# Anxiety and Depressive Symptoms after Stroke in 9 Rehabilitation Centers

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*Objective:* Determine the occurrence of anxiety and depressive symptoms in rehabilitation phase and identify the associated factors that include impact on functional outcome and quality of life in stroke patients.
*Design:* Prospective analytical study.
*Material and Method:* Two hundred fifty one stroke patients from nine rehabilitation centers admitted between March and December 2006 were enrolled into the present study. Anxiety and depressive symptoms were evaluated in stroke patients using the Hospital Anxiety and Depressive Scales (HADS) twice, on admission and at discharge to rehabilitation program. Factors associated with anxiety and depressive symptoms were identified using univariate and multiple logistic regression analyses. Functional ability and quality of life using Barthel ADL Index (BI) and WHOQOL-BREF questionnaires respectively were recorded and analyzed.
*Results:* Two hundred fifty one patients were assessed for anxiety and depressive symptoms using HADS. It was found that 25.5% of the patients suffered from anxiety symptoms, 37.8% from depressive symptoms, and 17.5% from both. Anxiety symptoms were associated with depressive symptoms (OR 5.49, 95%CI 2.89-10.43) and negatively associated with dyslipidemia (OR 0.48, 95%CI 0.25-0.94). Depressive symptoms were related to anxiety symptoms (OR 5.88, 95%CI 3.15-10.99) and female gender (OR 1.81, 95%CI 1.04-3.16). Patients with anxiety and depressive symptoms had lower functional ability and quality of life than patients without symptoms on admission and at discharge. After the rehabilitation program, patients without anxiety symptoms showed improvement in functional outcome and QOL. However, patients with or without depression symptoms have improvement in functional outcome after rehabilitation. However, patients without depressive symptoms showed more items improvement in QOL than patients with depression.
*Conclusion:* Symptoms of anxiety and depression are common after stroke. They are correlated with each other. Female gender also related to depressive symptoms. Patients with anxiety and depressive symptoms have lower functional ability and quality of life than those without symptoms.

*Keywords:* Anxiety, Depression, Stroke, Rehabilitation

Emotional symptoms encountered in stroke are far from receiving the same amount of concern from the staff, although anxiety and depression are prevalent, and known to influence stroke patients' outcome[1,2]. Emotional changes related to cerebro-vascular disease may be caused by the patient's brain damage per se[3,4], or accounted for by psychological reactions[5]. However, early identification and treatment of anxiety and depression symptoms may prevent more serious effects on neurological outcome in stroke patients[1,6,7].

Many studies have attempted to identify factors that were associated with emotional symptoms, most focused on the impact of lesion location and size

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in depression after stroke[3,8,9]. Depression has been related to physical handicap and the limitations in activity of daily living (ADL)[10-14], impaired quality of life (QOL)[15,16]. Anxiety also affected physical disability and QOL of stroke patients[17-19]. It is of interest to assess the impact of anxiety and depression during rehabilitation in determining functional outcome and quality of life.

The aims of the present study were to determine the occurrence of anxiety and depressive symptoms after stroke and to identify the associated factors including functional outcome and quality of life.

### Material and Method

The present study was part of the Thai Stroke Rehabilitation Registry (TSRR), which was the first hospital-based, multicenter national registry of inpatient stroke rehabilitation in Thailand[20]. The present study was conducted between March and December 2006 at nine rehabilitation centers including seven teaching hospitals, one national rehabilitation center, and one neurological institute. It was approved by the ethics committee of each center.

The inclusion criteria were stroke patients who were aged more than 18 years, had stable vital signs within 48 hours, could follow at least one-step commands, tolerate sitting position without vertigo or dizziness for at least 30 minutes. Patients who had severe medical conditions, could not communicate at all, were known to have major psychiatric disorder (e.g. dementia, schizophrenia, or a present psychotic episode) and had coexisting physical disability (e.g. amputation, spinal cord injury, blindness) were excluded from the present study.

On admission, after giving written informed consent, the patients were registered for the following baseline variables: age gender, main type of stroke, underlying disease, stroke onset date. Functional ability assessed with Barthel Index (BI), cognitive function tested with Thai Mental State Examination (TMSE), quality of life using WHOQOL-BREF questionnaire and emotional using Hospital Anxiety and Depression Scale (HADS).

