



Violence against primary caregivers of people with severe mental illness and their knowledge and attitudes towards violence: A cross-sectional study in China



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ABSTRACT

Purpose: The purpose of this study is to investigate the current situation of violence on primary caregivers of people with severe mental illness outside the hospital and the cognition of primary caregivers about violence among mental patients.

Methods: A self-designed questionnaire was used to investigate the primary caregivers ($N = 208$) of people with severe mental illness in a psychiatric hospital in Beijing.

Results: The incidence rate of violence suffered by primary caregivers was 74.03%, of which 61.54% had experienced verbal attacks, 54.33% had experienced threats, and 45.19% experienced physical attacks. Physical violence, mainly by unarmed attacks, has resulted in soft tissue injury and pain in the majority of caregivers. Multiple admission times, a lower educational level, single in marital status and involuntary hospitalizations were risk factors; growing older was protective factor. The causes of violence were dominated by mental symptoms in 120 cases (57.69%). Tolerance and avoidance were the coping styles of most caregivers adopted after violence, accounting for 51.44%. Furthermore, most of primary caregivers have limited knowledge of violence and adopted an attitude of pessimism towards patients' violence.

Conclusions: It was reported that violence was suffered by primary caregivers of persons with severe mental illness outside the hospital. The study indicated that formulating reasonable nursing intervention, providing health education as well as organizing training towards violence of patients are required to play an important role in effectively preventing and reducing the violence among the people with severe mental illness in China. More information and support needs to be obtained to help caregivers fulfill their duty of care outside the hospital.

Introduction

As an important global public health problem, interpersonal violence affects a lot of people around the world, frequently with lifelong effects on physiological and psychological health. More and more people are gradually starting to realize the significance of this global public health problem (Mikton, Butchart, Dahlberg, & Krug, 2016). However, the interpersonal violence mentioned above mainly includes four types of violence: intimate partner violence, child abuse, youth violence, and elder abuse (Krug, Mercy, Dahlberg, & Zwi, 2002). An important, yet often neglected, family violence by people with severe mental illness (SMI) was not mentioned in the report of the World Health organization (World Health Organization, 2014). As the research shows, about 75% to 100% of psychiatric nurses have been

attacked by patients during their careers (Iozzino, Ferrari, Large, Nielsens, & de Girolamo, 2015). Moreover, violence by psychiatric patients against their caregivers is also common. Winsper et al. (2013) conducted a systematic review and meta-regression analysis among people with mental illness, displaying that 28% of patients had violence before admission and 31% of patients still had violence after discharging from hospital, and the primary targets of violence were their caregivers (Desmarais et al., 2014).

SMI mainly including bipolar disorder, schizophrenia and other psychotic disorders (Tsigebrhan, Shibre, Medhin, Fekadu, & Hanlon, 2014). To our surprise, the violence of people with SMI was aimed at caregivers rather than the general public. Studies found that among the people with SMI engaged in violence, more than half committed violence directly against family members, not strangers (Desmarais et al.,

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2014; Imai, Hayashi, Shiina, Sakikawa, & Igarashi, 2014). On the one hand, in China, the cost of hospitalization is so high that low-income families are more willing to choose home treatment (Zeng, He, Li, Li, & Xiao, 2010). Information from an Asian study observes that about 70% of people with SMI live with their family (Chan, 2011). On the other hand, primary caregivers, such as spouses, parents or even their children provide continuous support to people with SMI, which contributes to diminishing the demand for mental health services (Hielscher et al., 2019). Consequently, many families prefer to place patients at home. Living together with patients make caregivers the main victims of violence from patients. There is growing evidence of violence against caregivers by people with SMI.

A body of evidence suggests that violence committed by people with SMI against their primary caregivers is not uncommon (Hsu & Tu, 2014; Kageyama et al., 2018; Kageyama, Solomon, & Yokoyama, 2016). According to a review, the proportion of these families exposed to violence by their relatives with SIM is estimated to be between 10% and 40%, which is much higher than that of the general population (Solomon, Cavanaugh, & Gelles, 2005). At the same time, the forms of violence that people with SMI against their primary caregivers are mainly including physical violence, non-physical violence and property damage, etc. (Kageyama, Solomon, Kita, et al., 2016, Khalid, Ford, & Maughan, 2012, Onwumere et al., 2014). A study conducted by Varghese (Varghese, Khakha, & Chadda, 2016) revealed that more than half of caregivers (53%) experienced violence from patients, and most of caregivers (95%) insisted that the patients had language violence, followed by physical attacks (80%) and attacks on objects (75%). As we expected, these results are equivalent to other studies (Kageyama, Solomon, Kita, et al., 2016, Krüger & Rosema, 2010, Madathumkovilakath, Kizhakkeppattu, Thekekunnath, & Kazhungil, 2018, Onwumere et al., 2014). A large number of violent incidents in people with SMI also arouse attention to the factors of violence.

Many factors are responsible for the emergency of violence. Commonly described predictors include pathological and sociological factors of patients, such as deficient insight, male gender, lower educational degree, low socioeconomic standing, non-adherence with treatment, unemployed status, unmarried status, anger, enmity and other aggressive symptoms, as well as experiences of suffering from violence (Bo, Abu-Akel, Kongerslev, Haahr, & Simonsen, 2011; Douglas & Guy, 2009; Ullrich, Keers, & Coid, 2014; Volavka, 2016). Another two groups (Carr et al., 2008; Witt, Van, & Fazel, 2013) examined the risk factors influencing the occurrence of violence among people with SMI, found that violence was closely related to non-adherence with medication, poor impulse control ability, longer duration of hospitalization and unplanned early readmission. These factors lead to violence that has a dual impact on caregivers.

