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Regional differences in health status in China: Population health-related quality of life results from the National Health Services Survey 2008

Word account

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Abstract

Purpose: to measure, describe and analyse regional differences in health-related quality of life measured by EQ-5D in China. Data were obtained via face-to-face interviews on a national representative sample (n=120,703, 15-103 years). The EQ-5D instrument was used to measure health status. Results: Rural areas had worse health status than urban areas. Health status was worst in western areas and best in eastern areas, and such disparities were profounder in rural areas. In urban areas, health status was best in middle-sized cities. In rural areas, health status increased with the economic development level of a county. Conclusion: Our study enhances understanding of the urban-rural differences and east-middle-west differences in health and sheds light on inequalities in health status between different city categories in the urban areas and county categories in the rural areas.

Key words

Introduction

Disparities in population health exists not only between countries (König, Bernert, Angermeyer, Mattschinger, Martinez, & Vilagut, 2009; Szende & Williams, 2004) but also within a country. Compared to developed countries (Bellanger & Jourdain, 2004; Burström et al., 2010; Lopez-Casasnovas, Costa-Font, & Planas, 2005; Salmela, 1993) such disparities are more serious in developing countries (World Health Organization [WHO], 2001). Ranking by equality in health distribution from high to low, China came 101st out of 191 member states of WHO.

Many factors contributes to regional differences, e.g. natural conditions, socio-economic development, health resource allocation etc. (Bellanger & Jourdain, 2004; Burström et al., 2010; Fang, Dong, Xiao, & Liu, 2009; Lopez-Casasnovas et al., 2005). China is a heterogeneous country, with 1.3 billion inhabitants distributed over 9.6 million km^2 of territory (Central People's Government of the People's Republic of China [CPGPRC], 2004). Regional differences in China present a complex picture, with different types and levels (United Nations Development Programme [UNDP], 2005; Pei & Rodriguez, 2006). There are three large geographic areas in China: the eastern, middle and western areas. Each of those areas contains about 10 provinces, in total 31 provinces in mainland China (CPGPRC, 2004). Under each province, there are cities in urban areas and counties in rural areas, on average 70 cities/counties per province. About 70% of the Chinese population live in rural areas and the majority live by agriculture. Regional disparities exist not only between urban and rural areas, but also between east, middle and west and between different cities (urban) and counties (rural).

The regional disparities existing historically have been widening rapidly since the economic reform of the 1980s (Office of WHO Representative in China and Social Development Department of China State Council Development Research Center [OWHORC & SDDCSCDRC], 2006; UNDP, 2005). The rapid economic growth and dramatic social and political system transition have assumed different magnitudes in different regions, being more

thorough and deeper in the east and urban areas (OWHORC & SDDCSCDRC, 2006; UNDP, 2005). This has impacted heavily on health: overall, the Chinese are living longer and are healthier (OWHORC & SDDCSCDRC, 2006), but at the same time, disparities in health between different regions are widening, e.g. large gaps in life expectancy between urban and rural (75.2 compared to 69.6 years), eastern and western areas (71.9 compared to 68.4 years) (UNDP, 2005). The recent health care reform makes reduction of regional inequalities in health a priority field (National Development and Reform Commission [NDRC], 2009). Large studies of inequalities in health in China have focused on the urban-rural issues (Liu, Hsiao & Eggleston, 1999; Shi, 1993; Tang, Meng, Chen, Bekedam, Evans, & Whitehead, 2008), but there is a shortage of studies regarding eastern-middle-western areas (UNDP, 2005), and differences between different types of cities and counties. A recent study revealed that there are distinct disparities in mortality and morbidity across different provinces in China (Fang et al., 2009).

China has substantial regional differences in health care systems (Shi, 1993) and insurance schemes (Xu, Wang, Collins, & Tang, 2007), which has attracted attention in recent years (Gao, Qian, Tang, Eriksson, & Blas, 2002; Shi, 1993; Henderson, Akin, Li, Jin, Ma, & Ge, 1994). Regional differences in socio-economic developments and health resource allocation have been considered common factors leading to inequalities in health (Bellanger & Jourdain, 2004; Lopez-Casasnovas et al., 2005; Salmela, 1993), and have been investigated in China as well (Henderson et al., 1994; Fang et al., 2009; Pei & Rodriguez, 2006; UNDP, 2005).

