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RESEARCH ARTICLE

Symptom Experiences, Symptom Management Strategies, And Outcomes In Patients With Stroke

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ABSTRACT

Stroke has become a major non-communicable disease that leads to disability and mortality in every nation worldwide. These patients face numerous complications throughout the disease's extended recovery phase. Symptom management therefore becomes important in preventing complications and promoting stroke recovery. This study aimed to investigate symptom experiences, symptom management strategies, and outcomes in patients with post-stroke. This study was descriptive research. Symptom Management Theory was used as the conceptual framework. The study was conducted in 93 participants with post-stroke within 6 months of the disease in Neurosurgery and Neurology clinics in a university hospital between August to December 2022. Data were collected by three instruments: 1) Personal data; 2) Questionnaire on the experiences of symptoms in patients post stroke; and 3) Questionnaire of symptoms management strategies and outcome of patients post stroke. The data were analyzed by using descriptive statistics. The results found that the most common top five symptoms were unilateral limb weakness (60.20%), facial palsy and unclear speaking (53.80%), fatigue (52.70%) numbness in any extremities (51.60%), and insomnia (37.60%). Unilateral limb weakness and facial palsy/ unclear speaking were high level for symptom frequency, moderate level for symptom severity and moderate level for symptom distress. Most strategies for treating cluster of motor function impairment rely on physical stimulation, such as physical therapy and massage. The outcomes of these symptom management were moderate. For cluster of swallowing difficulties, most strategies rely on changes in eating habits. The outcome of this symptom management was the lowest. The finding of this study could be used a baseline data for nursing care planning to assess the symptom experiences of patients after stroke. In addition, nurses can promote the management strategies with high effectiveness to improve patients' condition.

INTRODUCTION

Background

The World Health Organization has provided. Cerebrovascular disease or stroke falls under the category of cardiovascular disease. Cardiovascular disease, which includes coronary artery disease, hypertension, and cerebrovascular disease, constitutes a non-communicable disease that has become a leading cause of disability and mortality in many nations worldwide. The World Health Organization predicts that more than 15 million new stroke cases will occur each year (World Stroke Organization, 2020), with the bulk occurring in developing nations, and that this figure will rise further (Kim et al., 2020). According to previous data on the number of stroke patients in Thailand, new patients are being admitted on an annual basis. (Strategy and Planning Division Ministry of

Public Health, 2021) The majority of survivors were dependent 53.30%, with 31.10% requiring more than 40 hours of care per week. (Chansiri, 2021)

Stroke is a medical disorder caused by abnormal blood vessels in the brain. It is classified into two categories: ischemic stroke and hemorrhagic stroke. Ischemia accounts for 70-80% of all strokes. Consequently, cerebral blood flow was obstructed. Damage and death of brain cells occur. It can result in death or disability. (Muengtaweepongsa, 2020) Furthermore, it has an impact on the physical, mental, and social realms. Physical impacts include movement impairment, cognitive impairment, perceptual impairment, communication impairment, swallowing difficulty, and incontinence (Bosma et al., 2020; Li et al., 2019), as well as psychological elements like depression, anxiety (Cai et al., 2019), and societal factors like role changes and loss of income (Lekander et al., 2017). All of the above are significant rehabilitation considerations for post-stroke patients.

Stroke has several symptoms. There are two major causes contributing to this phenomenon: 1) Symptoms resulting from the pathological condition of the disease include bilateral weakness in the body due to impairment motor functioning in the brain. Symptoms of aphasia result in the communicate impairment (Dajpratham et al., 2018). 2) The disease's pathophysiology causes to complications such as shoulder pain, limited joint movement, and muscle spasms. Thalamus infarction can cause headaches or neurological pain in sufferers)Oh & Seo, 2015). Such symptoms result in a condition of dependency amongst this group of patients, needing assistance from others to accomplish their daily activities. Several persons were forced to resign from their jobs, incapable of reintegrating into their conventional community, and suffering emotional effects such as sadness increased irritation and fatigue as an effect of the stroke (Aiamanan & Pattanarueangkul, 2021).

