Prevalence and factors associated with psychological distress among adult patients with hypertension in a primary care clinic: A cross-sectional study

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Keywords:
Anxiety, Depression, Hypertension, Prevalence, Primary Care

Introduction
Psychological distress worsens the control of hypertension. This study aims to fill the knowledge gap and evaluate the prevalence and factors associated with depression, anxiety, and stress among patients with hypertension in a primary care clinic.

Methods: A cross-sectional study was conducted at Klinik Kesihatan Bandar Jerantut on hypertensive patients using a systematic random sampling method. Data were collected from 391 hypertensive patients using a self-administered questionnaire. Multiple logistic regression analysis was performed to identify the associated factors.

Results: The response rate was 99.5% (389/391). The mean age of respondents was 60.1 years and 44.7% were male. The prevalence of psychological distress was the highest at 28.8%, followed by anxiety (21.3%), depressive (16.2%), and stress symptoms (13.9%). Uncontrolled blood pressure was significantly associated with depressive (OR: 6.4; 95% CI: 3.32–12.28), anxiety (OR: 4.9; 95% CI: 2.75–8.82), and stress symptoms (OR: 6.3; 95% CI: 3.06–12.98). Worry about the complications of hypertension was significantly associated with depressive (OR: 4.5; 95% CI: 2.08–9.94), anxiety (OR: 10.8; 95% CI: 4.15–28.17), and stress symptoms (OR: 5.3; 95% CI: 2.14–13.22). Other associated factors were physical inactivity, employment, lack of formal education, and low household income.

Conclusion: A quarter of hypertensive patients experienced psychological distress in terms of depressive, anxiety, or stress symptoms. We recommend screening for psychological distress among high-risk hypertensive patients, especially those cannot achieve adequate blood pressure control or those who are worried about the complications of hypertension.
able to lower blood pressure levels and improve quality of life.  

According to the literature, the prevalence of depression among hypertensive patients is 26.8%, whereas the prevalence of anxiety symptoms among hypertensive patients varies widely, ranging from 8.9% to 55.3%. Studies on stress symptoms in hypertensive patients are scarce. Among hypertensive patients in Ghana, the prevalence of stress symptoms was reported to be 35%.

Ageing has been associated with higher odds of depression and anxiety in hypertensive patients, especially in those over 60 years old and those who experienced a longer duration of hypertension, possibly due to increased exposure to the disease. Female gender has also been associated with depressive and anxiety symptoms. This association is likely due to the differences in response towards stressors due to hormonal and physical factors. Gebre et al. and Ashok et al. found a positive association between family history of depression and depressive symptoms, suggesting that depressive symptoms are influenced by genetic inheritance. Furthermore, depressive and anxiety symptoms have been associated with lower socio-economic status: being unemployed, having a low income, and having a lower educational level. Lower socio-economic status limits access to various resources and thus increases the risk of depression. The same mechanism might also lead to anxiety. Smoking has also been associated with higher odds of depressive and anxiety symptoms; it is likely a maladaptive coping mechanism to overcome depression and stress.

Despite the important role of psychological distress in influencing blood pressure control among hypertensive patients, there is a paucity of relevant studies in Malaysia. The existing studies focus only on a specific group of hypertensive patients, such as the elderly and patients in hospital settings, and the studies are not generalisable to all hypertensive patients. Moreover, most of the studies are conducted on hypertensive patients with comorbidities, such as stroke, heart disease, and diabetes mellitus. These diseases could have a more significant impact on psychological distress as they are more disabling than hypertension, which is usually asymptomatic. Therefore, our study focuses on hypertensive patients without comorbidities, minimising the confounding factors.

Our objective was to examine the prevalence of psychological distress (depression, anxiety, and stress) among adult hypertensive patients in a primary care clinic and its associated socio-demographic factors and clinical characteristics.

