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published in
Journal of Affective Disorders
2018

DOI (link to publisher)
10.1016/j.jad.2018.06.019

document version
Publisher's PDF, also known as Version of record

document license
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citation for published version (APA)
Christ, C., de Jonge, M., Bockting, C. L. H., Kikkert, M. J., van Schaik, D. J. F., Beekman, A. T. F., & Dekker, J. J. M. (2018). Prevalence and predictors of violent victimization in remitted patients with recurrent depression. *Journal of Affective Disorders*, *238*, 405-411. Advance online publication. https://doi.org/10.1016/j.jad.2018.06.019

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Journal of Affective Disorders 238 (2018) 405–411

Contents lists available at ScienceDirect

Journal of Affective Disorders

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

Research paper

Prevalence and predictors of violent victimization in remitted patients with recurrent depression

C. Christ[a,b,c,1,*], M. de Jonge[a,1], C.L.H. Bockting[d], M.J. Kikkert[a], D.J.F. van Schaik[b,c], A.T.F. Beekman[b,c], J.J.M. Dekker[a,e]

[a] Department of Research, Arkin Mental Health Care, Klaprozenweg 111, Amsterdam 1033 NN, The Netherlands
[b] Department of Psychiatry, VU University Medical Center/GGZ inGeest, The Netherlands
[c] Amsterdam Public Health research institute, VUmc, Amsterdam, The Netherlands
[d] Academic Medical Center, Department Psychiatry, University of Amsterdam, Amsterdam, The Netherlands
[e] Vrije Universiteit Amsterdam, Department of Clinical Psychology, Amsterdam, The Netherlands

ARTICLE INFO

Keywords:
Victimization
Violence
Depression
Remission
Assault
Sense of mastery

ABSTRACT

Background: Depressed patients are at increased risk to fall victim to a violent crime compared to the general population. It remains unknown whether their increased risk persists after remission. This study compared victimization rates of remitted patients with both a random general population sample and a group of currently depressed patients. Furthermore, this study aimed to identify predictors of future violent victimization.
Methods: In this longitudinal study conducted in the Netherlands, 12-month prevalence rates of sexual assaults, physical assaults, and threats were assessed with the Safety Monitor in 140 currently remitted patients with recurrent depression, and compared to those of a weighted general population sample (N = 9.175) and a weighted sample of currently depressed outpatients (N = 102) using Chi-square tests. Logistic regression analyses were performed to identify baseline predictors of future victimization.
Results: The prevalence of violent victimization did not differ between remitted patients and the general population (12.1 vs. 11.7%). Remitted patients were significantly less likely to have been victimized over the past 12 months than currently depressed patients (12.1 vs. 35.5%). In remitted patients, living alone and low sense of mastery at baseline predicted future violent victimization. However, when combined in a multiple model, only living alone was independently associated with violent victimization (χ^2 = 16.725, df = 2, p < .001, R^2 = 0.221).
Limitations: Our comparison of victimization rates across samples was cross-sectional.
Conclusions: Since the increased risk of victimization appears to be specific for the acute depressive state, preventive interventions should target victimization in currently depressed patients.
Trial registration: Netherlands Trial Register (NTR): 2599.

1. Introduction

Psychiatric patients are at risk to fall victim to a violent crime. The risk of violent victimization - physical assault, sexual assault or threat - in psychiatric patients is known to be up to 11 times higher compared to the general population (Kamperman et al., 2014; Khalifeh et al., 2016; Teplin et al., 2005). Victimization is a highly stressful event that impairs quality of life (Lam and Rosenheck, 1998) and may cause depressive symptoms (Kilpatrick and Acierno, 2003; Krahé and Berger, 2017), posttraumatic stress disorder (Dworkin et al., 2017; Resnick et al., 1997), substance abuse (Resnick et al., 1997), treatment resistance (Neria et al., 2005), and the risk of revictimization (Roodman and Clum, 2001). Furthermore, victimization heightens service use and productivity losses, causing a substantial burden for society (Robinson and Keithley, 2000).

Most studies on victimization have been conducted in patients with severe mental illness (SMI) (e.g., de Mooij et al., 2015; Maniglio, 2009; Walsh et al., 2003) and patients with substance use disorders (e.g., Stevens et al., 2007). Only few studies have focused on violent victimization in other specific populations, such as depressed patients, who

* Corresponding author at: Department of Research, Arkin Mental Health Care, Klaprozenweg 111, 1033 NN Amsterdam, The Netherlands.
E-mail address: carolien.christ@arkin.nl (C. Christ).