In the face of violence from patients who are diagnosed with SMI, primary caregivers are affected both physically and psychologically (Onwumere et al., 2014). It is reported that caregivers often feel physically tired and may experience sleep disturbances during the care of a person with SMI (Onwumere et al., 2017; Smith, Onwumere, Craig, & Kuipers, 2018), especially after the violence. Caregivers also experience varying levels of negative emotional states, including disappointment, guilt, indignation, fear, shame, depression and anxiety (Hayes, Hawthorne, Farhall, O'Hanlon, & Harvey, 2015; Perlick, Hohenstein, Clarkin, Kaczynski, & Rosenheck, 2005). Another study found that about 52% of those who experienced moderate violence reported potentially significant levels of post-traumatic stress disorder (PTSD) (Loughland et al., 2009). Other research (Hanzawa et al., 2013) also suggested that even if caregivers lived separately from the patients, the psychological influence on caregivers caused by the patient's violence still continues. Obviously, caregivers are generally unprepared to cope with violence, which further compounds their pressure and burden in offering care to people with SMI.

Different coping strategies can be adopted to deal with the problem of patient's violence and to reduce the stress of caregiving. Emotion

oriented and problem oriented is the main types of coping strategies. The purpose of emotion oriented strategies are to reduce negative emotions, including avoidance, denial or resorting to religion whereas problem oriented refers to actions that are used to break the current situation, containing the strategies of solving problems or seeking social support (Madathumkovilakath et al., 2018). A study reveals that problem oriented coping strategies are used by the majority (80%) of caregivers to deal with violence of patients, only 22% of caregivers use avoidance in response to patient's violence (Varghese et al., 2016). However, another study reports that coping strategies that focus on emotions, such as avoidance and religious coping, are used by many caregivers (Ong, Ibrahim, & Wahab, 2016). Of course, any effective coping strategies require the caregivers to have a basic knowledge and attitude towards violence.

Caregivers' knowledge and attitudes towards violence of people with SMI are helpful in reducing such violence. However, it manifests that even when perceiving violent behavior towards them, caregivers are short of knowledge about planning to deal with it (Madathumkovilakath et al., 2018), including knowledge of the premonitory symptoms of violence, skills to handle such violence (Faay, Valenkamp, & Nijman, 2017). In addition, the stigmatization of mental illness is the public knowledge that violence from them is inevitable and dangerous (Arboleda-Florez, Holley, & Crisanti, 1998). Caregivers seldom talk about violence by people with SMI and do not ask for help from others on the disposal of violence at home (Varghese et al., 2016). Luckily for us, more and more caregivers of SMI realize the importance of training to prevent violence, like that training would play a major role in relieving this problem (Madathumkovilakath et al., 2018).

Violence committed by individuals with SMI has been the focus of public concern among clinicians, decision-makers, and the general public (Bonnet, Lacambre, Schandrin, Capdevielle, & Courtet, 2017), especially in countries with high level of development (Tsighebrhan et al., 2014). However, because people are concerned about further stigmatizing or inciting these adults people with SMI, violence towards their primary caregivers by them is a taboo area of public topic and scientific research (Solomon et al., 2005). Traditional Chinese families regard mental illness as a disgrace. As is shown in a survey, among the 4602 respondents who fill out a questionnaire, the majority of the respondents perceive that most members of their society hold a negative attitude towards mental illness patients and have a strong desire to keep distance from them (Liu et al., 2016). Moreover, stigmatization of the mentally ill has a negative impact on their family caregivers. Therefore, family caregivers are often reluctant to talk openly about their relatives' mental illnesses and violence in order to prevent their families from losing face (Chang & Horrocks, 2006). In other words, family violence by people with SMI against primary caregivers is concealed so that it has not been well surveyed, and it may be more serious and more widespread than has been admitted (Kageyama et al., 2015). As a result, little is known about such violence from people with SIM towards their primary caregivers, especially in Chinese culture.

The focus of the present study is therefore to understand the types, frequency, reasons and risk factors of family violence against caregivers, the psychological and physiological effects of violent behaviors on the primary caregivers, as well as the coping strategies of caregivers and the knowledge and attitude of the primary caregivers towards the violent behaviors of patients. It is vital to understand violence in people with SMI for at least three reasons. On the one hand, it can reduce such violence in people with SMI and psychological and physical harms to primary caregivers by promoting more effective prevention, treatment and support. On the other hand, social cognition of SMI-related stigma may change.

Methods

Participates

A sample of 208 respondents, all of whom looked after people with SMI at one of Chinese biggest psychiatric hospitals in Beijing. And all respondents were ones from each household. A caregiver was defined as an individuals who had been living with the patient for a period of time, and was closely involved in patients' care, which meant taking care of the patient's daily living, supervising medication, satisfying psychological needs, and keeping close contact with hospitals, etc. (Varghese et al., 2016). The inclusion criteria for primary caregivers were the following: age ≥ 18 years, direct adult relatives or other acknowledged caregivers living with patients who have a confirmed diagnosis by ICD-10 (international Classification of Diseases, ICD), be conscious and be able to speak Chinese adequately to complete the assessments, no history of mental disease. Furthermore, caregivers were required to take care of the patients > 5 days a week, at least 8 h a day, and they looked after the people with SMI over the last 12 months before admission to hospital. The inclusion criteria of primary caregivers were selected to provide a relatively homogeneous population for exploration of rich data. Caregivers suffering from a mental illness or a chronic physical illness were excluded.

Procedure

This research employed a cross-sectional correlational design. 208 caregivers were recruited by researchers to investigate the situation of violence conducted by SMI towards their primary caregivers before admission in 8 wards of a psychiatric hospital in Beijing. The respondents' right to know should be respected, so it is important to inform the respondents of the basic information such as the purpose of conducting the investigation. The researchers who are responsible for sending out questionnaires received unified training and sent out the questionnaires about 30 min before the visiting time of caregivers, explaining the purpose of the survey. In the meantime, if the respondents have a low educational level or are unable to fill out the questionnaire by themselves for other reasons, the trained researchers read the questions word by word. And the researchers can inform the respondents of the original intention of this question in a non-judgmental way to help them to understand. To ensure the authenticity and validity of the questionnaire, questionnaires were collected on the spot after completion. 208 questionnaires were distributed and 208 were returned, a response rate of 100%.

