Psychiatry Research 273 (2019) 435–442

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Public beliefs and attitudes toward schizophrenia and depression in Taiwan: A nationwide survey

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ARTICLE INFO

Keywords:
Stigma
Help-seeking
Causal beliefs
Emotional reactions
Mental health

ABSTRACT

Beliefs about and attitudes toward mental illness may be influenced by cultural- or country-specific contexts. Through a national survey, the current study investigated beliefs and attitudes toward people with schizophrenia and depression among the general public in Taiwan. A random-digit-dialing telephone-based cross-sectional survey was administered to Taiwanese adults aged 20–64 years (n = 1600). The data were analyzed through binary logistic regressions to test for differences between these disorders in causal beliefs, stereotypes, emotional reactions, desire for social distance, and help-seeking behavior. The results revealed that respondents were more concerned with biogenetic causal explanations for people with schizophrenia than for those with depression. Significantly more respondents perceived people with schizophrenia as more likely to be unpredictable and violent toward others. A similar trend was observed for the desire for social distance. For both disorders, respondents were significantly more likely to express compassion than to express anger toward the person described in the vignette. Respondents also expressed more desire for social distance from someone like the vignette who have received psychiatric treatment. These findings provide useful directions for the implementation of optimal psychoeducation among such communities. .

1. Introduction

Taiwan is experiencing a significant annual increase in the prevalence of mental disorders despite ongoing innovations in psychotropic medication, rehabilitations models, and reforms to the health care insurance system (Fu et al., 2013); furthermore, the rate of help-seeking in Taiwan is low (Dai et al., 2016). Untreated mental disorders typically result in poor clinical, social, and socioeconomic outcomes as well as reduced life expectancy due to associated medical conditions, such as diabetes, heart disease, stroke, respiratory conditions, and suicide (Bonabi et al., 2016; Wei et al., 2015). Therefore, understanding the reason that health care services for mental health disorders are underused has recently become a major topic of clinical research.

Of the multiple barriers against help-seeking for mental illness, negative stigmatizing attitudes as well as inadequate knowledge about mental illness and treatments negatively affects mental health treatment use and continuance (Andersson et al., 2013; Bonabi et al., 2016; Rusch et al., 2014). Public stigma against people with mental health problems is harsh and widespread and can lead to stereotyping, negative feelings, and discriminatory behaviors (Corrigan et al., 2004). Numerous studies have reported on the automatic cognitive and emotional aspects of mental illness stigma. Angermeyer and Matschinger (2005) found that labeling a person as mentally ill in a vignette is associated with an increased likelihood to be tied to stereotypes (e.g., “dangerous and unpredictable”), which leads to greater desire for social distance. Moreover, the authors found that labeling someone as mentally ill and perceiving them as dangerous and unpredictable is closely associated with feelings of fear and anger (Angermeyer and Matschinger, 2003). In addition, these stereotypes lead to further negative attitudes toward people who seek (psychiatric) treatment for mental problems, dissuading people from seeking mental health care and effective treatment (Pattyn et al., 2013).

When studying public stigma toward people with mental illness, several factors such as sex, age, socioeconomic status (e.g., education, occupational position, and income), knowledge about mental illness, and contact or familiarity with individuals with mental illness should be considered (Holzinger et al., 2012; von dem Knesebeck et al., 2014; 2013).

Furthermore, a potential determinant of stigmatizing attitudes toward people with mental illness is the extent to which psychiatric symptoms are perceived as resulting from biogenetic, psychosocial, or

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https://doi.org/10.1016/j.psychres.2019.01.062
Received 10 October 2018; Received in revised form 15 January 2019; Accepted 15 January 2019
Available online 17 January 2019
0165-1781/

other causes. Our understanding of the biological and genetic bases of mental illness has increased over the past two decades (Angermeyer et al., 2015; Pescosolido et al., 2010; Schomerus et al., 2014; Speerforck et al., 2014). Empirical studies have found that attributing psychopathology to biogenetic causes is more likely to reduce stigma and to improve the perception of psychiatric treatment (Angermeyer and Matschinger, 2005; Angermeyer et al., 2013a; Carter et al., 2017; Schomerus et al., 2006). However, stigmatizing attitudes have not diminished over the years; they persist and may even have increased (Pescosolido et al., 2010; Schomerus et al., 2014). In addition, at least among subgroups of the population, biogenetic factors are seen as less important than psychosocial factors (Cook and Wang, 2011; Ellison et al., 2015; Lincoln et al., 2008; Pattyn et al., 2013; Schomerus et al., 2014).