The hospital anxiety and depression scale (HADS)[21] was used to assess mood measuring of anxiety (7 items), depression (7 items) each answered on a four-point verbal rating. It is a 21-point scale (0 best, 21 worst), with a cutoff point of greater than 10 identify anxiety or depression.

The present study was complete as the patients achieved the rehabilitation goal or their BI score were stable for two consecutive weeks. At the end of study BI, WHOQOL-BREF and HADS were reassessed.

### Statistical analysis

Demographic data and characteristic of patients were described by descriptive statistical method. To identify factors associated with anxiety and depressive symptoms univariate statistical analysis was used. Subsequently, a multivariate logistic regression model, controlling for possible confounding covariates was used. The level of significance was set at $p < 0.05$. Statistical analyses were performed with SPSS 11.5 for window.

### Results

Three hundred seventy six patients were screened for the present study. Three hundred twenty seven met the inclusion criteria, 251 were assessed anxiety and depression using HADS. Demographic data of 251 patients are shown in Table 1.

The mean age was $62 \pm 12.32$ years, range 21-89 years, and 57.4% were males. Most of the patients were married (70.1%). The median duration from onset to admission for rehabilitation was 20 days (min = 1, max = 1,456). Among these, 140 (55.8%) patients were admitted less than 30 days after their stroke. The mean length of stay for rehabilitation was $28.29 \pm 17.16$ days, range 3-70 days. The main pathology was cerebral infarction (73.17%). From physical finding, 147 (58.6%) patients had left side weakness, 96 (38.2%) had right side weakness and six (2.4%) had bilateral weakness. Most of the patients had underlying hypertension (74.9%), followed by dyslipidemia (53.4%), diabetes (28.71%), and heart disease (7.5%). Thirty-five (13.9%) patients had a history of a previous stroke. More than half (50.61%) of the patients had cognitive impairment assessed by TMSE (score < 23). There were 44 (17.5%) patients with a history of smoking and 81 (32.3%) patients with alcohol consumption.

The occurrence of anxiety and depressive symptoms, sixty-four (25.5%) patients suffered from anxiety symptoms and 95 (37.8%) had depressive symptoms according to define cutoff score. Only 44 (17.5%) patients suffered from both anxiety and depressive symptoms. Mean score of HADS anxiety was $7.59 \pm 3.90$ and HADS depression was $8.53 \pm 4.14$.

### Factors related to anxiety and depressive symptoms

To identify factors associated with anxiety and depressive symptoms, patients were divided into

anxiety or depressive groups on the basis of HADS score more than 10. Variable factors related to anxiety and depressive symptoms included gender, age, onset

**Table 1.** Demographic data (n = 251)

| Demorgraphic data | Number (%) |
|---|---|
| Gender | |
|     Male | 144 (57.4) |
|     Female | 107 (42.6) |
| Age (years) | |
|     Mean ± SD | 62 ± 12.32 years |
|     Range | 21-89 years |
|     ≤ 60 | 113 (45.0) |
|     > 60 | 138 (55.0) |
| Marital status | |
|     Single | 20 (8.0) |
|     Married | 176 (70.1) |
|     Divorce/separated | 55 (21.9) |
| Onset to admission time (OAT) (days) | |
|     Mean ± SD | 73.52 ±154.10 days |
|     Median | 20.0 days |
|     Range | 1-1,456 days |
|     1-30 | 140 (55.8) |
|     31-90 | 57 (22.7) |
|     > 90 | 54 (21.5) |
| Length of stay (LOS) | |
|     Mean ± SD | 28.29 + 17.16 days |
|     Range | 3-70 days |
| Main type of stroke | |
|     Infarct | 185 (73.7) |
|     Hemorrhagic | 68 (26.3) |
| Comorbid disease | |
|     Hypertension | 188 (74.9) |
|     Diabetes | 72 (28.71) |
|     Dyslipidemia | 134 ( 53.4) |
|     Heart disease | 44 (7.5) |
|     Previous stroke | 35(13.9) |
| Smoking history | |
|     No | 144 (57.4) |
|     Ever (Ex-smoker) | 63 (25.1) |
|     Yes | 44 (17.5) |
| Drinking history | |
|     No | 170 (67.7) |
|     Yes | 81 (32.3) |
| Weakness side | |
|     Left | 147 (58.6) |
|     Right | 96 (38.2) |
|     Bilateral | 6 (2.4) |
| TMSE | |
|     Mean ± SD | 21.58 ± 6.42 |
|     1-23 | 127 (50.61) |
|     > 23 | 119 (47.4) |
|     Not test | 5 (2.0) |

to admission time, main type of stroke, marital status, side of weakness, hypertension, diabetes milletus, dyslipidemia, heart disease, previous stroke, smoking, alcohol consumption, and TMSE score.

