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Somatic Symptoms in Major Depressive Disorder: A Cross-sectional Study in a Mental Health Setting, Vietnam

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Abstract: *Introduction:* Major depressive disorder (MDD) presents a diverse clinical picture, especially with somatic symptoms, which can lead to negative impacts on the course and prognosis of the illness. This study aimed to (1) assess the prevalence of various somatic symptoms in MDD patients and (2) assess their association with demographic factors. *Methods:* A total of 345 outpatients diagnosed with MDD according to DSM-5 criteria were enrolled in this cross-sectional study over 6 months. Participants completed a questionnaire that included clinical and demographic information as well as the PHQ-9. *Results:* There were 99.7% of patients who had at least one somatic symptom. The common somatic symptoms were fatigue (89.9%), insomnia (87.8%), palpitations (77.7%), headache (69.6%) and dizziness (61.4%). Total PHQ-9 scores and total number of somatic symptoms were found to have a regression relationship with a regression coefficient of 0.14 (t = 6.001, $p < 0.001$). In multiple logistic regression analysis, female gender was found to be associated with dizziness (odd ratios [OR] = 2.54, 95% confidence interval [CI] 1.53-4.21, $p < 0.01$), headaches (OR = 1.94, 95% CI 1.16-3.32, $p < 0.05$), and bowel problems (OR = 0.59, 95% CI 0.37-0.96, $p < 0.05$); while headaches (OR = 1.73, 95% CI 1.05-2.85, $p < 0.05$), and stomach problems (OR = 0.56, 95% CI 0.36-0.88, $p < 0.05$) were associated with age 40 and below. *Conclusions:* The study findings provide a resource for clinicians in mental health settings as well as primary care clinics in detecting inexplicable somatic symptoms associated with MDD.

Keywords: major depressive disorder; somatic symptom; mental health center; Vietnam; Patient Health Questionnaire (PHQ-9).

1. INTRODUCTION

According to the World Health Organization, approximately 322 million people globally suffered from major depressive disorder (MDD) in 2015 [1], and this figure was expected to increase by 53.2 million by 2020 owing to coronavirus disease (COVID-19) [2]. The disorder is ranked first as a global burden [3] and third as a leading cause of disability among mental health illnesses [4]. Since the clinical picture of MDD shows various symptoms, with somatic

symptoms being a prevalent component [5], patients with depression first tend to seek medical support in primary care settings rather than psychiatric clinics [6]. An international study that recruited patients from 15 primary care centers in 14 countries on five continents found that approximately 45% to 95% of patients with MDD visit primary care facilities due to their chiefly somatic symptoms [7].

Any somatic symptom increases twice the likelihood of mood disorders compared to controls [6], and the number of

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these symptoms can predict the symptom severity of MDD [8] and the presence of suicidal ideation [9]. The more somatic symptoms patients with MDD experience, the lower their level of social function and quality of life [10]. The presence and severity of somatic symptoms in patients with MDD at baseline and the persistence of these symptoms after adequate intervention negatively impact on course and prognosis, which can predict remission, relapse, and recurrence of MDD, as well as quality of life and social burden [11]. Therefore, early detection of somatic symptoms in patients with MDD is critical for the intervention and management of the disorder [12].

In Vietnam, although MDD is the second most prevalent mental health condition, at 2.8% among the general population [13], there has been no study relating to this issue. This study aimed to assess the prevalence of various somatic symptoms in patients with MDD and their association with clinical and demographic characteristics.

2. MATERIALS AND METHOD

2.1. Study settings

A cross-sectional study was conducted at the outpatient unit of Mental Health Hospital in Ho Chi Minh City, Vietnam, from January to June 2018.

2.2. Participants

All 18-year-old and older patients were recruited if they were diagnosed with MDD by licensed psychiatrists based on the Structured Clinical Interview for DSM-5, Diagnostic and Statistical Manual of Mental Disorders (SCID-5), introduced by the American Psychiatric Association (APA) (https://www.appi.org/products/structured-clinical-interview-for-dsm-5-scid-5). Agreement to participate in the survey was given by participants who had the ability to communicate in Vietnamese.

The exclusion criteria were: presenting clinically significant abnormal findings on physical examination and laboratory tests; being on psychotropic medications two weeks before recruitment based on health record reviews; and meeting other mental health conditions based on DSM-5 criteria (including psychosis, dementia, bipolar disorder, and mental retardation).

