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Original article

Depression in male patients with schizophrenia residing in half-way house for protection and development of mental disabilities, Pathum Thani Province

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Background: Schizophrenia is a mental disorder with prominently impaired cognitive ability and daily life functioning, resulting in institutionalization for some patients A common comorbidity of patients with schizophrenia is depression that could further reduce patients quality of life.

Objectives: The current study aimed to examine the prevalence of depression and associated factors in male patients with schizophrenia residing at Half-way House for Protection and Development of Mental Disabilities, Pathum Thani Province.

Methods: This cross-sectional descriptive study was conducted among patients with schizophrenia who was residing at the half-way house. The data collection period for all eligible patients was from September 2019 to November 2019. The demographic characteristics, medical history and cause of residency of the participants were collected from the patients' profiles together with the interviews of the caregivers. All subjects were interviewed with two questionnaires, namely: 1) The Thai Version of Calgary Depression Scale of Schizophrenia (CDSS); and, 2) The Positive and Negative Syndrome Scale for Schizophrenia (PANSS). Furthermore, depression was presented in both score and prevalence and the correlation with other factors.

Results: Most of the eligible 319 male patients with schizophrenia were in the age range between 40 – 59 years, with an average age of 48.9 years. It was found that the prevalence rate of depression in male patients with schizophrenia in the half-way house was 39.5%. Additionally, it was reported that the most prevalence rate of depression was found in high and intermediate independent patients which accounted for 57.1% and 41.3%, respectively. However, there was no prevalence of depression in Group-C patients. Moreover, the associated factors of depression included suicidal history found in 44 patients (34.9%, OR 0.506 95% CI 0.276, 0.926, $P = 0.027$), adverse effects of medications found in 74 patients (23.2%, OR 0.423 95% CI 0.236, 0.757, $P = 0.004$), the number of times that patients miss taking their medications in a week found in 11 patients (2.82%, OR 0.526 95% CI 0.300, 0.921, $P = 0.025$) and total PANSS score (OR 0.982 95% CI 0.970, 0.994, $P = 0.003$).

Conclusion: The prevalence rate of depression among the male patients in the half-way house was accounted for 39.5% which mostly found in patients who had a history of suicide, adversely affected by their medications, and missed taking the medications during the week. Further depression was associated with current mental symptoms in inversed - U shape. Therefore, it is crucial to provide support for patients who had a suicidal history. It is also considered to monitor patients' medications and their mental symptoms closely. Additionally, providing patients with the opportunities to receive counselling sessions and psychological support would display the importance of multidisciplinary teamwork in the welfare house, especially for the patients with schizophrenia.

Keywords: Depression, schizophrenia, welfare house.

Schizophrenia is a common mental illness. In Thailand, the prevalence rate of schizophrenia was 0.7% in Thai population or 333,595 people [(1)], and its global number of patients is approximately 51 million people. In a year, the estimated number of the global population diagnosed with schizophrenia were 4,000.[(2)] Moreover, and the disorder occurs to anyone regardless of their sex, education, occupation and socioeconomic status. The causes of schizophrenia are currently unknown. However, there are various factors that associate with schizophrenia, including

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physical, psychological, social, cognitive and genetic factors. As a result, patients with schizophrenia are less independent and becomes more reliant on the caregivers. Thus, one's tendency to be abandoned is increased due to the limitations of the caregivers. Consequently, the welfare house has become the solution for the government to foster and increase the capacity of patients with schizophrenia. In addition, research studied the relationship between negative symptoms and depression in schizophrenia patients found that low mood, suicidal thoughts and pessimism had increased and more evident in patients with schizophrenia.[3]

The Half-Way House for Protection and Development of Mental Disabilities in Pathum Thani Province is one of the welfare houses in Thailand that foster male patients with moderate schizophrenia and considered as persons with disability type-4 (persons with mental or behavioral disabilities)[4] from the psychiatric hospital with no relative or guardian.[5] It is the only place in Thailand that accepts only schizophrenia patients. It has become a norm for patients to voluntarily come to the welfare house as they cannot independently be on their own due to numerous limitations including their symptoms, financial burden on family members and others' fears and attitudes towards schizophrenia patients.