Table 2 illustrates that patients with anxiety symptoms were found to be significantly associated with depressive symptoms, hypertension, dyslipidemia, infarction type, and smoking in the univariate analysis. However, in the multivariate logistic regression analysis, independent risk factors for anxiety symptoms were only depressive symptoms (OR 5.49, 95%CI 2.89-10.43) and dyslipidemia was negatively associated with anxiety symptoms (OR 0.48, 95%CI 0.25-0.94).

Patients who had anxiety symptoms and female gender were found to be significantly related to depressive symptoms in the univariate analysis and multiple logistic regression analysis are shown in Table 3 (anxiety symptom: OR 5.88, 95%CI 3.15-10.99 and female gender: OR 1.81 95%CI 1.04-3.16).

Comparison of functional outcome (BI score) between anxiety and non-anxiety groups is seen in Table 4. No statistical difference at admission, however anxiety group had a lower score than the non-anxiety group. At discharge, the anxiety group had a lower score than the non-anxiety group with statistical difference. The depressed group had a lower BI score with statistical difference both at admission and at discharge as shown in Table 5. Overall patients with anxiety or depressive symptoms had a lower BI score than patients without symptoms. However, after the rehabilitation program all groups improved functional outcome with statistical significance except no statistical significant improvement of the anxiety group as seen in Table 6 and 7.

Anxiety and depressed groups had lower WHOQOL scores in all items at admission and discharge than the non-anxiety and non-depressed groups with statistical difference as illustrated in Table 4 and 5. Table 6 illustrates that after rehabilitation program anxiety groups show no statistical difference in all items of WHOQOL scores whereas non-anxiety groups show significant improvement in all items of WHOQOL scores. Table 7 demonstrates that the depressed groups improve with statistical difference in physical and psychological items whereas non-depressed groups improve with statistical difference in all items.

**Discussion**

In the present study, 25.5% of the patients suffered from clinically significant anxiety symptoms, and 37.8% had clinically significant depression

**Table 2.** Univariate analysis and multivariate logistic regression analysis of risk factor with anxiety symptoms

| Variable | Crude OR | 95%CI | p-value | Adjusted OR | 95%CI | p-value |
|---|---|---|---|---|---|---|
| Depressive symptoms | | | | | | |
|   Yes | 5.87 | 3.16-10.89 | <0.001 | 5.49 | 2.89-10.43 | <0.001 |
| Hypertension | 0.48 | 0.26-0.90 | 0.021 | | | |
| Dyslipidemia | 0.50 | 0.28-0.89 | 0.018 | 0.48 | 0.25-0.94 | 0.032 |
| Type of stroke | | | | | | |
|   Infarction | 2.31 | 1.10-4.86 | 0.025 | | | |
| Smoking | | | | | | |
|   Yes | 0.322 | 0.12-0.86 | 0.018 | | | |

**Table 3.** Univariate analysis and multivariate logistic regression analysis of risk factors with depressive symptoms

| Variable | Crude OR | 95%CI | p-value | Adjusted OR | 95%CI | p-value |
|---|---|---|---|---|---|---|
| Anxiety symptoms | | | | | | |
|   Yes | 5.87 | 3.16-10.89 | <0.001 | 5.88 | 3.15-10.99 | <0.001 |
| Gender | | | | | | |
|   Female | 1.80 | 1.07-3.02 | 0.025 | 1.81 | 1.04-3.16 | 0.037 |

**Table 4.** BI, WHOQOL on admission and at discharge periods between anxiety patients and non-anxiety patients

| Outcome | Admission | | p-value | Discharge | | p-value |
|---|---|---|---|---|---|---|
| | Anxiety (n = 64) | Non-anxiety (n = 187) | | Anxiety (n = 17) | Non-anxiety (n = 134) | |
| Barthel index WHOQOL | 7.44 ± 4.33 | 8.04 ± 4.06 | ns | 9.41 ± 5.01 | 14.47 ± 4.21 | <0.001 |
|   Physical | 17.05 ± 2.75 | 18.67 ± 3.87 | 0.002 | 18.41 ± 2.98 | 21.98 ± 3.57 | <0.001 |
|   Psychological | 15.86 ± 3.11 | 18.99 ± 3.59 | <0.001 | 16.59 ± 3.66 | 20.82 ± 3.29 | <0.001 |
|   Social | 8.48 ± 1.79 | 9.34 ± 2.32 | 0.008 | 9.41 ± 1.62 | 9.87 ± 2.03 | ns |
|   Environment | 22.48 ± 3.87 | 25.12 ± 4.01 | 0.001 | 22.06 ± 4.70 | 26.58 ± 3.86 | <0.001 |