Measures

The anonymous questionnaire was conducted by using a self-made questionnaire, which consisted of three sections: the basic data of caregivers and patients, the situations of caregivers being subjected to violence and the knowledge and attitude of the caregivers towards the violence. Family members who are obliged to take care of mental patients are also considered to be working individuals to some extent. As a result, this questionnaire was designed according to the relevant documents of the WHO and its latest definition of violence in the workplace, as there is no WHO definition of domestic violence against family members (World Health Organization, 2002). Section 1 contained questionnaire items regarding patient-related information and caregiver-related information. As shown in many studies, the age, education, marriage and other general information of patients with mental illness and their caregivers are closely related to patients' violent behaviors (Douglas & Guy, 2009; Ullrich et al., 2014; Volavka, 2016). Therefore, the patient-related information in self-made questionnaire contained the patient's sex, age, education, occupation, marriage and working status, diagnosis, course of disease, total number of hospitalizations over the past year and way of hospitalizations. The family-

related information in self-made questionnaire contained the caregiver's sex, age, education, the relationship with patients, years of caring, marriage and working status, which was basically similar to the questionnaire designed by Indian scholar Varghese to collecting general information of patients and caregivers (Varghese et al., 2016). This present study was not collected the comorbidity of drug and alcohol addiction, because there was no significant correlation between substance addiction and violence by patients with SMI in a past research (Imai et al., 2014).

Section 2 consisted of 10 items to measure the situations of caregivers being subjected to violence, including types, frequency, causes and consequences of violence taken by patients, ways of physical violence, the coping strategies of caregivers of aggressive behavior in the domains of verbal violence, physical violence and violence against objects with a rating period not exceeding 12 month. In the current study, violence includes psychological violence that uses verbal or non-verbal methods to cause mental or emotional harm to others, as well as the physical force that may result in destruction, disability or even death (Kageyama, Solomon, Kita, et al., 2016). Based on these definitions, violence was categorized into four types: "language violence" (abusive language in person or through phone calls, text messages, or online chats), "threat"(verbal threats, behavioral threats such as slapping the table, stomping, glaring, spitting, confrontation), "physical violence" (kick, bite, scratch, push, throw, hair pulling, etc), "violence against property" (damage furniture, electrical appliances, money, cars, etc). The frequency of each type of violence listed over the last 12 months was selected from the following options: "never", "once", "2–3 times" or ≥ 3 times. Violence can cause psychological and physical harm to caregivers (Krug et al., 2002), as shown in Table 4, 2 multiple-choice items were used to rate physical effects (pain, soft tissue injury, trauma, fracture, cerebral concussion, etc) and psychological effects (grievance, anger, helplessness, feeling down, fear and insecurity, suicidal thoughts, etc) on respondents. The items in reasons for violence included mental symptoms, patients who refused to take the medicine while the caregiver urged him to take it, patients who refused to be hospitalized, caregivers who limited patients' range of activities, patients were treated unfairly, drug reaction, negative events, which has been supported by other studies (Volavka, 2016; Witt et al., 2013). The items in coping strategies included resorting to avoidance, communication and counseling with others, tit-for-tat, calling the police and isolating the patients. These coping strategies have also been found in other studies (Ong et al., 2016; Varghese et al., 2016).

Section 3 consisted of 18 questions related to the knowledge and attitude of the caregivers towards the violence. 9 items were included in caregivers' knowledge towards violence, including the knowledge of the manifestations of violence, the knowledge of the causes and prevention of violence, and the knowledge of the emergency treatment of violence. Chinese researchers also used such questions to design scale to explore caregivers' knowledge of violent behavior in psychiatric patients. The reliability and validity of scale have been evaluated in China and confirmed to be acceptable (Li, Chang, & Cui, 2007). Each item regarding the knowledge of violence listed was selected from the following options: "yes" (basically knowing the answers to each of the items), "a little" (partially knowing the answers to each of the items) or "no" (knowing nothing about the answers to each of the items). In addition, previous studies indicated that stigmatization of mental illness made caregivers negative about violence by patients. Caregivers were less likely to speak publicly about violence for fear of shame and were reluctant to seek to help deal with violence at home (Arboleda-Florez et al., 1998; Varghese et al., 2016), which was similar to those of a Chinese survey (Gong & Yang, 2008). 9 items regarding caregivers' attitudes to violence were identified based on the extant literature review. Each item regarding the attitudes of violence listed was selected from the following options: "yes", "not sure" or "no".

This questionnaire was reviewed and revised several times by 9 experts of the hospital, including 5 chief physician and 4 head nurses. In

addition, the researcher selected 18 caregivers from different wards for preliminary experiments to find out whether the options setting of this questionnaire was reasonable, whether the words were easy to understand. All of 18 caregivers had completed the questionnaire within 20 to 30 min. Then, the researcher collected the feedback on the questionnaire so that they could further make up for the deficiencies of the questionnaire and improve the quality of the questionnaire. The Cronbach's alpha for the three components of the questionnaires were 0.906 after revising the questionnaire.

Statistical analyses

Initially, descriptive analysis for social-demographic and clinical variables was expressed in terms of frequency and percentages for categorized variables, as well as means and standard deviations for continuous variables. Next, after the social-demographic of subjects with and without violence were compared using the χ^2 test or *t*-test, variables with statistical significance ($P < 0.05$) entered multiple regression to examine the risk factors for violence. However, according to clinical experiences and literature review, it was found that the gender and age of patients were closely related to the occurrence of violence (Bo et al., 2011; Douglas & Guy, 2009). A study also shown that parents are the main victims of violence. Perhaps the relationship between caregivers and patients also plays a significant role in the occurrence of violence (Boyer et al., 2012). So these three variables were included in logistic regression for further analysis. Finally, multiple logistic regressions were conducted to investigate the risk factors for violence, with the occurrence of violence as the dependent variable, the patient's gender, age, education, marriage status, ways of hospitalization, frequency of hospitalization and caregivers' education and employment status as the independent variable. P value < 0.05 indicated that there was a significant difference at an alpha level of 0.05 and 95% confidence intervals. Epidata3.1 was used to establish the database. All analyses were performed in SPSS for Windows, Version 21.0.