**Methods**

**Study design and setting**

A cross-sectional study was conducted at Klinik Kesihatan Bandar Jerantut (KKBJ) in Jerantut, Pahang, Malaysia. Jerantut town has a population of about 91,000 people, as of 2010; therefore, it is classified as an urban area according to the Department of Statistic Malaysia. KKBJ is the most extensive primary health clinic in district Jerantut, with a daily patient load of around 400 people. It also receives patients from the surrounding rural areas. Patients visiting this health clinic are Malay, Chinese, Indian, and Orang Asli, which is reflective of the constitution of the population of Malaysia. Data collection occurred from 13 July 2020 to 3 September 2020. Our study was registered under the Medical Research Register (NMRR) (ID: NMRR-19-2620-48946). Ethical clearance was obtained from the Malaysia Medical Research and Ethics Committee (MREC) before the commencement of the study. Approval to carry out the research was obtained from Pejabat Kesihatan Daerah Jerantut and KKBJ.

**Study population**

We recruited patients aged ≥18 years old with hypertension who were registered at the hypertension clinic and had a follow-up of at least 6 months. This study excluded those self-reported to have psychiatric disorders including but not limited to major depressive disorder, those who were unable to read Malay or English, were currently pregnant or breastfeeding, those who self-reported as having other chronic diseases, including but not limited to diabetes mellitus, chronic kidney disease, malignancy, stroke, or cardiovascular disease, those self-reported to have physical disabilities, and patients registered as disabled.

**Sample size calculation**

The sample size was calculated using G*Power software version 3.1.9.2 by using an odds ratio of 0.56 (‘completed higher education’) and a Cohen’s effect size of 0.5, with a power of 80%, significance level α of 0.05 and 95%
confidence interval. The largest estimated sample size was 388. The required sample size became 485 after being inflated with an estimated 20% non-response rate.

**Sampling method**

All hypertensive patients who attended the hypertension clinic during the data collection period were sampled using a systematic random sampling method. The calculated sampling fraction was 3. The first individual was selected using an automated number generator software (calculator.net); the subsequent participants were selected at a fixed interval of 3.

**Instruments**

This study used a set of self-administered questionnaires in both English and Malay. The questionnaire contained five parts: A, B, C, D, and E. Part A contained questions regarding socio-demographic characteristics. Part B contained the 21-item Depression, Anxiety and Stress Scale (DASS-21). The English version of the DASS-21 had an overall Cronbach’s alpha value of 0.88,24 and the validated Malay version of the DASS-21 had Cronbach’s alpha values of 0.84, 0.74, and 0.79, for the depression, anxiety, and stress scales, respectively.25 Parts C and D contained questions regarding clinical characteristics. Part E contained information about the patient’s blood pressure, body mass index (BMI), and medication records, which were input by the researchers.

**Data collection**

The data collection was carried out by the chief investigators assisted by research assistants. They were two staff nurses, two medical assistants, and two medical officers. The training of research assistants was completed before data collection. Staff nurses and medical assistants were responsible for preparing sampling frames, screening for eligibility, obtaining consent from participants, and measurement of blood pressure. The chief investigator and two medical officers were responsible for the questionnaire and interpretation of the DASS-21 score.

**Measurement of psychological distress**

We used the DASS-21 questionnaire to measure depression, anxiety, and stress. The total scores of each domain was multiplied by 2 to obtain the final scores.24 Psychological distress was categorised and defined by the scores in Table 1. Psychological distress was defined by the presence of at least ‘mild severity’ in either depression, anxiety, or stress. The cut-off score of ‘mild symptoms’ used to define psychological distress was recommended in a local study.26

**Table 1. 21-item Depression, Anxiety and Stress Scale (DASS-21) scoring.**

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0–9</td>
<td>0–7</td>
<td>0–14</td>
</tr>
<tr>
<td>Mild</td>
<td>10–13</td>
<td>8–9</td>
<td>15–18</td>
</tr>
<tr>
<td>Moderate</td>
<td>14–20</td>
<td>10–14</td>
<td>19–25</td>
</tr>
<tr>
<td>Severe</td>
<td>21–27</td>
<td>15–19</td>
<td>26–33</td>
</tr>
<tr>
<td>Very severe</td>
<td>28+</td>
<td>20+</td>
<td>34+</td>
</tr>
</tbody>
</table>