[1] **Author contributions**: CC and MdJ contributed equally to the manuscript. CC and MdJ drafted the original version of the manuscript that was added to and modified by JD, CB, MK, AS, and AB. All authors have read and approved the final manuscript.

https://doi.org/10.1016/j.jad.2018.06.019
Received 26 February 2018; Received in revised form 18 May 2018; Accepted 4 June 2018
Available online 06 June 2018
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appear to be prone to violent victimization as well. In a recent clinical study, Meijwaard et al. (2015) showed that depressed patients were 3.4 times more likely than members of the general population to have fallen victim to a violent crime over the previous year (Meijwaard et al., 2015). Likewise, a meta-analysis across both clinical and non-clinical samples demonstrated that depressed persons are vulnerable to domestic violence (Trevillion et al., 2012). Population-based studies, however, have reported mixed results. Silver et al. (2005) found that depressive disorder was cross-sectionally associated with neither physical victimization, nor sexual victimization in the Dunedin birth cohort study. In a prospective study, however, the presence of a depressive disorder predicted subsequent physical victimization, but not sexual victimization in a female general population sample (Acierno et al., 1999). Contrarily, depression did predict future sexual assault in a large college sample (Krahé and Berger, 2017). Hence, although evidence remains somewhat mixed, the majority of studies suggest that depressed patients are indeed at risk of violent victimization.

To date, victimization studies have only focused on patients in the acute phase of mental disorder. Therefore, it remains unclear whether the increased risk for victimization is a state or a trait effect; in other words, whether it is the result of a heightened vulnerability during the acute phase, or a more permanent characteristic that determines an increased risk of victimization or environmental circumstances before, during and/or after the presence of a disorder. No study has yet examined the prevalence of victimization after remission of depressive episodes - although formerly depressed patients are known to share several characteristics with currently depressed patients, which may increase their vulnerability to victimization. For example, studies in college samples showed that remitted individuals reported lower levels of positive affect than never-depressed peers, both in general (Werner-Seidler et al., 2013) and after perceived stress (O'hara et al., 2014). Remitted individuals have been shown to exhibit differences in emotion regulation, negative affect and stress response when compared to never-depressed controls (e.g., Ehring et al., 2008; Foland-Ross et al., 2014). Moreover, remitted patients have been found to encounter more interpersonal problems than controls (Fava et al., 2007; Kennedy and Paykel, 2004). Both interpersonal problems (de Waal et al., 2018; Stepp et al., 2012) and emotion regulation difficulties (Messman-Moore et al., 2013; Walsh et al., 2012) have been associated with a risk of victimization. Finally, depressive symptomatology has been associated with a lower sense of mastery (Ennis et al., 2000), which has been demonstrated to predict a higher risk for subsequent life events (Shanahan and Bauer, 2004) and subsequent traumatic exposure (Gil and Weinberg, 2015). Hence, not only currently depressed patients, but also remitted patients with recurrent depression may be at increased risk of victimization.

The main objective of this study was to examine the 12-month prevalence rates of violent victimization in remitted patients with a history of at least two depressive episodes, and to compare these with violent victimization rates of both a large sample of the general population (N = 9,175) and a sample of depressed outpatients (N = 102). We expected remitted patients to be victimized more frequently than members of the general population, but less frequently than currently depressed patients. Furthermore, we aimed to identify predictors of violent victimization in remitted patients, by exploring associations with both demographic and clinical characteristics. We hypothesized that female gender, a lower age, more previous depressive episodes, higher levels of depressive symptoms, negative affect and sad mood, lower sense of mastery, and lower levels of positive affect and interpersonal functioning at baseline predicts a higher risk for future violent victimization at follow-up.