Ethical considerations

Ethical issues have been carefully considered. First of all, ethical approval was approved by the Institutional Review Committee of the college and hospital where the first author works. Respondents were fully informed of the purpose and procedures of the study. Secondly, invitations to participating in this study were not mandatory and participants have the right to choose whether or not to participate, and they can withdraw from the research at any time without reason. Thirdly, to ensure the confidentiality and privacy of participants, they guaranteed that the results of the questionnaire will not be talked with anyone except the research group, and that the results will be published only in scientific publications.

Results

Socio-demographic and medical characteristics

The average age of the respondents were 47.42 years, 55.33% were female. The majority of the respondents had accomplished junior high school or above and 50.48% of the respondents were employed. And more than half of the respondents (54.82%) were parents, along with spouses (20.21%), children (8.23%) and siblings (15.42%). Clinical diagnoses of the patients were schizophrenia (57.69%), bipolar affective disorder (30.29%), schizoaffective disorders (11.48%) and mental disorders due to epilepsy (0.54%), of whom the majority were males (66.32%) with a mean age of 34.93 years, unmarried (53.4%) and involuntary admission (94.71%) (Table 1).

Types, frequency and reasons for violence

Fig. 1 reveals the frequency of four types of violence against primary caregivers over the last 12 months. Among 208 primary caregivers who were analyzed, 154 (74.03%) caregivers had experienced violence over the past years. The majority of caregivers of patients with SMI perceived language violence (61.54%) as the major type of violent behavior from the patient followed by threat (54.33%). 45.19% of caregivers experienced physical violence and 37.98% experienced violence against property. In addition, among 94 cases of physical violence, patients were most likely to use unarmed attacks (48.94%). A further 17.02% of patients used easily available goods to attack.

In terms of frequency, 24.52% of caregivers perceived language violence more than three times in the past year, whereas once a year was the most seen frequency of threats, physical violence and property destruction, accounting for 22.60%, 22.60% and 18.75% respectively.

Among the 208 caregivers who were surveyed, this study also indicated that the reasons leading to violence were dominated by people with mental symptoms: 120 cases (57.69%), followed by 52 cases (25%) of patients who refused to take the medicine while the caregiver urged him to take it, 46 cases (22.12%) of patients who refused to be hospitalized, and 46 cases (22.12%) of caregivers who limited their range of activities.

Risk factors associated with violence on caregivers

In the single-factor analysis, there were significant differences in education ($P = 0.024$), marital status ($P = 0.015$), way of hospitalization ($P = 0.000$), the frequency of hospitalization ($P = 0.036$) of patients and education ($P = 0.000$), employment status ($P = 0.001$) of caregivers between the two groups. Patient's gender, age, diagnosis and caregiver's gender, age, relationship with patients were not significantly between the two groups ($P > 0.05$).

As displayed in Table 2, the demographic and clinical data of patients were further analyzed by multivariate regression analysis. Taking the occurrence of violence as dependent variable, the demographic data of people with SMI, such as gender, age, ways of hospitalization, marital status, diagnosis, frequency of hospitalizations and caregivers' education, employment status and relationship with patients were taken as independent variables for regression analysis. Gender, education, marital status, diagnosis, frequency of hospitalizations, ways of hospitalization were set as dummy variables according to the requirement of binary logistic regression. As shown in Table 2, the incidence of violence was significantly lower in over 56 years old group (odds ratio [OR] = 0.28, $P = 0.031$, 95% confidence interval [CI] 0.09–0.89) (using 15–35 years old as the reference category). Additionally, higher risks of violence remained associated with multiple hospitalizations, either 2–4 admission times (OR = 2.79, $P = 0.017$, 95% CI 1.20–6.44) or over 5 admission times (OR = 3.96, $P = 0.019$, 95% CI 1.25–12.51) (using one admission time as the reference). The incidence of violence were also significantly more likely to have a low educational level, either junior high school (OR = 4.67, $P = 0.005$, 95% CI 1.60–13.45) or primary school and below (OR = 19.10, $P = 0.013$, 95% CI 1.84–198.08) (using over university degree as the reference). And high risks for violence remained associated with single in marital status (OR = 3.26, $P = 0.008$, 95% CI 1.37–7.77) (using married group as the reference) and involuntary hospitalizations (OR = 13.72, $P = 0.005$, 95% CI 2.18–86.25) (using voluntary group as the reference category).

Effects of violence on caregivers and caregiver's coping strategies to violence

Violence has both physiological and psychological effects on caregivers. As shown in Table 3, of which 154 caregivers who had ever been affected by patient's violence, the physiological effects on caregivers contained pain (58.44%), soft tissue injury (27.27%), trauma (15.58%), fracture (2.60%), and cerebral concussion (2.60%). Meanwhile, the

Table 1
Study population characteristics and comparison of socio-demographic data between violence and non-violence group.

	Violence (n = 154)	Non-violence (n = 54)	t/χ ²	P value
Age, years, mean (SD)	34.33(13.318)	37.63(13.975)	1.007	0.238
Gender: male	105	33	0.859	0.344
Education:				
Primary school or below	14	1		
Junior high school	49	10	9.468	0.024*
Senior high school or technical secondary school	62	25		
University degree or above	29	18		
Marital status:				
Single	92	20		
Married	51	29	8.465	0.015*
Divorced	11	5		
Way of hospitalization:				
Voluntary	2	9		
Non-voluntary	152	45	18.852	0.000**
Frequency of hospitalizations:				
Once	40	24		
2 to 4 times	82	20	6.676	0.036*
≥ 5 times	32	10		
Diagnosis:				
Schizophrenia	87	33		
Bipolar affective disorder	51	12	4.898	0.179
Schizoaffective disorder	14	6		
Mental disorders due to epilepsy	2	3		
Relationship with patients:				
Parents	87	27		
Spouses	30	12	2.739	0.602
Children	13	4		
Siblings	21	11		
Others	3	0		
Caregivers: age, years, mean (SD)	47.22(13.078)	48.00(12.582)	0.380	0.704
Gender: Female	91	24	3.469	0.063
Education:				
Primary school or below	30	8		
Junior high school	63	7	37.753	0.000**
Senior high school or technical secondary school	46	14		
University degree or above	15	25		
Employment status:				
Employed	76	14		
Unemployed	28	22	13.543	0.001**
Retired	50	18		

* Significant at $p < 0.05$.