In line with the foregoing discussion, most studies have used a vignette-based approach. For instance, Jorm et al. (1997), Lauber et al. (2005), and Link et al. (1999) presented participants with various open- and closed-ended questions that implied that something was wrong with the individuals in the vignette (i.e., they carried a mental illness (Sai and Furnham, 2013). Vignette-based studies have indicated that some similarities notwithstanding, schizophrenia and depression are markedly different in terms of public beliefs and attitudes. For example, in surveys of the general population in France (Angermeyer et al., 2013b) and Germany (Angermeyer and Matschinger, 2003), schizophrenia was perceived as a mental illness with a strong biogenetic component and a rather unfavorable prognosis, warranting psychiatric treatment; by contrast, depressive disorder was seen more as a consequence of exposure to psychosocial stress that would ameliorate with psychotherapy and alternative treatments. Moreover, people with schizophrenia were more frequently perceived as unpredictable and dangerous and met with fear and less frequently accosted with prosocial feelings. Moreover, people with schizophrenia faced more rejection than did those with depression. Similarly, a study conducted in Australia and Japan identified greater stigma against schizophrenia than against depression (Griffiths et al., 2006). The differences in beliefs about these two mental disorders has resulted in differences in help-seeking behavior among those affected, ultimately resulting in differences in health care delivery and content.

Evidence suggests that stigma and social distance are typically greater among Japanese people than among Australians (Griffiths et al., 2006). Furthermore, both schizophrenia and depression appear to be more stigmatized in Asian societies than in Western societies (Lauber and Rossler, 2007; Wong et al., 2017; Yang et al., 2013). People with schizophrenia in particular are often exposed to public prejudices and stereotypes (Castelli et al., 2017; Lampropoulos et al., 2017), such as “dangerousness,” “unpredictability,” and “incurability, ” resulting in discrimination against and social exclusion of those affected (Angermeyer et al., 2004; Castelli et al., 2017; Lampropoulos et al., 2017). A systemic literature review on emotional reactions to people with mental illness indicated that positive emotional reactions (e.g., desire to help, compassion, warmth, empathy, friendliness, kindness, and pity) to people are most prevalent, followed by fear and anger (Angermeyer et al., 2010). A cross-sectional Chinese survey reported that work stress, problematic thoughts, and negative life events are the three main causal explanations for mental disorders and that seeing a counselor or a psychiatrist is the most common curative suggestion (Wang et al., 2013). According to Wong et al. (2010), a higher percentage of Chinese-speaking Australians believe that professionals, particularly counseling professionals, could help people with schizophrenia.

Most aforementioned studies have been conducted in the context of developed (primarily Western) countries. Culture is likely to influence the experience, expression, and determinants of stigma as well as the effectiveness of approaches to stigma reduction (Pang et al., 2017; Yang et al., 2014; 2013). Thus, research into this phenomenon is relatively lacking in non-Western cultures. Nevertheless, studies are increasingly examining public beliefs and attitudes toward people with mental illness in non-Western countries. Recent research in Chinese societies, such as mainland China (Chen et al., 2018; Gong and Furnham, 2014; Haraguchi et al., 2009; Yu et al., 2015), Hong Kong (Hui et al., 2018; Wong and Xuesong, 2011; Wong et al., 2012), and Singapore (Pang et al., 2017; Subramaniam et al., 2017), has identified how sociocultural context shapes mental illness stigma and treatment. Yang et al. (2007, 2014) proposed that in Chinese societies, the manifestations of the stigma associated with mental illness are shaped by cultural meanings embedded within Confucianism, the centrality of “face,” and the pejorative etiological beliefs about mental illness. Although studies in Taiwan have concluded that people with mental illness may frequently experience stigma (Kao et al., 2016; Lien et al., 2015), little is known about the widespread negative attitudes to mental illness in the Taiwanese society. To our knowledge, relatively few studies have explored the negative beliefs toward mental illness in general (Song et al., 2005) and schizophrenia and depression in particular, the related causal assumptions, desire for social distance (Wong et al., 2017), and professional help-seeking preferences (Wong et al., 2017; Zhuang et al., 2017). A review of relevant literature revealed two major limitations: First, most studies have employed convenience sample, limiting the scope of their conclusions. Second, no study has comprehensively examined the public's emotional reactions to people with mental illness.

The present study investigated the public's beliefs about and attitudes toward schizophrenia and depression in a representative (nationwide) Taiwanese population. We employed the vignette recognition technique and examined the differences in causal beliefs, stereotypes, emotional reactions, help-seeking preferences, and treatment stigma between schizophrenia and depression while controlling for sex, age, education, family income, place of residence, and familiarity with mental illness.

