schooling and other means, after long-term regulation, eases the burden on families, so that the whole area gradually smooths over the current age fault brought by the negative impact period.

(2) Physical and Mental Conditions of the Elderly in Disaster Areas

1) Physical Condition

All of the seniors reported a significant decline in health after the disaster when they were in much better health before it. Some old people said that their bodies seemed to collapse all at once, the disaster on the body of the elderly obvious degree of impact, and the negative impact on the body is huge. After the disaster, most of the injured people cannot recover for a long time, and even some of the disabled elderly people are in poor physical condition compared with the elderly people who are not injured. In addition, the psychological impact caused by the death of relatives or friends also has a huge negative impact on their physical health. Several elderly people whose close relatives died have still not fully recovered from the disaster, and there are no children to provide daily care for them, making it difficult for them to improve their health. The elderly is more likely to suffer from arthrits, which is linked to intense work in their youth, injuries sustained during earthquakes, and the wet, rainy climate of the area. Major natural disasters have produced a series of negative impacts on the health of the elderly. With the passage of time, the overall health of the local elderly has a benign development trend. However, there are still some elderly people whose conditions cannot be improved. However, it is noted that there are more elderly people in Wenchuan and they live a long life. Apart from the factors of natural disasters, the local climate is pleasant, and many tourists will be attracted to Wenchuan in summer to avoid the summer heat. Besides, the body condition of the elderly people is stronger than that of the younger ones. Because of the lack of working-age factors in the family, the elderly at a younger age also need to assume the supporting responsibilities in the family and complete the role tasks of the backbone role. The work not adapted to the age group also has a certain impact on the body, and the elderly live a simpler life and fewer burdens, so their body condition is better.

The economic expenditure of the local elderly is basically used for daily living expenses and medical treatment. On the one hand, the proportion of medical treatment expenditure also reflects the physical health status of the population in a region. The elderly with a large proportion of medical treatment reflects that their health level is not very good, and chronic diseases or disabilities require long-term medical expenditure to maintain the basic stability of health level. The worse the health condition is, the more likely it is to fall into economic difficulties. Health condition is also a factor affecting economic difficulties. The local economic difficulties are mainly caused by a single income mode.
Income is also more than the health of the elderly sources. Although the policy subsidy income is too low, it is stable but has weak anti-risk ability. It cannot play an effective positive protection role in the face of the situation. The protection dimension is low and can only meet the economic needs at a lower level. At the same time, due to the impact of disasters, the local economy has been continuously damaged, and the economic foundation of the elderly is relatively weak.

2) Mental State
All respondents believed that the disaster had a significant impact on their psychology. The injury of themselves or their relatives, the death of relatives, family breakdown, economic losses, and other factors had a significant impact on their psychology at that time. Each respondent had more or less psychological trauma, some of which could not even be eliminated until now. The survey respondents believed that post-disaster psychological counseling played a huge role in their recovery of psychological state, and most of the psychological problems were alleviated or eliminated after post-disaster psychological counseling. The negative effects of disasters on the mental state have so far been minimized.

I Life Satisfaction
Local elderly people are generally optimistic about their current life, even though the family conditions are still relatively backward, but they have a better longing for the future life. Only a few people are dissatisfied with their current life state due to their family's special reasons, among which the imbalance of family structure caused by the loss of relatives due to disasters is the most important reason. One survey object has a particularly obvious characteristic. His son was killed in the earthquake, leaving his grandson to live with the old man. The family structure changed due to the earthquake, and his satisfaction with life became very low.

Secondly, compared with earthquakes, mud-rock flow, and landslide disasters are more frequent in the local area. Due to the mud-rock flow disaster, the villagers in Mianzhou Town were relocated to a larger scale, and the government did not properly handle the relocation work, which made the villagers dissatisfied with losing their land and leaving their original homes, which is also an important factor affecting the satisfaction of residents.

After statistics, it is found that the most important reason for respondents to be dissatisfied with the life of the elderly is financial constraints. Economic pressure has a strong negative impact on the life of the elderly. In order to improve overall life satisfaction, it is necessary to solve the economic predicament from the economic level. Solving financial difficulties is the key to fundamental satisfaction.

