Depression Symptoms Level Among Thyroid Disorders Patients at Central Region of Peninsular Malaysia

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Abstract

Background of Study: Patients with thyroid disorders were found to have continued to experience symptoms of depression despite the great of treatment has been given to the patient to balance the thyroid hormones. Objective: The aim of this study is to determine the level of depression symptoms among various types of thyroid disorders patients. Methods: A cross sectional study was carried out at one of the government hospital at central region of Peninsular Malaysia from August to October 2016. Patients were diagnosed as thyroid disorders, Malaysian citizen, above 18 years old and did not have any psychiatric disorders were included in this study. Depression Anxiety Stress Scale-42 (DASS-42) was selected to determine the severity of depression symptoms and interpreted as follow: less than 9-no depression, between 10 and 13-mild depression, between 14-20-moderate depression, between 21 and 27-severe depression and more than 28-extreme severe depression. Descriptive statistic was analysed by IBM Statistical Package for the Social Sciences (SPSS) version 21.0. Results: About 15% (23) out of 153 thyroid patients had varies degree of depression symptoms from mild to severe extremely depression. Patients who had hyperthyroid were found to have more depressed, followed by hypothyroid and thyroid cancer group. Conclusion: These findings would suggest that the depression score was higher in the patients who have hyperthyroid. A more detail and thorough study is recommended to be done, in order to confirm these findings.

Keywords: Depression Symptoms, Thyroid Disorders, Malaysia

Introduction

Thyroid disorders patients have a high risk to experience depression symptoms resulting from the thyroid hormone fluctuations. The pathophysiological basis of depression symptoms lies in the imbalance of thyroid hormones such as thyroid stimulating hormone (TSH) and free thyroxine (fT4) [1-3]. The TSH is a hormone that stimulates production and secretion of fT3 and fT4 from the thyroid gland. Patients who suffered from depression symptoms may caused by insufficient thyroid hormone.
Moreover, the absent of nocturnal surge of TSH and alteration of the hypothalamic-pituitary-adrenal (HPA) axis regulation resulting a reduction of thyroid hormone secretion which may affect mood such as depression symptoms [6,7]. Another reviews paper stated that the person who had prolonged stress, the TSH secretion will be inhibited, and ultimately lead to decreased conversion of thyroxine (T4) to triiodothyronine (T3) [8,9]. As a result, the neurogenesis activity in the brain will be reduced and symptoms of depression such as change in mood, thinking, and activity which can impair the personal and social functioning will appear. However, the complexity of the interaction between the thyroid hormones and depression symptoms still debatable and remain controversial.

Patients with thyroid disorders were found to have continued to experience symptoms of depression despite the great of treatment has been given to the patient to balance the thyroid hormones. The depression symptoms among thyroid disorders was reported in some part in Europe and Asian countries. Branka and his colleagues found that 36.7% (n=60) out of 163 thyroid patients who were had regular follow-up were suffered from minor depression symptoms and 6.1% (n=10) of them had major depression symptoms [10]. Meanwhile, Ittermann revealed that 22.3% (n=110) out of 498 thyroid disorders patients were had current depression symptoms evaluated by Beck Depressive Inventory-II score [11]. Furthermore, another cross-sectional study showed that about 15% (n=9) out of the 60 thyroid disorders patients suffered from depression symptoms in Nepal [12]. Based on these study findings, it can be implied that the depression symptoms are still common among thyroid disorders patients, even though they received the treatment for balancing their thyroid hormone level. However, there is scarce of data on prevalence of depression symptoms among thyroid disorders patients in Malaysia.