Studies of regional inequalities in health mostly used mortality and morbidity measures (Gao et al., 2002; Fang et al., 2009), as well as the usage of health service (Henderson et al., 1994); there are few studies using health-related quality of life (HRQoL) measures in China. HRQoL reflects multi-dimensions of health, such as physical, psychological, social, cognitive and role function, as well as general wellbeing (Spiker & Revicki, 1996). Outcome measures

which neglect impacts on HRQoL might tend to underestimate the health disadvantage of deprived areas (Congdon, 2001).

The EQ-5D instrument has been used worldwide to measure HRQoL (Rabin & de Charro, 2001). EQ-5D population health studies have been performed mostly in Europe (Burström, Johannesson, & Diderichsen, 2001; Kind, Dolan, Gudex, & Williams, 1998; König et al., 2009; Sorensen, Davidsen, Gudex, Pedersen, & Bronnum-Hansen, 2009; Szende & Williams, 2004), USA (Fryback, Dunham, Palta, Hanmer, Buechner, & Cherepanov, 2007; Lubetkin, Jia, Franks, & Gold, 2005; Luo, Johnson, Shaw, Feeny, & Coons, 2005), Canada (Leung, Luo, So, & Quan, 2007) and Asia (Kil, Lee, Yun, An, & Jo, 2008; Shafie, Hassali, & Liau, 2010; Ting, Tarn, Ching, Liou, Shaw, & Chiou, 2007; Tsuchiya, & et al., 2002), including China (Sun et al., 2010; Wang, David, Mullahy, & Mullahy, 2005). Studies among other Chinese populations have also been performed in Singapore (Luo, Chew, Fong, Koh, Ng, & Yoon, 2003), the USA (Lubetkin et al., 2007; Luo et al., 2005) and Canada (Leung et al., 2007). Results from an EQ-5D study performed in Beijing suggested that EQ-5D is valid for measuring health status in the Chinese population (Wang et al., 2005).

The EQ-5D was included for the first time in the National Health Service Survey (NHSS) 2008 to measure population health status in all 31 provinces in mainland China (Sun et al., 2010). In the present study, we investigated regional inequalities in HRQoL on a national representative sample from four different levels: urban-rural differences, eastern-middle-western differences, inter-city differences and inter-county differences.

Aim

To measure, describe and analyse regional differences in HRQoL measured by EQ-5D in China.

Material and Methods

Material

Data were derived from the NHSS 2008, which has been organised by the Ministry of Health (MoH) in China every fifth year since 1993 (Center for Health Statistics and Information of Ministry of Health of People's Republic of China [CHSIMOHPRC], 2009). Face-to-face interviews were conducted by trained local interviewers (Center for Health Statistics and Information of Ministry of Health of People's Republic of China [CHSIMOHPRC], 2008). The NHSS 2008 questionnaire includes more than 200 questions, on acute diseases and injuries, chronic and other diseases, hospitalisation, health-related behaviour, educational level, family income and employment status, social relations, safety and security, medical care fees, accessibility (distance and time) and satisfaction with health service, insurance coverage, vaccination and disease control, woman and child health services. The EQ-5D was placed in the beginning of the questionnaire, after questions on general information and diseases and injuries, but before questions on health-related behaviour. The whole interview for each individual took generally around 45 minutes.

In NHSS 2008, 56,400 households were sampled using a multi-stage stratified cluster random sampling (CHSIMOHPRC, 2008). In the first sample stage, 2,400 districts (urban area) and counties (rural area) were stratified based on socio-economic, health care and population structure to sample 94 districts and counties. In the second stage, 2,350 sub-districts (Jiedao in Chinese) in urban area and townships (Xiang in Chinese) in rural area in the 94 counties were stratified based on population size and income per capita to sample 470 sub-districts and townships. In the third stage, 940 residential committees (Juweihui in Chinese) in urban area and villages (Cun in Chinese) in rural area were sampled using the same criteria as in the second stage. In each residential committee or village, 60 households were randomly selected, and all family members in a sampled household were interviewed individually. An oversampling of ten

households in each residential committee (village) took place at the design stage, to make up for households that could not be reached (less than 7%).

In total, 177,501 respondents were included in NHSS 2008. Of these, about 18% aged below 15 years were excluded, since EQ-5D questions should only be administered to respondents 15 years and over. Respondents not answering the questions by themselves were excluded (13%). In total, less than 2% of the respondents had missing answers on age, sex, in at least one of the EQ-5D dimensions, on VAS or reported VAS higher than 100. After applying the previous exclusion criteria, 120,703 respondents were used for this study.