2. Methods

2.1. Design

In this study, we first cross-sectionally compared the 12-month prevalence rates of violent victimization in remitted patients with victimization rates in both a large sample of the general population and a sample of currently depressed outpatients. The methods regarding the three different samples are provided below. Second, utilizing a longitudinal, prospective design, we tested putative predictors of violent victimization in remitted patients. This study utilized data from a larger study: a randomized controlled trial that examined the effectiveness of Preventive Cognitive Therapy (PCT) added to Treatment As Usual in the prevention of relapse in remitted patients with recurrent depression (de Jonge et al., 2015). Since PCT was not directed at preventing victimization, we did not expect an effect for conditions. Nevertheless, we assessed whether an effect of condition existed. A detailed description of the methods is available elsewhere (de Jonge et al., 2015); a summary of the methods is provided below. The study protocol was approved by the Medical Ethical Committee, *Stichting Medische-Ethische Toetsingscommissie Instellingen Geestelijke Gezondheidszorg (METiGG)*, and was conducted in accordance with the 1964 Declaration of Helsinki and its later amendments. All patient data were pseudonymized using unique study codes that were used to code and file all electronic information. Only designated members of the research team have access to a secured file with the key that links this code to the participant's identity. All informed consents are stored both electronically and in hard copy, with the hard copies stored in a locked cabinet.

2.2. Participants

2.2.1. Primary sample: remitted patients

Between January 2012 and August 2014, 2064 patients from five different mental health centers in the Netherlands were either approached by their caregiver or recruited via media. Patients were included if they a) had experienced at least two previous Major Depressive Episodes (MDEs); b) were in remission for at least two months as assessed by the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (Spitzer et al., 1992); c) had absent or mild depressive symptoms defined as a current score of <14 on the 17-item Hamilton Depression Rating Scale (Beck et al., 1961); d) had received prior cognitive therapy with a minimum of eight sessions; and e) had sufficient understanding of the Dutch language. Patients were excluded if they had a) mania, hypomania, or a history of bipolar disorder; b) any current or previous psychotic disorder; c) current alcohol or drugs misuse; or d) acute predominant anxiety disorder. All patients received both verbal and written information about the study, and all participants provided written informed consent prior to the first interview. For the current study, only data of patients who were still in remission at 15 months after baseline were used.

In total, 659 patients were assessed for eligibility, and 214 patients met the inclusion criteria and consented to randomization. Of these 214 participants, 88% were recruited via treatment centers and 12% through the media. Primary outcome data were obtained for 195 (91.1%) participants, and 19 (8.9%) participants were lost to follow-up. For the purpose of this study, data of 140 participants (71.8%), who had not experienced relapse or recurrence during the follow-up phase of the study, were used. Ethnicity, living situation, and education were missing for one individual. An overview of the demographic and clinical characteristics of the participants is presented in Table 1. Participants were on average 43 years old (M = 43.67, SD = 11.67) and mostly female (n = 90, 64.3%).

2.2.2. Comparison group 1: sample of the general population

The first comparison group consisted of a sample of 9,175 adult participants aged between 18 and 65 years from the general population

Table 1
Sociodemographic and clinical characteristics of remitted patients (N = 140), and the unweighted samples of the general population (N = 9.175) and currently depressed patients (N = 102).

Characteristic	Remitted patients (N = 140)	General population (N = 9,175)	Currently depressed patients (N = 102)
Age in years, mean (SD)	43.67 (11.67)	42.97 (12.62)	43.75 (9.19)
Gender, *n* (%)			
Male	50 (35.7)	4289 (46.7)	34 (33.3)
Female	90 (64.3)	4886 (53.3)	68 (66.7)
Ethnicity, *n* (%)			
Western	123/139 (88.5)	6580 (71.7)	57 (55.9)
Non-Western	16/139 (11.5)	1982 (21.6)	45 (44.1)
Missing		305 (3.3)	
Living Alone, *n* (%)	58/139 (41.7)		
Education, *n* (%)			
Low	18/139 (12.9)		
Intermediate	44/139 (31.7)		
High	77/139 (55.4)		
Received PCT, *n* (%)	72 (51.4)		
Previous MDEs, mean (SD)	3.91 (3.35)		
CR Depressive sympt., mean (SD)	4.01 (3.72)		
SR Depressive sympt., mean (SD)	15.71 (8.33)		
Sad Mood, mean (SD)	33.98 (19.89)		
Negative Affect, mean (SD)	6.26 (6.28)		
Positive Affect, mean (SD)	17.93 (7.64)		
Sense of Mastery, mean (SD)	17.34 (3.41)		
Interpersonal Problems, mean (SD)	148.77 (32.65)		

Note: PCT = Preventive cognitive therapy; MDEs = Major Depressive Episodes; CR Depressive sympt. = Clinician-rated depressive symptomatology by the Hamilton Depression Rating Scale; SR Depressive sympt. = Self-rated depressive symptomatology by the Inventory of Depressive Symptomatology-Self Report.

of Amsterdam. Participants were recruited by Research Information and Statistics in 2011, commissioned by the governmental institution Statistics Netherlands. Violent victimization in the previous 12 months was measured with a self-report questionnaire, which were distributed over the Internet, or as paper copies. If participants did not respond to the survey, the assessment was conducted over telephone or a face-to-face interview at home.