2. Methods

2.1. Study design and sample

Cross-sectional data were obtained through a random-digit-dialing computer-assisted telephone interview (Choi, 2004) survey conducted over 1 month (October–November, 2016) by a telephone research company in Taiwan. The estimated population of Taiwan in October 2016 was 23,526,295. The target population for this study (i.e., adults aged 20–65 years; N = 16,142,984), representing 68.6% of the aforementioned Taiwan population. The respondents were selected through a stratified and clustered multistage sampling process considering gender, age (i.e., 20–30, 31–30, 41–50, 51–65 years) and place of residence. The final sample size was 1600. Of these, 545 individuals refused to respond, yielding an effective completion rate of 74.6%. Regarding sex, age, and place of residence, the sampled population is comparable with the entire population aged 18–65 years in 2016 (Table 1). Personal fully structured interviews were administered by well-trained employees of a large Taiwanese opinion polling firm, all of whom were fluent in a local language (i.e., Mandarin or Taiwanese). The survey questionnaire comprised two parts: the first captured the sociodemographic and clinical characteristics of the respondents (namely sex, age, educational attainment, marital status, place of residence, family income (net household income per month), and familiarity with mental illness), and the second part captured the beliefs and attitudes toward mental illness (i.e., schizophrenia and depression vignette). Each respondent was telephonically interviewed only once, and the average interview lasted 12 min. Before data collection, ethical approval was obtained from the Institutional Review Board of Tri-Service General Hospital National Defense Medical Center, Taiwan (ID: 1-105-05-085).

Table 1
Socio-demographic characteristics of Taiwanese population [a] and the survey sample (value in % of respective sample).

	National data (%)	Sample of this study (%)	χ^2	p
Sex				
Male	49.8	50.0	0.03	0.87
Female	50.2	50.0		
Age (years)				
20–29	19.8	18.8	0.01	1.00
30–39	24.0	23.4		
40–49	22.5	22.9		
50–59	22.4	23.0		
60–65	11.3	11.9		
Place of residence				
North	43.8	43.9	1.92	0.75
Central	24.6	24.6		
South	27.3	27.3		
East	4.3	4.2		

[a] Resource: Department of Household Registration Affairs of Ministry of the Interior, Taiwan/ Official Report 2016–08

2.2. Measures

2.2.1. Case vignette

The interview content was based on a case vignette describing a male (*Daxiong*) or a female (*Mei*)—identical with exception of the gender of the target—with schizophrenia or depression according to the criteria described in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013), without the use of clinical terminology. Before use, the vignettes had been submitted to four psychiatrists and psychologists for blind diagnostic allocation (Appendix). All experts arrived at the correct diagnoses for both case histories. Randomly drawn subsamples were presented with either the vignette entailing schizophrenia (n = 800) or depression (n = 800). The gender of the patients in the vignettes was systemically varied, with 50% of the case patients presented as female.

2.2.2. Beliefs in potential causes of mental illness

After presenting the case vignette, the respondents were asked to rate eight items as a likely or unlikely cause of mental illness (specifically, *likely, not likely, depends*, or *don't know*). These eight items can be classified into four groups: biogenetic, psychosocial, medical, and traditional causal explanations for mental illness (Table 3). The answer of *likely* was used as in indicator for the endorsement of the causal belief (1 versus 0). To explore the cultural dimension of Chinese respondents' causal beliefs, the research team added additional items (e.g., "God's will, punishment, or retribution for own past wrongdoings" and "Bad *Feng Shui* or being possessed") to the list of options. This scale was adapted from the one previously used by Cook and Wang (2011) and Zhuang et al. (2017).

2.2.3. Stereotypes

Stereotypes were assessed using the Personal Attributes Scale (PAS; Angermeyer et al., 2004; Ellison et al., 2015). For this study, we selected five items covering two major stereotypes about mental illness: perceived dangerousness (3 items) and dependency (2 items) (Table 4). In an UK sample, the alpha coefficients of the PAS were 0.77 for the dangerousness subscale and 0.69 for the dependency subscale (Ellison et al., 2015). The respondents were asked to rate the items on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) while assessing personal attitudes toward the person described in the vignette.

2.2.4. Emotional reaction

According to Angermeyer and Matschinger (2003) and Ellison et al. (2015), people with mental illness elicit three types of emotional reactions: fear, pity, and anger (Table 4). The subscales pertaining to these three reactions have acceptable internal validity (α = 0.77 for fear, 0.71 for pity, and 0.78 for anger; Ellison et al., 2015). The respondents' emotional reactions to the individuals described in the vignette were assessed on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Principal component analysis with varimax rotation yielded three factors with eigenvalue > 1. The eigenvalues indicated that the following two factors should be extracted and inspected for simple structure:

"Negative emotional reactions," such as fear and anger: (eigenvalue = 1.60, variance explained = 31.9%): The person in the vignette provokes my incomprehension (rotated factor loading = 0.75); I react angrily or feel annoyed (0.69), The person scares me (0.69).