**Variables**

In this study, the dependent variable was psychological distress represented by depression, anxiety, or stress, which are presented as categories (Table 1). The independent variables were socio-demographic characteristics (age, gender, ethnicity, marital status, employment status, monthly household income, and educational level) and clinical characteristics (smoking status, exercise status, family history of mental illness, worry about complications of hypertension, usage of a beta-blocker, length of follow-up, BMI, and blood pressure control).

**Pilot study**

This questionnaire was evaluated in a pilot study with 40 respondents for face and content validity before data collection and was found satisfactory. DASS-21 in the pilot study had Cronbach’s alpha values of 0.863, 0.747, and 0.824 for depression, anxiety, and stress, respectively. The data obtained from the pilot study were not included in the final study.

**Data analysis**

The categorical data are reported as frequencies and percentages. The normally distributed continuous data are presented as means with
standard deviation (SD). Non-normally-distributed continuous data are presented as medians and interquartile ranges (IQR). IBM Statistical Package for Social Science (SPSS) version 26.0 software was used for statistical analysis.

The categorical data that contained ≥20% cells with an expected count of <5 were re-categorised into meaningful categories according to their significance from the literature review. Re-categorisation was performed to avoid small, expected numbers in the cells, leading to assumption violation in the chi-square test. These variables were ethnicity, marital status, monthly household income, and BMI.

We used a chi-square test for the categorical data and an independent t-test or Mann–Whitney U test for the continuous data to identify the associations between the depression, anxiety, and stress symptoms (dependent variables) and the socio-demographic and clinical characteristics (independent variables). The chi-square test was used to determine the reference group for the independent variables’ categories in multiple logistic regression analysis.

Subsequently, simple logistic regression (SLR) was conducted to identify potential independent determinants with a p-value <0.25 for the multiple logistic regression (MLR). Then, MLR was conducted. The level of significance was set at p<0.05. The results for MLR are presented as odds ratios (OR) with 95% confidence interval (CI).

The goodness of fit of the model was tested using the Hosmer–Lemeshow test. Residual statistics (studentised residual and standardised residual) and influential statistics (Cook’s distance, DFBeta value, and leverage value) were run to identify the fitness of the model and any points that may influence the model. A few extreme residual values were noted from the studentised and standardised residual values; those extreme residual values were removed before re-running the test. The extreme residual values were found to not influence the results of our model; therefore, these extreme residual values were retained in our final model.

**Results**

**Respondents’ characteristics**

A total of 391 patients were selected using a systematic randomisation sampling method for participation. Of the 391 patients, 2 declined participation. The final number of participants was 389, with a response rate of 99.5%. The mean age of the respondents was 60.1 years. Over half of the study population were female (55.3%), and over half of the study population (57.6%) had achieved adequate blood pressure control.

Regarding the respondents’ psychological status, 28.8% (112/389) were noted to have psychological distress with either depressive symptoms (16.2%, 63/389), anxiety symptoms (21.3%, 83/389), or stress symptoms (13.9%, 54/389).

Factors associated with psychological distress

Table 2 shows the association between depressive, anxiety, and stress symptoms and socio-demographic and clinical characteristics in patients with hypertension using a bivariate analysis.