2.3. Sampling

Interviewers first provided the information and the purpose of the study to all eligible participants and their caretakers, then requested them to sign an informed consent form and collected demographic questionnaires. All eligible recruits were invited to complete a somatic symptom checklist and the Patient Health Questionnaire (PHQ-9). The interviewers would read each question and its responses from the PHQ-9 and the somatic symptom checklist to patients who could not read Vietnamese due to their low educational level or visual impairments.

2.4. Measures

The clinical and demographic questions included age, sex, marital status, education level, occupational status, economic status, PHQ-9 score, and somatic symptom checklist. Since the majority of Vietnamese people consider their economic status to be a crucial concern, the question "How do you rate your economic standing?" was used to evaluate patients' perceptions of the issue rather than ranking those based on their month's profit.

The fourteen somatic symptoms were backaches, chest pains, bowel problems (constipation and/or diarrhea), dizziness, faintness, fatigue, palpitations, headaches, dysmenorrhea, stomach problems (nausea and/or flatulence), dyspareunia, tachypnea, abdominal pain, and insomnia. As for somatic symptoms, participants could respond with "yes" or "not at all".

The PHQ-9, a multifunctional instrument for screening and scaling MDD symptom severity [14], was developed by Kroenke et al. in 2001 [15] and has been translated into more than 60 languages, including the Vietnamese version elsewhere [16]. The scale takes approximately 3 to 5 minutes to complete and rates the frequency of the symptoms over the last two weeks on a 4-point Likert-type scale ranging from 0 to 3, on which 0, 1, 2, and 3 represent not at all, several days, more than half the days, and nearly every day, respectively [14]. Cutoff scores of 5, 10, 15, and 20 represent the symptom severity, namely, mild, moderate, moderately severe, and severe, respectively [17]. Cronbach's α for the scale ranged from 0.74 to 0.89, showing good internal consistency [15, 18-20]. In the present study, the PHQ-9 showed good internal consistency, as represented by Cronbach's α coefficient of 0.749.

2.5. Statistical method

The data was entered into SPSS version 28.0 for analysis. The demographic factors were the independent variables, while total PHQ-9 scores and somatic symptoms were the dependent variables. Numeric variables with a normal distribution were expressed as means (SD) and ranges, while non-normal variables were described by median and interquartile range. Categorical variables were expressed as percentages (%). An independent-sample T test was used to assess whether there were statistically significant differences between the mean total PHQ-9 scores, the mean number of somatic symptoms, and demographic factors. A simple linear regression was conducted to evaluate a correlation between the PHQ-score and the number of somatic symptoms.

Logistic regression analyses were conducted to assess the impact of gender and age on the presence of somatic symptoms. First, the chi-squared test was applied to detect the significant associations between demographic variables and these fourteen somatic symptoms. A univariable binary logistic regression analysis was performed with each associated somatic symptom and demographic factors. Finally, multivariable analysis with the Enter method containing all variables that had a p-value of less than 0.25 [21] was performed to determine the association as well as the degree of those between demographic factors and somatic symptoms by calculating the adjusted odds ratios (ORs) and 95% confidence intervals (CIs). The model's goodness of fit was evaluated using Hosmer and Lemeshow. Statistical significance was set at a p-value of less than 0.05, and a two-sided test was used.

3. RESULTS

3.1. Overall results

Of the 345 eligible participants, 73% were women, and the mean age was 41.1 years (SD ± 14.7) with a range of 16 to 84 years. Most patients were married and had an average or high income (around 65% and 88.7%, respectively). The detailed characteristics are presented in table 1. In terms of depressive symptom severity, the mean PHQ-9 score was 15.8 ± 5.5 with a range from 1 to 27. The symptom severity of severe accounted for 28.1%, while those for mild, moderate, and moderately severe were 15.4%, 23.8%, and 32.8%, respectively.