"Positive emotional reactions or pro-social reactions" (1.37, 27.3%): I feel the need to help (0.81); I feel sympathy (0.79).

Here, the principal component analysis scores were reversed, with higher scores indicating stronger emotional reactions.

2.2.5. Social distance

To assess respondents' desire for social distance, we used a scale developed by Link et al. (1999), a modified version of the Bogardus Social Distance Scale (Bogardus, 1925). This scale includes seven items representing the following social relationships: rent a room, common place of work, neighborhood, child care, marriage into one's family, member of the same social circle, and personal job brokering (Table 4). Each item was rated on a 5-point Likert scale (1 = *definitely willing*, 5 = *definitely unwilling*), with higher scores indicating a preference for greater social distance. The reliability of the scale, assessed using Cronbach's alpha, was 0.80 and 0.78 for the schizophrenia and depression vignettes, respectively.

2.2.6. Help-seeking attitudes

Help-seeking preferences were assessed using the following open-ended question: "Who do you think the person in the vignette should seek help from?" Several help-seeking opinions were considered (Table 5). To explore the cultural dimension of Chinese respondents' beliefs on professional help and treatment methods, we added additional items, for example, "Chinese medicine doctor" and "Chinese traditional healer." The respondents rated their preference on a 5-point Likert scale ranging from *strongly agree* to *strongly disagree*.

2.2.7. Stereotypical attitude toward psychiatric treatment

Treatment stigma (Pattyn et al., 2013) was measured using a three-item scale relating to the exclusion of the person in the vignette in various social circumstances after the person had received psychiatric treatment (Table 5). Each item was scored on a 5-point Likert scale, with a higher score indicating a stronger agreement with the statement that receiving psychiatric treatment leads to social exclusion.

2.3. Statistical analysis

Data were initially analyzed using percent frequencies and 95% confidence intervals. In between-vignette group comparisons of socio-demographic and clinical characteristics, the appropriate nonparametric tests were used. Chi-squared testing was used to determine whether the study variables significantly differed between the groups of respondents. To compare the differences in the endorsement of the public's beliefs and attitudes toward the two disorders, the mean score was computed using the 0–1 method, with 1 denoting *strongly agree* or *agree* and 0 denoting all other choices for each item. To examine whether the respondents reacted differently to the schizophrenia and depression vignettes, each item was subjected to binary logistic regression, with the significant level set at $p < 0.05$; to determine

Table 2
Socio-demographic and clinical characteristics of the participants (n = 1600).

	Schizophrenia vignette (N/%)	Depression vignette (N/%)
Sex [n.s.]		
Male	400/50	400/50
Female	400/50	400/50
Age (years) [n.s.]		
20–29	149/18.6	152/19.0
30–39	182/22.8	192/24.0
40–49	185/23.1	181/22.6
50–59	186/23.3	182/22.8
60–65	98/12.3	93/11.6
Place of residence [n.s.]		
North	351/43.9	351/43.9
Central	197/24.6	197/24.6
South	218/27.3	218/27.3
East	34/4.3	34/4.3
Education [n.s.]		
University degree or above	504/63.0	490/61.1
High school	207/25.9	242/30.3
Secondary education	64/8.0	54/6.8
Primary education or below	25/3.1	14/1.8
Marital status [n.s.]		
Single	259/32.4	26,332.9
Married	515/64.4	506/63.2
Divorced, widowed, or separation	21/2.6	25/3.1
Cohabitation	5/0.6	6/0.8
[a]*Family income* [n.s.]		
0–50,000	196/24.5	201/25.1
50,001–100,000	362/45.3	339/42.4
100,001–200,000	145/18.1	169/21.1
200,001–300,000	31/3.9	39/4.9
300,001 +	36/4.5	31/3.9
Unknown	30/3.7	21/2.5
Familiarity with mental illness[n.s.]		
Living with people with mental illness	31/3.9	32/4.0
Relatives with mental illness	58/7.3	59/7.4
Friends with mental illness	53/6.6	35/4.4
Classmates or colleagues with mental illness	64/8.0	56/7.0
Meeting people with mental illness occasionally	201/25.1	198/24.8
See movies or reports about mental illness once	167/20.8	190/23.7
No contact	226/28.3	230/28.7

[a] Monthly income for people in New Taiwan dollar;
[n.s] Non-significant

whether differences in the sociodemographic variables of the two groups may have influenced the results, the analyses were adjusted for age, sex, education, remoteness of residence, family outcome, and personal experience with mental illness. Given the largeness of the samples, even very small differences between the groups could be statistically significant; therefore, we further examined the effect sizes of the between-group differences. We applied Cohen's (1982) interpretation of the effect size, with effect size between 0.2 and 0.5 denoting a small difference, that between 0.5 and 0.8 denoting a medium difference, and that larger than 0.8 denoting a large difference. All analyses were conducted using the statistical program package SPSS, version 18.0 (SPSS Inc., Chicago, IL, USA).

