Cross-Sectional Study of Mental Health Related Knowledge and Attitudes Among Care Assistant Workers in Guangzhou, China

Jie Li (biglijie@163.com)
Guangzhou Brain Hospital  https://orcid.org/0000-0001-7156-0687

Xiao-Ling Duan
Affiliated Brain Hospital of Guangzhou Medical University: Guangzhou Huiai Hospital

Hua-Qing Zhong
Affiliated Brain Hospital of Guangzhou Medical University: Guangzhou Huiai Hospital

Wen Chen
Sun Yat-Sen University School of Public Health

Sara Evans-Lacko
The London School of Economics and Political Science

Graham Thomatico
King's College London

Research

Keywords: Stigma and discrimination, Severe mental disorders, Low- and middle-income countries, Human rights

DOI: https://doi.org/10.21203/rs.3.rs-107392/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License
Abstract

**Background:** Care assistant workers (CAWs) are a part of a new pattern of mental health care providers in China and play a significant role in bridging the human resource shortage. CAWs in China mainly include community cadres, community mental health staff and community policemen. The mental health related knowledge and attitudes of CAWs could influence their mental health care delivery. This study aimed to assess the mental health related knowledge and attitudes of CAWs in Guangzhou, China.

**Methods:** In November 2017, a study was conducted among 381 CAWs from four districts of Guangzhou, China. Participants were assessed using the Perceived Devaluation and Discrimination Scale (PDD), the Mental Health Knowledge Schedule (MAKS), and the Mental illness: Clinicians’ Attitudes (MICA). Data were analyzed by descriptive statistics, ANOVA, Bonferroni corrections and multivariable linear regression.

**Results:** The mean scores (standard deviation) of PDD, MAKS and MICA were 36.45 (6.54), 22.72 (2.56), 51.67 (7.88), respectively. Univariate analyses showed that the older CAWs, community policemen and those who were less willing to deliver care had significant higher MICA scores when compared with other staff \((P < 0.001)\). However, participants who disagreed additional item 1 (views towards inpatients) and additional item 2 (affiliate stigma) had a significant lower MICA scores when compared with those who agreed \((P < 0.001)\). Multivariable linear regression showed that after controlling some variables, care willingness and PDD total score were significantly positively associated with the MICA total score (all \(P < 0.05\)), while attitudes on additional items were significantly negatively associated with the MICA total score (all \(P < 0.01\)).

**Conclusion:** These findings suggest negative attitudes towards people with mental disorders among CAWs are common, especially among older staff. Community policemen suggest that they applied stereotypes of ‘violent mentally ill’ people to all people they deal with who have mental disorders. The results also indicate human rights are being paid attention to now, but need to be improved in the future. Strategies to improve attitudes and to reduce stigma and discrimination should be conducted with particular staff groups.

**Background**

Severe mental disorders (SMD), such as schizophrenia and bipolar disorder, are a leading cause of disability and premature mortality in the world [1]. It is shown that mental disorders could lead to 32.4% of years lived with disability and 13.0% of disability-adjusted life-years [2, 3]. Moreover, there is also increasing evidence suggesting that mental disorders account for more than approximately 13% of the global burden of disease [1, 4, 5]. It is predicted that mental disorders will take up one third of the economic burden of all non-communicable diseases by 2030 [6]. Give that SMD have an influence on well-being of individuals, happiness of families and harmony of society, including the related stigma, which sets barriers to patients’ psycho-social recovery and returning to school, work settings and community. Effective measures should be taken to deliver better services to those living with SMD [7, 8].
With the development of economy and society in middle- and high-income countries, it is important to strike a balanced model between hospitals and communities for improving mental health services in the middle- and high-income countries [9].

When compared to high-income countries, however, there are more challenges to improve mental health services in low- and middle-income countries (LMICs), given that such as a huge treatment gap (TG) exists, and the shortage of human resources which are available [10]. The treatment gap refers that more than 95% of people with common mental disorders in LMICs receive no effective treatment [11]. WHO also have reported that 97% of high-income countries deliver community-based care, but the proportion in low-income countries is only about 52% [12]. Due to the fact that mental health care mainly relies on professionals, rather than advanced technology or medical equipment, WHO has proposed strategies called task shifting (TS) for increasing human resources in mental health care, which means to shift part of services or roles from mental health staff to non-specialist health workers in the community [13].