2.2.3. Comparison group 2: currently depressed patients

Participants were recruited at a specialized department for mood and anxiety disorders of Arkin Mental Health Care in Amsterdam between January 17, 2011, and January 24, 2012. In this cross-sectional study, violent victimization in the previous 12 months was measured in a face-to-face survey. Surveys were carried out by trained psychology research associates, and took place at the participant's mental health care center or the participant's home. Patients were eligible for the study if they: 1) had a primary diagnosis of depressive disorder, including major depressive disorder, dysthymic disorder, or depressive disorder not otherwise specified according to the DSM-IV (American Psychiatric Association, 2000); 2) were at least 17 years old; and 3) had sufficient understanding of the Dutch language. Out of 193 patients who were interested in participating in the study, 102 patients were included. All patients received outpatient care, and received both verbal and written information about this study by their therapist. Written informed consent was obtained from all participants prior to the survey. Participants received a monetary compensation of €15,- for their participation. A more detailed description of this study has been described elsewhere (Meijwaard et al., 2015).

2.3. Measures

2.3.1. Victimization

In each sample, violent victimization was measured with Section 4 of the Safety Monitor (Dutch version: Veiligheidsmonitor) (Akkermans et al., 2013) which is developed by the Dutch Ministry of Security and Justice. The Safety Monitor strongly resembles the International Crime Victimization Survey (ICVS) (Martin, 2010), and is used by Statistics Netherlands (CBS) to measure victimization on a large scale. The Safety Monitor is an adequate self-report instrument that assesses victimization of 11 different crimes, subdivided into three categories: violent crimes, property crimes and vandalism. For the purpose of this study, we only assessed the overall violent crimes category and its three subcategories: physical assault, sexual assault and threat. For each of these crimes, participants first were asked whether they had become victim of that crime in the past 12 months, and, when answering affirmative, how frequently they experienced that crime in the past 12 months. For the analyses, we used the dichotomous response of whether or not patients had become victim of each subcategory. Violent victimization was scored positively if the patient had answered affirmatively on at least one out of three crime subcategories.

2.3.2. Remission status and previous MDEs

In the remitted sample, remission status and number of previous MDEs were determined using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) and the life-chart (Spitzer et al., 1992). The assessments where conducted by trained assessors who attended regular consensus meetings to enhance inter-rater agreement. In the currently depressed sample, the presence of an MDE was determined by the current DSM-IV diagnosis as stated by the therapist during the diagnostic intake procedure.

2.3.3. Demographic and clinical characteristics

In the remitted sample, demographic and clinical characteristics were assessed at baseline. Living situation was determined by asking the patients whether they lived alone or with a partner or roommate. In the currently depressed sample, sociodemographic information was assessed with Section 12 of the Safety Monitor.

2.3.4. Depressive symptomatology

Depressive symptomatology was assessed with both a self-report questionnaire and a clinician-rated questionnaire in the remitted sample. The Inventory of Depressive Symptomatology – Self Report (IDS-SR; Dutch version) is a 30-item self-report measure in which patients rate their symptoms on a scale of zero to three. The IDS-SR rates all DSM-IV core symptom domains including mood, cognitive and psychomotor symptoms, but also commonly associated symptoms including anxiety, to assess levels of depressive symptomatology. The IDS-SR has excellent psychometric properties (Rush et al., 1996). In the current study, internal consistency of the IDS-SR was good (Cronbach's $\alpha = 0.84$).

The Hamilton Depression Rating Scale (HDRS) is a 17-item clinician-rated interview that measures levels of depressive symptomatology. This widely used semi-structured interview covers affective, behavioral and biological symptoms with scores ranging from 0 to 52 (Hamilton, 1960).