3. Results

Of the 1600 respondents, 50% were women. The majority (57.8%) were aged 40–65 years; the level of education of the majority (45.9%) was college or higher, followed by high school (35.5%). More than half (63.8%) were married. Family income per month above 50,000 New Taiwan Dollars was considered high (75.2%). The schizophrenia vignette was presented to 800 respondents. Table 2 lists the descriptive summary statistics of the sociodemographic characteristics of the respondents. The sociodemographic and clinical characteristics of the groups presented with the schizophrenia and depression vignettes did not differ significantly.

Table 3 presents the public's causal beliefs about the two investigated mental disorders. Regarding causal attributions, psychosocial factors were the most likely cause for the symptoms presented in both vignettes. The respondents were more concerned with the likelihood of biological explanations for schizophrenia than for depression. The same applied to other explanations, such as “God's will…” and “being possessed or haunted.” By contrast, psychosocial factors were more likely to be endorsed as causing depression than schizophrenia (Table 3).

Table 4 presents the data on emotional reactions, stereotypes, and social distance associated with the two disorders. For both disorders, those with the illness elicited positive emotional reactions (e.g., sympathy and desire to help) the most, followed by fear and anger. Regarding perceived dangerousness, significantly more respondents perceived people with schizophrenia as likely to be more violent (versus those with depression) toward others and as likely to be unpredictable. Regarding emotional reaction, the respondents were significantly more likely to express compassion toward both disorders. A similar pattern was seen for social distance, as within different social relationships, the respondents were significantly less likely to express willingness to contact people with schizophrenia (Table 4).

Regarding professional help (Table 5), respondents presented the

Table 3
Causal beliefs regarding schizophrenia and depression.

View about illness	Schizophrenia (N/ %)	Depression (N/ %)	Adjusted OR (95% CI)
Biogenetic			
Genes and hereditary factors	322/ 40.3	326/ 40.8	0.99 (0.81–1.21)
A brain disorder or chemical imbalance [a]	435/ 54.4	348/ 43.5	1.61 (1.32–1.97)***
Psychosocial			
Stress situations such as family quarrels, financial/ working difficulties [c]	598/ 74.8	722/ 90.3	0.31 (0.24–0.42) ***
Childhood problem (i.e., being abused or having lost a parent as little child)	385/ 48.1	402/ 50.3	0.93 (0.76–1.13)
Medical			
Head injuries [b]	193/ 24.1	127/ 15.9	1.76 (1.36–2.27) ***
To have a weak or nervous character	458/ 57.3	473/ 59.1	0.94 (0.77–1.15)
Traditional			
God's will or punishment or retribution for own past wrongdoings [a]	82/ 10.3	53/ 6.6	1.56 (1.08–2.25)*
Bad Feng Shui or being possessed [b]	121/ 15.1	70/ 8.8	1.84 (1.34–2.52)***

Note: ORs adjusted for age, gender, level of education, current residence, familiarity, and monthly income.
* $p < 0.05$
*** $p < 0.0.001$.
[a] Difference from the Taiwanese sample involves a small effect size ($0.2 \leq$ Cohen's $h < 0.5$).
[b] Difference from the Taiwanese sample involves a medium effect size ($0.5 \leq$ Cohen's $h < 0.8$).
[c] Difference from the Taiwanese sample involves a large effect size (Cohen's $h \geq 0.8$).

Table 4
Respondents of endorsement of levels of stereotypes, emotional reactions and desire for social distance of individuals with schizophrenia and depression.