Ethical permission for analyses of this study was granted by the Regional Ethics Committee, Stockholm, Sweden (Dnr: 2009/1892–31).

Interview procedure

The interviewers were recruited from local health workers. The supervisors for interviewers were trained at the national level (4 supervisors per county, recruited from local health authority staff and county interviewers). The supervisors then trained the interviewers in each county (30 interviewers per county). An instruction for performing face-to-face interviews on NHSS questions was provided by MoH (CHSIMOHPRC, 2008). As a quality control, the supervisors checked the completeness of the questionnaire at the end of each day. If the information was missing, the interviewer went back during the same day or next day to ask the missing question again. If all family members in one household were missing, the interviewer would try to contact that family three times during the following days. If no family members were reached, the interviewer would choose another sampled household so as to clock up 60 households in each residential committee (village).

Health outcome measure

The EQ-5D instrument is a generic HRQoL outcome measure (Rabin & de Charro, 2001) which classifies respondents' health status in five dimensions (mobility, self-care, usual activities,

pain/discomfort and anxiety/depression), with three severity levels (no problems, some problems and severe problems). The EQ-5D instrument in total defines 243 health states.

A visual analogue scale (VAS) was used in the survey, with anchor points 0 (worst health state) and 100 (best health state). The scale consisted of a horizontal line where every 10th was marked and labelled 0, 10, 20…, 100. The question was framed: "On the scale please point out which point best represents your own health state today." The scale was harmonised to fit in with the NHSS questionnaire, and hence slightly differs from the EQ VAS. In the present study, the results are presented as VAS scores since they were not obtained with the original EQ VAS.

Data analyses

Variables for region categorisations

Variables for region categorisations in our study followed the official categorisations (CPGPRC, 2004; CHSIMOHPRC, 2009).

Urban and rural areas

Each province contains both urban and rural areas, on average 70 urban cities and rural counties (including county-level cities) per province. The under-provincial administrative tiers are presented in Figure 1. Below city (district) level in the urban areas, the administrative tiers from high to low are sub-districts (Jiedao in Chinese) and residential committees (Juweihui in Chinese); while below county level in rural areas, the administrative tiers are townships (Xiang in Chinese) and villages (Cun in Chinese).

Figure 1

Eastern, middle and western areas

The eastern area is alongside the sea coast, and is the most developed area. It includes 12 provinces: Liaoning, Beijing, Tianjin, Hebei, Shandong, Shanghai, Jiangsu, Zhejiang, Fujian, Guangdong and Hainan. Next to the eastern area is the middle area, including 9 provinces:

Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan. The western area is the least developed area, including 10 provinces: Sichuan, Chongqing, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Guangxi and Inner-Mongolia.

City and county categories

In terms of administrative level and population size, the cities in urban areas can be divided into three categories: big, middle-sized and small cities. The big city category includes cities under the direct govern of the Central Government (Beijing, Tianjing, Shanghai and Chongqing) and province capital cities with a population of more than one million inhabitants. So-called prefecture cities, which are under the direct govern of the Provincial Governments, with a population of more than half million inhabitants and province capital cities with a population between half and one million inhabitants are in the middle-sized city category. Prefecture cities and provincial capital cities with a population less than half million inhabitants are in the small city category. The counties in the rural areas can be divided into four categories based on their socio-economic development level. Indicators such as economy, demography, literacy and health were used to define the socio-economic development level. The county categories are: Type I to Type IV (Type I is most developed and Type IV is least developed).

Variables for socio-economic status

The highest accomplished educational level was classified into below primary school; primary school; junior middle school; senior middle school; college and above. An individual's annual income was assessed by dividing household annual income by the numbers of persons living in the family within the last half-year, regardless of age and employment status. Respondents were then ranked from lowest to highest by their annual income and divided into five groups of equal size: the lowest income group had an income below 2,500 RMB; the second group from 2,500 to 3,999 RMB; the third group from 4,000 to 5,999 RMB; the fourth group from 6,000 to 9,9999

RMB; the fifth group 10,000 RMB and above. Employment status was categorised into employed, unemployed, student and retired.