China, one of the middle-income countries in the world, has large numbers of people diagnosed with mental disorders. In 2012, it is reported that 173 million Chinese people are estimated to have been diagnosed as psychiatric disorders, of whom 158 million receive no treatment [14]. However, policies on mental health in China have been developed accord to different characteristics in the different historical periods. There are three major changes in the period of delivering mental health care in China: The policy of ‘public prevention and public treatment’ adopted in the 1950s for people with SMD, the prevention and treatment management mode dominated by specialized psychiatric hospitals from the 1960s to the 1990s, and a rehabilitation management mode featuring community combined hospitals since the 1990s. To be specific, the Chinese government has taken effective measures to face challenges and to satisfy part of mental health needs in recent years, including efforts in 2005 to cover psychotropic drugs in basic health insurance, an initiative in 2010 to build more psychiatric hospitals and psycho-psychiatric units in general hospitals, and the ‘686 Programme’ in 2004 which aims to integrate resources of hospital and community services together and train mental health staff in case management and use individual service plans [14, 15].

China is experiencing a shift from a model of care focusing on single psychiatric institution to a new combination of multiple specialized hospitals, general hospitals and community services which results in the emergence of a new pattern of mental health care providers in communities, named care assistant workers (CAWs). CAWs arise from the specific socio-political ecological culture in China, especially for community policemen. CAWs mainly consist of community cadres, community mental health staff and community policemen. Among them, community mental health staff is primarily responsible for the diagnosis and treatment of patients with mental disorders in community settings. Community cadres are mainly in charge of providing comprehensive services for people living in the community and help with follow-up care, supervise medication compliance, and the crisis management of patients and caregivers. Local policemen in the community usually have close contact with SMD patients with unstable psychiatric symptoms or even violent behaviour, and they can assist patients with mental disorders to go to hospital if needed. For community policemen, there is trend that they are in transition from seeing
psychiatric patients as ‘bad’ to ‘mad’ in their work. Community policemen used to be in charge of most criminals and a small part of criminals suffering from mental disorders. Gradually, the scope of their work has expanded, from managing people who have severe violent behaviour to those who have manifest less disturbed behaviour. In this context, community cadres and community policemen are also regarded as lay mental health workers (LHWs) [16]. It refers to those workers who lack a formal medical professional certificate or degree, but who are part of the workforce in the field of mental health.

The knowledge and attitudes of CAWs towards people with SMD can influence their behavior and quality of services provided for patients. Negative attitudes and discriminatory behaviors could cause adverse consequences, such as unwillingness to deliver care, or spending less time with such patients, or disregarding ignoring human rights [17]. However, it is still unclear what the current levels of knowledge and attitudes are among CAWs, especially for community policemen who are groups arising from Chinese socio-ecological system and their data are usually difficult to acquire. Therefore, assessing these baseline levels of CAWs is crucial to improve mental health care, especially in Guangzhou which is one of the largest metropolitan cities in China. Guangzhou has its own mental health service model named ‘PTSA’ (Policy, Training, Service, and Assessment) and implementing assessment need to figure out baseline levels [18].

This is the first study aiming at assessing the current level of knowledge and attitudes among CAWs in Guangzhou, China. We hypothesized that different types of CAWs with different age groups, care willingness and attitudes towards additional items would have different level of knowledge and attitudes related to mental health.

**Methods**

**Risk assessment of patients with SMD in China**

In 2004, the ‘686 Programme’ was initiated in China to strengthen the management and treatment of people with SMD, which aimed to construct a national community-based system. In this programme, the risk assessment questionnaire was used to assess risk assessment level of people with SMD [19].

There were six levels in risk assessment questionnaire, all ranging from 0 to 5. Levels were classified as follows: Patients in level 1 were those who showed no risks; Patients in level 2 were those who showed verbal threats and shouting, but no beating behavior; Patients in level 3 were those who had obvious behavior of beating and smashing, regardless of occasion, aiming at property and could not be persuaded to stop; Patients in level 4 were those who had continuous behavior of beating and smashing, regardless of occasion, aiming at property or people, and could not be persuaded to stop (including self-injury and suicide); Patients in level 5 were those who had any behavior such as with serious violence against others.