Depressive symptoms were significantly associated with poor blood pressure control (p<0.001) and worry about complications of hypertension (p<0.001). Anxiety symptoms were significantly associated with older age (p=0.002), employment status (p=0.002), poor blood pressure control (p=0.001), worry about complications of hypertension (p<0.001), and higher BMI (p=0.007). Stress symptoms were significantly associated with older age (p=0.008), poor blood pressure control (p<0.001), worry about complications (p<0.001), and higher BMI (p=0.005).
Depressive symptoms are defined as DASS-21 depression score >9; Anxiety symptoms are defined as DASS-21 anxiety score >7; Stress symptoms are defined as DASS-21 stress score >14; Controlled blood pressure (BP) is defined as diastolic BP ≤90 mmHg and systolic BP ≤140 mmHg; Uncontrolled BP is defined as diastolic BP ≥90 mmHg or systolic BP ≥140 mmHg; Normal BMI is defined as BMI 18.5–22.9 kg/m²; Abnormal BMI is defined as BMI <18.5 kg/m² or BMI ≥23.0 kg/m²

*: analysed with independent t-test

1: analysed with Mann–Whitney U test

* significant at p<0.05
Determinants of psychological distress based on multivariate logistic regression

The final model identified three determinants of depressive symptoms among patients with hypertension (Table 3): ‘uncontrolled blood pressure’ (OR: 6.4; 95% CI: 3.3–12.28, p<0.001), ‘presence of worry about complications of hypertension’ (OR: 4.5; 95% CI: 2.08–9.94, p<0.001), and ‘no exercise’ (OR: 2.4; 95% CI: 1.23–4.85, p=0.001).

The final model for anxiety symptoms identified four determinants (Table 3), with ‘being worried about complications of hypertension’ as the strongest determinant (OR: 10.8; 95% CI: 4.15–28.17, p<0.001), followed by ‘did not receive a formal education’ (OR: 4.9; 95% CI: 1.42–17.36, p=0.012), ‘had uncontrolled blood pressure’ (OR: 4.9; 95% CI: 2.74–8.72, p<0.001), and ‘being employed or having own business’ (OR: 2.7; 95% CI: 1.38–5.35, p=0.004).

The model for stress symptoms identified three determinants: ‘uncontrolled blood pressure’ (OR: 6.3; 95% CI: 3.05–12.97, p<0.001), ‘presence of worry about complications of hypertension’ (OR: 5.3; 95% CI: 2.14–13.22, p<0.001), and ‘monthly household income of less than RM3,000’ (OR: 3.7; 95% CI: 1.37–10.29, p=0.010).

Table 3. Determinants of depressive, anxiety, and stress symptoms in patients with hypertension using multiple logistic regression (n=389).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Depressive symptoms</th>
<th>Anxiety symptoms</th>
<th>Stress symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjusted odds ratio (95% CI)</td>
<td>p-value</td>
<td>Adjusted odds ratio (95% CI)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>0.988 (0.630–3.993)</td>
<td>0.371</td>
<td>1.011 (0.977–1.046)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.414 (0.771–2.595)</td>
<td>0.263</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Chinese</td>
<td>1.148 (0.526–2.585)</td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
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<tr>
<td>Married</td>
<td></td>
<td></td>
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<tr>
<td>Other than married</td>
<td>1.878 (0.862–4.094)</td>
<td></td>
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</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed/Own business</td>
<td>2.719 (1.382–5.351)</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>2.017 (0.919–4.428)</td>
<td>0.080</td>
<td></td>
</tr>
<tr>
<td>Retired/Pensioner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>4.970 (1.423–17.362)</td>
<td>0.012</td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary school</td>
<td>0.989 (0.508–1.926)</td>
<td>0.975</td>
<td></td>
</tr>
<tr>
<td>College/University</td>
<td>1.210 (0.446–3.281)</td>
<td>0.708</td>
<td></td>
</tr>
<tr>
<td>Household income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥RM3,000/month</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>&lt;RM3,000/month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled</td>
<td>6.384 (3.320–12.276)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Uncontrolled</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Exercise status</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>&lt;150 min/week</td>
<td>2.451 (1.236–4.859)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>≥150 min/week</td>
<td>1.393 (0.565–3.432)</td>
<td>0.471</td>
<td></td>
</tr>
<tr>
<td>Family history of mental health problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>2.210 (0.927–5.268)</td>
<td>0.074</td>
<td></td>
</tr>
<tr>
<td>Worry about complications of hypertension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>4.547 (2.080–9.939)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>10.816 (4.153–28.165)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other than normal</td>
<td></td>
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</tr>
</tbody>
</table>