From the symptom management theory (Larson et al.,1994; Dodd et al.,2001; Humphreys et al.,2014; Bender et al.,2018), when person has abnormal symptoms with them. They evaluate the frequency of occurring, its severity, and distress that effect to them. Then, person find the strategies to manage them until the symptoms' relieved. In cases, the symptom is not relieved, persons change the strategies until its better or disappeared. The literature review there was limited study reported on patient's perspectives regarding their ability to independently manage their symptoms and its outcomes. Furthermore, there was no research report covered all three dimensions of the symptom experiences, management strategies, and outcomes. Then, this study was conducted to explore all 3 dimension of symptom experiences, including, management strategies, and outcomes. The findings of this study can be used as a fundamental information for providing health education to efficiently manage symptoms associated with stroke.

Theoretical Framework

The symptom management theory developed by Dodd and faculty colleagues from the University of California, San Francisco, USA. (Larson et al.,1994; Dodd et al.,2001; Humphreys et al.,2014; Bender et al.,2018) includes three related main concepts. Symptom Experience, Symptom Management Strategies and Symptom outcomes. According to the concept of experiencing a change or abnormalities in the body. Individuals evaluate the symptoms occurrence, intensity, and whether people respond to lifestyle disruptions or discomfort of those symptoms. When an abnormality occurs, individuals will seek strategies of symptom management to reduce discomfort or better effectively manage symptoms. Management can be performed by patients themselves or with the assist of others. Dynamic management ways combine many methods to effectively manage symptoms. The method that continues to yield satisfactory outcomes is still the same method. In the event of management failure, they will seek other ways. The person will evaluate the outcomes of symptom management by evaluating the state of the symptoms to evaluate if the problems have reduced physical functions, emotional well-being, possible consequences, economic implications, mortality rate, self-management, and overall quality of life.

According to the symptom management theory, any change in the body's normal state is symptomatic of a stroke. The patients with post stroke will possess a consciousness of the symptoms that develop. Evaluate symptoms according to their frequency of occurrence. The effect and response of symptoms to disruptions in a person's lifestyle. Upon recognizing the symptoms, the patient becomes an individual with the competence and inclination to recuperate and will actively explore strategies to reduce discomfort or successfully manage symptoms more effectively than previously. The management strategy was defined by their dynamic structure. Until the patient obtains an appropriate treatment or the treatment proves efficient in resolving problems.

METHODS

Study Design

This research was descriptive study design. It aimed to investigate symptom experiences, symptom management strategies, and outcomes in patients with post-stroke. Symptom Management Theory by Dodd and faculty colleagues from the University of California was used as a conceptual framework.

Samples/Participants

The population of this study were patients diagnosed with ischemic or hemorrhagic stroke who registered in the neurological and neurosurgery outpatient department in a university hospital. Data were collected from August to December 2022. The participants followed the criteria for inclusion. Inclusion criteria were: 1) 20 years of age or older if persons aged 60 or older were required to pass the conditions for cognitive impairment assessment with 6CIT (the Six Item Cognitive Impairment 2) stroke's duration period was limited to 6 months after the onset of the stroke. 3) had at least one stroke-related complication. 4) received first diagnosis of stroke. 5) could effectively convey information, ideas, and proficiency in both reading and writing Thai languages. 6) willing to participate in the study.

The sample size was calculated by using Yamane's formula (Yamane, 1973). We calculated from the number of stroke patients in the years 2018-2019 was 1,816 persons as reported by the medical records information of the university hospital in 2020. Assign a sampling error value of 0.1, yielding the sample size is calculated to be 93 persons.

Research Instrument and Validation

1. Screening instruments for data collection

1.1 The six-item cognitive impairment test (6 CIT) Thai version: This instrument was originally developed by Brooke and Bullock (Brooke & Bullock, 1999). It was allowed from developer to translate into Thai and passed the back translation process, then conducted a validation study by Suphap Aree-ua and Pitchpra-on Yangcharoen (2020). The 6CIT is applied to test the cognitive abilities of a sample of people aged 60 and above. The material is divided into three sections. 1) assessment of the environmental parameters 2) intention parameters 3) remember parameters. Scores interpretation of findings divided into 2 categories; a score of 0-7 indicated the absence of any cognitive impairment and a score of 8-28 indicated significant cognitive impairment.

2. Instruments for data collection

In these parts of the instrument, it was divided into three parts as the follows.