Statistical analyses

All descriptive analyses by region were stratified by sex and age groups (15-44 years; 45-64 years; 65+). Percentages of respondents reporting problems in each EQ-5D dimension and VAS score (mean) were analysed by region. We carried out multiple logistic regression analyses to estimate the likelihood of having no problems in each of the EQ-5D dimensions. Multiple linear regression analysis was used to estimate the variation in VAS scores. We created two sets of models: in one set we controlled for sex and age (5-year age groups were entered as dummy variables, except for the oldest, 85+), and in the other set, we additionally controlled for educational level, income group and employment status (dummies entered based on the categorisation of socio-economic variables). Separate regressions were carried out for each region (urban-rural areas, eastern-middle-western areas, big-middle-small city categories and Type I-IV county categories), dummy variables were entered based on this regional categorisation. All analyses were performed in SAS 9.1 (SAS Institute). The significant level used in regression analyses was 5% level.

Results

Characteristics of respondents

Characteristics of respondents by region are presented in Table 1. The proportion of women was higher in all regions, except in the rural Type IV county. In the rural area, there was a higher percentage of respondents with the lowest educational level (19%) and in the lowest income group (29%), compared to the urban area (7% and 6%, respectively.) The proportion of retired was low in the rural areas (2%) compared to urban areas (32%), and the employment rate was higher in the rural areas (82%) than in the urban areas (41%).

(Table 1)

By urban and rural areas

Rural respondents reported more problems in all the EQ-5D dimensions and lower VAS scores than the urban respondents (Table 2). The difference in problems reported in EQ-5D dimensions between the rural and urban respondents increased with age.

(Table 2)

By eastern, middle and western areas

Problems reported in EQ-5D dimensions increased and VAS scores decreased from eastern to western areas for both urban (Table 3) and rural respondents (Table 4). This gradient was steeper among rural than among urban respondents.

(Table 3 and 4)

By city category in urban areas

For men aged 15-44 years, except for the anxiety/depression dimension, respondents from big city reported the lowest percentage of problems in all EQ-5D dimensions; for men aged 45 years and over, respondents from middle-sized cities reported the lowest problems in most EQ-5D dimensions (Table 5). For all age groups, men from small cities reported the highest percentage of problems in most EQ-5D dimensions.

For women aged 15-44 years, except for the usual activities dimension, respondents from middle-sized cities reported the lowest percentage of problems in all EQ-5D dimensions; for women aged 45-64 years, respondents from big cities reported the lowest problems in all EQ-5D dimensions. For women aged 65+, except for pain/discomfort and anxiety/depression dimensions, respondents from middle-sized cities reported the lowest percentage of problems in EQ-5D dimensions. For all the age groups, women from small cities reported the highest percentage of problems in most EQ-5D dimensions.

(Table 5)

By county category in rural areas

Overall, problems reported in EQ-5D dimensions increased and VAS scores decreased from Type I to Type IV county, most developed to least developed county, (Table 6). Exceptions were found for both men and women aged 15-44 years in the usual activities and pain/discomfort dimensions and men in mobility dimension, where Type II county respondents reported the lowest percentage of problems.

(Table 6)

Regression analyses

For each region, the likelihood of having no problems in a specific EQ-5D dimension and the variation of VAS score were analysed, controlling for sex and age in Table 7, and also for educational level, income group and employment status in Table 8. The likelihood of women having no problems was significantly lower than for men, and women had significantly lower mean VAS scores than men. Individuals with a higher educational level, in a higher income group and gainfully employed were more likely to have no problems in EQ-5D dimensions, and they had higher mean VAS scores (results not shown).

In Table 7, when sex and age were controlled, rural respondents had significantly lower likelihood of having no problems in all EQ-5D dimensions and had significantly lower VAS scores than the urban respondents.

For urban areas, respondents in the eastern area were significantly more likely to have no problems in EQ-5D dimensions than those in the western area, with the exception of pain/discomfort. Difference in the anxiety/depression dimension was found between middle and western area respondents. Both eastern and middle area respondents had significantly higher VAS scores than western respondents. For rural areas, an eastern-middle-western gradient in health was observed; there were significant differences for all dimensions between all areas. In urban areas, overall, middle-sized city respondents had the best health, while the respondents in small cities had the worst. An exception was seen for VAS scores, where the lowest scores were found among big city respondents. In rural areas, a gradient in the likelihood to have no problems was seen for all EQ-5D dimensions and in the VAS score over Type I to Type IV county, i.e. respondents in Type IV county reported worst health.