In this study, 99.7% of participants had at least one somatic symptom, of which fatigue was the most common (89.9%), closely followed by sleep disturbance, palpitations, headache, and dizziness (87.8%, 77.7%, 69.6%, and 61.4%, respectively). The prevalence of each medically unexplained somatic symptom is further illustrated in Figure 1. The mean number of somatic symptoms was 7 (SD 2.4), with a range of 0 to 14 symptoms.
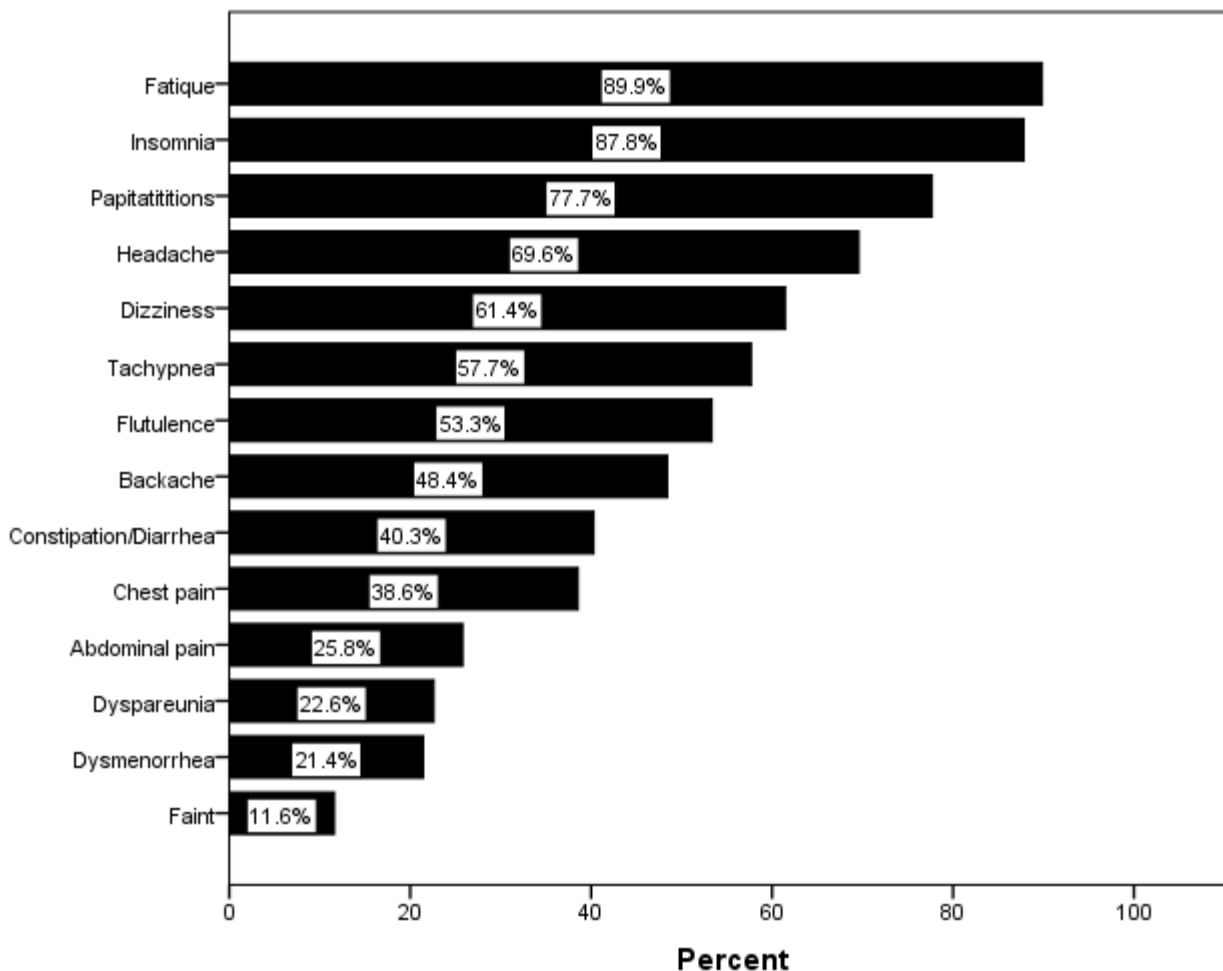

Figure 1. Prevalence of somatic symptoms

3.2. Association between demographic factors and PHQ-9 scores and the number of somatic symptoms

Table 1 demonstrates the association between demographic profiles and total PHQ-9 scores as well as the total number of somatic symptoms by using an independent-samples T test. Patients in an executive job had a considerably higher mean total PHQ-9 score than those in an unskilled job or those who were not working (p = 0.002). Additionally, patients aged 40 and below had a significantly higher total number of somatic symptoms than those aged over 40 (p = 0.001).

Using the total score of PHQ-9 as the independent variable, a linear regression model of the total score of PHQ-9 and the total number of somatic symptoms was conducted.