2.1 Personal information questionnaire; this questionnaire was used to collect personal information. The personal information questionnaire encompassed the following demographic variables such as: gender, age, marital status, education level, occupation, earnings received on a monthly, treatment obligation, underlying disease, length of stroke duration, acquiring information regarding the symptoms management strategies for treating problems arising from a stroke.

2.2 Questionnaire on the symptom experiences in patients after stroke. The assessment of symptom experiences was based on the prevalence, frequency, severity, and distress to symptoms. This instrument was developed by the principal investigator and colleagues from literature review and it was used to survey the perception of symptom experiences after stroke. A total of 32 symptoms related to stroke were detected in the questionnaire. Participants were instructed to indicate the items that were observed according to their personal perspectives. The scores are categorized into two levels for the symptom prevalence: symptomatic (Yes) and asymptomatic (No). The scores of symptom frequency varied from 1(Very rarely) – 4 (Often). The scores of symptom severity varied from 1(Mild severity) – 4 (Most severity). Moreover, the scores of symptom distress varied from 0 (Not interfere) – 5 (Most interfere). The measurement of symptom frequency, severity, and distress was assessed when the participants indicate their decision with a check mark with symptom prevalence. Finally, all scores of each part of the symptom prevalence, frequency, severity, and distress will be summed. A higher score implied a higher symptom frequency/severity/distress of patients post stroke.

2.3 Questionnaire of symptoms management strategies and outcome in patients after stroke. Principal investigator and colleagues developed this part of the questionnaire based on the analysis of existing literature. The symptom management strategies were categorized based on symptoms, with a total of 13 cluster and 78 activities. Participants were instructed to accurately mark the checkbox of the strategy that relates to symptom management. The answer of each strategy was divided into two groups: yes - if the strategy was used and No - in case of the strategy was not used. For the score of effectiveness for each strategy management was varied from 0 (used, but no effectiveness) - 4 (Most effectiveness). Finally, all scores of each strategy and effectiveness of the symptom managements will be summed. A high score indicates a higher number of strategies and the effectiveness of the symptom management strategies.

Quality of the measurement

These two parts of questionnaire on the symptom experiences, and symptoms management strategies and outcome in patients after stroke was developed by the principal investigator and colleagues by a literature review. Then, it was passed the content validity by three experts. It included one Advanced Practice Nurse, one physician who expert in Neurological surgery and one head nurse who work in stroke unit. Then, the Content Validity Index (CVI) was measured as 0.95. In addition, the reliability of the instrument was tested by the test-retest stability. The calculated reliability value was 0.94.

Data collection

1. The researcher conducted the research after obtaining approval from the Human Research Ethics Committee.

2. The researcher collaborates with the supervisor of the Neurology and Neurosurgery clinics in the university hospital and seeks a license to collect information through clarifying the specifics of the research and cooperating for the purpose of performing research and collecting information.

3. The researcher introduced to the participants and explored collaboration to engage in research projects by providing a comprehensive description of the research project's details, indicating their willingness to cooperate in the research.

4. Explain the questionnaire and request consent to collect information. The participants were 60 years old and older were required to take a cognitive impairment test for screening. The participants answered the questionnaire. For older patients or individuals with vision impairments, the researcher will speak and administer the questionnaire. The process of data collection typically lasts for a duration of 30-40 minutes each time, during which the researcher collects data on a maximum of 5 cases per day.

5. After collecting comprehensive information was verified for completeness and appreciation was extended to the research participants.

Data Analysis

After data collection was complete, the integrity of the data was verified. Then, the data were analyzed utilizing computer software SPSS (Statistical Package for Social Science) version 21. All of the data on personal information, symptom experiences, symptom management strategies, and symptom management strategies outcomes in patient post-stroke was analyzed by descriptive statistics.

Ethical Consideration

The researcher proposed a research proposal for approval by the Human Research Ethics Committee from the Faculty of Medicine Ramathibodi Hospital (COA number MURA2021/814, September 20, 2021. This study was conducted in accordance with the Declaration of Helsinki.

RESULTS

The research's findings demonstrated the characteristics of 93 participants. which included with 59 being males (63.40%) and 34 being females (36.60%). The age of the participants varied from 61-70 years 48.3%. The average age was 62.20 (SD=7.79). 79.60% of respondents were married, 89.20% were Buddhist, 24.70% had completed primary school, and 39.70% were either unemployed or retired. The monthly family income ranged 30,000 - 50,000 baht (49.50%), 47.30% of participants claimed from universal health coverage scheme.

