Survey on Mental Health Status of Urban Community Residents in Xi’an Based on SCL-90 Psychological Scale

Jiao TAN¹, Yong-Hong MA¹,* , Ming-Juan SHI¹, Jing LEI¹
Ke MEN² and Rong-Qiang ZHANG³

¹Department of Epidemiology and Health Statistics, College of Public Health, Xi’an Medical University, Xi’an, Shaanxi, China;
²Institute for Research on Health Information and Technology of Xi’an Medical University, Xi’an, Shaanxi, China;
³Department of Epidemiology and Health Statistics, College of Public Health, Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, China

*Corresponding author

Keywords: Community Residents, Mental Health, SCL-90 Scale

Abstract. The purpose of this study is to investigate the mental health status of 1021 community residents in Xi’an, which provides a scientific basis for understanding the mental health status of urban residents in our country, establishing a psychoanalysis model and promoting residents' health. The community residents of 8 community health service centers in Xincheng District of Xi’an City were used as the research object from June 1, 2016 to December 31, 2016, using the SCL-90 psychological scale for their psychological status measuring. The result is that the scores of SCL-90 for community residents in Xi’an are between 1.24 and 1.67. There were significant differences between male and female in other factors except for hostility (t=1.111, P=0.267), phobic-anxiety (t=1.658, P=0.098) and psychotic (t=0.359, P=0.025), interpersonal relationship (t=5.132, P=0.000), depression (P<0.05), and women's scores were higher than men's score (t=2.730, P=0.006). The scores of female anxiety (t=2.722, P=0.007) and psychotic (t=3.302, P=0.001) in 2016 were higher than those in the year of 1986; the study showed that the highest score was between the ages of 18 and 44 (youth group). This study can reflect the mental health of urban residents in Xi’an. The study found that the general mental health of residents in China remains steady. The concrete manifestations of women’s psychological health problems are increasingly prominent, and there is an upward trend in obsessive-compulsive disorder, interpersonal relationship and psychosis. The Chinese residents have the most severe mental health problems between the ages of 18 and 44, especially in the age group of 30-39.

1. Introduction

In recent years, with the improvement of the living standards of Chinese residents and the attention to physical and mental health, the study of mental health issues has become a hot topic, and it presents the characteristics of diversification, multi-method and content enrichment. There are many scales to assess the mental health of the population. Self-reporting inventory, SCL-90 is a commonly used self-assessment symptom scale. It measures the self-conscious symptoms and severity of the outpatient or the patient, and it is widely used at home and abroad [1-3]. At present, the number of normative people using the SCL-90 scale by the Chinese people is relatively high compared with the 1388 norm in 1986 [4]. However, the development of mental health of Chinese residents has changed in the past 30 years, it is necessary to revise the norm. This study is based on the study of community residents in Xi’an, Shaanxi Province. Using SCL-90 to establish the current norm of mental health of community residents in Xi’an, to understand the mental health status of Xi’an residents and promote the physical and mental health of residents to provide scientific basis.
2. Methods

2.1 Objects

The data of this study comes from the social development project in Shaanxi Province. From June 1, 2016 to December 31, 2016, we conducted a survey in 8 community health service centers in Xincheng District, Xi'an City. SCL-90 mental scale was used to measure the mental health status of community residents. A total of 1,100 questionnaires were distributed and 1021 questionnaires were collected. The effective rate was 92.82%.

2.2 Research Methods

This study used the SCL-90 symptom self-assessment scale including nine factors. The assessor is required to make an independent assessment of each item of the scale according to its own actual situation, and without discussion or be affected by others. The staff shall check whether there are any missing items or areas that do not meet the requirements after completion.

2.3 Statistical Methods

The data of SCL-90 psychological scale was entered by using Epidata 3.0, and the database was established by SPSS17.0 statistical software. Psychological scores of different dimensions were expressed by mean or plus or minus standard deviation. Difference in psychological score of different sexes in 1986 and 2016 was t examined. Difference of psychological scores in two years of different age was based on variance analysis. There was statistically significant difference if P < 0.05.

3. Results

3.1 Comparison the Scores of SCL-90 Factors Among Community Residents in Xi’ an Between 2016 and 1986

In 2016, the average score of SCL-90 factors was between 1.24 and 1.67. No significant peak was found. Among them, factors such as obsessive-compulsive symptoms, interpersonal relationships, and hostility have a large tendency of discrete scores, and their scores exceed 2.0 in terms of mean plus/minus standard deviation. 2016 and 1986 each factor score comparison, the obsessive-compulsive symptoms (t=2.076, P=0.038), interpersonal relationship (t=6.173, P=0.000), depression (t=2.538, P=0.011), psychotic (t=3.361, P=0.000). There are differences in the factors, such as statistical significance. In which the obsessive-compulsive symptoms and psychosis factor scores were higher than that in 2016. The scores of interpersonal relationships and depression in 2016 were lower than that in 1986. See Table 1.