Among 50,000 patients with SMD registered in the registry system of Guangzhou SMD management database, nearly 1,000 (2%) of patients were assessed from level 3 to level 5 who were those with
potential violence to themselves, their families and the whole society to some extent. Therefore, CAWs who delivered services towards patients with a level higher than 3 had priority as participants in our study.

**Study design and participants**

This cross-sectional study which lasted for nearly a month was led by Guangzhou Huiai Hospital (current name is The Affiliated Brain Hospital of Guangzhou Medical University) and conducted in the community in November, 2017. Ethics application was approved by the Research Ethics Committee of Guangzhou Huiai Hospital (Number 0252017). Based on our previous study [20], 4 of 11 districts were randomly chosen based on their geographical locations in Guangzhou City. Finally, Li Wan and Tian He were included as urban districts; Hua Du and Nan Sha were chosen as suburban districts.

Participants in our study were all CAWs who worked in the four selected districts and delivered mental health services to patients with SMD assessed as over level 3 by the risk assessment questionnaire. We also required that CAWs who participated in this study should be those whose service users should satisfy a series of criteria, namely taking antipsychotic medication, being in a stable condition, and living in the community for at least half a year. Participants were asked to complete three standardized scales to assess their baseline level of knowledge and attitudes. Thus, this research mainly aims at learning about the current level of knowledge and attitudes among CAWs. We have also developed an anti-stigma training programme for CAWs in Guangzhou China, which is described elsewhere [17].

After the procedure had been thoroughly explained, participants were those who gave their written, informed consent. A total of 381 participants were included in data analysis.

**Instruments**

**Perceived Devaluation and Discrimination Scale (PDD)**

Perceived Devaluation and Discrimination Scale (PDD) was developed by Link, using to assess believes of participants regarding to which extent other people will devalue or discriminate against somebody with mental disorders. The scale consisted of 12 items rated by 5 points from strongly agree to strongly disagree [21]. Total score of PDD ranged from 12 to 60 and item 5, 6, 7, 9, 11 and 12 were reversely scored. The higher score suggested the stronger perception of devaluation and discrimination. In this study, we used the Chinese version of PDD which has been tested with good validity and reliability (Cronbach $\alpha = 0.70$) [22, 23].

**Mental Health Knowledge Schedule (MAKS)**

Mental Health Knowledge Schedule (MAKS) was revised by Evans-Lacko, Thornicroft and colleagues from King's College London, United Kingdom. It was used to measure participant's knowledge and understanding regarding stigma and other psychosis, including depression, schizophrenia, bipolar
disorder, etc. This scale consisted of 12 items, which were rated on the 5-point Likert scale ranging from strongly agree to strongly disagree [24]. The higher score suggested more stigma-related mental health knowledge. MAKS was made up of two parts: Part A (item 1–6) aimed at measuring knowledge and understanding of stigma and discrimination; Part B (items 7–12) aimed at measuring the ability to identify depression, stress, schizophrenia, bipolar disorder, drug addiction and grief. Please note that rather than using independently, MAKS is a short and brief scale that should be used together with other scales related to knowledge, attitudes and behavior. In this study, MAKS was used in conjunction with PDD and MICA. The reliability of MAKS was retested with good validity reliability (Cronbach $\alpha = 0.70$) [24]. The Chinese version of MAKS was introduced and verified by Li and colleagues from Guangzhou Huai Hospital [25].

Mental illness: Clinicians’ Attitudes (MICA)

Mental illness: Clinicians’ Attitudes (MICA) was used to measure the level of stigmatizing attitudes of participants towards psychiatry and mental disorders [26]. This scale consisted of 16 items, which were rated by 6 points from strongly agree to strongly disagree. The higher score suggested stronger stigma and more negative attitudes. We also used the Chinese version of MICA introduced by Li and tested with good validity and reliability (Cronbach $\alpha = 0.72$) [27, 28].

In order to further research attitudes, participants were also asked to show their opinions towards two additional items: ‘People with severe mental disorders, such as schizophrenia, should receive long stay care in hospital’ and ‘It would be disgraceful for me if someone in my family had a serious mental disorder’. Items were rated on the 5-point Likert scale ranging from 1 = totally agree to 5 = totally disagree.