View about illness	Schizophrenia (N/ %)	Depression (N/ %)	Adjusted OR (95% CI)
Stereotypes			
The vignette person is dangerous [b]	380/ 47.5	260/ 32.5	1.91 (1.56–2.35)***
The vignette person is aggressive or violent [b]	381/ 47.6	275/ 34.4	1.74 (1.42–2.14)***
The vignette person is unpredictable [a]	654/ 81.8	604/ 75.5	1.44 (1.13–1.84)**
The vignette person is helpless or in need of help	693/ 86.7	700/ 87.5	0.95 (0.70–1.28)
The vignette person depends on other people	698/ 87.3	715/ 89.4	0.82 (0.60–1.12)
Emotional Reactions			
I react angrily or feel annoyed	145/ 18.2	123/ 15.4	1.21 (0.93–1.58)
I react with incomprehension [a]	440/ 55.0	375/ 46.9	1.37 (1.12–1.67) **
I feel sympathy	689/ 86.2	698/ 87.3	0.90 (0.67–1.20)
I feel the need to help	787/ 98.4	784/ 98.0	1.28 (0.61–2.70)
The vignette person scares me [b]	365/ 45.6	269/ 33.6	1.66 (1.36–2.04) ***
Desire for Social Distance			
I would rent out a room to the vignette person [a]	255/ 31.9	294/ 36.8	0.81 (0.66–1.00) *
I would accept the vignette person as a coworker [a]	578/ 72.2	649/ 81.1	0.61 (0.48–0.78) ***
I would accept the vignette person like this as a neighbor [a]	510/ 63.7	552/ 69.1	0.79 (0.64–0.98) *
I would hire the vignette person for taking care of my children	40/ 5.0	56/ 7.0	0.71 (0.46–1.08)
I would accept the vignette person as an in-law [a]	95/ 11.9	128/ 16.0	0.70 (0.52–0.95) *
I would introduce the vignette person to my friend [a]	545/ 68.2	624/ 78.0	0.61 (0.49–0.77) ***
I would recommend the vignette person if a friend of mine was looking for an employee [a]	545/ 68.2	612/ 76.5	0.66 (0.53–0.83) ***

Note: ORs adjusted for age, gender, level of education, current residence, familiarity, and monthly income.
* $p < 0.05$
** $p < 0.01$
*** $p < 0.0.001$.
[a] Difference from the Taiwanese sample involves a small effect size ($0.2 \leq$ Cohen's $h < 0.5$).
[b] Difference from the Taiwanese sample involves a medium effect size ($0.5 \leq$ Cohen's $h < 0.8$).

schizophrenia vignette most frequently recommended seeking help from mental health professionals, followed by general and religious practitioners. Similar results were obtained for the depression vignette. For both disorders, seeking help Chinese medicine practitioners or translational healers was less frequently advised. Moreover, respondents expressed their preference for the social exclusion of those receiving psychiatric treatment.

4. Discussion

On the basis of a large survey of the Taiwanese population, this study provides insights into beliefs about and attitudes toward schizophrenia and depression and toward help-seeking. Consistent with previous studies (Cook and Wang, 2011; Reavley and Jorm, 2011; Schomerus et al., 2006; 2014), our results demonstrated that psychosocial causes of schizophrenia or depression were particularly popular. Although this causal explanation appears to be associated with less stigmatizing attitudes, it appears to promote informal help-seeking (Nieuwsma and Pepper, 2010; Pattyn et al., 2013; Schlier et al., 2014), which is not always appropriate in cases of severe mental illness.

The respondents also believed that schizophrenic symptoms are caused by biogenetic factors. These results are consistent with other studies suggesting that a large proportion of respondents tend to believe in biogenetic causes of schizophrenia (Angermeyer et al., 2013a; Schomerus et al., 2006). In the past decades, biological approaches to the understanding and treatment of mental illness have progressed rapidly, resulting in less desire for social distance, a fundamental dimension of stigma. Promoting biogenetic causal explanations has therefore been recommended in antistigma campaigns (Angermeyer et al., 2011; Lincoln et al., 2008; Pescosolido et al., 2010; Schlier et al., 2014). In the broader literature, however, the relationship between biogenetic causes and stigma is complex and inconsistent (Angermeyer

Table 5
Help-seeking attitudes for schizophrenia and depression.

	Schizophrenia (N/ %)	Depression (N/ %)	Adjusted OR (95% CI)
Help-seeking object			
General practitioner	533/ 66.6	514/ 64.3	1.10 (0.89–1.35)
Psychologist or counselor	785/ 98.2	782/ 97.7	1.24 (0.62–2.49)
Psychiatrist	752/ 94.0	746/ 93.3	1.15 (0.77–1.72)
Close family or relative	684/ 85.5	709/ 88.6	0.77 (0.57–1.03)
Religious practitioner, such as minister/priest, spiritual father, master [a]	446/ 55.8	498/ 62.3	0.77 (0.63–0.94) *
Chinese medical doctor	344/ 43.0	378/ 47.2	0.83 (0.68–1.02)
Chinese traditional healer	333/ 41.6	322/ 40.3	1.06 (0.87–1.30)
Wait and do nothing	45/ 5.6	45/ 5.6	0.99 (0.64–1.52)
Treatment Stigma			
After receiving treatment, the vignette person will be consider an outsider in his or her community [a]	415/ 51.9	353/ 44.1	1.38 (1.13–1.69) **
If the vignette person mentions that he or she has been in treatment, he or she will lose some of their friends [a]	550/ 68.8	498/ 64.3	1.32 (1.09–1.63) **
Whatever the vignette person accomplishes in the future, his or her chances will always be limited when people discover that he or she has been in treatment [a]	617/ 77.1	563/ 70.4	1.44 (1.15–1.80) **