(Table 7)

In Table 8, after controlling also for socio-economic status, overall, the differences between regions were reduced and some differences became insignificant, but the trend was similar. This may suggest that the regional differences in health are partly due to differences in socio-economic composition between regions. Some exceptions were found for the rural eastern-middle-western areas, where the effects of regional variables increased in the dimensions self-care, usual activities and anxiety/depression, after controlling for socio-economic status. The VAS score coefficient for the rural area became positive, which is the opposite of what can be seen in Table 7.

(Table 8)

Discussion

We investigated regional inequalities in HRQoL measured by the EQ-5D instrument among the Chinese population stratified by sex and age from four different levels. Disparities in health between urban and rural areas have been demonstrated by previous studies (Gao et al., 2002; Henderson et al., 1994; Liu et al., 1999), and our study reported similar findings with the EQ-5D descriptive system, though with smaller differences. Respondents' health status decreased from eastern to western areas, which is in line with previous findings (Fang et al., 2009; Pei & Rodriguez, 2007; UNDP, 2005). We also found such differences to be profounder in rural than in urban areas. In the urban areas, respondents from middle-sized cities reported best health; in rural areas, respondents' health status diminished from Type I to Type IV counties. To the best of our knowledge, this is the first time that regional inequalities in health have been investigated by applying the EQ-5D instrument to a nationally representative sample in China, and the inter-city and inter-county differences in health have not yet been reported in any other articles published internationally.

Although the Chinese government has devoted much effort to reducing the huge disparities between urban and rural areas, e.g. by providing free education, building up the rural pension system, providing a new Rural Cooperative Medical System etc., the urban areas are still much more developed than the rural areas, e.g. the illiterate population is found mainly in rural areas (illiteracy rate: 4.6% in urban areas, 11.6% in rural areas) (UNDP, 2005), the number of persons with university education is higher and urban residents' per person income is higher. These differences will be profounder if all types of subsidies to urban respondents are taken into consideration (UNDP, 2005). China's urban-rural income inequalities might be the highest in the world (UNDP, 2005). The majority of rural respondents are employed in agriculture, and as peasants most of them do not have unemployment benefit or pension, and their social security network relies mainly on the family.

We expected a large difference in health status between the urban and rural respondents, but as the results showed, although urban respondents reported better health than rural respondents, compared with studies based on life expectancy, mortality or morbidity data, the magnitude of the differences was smaller. In the regression analyses, when socio-economic status was controlled the opposite trend was found for VAS score. This might be linked with the way in which people judge their own health status. Studies suggested that respondents with lower expectation of health might rate their own health status higher (Sen, 2002; Symon, Daignault, Symon, Dunn, Sanda & Sandler, 2006). The rural respondents might have a lower expectation of health than the urban respondents, in which case, given the same health conditions, the rural respondents might perceive their health status higher than the urban respondents. This issue needs further investigation.

The eastern-middle-western disparities in developments have existed historically. Although in recent years China's development strategy has more focused on western areas, e.g. low taxation and better transport conditions, national level fiscal transferring to the middle and western areas, encouraging people to migrate to western areas, there is still a huge gap between those areas. For example, the school drop-out rate is highest in the western area (UNDP, 2005), and average household income decreased from east to west.

From eastern area to western area, health status went from high to low, and disparities in health are profounder in rural than in urban areas. This might be due to that middle-sized cities being located mainly in the middle and west of China, and health is better in middle-sized cities. The possible reasons are given in the following paragraph, where we discuss about inter-city differences in health. In rural areas with the same socio-economic status, respondents' health status declined from eastern to western area.

Health status was best in middle-sized cities. The reason could possibly be that there is a lower stress level, better housing situation and a better environment in middle-sized cities than in

big and small cities, but this issue needs further investigation (Van de Poel, O'Donnell & Van Doorslaer). Big city respondents had fewer problems in EQ-5D dimensions than small city respondents. However, they had lower VAS scores, and this difference was enlarged after controlling for socio-economic status. Respondents in big cities might have higher expectations of health than small city respondents, and might rate their health lower for this reason (Sen, 2002; Symon et al., 2006).

Our results showed that from Type I to Type IV counties, health status went from high to low, and this gradient persisted when socio-economic status were all controlled. Type III and IV counties are mainly located in the mountain and desert region in the western area. Basic living conditions there are quite rough there, with respondents facing such problems as lack of clean drinking water and difficulties in communicating with the outside world, due to poor road conditions.