Statistical analysis

Statistical analyses were conducted using IBM SPSS Statistics (Version 23.0; IBM Corporation, USA). First, descriptive statistics, including mean and standard deviation (SD) for normally distributed variables and frequency and proportion for categorical variables, were calculated to describe differences on demographic information of CAWs. Second, ANOVA was conducted to compare differences of total scores of PDD, MICA and MAKS at different ages, care groups, care willingness and additional items. Furthermore, Bonferroni corrections were conducted to analyze differences between any two groups if statistically significant differences were found by ANOVA. Last, multilinear regression models were used to calculate associations between MICA and age, care willingness, additional items and PDD total score among participants. To be specific, adjusted regression coefficients ($Ab$) of MICA with corresponding 95% confidence intervals ($Cl$) were calculated, while statistically significant demographics (age, educational level and types of CAWs) were adjusted. Significance was set at $P < 0.05$.

Results

Baseline characteristics
In total 384 CAWs in all were invited to participate in this study. As shown in Table 1, there were 381 care assistant workers completed our assessment. The response rate was 99.2% (381 of 384). Most of CAWs were community cadres (52.2%), the rest of whom were community health workers (18.1%), community policemen (16.5%), volunteers (2.1%) and others (11.1%) who included patients’ remote relatives, friends and neighbors, etc. It is found that 69.8% of CAWs showed their willingness to deliver services towards patients with SMD, while neutral was 24.1% and unwillingness was only 6%. Besides, all of CAWs were responsible for various kinds of mental disorders, for example, schizophrenia, schizoaffective disorder, bipolar disorder, paranoid mental disorders, mental disorders due to epilepsy, mental retardation with mental symptoms and other mental disorders.
### Table 1
Socio-demographic characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Participants (n = 381)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years: mean (SD)</td>
<td>39.04 (9.07)</td>
</tr>
<tr>
<td>Education, years: mode (%)</td>
<td>15 (81.9)</td>
</tr>
<tr>
<td>Race, n(%)</td>
<td></td>
</tr>
<tr>
<td>Han</td>
<td>376 (98.7)</td>
</tr>
<tr>
<td>Others</td>
<td>5 (1.3)</td>
</tr>
<tr>
<td>Sex, n(%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>227 (59.6)</td>
</tr>
<tr>
<td>Female</td>
<td>154 (40.4)</td>
</tr>
<tr>
<td>Religious, n(%)</td>
<td></td>
</tr>
<tr>
<td>Atheists</td>
<td>363 (95.3)</td>
</tr>
<tr>
<td>Others</td>
<td>18 (4.7)</td>
</tr>
<tr>
<td>Care assistant workers, n(%)</td>
<td></td>
</tr>
<tr>
<td>Community health workers</td>
<td>69 (18.1)</td>
</tr>
<tr>
<td>Community policemen</td>
<td>63 (16.5)</td>
</tr>
<tr>
<td>Community Cadres</td>
<td>199 (52.2)</td>
</tr>
<tr>
<td>Volunteers</td>
<td>8 (2.1)</td>
</tr>
<tr>
<td>Others</td>
<td>42 (11.1)</td>
</tr>
<tr>
<td>Care willingness, n(%)</td>
<td></td>
</tr>
<tr>
<td>Willingness</td>
<td>266 (69.8)</td>
</tr>
<tr>
<td>Neutral</td>
<td>92 (24.1)</td>
</tr>
<tr>
<td>Unwillingness</td>
<td>23 (6.0)</td>
</tr>
</tbody>
</table>

Data were indicated by mean, standard deviation (SD), frequency and proportion

**PDD, MAKS and MICA total scores**

The mean total score was 36.45 (SD = 6.54) for the PDD, 22.72 (SD = 2.56) for the MAKS and 51.67 (SD = 7.88) for the MICA. Higher score indicated higher level of knowledge (MAKS) regarding mental health or higher stigma (PDD and MICA) towards mental disorders.
Responses frequencies for additional items in the MICA scale

As shown in Table 2, there were two additional items in the MICA for further assessing participants' attitudes. One is ‘People with severe mental disorders, such as schizophrenia, should receive long stay care in hospital’. The other is ‘It would be disgraceful for me if someone in my family had a serious mental disorder’. Attitudes composed of three dimensions, agree (strongly agree and partly agree), neutral and disagree (strongly disagree and partly disagree). In our results, 52.8% of CAWs hold attitude of agree for item 1, while 66.9% of CAWs hold attitude of disagree for item 2.