Personal physical condition is also a factor affecting life satisfaction, the better the physical condition, the higher the satisfaction of life. When people suffer from illness for a long time, they will lose their optimistic attitude towards life, and good physical condition will play a positive role in promoting life satisfaction. Similarly, a higher degree of satisfaction with real life will also affect the level of physical health to some extent.

The relationship between grass-roots cadres and masses is also an important factor affecting life satisfaction. The survey found that the relationship between local cadres and the masses was tense, and the elderly generally had a high degree of satisfaction with the policy, but they were dissatisfied with the implementation of the grass-roots government and believed that the grass-roots cadres did not do anything. In addition to Qiang Feng village, the village is a traditional Qiang village, all the villagers in the village belong to the same family, village cadres understand the overall situation in the village detailed and harmonious relationship, most of the village cadres and even the village branch secretary for the whole village understanding very little, even do not understand the specific number and distribution of the elderly in the village, the vast majority of villagers for the village cadres identification is very low, there is little interaction between cadres and the masses. Even some villagers have a hostile attitude towards the cadres, in a state of anger dare not speak.

There is a high mobility of local cadres, and many policies have not been implemented immediately. Therefore, villagers have to bear losses, but cannot get compensation from time to time. Villagers believe that grassroots cadres illegally occupy the policy subsidies given by the state, but due to the limitations of the author, it is impossible to research this.

Most of the respondents in Mianzhou Town were dissatisfied with the resettlement work after relocation and believed that there was no improvement in the security in the later period, no compensation for villagers after land acquisition, and no measures or policies to support employment, resulting in unemployment and loss of the main source of economy for most villagers.

In a word, the propaganda degree of the policy is not in place, coupled with the irresponsibility of some grassroots cadres, the details of the implementation of the policy, and the lack of careful consideration, so that the local residents who enjoy a lot of policy benefits are increasingly dissatisfied with grassroots cadres. It is hoped that in the future, the government can take more consideration of the actual situation of local residents in the process of work, make efforts to improve the relationship between cadres and the masses and enhance the recognition of residents. Drive the overall development of the local area, and fundamentally improve the life satisfaction of residents.

II Unbalanced Psychological State
The elderly with richer families is often less satisfied with their current life than the elderly with poorer families. Through comparison, families with superior families tend to have a greater proportion of economic conditions decline due to natural disasters, which gives them more sense of loss, while those with poorer families have little change in their income. Even the post-disaster state subsidy was higher than their pre-disaster income, which increased their life satisfaction.

The most obvious one is Mianfeng Village and Sanguanniaoz Village in Mianju Town. The economic status and overall economic conditions of these two villages are better than those of other survey areas, but the overall gap is too large. In addition, the region not only suffered from earthquake disasters but also the worst-hit areas of debris flow, the damage scope is wider and time is more frequent, which leads to an extreme imbalance in their psychological state. More nostalgic for their former lives, the overall satisfaction level of the region is not high compared to their economic level.

Qiangfeng Village in Mianju Town is mainly dissatisfied with its current lifestyle due to the loss of land caused by the construction of expressways. The construction of expressways has occupied residents' land and housing, but subsequent government subsidies have not been implemented, and the problem of employment placement has not been solved. Local residents have often told the author about such
problems during the investigation. The imbalance in their mental state is evident, but this state is not enough to affect their overall mental state at present, and they are still optimistic about their expectations for life.

Xiuping community of Yingxiu is in the worst psychological state. Xiuping community is located in the epicenter of the Wenchuan earthquake and was the most severely damaged by the earthquake. After the earthquake, the local tourism industry was developed and the overall economic momentum was relatively good. Some elderly people are even disabled by the earthquake themselves. The impact of the disaster on them is long-term and negative, especially in terms of psychological state, which is difficult to cure.

Yuzixi Village, adjacent to Xiuping Community, is located on a hill less than 500 meters away from Xiuping Community. There are many poor elderly people and empty-nesters in the local area, and the economic level is relatively backward. However, the satisfaction and psychological state of local residents are the best, and the construction conditions, layout, and construction of the village are also the best. The village was built with the overall assistance of an entrepreneur, who regularly provided various kinds of assistance to Yuzixi Village. Even during the Spring Festival, the entrepreneur would come to accompany local residents and pay for the whole village to have a collective dinner to celebrate the festival. Thanks to more help from the outside world, the elderly in Yuzixi Village is more satisfied with their current life than those in other areas. The feedback from the elderly to the mental state was generally positive, and no negative cases appeared.