Depression in patients with schizophrenia was associated with several factors shown in some studies on depression in schizophrenia patients who are the in-patients of the psychiatric hospital and the communities in Thailand. Including family support, environmental conditions, age, duration of illness, understanding of mental illness, psychotic side effects, substance abuse, drinking, suicide history, income From work, income sufficiency, congenital diseases, family relationships, genes, and social support etc. However, there is no research on patients with schizophrenia residing in the welfare house. Therefore, this current study would be beneficial for preparing an action plan to foster and support the mental health of schizophrenia patients in the welfare house. The question of the research is as follows: 1) How the prevalence of depression of male patients with schizophrenia residing in half-way house for protection and development of mental disabilities, Pathum Thani Province?; 2) What are the factors related to depression of male patients with schizophrenia residing in half-way house for protection and development of mental disabilities, Pathum Thani Province? The objectives of the research were to study the prevalence of depression and related factors of male patients with schizophrenia residing in half-way house for protection and development of mental disabilities, Pathum Thani Province.

Materials and methods

This descriptive study was conducted among patients with schizophrenia who was residing at the Half-Way House for Protection and Development of Mental Disabilities, Pathum Thani Province in the period of data collection.

$$n = \frac{z_{\alpha}^{2} pq}{d^{2}}$$

n = sample size
z = critical value at a confidence level of 95 percent is equal to 1.96
p = Prevalence ratio of chronic schizophrenia patients with depression is 0.46
d = the value of acceptable opportunity movement is 0.055
n = calculate the sample group approximately 315 peoplep

The subjects were recruited through the inclusion criteria: patients with schizophrenia who were diagnosed by a psychiatrist according to ICD-10 (F20 - F29)[6], having a good consciousness, awareness of others, awareness of time and place, ability to communicate with the researcher and voluntarily participated in the study. Moreover, the criteria excluded patients who were admitting to the hospital with mental or physical conditions. The present research has been approved by the Research Ethics Committee, Faculty of Medicine, Chulalongkorn University (IRB no. 348/62). Additionally, the data collection and consent were approved by Department of Empowerment of Persons with Disabilities together with the Half-Way House for Protection and Development of Mental Disabilities in Pathum Thani Province.

The director of the half-way house was the legal representative of the patients which the researcher clarified the objective, methods, risks and benefits of the research before the director signed the inform consent form for the subjects to participate in this study. The research method involved reading the questions from the questionnaires for the participants to answer together with collecting more data through patients' medical profiles as well as interviewing

the caregivers. The inventories included, namely: 1) Questionnaire Form for Demographic Characteristics Data, Medical History and Cause of Residency of the Patients; 2) The Thai Version of Calgary Depression Scale of Schizophrenia (CDSS)[7]; and, 3) The Positive and Negative Syndrome Scale for Schizophrenia (PANSS).[8] Details of the instruments are as follows:

The Thai Version of Calgary Depression Scale of Schizophrenia (CDSS) was invented by Addington D and colleagues which translated into Thai by Suttajit S, *et al*.[7]

The questionnaire consisted of 9 items with the range scores between 0 – 27 and the result of 5 scores or higher indicated that one has depression. The internal consistency, Cronbach's alpha, of the instrument was 0.77.[9]

The Positive and Negative Syndrome Scale for Schizophrenia (PANSS) was developed by Kay SR, *et al*. which translated into Thai by Nilchaikovit T, et al. The scale composed of 3 sections including positive scale (7 syndromes), negative scale (7 syndromes) and general psychopathology scale (16 syndromes). The rating scale was divided into 7 scales which the scores in each level showed the severity of mental disorder from 1 – 6. The internal consistency, Cronbach's alpha, of the instrument was 0.78.[8]