**Table 5.** BI, WHOQOL on admission and at discharge periods between depressed and non-depressed patients

| Outcome | Admission | | p-value | Discharge | | p-value |
|---|---|---|---|---|---|---|
| | Depressed (n = 95) | Non-depressed (n = 156) | | Depressed (n = 41) | Non-depressed (n = 210) | |
| Barthel index WHOQOL | 7.04 ± 4.06 | 8.40 ± 4.11 | 0.011 | 10.73 ± 4.58 | 14.79 ± 4.11 | <0.001 |
|   Physical | 17.02 ± 3.17 | 19.01 ± 3.77 | <0.001 | 19.63 ± 3.16 | 22.15 ± 3.59 | <0.001 |
|   Psychological | 16.22 ± 3.44 | 19.40 ± 3.38 | <0.001 | 17.80 ± 3.52 | 21.07 ± 3.21 | <0.001 |
|   Social | 8.49 ± 1.94 | 9.49 ± 2.30 | <0.001 | 9.07 ± 2.16 | 10.00 ± 1.94 | 0.001 |
|   Environment | 22.81 ± 3.77 | 25.44 ± 4.03 | <0.001 | 23.05 ± 3.87 | 26.90 ± 3.82 | <0.001 |

**Table 6.** BI, WHOQOL of anxiety and non-anxiety patients on admission and at discharge periods

| Outcome | Anxiety | | p-value | Non-anxiety | | p-value |
|---|---|---|---|---|---|---|
| | Admission (n = 64) | Discharge (n = 17) | | Admission (n = 187) | Discharge (n = 134) | |
| Barthel index WHOQOL | 7.44 ± 4.33 | 9.41 ± 5.01 | ns | 8.04 ± 4.06 | 14.47 ± 4.21 | <0.001 |
| Physical | 17.05 ± 2.75 | 18.41 ± 2.98 | ns | 18.67 ± 3.87 | 21.98 ± 3.57 | <0.001 |
| Psychological | 15.86 ± 3.11 | 16.59 ± 3.66 | ns | 18.99 ± 3.59 | 20.82 ± 3.29 | <0.001 |
| Social | 8.48 ± 1.79 | 9.41 ± 1.62 | ns | 9.34 ± 2.32 | 9.87 ± 2.03 | <0.014 |
| Environment | 22.48 ± 3.87 | 22.06 ± 4.70 | ns | 25.12 ± 4.01 | 26.58 ± 3.86 | <0.001 |

**Table 7.** BI, WHOQOL of depressed and non-depressed patients on admission and at discharge periods

| Outcome | Depressed | | p-value | Non-depressed | | p-value |
|---|---|---|---|---|---|---|
| | Admission (n = 95) | Discharge (n = 41) | | Admission (n = 156) | Discharge (n = 210) | |
| Barthel Index WHOQOL | 7.04 ± 4.06 | 10.73 ± 4.58 | <0.001 | 8.40 ± 4.11 | 14.79 ± 4.11 | <0.001 |
| Physical | 17.02 ± 3.17 | 19.63 ± 3.16 | <0.001 | 19.01 ± 3.77 | 22.15 ± 3.59 | <0.001 |
| Psychological | 16.22 ± 3.44 | 17.80 ± 3.52 | 0.016 | 19.40 ± 3.38 | 21.07 ± 3.21 | <0.001 |
| Social | 8.49 ± 1.94 | 9.07 ± 2.16 | ns | 9.49 ± 2.30 | 10.00 ± 1.94 | 0.025 |
| Environment | 22.81 ± 3.77 | 23.05 ± 3.87 | ns | 25.44 ± 4.03 | 26.90 ± 3.82 | <0.001 |