2.3.5. Sad mood

Sad mood was assessed by a one-item, digitally administered Visual Analogue Mood Scale (VAMS). The VAMS consists of a line that runs from zero to 100, with the descriptors “happy” located on the left side

and “sad” on the right side (consistent with van Rijsbergen et al., 2012). Patients were asked to rate their current mood by placing a cursor on the line, with the following instruction: “please rate your current mood”. A higher score represents a sadder mood. The VAMS has been used in previous research examining the effect of sad mood on relapse and recurrence (van Rijsbergen et al., 2012; van Rijsbergen et al., 2014).

2.3.6. Positive affect and negative affect

Positive affect (PA) and negative affect (NA) were assessed by using the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988). Patients were asked to rate their current mood on a 5 point Likert scale. The PANAS consists of 10 positive items that represent PA and 10 negative items that represent NA. The Dutch version was used (Engelen et al., 2006), which yielded good to excellent internal consistency in our sample of remitted patients, with a Cronbach's alpha of 0.89 for the NA scale and 0.91 for the PA scale.

2.3.7. Sense of mastery

Sense of mastery was measured using the abbreviated 5-item version of the Pearlin Mastery Scale (PMS) (Pearlin and Schooler, 1978). Sense of mastery concerns the extent to which a person perceives oneself to be in control of events and factors that influence one's life (Pearlin and Schooler, 1978). Items are rated on a 5-point Likert scale, for example: “There is really no way that I can solve some of the problems that I have.” The PMS has adequate psychometric properties (Pearlin et al., 1981; Pearlin and Schooler, 1978). In the current study, the internal consistency was good (Cronbach's $\alpha = 0.83$).

2.3.8. Interpersonal functioning

To measure interpersonal functioning, the Inventory of Interpersonal Problems – Circumplex (IIP-C) was used. The IIP-C is a self-report measure that consists of 64 items designed to measure interpersonal deficiencies and excesses (Alden et al., 1990). Patients are asked to rate two types of items: interpersonal behaviors that are “hard for you to do” (e.g., “It is hard for me to be self-confident when I am with other people”) and interpersonal behaviors that “you do too much” (e.g., “I open up to people too much”). Items are rated on 5-point response scale ranging from 0 (not at all) to 4 (extremely). The current study used the total score of the IIP-C. The Dutch version of the IIP-C has good psychometric properties (Horowitz et al., 1993; Vanheule et al., 2006). In the current study, the internal consistency was excellent (Cronbach's $\alpha = 0.95$).

2.4. Procedure

Upon entry in the study, patients were followed for 15 months. The SCID-I and HDRS were administered at baseline and after 15 months via telephone or face-to-face interviews, which were performed by trained assessors. The Safety Monitor was administered in a telephone interview at 15 months after baseline – covering the prior 12 months. The IDS-SR, VAMS, PANAS, PMS, and IIP were administered online: patients received a personalized hyperlink via email, which gave access to the online questionnaires. The IDS-SR, VAMS, PMS, and IIP were administered at baseline, and the PANAS was administered 4 weeks after baseline.

2.5. Data analysis

We compared the prevalence rates of violent victimization in remitted patients with those in a sample of the general population in the Amsterdam district, and a sample of depressed outpatients. To improve comparability of these groups and our sample of remitted patients, data from both comparison groups were weighed for gender, age and ethnicity – variables that may be associated with risk of victimization. First, weights larger or smaller than 1 were assigned to participants who were respectively underrepresented or overrepresented in each comparison sample relative to the remitted patient sample. Second, final weights were calculated by multiplying the weights for age, gender, and ethnicity. Subsequently, we used a chi-square to compare the prevalence rates of violent victimization in remitted patients with those in the general population and the currently depressed sample. We differentiated between overall violent victimization and the subcategories physical assault, sexual assault, and threat. For sexual assaults, we used Fischer's exact test, since there were only two counts of sexual assaults in the remitted sample. In addition, risk ratios were calculated for each type of victimization.

Second, we used a Binary logistic regression to predict overall violent victimization in the sample of remitted patients ($N = 140$). Putative predictors were demographic, clinical, and illness-related characteristics: age, gender, ethnicity, living situation, treatment condition, number of previous depressive episodes, depressive symptoms, sad mood, negative affect, positive affect, sense of mastery, and interpersonal problems. Finally, we fitted a multiple logistic regression model to predict violent victimization with the significant predictors that originated from the previous analyses. All variables with $p < .20$ in the univariate analyses were entered in the model. Goodness-of-fit was assessed using the Hosmer-Lemeshow test. All statistical analyses were conducted using SPSS Statistics 22.0, and statistical significance was set at $p < .05$.