Statistical analysis

The data were analyzed through the statistic computer program SPSS Version 22 to find the prevalence rate of depression which presented in mean, proportion, percentage, frequency, and standard deviation (SD). Odds ratio (OR) were calculated with 95% confidence interval (CI). Also, student's *t* - test and chi-square were used to analyze and find associated factors of depression as well as multiple logistic regression was used to find the predictors of depression in patients with schizophrenia with statistically significant at $P < 0.05$. Moreover, the relationship between CDSS and PANSS was examined using linear regression and fractional polynomial analysis in order to explore linear and non-linear associations.

Results

From all of 319 subjects, most of the patients' potentials were categorized in intermediate independence (86.5%; 276/319 patients) with the average age of 48.91 years old (SD = 10.46) and the average duration of residency of 10.75 years (SD = 9.09). Moreover, the majority of the subjects finished secondary school as their highest education status (44.8%), were Buddhists (94.4%), Christians, Muslims and others (5.6%). Most of the patients were single (85.0%) and others were widowed, divorced, married, and separated (15%), not working (20.6%; 26/126 patients) and for those who had occupational experiences were mostly laborers (24.6%; 31/126 patients). In addition, many of the subjects did not have physical health conditions (83.7%), no history of narcotic use (73.4%), no history of alcohol use (69.9%), no suicidal history (76.8%), and had been residing in the welfare house for 1 – 10 years (64.6%) (Table 1). Moreover, the majority of subjects had been diagnosed with schizophrenia more than 30 years (39.2%), not adversely affected by their medications (76.8%), regularly took their medications (96.6%), and the cause of residency was mostly because their family members denied them (61.8%) (Table 2).

The results showed that 126 subjects had depression (39.5% scoring five or higher on CDSS). Factors that were significantly different in those who had and did not have depression included age, education level, occupational experiences, physical health conditions, narcotic use history, alcohol use history, suicidal history, duration of residency in the welfare house, duration of the disorder, adverse effects of medications, and the number of times the patients miss taking their medications in a week (Table 1 and 2).

The significant associated factors of depression were suicidal history, adverse effects of medications, the number of times the patients miss taking their medications and PANSS scores (Table 3).

The correlation between CDSS and PANSS scores was analyzed through Pearson's correlation coefficient, which found that the correlation was -0.282 ($P < 0.01$). It was also found that the value of $R^2 = 0.077$ when submitted to simple linear regression analysis and the value of $R^2 = 0.102$ once submitted to fractional polynomial regression analysis at the maximum degree of 2 (Table 4). These findings reflected that the correlation between depression scores and schizophrenia scores was likely to be an inversed U-curve rather than a linear relationship.

Table 1. Demographic characteristics of the patients.