** Significant at $p < 0.01$.

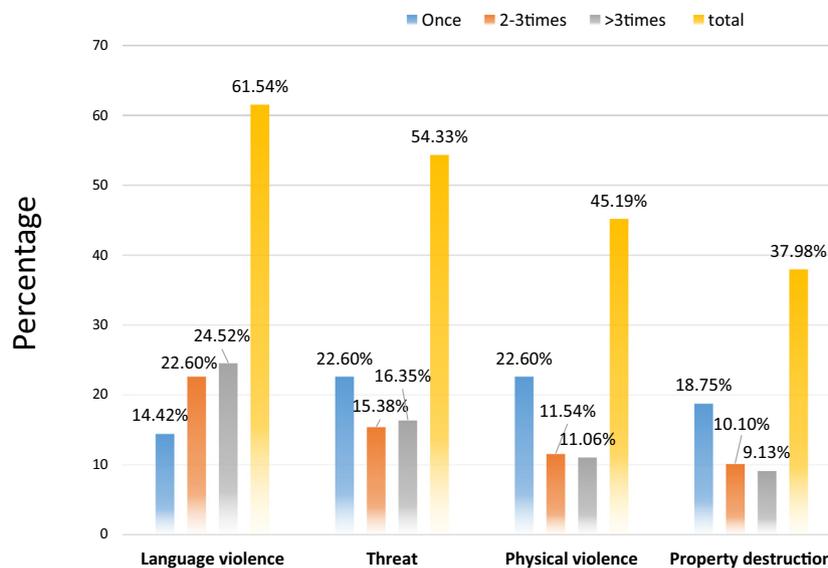


Fig. 1. Frequency of types of violence on primary caregivers in the past year.

Table 2
Risk factors for parents' violence.

Items	OR	95%CI	P value
Age of the patient (years)			
15-35	1.00	Reference	
36-55	0.57	0.21-1.56	0.270
56 or older	0.28	0.09-0.89	0.031*
Marriage of the patient			
Married	1.00	Reference	
Single	3.26	1.37-7.77	0.008**
Divorced or widowed or separated	1.66	0.44-6.24	0.451
Admission times			
Once	1.00	Reference	
2 to 4 times	2.79	1.20-6.44	0.017*
≥ 5 times	3.96	1.25-12.51	0.019*
Education of the patient			
University degree or above	1.00	Reference	
Senior high school or technical secondary school	2.03	0.86-4.81	0.107
Junior high school	4.67	1.60-13.45	0.005**
Primary school or below	19.10	1.84-198.08	0.013*
Way of hospitalization			
Voluntary	1.00	Reference	
Non-voluntary	13.72	2.18-86.25	0.005**

* Significant at $p < 0.05$

** Significant at $p < 0.01$

Table 3
The effects on caregivers.

Items	Proportion in % (n)
Physical effects:	
Pain	58.44(90)
Soft tissue injury	27.27(42)
Trauma	15.58(24)
Fracture	2.60(4)
Cerebral concussion	2.60(4)
Psychological effects:	
Grievance	63.63(98)
Anger	57.79(89)
Helplessness	40.91(63)
Feeling down	39.61(61)
Fear, insecurity	34.42(53)
Hate the patients	22.08(34)
No effects	4.54(7)
Suicidal thoughts	1.30(2)

psychological effects of patient's violence on caregivers mainly contained grievance (63.63%), anger (57.79%), helplessness (40.91%), feeling down (39.61%), fear and insecurity (34.42%), hating the patients (22.08%), etc.

Facing violence from patients, the usual coping strategies of caregivers to violence were: toleration and avoidance in 107 cases (51.44%), communication and counseling with others in 80 cases (38.46%) and tit-for-tat given by caregivers in 19 cases (9.13%).

The caregivers' knowledge and attitudes towards violence

Caregivers of people with SMI viewed violence in different knowledge and attitudes. As indicated in Table 4, nearly half of caregivers (46.15%) did not have a thorough knowledge of the premonitory symptoms of violent behaviors and 50 (24.04%) caregivers regarded poor treatment by doctors as an important cause of the emergency of violence. Moreover, majority (68.75%) of caregivers were not familiar with skills for dealing with violent behaviors. Only 38.94% of caregivers were aware of a strong association between violence and adherence to medication. At the same time, the caregivers' knowledge of violence can also reflect their attitudes towards violence.

39.42% of the primary caregivers felt too ashamed to ask for help when they were caught in the violence of the patients and another

42.79% of the primary caregivers who held negative attitudes towards violence thought that violent behaviors were inevitable. Fortunately, 74.03% of caregivers recognized the importance of training about preventing violence and called for it. 49.04% of caregivers answered "no" to the question that patients without serious physical violence did not need treatment.

Table 4 also compares knowledge and attitudes between the caregivers who had experienced violent behavior and those who did not. Caregiver's understanding of violence ($P = 0.011$), knowledge of adherence to medication ($P = 0.045$), willingness to ask for help ($P = 0.011$), knowledge of treatment ($P = 0.023$) in violent group were significantly different from those of the non-violent group.

Discussion

Caregivers reports of patient-initiated violence

This study surveyed 208 caregivers who cared for patients with a diagnosis of SMI, an astonishing 74.03% of caregivers experienced violence over the past years. This is higher than a study on the incidence of violent behaviors in which the estimated 20–35% reported by Labrum & Solomon, 2017 in the past 6–12 months. The primary caregivers in this study took care of patients for > 8 h a day, at least 5 days a week, lengthier cohabitation and frequent communication with patients may be associated with a significantly higher incidence. Furthermore, the majority of patients in this study were admitted to hospital involuntarily, which meant that their recent condition was not stable and they were prone to conduct violent behaviors due to symptom domination or poor emotional control.

