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Comparative Study on Health-Related Quality of Life of Farmers and Workers



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ABSTRACT

Objective: To estimate and compare the health-related quality of life (HRQOL) between Chinese farmers and workers and study the relationships between the sociodemographic factors and HRQOL of the 2 populations. **Methods:** We conducted 2 cross-sectional surveys in Zhejiang Province in China by using multistage cluster sampling; we applied the EuroQOL 5-dimensions 3-level (EQ-5D-3L) self-report questionnaire to assess the HRQOL of farmers and workers through face-to-face interviews. The χ^2 test, 1-way analysis of variance (ANOVA), and multiple linear regression models were used to compare the HRQOL between farmers and workers and identify the factors that influence HRQOL. **Results:** We included 3675 farmers and 2836 workers in the analysis. The HRQOL differed between the 2 populations. The most prevalent problems reported were Pain/Discomfort and Anxiety/Depression; workers reported significantly more Pain/Discomfort and Anxiety/Depression compared with farmers

($P < 0.001$). The mean EQ-5D index scores were 0.987 for farmers and 0.959 for workers ($P < 0.001$), and the EQ-VAS scores were 83.59 for farmers and 81.11 for workers ($P < 0.001$), indicating that farmers had better HRQOL compared with workers. Sex, age, marital status, education level, and personal monthly income were reported to influence the HRQOL of farmers, whereas marital status and education level were reported to influence that of workers. **Conclusions:** The HRQOL of farmers was better than that of workers. To improve the HRQOL, it is important to pay more attention to mental health, especially in workers.

Keywords: China, cross-sectional survey, EQ-5D, EQ-VAS, farmer, health-related quality of life, HRQOL, worker.

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A *farmer* (also called an *agriculturist*) is a person engaged in agriculture, raising living organisms for food or raw materials, and the term usually applies to people who do some combination of raising field crops, vineyards, orchards, and poultry or other livestock [1]. A *worker* (i.e., employee) refers to a person who works in return for payment, which may be in the form of an hourly wage or an annual salary or by piecework, depending on the type of work he or she does and/or which sector the person is working in [2]. The *China Statistical Yearbook 2012* reported that the total population of farmers was 656.56 million and that of workers was 764.20 million in 2011 [3].

Since the late 1970s, studies on quality of life (QOL) had been conducted widely in medical fields. These studies explored the impacts of both diseases and treatments on QOL as well as the factors influencing QOL and formed the concept of health-related quality of life (HRQOL). HRQOL is a multidimensional concept, which measures the patient's health status in the domains related to physical, mental, emotional, and social functioning.

This concept goes beyond direct measures of population health, life expectancy, and causes of death and focuses on the impact health status has on QOL [4,5]. The state of life experience depends on individual goals, expectations, standards, and concerns in different cultures and value systems [6]. The EuroQOL 5-dimensions 3-level (EQ-5D-3L) questionnaire has been widely used to describe the health status and QOL of populations worldwide [7–13]. It has been recommended as a tool for conducting health technology assessment in China by the *China Guidelines for Pharmacoeconomics Evaluation 2011* [14], and its descriptive system, the EQ-5D-3L self-report questionnaire, has been validated in Chinese populations [6–8,15–18].

The EQ-5D scale has been used to measure farmers' HRQOL by researchers worldwide [7,8,11,17,19,20]. A health survey in South Korea applied the EQ-5D scale to measure the health of workers in that country [21]. However, few studies have used this method to evaluate the health status of workers in China. Although several studies have reported occupation as one of the demographic factors

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related to QOL [21–27], to the best of our knowledge, there is no study focusing on comparing the effects of different occupation types on QOL. Therefore, our cross-sectional study aimed to use the EQ-5D scale to estimate and compare the HRQOL between Chinese farmers and workers for the first time and study the relationships between the sociodemographic factors and HRQOL of the 2 populations.

Methods

Study Sites

Our cross-sectional study included a rural health service survey (RHSS) and a workers' health survey (WHS) in Zhejiang Province. Zhejiang Province is situated on China's southeastern coast, on the southern part of the Yangtze River Delta, with about 32.79 million farmers and 36.74 million workers [3,28]. Its northeastern part is adjacent to Shanghai. The gross domestic product of Zhejiang Province reached 3.23 trillion Yuan, ranking the fourth highest-income province in China in 2011. The per capita net income of rural residents reached 13,071 Yuan, 1.87 times higher than the national average, taking the first place among all provinces in the consecutive 27 years [28]. The RHSS was performed in 2 counties in Ningbo, which is the second largest city in Zhejiang Province and is a higher-development area (per capita net income of farmers = 16,518 Yuan) with a higher agricultural population (368.23 million) [28,29]. The WHS was performed in 3 cities (counties), including Jiaying, Yuyao, and Cixi, which are higher-development areas (gross domestic product per capita = 78,202 to ~ 105,334 Yuan) with more industries (3987 to ~ 4434 enterprises) and a large number of employed population (3.22–4.94 million) [28,30–32].