Demographic characteristics	Total (n = 319) n (%)	Depressed (n = 126) n (%)	Not depressed (n = 193) n (%)	Statistic *P* - value
Age				*t* - test 83.5 $P < 0.001^{**}$
20 - 29 years old	13 (4.1)	4 (3.2)	9(4.7)	(mean 48.0 SD
30 - 39 years old	46 (14.4)	17 (13.5)	29 (15.0)	9.9 and mean
				49.5 SD 10.8)
40 - 49 years old	110 (34.5)	51 (40.5)	59 (30.6)	
50 - 59 years old	97 (30.4)	38 (30.2)	59 (30.6)	
60 + years old	53 (16.61)	16 (12.7)	37 (19.2)	
Patient group				X^2 17.475 $P < 0.001^{**}$
High independence	21 (6.6)	12 (9.5)	9(4.7)	
Intermediate independence	276 (86.5)	114 (90.5)	162 (83.9)	
Low independence	22 (6.9)	0 (0)	22 (11.4)	
Highest education status				X^2 17.201 $P = 0.001^{*}$
Primary school	121 (37.9)	49 (38.9)	72 (37.3)	
Secondary school	143 (44.8)	68 (54.0)	75 (38.9)	
Undergraduate	10 (3.1)	3 (2.4)	7 (3.6)	
No education	45 (14.1)	6 (4.8)	39 (20.2)	
Religion				Fisher exact 2.383 $P = 0.143$
Buddhist	301 (94.4)	122 (96.8)	179 (92.8)	
Christian	8 (2.5)	0 (0.0)	8 (4.1)	
Muslim	5 (1.6)	2 (1.6)	3 (1.6)	
Others	5 (1.6)	2 (1.6)	3 (1.6)	
Marital status				Fisher exact 1.676 $P = 0.204$
Single	271 (85.0)	103 (81.8)	168 (87.0)	
Widowed	11 (3.4)	4 (3.2)	7 (3.6)	
Divorced	5 (1.6)	3 (2.4)	2 (1.0)	
Others (e.g. married, separated)	32 (10.0)	16 (12.7)	16 (8.3)	
Occupations				X^2 27.643 $P = 0.001^{*}$
Government official	12 (3.8)	9 (7.1)	3 (1.6)	
Private sector employee	22 (6.9)	8 (6.4)	14 (7.3)	
Freelancer	57 (17.9)	26 (20.6)	31 (16.1)	
Farmer	21 (6.6)	6 (4.8)	15 (7.8)	
Seller	15 (4.7)	5 (4.0)	10 (5.2)	
Laborer	60 (18.8)	31 (24.6)	29 (15.0)	
Security guard	9 (2.8)	2 (1.6)	7 (3.6)	
Factory worker	20 (6.3)	13 (10.3)	7 (3.6)	
Not working	103 (32.3)	26 (20.6)	77 (39.9)	
Physical health conditions				X^2 6.883 $P = 0.009^{*}$
Yes	52 (16.3)	29 (23.0)	23 (11.9)	
No	267 (83.7)	97 (77.0)	170 (88.1)	
Narcotic use history				X^2 14.855 $P < 0.001^{**}$
Yes	84 (26.3)	48 (38.1)	36 (18.7)	
No	235 (73.4)	78 (61.9)	157 (81.4)	

Table 1. (Con) Demographic characteristics of the patients.

Demographic characteristics	Total (n = 319) n (%)	Depressed (n = 126) n (%)	Not depressed (n = 193) n (%)	Statistic *P* - value
Alcohol use history				X^2 7.657 $P = 0.006^*$
Yes	96 (30.1)	49 (38.9)	47 (24.4)	
No	223 (69.9)	77 (61.1)	146 (75.7)	
Suicidal history				X^2 16.065 $P < 0.001^{**}$
Yes	74 (23.2)	44 (34.9)	30 (15.5)	
No	245 (76.8)	82 (65.1)	163 (84.5)	
Duration of residing in the welfare home				*t* - test 21.124 $P < 0.001$**
1 - 10 years	206 (64.6)	96 (76.2)	110 (57.0)	
11 - 20 years	75 (23.5)	17 (13.5)	58 (30.1)	
21 - 30 years	24 (7.5)	9 (7.1)	15 (7.8)	
30 years and more	14 (4.4)	4 (3.2)	10 (5.2)	

Note: Pseudo Chi-Square Tests $P < 0.001$

Table 2. Demographic characteristics of the patients.