<table>
<thead>
<tr>
<th>Attitude</th>
<th>n = 381</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item-1-Views towards inpatients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with severe mental disorders, such as schizophrenia, should receive long stay care in hospital.</td>
<td>Agree</td>
<td>201</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>82</td>
</tr>
<tr>
<td><strong>Item-2- Affiliate stigma</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It would be disgraceful for me if someone in my family had a serious mental disorder.</td>
<td>Agree</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>255</td>
</tr>
</tbody>
</table>

PDD, MAKS and MICA total scores and socio-demographic variables

1) Comparisons by age

As shown in Table 3, there was no difference among the four-age groups in the scale of PDD or MAKS. However, there was a significant difference in the MICA score ($P<0.001$). It demonstrated that CAWs with 40–49 years old ($53.58 \pm 8.06$) and 50–60 years old ($55.13 \pm 7.30$) had significant higher MICA scores compared with CAWs with 20–29 years old ($48.82 \pm 7.01$) and 30–39 years old ($49.71 \pm 7.33$). It suggested that the older groups showed more stigma.
Table 3
Differences of PDD, MAKS and MICA total scores among different age groups (Mean ± SD)

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Age groups</th>
<th>20–29</th>
<th>30–39</th>
<th>40–49</th>
<th>50–60</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDD</td>
<td></td>
<td>35.86 ± 5.68</td>
<td>36.16 ± 6.37</td>
<td>36.98 ± 7.24</td>
<td>36.60 ± 6.17</td>
<td>0.58</td>
<td>0.63</td>
</tr>
<tr>
<td>MAKS</td>
<td></td>
<td>22.54 ± 2.41</td>
<td>22.69 ± 2.66</td>
<td>22.91 ± 2.46</td>
<td>22.56 ± 3.39</td>
<td>1.87</td>
<td>0.60</td>
</tr>
<tr>
<td>MICA</td>
<td></td>
<td>48.82 ± 7.01</td>
<td>49.71 ± 7.33</td>
<td>53.58 ± 8.06*</td>
<td>55.13 ± 7.30*</td>
<td>12.70</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

*Compared with 20–29 age group and 30–39 age group, P < 0.05 (Bonferroni corrections)

2) Comparisons by types of CAWs

As shown in Table 4, differences of the PDD, MAKS and MICA total scores on the four groups were all significant (P < 0.05). Community policemen had the highest scores of PDD (38.33 ± 6.36) and MICA (55.63 ± 7.49), and community mental health staff had the lowest score in the MICA (48.16 ± 7.76). Community mental health staff and community policemen had higher MAKS scores (23.37 ± 2.65 for community policemen and 23.59 ± 2.69 for community mental health staff) than those of community cadres (22.41 ± 2.63) and others (21.96 ± 2.24).

Table 4
Differences of PDD, MAKS and MICA total scores among care groups (Mean ± SD)

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Community mental health staff</th>
<th>Community policemen</th>
<th>Community cadres</th>
<th>Others</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDD</td>
<td>36.77 ± 7.76</td>
<td>38.33 ± 6.36</td>
<td>35.51 ± 5.89#</td>
<td>37.42 ± 6.88</td>
<td>3.61</td>
<td>0.013</td>
</tr>
<tr>
<td>MAKS</td>
<td>23.59 ± 2.69</td>
<td>23.37 ± 2.65</td>
<td>22.41 ± 2.63*</td>
<td>21.96 ± 2.24**#</td>
<td>6.28</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>MICA</td>
<td>48.16 ± 7.76</td>
<td>55.63 ± 7.49*</td>
<td>51.13 ± 7.49*#</td>
<td>53.66 ± 7.57*</td>
<td>12.26</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

*Compared with community mental health staff, P < 0.05; # Compared with community policemen, P < 0.05 (Bonferroni corrections)