Methods

This is a cross-sectional study design. One hundred and fifty three adult patients who have been diagnosed as any type of thyroid disorders such as hypothyroid, hyperthyroid and thyroid cancer were recruited from the Medical Outpatient Department (MOPD) and Surgical Outpatient Department (SOPD) in one of the government hospitals in Central region of Peninsular Malaysia. A permission to conduct a study was obtained from the University Ethics Committee and Ministry of Health Malaysia. A data collection was started from 1st August 2016 to 31st October 2016. A patient who have been diagnosed as any types of thyroid disorders, Malaysian citizen and aged 18 and above were approached to participate in this study. Meanwhile, a patient who had dementia and psychotic disorders will be excluded in this study due to cognitive impairment and they are unable to self-report the some contents in the survey form. Depression Anxiety Stress Scale-42 (DASS-42) was selected as a tool to determine the level of depression symptoms. This tool has been developed by Professor Dr. Peter Lovinbond from the University of New South Wales Australia which consist of stress, anxiety and depression domain [13]. However, only depression domain was used to determine the level of depression symptoms. There are consist of seven statements where the patient need to indicates how much the statements applied to him/her over the past week in a likert scale from 0 to 3 (0=did not apply to me at all; 3-applied to me very much). Then, the score was summed up and classified as followed; 0 – 9 (normal); 10 - 13 (mild); 14
– 20 (moderate); 21-27 (severe) and 28 and above (extremely severe). This tool was prepared in English and Malay language.

Sociodemographic data was obtained by using the semi-structured questionnaire including in the demographic data section such as age, gender, financial status, ethnic and family history of psychiatric illness. Meanwhile, in medical history section will consist of type of thyroid disorders, duration of the thyroid disorders, co morbidity of any other illness and type of current medication used.

The data analysis was conducted using the IBM Statistical Package for the Social Sciences (SPSS) version 21.0. The continuous data was presented as means and standard deviations and the categorical data were presented as proportions. The analysis result were organized in the form of table. A p-value of <0.05 was considered statistically significant.

### Results

**The characteristics of study sample**

Table 1 showed the characteristics of study sample. Out of 153 participants, majority of them were female (75.2%) and 24.8% were male. The minimum participants’ age was 18 years old and the maximum age was 77 years old. The mean of the age was 40.16±13.54 years old. Most of them were Malay (60.1%), followed by Chinese (32.7%) and only 7.2% was Indian. More than half participants were married (69.9%), 20.3% were widower/widow, 7.2% were single and only 2.6% were divorced. Majority of them still working in government and private sector (65.4%) and 34% was unemployed. Most of the participants had income more than RM1000 (62.1%) and 37.9% had income less than RM 1000. Most of the respondents completed their secondary school (52.3%). For the classification of thyroid disorders, 84.5% were diagnosed as hyperthyroid, followed by 7.2% hyperthyroid and 8.5% had thyroid cancer.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>38</td>
<td>24.8</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>115</td>
<td>75.2</td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>20</td>
<td>13.1</td>
<td>40.16 (13.54)</td>
</tr>
<tr>
<td>26-40</td>
<td>68</td>
<td>44.4</td>
<td></td>
</tr>
<tr>
<td>41-60</td>
<td>51</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>Above 60</td>
<td>14</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>92</td>
<td>60.1</td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>50</td>
<td>32.7</td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td>11</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>107</td>
<td>69.9</td>
<td></td>
</tr>
<tr>
<td>Widow/er</td>
<td>31</td>
<td>20.3</td>
<td></td>
</tr>
</tbody>
</table>
Depression symptoms level among thyroid disorders patients

Table 2 showed the level of depression symptoms among thyroid disorders patients grading by DASS-42 score. 130 (85%) out of 153 patients had no symptoms of depression. However, 24.8% (19) out of 129 hyperthyroid patients had mild to extremely severe depression symptoms (mild, n=6; moderate, n=9, severe, n=3 and extremely severe, n=1). Meanwhile 18.2% (2) out of 10 hypothyroid patients had moderate to severe depression symptoms (moderate, n=1; severe, n=1) and 7.7% (1) out of 13 who had thyroid cancer reported mild depression only. However, there was not statistically significant between type of thyroid disorders and the level of depression symptoms (p=0.283).