III Loneliness

86.9 percent of the elderly had the feeling of loneliness, loneliness of the elderly is widespread. Loneliness is a common problem among the elderly, with lack of companionship ranking third in life satisfaction among local seniors. Compared with other areas, the phenomenon of widowhood among the elderly in the local area is more serious because of the disaster, as well as the death of children or other close relatives, their sense of loneliness is more obvious and stronger. The elderly in ordinary areas may feel lonely when their children are not around only because their children go out for work, and the feeling of loneliness will be eliminated when their children return home. However, it is not uncommon for the elderly in disaster areas to lose their children due to disasters, and the resulting sense of loneliness is difficult to eliminate or reduce.

The higher the income, the more eager for spiritual companionship. There are several reasons for this phenomenon. First of all, when the economic income is too low, they tend to consider how to solve the economic dilemma first and consider fewer factors for emotional companionship. At the same time, due to the single source of local income, they are subsidized by national policies, while the relatives who die and the older elderly get more subsidies, and the older elderly also have a higher death rate due to the time factor of their close relatives, such as spouses. Therefore, they often want to be accompanied by relatives in their daily life, so they are more affected by loneliness.

In addition, Huangjiawan Village and Huangjiaacun are more distinctive. The two villages are located in mountainous areas with scattered layouts, and the distance between the villagers is farther than other villages. The elderly cannot travel easily and can hardly find suitable companions when they are lonely.

4. Suggestions

To enhance the physical and mental wellbeing of the elderly, the government should focus on several key areas. Firstly, in relation to physical health, the government should encourage healthier habits and modern medical beliefs among the elderly, promoting appropriate medical treatments and regular health check-ups. Secondly, establishing small medical centers in rural areas could facilitate local access to healthcare, or alternatively, medical service teams could be dispatched to these areas to provide on-site check-ups and other essential services. This would significantly improve healthcare accessibility for the elderly. Finally, tailored exercise programs and lifestyle guidance, adapted to the local elderly population's physical conditions, could holistically boost their physical wellbeing.

In terms of mental health, post-disaster psychological counseling is crucial. To enhance the psychological wellbeing of the elderly, the normalization of counseling services is a first step. Professional institutions or organizations should regularly serve the elderly, given the deep and persistent impact of post-disaster psychological trauma, which is difficult to eliminate in the short term. Secondly, effective communication of policies is key. This involves not just implementing policies, but also considering local residents' acceptance of these policies. Ensuring that residents receive deserved land exproportion subsidies could increase support for these policies, and facilitate cooperation in their implementation. Thirdly, efforts should be made to improve supporting facilities in villages, particularly those services targeted at the elderly. Expanding local employment opportunities may encourage the labor force to return, providing more familial support for the elderly. Lastly, the frequency of social worker visits should be increased. While the elderly value social worker services, these are often infrequent and not normalized. Although local volunteer teams often fill this role, their services may not be as professional or effective. By increasing the regularity of social worker services, we can better meet the needs of the elderly.

Economic factors also play a crucial role in enhancing the physical and mental wellbeing of the elderly, with these aspects interacting in complex ways. Economic development should leverage local geographical resources and proximity to the provincial capital, with a focus on tourism development. For instance, capitalizing on attractions such as 'The Story of Yu' and summer vacation farmhouses could boost the local economy. Wenchuan's abundant water resources make it an ideal location for the construction of hydropower plants, thereby fostering a more self-sustaining economy.

Ultimately, to genuinely improve the quality of life of the elderly, it's essential to address their physical and mental states in tandem. This approach can minimize the impact of post-disaster consequences during their later years. By fully addressing the physical and psychological issues faced by the local elderly, we can ensure their lives are healthier, happier, and more secure.

Once comprehensive policies are formulated, greater emphasis should be placed on their practical implementation. Strengthening communication between grassroots government and the public is vital. Selecting grassroots cadres who genuinely serve the people is crucial to ensuring that policies and services can effectively address and improve
the needs of the community and fulfill various performance indicators.

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