Demographic characteristics	Total (n = 319) n (%)	De-pressed (n = 126) n (%)	Not De-pressed (n = 193) n (%)	Statistic *P* - value
Duration of disorder				*t* - test 25.528 $P < 0.001$**
1 - 10 years	71 (22.3)	35 (27.8)	36 (18.7)	
11 - 20 years	67 (21.0)	29 (23.0)	38 (19.7)	
21 - 30 years	56 (17.6)	22 (17.5)	34 (17.6)	
30 years and more	125 (39.2)	40 (31.8)	85 (44.1)	
Causes of residency				X^2 3.528 $P = 0.317$ (mean 8.1 SD 6.8 and mean 10.1 SD 8.1)
Lack of caretakers	81 (25.4)	31 (24.6)	50 (25.9)	
Denied by family members	197 (61.8)	78 (61.9)	119 (61.7)	
Family members have no ability to control the patients' behavior	30 (9.4)	15 (11.9)	15 (7.8)	
Others	11 (3.4)	2 (1.6)	9 (4.7)	
Types and names of patients' medications				
Antipsychotics (Tablet)				
Haloperidol	83 (26.0)	32 (25.4)	51 (26.4)	X^2 0.042 $P = 0.838$
Perphenazine	73 (22.9)	31 (24.6)	42 (21.8)	X^2 0.349 $P = 0.555$
Chlorpromazine	109 (34.2)	46 (36.5)	63 (32.6)	X^2 0.506 $P = 0.477$
Thioridazine	25 (7.8)	9 (7.1)	16 (8.3)	X^2 0.139 $P = 0.709$
Trifluperazine	9 (2.8)	4 (3.2)	5 (2.6)	X^2 0.095[a] $P = 0.743$
Clozapine	113 (35.4)	48 (38.1)	65 (33.7)	X^2 0.650 $P = 0.420$
Risperidone	116 (36.4)	47 (37.3)	69 (35.8)	X^2 0.079 $P = 0.778$

Table 2. (Con) Demographic characteristics of the patients.

Demographic characteristics	Total (n = 319) n (%)	De-pressed (n = 126) n (%)	Not De-pressed (n = 193) n (%)	Statistic *P*-value
Antipsychotics (Injection)				
Haloperidol	49 (15.36)	18 (14.3)	31 (16.1)	X^2 0.185 $P = 0.667$
Fluphenazine (Fendec, DECA)	59 (18.50)	26 (20.6)	33 (17.1)	X^2 0.632 $P = 0.426$
Risperidone	5 (1.57)	3 (2.4)	2 (1.0)	Fisher exact 0.893 $P = 0.387$
Others	10 (3.13)	4 (3.2)	6 (3.1)	Fisher exact 0.001 $P = 1.000$
Antidepressants				X^2 2.559 $P = 0.110$
Fluoxetine, Fluvoxamine, Amitriptyline, Nortriptyline, Mianserin and Sertraline	55 (17.2)	27 (21.4)	28 (14.5)	
None	264 (82.8)	99 (78.6)	165 (85.5)	
Anticonvulsants				X^2 0.101 *P = 0.750*
Valproate, Carbamazepine	88 (27.6)	36 (28.6)	52 (26.9)	
None	231 (72.4)	90 (71.4)	141 (73.1)	
Benzodiazepine				X^2 6.497 $P = 0.165$
Diazepam	50 (15.67)	15 (11.9)	35 (18.1)	
Lorazepam	23 (7.21)	11 (8.7)	12 (6.2)	
Chlorazepate	30 (9.40)	13 (10.3)	17 (8.8)	
Trazodone	12 (3.76)	8 (6.3)	4 (2.1)	
None	204 (63.95)	79 (62.7)	125 (64.8)	
Others	265 (83.1)	1 (0.5)	160 (82.9)	X^2 0.010 $P = 0.920$
Trihexyphenidyl (ACA, Artane, Lithium, Phenobarbital)	256 (80.3)	101 (80.2)	155 (80.3)	
None	54 (16.9)	21 (16.7)	33 (17.1)	
DMPA (Injection)				X^2 0.379 $P = 0.538$
Yes	29 (9.1)	13 (10.3)	16 (8.3)	
No	290 (90.9)	113 (89.7)	177 (91.7)	
Adverse effects of medications				X^2 13.963 $P < 0.001^{**}$
Yes	74 (23.2)	43 (34.1)	31 (16.1)	
No	245 (76.8)	83 (65.9)	162 (83.9)	
Numbers of times patients miss taking their medications in a week				Fisher exact 8.538 $P = 0.008^{*}$
Never	308 (96.6)	117 (92.9)	191 (99.0)	
1 - 10 times	10 (3.5)	8 (6.4)	2 (1.0)	
6 - 10 times	1 (0.3)	1 (0.8)	0 (0.0)	

Note: Pseudo Chi-Square Tests $P < 0.001$

Table 3. Risk factors of depression using multiple fractional polynomial regression analysis.