Table 1. Comparison the Scores of SCL-90 Factors Among Community Residents in Xi’an Between 2016 and 1986. (n=1021).

| Scores for 2016 | Somatization | Obsessive-Compulsive | Interpersonal-Sensitivity | Depression | Anxiety | Hostility | Phobic-Anxiety | Paranoia | Psychotic |
|----------------|--------------|----------------------|---------------------------|------------|---------|----------|----------------|----------|-----------|
| for n=1021     | 1.39±0.44    | 1.67±0.59            | 1.50±0.5                  | 1.44±0.5   | 1.41±0.48 | 1.49±0.5 | 1.24±0         | 1.40±0.5 | 1.35±0.45 |
| Scores for 1986| 1.37±0.48    | 1.62±0.58            | 1.65±0.6                  | 1.50±0.5   | 1.39±0.43 | 1.46±0.5 | 1.22±0         | 1.43±0.5 | 1.29±0.42 |
| for n=1388     | 1.047        | 2.076                | 6.173                     | 2.538      | 1.074   | 1.293    | 1.220          | 1.324    | 3.361     |
| t               | 0.295        | 0.038                | 0.000                     | 0.011      | 0.283   | 0.196    | 0.222          | 0.186    | 0.001     |

3.2 Comparison of the Sex Differences in SCL-90 Scores Among 1021 Community Residents in Xi’an in 2016

In the 2016 SCL-90 assessment, by comparing the scores of males and females of each factor, it
was found that except Paranoid Ideation and Psychotic factors, there were statistical differences between the male and female factors, and female scores were higher than those of males. (Table 2)

Table 2. Comparison of the Sex Differences in SCL-90 Scores Among 1021 Community Residents in Xi’an in 2016.

| Gender | Somatization | Obsessive-Compulsive | Interpersonal-Sensitivity | Depression | Anxiety | Hostility | Phobic-Anxiety | Paranoid Ideation | Psychotic | Sleeping and eating condition |
|--------|--------------|----------------------|--------------------------|------------|---------|-----------|---------------|------------------|-----------|-------------------------------|
| male n=495 | 1.35±0 .44 | 1.54±0.54 | 1.41±0 .43 | 1.42±0 .43 | 1.35±0 .41 | 1.44±0 .57 | 1.21±0.8 | 1.40±0 .41 | 1.34±0 | 1.47±0.41 |
| female n=526 | 1.41±0 .48 | 1.63±0.51 | 1.51±0 .56 | 1.48±0 .53 | 1.41±0 .53 | 1.48±0 .58 | 1.25±0.9 | 1.46±0 .48 | 1.33±0 | 1.53±0.43 |
| t | 2.078 | 2.739 | 3.159 | 1.979 | 2.015 | 1.111 | 1.658 | 2.141 | 0.359 | 2.279 |
| P | 0.038 | 00.006 | 0.001 | 0.048 | 0.044 | 0.267 | 0.098 | 0.033 | 0.719 | 0.023 |

A comparison of the sex ratios between the 2016 and 1986 SCL-90 test scores found that there were differences in the 4 factors in male comparisons, which are somatization (t=2.240, P=0.025), interpersonal-sensitivity (t=5.132, P=0.000), depression (t=2.730, P=0.006) and anxiety (t=2.029, P=0.043). The scores of the two factors of Interpersonal-Sensitivity and Phobic-Anxiety factors in 2016 were lower than the scores of 1986. The scores of two factors of Anxiety and Psychotic were higher in 2016 than that in 1986. (Table 3)

Table 3. Comparison the Gender Differences of the SCL-90 Scores of Community Residents in 2016 and the Normal Model Scores in 1986.