3. Results

3.1. Prevalence of violent victimization

As shown in Table 2, we found no significant difference in prevalence rates of overall violent victimization, threat, physical assault, and sexual assault between the remitted patients and the general population (12.1% vs. 11.7% for violent victimization, resp.), χ^2 (1, $N = 9{,}315$) = 0.032, $p = .858$. Remitted patients were 2.9 times less likely to be violently victimized over the past 12 months than currently depressed patients (12.1% vs. 35.5%, resp.), χ^2 (1, $N = 242$) = 19.138, $p < .001$, as shown in Table 3. These findings indicate that remitted patients with recurrent depression do not have an increased risk to become victim of a violent crime as compared to the general population. Since no significant interaction with gender existed, victimization rates are not reported separately for male and female respondents.

3.2. Predictors of violent victimization

Table 4 provides the results of the univariate logistic regression analyses for the associations of sociodemographic and clinical characteristics with violent victimization. We found that living alone at baseline prospectively predicted more future violent victimization during 12 months – increasing the risk of violent victimization more

Table 2
Comparison of prevalence rates of violent victimization in remitted patients and a weighted sample of the general population of Amsterdam.

Type of victimization	Remitted patients ($N = 140$) % (95% CI)	Population Amsterdam[a] ($N = 9{,}175$) % (95% CI)	χ^2	df	p	RR[c]
Violent victimization	12.1 (6.7–17.6)	11.7 (11.0 – 12.4)	0.032	1	.858	1.04
Threats	7.9 (3.3–12.4)	7.9 (7.4 – 8.5)	0.001	1	1.00	0.99
Physical assaults	4.3 (0.9–7.7)	2.1 (1.8–2.4)	3.090	1	.079	2.04
Sexual assaults	1.4 (−0.6–3.4)	3.5 (3.1–3.9)	[b]	[b]	.244	0.41

[a] VM data was weighed for gender, ethnicity and age.
[b] Fischer's Exact test was used, due to $n < 5$.
[c] Risk ratio for remitted patients compared to the general population.

Table 3
Comparison of prevalence rates of violent victimization in remitted patients and a weighted sample of depressed patients.

Type of victimization	Remitted patients (N = 140) % (95% CI)	Depressed patients[a] (N = 102) % (95% CI)	χ^2	df	p	RR[c]
Violent victimization	12.1 (6.7–17.6)	35.5 (26.3–44.7)	19.138	1	.000	2.9
Threats	7.9 (3.3–12.4)	19.1 (11.7–26.7)	6.641	1	.010	2.4
Physical assaults	4.3 (0.9–7.7)	16.1 (9.1–23.1)	9.830	1	.002	3.7
Sexual assaults	1.4 (−0.6–3.4)	7.2 (2.3–12.1)	[b]	[b]	.022	5.1

[a] VM data was weighed for gender, ethnicity and age.
[b] Fischer's Exact test was used, due to $n < 5$.
[c] Risk Ratios for Depressed patients compared to the Remitted patients.

Table 4
Univariate logistic regression analyses on associations of sociodemographic and clinical characteristics with violent victimization in remitted patients (N = 140).

	OR	95% CI	p
Age	1.012	0.968–1.057	.604
Gender	0.583	0.210–1.622	.302
Ethnicity	0.355	0.100–1.261	.109
Living situation	8.273	2.253–30.372	**.001**
Received PCT	1.220	0.442–3.371	.701
Previous MDEs	0.983	0.831–1.164	.844
Depressive symptoms (IDS-SR)	1.004	0.944–1.067	.905
Sad mood (VAMS)	0.998	0.968–1.029	.891
Negative affect (PANAS)	0.982	0.898–1.074	.697
Positive affect (PANAS)	1.003	0.934–1.076	.940
Sense of mastery (PMS)	0.849	0.723–0.997	**.045**
Interpersonal problems (IIP-C)	1.012	0.996–1.029	.136

Note: PCT = Preventive cognitive therapy; MDEs = Major Depressive Episodes; IDS-SR = Inventory of Depressive Symptomatology-Self Report; VAMS = Visual Analogue Mood Scale; PANAS = Positive And Negative Affect Schedule; PMS = Pearlin Mastery Scale; IIP-C = Inventory of Interpersonal Problems, total score.

than 8-fold. In addition, a lower sense of mastery at baseline predicted more subsequent violent victimization during 12 months as well, although the association was weak: a lower sense of mastery increased the risk of violent victimization 1.16-fold. Neither any other demographic characteristics (i.e., gender, age), nor any other clinical characteristics (i.e., number of previous depression episodes, depressive symptoms, affect, sad mood, and interpersonal functioning) predicted a higher risk for future violent victimization at follow-up. Table 4 provides an overview of all potential predictors.