3) Comparisons by care willingness

As shown in Table 5, there were significant differences in PDD (P < 0.05) and MICA scores among CAWs with different care willingness (P < 0.001). CAWs with attitude of unwillingness (55.26 ± 9.69) or neutral (54.47 ± 6.85) had significant higher MICA scores than those who were willing to deliver the care (50.39 ± 7.72).
### Table 5
Differences of PDD, MAKS and MICA total scores among care willingness (Mean ± SD)

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Willingness</th>
<th>Neutral</th>
<th>Unwillingness</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDD</td>
<td>35.84 ± 6.57</td>
<td>37.67 ± 6.02</td>
<td>38.65 ± 7.34</td>
<td>4.13</td>
<td>0.017</td>
</tr>
<tr>
<td>MAKS</td>
<td>22.80 ± 2.64</td>
<td>22.48 ± 2.69</td>
<td>22.83 ± 2.69</td>
<td>0.51</td>
<td>0.60</td>
</tr>
<tr>
<td>MICA</td>
<td>50.39 ± 7.72</td>
<td>54.47 ± 6.85*</td>
<td>55.26 ± 9.69*</td>
<td>12.41</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

*Compared with willingness, P< 0.05 (Bonferroni corrections)

### PDD, MAKS and MICA total scores and additional items

As shown in Table 6, PDD total scores were significantly different for additional item 2 (affiliate stigma) (P< 0.001) rather than item 1 (views towards inpatients) (P>0.05). Scores of CAWs with attitudes of agree (40.13 ± 6.51) and neutral (37.98 ± 5.50) towards additional item 2 were higher than that of disagree (35.36 ± 6.58). But MAKS total scores were significantly different for additional item 1 (P< 0.05), not for item 2 (P>0.05). Scores of CAWs with attitudes of neutral (22.42 ± 2.60) towards additional item 1 were lower than that of disagree (23.41 ± 2.56). However, MICA total scores were significantly different for both item 1 (P<0.001) and item 2 (P<0.001). For additional item 1, scores of CAWs with attitudes of agree (53.40 ± 7.43) and neutral (51.46 ± 7.15) towards were higher than that of disagree (47.66 ± 8.38). For additional item 2, scores of CAWs with attitudes of agree (59.78 ± 4.62) and neutral (55.06 ± 6.09) towards additional item 2 were higher than that of disagree (49.25 ± 7.56).

### Table 6
Differences of PDD, MAKS and MICA total scores on additional items (Mean ± SD)

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Item 1: People with severe mental disorders, such as schizophrenia, should receive long stay care in hospital.</th>
<th>Item 2: It would be disgraceful for me if someone in my family had a serious mental disorder.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agree</td>
<td>Neutral</td>
</tr>
<tr>
<td>PDD</td>
<td>36.76 ± 6.67</td>
<td>36.17 ± 6.41</td>
</tr>
<tr>
<td>MAKS</td>
<td>22.59 ± 2.68</td>
<td>22.42 ± 2.60*</td>
</tr>
<tr>
<td>MICA</td>
<td>53.40 ± 7.43*</td>
<td>51.46 ± 7.15*</td>
</tr>
</tbody>
</table>

*Compared with disagree, P< 0.05 (Bonferroni corrections)
Association between MICA and other measurements among participants

As shown in Table 7, after controlling for sex, education level and CAWs, CWSs’ age ($b_{ad} = 0.095$, $P = 0.012$), care willingness ($b_{ad} =1.784$, $P < 0.001$), and PDD total score ($b_{ad} = 0.279$, $P < 0.001$) were significantly positively associated with the MICA total score, while attitude on additional item 1 ($b_{ad} = -0.8$, $P = 0.005$) and attitude on additional item 2 ($b_{ad} = -2.493$, $P < 0.001$) were significantly negatively associated with the MICA total score. $R^2$ of the multiple linear regression model was 0.454.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>$b$(95%CI)</th>
<th>P</th>
<th>$b_{ad}$(95%CI)#</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.240 (0.155 to 0.324)</td>
<td>&lt;0.001</td>
<td>0.095 (0.021 to 0.169)</td>
<td>0.012</td>
</tr>
<tr>
<td>Care willingness</td>
<td>2.609 (1.751 to 3.466)</td>
<td>&lt;0.001</td>
<td>1.784 (1.076 to 2.491)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Additional item 1</td>
<td>-2.089 (-2.720 to -1.459)</td>
<td>&lt;0.001</td>
<td>-0.8 (-1.353 to -0.247)</td>
<td>0.005</td>
</tr>
<tr>
<td>Additional item 2</td>
<td>-3.514 (-4.113 to -2.916)</td>
<td>&lt;0.001</td>
<td>-2.493 (-3.061 to -1.926)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PDD total score</td>
<td>0.451 (0.338 to 0.564)</td>
<td>&lt;0.001</td>
<td>0.279 (0.183 to 0.376)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>MAKS total score</td>
<td>-0.340 (-0.638 to -0.042)</td>
<td>0.025</td>
<td>-</td>
<td>0.101</td>
</tr>
</tbody>
</table>