| Gender | Somatization | Obsessive-Compulsive | Interpersonal-Sensitivity | Depression | Anxiety | Hostility | Phobic-Anxiety | Paranoid Ideation | Psychotic |  |
|--------|--------------|----------------------|--------------------------|------------|---------|-----------|---------------|------------------|-----------|-------|
| male n=495 | 1.35±0 .41 | 1.64±0.5 | 1.48±0 | 4 | 1.42±0 | .51 | 1.37±0 | .44 | 1.44±0 | 1.21±0 | 1.42±0 | 1.34±0 |
| female n=724 | 1.41±0 .49 | 1.66±0.6 | 1.66±0 | 4 | 1.51±0 | .60 | 1.42±0 | .41 | 1.48±0 | 1.23±0 | 1.46±0 | 1.32±0 |
| t | 2.240 | 0.577 | 0.5132 | 2.730 | 2.029 | 1.111 | 01.216 | 0.917 | 1.195 | 0.779 |  |
| P | 0.025 | 0.564 | 0.000 | 0.006 | 0.043 | 0.224 | 0.0359 | 0.233 | 0.346 |  |

3.3 Comparison of Scores of SCL-90 Factors Among 1021 Community Residents in Xi’an in 2016

According to the 2016 WHO classification of age, there was a statistically significant difference between the different age groups. The general performance is between 18 and 44 years old (youth group) with the highest score, indicating that there are serious psychological problems in this age group. In addition, somatization factors scored the highest in the 45-59-year-old group (1.42±0.47),
and the Sleeping and Eating Condition factor in the 75-89-year-old group scored the highest (1.34±0.65). (Table 4)

### Table 4. Compare the Scores of SCL-90 Factors Among 1021 Community Residents in Xi'an in 2016.

| Gender | Somatization | Obsessive-Compulsive | Interpersonal-Sensitivity | Depression | Anxiety | Hostility | Phobic-Anxiety | Paranoic Ideation | Psychotic | Sleeping and eating condition |
|--------|--------------|----------------------|--------------------------|------------|---------|-----------|---------------|-------------------|-----------|-------------------------------|
| ≤18 (n=8) | 1.21±0.4 | 1.62±0.5 | 1.45±0 | 1.34±0 | 1.38±0 | 1.33±0 | 1.24±0 | 1.38±0 | 1.36±0 | 1.34±0.52 |
| 18-44 (n=284) | 1.37±0.7 | 1.67±0.5 | 1.54±0 | 1.47±0 | 1.43±0 | 1.52±0 | 1.25±0 | 1.44±0.5 | 1.37±0.5 | 1.52±0.58 |
| 45-59 (n=631) | 1.42±0.8 | 1.54±0.5 | 1.41±0 | 1.38±0 | 1.31±0 | 1.39±0 | 1.15±0 | 1.33±0.4 | 1.28±0.6 | 1.54±0.58 |
| 60-74 (n=63) | 1.33±0.7 | 1.42±0.4 | 1.28±0 | 1.28±0 | 1.26±0 | 1.27±0 | 1.15±0 | 1.24±0.3 | 1.18±0.5 | 1.48±0.54 |
| 75-89 (n=35) | 1.37±0.7 | 1.52±0.3 | 1.42±0 | 1.39±0 | 1.23±0 | 1.33±0 | 1.14±0 | 1.42±0.4 | 1.23±0.2 | 1.55±0.65 |
| F | 12.015 | 23.636 | 16.005 | 13.957 | 17.044 | 11.23 | 5 | 10.163 | 18.163 | 13.37 |
| P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.000 | 0.000 | 21.680 |

### 4. Discussion

The SCL-90 scale is a 90-item self-assessment scale developed by Derogatis et al. [5]. It generally allows participants to assess the status of a period of time (usually a week) to measure the mental health of the population. Numerous studies have shown that the scale has a good reliability and validity, and is widely used in mental health screening. In 1986, Jinhua and Wu Wenyuan published 1388 people's norms of the scale [4], in the following 30 years there has been a lot of related research. For example, Tod established the norm of mental health for students in 1997 [6]. N. Schmitz proposed a combined norm of 2425 people in German [7]. However, mental health is affected by many factors, social changes and other factors will inevitably affect the mental health of the population. Therefore, the timeliness of the norm is an important issue in psychological measurement.

This study used SCL-90 to study 1021 residents in Xi'an and found that the average score of each factor was between 1.24 and 1.67. No significant peak was found. It shows that the scores of various factors in the population of Xi’an are relatively close, and the mental health maintains a stable state. In 2016, the SCL-90 scores of men and women in the community found that there were statistical differences between men and women, and women were higher than men. This was consistent with the findings of James A. Blumenthal [8]. Due to the influence of women's own characteristics, social culture, family and social pressure, psychological problems are more likely to arise. Therefore, the mental health of women should be promoted from the aspects of family social support and improvement of the working environment [9,10]. Compared with the norm model in 1986, it was found that in 2016, the scores of somatization, interpersonal relationships, depression, and anxiety in men in Xi’an were lower, indicating that male mental health in these areas was improved. This may be because the development of productive forces in China, the improvement of social environment, and the improvement of people’s basic lives have greatly reduced the pressure on men’s lives in the family and effectively promoted their mental health [11]. While the score of women in anxiety and psychosis factor was higher than 2016 in 1986, which was consistent with the findings of L Cai and D Lim [12,13]. This may be related to the more frequent social activities of women in China in recent years, the improvement of social status, and the assumption of more social division of labor and social responsibility [14]. Among the different age groups, The 18-44 year old group (youth group) has the highest score. This indicates that young people are the backbone of social construction playing an important role in society and family, meanwhile, they
are under greater pressure. Then, it is easy to neglect their health and seriously affect the physical and mental health [15].