Variables	Odds ratio	Lower 95% CI	Upper 95% CI	*P*-value
Age	0.54	0.02	-0.058,0.288	0.512
Highest education status	The effect of stress management program on psychotic symptoms of schizophrenic patients.			
Primary school				
Secondary school	-0.42	0.76		
Undergraduate	0.78			
Physical health conditions	1.41	-0.930,2.076		
Narcotic use history	-0.998, 2.084			
Alcohol use history	-3.207, 2.362	0.454		
Suicidal history	0.488			
Adverse effects of medications	0.766			
Times of missing doses in a week	1.34	0.61	0.133, 2.540	0.030*
Current mental symptoms	0.57	0.55	-0.508, 1.639	0.301
Total_PANNS score^{-2}	29802.41	7528.66	14987.91, 44616.91	< 0.001**
Total_PANNS score^{-1}	-101040.3	25993.05	-152188.1, -49892.59	< 0.001**

Note: Pseudo R-Squared 0.251 Adj R-Squared 0.221 RMSE 3.895 $P < 0.001$

Table 4. The correlations between depression and schizophrenia using simple linear regression and fractional polynomial regression.

	Beta	SE	95% CI	*P*-value
Linear model R^2 0.077				
Total PANNS score	-0.05	0.01	-0.07, -0.03	< 0.001**
Fractional polynomial model R^2 0.102				
Total_PANNS score^{-2}	-32461.92	6885.35	-46008.84, -18915.01	< 0.001**
Total_PANNS score^{-1}	1312.51	246.43	827.66, 1797.35	< 0.001**

Discussion

This study found that among 319 male patients with Schizophrenia in the Half-Way Home for Protection and Development of Mental Disabilities had comorbidity of depression accounted for 39.5%. Comparing to other studies using the identical CDSS questionnaire, it was found that the results were supported by the study of Ertekin H, *et al.* [9] which reported that patients with Schizophrenia in a welfare facility had a prevalence rate of depression accounted for 26.5%. This implied that there were differences of the sample group varied in nationality, social role, public healthcare, and other contexts which caused the slightly different results. Moreover, another research conducted by Namsoot J. [10] in schizophrenia patients with legal cases in psychiatric hospital discovered that the prevalence rate of depression was accounted for 46.4%. This result was almost identical to the current study which feasibly because there were similar characteristics of the sample group including the context of residing in the government facility where the patients had limited space, organized daily schedule and common rules of residency. In addition, a few pieces of research were conducted among chronic schizophrenia out-patients using the Zung Self-Rating Depression Scale showed similar results which according to Salasawadi P. [11], the prevalence rate of depression was accounted for 36.0% and another study of Kamrai W. [12] showed 26.0% prevalence rate of depression.

Comparing to another group of schizophrenia patients who were recently diagnosed with the disorder, the result came out significantly different. A research conducted by Ketchai S, *et al.*[13] which

studied the predictors of depression in schizophrenia patients who were recently diagnosed up to five years, it was found that the prevalence rate of depression in most schizophrenia patients who had been diagnosed under five years (91.5%) was accounted for 75.3%. Thus, this data implied that depression was found more in schizophrenia patients who were recently diagnosed with the disorder than chronic patients. Additionally, most of the chronic schizophrenia patients who were in-patients and out-patients in the hospital, in the community and in the welfare home showed similar results of the prevalence rate of depression as a group and had a lower rate of depression than the recently diagnosed patients.