Subsequently, we fitted a multiple regression model combining the two significant univariate predictors of victimization during 12 months (Table 5). The multiple logistic regression analysis for violent victimization yielded a significant overall model (χ^2 = 16.725, df = 2, $p < .001$, R^2 = 0.221). Only living alone was independently associated with violent victimization; when combined with living situation, sense of mastery did not significantly contribute to the model. The explained variance of the model (R^2 = 0.221) indicated that 22% of the variance in violent victimization could be explained by living situation and sense of mastery. The Hosmer and Lemeshow test indicated a proper fit to the data (p = .29).

Table 5
Results of multiple logistic regression analysis for associations with violent victimization in remitted patients (N = 140).

	OR	95% CI	p	R^2
Living situation	7.952	2.136–29.602	.002	
Sense of mastery	0.865	0.729–1.027	.098	0.221

4. Discussion

The main purpose of this study was to determine the 12-month prevalence rates of violent victimization in remitted patients with recurrent depression, as compared to a sample of the general population and a sample of currently depressed patients. Contrary to our expectations, prevalence rates of violent victimization in remitted patients did not differ from the prevalence rates in the general population across all categories of violent victimization. As hypothesized, remitted patients had significantly lower prevalence rates compared to depressed patients across all categories of violent victimization. The second objective of this study was to identify potential predictors of future victimization in remitted patients with recurrent depression. We found living alone and a low sense of mastery to be predictive of subsequent violent victimization. When combined with living situation, however, sense of mastery did not significantly contribute to the model.

Our results show that remitted patients do not have an increased risk of falling victim to a violent crime in comparison to the general population – contrary to currently depressed patients. Neither the number of previous episodes, nor the level of depressive symptoms predicted subsequent violent victimization in our sample of remitted patients. Our findings indicate that patients' increased vulnerability to victimization may be limited to the acute phase of depression, and may decrease after remission – thereby representing a state rather than a trait effect. Another possible explanation, however, might be that patients with a current depression are more likely to report victimization than remitted patients, due to mood-congruent cognitive biases. Depressed patients have been demonstrated to exhibit biases toward negative information in memory and interpretation (Mathews and MacLeod, 2005). Their tendency to interpret or memorize ambiguous information as negative may cause depressed patients to appraise and report ambiguous interpersonal situations as victimization more often than others. However, this hypothesis seems to be inapplicable to severe assaults, which are less likely to be considered ambiguous situations. Moreover, it seems unlikely that the substantially increased risk of victimization in depressed patients is completely attributable to mood-congruent bias.

Of all demographic characteristics we examined, only living alone prospectively predicted violent victimization. Individuals who live alone have an 8-fold higher risk to become victim of a violent crime, which is consistent with most (Miethe and McDowall, 1993; Wittebrood, 2006; Xu et al., 2013), but not all (Meijwaard et al., 2015; Teasdale, 2009) previous studies. Comparably, single, divorced, and widowed individuals have been shown to have a higher risk of victimization than others (Cohen and Felson, 1979; Tseloni and Pease, 2003; Wittebrood, 2006). According to *Routine activity theory* (Cohen and Felson, 1979), the increased vulnerability of individuals who live alone may be explained by the absence of capable guardians: persons whose presence discourages potential offenders from perpetrating a crime. From a routine activity perspective, the presence of other household members, such as family members or roommates, decreases one's vulnerability to become victim of a crime by enhancing social control (Cohen and Felson, 1979; Schreck, 2017). An alternative explanation, however, might be that both living alone and victimization risk are influenced by a third, latent factor that was not examined in this study.

A low sense of mastery at baseline was also predictive of subsequent violent victimization at the univariate level, although the association was weak. This is the first study to relate sense of mastery to victimization; however, previous studies have demonstrated that a low sense of mastery increased the risk for future life events (Shanahan and Bauer, 2004) and traumatic exposure (Gil and Weinberg, 2015).