Sampling

The sample in the RHSS in Ningbo was selected by using a multistage stratified cluster random sampling method. First, 2 counties were chosen randomly. Second, 5 towns were drawn from each county, and 2 villages were drawn from each town randomly. Finally, the number of the households drawn from each village was determined according to the proportion of households. A total of 2000 households were enrolled in the RHSS, and all members in a household were interviewed, with a total of 5513 farmers interviewed. The sampling methods were the same as the fourth NHSS in 2008 in China (Ningbo was selected as the sole sample city in Zhejiang Province) [29,33].

The sample in the WHS was selected by using a multistage cluster sampling method. First, 9 manufacturing industries were selected from 3 cities (counties) in Zhejiang Province according to study purposes, economic development, transportation, and cooperation. The industrials included 2 small-sized (employees of < 300), 5 medium-sized (employees of 300 to ~ 2000), and 2 large-sized (employees of ≥ 2000) enterprises. Second, 31 production workshops were randomly selected from the 9 industries. Finally, we interviewed all the workers in the 31 workshops. A total of 2836 workers were included in the face-to-face interviews [30–32].

Data Collection

The one-on-one, face-to-face interviews were conducted by trained investigators who used the rural health service household questionnaire in the RHSS and the feasibility of occupational health and work injury (occupational disease) insurance questionnaire in the WHS. Both questionnaires include a part of the standard EQ-5D-3L questionnaire. The investigators were trained as a group on uniform standards and passed coincidence examination. According to the requirements of the EQ-5D scale with

regard to practical applications, the respondents should be 16 years of age or older and answer the questions by themselves.

The RHSS was carried out between June and August in 2011. Two specific project offices were set up at the local Center for Disease Control and Prevention (CDC) in the 2 counties. These offices were in charge of training the instructors and investigators, organizing the survey, and carrying out the quality control under the supervision of Zhejiang University. The investigators were local medical personnel. After obtaining informed consent, all members of a household were interviewed in their homes individually. Ethical approval was obtained from the Medical Faculty Ethics Committee of Zhejiang University [29]. The WHS was carried out between December, 2011, and April, 2012. Graduate and undergraduate students were trained as a group to be qualified investigators. After obtaining informed consent, all workers were interviewed at their workshops individually. They were told to answer truthfully and that there was no right or wrong answer. Data to fill in were anonymous. The questionnaires were checked, and quality control was performed by survey supervisors who were professionals from Zhejiang University. We modified the questionnaires on the basis of a pilot study [30].

This report has only used the general household, individual variables and the EQ-5D-3L information. This information includes 1) participants' socioeconomic data: age, sex, birth date, residence, education level, marital status, personal monthly income, and living conditions; 2) participants' self-reported health status based on the EQ-5D index score estimated by the EQ-5D-3L questionnaire descriptive system; and 3) participants' self-reported health based on a visual analogue scale (VAS). Each EQ-5D-3L health state can be coded using a five-digit numbering system using the numbers 1 (no problems), 2 (some/moderate problems), and 3 (extreme problems), to indicate the functional levels of the 5 dimensions of mobility, self-care, usual activities, pain/discomfort, and anxiety/depression in the state. For example, the score of 21,223 stands for a state of having no problems in self-care, some problems in mobility and usual activities, moderate pain/discomfort, and extreme anxiety/depression. The score is then converted into an index. The EQ-5D index is a set of observations about a person defined by the descriptive system. It is converted to a single summary index by applying a formula that essentially attaches weights to each of the levels in each dimension by the time trade-off (TTO) method [34]. The higher the EQ-5D index score (–0.15 to ~1.00) and EQ-VAS score (0 to ~100), the better is the respondent's HRQOL.

Statistical Analysis

In the RHSS, all members in a household were interviewed, including those ≤ 16 years of age and were not required to answer the EQ-5D section and those not able to answer the questionnaire independently; in the WHS, the workers interviewed were in the age group of ≥ 16 years (the minimum legal working age in China) to ≤ 70 years and were able to answer the questionnaire independently. To ensure comparability of the 2 groups, for the farmers, we only included individuals aged ≥ 16 years to ≤ 70 years who provided responses to the EQ-5D section, and this resulted in a sample of 3725. Data were further excluded if there was a missing value in sex, age, education level, marital status, and income level, or the 5 dimensions of the EQ-5D or EQ-VAS score. After cleaning the database, the effective sample sizes were 3675 farmers and 2836 workers. Data were double-entered and double-checked by EpiData version 3.1, imported in Microsoft Excel, and then analyzed with SPSS version 16.0. The answers to the EQ-5D-3L questionnaire were converted into a utility index score through a Chinese general population-based EQ-5D-3L social value set [18].

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