



naire according to their answers. We prepared a total of 220 copies of questionnaires, collected 201 copies. After deleting the samples with missing variables, we obtained 187 valid copies, and the valid response rate was 85%.

The selected respondents were 60 years old or older left-behind people, including 102 males and 85 females, whose children were all working outside in the survey period, as listed in Table 1. The age was mainly 60–69 years old, 70–79 years old, and older than 80, and 60–69 years old people were the most.

**Table 1** Samples of rural left-behind elderly people in Guizhou Province

Indicator	Type	Number of samples//people	Percentage//%
Gender	Male	102	54.54
	Female	85	45.46
Age	60–69	66	45.29
	70–79	78	31.71
	Older than 80	43	23.00
Health status	Excellent	23	12.30
	Good	61	32.62
	General	64	34.22
	Poor	39	20.86

### 3 Results and analysis

**3.1 Family labor transfer** The total number of family members and labor transfer of left-behind elderly people in Guizhou Province are listed in Table 2. From Table 2, it can be known that the total number of family members of the left-behind elderly people was 4–6 (47.59%), followed by 7–10 (29.25%) and 3 or less (12.30%). The family labor transfer occurred mainly in families with 3 or less members (70.05%), followed by 4–6 members, and 7–10 members. Many families have changed from the male labor transfer to the simultaneous transfer of male and female labor, finally only the children and elderly people were left behind.

**Table 2** Number of family members and labor transfer of left-behind elderly people in Guizhou Province

Indicator	Type	Number of samples people	Percentage %
Number of family members	≤3	23	12.30
	4–6	89	47.59
	7–10	56	29.95
	More than 11	19	10.16
Number of transferred family labors	≤3	131	70.05
	4–6	52	27.85
	7–10	4	2.10

The rapid rural labor transfer in Guizhou Province is mainly due to the acceleration of urbanization. Urbanization construction can alleviate the employment and economic pressure caused by the scarcity of land resources and the conflict between human and land in Guizhou Province. It is the most important factor stimulating the labor transfer in Guizhou Province. Besides, people's longing and eagerness for urban life is the subjective factor influencing the rural labor transfer. After rural surplus labors are transferred to urban areas, their social status, income level, educational opportunities, medical care, etc. are improved, and economic capacity is

improved. Therefore, more and more rural young and middle-aged people yearn for the urban high income and superior living environment, and spontaneously transfer to urban areas.

**3.2 Land changes** The land changes in families with left-behind elderly people in Guizhou Province are listed in Table 3. From Table 3, it can be known that 49.20% families with left-behind elderly people circulated land (0.07–0.13 ha), while 39.58% families with left-behind elderly people did not circulate land. The economic development of Guizhou Province is relatively backward, and the transformation of local industries is difficult. The economic benefits brought by rural land transfer are generally difficult to improve the enthusiasm of farmers, and the land eventually returns to the farmers' own planting management. The land left idle by rural left-behind elderly people was mainly 0.07–0.13 ha (76.47%), and then 0.20–0.26 ha (21.93%). Traditional farming idea of rural left-behind elderly people is firm. When family labors decrease, they are not willing to leave the land idle. This is a main reason why there is little land left idle in rural families. In addition, Guizhou Province is located in the southwestern part of China, the karst land area is large, and the conflict between human and land is prominent. The land owned by the farmers is small.

The farmland returned to forest by rural left-behind elderly people was mainly 0.07–0.13 ha (83.15%), and then 0.20–0.26 ha (16.85%). The survey indicates that the returning of farmland to forest in many rural families was mainly due to natural wasteland, rather than government unified planning. In summary, the land changes in the left-behind elderly families in Guizhou Province are small, resulting in a large amount of labor for the left-behind elderly; due to physical aging and diseases, a large amount of labor will increase the physical burden and mental stress of the left-behind elderly people, which will greatly reduce the sense of happiness.

**Table 3** Land changes in families with left-behind elderly people in Guizhou Province

Indicator	Type//ha	Number of samples	Percentage %
Land circulation	0	74	39.58
	0.07–0.13	92	49.20
	Others	21	11.22
Land left idle	0.07–0.13	142	75.94
	0.20–0.26	41	21.93
	Others	4	2.13
Farmland returned to forest	0.07–0.13	153	83.15
	0.20–0.26	31	16.85

### 3.3 Economic status

**3.3.1 Labor participation.** Rural left-behind elderly people, especially those with relatively low ages, would actively participate in labor to increase their income to subsidize their living expenses as long as their physical conditions permit. The survey of economic status of left-behind elderly people in Guizhou Province is listed in Table 4. From Table 4, it can be seen that the left-behind elderly people who were basically not working only account for 20.33%, while 22.46% and 45.45% had high and general

amount of labor, respectively. Through interviews with left-behind elderly people in the surrounding areas of development of characteristic industries in Guizhou Province, it is found that although most of the family land has been transferred, the left-behind elderly people were forced to work in local enterprises for livelihood. In other words, high amount of labor of the left-behind elderly people is mainly due to economic status, they wanted to reduce the burden of their children.