When interpreting the results, the minimum important differences (MID) in health status need to be addressed. To our best knowledge, there is no authoritative recommendation for the MID for EQ-5D. Some studies have investigated this issue, mainly focused on utility scores (Luo, Johnson & Coons, 2010; Sullivan, Lawrence & Ghushchyan, 2005; Walters & Brazier, 2005). Most studies on MID for visual analogue scales are related to a certain health problem, e.g. pain or sleep problems (Salaffi, Stancati, Sivestri, Ciapetti & Grassi, 2004; Zisapel & Nir, 2002). Further studies are needed to explore this issue.

Some limitations must be addressed here, apart from limitations regarding how to define socio-economic status, interviewer bias and ceiling effects, which have been discussed elsewhere (Sun et al., 2010). The sampling design was complex, using a multi-stage sampling with both stratification and clustering. The difficulties of taking the effects of the sampling design into consideration at all stages of the analyses might affect the precision of our estimates. Nevertheless, the NHSS sampling design was examined by the MoH for all waves of the

surveys, and the representativeness of the sample was considered good, i.e. proportions of the population from different regions, age, sex and socio-economic structures are representative of the Chinese population (CHSIMOHPRC, 2008), and are similar to the census data, except for the unemployment rate, which might be due to different ways of defining unemployment (National Bureau of Statistics of China, 2009).

Another limitation of our study is related to the situation concerning inner-immigrants, those rural respondents working in urban areas. This number has increased, and by 2002 will reach 150 million (UNDP, 2005). However, they were not included in our study. Inner-immigrants are often associated with low pay, harsh working and living conditions, and difficulties in accessing health care and social security networks, due to their not being registered residents of urban areas (Zhan, Sun, & Blas, 2002). The NHSS question applied a proxy to investigate these persons' living situation, but information on their health status is lacking. Further studies are needed among the inner-immigrants.

There are large regional differences in income, and for the same amount of income the relative values are different in different regions, so that the income group could differ from one region to another. But in order to make cross-regional comparisons, we used the average income group for the whole country. The limitation of so doing is due to the fact that the same amount of money is worth more in poor regions.

Comparison of our results with population studies in other countries showed similar findings, with most problems reported in the pain/discomfort dimension, followed by the anxiety/depression dimension, more problems with increased age and women reporting worse health than men (Burström et al., 2001; Kind et al., 1998; König et al., 2009; Leung et al., 2007; Lubetkin et al., 2005; Sun et al., 2010; Sorensen et al., 2009; Szende & Williams, 2004;). However, it is difficult to make a direct comparison for the proportion of respondents reporting problems in EQ-5D dimensions, as this differs from country to country. This might be due to

several reasons other than the difference in health status between populations. The age and sex structure might be different across countries, or people in different countries might refer to levels of health differently (Szende & Williams, 2004; Sorensen et al., 2009; Bharmal, & Thomas, 2006), or again the mode of administration might vary from one survey to another (Bowling, 2005; Weinberger, Oddone, Samsa, & Landsman, 1996), or some countries include proxy respondents. Therefore, one needs to be cautious when making international comparisons of population health status. A large ceiling effect (a large proportion of the population tending to report good health, which here refers to reporting no problems in any EQ-5D dimensions) as found in our study (87%) has also been observed in other studies including Chinese populations, in China (Wang et al., 2005), as well as in US (Fu & Kattan, 2006; Lubetkin et al., 2005) and Canada (Leung et al., 2007). This was also the case in a study in Japan (Tsuchiya et al., 2002) and in Malaysia (Shafie et al., 2010).

We have investigated different types of regional inequalities in health status, by using the EQ-5D instrument in a national representative sample. Given the caveats, the EQ-5D distinguished well between regions that were a priori supposed to differ in health status. Our study adds knowledge regarding regional disparities in different dimensions of health, apart from the known regional differences in health using mortality and morbidity data. This study enhances the understanding of the urban-rural differences and east-middle-west differences in China, and also sheds light on inequalities in health status between different city categories in the urban areas and county categories in the rural areas. The results can be used as EQ-5D norms data for different regions in China, and as a reference for further studies regarding regional health status.

Acknowledgement

The EQ-5D is a copyrighted instrument and all requests for using it should be sent to the EuroQol Executive Office in Rotterdam, the Netherlands (userinformationservice@euroqol.org).

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