Information about the health status and ability to perform daily activities. The stroke was mostly cerebral infarction 89.20%, with a minority being intracerebral hemorrhage10.80%. The majority brain lesions were located in the frontal lobe area 57%. The duration of stroke mostly the period of 3-6 months 71%. Majority prevalent comorbidity was hypertension 76.30%. participants had disability to perform their daily activities 49.50%. The majority of caregivers were family members 80.60%. Healthcare professionals provided primary source of information regarding stroke education and health care 95.70%. No information about how to manage post-stroke symptoms 57%.

Top 5 most common symptom prevalence were unilateral limb weakness 60.20%, facial palsy and unclear speaking 53.80%, fatigue 52.70%, numbness in any extremities 51.60%, and insomnia 37.60%. For top 5 symptoms frequency were unilateral limb weakness; facial palsy and unclear speaking; numbness in any extremities; fatigue; and moodiness. For top 5 symptom severity were unilateral limb weakness; numbness in any extremities; fatigue; facial palsy and unclear speaking; and dizziness. Lastly for symptom distress, top 5 symptom distress were unilateral limb weakness; numbness in any extremities; facial palsy and unclear speaking; fatigue; and insomnia, more details has been shown in Table 1

Table 1. Symptoms experiences of participants after post-stroke (N=93)

Symptoms	Occurrence N (%)	Frequency M (SD)	Severity M (SD)	Distress M (SD)
Cluster of motor function impairment				
Unilateral limb weakness	56(60.20)	2.35(1.93)	1.66(1.52)	1.62(1.53)
Numbness in any extremities	48(51.60)	1.98(1.97)	1.22(1.29)	1.22(1.28)
Muscle spasms	17(18.30)	0.27(0.28)	0.22(0.48)	0.37(0.95)
Hand/feet swelling	13(14.00)	0.32(0.82)	0.28(0.75)	0.18(0.47)
Imbalance of body	13(14.00)	0.48(1.22)	0.39(0.98)	0.20(0.47)
Swinging feet/Feet drop	12(12.90)	0.30(0.80)	0.26(0.48)	0.17(0.48)
Cluster of swallowing difficulties				

Facial palsy and unclear speaking	50(53.80)	2.11(1.97)	1.04(1.11)	1.00(1.09)
Dysphagia	17(18.30)	0.48(1.08)	0.47(1.08)	0.47(1.05)
Cluster of body's functions impairment				
Fatigue	49(52.70)	1.67(1.67)	1.13(1.32)	1.09(1.11)
Dizziness	27(29.00)	0.86(1.46)	0.91(1.49)	0.92(1.51)
Diplopia	5(5.40)	0.14(0.60)	0.09(0.38)	0.14(0.68)
Hiccup*	4(4.30)	0.14(0.68)	0.14(0.68)	0.09(0.38)
Hemianopia*	2(2.20)	0.09(0.58)	0.09(0.38)	0.09(0.58)

Table 1. Symptoms experiences of participants after post-stroke (N=93) (cont.)

Symptoms	**Occurrence N (%)**	**Frequency M (SD)**	**Severity M (SD)**	**Distress M (SD)**
Cluster of sleep disturbances				
Insomnia	35(37.60)	0.85(1.13)	0.76(1.03)	0.68(0.96)
Cluster of emotional and psychological disorders				
Moodiness	31(33.30)	0.88(1.35)	0.54(0.81)	0.54(0.81)
Sadness	21(22.60)	0.62(1.25)	0.32(0.64)	0.32(0.64)
Decreased interest	5(5.40)	0.05(0.22)	0.05(0.22)	0.05(0.22)
Unable to focus	3(3.20)	0.05(0.30)	0.03(0.17)	0.03(0.17)
Cluster of pain after stroke				
Shoulder pain	27(29.00)	0.69(1.22)	0.67(1.15)	0.48(0.82)
Headache	15(16.10)	0.29(0.70)	0.22(0.52)	0.18(0.51)
Cluster of pain after stroke				
Neurogenic pain	4(4.30)	0.04(0.20)	0.09(0.40)	0.04(0.20)
Cluster of defecation and urinary system disorders				
Constipation	26(28.00)	0.80(1.35)	0.49(0.82)	0.49(0.82)
Urinary incontinence	9(9.70)	0.32(1.01)	0.32(1.01)	0.32(1.01)
Cluster of neurological disorders				
Focal seizure	5(5.40)	0.11(0.45)	0.09(0.40)	0.09(0.40)
Generalized Seizures	2(2.20)	0.06(0.43)	0.09(0.58)	0.09(0.58)