**3.3.2 Income.** The income of the left-behind elderly people mainly came from the supply of migrant children, self-working and social security funds. From Table 4, it can be seen that the monthly income of the left-behind elderly people was mainly below 300 yuan, accounting for 41.17%; while the left-behind elderly people with a monthly income of higher than 1 000 yuan accounted for only 25.13%. Due to physical condition and low educational level, left-behind elderly people could only do some basic farm work to increase their income. However, their children as main supplier of their source of income had high life pressure and could spare little to subsidize the left-behind elderly people, some children even rarely sent living expenses to their left-behind parents. According to our survey, only 9.60% left-behind elderly people had their retirement wages, 7.43% lived on their own income, 19.78%, 16.04%, and 11.76% lived with their children's money and national pension insurance and subsistence allowances, respectively. These indicate that the income obtained according to the relevant national policies accounted for a relatively low proportion of the total income of the left-behind elderly people.

**3.3.3 Consumption.** The daily consumption level of the elderly people is closely related to the quality of life. It can be seen from Table 4 that the expenses of the left-behind elderly people were mainly paid on general living (57.22%), human relations (14.44%), medical treatment (13.90%) and others (14.44%). The general living expenses were the largest part mainly because the family affairs were handled by the left-behind elderly people after their children went to cities to do migrant work. Most of the left-behind elderly people had a large amount of labor, low economic income, and large expenses. Such situations reduce the sense of happiness of the left-behind elderly people.

**Table 4 Economic situation of left-behind elderly people in Guizhou Province**

Indicator	Type	Number of samples // people	Percentage %
Labor participation	Very high labor amount	22	11.76
	High labor amount	42	22.46
	General labor amount	85	45.45
	Basically no work	38	20.33
Monthly income yuan	Lower than 300	77	41.17
	400 – 600	38	20.33
	700 – 900	25	13.37
	Higher than 1 000	47	25.13
Consumption	General living expenses	107	57.22
	Human relations	27	14.44
	Medical treatment	26	13.90
	Others	27	14.44

### 3.4 Spiritual comfort

**3.4.1 Mental status.** According to Table 5, 17.64% of left-behind elderly people felt that they had no living difficulty when their children did not live with them; 28.87% thought that they needed help and care in daily life; 27.80% felt lonely when their children did not live with them; 25.69% missed their children. Those left-behind elderly people who felt that they had no living difficulty when their children did not live with them were mainly young and healthy. For children doing migrant work, 44.92% of the left-behind elderly showed support, 37.97% did not support, and only 17.11% said it does not matter.

**3.4.2 Care from children.** In Guizhou Province, the reunion of left-behind elderly people with their children was mainly one time a half year or one time a year, accounting for 28.87% and 41.17%, respectively, followed by one time a quarter (27.30%) or one time every two years (2.66%). The care from children was regular care (66.35%), occasional care (29.95%), and seldom care (3.7%). Children doing migrant work had little time of staying in hometown, they mainly bought clothes or sent money to their parents, and generally accompanied with their left-behind parents only when their parents got serious diseases or could not care of themselves. In addition, young people often care much about themselves or their children, but care little about their parents.

**Table 5 Spiritual comfort of left-behind elderly people in Guizhou Province**

Indicator	Type	Number of samples people	Percentage %
Mental status	No difficulty	33	17.64
	Needing help and care	54	28.87
	Feeling lonely and needing accompaniment	52	27.80
	Missing children	48	25.69
Attitude towards children's migrant work	Support	84	44.92
	Not support	71	37.97
Reunion	Not matter	32	17.11
	One time three months	51	27.30
	One time a half year	54	28.39
	One time a year	77	41.17
Care of left-behind elderly people	Over 2 years	5	2.66
	Regularly	124	66.35
	Occasionally	56	29.95
Entertainment	Seldom	7	3.70
	Watching TV at home	85	45.47
	Chatting with family members	65	34.76
	Participating in collective activities	25	13.37
		12	6.40

**3.4.3 Entertainment.** According to our survey, the entertainment modes of left-behind elderly people in Guizhou Province mainly included watching TV at home and chatting with family

members. Most of them watched TV at home, the proportion was 45.47%; the proportion of playing cards (mahjong) and participating in group activities was 13.37% and 6.40%, respectively, indicating that the leisure and recreation activities of the left-behind elderly people were relatively simple. The urbanization of Guizhou Province is developing slowly, the rural cultural atmosphere is weak, and the entertainment and leisure facilities for the elderly people are scarce. These are main reasons for few entertainment activities of the left-behind elderly people.