Depressive symptoms are defined as DASS-21 depression score >9; Anxiety symptoms are defined as DASS-21 anxiety score >7; Stress symptoms are defined as DASS-21 stress score >14; Controlled BP is defined as diastolic BP <90 mmHg and systolic BP <140 mmHg; Uncontrolled BP is defined as diastolic BP ≥90 mmHg or systolic BP ≥140 mmHg; Normal BMI is defined as BMI 18.5–22.9 kg/m²; Abnormal BMI is defined as BMI <18.5 kg/m² or BMI ≥ 23.0 kg/m². * significant at p<0.05
Discussion

Prevalence of psychological distress

There was discrepancy between our results and the reported prevalence of depression, anxiety, and stress. Overall, the prevalence of depression, anxiety, and stress found in our study was lower than that reported in the literature.9,13,17,21 This discrepancy could be due to different measuring tools, locations, and age groups. Despite the differences, the prevalence of psychological distress among the respondents was high. We found that 28.8% of the respondents had psychological distress represented by depressive, anxiety, and stress symptoms. Some of the respondents had a combination of two or all three symptoms.

We found that 16.2% of the respondents had depressive symptoms. The result was lower than the results of a systematic review by Li et al., where the prevalence of depressive symptoms among patients with hypertension was reported to be 26.8%.11 This discrepancy could be due to the different measuring tools used by the studies. Li et al.’s study mainly adopted papers from China using Zung’s Self-Rating Depression Scale, which has higher sensitivity (0.93) but lower specificity (0.69) in detecting depression when compared with the DASS-21 depression subscales (sensitivity 0.84, specificity 0.84).27 As a result, our low prevalence of depression could be due to a lower sensitivity of the screening tool with fewer false-positive cases.

The prevalence of depression, anxiety, and stress in our study was much lower than that reported by other studies in a hospital setting, such as a study by Gebre et al., who reported a depression prevalence of 24.7%. Aberha et al., who reported an anxiety prevalence of 28.5%, and Kretchy et al., who reported a stress prevalence of 35%.9,13,16 Across geographical regions with different cultural and political backgrounds, Ashok et al. reported that 41% of their study population in India had depression. The author concluded that the high prevalence of depression could be influenced by socio-cultural factors.8 In contrast, Hamrah et al. noted that 58.1% of the study population in Afghanistan had depression, and 42.3% had anxiety, which could have been due to the political situation in the country at the time of the study.15,20

In Malaysia, our study yielded a higher prevalence of depressive and anxiety symptoms than that reported by Norfazilah et al. (depressive symptoms 4%; anxiety symptoms 13.2%), likely due to differences in the study populations. The study by Norfazilah et al. was conducted in a hospital setting with fewer women (41.2% vs. 55.3%).21 Men and women may have different responses towards stressors due to differences physical and hormonal factors and their role in society, where women are more easily affected by stressors than men.27 We also reported a higher prevalence of anxiety symptoms than Ismail et al. (21.3% vs. 13.3%).20 A possible explanation for this discrepancy is that our study recruited individuals above the age of 18 years, whereas Ismail et al. recruited individuals above 60 years, and most of them were likely not employed. In our study, we noted that individuals who were working were more likely to have anxiety symptoms than those who were not working. The proportion of patients who were working was not reported by Ismail et al.; about one-third of the patients in our study were employed.