Mastery represents the extent to which one regards life events as being under one's own control (Pearlin and Schooler, 1978). In addition, the sense of mastery is referred to as the capacity to cope with and overcome obstacles by relying on one's own efforts (Hobfoll et al., 2002). Patients who perceive less control of life events and experience a lower capacity to cope with obstacles than others may feel less able to control a threatening situation, and may therefore be less effective in defending themselves. Moreover, these patients may come across as more vulnerable than patients who perceive to be in control, which possibly leads to victimization. However, when combined with living situation in one model, sense of mastery did not significantly contribute to the model. More research is needed to replicate our findings, and to clarify the relation between sense of mastery and victimization.

Contrary to our expectations, all other demographic and clinical characteristics did not predict future violent victimization in remitted recurrently depressed patients. Prior studies have found that both age (de Mooij et al., 2015; Meijwaard et al., 2015; Walsh et al., 2003) and gender (de Waal et al., 2017; Walsh et al., 2003) are associated with violent victimization. In addition, depressive symptoms, psychopathology and interpersonal problems have been demonstrated to be associated with victimization as well (de Mooij et al., 2015; de Waal et al., 2018; Resnick et al., 1997; Stepp et al., 2012). A possible explanation for these unexpected results may be a lack of power, since only 12 percent of our sample experienced victimization. Regarding the absent association between depressive symptoms and victimization, a possible explanation may be that we only included patients with a maximum HDRS-score of 13. Therefore, the range of depressive symptoms may be too small in our sample to detect a significant relation.

This study has several limitations. First, victimization was assessed with a self-report questionnaire, and therefore might be influenced by memory bias. However, the majority of studies have utilized self-report questionnaires to measure victimization, which have been demonstrated to be a more accurate measure than police reports (Rand and Catalano, 2007). In addition, the Safety Monitor has been used in previous studies, which enhances the comparability of our results to the results of others (e.g., de Mooij et al., 2015; de Waal et al., 2018; Kamperman et al., 2014). Second, the low prevalence of victimization negatively influenced our power to detect predictors of victimization. Consequently, it is possible that important predictors could not be detected in our study. Third, our comparison of victimization rates of remitted patients with those of currently depressed patients and the general population was only cross-sectional. Therefore, we are unable to draw firm conclusions regarding the prevalence of victimization during different phases of depression. More rigorously designed longitudinal research is needed to verify the hypothesis that increased victimization rates are limited to the acute phase of depression: future studies should longitudinally assess victimization both during the acute phase of the depression and after recovery in the same sample.

Notwithstanding these limitations, this study also has several strengths. Most importantly, this is the first study to assess prevalence rates of victimization in a relatively large sample of remitted patients with recurrent depression, and to compare these with a sample of the general population and a sample of currently depressed patients. Second, this is the first study to examine potential predictors of victimization in remitted patients. Third, this study used a longitudinal, prospective design. Finally, remission was assessed with the SCID-I, a well-validated clinical interview that is widely used for this purpose. Our results indicate that remitted patients with recurrent depression do not have an increased risk to become victim of a violent crime, as opposed to currently depressed patients. The increased risk of victimization in depressed patients appears to be specific for the acute phase of depression, and may therefore resemble a state effect, rather than a trait effect. Interventions aimed at preventing violent victimization in currently depressed patients should be developed. The first attempt to develop such an intervention is presently under way (Christ et al., 2018).

Conflict of interest

All authors declare that they have no competing interests.

Acknowledgments

We wish to thank all participants of this study. In addition, we are grateful to Onderzoek en Statistiek Amsterdam, the Netherlands (Statistics Netherlands) for collecting the data in the general population of Amsterdam, and for providing us access.

Funding

The research is funded by ZONMW: The Netherlands association for Health research and Development, Health Care Efficiency Research program (project number: 171102004), awarded to J.J.M. Dekker (principal Investigator), Professor of Clinical Psychology, Vrije Universiteit, Amsterdam, The Netherlands.

Role of funder

Funding sources did not play any role in the design and conduct of the study, collection, management, analysis, and interpretation of the data; preparation, review or approval of the manuscript; and decision to submit the manuscript for publication.

Access to data

M. de Jonge had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2018.06.019.

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