5. Conclusion
In conclusion, the mental health status of 1021 residents in Xi’an can be measured accurately, which can accurately reflect the mental health status of residents in Xi’an. Through this study, it is found that the general mental health of residents in Xi’an maintains a stable state. The concrete manifestation is that women’s mental health problems are prominent, and there is an upward trend in anxiety and psychosis. It is particularly manifest as that problem of female psychological health, and has a tendency to rise in the fields of anxiety and mental illness. The mental health problems of community residents aged 18 to 44 are the most serious, especially in the group of 30-39 year old, with psychological health problems such as compulsion, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation, and psychotic disorders.

Conflicts of Interest
The authors declare no competing financial interests.

Acknowledgments
This work was funded by the Social Development Scientific and Technological Project, Shaanxi Science and Technology Department, Shaanxi Province (2016SF-245) and Special Research Project, Department of Education, Shaanxi Province (15JK1628).

References
[1] Xu J., Zhang J., Feng L., et al. Self-rated health of population in southern China: association with socio-demographic characteristics measured with multiple-item self-rated health measurement scale [J]. *Bmc Public Health*, 2010, 10 (1): 393.
[2] Tan H., Lan X., Yu N. Reliability and validity assessment of the revised Symptom Checklist 90 for alopecia areata patients in China [J]. *Journal of Dermatology*, 2015, 42 (10): 975-980.
[3] Schenk A. M., Fremouw W. J. Prevalence, Psychological Impact, and Coping of Cyberbully Victims Among College Students [J]. *Journal of School Violence*, 2012, 11 (1): 21-37.
[4] Hua J., Wu W., Zhang M. Preliminary Analysis of the SCL-90 Evaluation Results of Normal People in China [J]. *Chinese Journal of Nervous and Mental Diseases*, 1986,8 (5): 89-92.
[5] Derogatis L. R., Unger R. Symptom Checklist 90-Revised [M]. American Cancer Society, 2010.
[6] Todd D. M., Deane F. P., McKenna P. A. Appropriateness of SCL-90-R adolescent and adult norms for outpatient and nonpatient college students [J]. *Journal of Counseling Psychology*, 1997, 44 (3): 294-301.
[7] Schmitz N., Hartkamp N., Kiuse J., et al. The Symptom Check-List-90-R (SCL-90-R): a German validation study [J]. *Quality of Life Research*, 2000, 9 (2): 185-193.
[8] Blumenthal J. A., Emery C. F., Madden D. J., et al. Long-term effects of exercise on psychological functioning in older men and women [J]. *Journal of Gerontology*, 1991, 46 (6): 352.
[9] Marmot M., Friel S., Bell R., et al. Closing the gap in a generation: health equity through action on the social determinants of health [J]. *The Lancet*, 2008, 35 (2): 1661-1669.
[10]Billings A. G., Moos R. H. The role of coping responses and social resources in attenuating the stress of life events [J]. *Journal of Behavioral Medicine*, 1981, 4 (2): 139-157.
[11] McGinnis J. M., Williams-Russo P., Knickman J. R. The case for more active policy attention to health promotion [J]. Health Aff, 2002, 21 (2): 78-93.

[12] Cai L., Kalb G. Health status and labour force participation: evidence from Australia [J]. Health Economics, 2006, 15 (3): 241-261.

[13] Lim D., Sanderson K., Andrews G. Lost productivity among full-time workers with mental disorders [J]. Journal of Mental Health Policy and Economics, 2000, 3 (3): 139-146.

[14] Coltrane S. Research on household labor: Modeling and measuring the social embeddedness of routine family work [J]. Journal of Marriage & Family, 2000, 62 (4): 1208-1233.

[15] Thoits P. A. Mechanisms linking social ties and support to physical and mental health [J]. Journal of Health & Social Behavior, 2011, 52 (2): 145-161.