$b_{ad}$: Partial regression coefficient after controlling for the participants’ sex, education level and care assistant workers; CI: Confidence interval

Discussion

In recent years, the provision of care for people with mental disorders in China has developed from experience-based policies to evidence-based practices. The balanced care model increases service accessibility and task shifting building the human resource shortage in LMICs [29, 13]. CAWs arise from special context of socio-political ecological culture in China, mainly including community cadres, community mental health staff and community policemen. They are essential to bridge the human resources gap and to deliver better mental health care in China. However, the quality of care delivered by CAWs could be influenced by their knowledge and attitudes related to mental health. As far as we know, this is the first study to investigate the mental health related knowledge and attitudes of CAWs in the Chinese community, especially for community policemen whose attitudes were difficult to know before.

Policies on mental disorders in China have developed based on different characteristics of periods in history, from the ‘public prevention and public treatment’ in twentieth century to a social governance model—collaboration, participation and common interests in twenty first century. Human rights of people with SMD have been paid attention to and improved, which is consistent with the goals of the
Comprehensive Mental Health Action Plan 2013–2020 [30]. CAWs play important roles in delivering better mental health services to patients with SMD in the community, which could also be regarded as a manifestation of respect of human rights.

It is worth noting that CAWs in our study mainly provide mental health care to people with SMD, such as schizophrenia, schizoaffective disorder, paranoid mental disorders, bipolar disorder, epilepsy and mental retardation associated with mental disorders, which is consistent with the ‘686 Program’ [19]. In this study, we found that negative attitudes towards patients with SMD were more common among older age groups, especially for those between 40–49 years old and 50–60 years old. It is consistent with previous studies which have found that middle and high ages have been one of the factors influencing less favourable public attitudes towards patients with mental disorders in high-income western countries [31–35] and in China [23]. It is notable that the middle-aged and elderly have witnessed different policies in Chinese history and have stereotypes which may have been formed during the long history of the mode of prevention and treatment management dominated by the large, specialized psychiatric hospitals.

These results also indicated that community policemen had relatively high level of knowledge but stronger negative attitudes towards patients with mental disorders. However, community cadres had less stigma and discrimination compared with community policemen. We think the reason is related to ‘Task shifting’, meaning that more and more patients with SMD will be treated, rehabilitated and managed within the community to form a balanced service model between hospital and community service in mental health care [13]. Previous studies have found that it is common to find more stigma and discrimination among community policemen [36], which is consistent with our results. But for community policemen, task shifting means that the functions of the police have been expanded from solving problems of violence to focusing less upon violence, but their original attitudes towards patients had not changed accordingly. They could have more chances to contact patients with mental disorders [37–40]. In fact, community policemen are playing important roles in providing care to people with mental disorders, including for patients at the onset of illness and assessing potential violence and assisting with involuntary hospitalization for patients with long-term illness. Therefore, it is noteworthy to find that community policemen had a relatively high level of knowledge and understanding regarding stigma and other psychosis but more negative attitude due to their job contents and unchanged perspectives. For community cadres, the findings were different. Community cadres participate more in the rehabilitation of patients living in the community and have a frequent contact and further understanding towards them. Previous studies also showed that people who were familiar with and in close contact with patients with mental disorders tended to have a more positive attitude toward them [41, 29].