symptoms at admission to rehabilitation. As the patients' premorbid emotional status is unknown, the present study cannot distinguish pre-existing psychiatric symptoms from problems caused by the current cerebrovascular accident. Some investigators claimed that the etiology of depression was a complex mixture of pre-stroke personality and it arose as a psychological reaction to stroke induced impairments and social handicaps[22,23]. Patients suffered from aphasia, which was known to be associated with depression symptoms[24,25], were excluded from the present study. The prevalence of anxiety and depression symptoms presumably would have been higher if the excluded patients had been able to participate in the present study. Even though the HAD scale has been found to assess anxiety and depression disorder in both psychiatric and somatic patients[26], the authors have not compared this scale to other instruments that assess emotional symptoms. The results, therefore, must be interpreted with caution.

The number of patients diagnosed with anxiety symptoms in the present study corresponds well with the findings of other studies[27-30]. The prevalence of depression varied considerably (22%[31] to 47%[32]). The variation was due to patient selection, method, and timing of measurement. Some studies were community based[27,32] and thus, might have been expected to include a greater proportion of less severe strokes than hospital based studies[31,33,34]. Comparison between the present and previous studies is therefore difficult. It must also be emphasized that the authors have not aimed at diagnosing depression and anxiety, but rather assess depression and anxiety symptoms.

The contributing factors of anxiety symptoms in the present study are only depressive symptoms, which correspond well with other studies that anxiety and depression often coexist[18,35,36]. This is supported by the results of the present study, as 17.5% of the patients suffered from both anxiety and depressive symptoms. This suggested as other investigators have hypothesized, that depression and anxiety may share similar mechanisms[37]. There is no relationship of anxiety symptoms with age or gender that agreed with other studies[19], although other studies[18,35,36]

have shown that anxiety is common in young patients and women.

Depressive symptoms were found associated with anxiety symptoms and female gender in the present study. The authors found that female gender was related with depressive symptoms, which was corresponding to the previous studies[13,38]. Contrary to some earlier reports that found that patients with left hemispheric lesions are more depressive than those with right hemispheric lesion[12,39], the authors did not find an association between depression and side of hemi- pare-sis. The authors also have found no association between depressive symptoms with age, OAT, type of stroke, marital status, comorbid disease, smoking, alcohol drinking, and TMSE score. Younger age has been associated with depression[40]. Living alone has been associated with depression in some studies[10] but not in others[39,41].

The anxious patients and depressed patients were more dependent in ADL function, as measured by the Barthel Index, and had a lower quality of life, as measured by the WHOQOL, at both admission and discharge in the present study. This is not surprising, as a low BI score implies that the patients need help in ordinary daily activities, and thus, have suffered a loss of personal autonomy. This corresponds to previous studies that showed that depressive patients needed more help in ADL and were more often in institutional care[10,12,14,32]. Other studies also showed that anxiety was associated with physical disability and low QOL[17-19].

After the rehabilitation program, the present study illustrated that patients with no anxiety symptoms showed significant improvement in functional outcome and QOL, whereas patients with anxiety symptoms did not have significant improvement. This corresponded to another study that anxiety influenced stroke patients outcome[1]. Nevertheless, patients with or without depression symptoms have improvement in functional outcome after rehabilitation program in the present study. However, another study showed that depression is a recognized cause of failure rehabilitation[14]. It may be due to in-hospital, patients were exposed to an intensive rehabilitation program in which their partici-pation was actively sought and reinforced. However, in QOL aspect depressed patients showed fewer items of improvement than non-depressed patients.

**Conclusion**

Symptoms of anxiety and depression are common after stroke and they have significantly correlated with each other. Female gender is signifi-cantly related to depressive symptoms. Patients with anxiety or depressive symptoms have low functional ability and quality of life than patients without symp-toms at admission and discharge. After a rehabilitation program, patients without anxiety symptoms show improvement in functional outcome and QOL. Both patients with or without depression symptoms have improvement in functional outcome after rehabilitation but in QOL aspect patients without symptoms show more items improved than patients with depressive symptoms. The present study would be of benefit for rehabilitation personnel to focus on both anxiety and depressive symptoms after a stroke for preventive strategy and proper treatment that may improve functional ability and quality of life of stroke patients.