Note: ORs adjusted for age, gender, level of education, current residence, familiarity, and monthly income.
* $p < 0.05$
** $p < 0.01$
[a] Difference from the Taiwanese sample involves a small effect size ($0.2 \leq$ Cohen's $h < 0.5$).

and Matschinger, 2005; Pescosolido et al., 2010; Schomerus et al., 2014; 2012). Thus, there have been calls for public health messages to focus on the complex interaction between biogenetic and psychosocial factors, making it important to understand how such beliefs have evolved over time (Lincoln et al., 2008; Pilkington et al., 2013; Schlier et al., 2014).

In the present study, both groups held traditional beliefs regarding the cause of mental illness—that mental illness is a result of possession by demons or the wrongdoing of one's ancestors—indicating adherence to traditional Chinese cultures and cultural beliefs about mental illness (Wong and Xuesong, 2011; Wong et al., 2012); this result affirms the findings of Chang and Song (1998), whose survey in Taiwan found that psychosocial factors are the leading causal attribution to mental illness, with biological and superstitious factors being the second and third, respectively. These findings may be a reflection of the moral judgment and superstitious attributions typically associated with mental illness because of a lack of knowledge of mental illness (Phillips et al., 2000; Yang et al., 2007, 2010). Such non-Western nonbiomedical perceptions are incongruent with Western ones and may lead to higher stigma, delayed treatment, and poor treatment adherence (Gureje et al., 2006; Yang et al., 2010; 2013); therefore, knowledge of causal explanations for mental illness that lead to or act against identification of mental illness would enable more targeted psychoeducation (Yang and Wonpat-Borja, 2012). For example, Chien and Chan (2004) found that psychoeducation curricula designed for laypeople endorsing Chinese traditional beliefs can provide a biomedical understanding of the illness, thus promoting effective treatment.

Our results, consistent with those reported earlier (Angermeyer et al., 2010; Ellison et al., 2015), revealed a higher prevalence of positive emotional feelings toward people with mental illness than negative ones, such as anger and fear. The findings reported herein may carry important implications for interventions aimed at reducing the stigma surrounding mental illness. Therefore, antistigma interventions should aim to more directly affect emotions and improve the social acceptance of those affected (Angermeyer et al., 2010; Makowski et al., 2016). Some studies have indicated that emotional reactions may more strongly predict discrimination than do stereotypes (Angermeyer et al., 2010; Makowski et al., 2016; Thornicroft and Kassam, 2008). In this study, fearful reactions toward people with schizophrenia or depression were quite common. To reduce fear, educational programs and contact-based approaches should be considered (von dem Knesebeck et al., 2014).

Consistent with previous studies (Angermeyer et al., 2013b; Pescosolido et al., 2010; Reavley and Jorm, 2011), desire for social distance was generally higher for schizophrenia than for depression. Substantial differences exist in the public's attitudes toward various mental disorders (Pescosolido et al., 2010; Schomerus et al., 2014); hence, interventions tailed-made for a particular mental disorder may prove more successful than those addressing people with mental illness in general (Angermeyer et al., 2010). In the present study, consistent with the literature (Angermeyer et al., 2013a, 2013b; Haraguchi et al., 2009; von dem Knesebeck et al., 2015), desire for social distance was greatest when in contexts involving hiring and taking care of children.

In Taiwan, mental healthcare is usually provided by a team of interdisciplinary mental health professionals, including psychiatrists, psychologists (clinical or consulting), and social workers. Nearly 90% of respondents in this study indicated that they would seek help for mental health problems from a mental health professional, which is consistent with previous studies from Taiwan (Zhuang et al., 2017); these results evidence a rather high acceptance of psychiatry among Taiwanese public. Furthermore, the percentage of Taiwanese who endorsed counseling professionals as helpful for people depicted in the schizophrenia or depression vignettes was higher than in several studies from China (Wong and Xuesong, 2011; Wang et al., 2013). A possible reason for this difference is that mental health services are fairly prevalent in Taiwan and the general public may be more aware of the roles and functions of mental health professionals.

Chinese medicine doctors were more preferred by the Taiwanese public than the Chinese public (Wong et al., 2012). The significant role of traditional Chinese medicine was also reported by Yang et al. (2008), who found that Chinese Americans perceived greater community attitudes of shame when accessing Western psychiatric services as opposed to traditional Chinese medicine to treat a mental disorder. The relative willingness of people to consult Chinese medicine doctors should not be ignored, because it is especially common for people with depression to present with somatic rather than psychological complaints (Barney et al., 2006). Moreover, the label of somatic complaints is more often free of stigma, fear, guilt, and ambivalence attached to psychological complaints; thus, these somatic complaints are often perceived as more effective and perceived as more legitimate in getting Chinese people to seek help (Yu et al., 2015). However, Chinese medicine doctors might lack knowledge or skills to detect and manage mental problems. Thus, it is important to not only educate Taiwanese lay people on the advantages and disadvantages of traditional Chinese medicine but also foster knowledge of mental illness among traditional Chinese medicine doctors for improving the healthcare of people with mental illness.

