

Correlation Analysis of Agricultural Injuries and Quality of Life Among Rural Residents in Hainan Province

Kang Lu, Qisheng Wu, Weiling Xu, Qiao Li*

International School of Public Health and One Health, Hainan Medical University, Haikou 571199, China.

Abstract: Objective To analyze the correlation between agricultural injuries and quality of life among rural residents in Hainan Province, and to provide a scientific basis for agricultural injury prevention in Hainan. **Methods** Using a multi-stage random sampling method, one city (county) was randomly selected in each of the five directions of Hainan: east, south, west, north and central. 1-2 towns (townships) were selected in each of the selected cities (counties), then 5-10 natural villages were selected in each town, and 20-30 households were randomly selected in each village (neighbourhood committee) to conduct a face-to-face survey of all permanent residents aged 15 or above in the selected households. **Results** In both the no agricultural injury group and the group with agricultural injury, there were statistically significant differences ($P<0.05$) in the six dimensions of Physical Functioning, Role-Physical, Bodily Pain, General Health, Social Functioning and Role-Emotional and in the total score between the two groups, all with the no agricultural injury group scoring higher than the agricultural injury group. The incidence of agricultural injuries showed an overall decreasing trend as the quality of life score increased ($P<0.05$). **Conclusion** The incidence of agricultural injuries among rural residents in Hainan is related to the quality of life, and relevant measures should be taken to reduce the incidence of agricultural injuries and improve the quality of life of rural residents in Hainan.

Keywords: Rural Residents of Hainan Province; Agricultural Injuries; Quality of Life; Correlation

Introduction

Hainan Province is the only tropical province in China and the most important area for modern agricultural development with tropical characteristics in China, with a rural practicing population increasing from 5.256 million in 2005 to 6.1958 million in 2018. Of these, 3.2398 million were directly engaged in agricultural production, and agricultural employment accounted for 53.95% of the total social employment (6.050 million) ^[1]. Study showed that the overall incidence of work-related agricultural injuries in China was 30.6%^[2]. Agricultural injuries remain a widespread social problem worldwide and can lead to an increased economic burden on society^[3]. In rural areas of China, injuries cause direct medical costs of up to 65 billion yuan, and losses due to injury off work amount to more than 6 billion yuan^[4], such huge economic losses and burdens have affected our economic development. Therefore, relevant measures should be taken to prevent and control the occurrence of injuries, so as to reduce the socio-economic burden caused by injuries. The occurrence of agricultural injury is related to many factors. This study intends to analyze the correlation between agricultural injury and quality of life in rural residents of Hainan, which will provide data reference for preventing the occurrence of agricultural injury in Hainan.

1. Objects and methods

1.1 Study population and sampling methods

Using a multi-stage random sampling method, one city (county) was randomly selected in each of the five directions of Hainan: east, south, west, north and central. 1-2 towns (townships) were selected in each of the selected cities (counties), then 5-10 natural villages were selected in each town, and 20-30 households were randomly selected in each village (neighbourhood committee) to conduct a face-to-face survey of all permanent residents aged 15 or above in the selected households. There were 1,893 surveys, 1,776 valid questionnaires, with an effective rate of 93.8%, and all survey respondents gave their informed consent.

1.2 Criteria for agricultural injury

Agricultural laborers are defined as agricultural injuries when they rest for more than one day due to injuries or go to medical institutions for disposal in engaging in agricultural production labor^[5].

1.3 Research tools

The Chinese version of the SF-36 scale was used to measure the quality of life of the population. The scale has 36 entries and is divided into 8 dimensions: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE) and Mental health (MH). Higher scale scores indicate a higher quality of healthy life.

1.4 Statistical Analysis

SPSS 26.0 software was applied for statistical analysis. General demographic information was described statistically and comparisons between groups were made using t-tests or chi-square tests. The test level was $\alpha=0.05$.

2. Results

2.1 General demographic data

Of the 1776 people investigated, 952 (53.6%) were male and 824 (46.4%) were female; 1182 (66.55%) were Han, 529 (29.79%) were Li, and 65 (3.66%) were other ethnic groups; the mean age was (45.1 ± 15.7) years; 274 (15.43%) were unmarried, 1426 (80.29%) were married, and 76 (4.28%) were divorced or widowed.