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## ภาวะวิตกกังวลและภาวะซึมเศร้าของผู้ป่วยโรคหลอดเลือดสมองที่เข้ารับการฟื้นฟูสมรรถภาพ

พรพิมล มาศสกุลพรรณ, กาญจนา ริ้วทอง, ปิยะภัทร เดชพระธรรม, วิไล คุปต์นิรัติศัยกุล

**วัตถุประสงค์**: เพื่อหาค่าความชุกของภาวะวิตกกังวลและภาวะซึมเศร้า และปัจจัยที่เกี่ยวข้องกับภาวะดังกล่าว รวมถึงผลกระทบต่อความสามารถในการประกอบกิจวัตรประจำวันและคุณภาพชีวิตของผู้ป่วยโรคหลอดเลือดสมอง ที่เข้ารับการฟื้นฟูสมรรถภาพ

**รูปแบบการศึกษา**: การศึกษาไปข้างหน้าเชิงวิเคราะห์

**วัสดุและวิธีการ**: ศึกษาผู้ป่วยโรคหลอดเลือดสมองที่เข้ารับการฟื้นฟูสมรรถภาพระหว่างเดือนมีนาคมถึงธันวาคม พ.ศ. 2549 จาก 9 โรงพยาบาลจำนวน 251 ราย แบบสอบถามเพื่อคัดกรองภาวะวิตกกังวลและภาวะซึมเศร้า (hospital anxiety and depression scales, HADS) ใช้สัมภาษณ์ผู้ป่วยเมื่อแรกรับและจำหน่ายจากการฟื้นฟูสมรรถภาพ ปัจจัยที่เกี่ยวข้องกับภาวะวิตกกังวลและภาวะซึมเศร้าวิเคราะห์โดยใช้ univariate analysis และ multivariate logistic regression analysis รวมถึงความสามารถในการประกอบกิจวัตรประจำวันและคุณภาพชีวิตก็นำมาวิเคราะห์

**ผลการศึกษา**: สัมภาษณ์ผู้ป่วย 251 ราย โดยแบบสอบถาม HADS พบภาวะวิตกกังวลร้อยละ 25.5 ภาวะซึมเศร้า ร้อยละ 37.8 และทั้งสองภาวะร้อยละ 17.5 ปัจจัยที่มีความสัมพันธ์ต่อภาวะวิตกกังวล ได้แก่ ภาวะซึมเศร้า (OR 5.49, 95%CI 2.89-10.43) และปัจจัยที่มีผลตรงกันข้ามได้แก่ ภาวะไขมันในเลือดสูง (OR 0.48, 95%CI 0.25-0.94) ส่วน ปัจจัยที่มีความสัมพันธ์ต่อภาวะซึมเศร้า ได้แก่ ภาวะวิตกกังวล (OR 5.88, 95%CI 3.15-10.99) และเพศหญิง (OR 1.81, 95%CI 1.04-3.16) ผู้ป่วยที่มีภาวะวิตกกังวลหรือภาวะซึมเศร้าพบว่ามีความสามารถในการประกอบกิจวัตร ประจำวันและคุณภาพชีวิตด้อยกว่าผู้ป่วยที่ไม่มีอาการทั้งแรกรับและจำหน่าย เมื่อผ่านการฟื้นฟูสมรรถภาพพบว่า ผู้ป่วยที่ไม่มีภาวะวิตกกังวลมีความสามารถในการประกอบกิจวัตรประจำวันและคุณภาพชีวิตดีขึ้น ผู้ป่วยทั้งกลุ่ม ที่มีและไม่มีภาวะซึมเศร้ามีความสามารถในการประกอบกิจวัตรประจำวันดีขึ้นหลังผ่านการฟื้นฟูสมรรถภาพ แต่ในแง่ของคุณภาพชีวิตพบว่า ผู้ป่วยที่มีภาวะซึมเศร้ามีอาการดีขึ้นน้อยหัวข้อกว่ากลุ่มที่ไม่มีอาการ

**สรุป**: ภาวะวิตกกังวลและภาวะซึมเศร้าในผู้ป่วยโรคหลอดเลือดสมองพบได้บ่อย และมีความสัมพันธ์กันอย่างมี นัยสำคัญทางสถิติ รวมถึงเพศหญิงมีความสัมพันธ์ต่อภาวะซึมเศร้าด้วย ผู้ป่วยที่มีภาวะวิตกกังวลและภาวะซึมเศร้า มีความสามารถในการประกอบกิจวัตรประจำวันและคุณภาพชีวิตต่ำกว่ากลุ่มที่ไม่มีอาการ