Exposure to a broad range of violence, including language (61.54%), physical (45.19%), property (37.98%) violence and threats (54.33%). Language violence and threats were the most frequent types of violence, which was consistent with a study on language violence and threats (Varghese et al., 2016). Language violence and threats are mild forms of violence among patients, which invisibly breeds more serious violence accompanied by some symptoms involving emotional instability, restlessness, pacing back and forth (Faay et al., 2017). Consequently, caregivers who mishandle the initial language violence and threats will end up with more serious forms and consequences of violence. Moreover, physical violence also accounted for a significant proportion in our sample, which may be due to the fact that women (55.33%) and parents (54.82%) were the main caregivers in this study. And the majority of patients were young male, as is traditionally observed in most Chinese family of psychosis. Women have limited physical strength due to the gender difference, so it is difficult for them to cope with the physical violence of patients. And aged parents feel powerless to deal with the physical violence of young adults. Property violence was rare in our sample, about half of what was reported in another study (Madathumkovilakath et al., 2018).

An analysis of the reasons for violence on caregivers

In the present study, there were 120 patients (57.69%) who are dominated by mental symptoms have triggered violence, and the findings were supported by the research done by Witt et al. (2013). Mental symptoms that contribute to perpetuate violence are important obstacles to violence management and obscure the true reasons for violence (Davison, 2005). Some special mental symptoms involving imperative auditory hallucinations, delusion of persecution, delusion of reference and delusion of jealousy (Li, Zhong, Zhou, & Wang, 2018) are reported as important factors affecting the occurrence of violence in patients. However, caregivers cannot recognize psychiatric symptoms very well, neglecting some subtle changes and abnormal actions that occur under the control of mental symptoms. Eventually, violence was triggered. Therefore, it's necessary for caregivers to discern the roots of violence and evaluate mental symptoms, which conduce to lessen the

Table 4
Caregivers' knowledge and attitudes towards violence.

Items	Total	Violence (n,%)	Non-violence (n,%)	χ^2	P value
Understand violence				9.102	0.011
Yes	46(22.12)	38(18.27)	8(3.80)		
A little	118(56.73)	78(37.50)	40(19.23)		
No	44(21.15)	38(18.27)	6(2.88)		
Understand the premonitory symptoms of violence				0.759	0.706
Yes	28(13.46)	19(9.13)	9(4.33)		
A little	84(40.39)	62(29.80)	22(10.58)		
No	96(46.15)	73(35.10)	23(11.06)		
Understand how to deal with precursors of violence				1.408	0.527
Yes	16(7.69)	10(4.81)	6(2.88)		
A little	55(26.44)	40(19.23)	15(7.21)		
No	137(65.87)	104(50.00)	33(15.87)		
Understand skills for dealing with violence				0.720	0.699
Yes	11(5.29)	7(3.37)	4(1.92)		
A little	54(25.96)	41(19.71)	13(6.25)		
No	143(68.75)	106(50.96)	37(17.79)		
Poor treatment by doctors leads to violence				0.954	0.638
Yes	50(24.04)	35(16.83)	15(7.21)		
Not sure	92(44.23)	71(34.13)	21(1.10)		
No	66(31.73)	48(23.08)	18(8.56)		
Violence not relate to adherence to medication				6.305	0.045
Yes	38(18.27)	22(10.58)	16(7.69)		
Not sure	89(42.79)	73(35.10)	20(9.62)		
No	81(38.94)	63(30.29)	18(8.65)		
Violence is inevitable				5.684	0.058
Yes	89(42.79)	73(35.10)	16(7.69)		
Not sure	68(32.69)	48(23.08)	20(9.62)		
No	51(24.52)	33(15.87)	18(8.65)		
Feel reluctant to ask for help				9.090	0.011
Yes	82(39.42)	68(32.69)	14(6.73)		
Not sure	40(15.87)	23(11.06)	17(8.17)		
No	86(44.71)	63(30.29)	23(11.06)		
Violence is not surprising				1.976	0.389
Yes	82(39.42)	62(29.81)	20(9.62)		
Not sure	33(15.87)	27(12.98)	6(2.88)		
No	93(44.71)	65(31.25)	28(13.46)		
Training to prevent violence needs to be held				3.961	0.159
Yes	154(74.03)	119(57.21)	35(16.83)		
Not sure	37(17.79)	25(12.10)	12(5.77)		
No	17(8.18)	10(4.81)	7(3.37)		
Patients without serious physical violence do not need treatment				7.541	0.023
Yes	51(24.52)	35(16.83)	16(7.69)		
Not sure	55(26.44)	35(16.83)	20(9.62)		
No	102(49.04)	84(40.38)	18(8.65)		

Significant at $p < 0.05$.

Significant at $p < 0.01$.

violence by providing the help of specialized knowledge and strategies.

Meanwhile, our results from the current study suggested that 52 (25%) caregivers were attacked when urging patients to take medicine, which was closely related to poor compliance of taking medicine out hospital of patients. This study also confirmed that noncompliance to medications was significant associated with violence perceived by the caregiver (Varghese et al., 2016). Psychiatric patients insist that they are not ill and unwilling to take medicine because they are generally not fully aware of their illness (Hanzawa et al., 2013), so that the more serious the illness is, the worse the compliance is. However, most caregivers simply force the patient to take the medication, without effective communication with the patient. The violence threshold may be lowered through ineffective communication, leading to more serious conflicts and violent behaviors (Otero et al., 2011). This study not only shown that the medication compliance of psychiatric patients needs to be improved, but also indicated that there were problems in the communication between caregivers and patients. Therefore, the importance of insisting on taking medicine as the most basic condition to reduce the recurrence of mental illness should be emphasized in health education. In the meantime, caregivers should learn to use the correct way of communication to de-escalate violence, instead of inducing the patients' irritable mood and subsequent violence by simply urging them to take

medicine.

In addition, the patients' refusal to be hospitalized and the caregiver's restriction on the patients' range of activities are also important reasons for violent behaviors of patients. In this study, 46 cases (22.12%) of patients' violent behaviors were caused by the above two reasons respectively. Restricting the range of activities of patients for safety considerations will inevitably deprived patients' necessary entertainment and communication (Zou, Li, Nolan, Wang, & Hu, 2013). When the needs of these patients are not met, they resort to violence, and it is in keeping with their character to do so in such cases. In fact, satisfying their desires and needs may be the motivation for violent behaviors of patients. Most patients can benefit from violence (Coogan, 2011). The more patient gain from violence, the more violence caregivers will experience in the future. Under the Chinese traditional culture background, families will feel guilty to their relatives afflicted with mental illness and try to tolerate the violence of patients as much as possible, which leads to the intensification of violence. It is therefore important for medical staffs to provide caregivers with professional knowledge about patients' real motivation for violence in order to improve their skills of problem-solving.