Using the binary category Logistic model for estimation, Song Yueping<sup>[8]</sup> analyzed the social economy, living conditions of the rural left-behind elderly people and the economic support of their migrant children, and proposed that the children's spiritual support could significantly reduce the loneliness of the rural left-behind elderly and enhance the mental health of the left-behind elderly people, that is, the satisfaction of the spiritual needs of the elderly people had more significant influence on the sense of happiness than the material needs. This survey also found that lack of spiritual comfort was an essential factor for low sense of happiness of the left-behind elderly people.

**3.5 Social and medical security** A sound social security system is a basic guarantee for the living of left-behind elderly people in rural areas. In this survey, only 16.04% and 11.76% left-behind elderly people had their economic sources from pension insurance and subsistence allowances. Due to the prominent issue of aging in China, the social security services enjoyed by the elderly

people in remote areas are few. In the process of medical security services, due to low educational level, many left-behind elderly people do not understand the specific medical security reimbursement process, and they do not really enjoy the convenience and services brought by medical security. Besides, in many places, rural medical and health conditions are poor, and there are widespread problems such as poor medical facilities, few medical staff, and low professional quality<sup>[9]</sup>. The left-behind elderly could not receive high-level medical care. The state subsidy policy is an important guarantee for the elderly to improve their healthy life. Establishing a sound social security mechanism can improve the satisfaction of the left-behind elderly and increase their happiness index.

**3.6 Sense of happiness of left-behind elderly people** The survey of the sense of happiness of left-behind elderly people in Guizhou Province is listed in Table 6. From Table 6, it can be seen that before the family labor transfer, 34.24% of the elderly people thought they were very happy, 18.18 percentage points higher than that after the family labor transfer; 52.40% of the elderly people thought they were happy, 15.16 percentage points higher than that after the family labor transfer. After the family labor transfer, 33.34% of the elderly people thought they were unhappy, 13.16% of the elderly people thought they were very unhappy, 24.79 percentage points and 8.55 percentage points higher than that before the family labor transfer.

**Table 6 Survey of the sense of happiness of left-behind elderly people in Guizhou Province**

Indicator	Type	Number of samples//people	Percentage//%
Sense of happiness (before labor transfer) (children not going to do migrant work)	Very happy	64	34.24
	Happy	98	52.40
	Unhappy	16	8.55
	Very unhappy	9	4.81
Sense of happiness (after labor transfer) (children going to do migrant work)	Very happy	30	16.06
	Happy	79	37.24
	Unhappy	53	33.34
	Very unhappy	25	13.36

Before and after the family labor transfer, there were great changes in the happiness of the left-behind elderly people in Guizhou Province. These indicate that the labor transfer has a great influence on the sense of happiness of the left-behind elderly people. The labor transfer has changed the existing family structure. The elderly people have to do farm work, bring up grandchildren and could not really enjoy the old-age life. In addition, the social security and medical security system is not implemented in detail and not in accordance with local situations. The old-age life of the left-behind elderly people is low in material security, and the left-behind elderly people lack spiritual care and communication.

## 4 Conclusions and recommendations

**4.1 Developing tourism to resolve the conflict between human and land** The land changes of families of left-behind elderly people in Guizhou Province are not obvious, and the income is

not optimistic; the acceleration of urbanization construction has led to the loss of a large number of rural labors, but there are little changes in the rural land transfer, land left idle, land conversion to farmland and forest. Guizhou Province is situated in remote areas, economic development is backward, traditional industries are difficult to develop, and new industries have low development returns, and it is difficult to make unified planning and utilization. The land changes of rural families are little, and the elderly people have to increase income through traditional rural farming, but such method could provide relatively low income. Besides, due to children's pressure of living and bringing up children, they could provide little money to their left-behind parents. Generally, the income of the left-behind elderly people is not optimistic. The natural tourism resources represented by karst scenery and the humanities tourism resources represented by ethnic customs in Guizhou Province cooperate with each other to form a unique tourism resource complex<sup>[10]</sup>. Since the beginning of the 1980s,