The study discovered a classification of stroke patients according to their dependency on medication and non-medication use. The forms of medicine included both modern medication and traditional medication. Non-medication methods of stimulation were complaints of physical compression, physical therapy, limitation or reduction of normal movement, and nutrition, such as picking the type of food or refraining from eating are common stimulation methods.

For medication was used when participants had dizziness with moderate effectiveness while it was used when they had insomnia, shoulder pain, headache, and constipation with low effectiveness. For physical therapy or exercise, limit activity and reduce movement and massage was used when they had unilateral limb weakness, numbness in any extremities, with mild to moderate effectiveness.

A cluster of swallowing difficulties, limiting the amount of food or drink and exercise the muscles of the face and neck as proportions (12.90%), the outcomes of were minimal (M=0.34, SD=0.91). Avoiding meals that had previously caused coughing is the second (9.70%), the outcomes were minimal (M=0.28, SD=0.86). The third selecting appropriate eating and eating while being fed by a caregiver (5.40%), the outcomes were minimal effective (M=0.15, SD=0.64).

A cluster of body function impairment included fatigue, the most common strategy to manage fatigue was to adjust behavior and increase rest time or take breaks for rest 46.30%, the outcomes were moderate (M=1.25, SD 1.23). The second relaxing with favorite activities 41.90%, and the outcomes

were minimal (M=0.92, SD 1.15). The third physical therapy or exercise 11.80%, the outcomes were minimal (0.29 SD 0.81).

Cluster of sleep disturbances according to research making the bedroom environment quiet was the most commonly used method of managing insomnia 28.00%, the outcomes were minimal (M=0.72, SD=1.07). The second taking sleeping drugs as suggested by a doctor 23.70%, the outcomes were minimal (M=0.81, SD=1.32). The third avoided drinking tea and coffee beverages at 11.80%, the outcomes were minimal effective (M=0.22, SD=0.58).

Cluster of emotional and psychological disorders, the most popular strategy to control symptoms was to reduce stress or relax by doing enjoy activities 26.90%, the outcomes were minimal (M=0.71, SD=0.96). The second was using medications as directed by a doctor 18.30%, the outcomes were minimal (M=0.70, SD=1.33), The third strategy was to get more sleep during the day 14%, the outcomes were minimal effective (M=0.30, SD=0.76).

For a cluster of pain after stroke, the most effective pain management use was a combination of oral and topical medications. The most popular strategy to control pain was modern analgesics 24.70%, the outcomes were moderate (M=1.19, SD=1.46). The second was limit of activity or restriction of movement in the area of pain 26.90%, the outcomes were minimal (M=0.59, SD=1.09). The third was utilizing traditional analgesics 18.3%, the outcomes were minimal effective (M=0.41, SD=0.83).

A cluster of defecation and urinary system, the study discovered that two strategies were the most commonly used for the management of constipation were using laxatives (23.70%) and selecting meals that contain a high amount of dietary fiber (0.53%), the outcomes were minimal (M=0.82, SD=1.52) and (M=0.53, SD=0.97). The second drinking water was sufficient to satisfy the body's needs 14.00%, the outcomes were minimal (M=0.25, SD=0.65). The most commonly used for the management of urinary incontinence were an environment allowing for easy entry to the restroom 9.70%, the outcomes were minimal (M=0.25, SD=0.77). The second was to limit the amount of drinking water (8.60%), the outcomes were minimal (M=0.23, SD=0.75).