Applying the total score of PHQ-9 as an independent variable X and the total number of somatic symptoms as a dependent variable Y, the regression equation was Y = 4.88 + 0.14 X (Figure 2). The regression coefficient of 0.137 was tested using the t test, yielding t = 6.001 (p < 0.001), and revealing a regression relation between total PHQ-9 scores and the total number of somatic symptoms. The regression model showed a good fit, with $R^2 = 0.095$ as the coefficient of determination, which has a valuable range from 0 to 1 [22].

3.3. The impact of demographic characteristics on somatic symptoms

Female patients with MDD were more likely to exhibit dizziness (odds ratios [OR] = 2.54, 95% confidence interval [CI] 1.53-4.21), headaches (OR = 1.94, 95% CI 1.16-3.32),

and less likely to complain of bowel problems (OR = 0.59, 95% CI 0.37-0.96). When compared to patients aged over 40, patients aged 40 and below were more likely to exhibit headaches (OR = 1.73, 95% CI 1.05-2.85), and were less likely to complain of stomach problems (OR = 0.56, 95% CI 0.36-0.88). Additionally, the high risk of developing somatic symptoms in patients with MDD was found to be related to single or separated marital status, including dizziness (OR = 2.12, 95% CI 1.27-3.55), dysmenorrhea (OR = 1.89, 95% CI 1.03-3.47), dyspareunia (OR = 0.40, 95% CI 0.21-0.73); and unskilled or not working job status, including chest pain (OR = 1.98, 95% CI 1.23-3.14), stomach problems (OR = 0.61, 95% CI 0.38-0.96), and dyspareunia (OR = 2.04, 95% CI 1.13-3.68) (Table 2).

Table 1. Association between socio-demographic factors and PHQ-9 scores, the number of somatic symptoms

Characteristic		N (%)	PHQ-9 scores*			Number of somatic symptoms*		
			Mean ± SD	t	p-value	Mean ± SD	t	p-value
Sex	Female	252 (73.0)	16.13 ± 5.49	-1.623	0.106	7.18 ± 2.47	-1.509	0.132
	Male	93 (27.0)	15.04 ± 5.59			6.73 ± 2.45		
Age groups	≤ 40 years	171 (49.5)	16.03 ± 5.53	-0.636	0.525	7.49 ± 2.47	-3.208	**0.001**
	> 40 years	174 (50.5)	15.65 ± 5.55			6.64 ± 2.39		
Marital status	Married	222 (64.4)	15.44 ± 5.65	-1.791	0.074	6.87 ± 2.48	-1.943	0.053
	Single/Separated	123 (35.6)	16.55 ± 5.27			7.41 ± 2.41		
Education	Primary school or under	85 (24.5)	16.71 ± 5.15	1.669	0.096	7.18 ± 2.59	0.497	0.620
	Secondary school or higher	260 (75.5)	15.55 ± 5.63			7.02 ± 2.43		
Job status	Executive	129 (37.4)	17.00 ± 5.13	3.048	**0.002**	6.93 ± 2.48	-0.759	0.448
	Unskilled/not working	216 (62.6)	15.14 ± 5.66			7.14 ± 2.46		
Economic status	Low-income	39 (11.3)	16.95 ± 4.44	1.601	0.115	7.21 ± 2.64	0.387	0.699
	Average or high-income	306 (88.7)	15.70 ± 5.65			7.04 ± 2.45		