the tourism industry in Guizhou Province has been developing rapidly<sup>[11]</sup>. As early as in 1991, the Guizhou Provincial Tourism Bureau took the lead in proposing the development idea of "poverty alleviation through developing tourism". After 20 years of active exploration, tourism development has played a significant role in promoting poverty alleviation<sup>[12]</sup>. Therefore, it is recommended to seek new tourism development concept with the aid of unique geographical conditions and natural scene in Guizhou Province, for example, "tourism +", "all-for-one tourism", and improving new tourism models, to realize prosperous and stable tourism development in Guizhou Province. The development of the tourism industry will drive the development of local industries and facilitate the unified use of land. The development of tourism can make up for the conflict between human and land caused by the scarcity of land resources in Guizhou Province, and can effectively increase employment opportunities, reduce the amount of labor outflows, and allow the left-behind elderly to transfer to the non-left-behind elderly, fundamentally solve the problem of left-behind elderly people, and raise their sense of their happiness. Through interviews with surrounding residents, the left-behind elderly people in areas where there are local enterprises have high satisfaction with life, because the development of local industries brings considerable economic benefits and ensures life quality. Furthermore, in areas where local industry development is better, the entertainment and recreation facilities are relatively complete, which greatly enriches the spiritual entertainment life of the left-behind elderly people.

**4.2 Enhancing the spiritual comfort of left-behind elderly people** This survey found that the care of left-behind elderly people from children and the reunion with children are not optimistic. In rural areas, the entertainment and collective cultural activities are few. Most of the left-behind elderly people stay at home to watch TV and chat with their families. Besides, children doing migrant work have little time of staying in hometown, they mainly buy clothes or send money to their parents, and generally accompany with their left-behind parents only when their parents got serious diseases or can not care of themselves. Also, young people often care much about themselves or their children, but care little about their parents.

According to *Decision on Several Big Issues on Promoting the Reform and Development of Rural Areas* issued by The Third Plenary Session of the 17th Central Committee of the CPC, it is required to adhere to the occupation of rural positions with advanced socialist culture to meet the growing spiritual and cultural needs of farmers<sup>[13]</sup>. As the living standards of rural residents continue to improve and agricultural modernization develops, the demand for spiritual entertainment in rural left-behind elderly people will increase<sup>[14]</sup>. Increasing the spiritual comfort of the left-behind elderly people should mainly start from child care, and migrant children should provide necessary spiritual comfort and support for the left-behind parents. Besides, it is recommended to enhance the communication between migrant children with the left-behind parents in both words and actions. Also, it is recommended to intensify the inheritance of filial piety culture, inherit and carry forward the traditional virtues that allow the elderly have dependency and

to be supported properly. It is recommended to implement the relocation policy proposed in the state "Precision Poverty Alleviation" and "New Countryside Construction". The implementation of these policies can unify the planning of residential areas, facilitate the concentrated living of residents, and bring people closer to each other in a practical sense, increase the opportunity to communicate with the villagers, which also favorable for the development of cultural and recreational activities.

**4.3 Strengthening the social security system and improving medical security** The left-behind elderly people enjoying pension insurance and subsistence allowances takes up a relatively low proportion of their total income. Through questionnaires and interviews, it was found that the left-behind elderly people have low evaluate of the medical treatment. The reasons are as follows. (i) Transportation is inconvenient. The left-behind elderly people often delay the illness, as a result, the minor illness may lead to serious disease. (ii) The proportion of reimbursement enjoyed by left-behind elderly people is very low. (iii) Many rural areas have poor medical and health conditions, and there are generally poor medical equipment and, few medical staff, low professional quality. (iv) Left-behind elderly people could not receive high-level medical care.

In order to strengthen the social security system, in order to protect the virtuous circle of the system, apart from improving the sense of family pension responsibility, government participation also plays a very important role. It is necessary not only to establish a sound endowment pension system, but also to supervise the management of the rural endowment system, and to be responsible for the smooth implementation of the endowment system, to guarantee funds be put in place<sup>[15]</sup>, so that the left-behind elderly people can better enjoy social support and services. Besides, in medical services, on the basis of the current construction of rural clinics, it is recommended to increase more professional general practitioners, medical equipment and basic medical examination services, as well as drug types. Finally, it is recommended to survey the health condition of the left-behind elderly people, make medical records, and provide medical services regularly for those elderly people who could not move flexibly.

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