Table 2. Level of Depression Symptoms among Thyroid Disorders Patients

<table>
<thead>
<tr>
<th>Level</th>
<th>Hyperthyroid (%)</th>
<th>Hypothyroid (%)</th>
<th>Thyroid Cancer (%)</th>
<th>Total (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>110 (85.3)</td>
<td>8 (72.7)</td>
<td>12 (92.3)</td>
<td>130 (85)</td>
<td>0.283</td>
</tr>
<tr>
<td>Mild</td>
<td>6 (14.7)</td>
<td>0 (0)</td>
<td>1 (7.7)</td>
<td>7 (4.6)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>9 (7.0)</td>
<td>1 (9.1)</td>
<td>0 (0)</td>
<td>10 (6.5)</td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>3 (2.3)</td>
<td>1 (9.1)</td>
<td>0 (0)</td>
<td>4 (2.6)</td>
<td></td>
</tr>
<tr>
<td>Extremely severe</td>
<td>1 (0.8)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>2 (1.3)</td>
<td></td>
</tr>
</tbody>
</table>

DASS-Depression subscore: 0 - 9 (normal); 10 – 13(mild); 14 -20 (moderate); 21-27 (severe) and 28 and above (extremely severe)

Discussion

In this study, there were shown that, the most of participants were female (75.2%) at ranged of age 26 to 52 years old. Majority of them were been diagnosed as hyperthyroid (84.3%). The similar findings were found at one of the semi-government hospital in Malaysia by Loh, Ananda & Chan and known as referral centre for thyroid management [15,16]. Thus, this suggested that the most common patients who seek treatment for thyroid were middle-aged females with hyperthyroid. Besides, this in...
line with another study at Asian countries, where majority of the patients were female and at the middle aged of groups [12,17]. However, most of them been diagnosed as hypothyroid. These findings were contrast in Europe that found the thyroid nodules were dominated among middle to older age of groups [10,18]. The varies of thyroid disorders found at different countries might be caused by geographical differences which could contribute to cause of thyroid disorders.

The aim of this study was to determine the level of depression symptoms among thyroid disorders patients. This study revealed that only 15% (n=23) out of 153 patients experienced depression symptoms. When classified to group of thyroid disorders, hyperthyroid patients were most suffered from depression symptoms from mild to extremely severe depression rather than hypothyroid patients who had moderate to severe depression and one patient had mild depression from the thyroid cancer group. However, there was not statistical significant between the level of depression symptoms and group of thyroid disorders (p=0.283). This finding was supported by the results of a cohort study showed that about 69% (n=44) out of 64 untreated hypothyroid had depression and 46% (n=29) from this group had persisted depression even after the treatment19. This is in contrast to the findings reported from the three descriptive studies which found that the high prevalence of depression symptoms was among hypothyroid patients [17,20,21].

Furthermore, another two cross-sectional studies revealed that the high frequency of depression symptoms was among patients with autoimmune thyroid disorders [10,22]. The significant correlation between the depression symptoms score and type of thyroid disorders also was found in study by Branka [10]. However, the patient with autoimmune thyroid disorders was not found in this present study. This discrepancy may be due to the clinician was identify this type of thyroid disorders in hypothyroid and hyperthyroid group. Therefore, the comparison cannot be made with the current study.

There are some limitations in this study. The results cannot be generalize to other settings due to small sample size and this study was conducted at the small settings. In addition, an association factors of depression symptoms were not determined in this study, thus an extensive analysis is recommended to identify the predicting factors that contribute to development of depression symptoms among thyroid disorders patients.

Based on the research findings, there was varies of depression symptoms level among patients with thyroid disorders. Also, this study would suggest that the depression symptoms score was higher in the patients who have hyperthyroid, followed by hypothyroid and thyroid cancer groups. The outcome of this study will provide the baseline data for severity of depression symptoms among this population, therefore the prevention program can be initiated and the morbidity to have psychiatric illness may be prevented.

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