Risk factors correlates of violence on caregivers

Contrary to expectation, there was no statistical significance between patient's sex, age and the incidence of violence ($P = 0.344$, $P = 0.283$). However, these findings are contrary to past research (Carr et al., 2008; Witt et al., 2013) that male gender, lower age were significant predictors of violence of individuals with SMI. Therefore, based on previous studies and clinical experience, it is necessary to further explore the influence of gender and age on violence. Meanwhile, different marital status of the patients was closely related to the appearance of violence ($P = 0.015$). A stable marital relationship with full family support can play a positive role in patients with their rehabilitation, life satisfaction and social interaction, so as to prevent and reduce the occurrence of violence as being supported by another study (Černý et al., 2018). In addition, our results also are similar to a previous study (Fleischman, Werbeloff, Yoffe, Davidson, & Weiser, 2014) that patients' education, way of hospitalization and frequency of hospitalizations were significant predictors of violent behaviors of individuals with SMI ($P = 0.024$, $P = 0.000$, $P = 0.036$). Compared to patients who admitted voluntarily and less frequently, patients admitted involuntarily and frequently have poor medical compliance and unstable conditions that lack awareness of their current state, and they are prone to conduct violence under the control of symptoms or uncontrollable emotion (Volavka, 2016; Witt et al., 2013). Therefore, patients are usually unwilling to cooperate and thus prone to conducted violence against their caregivers under the circumstances (Carr et al., 2008). All the above variables are included in multiple regression analysis.

Multivariate regression analysis further proved that multiple hospitalizations, unmarried, low educational level and involuntary hospitalization were risk factors leading to violence of people with SMI, while increasing age was the protective factor. Firstly, our results are similar to previous study that the risk of violence decreased with the increase of age (Witt et al., 2013). Violence is well known to decrease from adolescence through the middle age. This observation is reasonable as it is easier for patients to control their emotions without being affected by impulsivity along with the increase of age. Secondly, patients who have been hospitalized for many times may be at increasing risk of relapse and violence due to poor out-of-hospital medication compliance (Cheng, Chen, Lin, & Huang, 2018). Thirdly, unmarried patients are less likely to get emotional support from stable relationships and marriages, and are prone to conducted violence. Finally, patients usually deny illness and refuse to be hospitalized. At the same time, the closed-off management of hospital make patients feel that their freedom is restricted (Papadopoulos et al., 2012), thus it is not surprising that patients resist hospitalization. In conclusion, disagreement in treatment between patients and caregivers mentioned above will increase the risk of violence perpetrated by the patients.

The effects of violence on caregivers

Our study observed that 58.44% of caregivers who was violently attacked by a patient suffered from pain, 27.27% suffered from soft tissue injury and 2.60% suffered from fracture. Previous studies found that pain and fractures are serious consequences of physical violence (Goodfellow, Bone, & Gelberg, 2018; Hegarty, 2013). Although the serious consequences of patients' violence on caregivers are relatively few, the negative psychological effects of violence on caregivers should not be neglected (Hayes et al., 2015; Onwumere et al., 2014). Families are obligated to take care of individuals suffering from mental illness in Chinese traditional culture, which has contributed to the caregivers' burden in China. The psychological effects from a patient's violence are strongly associated with the increasing pressure of caring for a family member with SMI who conducts violence (Hanzawa et al., 2013). This current study found that caregivers who were subjected to violence tend to appear a broad range of negative emotional states, including

grievance, anger, fear and depression (Perlick et al., 2005). 22.08% of caregivers had the idea of hating the patient in this study, but did not had the extreme idea of wanting the patient to die, contrary to the results of another Japanese study (Kageyama et al., 2018). Our results displayed that only 1.3% of caregivers had suicidal thoughts after experiencing a patient's violence, while 15.7% of caregivers in another study had suicidal thoughts (Kageyama et al., 2018). It also indirectly reflects that a minority of Chinese caregivers of SMI has extreme thoughts after being subjected to violence, and most of them are still able to keep negative emotions under control. However, such negative emotions will still affect the care of patients by reducing the quality of life and confidence of caregivers. Community and hospitals should pay more attention to cope with it in time so that they can get more social support.

Caregiver's coping strategies to violence

A wide range of coping strategies to deal with the violent behavior from patients can be employed by caregivers. With respect to the survey of caregivers' coping strategy after experiencing violent behaviors, 51.44% of caregivers' coping strategy of violent attacks were tolerance and avoidance. Coincidentally, previous studies have also identified that tolerance and avoidance were indeed the main coping methods of caregivers facing violence from patients (Mackay & Pakenham, 2012; Onwumere et al., 2011). In traditional Chinese culture, mental illness might be seen as a punishment for the violation of Confucian tradition. Any violation of such tradition would provoke the god's wrath that results in mental illness (Lin & Lin, 1981). As a result, caregivers who care for a mentally ill family member may feel guilty and choose tolerance or avoidance in the face of the patient's violence. Moreover, it is widespread that stigmatized attitudes towards people with mental illness (Stefanovics et al., 2016). Stigma discourages caregivers from talking about the illness of relatives with mental illness in front of outsiders, let alone violence. However, the use of avoidance has a negative impact on the symptoms of patients than other strategies and might therefore conduce to patients' relapse (Varghese et al., 2016).

In addition to emotion oriented coping strategies, 38.46% of caregivers adopted problem oriented as the coping strategies including communication and consults to others. The use of oriented coping suggested that the relatives perceived that they could do something to improve the situation rather than relying on day dreamed, imagined or hoped for a miracle to cope with the patient's violent behaviors (Varghese et al., 2016).