2.2 Correlation analysis of agricultural injuries and quality of life among rural residents in Hainan

In the non-agricultural injury group and the agricultural injury group, except that there was no significant difference in the scores of vitality (VT) and mental health (MH) between the two groups, there were significant differences in the scores of the other six dimensions and the total score between the two groups ($P < 0.05$), which were higher in the non-agricultural injury group than in the agricultural injury group, indicating that the occurrence of agricultural injury in residents was related to the quality of life. The results are presented in Table 1.

Table 1 Differences in Quality of Life Scores of Rural Residents in Hainan with or without Agricultural Injury Experience
($\bar{X} \pm S$)

Dimension	Agricultural Injuries		<i>t</i>	<i>P</i>
	Yes (n=529)	No (n=1247)		
PF	88.85±17.12	94.73±13.72	-5.606	<0.0001
RP	71.41±31.10	88.28±24.61	-9.946	<0.0001
BP	77.12±21.30	87.99±18.34	-9.883	<0.0001
GH	62.50±22.33	69.21±19.81	-3.999	<0.0001
VT	73.24±16.42	74.70±14.18	-1.165	0.244
SF	79.77±18.44	84.24±15.88	-5.012	<0.0001
RE	65.85±41.20	89.48±25.05	-13.623	<0.0001
MH	72.17±16.50	71.03±14.47	0.566	0.571
Overall score	589.16±125.50	651.93±101.45	-7.571	<0.0001

2.3 Changes in the incidence of agricultural injuries with quality of life among rural residents in Hainan

Rural residents in Hainan Province were divided into four groups based on quartiles of quality of life scores (The results are shown in Table 2). Chi-square trend test showed that there was a linear trend between the incidence of agricultural injuries and the scores of quality of life ($P < 0.05$), indicating that the incidence of agricultural injuries generally showed a decreasing trend with the increase of quality of life scores.

Table 2 Comparison of the incidence of agricultural injuries among different subgroups of rural residents in Hainan Province in terms of quality of life

Quality of Life Group	Agricultural Injuries		χ^2	<i>P</i>
	Yes(n=529)	No(n=1247)		
Low Group (>P25)	211(39.9%)	223(17.9%)	114.818	<0.0001
Lower Middle Group (P25~P50)	140(26.5%)	312(25.0%)		
Upper Middle Group (P50~P75)	84(15.9%)	350(28.1%)		
High Group (<P25)	94(17.8%)	362(29.0%)		

3. Discussion

Rural residents who had not been injured in agriculture had higher scores on six dimensions of Physical Functioning, Role-Physical, Bodily Pain, General Health, Social Functioning, Role-Emotional and higher total quality of life scores than those who had been injured in agriculture. The analysis found that the incidence of agricultural injuries among rural residents in Hainan generally tended to decrease as the quality of life scores increased. This suggests that the quality of life of Hainan's rural residents is related to the incidence of agricultural injuries. Therefore, the relevant authorities need to develop some measures to reduce the occurrence of agricultural injuries among rural residents in Hainan in order to improve the quality of life of rural residents in Hainan.

Among rural residents in Hainan Province, those with agricultural injuries scored slightly higher on the mental health

dimension compared to those without agricultural injuries, but the difference was not statistically significant, which may be related to the prevalence of the Daddy tea culture among Hainan residents, making those who have experienced agricultural injuries less psychological trauma compared to other regions^[6]. The current study showed a correlation between physical and mental health status and the occurrence of agricultural injuries, which is consistent with the results of foreign studies^[7].

Agricultural injuries not only cause economic losses, but also endanger the health of rural residents^[8]. Therefore, we need to strengthen the comprehensive management of the rural agricultural environment, as well as strengthen the education of rural residents on agricultural injuries to reduce the risk factors in rural agricultural production and effectively control the occurrence of agricultural injuries. In addition to reducing the incidence of agricultural injuries, we should also pay more attention to people who have experienced agricultural injuries, who have lower quality of life scores and may need more care and policy attention.

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First Author: Kang Lu, Postgraduate student

Corresponding author: Qiao Li, Associate Professor