Finally, this study identified a high level of treatment stigma, a worrisome finding as people with mental illness are most in need of help. Our results have major implications for interventions aimed at reducing such stigma and the social exclusion of people who have received psychiatric treatment, which appear to be triggered by the direct effect of the aforementioned labels. The perceived public stigma (i.e., others would view one negatively if they sought treatment) is common and has been associated with reluctance to seek professional help (Barney et al., 2006; Pattyn et al., 2013; Pedersen and Paves, 2014). Cross-sectional research among US university students (Pedersen and Paves, 2014) suggests that many students report high perceived stigma and that these perceptions may be strongly influence treatment intention.

Several methodological limitations should be considered when interpreting our findings. First, this was a cross-sectional study; the differences and potential trends across time could not be identified because of the lack of longitudinal data. Second, the vignette technique has limited generalizability because it refers to hypothetical situations. Third, although widely used, the use of a case vignette—where the reported information is based on a short case history—to investigate complex diseases, such as schizophrenia and depression, fails to provide the information necessary to better understand public perceptions about the diseases. Fourth, the small number of items in some scales, notably the emotional reactions and causal beliefs scales, limits their usefulness. Fifth, the self-reported nature of the data may be affected by social desirability bias (Blay et al., 2008). Finally, some items in the scales were used for the first time to evaluate the public's beliefs and attitudes toward people with mental illness among adults and are yet to be validated in Taiwan. Further research is essential to explore the validity and usefulness of the scales.

Our findings enhance the literature on community attitudes toward people with mental disorders and highlight the importance of understanding these issues in context. Interventions addressing misconceptions are thus necessary to improve patient care. This study is expected to present a clearer picture of the nature of causal illness explanations, stigma, and help-seeking for mental illness, promote greater public awareness about mental health, and provide a platform for developing more comprehensive public policy in Taiwan.

Acknowledgements

We thanked all participants who kindly volunteered to take part in this study. This study was supported by grants from the Ministry of Science and Technology, Taiwan (105-2410-H-003 -033 -SSS). We were also grateful to clinical psychologist Chien-Wen Lu and Dr. Hsin-An Chang who provided their opinions of this paper that helped us develop the questionnaire. This article was subsidized by the National Taiwan

Normal University (NTNU), Taiwan, R.O.C. This manuscript was edited by Wallace Academic Editing.

Statements with Ethical Standards

The authors of this manuscript have complied with APA ethical principles in their treatment of individuals participating in the research, program, or policy described in the manuscript. The research has been approved by *Tri-Service General Hospital* (ID: 1-105-05-085) responsible for the protection of human participants.

Funding

This study was funded by the Ministry of Science and Technology, Taiwan (105-2410-H-003 -033 -SSS).

Conflict of Interest

Author (Pr. Yin-Ju Lien) has received research grants from the Ministry of Science and Technology, Taiwan. The authors declare that they have no conflict of interest.

Author contributions

YJL and YCK conceptualized and designed the study. YJL supervised the study. YCK analyzed the data further and wrote the final manuscript. YJL helped to draft and revised the manuscript. All authors have read and approved the paper.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.01.062.

Appendix. The case vignette

Daxiong (or Mei) is 30 years old and is not married. He (or she) used to regularly help his (or her) father work on the store, but for the last 10–15 days he (or she) has not been going to work. For the last 2–3 months he (or she) has been staying alone and aloof. He (or she) has not been bathing regularly and sometimes becomes aggressive for no apparent reason. He (or she) never used to behave in this way. On several occasions his (or her) father has found him (or her) talking to himself (or herself) when nobody else was around. He (or she) has become suspicious of others and says that people are talking about him (or her). For the last one week he (or she) has refused to eat food as he (she) suspects his (or her) food is being poisoned by the neighbors.

Daxiong (or Mei) is 30 years old and was fine until six months ago when he (or she) began to feel tired all the time. He (or she) says that she is sad and has lost interest in life. Even his (or her) children and family don't make him (or her) feel happy. He (or she) cannot sleep and he (or she) has lost the taste for food, which he (or she) used to love. He (or she) has also lost interest in cooking because he (or she) can't concentrate. Sometimes he (or she) feels like jumping in the well to end her life.

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