* Using independent T test to compare differences between demographic groups (significant level p < 0.05)
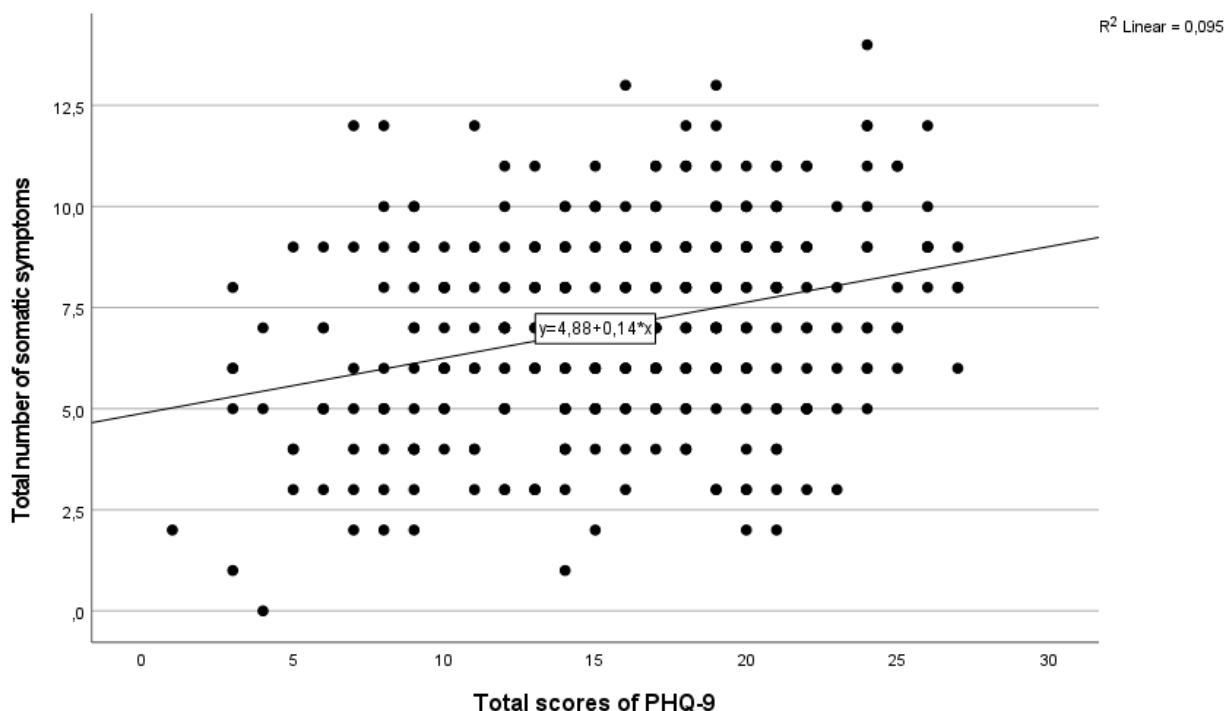
Figure 2. Regression line graph of total PHQ-9 scores and the total number of somatic symptoms

Table 2. The results of logistic regression model

Variable dependent	Independent	ß	SE	Odd ratios	95% CI		p-value
Chest pain	Marital status	0.26	0.23	1.30	0.83	2.06	0.247
	Job status	0.67	0.23	1.96	1.23	3.14	0.005
Dizziness	Gender	0.93	0.25	2.54	1.53	4.21	< 0.001
	Age	0.33	0.24	1.39	0.87	2.24	0.164
	Marital status	0.75	0.26	2.12	1.27	3.55	0.004
Headache	Gender	0.66	0.26	1.94	1.16	3.23	0.011
	Age	0.55	0.25	1.73	1.05	2.85	0.029
	Marital status	0.34	0.27	1.41	0.83	2.40	0.203
Dysmenorrhea	Age	-0.45	0.30	0.63	0.34	1.16	0.144
	Marital status	0.63	0.31	1.89	1.03	3.47	0.039
	Educational degree	0.38	0.34	1.46	0.74	2.90	0.270
Stomach problems	Age	-0.56	0.22	0.56	0.36	0.88	0.012
	Job status	-0.49	0.23	0.61	0.38	0.96	0.034
Dyspareunia	Age	0.55	0.28	1.73	0.99	3.03	0.051
	Marital status	-0.91	0.31	0.40	0.21	0.73	0.003
	Job status	0.71	0.30	2.04	1.13	3.68	0.018
Bowel problems	Gender	-0.51	0.24	0.59	0.37	0.96	0.036
Abdominal pain	Age	0.51	0.26	1.67	0.99	2.80	0.051
	Marital status	0.30	0.26	1.35	0.80	2.28	0.250

SE: standard error; CI confidence interval

4. DISCUSSION

Our study adds considerable data to the field, showing that 99.7% of patients with MDD visiting a mental health center experience at least one somatic symptom. This prevalence is high but still consistent with that reported by Garciá-Campayo et al. (93%) [23], Caballero et al. (93%) [24], and Simon et al. (45% to 95%) [7]. With regards to the prevalence of medically unexplained somatic symptoms in MDD patients, our findings indicate that the top five somatic symptoms among Vietnamese patients with depression visiting the mental health center are, in order of frequency, fatigue (89.9%), insomnia (87.8%), palpitations (77.7%), headaches (69.6%), and dizziness (61.4%). The results corresponded with those of Zhao et al. [25], in which insomnia was the most common somatic symptom for MDD patients visiting both psychiatric and general hospitals (66.4% and 62.3%, respectively), while other common somatic symptoms for depressed patients visiting psychiatric hospitals were pre-verbal physical complaints (47.8%), low appetite (38.5%), weight loss (38.2%), and headaches (29.5%). Bekhuis et al. [26] divided somatic symptoms into groups based on systems, including musculoskeletal (52.3%), cardiopulmonary (35.2%), and gastrointestinal clusters (29.8%). Fornalo et al. [27] found that the four most frequent somatic symptoms were asthenia (64.4%), insomnia (41.5%), tenseness (39.8%), and headaches (38.5%). Similarly, other studies revealed that common somatic symptoms in MDD patients visiting primary care institutions were fatigue, cardiovascular complaints, gastrointestinal complaints, musculoskeletal complaints, headaches, and sleep disturbance [28, 29].