Table 2. Symptom management strategy and outcome of post stroke

Symptom Management Strategies	**Post stroke symptoms**										
	No* for Weakness Mean effective	**No* for Numbness Mean effective**	**No* for Dysphagia Mean effective**	**No* for Fatigue Mean effective**	**No* for Dizziness Mean effective**	**No* for Insomnia Mean effective**	**No* for Moody Mean effective**	**No* for Sadness Mean effective**	**No* for Shoulder pain Mean effective**	**No* for Headache Mean effective**	**No* for Constipation Mean effective**
Medication use											
-Modern medication -Traditional medication	9.7(0.22)	8.6(0.50)			29.0(1.01) 6.5(0.14)	23.7(0.81)	18.3(0.70)	18.3(0.80)	24.7(1.19) 18.3(0.41)	16.1(0.74) 1.1(0.11)	23.7(0.82)
Non-medication use											
-Physical therapy or exercise -Limit activity/ Reduce movement -Massage	60.2(1.88) 30.1(0.49) 42.6(1.04)	41.9(0.63) 9.7(0.67) 32.3(0.62)	12.9(0.34)	11.8(0.29)	14.0(0.34) 28.0(0.91)				26.9(0.59) 11.8(0.24)	2.2(0.10) 3.2(0.33)	

- Alternative medicine	3.2(0.24)	7.5(0.83)									
-Adjust activity/behavior -Increase rest time -Relaxing -Adjust environment -Raise morale/make merit			12.9(0.34) 5.4(0.11)	46.2(1.25) 41.9(0.92)	29.0(0.90)	11.8(0.22) 6.5(0.22) 28.0(0.72)	14.0(0.76) 26.9(0.71) 6.5(0.08)	7.5(0.55) 21.5(0.61)	8.6(0.51)	10.8(0.49)	14.0(0.25)
*No of symptom management strategies											

DISCUSSION

Symptoms experiences of post-stroke

The symptoms experienced post-stroke totaled 27 symptoms, which were divided into 8 clusters based on abnormalities in the body's functioning.

Unilateral limb weakness was the most common in cluster of motor function impairment. When the lesions in the brain were divided by location, it was discovered that patients with unilateral limb weakness had the most lesions in the frontal area (40.9%). Brain lesions are associated with weakness, so weakness appears on the opposite side of the brain lesion. The frontal lobe of the brain, in particular, produces weakness and loss of sensation on the side of the body opposite the area of brain damage. Weakness and interruptions in the balance of the body or ataxia are observed in the pons, cerebellar, and midbrain (Muengtaweepongsa, 2020). Unilateral limb weakness had a high symptom frequency, moderate symptom severity, and moderate symptoms of distress. This is consistent with a study of symptom experiences in patients within a year post-stroke. It was discovered that, at 88.70%, unilateral limb weakness was most prevalent, with high symptom frequency, moderate symptom severity, and moderate symptom distress (Shi et al., 2018).

Numbness in any extremities it ranked the second in cluster of motor function impairment and it was the fourth most prevalent in all symptoms overall 51.60%. Unilateral limb weakness and numbness in any extremities are frequently present together (Muengtaweepongsa, 2020). This study revealed that 32.30% of the sample experienced both weakness and numbness symptoms and located in the frontal lobe of the brain. Thalamus area lesions frequently appear in cases of persistent numbness without weakness. According to this study, frontal brain lesions were present in 26.90% and thalamus lesion were present in 5.30%. The symptoms frequency of the numbness in any extremities was quite often. There's a moderate amount of symptom severity and symptom distress. This may be due to the reason that weakness and numbness are incapacitating symptoms caused by brain lesions that lack a particular recovery, period with an immediate effect on daily life. walking as well as maintaining balance compared to other symptoms, this heightens stroke patients' awareness of the severity and disruption to the way they live.

Other symptoms difficulties in walking or make walking imbalanced, such as swinging feet and swelling feet, can be resulting in a walking pattern that differs from normal and drags the feet. In 14% of cases, swelling hands and feet were discovered. The symptoms frequency was minimal. There's a minimal amount of symptom severity and symptom distress. The main cause of swelling hands and feet on the weak side is long-term immobility of the limb, which cause lowers blood

flow and allows fluid to seep from tiny blood capillaries. As a result, the tissue that surrounds exhibits swelling in the body's extremities and retention of fluid. Swelling hands or feet can also be a complication of co-morbid illnesses like heart disease, as blood vessel activity becomes less efficient in older people (Kogo et al., 2019). Swinging feet/Feet drop disorder may lead you to drag your feet or lose control of the toes as you walk. In 12.90% of cases, there was increased knee or hip bending during standing, resulting in an imbalanced stance. The symptoms frequency was minimal. There's a minimal amount of symptom severity and symptom distress. Findings from the research of post-stroke symptom experiences after a year revealed that for those with foot drop symptoms, 20.00% indicated a rare occurrence of symptoms. There's little violence. and there will be minimal symptoms of distress. For 37.40% of the patients, swinging the feet was a symptom. It seldom did the medical condition come back often. There was hardly much violence and there were minimal symptoms of distress (Shi et al., 2018).