CAWs usually share similar community culture with patients with SMD, so their positive attitudes could help patients increase their accessibility to mental health care. Therefore, it is significant and necessary to figure out and improve CAWs’ knowledge and attitudes towards mental disorders. Considering the socio-political ecological culture in China, specific strategies aimed at reducing negative attitudes and stigma and discrimination should be carried out in relation to particular staff groups.
Strengths and limitations

There are several limitations in this study which should be considered. First, this study aims to report the baseline level of knowledge and attitudes among CAWs, so it is difficult to figure out the causal relationship between attitudes towards people with SMD and related factors. Second, connecting quantitative research with qualitative research, such as formative work which is absent in this study, will be a more effective approach to investigate factors related to stigma and discrimination.

Conclusion

Findings in our study suggest that negative attitudes towards people mental disorders among CAWs are common, especially among older staff and community policemen. However, the inadequate knowledge and negative attitudes of CAWs could be reduced by delivering better mental health services and by addressing the treatment gap. Therefore, investigating the baseline level of mental health related to knowledge and attitudes among CAWs is beneficial in order to carry out strategies in future to improve negative attitudes and reduce the perceived stigma and discrimination.

Abbreviations

CAWs
CAWs; LMICs: low- and middle-income countries; SMD: severe mental disorders; PTSA: Policy, Training, Service, and Assessment; PDD: Perceived Devaluation and Discrimination Scale; MICA: Mental illness: Clinicians’ Attitudes; MAKS: Mental Health Knowledge Schedule; CI: confidence intervals; SD: standard deviation.

Declarations

Authors’ contributions

JL designed and led the study. JL drafted the original manuscript. XLD and HQZ helped to coordinate the whole investigation and WC conducted the main data analysis. GT and SEL contributed to the scale support and critically appraised the manuscript. All authors read and approved the final manuscript.

Author details

1The Affiliated Brain Hospital of Guangzhou Medical University (Guangzhou Huaiai Hospital), NO. 36 Mingxin Road, Liwan District, Guangzhou 510370, China. 2Department of Medical Statistics, School of Public Health, Sun Yat-sen Center for Migrant Health Policy, Sun Yat-sen University, Guangzhou, China. 3Personal Social Services Research Unit, London School of Economics and Political Science, London, UK. 4Centre for Global Mental Health, and Centre for Implementation Science, Institute of Psychiatry, Psychology and Neuroscience, King’s College London, London SE5 8AF, UK.
Acknowledgements

We would like to appreciate participants of CAWs in this study, without whom the study would be difficult to conduct. We also appreciate the contributions of our colleagues such as Yu Fan, Qiao-Mei Zeng and Sheng-Li Huang (The Affiliated Brain Hospital of Guangzhou Medical University) who assisted with data collection. Thanks Xing-Rong Hou, a research assistant in the Affiliated Brain Hospital of Guangzhou Medical University, who assisted with editing and making comments on this manuscript. GT is supported by the National Institute for Health Research (NIHR) Applied Research Collaboration South London at King’s College London NHS Foundation Trust, and by the NIHR Asset Global Health Unit award. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care. GT also receives support from the National Institute of Mental Health of the National Institutes of Health under award number R01MH100470 (Cobalt study). GT is supported by the UK Medical Research Council in relation the Emilia (MR/S001255/1) and Indigo Partnership (MR/R023697/1) awards.

Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

The data supporting the conclusions of this study are not publicly available. If any researcher show interest in data or materials access, they should contact the corresponding author on the reasonable request.

Consent for publication

Not applicable.

Ethics approval and consent to participate

Ethical approval was obtained from the Research Ethics Committee of The Affiliated Brain Hospital of Guangzhou Medical University (Guangzhou Huiai Hospital) (Number 025, 2017). Participants were all agreed to participate in this study and gave their written consents.

Funding

This study was supported by four sources of funds. The first was the programme of randomly control study in intervention of patients with schizophrenia in community (201607010383), which was supported by Guangzhou Science Technology and Innovation Commission. The second was the mental health model research in community of Guangzhou (2016A031002), which was supported by Health and Family Planning Commission of Guangzhou Municipality. The third was the National Institute for Health Research under its Programme Grants for Applied Research scheme (Improving Mental Health Outcomes
by Reducing Stigma and Discrimination: RP-PG-0606-1053). The fourth was the medical research council of UK for INDIGO project (MR/R023697/1) lead by the King’s College London.

References

4. World Health Assembly. Global burden of mental disorders and the need for a comprehensive, coordinated response from health and social sectors at the country level: report by the Secretariat. World Health Organization. 2012; 65