To our Surprise, 9.13% of caregivers employed tit-for-tat approaches that often irritates patients and escalates violence to deal with violence from patients, which led to more serious consequences. The commonest coping strategy adopted by the caregivers should be making great efforts to figure out what problems are so that they can develop a plan for the future. Of course, the caregivers can get comforts if they have the knowledge and strategies to manage the violent behaviors from the patient.

The caregiver's knowledge and attitudes towards violence

The present study also compared the knowledge and attitudes towards violence of SMI between caregivers who experienced violence and those not. The results of this study shown that caregivers had a low level of practical and perceived knowledge of violence of patient, particularly in the premonitory symptoms and skills of dealing with violence, and they were not prepared for the management of violence. Results of attitude items indicated that some caregivers had a negative attitude towards violence.

Of 208 caregivers, 56.73% of caregivers had limited understanding of violence, which was similar to a study that caregivers lack knowledge regarding violence from patients. And there was a statistically significant difference between the two groups in their knowledge of

violence. Caregivers who have experienced violent behaviors of patients potentially increase their understanding of violence. In terms of knowledge about premonitory symptoms towards violence, 40.39% of caregivers had a little knowledge and 46.15% of caregivers were completely unaware of it. In a study by Faay et al., results shown that there will be warning signs before the appearance of violence, including restlessness (21.2%), not listening (15.2%) and anger (9.8%) (Faay et al., 2017). Knowledge of these warning signs may help caregivers pay more attention to predicting changes in violent behaviors in their daily lives. Moreover, 50(24.04%) caregivers regarded poor treatment by doctors as an important cause of the emergency of violence. When caregivers do not fully understand the characteristics of mental illness, misunderstanding and questioning treatment will inevitably lead to potential medical disputes. Therefore, it is suggested that future health education should focus on explanation.

The attitude item indicated that the caregiver had a negative attitude towards violence and poor preparation ability, which was complementary to the caregiver's knowledge of violence. A total of 82 caregivers(39.42%) had clearly expressed their unwillingness to expose violence to the public. Negative attitudes and discrimination towards patients and caregivers in society aggravated the stigma that leads caregivers to avoid talking about relatives with mental illness in order to prevent humiliation(Chang & Horrocks, 2006). Willingness to talk to others about violence from people with SMI is particularly important for caregivers as there is evidence that caregivers turn to others for help deal with problems rather than avoid them(Madathumkovilakath et al., 2018). Furthermore, 42.79% of caregivers thought violence was inevitable. Patients with SMI exhibit a range of behaviors that are dominated by psychotic symptoms(Černý et al., 2018), caregivers who lack the knowledge of SMI will regard violence as an inevitable manifestation of psychopathy. Only 38.94% of caregivers in this study deemed that violence was closely related to medication compliance. Some caregivers simply assumed that discharging from hospital represent the disease has been cured, that is to say, there is nothing wrong with stopping taking medicine, so some caregivers do not effectively supervise and manage the drug treatment of patients, resulting in the relapse of patients and repeated hospitalization, which not only makes the family spend a lot of manpower and financial resources, but also reduces the confidence of patients and their families in disease control. Fortunately, 74.03% of caregivers advocated that training on violence prevention in hospitals or communities should play a key role in improving caregivers' knowledge of violence, which indicated that such training for caregivers should be included in future health education (Kageyama, Solomon, Kita, et al., 2016).

Implications

Risk factors for violence on caregivers were determined to be poor treatment compliance, deficiency of communication skills, insufficient knowledge of mental illness, limitations of the patient's range of activities and so on. In order to lower the rate of violence against caregivers, these risk factors need to be reduced wherever possible. Firstly, patients after releasing from hospital mainly receive treatment and management at home or in the community, so the rehabilitation of patients depends on adherence to treatment and good family management. That is to say, health education for caregivers and patients should not be confined to hospitals but extended to communities and families. Secondly, the treatment of psychiatric patients is a long-term process. Hence, our findings would help to educate caregivers regarding the knowledge of drug compliance of patients, so that they can grasp practical knowledge about nursing. With the help of a combination of such knowledge and a doctor's advice, the poor compliance of drugs will improve to a large extent. Thirdly, health education that includes training of communication skills and handling skills directed to violence devote to alleviate the patients' negative emotion and prevent the occurrence of violence. Eventually, a strong link between stigma and

rehabilitation of patients was identified, and health education should be adopted to improve the general people's awareness of mental illness in order to eliminate prejudice and create a more relaxing environment for patients' rehabilitation.

Limitations

The current study features several limitations. Initially, the respondents in our study were all from the same psychiatric hospital, which revealed that this study was a single-source design. Although the respondents were all from the same hospital, Beijing's influence as the capital attracted patients from all over the country, not just from Beijing native. However, it is still suggested to conduct the study in different psychiatric hospitals in the future. What's more, an exploration of testing the directionality of the relationships is not allowed in the present study because of the design of cross-sectional. For increasing confidence in the explanation of results, longitudinal study designs are indispensable in the future.

Three directions for further research are mentioned. First, it is suggested that future intervention researches should be conducted according to the main causes of violence against caregivers. Next, it is helpful to further explore the psychological impact of caregivers after violence by adopting the method of random sampling and qualitative interview. At last, providing individualized health education based on the characteristics of caregivers' age, gender, education level and receptiveness is aimed at reducing violence on caregivers and improving the quality of caregivers' life.

Conclusion

The current study reported violent experiences of caregivers of people with SMI outside the hospital. Most caregivers reported that they have experienced violence, mainly verbal abuse. Caregivers play the most prominent role in relationships with psychiatric patients, especially in dealing with the violence aimed at caregivers. Cautions must be reserved in managing such violence. Nonetheless, this study explored that most of the primary caregivers were unable to cope up with the violence properly. The high incidence of violence has both physical and psychological effects on caregivers. Our finding of violent victimization in caregivers who were responsible for caring for people with SMI in this setting highlighted the requirement to provide access to mental health care, intervene to reduce the rate of violence on caregivers in family care, as well as health education for caregivers. On top of that, coping strategies training to handle violence in SMI may deserve to be incorporated to therapy of people with SMI.

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Declaration of competing interest

The authors state that they have no conflicts of interest to expose.

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