The present study revealed a strong association between the number of somatic symptoms and depressive symptom severity in which patients with a high level of depressive symptom severity were likely to experience more somatic symptoms than others (t = 12.715, p = 0.000). This result was consistent with that published by Garciá-Campayo et al. [23] and Von Korff et al. [30, 31]. Our study also discovered that patients under 40 years of age exhibited more somatic symptoms than those who were over 40, similar to the findings of Zhao et al. [25]. In this study, there was no significant association between sex and the number of somatic symptoms, whereas Silverstein et al. found that the prevalence of somatic depression was much higher among women than among men [32].

Our results concur with earlier studies in terms of the association between somatic symptoms and age as well as sex. Patients under the age of 40 usually complained about headaches (OR = 1.73, 95% CI 1.05-2.85) and were less likely to complain of stomach problems (OR = 0.56, 95% CI 0.36-0.88). Similarly, Zhao et al. concluded that, compared to other age groups, patients over 40 years of age have the highest percentage of insomnia, low appetite, pre-verbal physical

complaints, respiratory system complaints, and trunk pain [25]. Additionally, our study proposes that sex mainly makes a difference in the types of somatic symptoms among MDD patients, including dizziness, headaches, and intestinal complaints. The findings were consistent with those of some international studies, in which female patients with MDD experienced more somatic symptoms than males [32], especially insomnia, low appetite [25, 33], and pain [34, 35]. Our study discovered that some specific somatic symptoms varied by marital status, occupational status, and education level. Overall, our findings are consistent with some studies and conflict with others. The inconsistencies may be due to different study settings and populations.

To our knowledge, this is the first study to assess the somatic symptoms in patients with MDD in Vietnam. To improve future research, some limitations should be addressed. Due to the characteristics of a small sample size and single-facility design, the findings may not generalize to the general population. Additionally, since there were gaps in the data related to the starting time of somatic symptoms, their frequency, severity, and consequences, the study's results did not reflect an overview evaluation of these symptoms in patients with major depressive disorder. Therefore, further studies should be performed to investigate all aspects of somatic symptoms in patients with MDD who seek mental health facilities as well as primary health care in Vietnam.

Conclusion

Most Vietnamese patients with MDD exhibited somatic symptoms (99.7%), of which the common somatic symptoms were fatigue (89.9%), insomnia (87.8%), palpitations (77.7%), headaches (69.6%), and dizziness (61.4%). The number of somatic symptoms was significantly associated with age over 40 (p = 0.001) and had a regression relationship with MDD symptom severity (p = 0.000). Gender, age, marital status, and job status were found to be correlated with some somatic symptoms, including chest pain, dizziness, headaches, dysmenorrhea, dyspareunia, and intestinal problems (p< 0.05). The findings provide data for practitioners in both mental health settings as well as primary care clinics to detect inexplicable somatic symptoms co-occurring with MDD.

ETHICAL STATEMENT

This study was carried out in accordance with the latest version of the Declaration of Helsinki. The study design was reviewed by an appropriate ethical committee and participants' informed consent was obtained after the nature of the procedures was fully explained to them.

The study protocol was accepted by the Institutional Review Board of the University of Medicine and Pharmacy at Ho Chi Minh City and designated 99/ĐHYD-HĐ.

CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

AUTHORS' CONTRIBUTION

HNYP contributed to conceptual design, data gathering, statistical analysis, the provision of the original draft, and as a corresponding author. PTMC, BXM and TAN contributed to conceptual design, data gathering, statistical analysis, and the provision of the original draft. TTN and HHNQ contributed to conceptual design, statistical analysis, and manuscript editing. NTL and NTH supervised the conceptual design, statistical analysis, and final manuscript performance. All authors read and approved the final manuscript.

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