The associated factors of depression included age, highest education status, occupational experiences, physical health conditions, narcotic use history, alcohol use history, a history of suicidal attempt, duration of residency in the welfare home, duration of the disorder, adverse effects of medications and the number of times the patients miss taking their medications in a week. This was supported by the study of Namsoot J.[10] in adverse-effects-of-medications factor and the research was done by Phandontree P.[14] in age, duration- of-disorder, narcotic-use-history and adverse-effects-of-medications factors. Similarly, the same results showed in the research of Salasawadi P.[12] in age and adverse-effects-of-medications factors, the study of Kamrai W.[12] in physical-health-conditions and adverse-effects-of-medications factors, the research of Ertekin H, *et al*.[9] together with Krynicki CR, *et al*.[3] in a mental-symptoms factor.

In this present study, it showed that suicidal history was an associated factor of depression which differed from the studies of Namsoot J. [10], Phandontree P. [14] and Salasawadi P. [11] They found that suicidal history did not have any correlations with depression. However, Namsoot J. [10] stated that suicidal history was a predictor of aggressive behaviors. Another factor that shown in the current study as an associated factor of depression was the number of times the patients miss taking their medications, in contrary, there was no evidence of such correlation from a literature review.

The predictors of depression in schizophrenia patients in the welfare home consisted of associated factors of depression which were suicidal history, adverse effects of medications, the number of times patients miss taking their medications in a week and current mental symptoms. As a result, the correlation between Schizophrenia and depression might not be a linear relationship but a curved relationship which means depression in the patients with high independence had a positive correlation with psychotic symptoms, however, depression in patients with lower independence had a negative correlation with psychotic symptoms. Nevertheless, this conclusion from the finding was limited since the current study could not collect such data from all patients with schizophrenia with very severe symptoms due to their limitations to answer the questions.

According to the associated factors, it is crucial to be attentive to patients' depression when it comes to fostering patients with schizophrenia in the welfare home. Focusing more on depression in schizophrenia patients would help prevent the relapse of patients' mental symptoms, lessen the burden of the caretakers in taking care of a large number of patients in each day, provide and promote appropriate social support for the patients, lessen foreseeable depression symptoms and better patients' wellbeing as well as their mental health.

This current study collected data from 319 participants from a total of 500 patients. In low independence patients, the severity of the psychotic symptoms was high. Thus, it was an obstacle to communicate with the patients and for the patients to answer the depression questions reliably, which brought to a zero prevalence rate of depression. Moreover, the results could not refer to the cause of the absence of depression due to the lack of data collecting of such variables. Therefore, future studies should include the cause of depression as a variable in order to find in-depth data together with other factors that associate with schizophrenia patients in the welfare home. Another suggestion is that there should be more research on how to evaluate depression in low independent patients to find more data about depression in a group of patients with severe symptoms of schizophrenia.

Medical care for patients at the protection center should pay attention and be aware of the side effects of the drug and forget to take the drug more in 1 week. Including the surveillance of aggravated mental symptoms especially the group of patients showing low mental symptoms should also be aware of the occurrence of depression Because the study found that patients with depression are more common in groups with mild mental symptoms. In addition,

the collection of patients' personal history should be given priority in the history of suicide. To prevent the occurrence of depression, encourage the patient to have good physical and mental health, and caregivers can take care of the patient more easily as well.

Conclusion

The prevalence rate of depression among the male patients in the Half-way house was accounted for 39.5% which mostly found in patients who had a history of suicide, adversely effected by their medications, and missed taking the medications during the week. Further depression was associated with current mental symptoms in inversed-U shape. Therefore, it is crucial to provide support for patients who had a suicidal history. It is also considered to monitor patients' medications and their mental symptoms closely. Additionally, providing patients with the opportunities to receive counselling sessions and psychological support would display the importance of multidisciplinary teamwork in the welfare home, especially for the patients with schizophrenia.

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Conflict of interest

The authors, hereby, declare no conflict of interest.

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