Determinants of psychological distress

a) Worry about complications of hypertension

The presence of worry about complications of hypertension was associated with depression, anxiety, and stress. We were not surprised by this finding, as 64.3% of our respondents reported feeling worried about the complications of hypertension.6 This finding is significant as it is common for patients to express concern about complications of hypertension rather than telling healthcare providers that they are depressed, anxious, or stressed. When hypertensive patients express their worry, it cues healthcare providers to screen for depression, anxiety, and stress.

b) Uncontrolled blood pressure

Our study showed that respondents with uncontrolled blood pressure were 6 times more likely to have depressive symptoms than those with controlled blood pressure. Similar observations were reported by Gebre et al. (OR 7.57), Almas et al. (OR 1.94), and Ashok et al. (OR 4.33).8,9,29 The association between depression and uncontrolled blood pressure could be due to poorer disease management behaviour among patients with depression. Zakaria et al. noted that hypertensive
patients with depressive symptoms had lower compliance towards medication. Doubuva et al. noted that this group of patients tended to have poorer adherence to lifestyle advice, such as low regulation of salt intake, that could potentially lower blood pressure.

Patients with uncontrolled blood pressure were 6 times more likely to have stress symptoms than those with controlled blood pressure. The association between uncontrolled blood pressure and stress symptoms could be due to the effects of stress hormones that increase heart rate and blood pressure.

Patients with uncontrolled blood pressure were 5 times more likely to have anxiety symptoms than those with controlled blood pressure. This could be due to the patients' awareness of uncontrolled blood pressure. Hypertensive awareness has been shown to lead to psychological distress.

Liu et al. concluded that the relationship between psychological stress and blood pressure was bidirectional. Awareness of uncontrolled blood pressure could be a stressor that leads to depression, anxiety, and stress symptoms. Moreover, depression, anxiety, and stress worsen the existing blood pressure through poor lifestyle changes and non-adherence to medications. The vicious cycle of psychological distress and uncontrolled blood pressure is unresolved without early identification and intervention.

**Strengths of this study**

Our study, carried out in a primary care clinic, achieved an exceptionally high response rate. We studied three psychological symptoms (depression, anxiety, and stress) in contrast to the first two symptoms in other studies. In addition, our study excluded comorbidities, allowing the effects of hypertension alone on psychological distress to be examined.

**Limitations of this study**

Our study was carried out in a single government primary health care clinic and therefore the results cannot be extrapolated to another population, especially patients who receive treatment at a private centre as they are likely to have a higher socioeconomic background. In addition, our study was potentially subjected to response bias, as mental distress could be underreported due to shame. Our study was inevitably conducted during COVID-19 pandemic, where daily routines had changed due to the Movement Control Orders (MCO) with strict Standard Operating Procedures, including wearing a mask in public places, no social gatherings, and no outdoor activities, which could contribute to the high prevalence of psychological distress among the general Malaysian population.

Perveen et al. reported that 42.5% of the general population had depressive symptoms, 67.7% had anxiety symptoms, and 80.7% had stress symptoms. However, the impact of the pandemic on the psychological stress of the study population could have been lessened, as the study was completed in September 2020, in the period of post-MCO, and the case burden of COVID-19 was improving. Nevertheless, the impact of COVID-19 cannot be ignored, and the results must be interpreted with caution.

In summary, the prevalence of psychological distress among hypertensive patients in our study is significant; One in four patients had depressive, anxiety, or stress symptoms. Alarmingly, all these symptoms were significantly associated with uncontrolled blood pressure. Worrying about hypertensive complications appeared to be significantly associated with the three symptoms. Screening for psychological distress should be performed in high-risk individuals, especially those with uncontrolled hypertension or those concerned about hypertension complications. Early detection of psychological distress is urgently needed for further intervention.

**Acknowledgements**

We would like to thank the staff at KKBJ for assisting in data collection. We would also like to thank the participants in this study for providing their valuable information.

**Conflicts of interest**

There are no conflicts of interest to declare in this study.
How does this paper make a difference in general practice?

- Our results suggest that the prevalence of psychological distress is high among Malaysian hypertensive patients.
- We recommend that primary care doctors should screen for psychological distress in patients with uncontrolled blood pressure or patients who worry about hypertensive complications, in addition to other identified risk factors, with appropriate screening tools.

References