Symptoms of fatigue appeared as an insufficient amount of energy when performing an array of activities such as experiencing fatigue, finding difficulty in performing everyday duties independently, or needing extra support. Symptoms of fatigue have been reported in stroke patients with prefrontal cortical lesions. According to the findings of this study, 25.80% of frontal lesions had symptoms of fatigue. Fatigue had the frequency of a mild symptom. The symptoms severity and symptoms of distress were moderate. According to Dan Shi's study, 71.3% of stroke patients reported fatigue. Symptoms frequency was moderate, symptoms severity and symptoms of distress were minimal. Fatigue has been reported by 30% of patients who experienced strokes. Out of these patients, 24% have extreme fatigue. 54% of women reported signs of fatigue(Shi et al., 2018). Post-stroke fatigue can have an impact on rehabilitation in stroke patients. By making patients dissatisfied with physical activity. Reduced tolerance and motivation for physical activity to support and promote rehabilitation (Thilarajah et al., 2018)

Dizziness can be described by the sensation that the surroundings are moving, particularly while shifting positions. Dizziness frequently comes with body imbalance or diplopia. Dizziness often occurs in stroke patients suffering from lesions in the brainstem and cerebellar hemisphere, and it may also occur in the anterior insula. There will be no symptoms of ataxia or body imbalance in this area. According to the findings of this study, the participants with dizziness had the highest lesions brain in the Pons area 11.8%. Symptoms frequency, symptoms severity, and symptoms of distress were minimal. Some drugs may induce dizziness as a side effect. In particular with antidepressant medicines. (Inoue & Goto, 2020).

A cluster of sleep disturbances, in stroke patients both insomnia and hypersomnia can be detected (Ahmad et al., 2022). Only insomnia symptoms were discovered as a result of this study. This may have been due to the unclear wording of the questionnaire, causing the research participants to be unclear about the topic. Furthermore, the participants in the sample achieved their daily tasks independently. Therefore, causing impacted sleeping routines or excessive sleepiness during the day. This study showed that 37.60% of participants had symptoms of insomnia. Insomnia had the frequency of a mild symptom. The symptoms severity and symptoms of distress were minimal. Insomnia affects more than 44% of post-stroke patients, and it affects women more than men. Insomnia significantly affects patients' ability to recover and their overall quality of life (Chen et al., 2011; Tang et al., 2015). Additionally, they found that their sleep hours decreased since before the sickness. Sleeping 4-5 hours per night accounted for 22.20% of total sleep duration while sleeping 2-3 hours per night accounted for 74.00% (Ahmad et al., 2022). Furthermore, patients with stroke frequently have other co-morbidities, such as hypertension, and coronary artery disease. It is also caused by many kinds of drugs which may lead to insomnia, such as beta-blockers, clonidine, and diuretics (Cai et al., 2021).

In a cluster of defecation and urinary system disorders, the prevalence of constipation was 28.0%. Constipation refers to a symptom that occurs as the amount of bowel movements decreases or changes from before the disease. The stool was dehydrated, and hard and imparts a sensation of incomplete defecation. More difficult than usual to push out. Constipation was found to be related

to brain lesions at the medulla and brainstem area defects in stroke patients, and body fluid imbalance caused by consuming less water, cognitive impairment, and limited movement due to physical weakness. According to Shayan Alijanpour and colleagues' research, 75.60% of stroke patients with constipation had the ability (Alijanpour et al., 2022; Cheng et al., 2020). This study reported mild symptoms frequency. The symptoms severity and symptoms of distress were minimal. This contrasts with perceived symptom experience and symptom management of complications among caregivers of elderly with stroke, which was found to be as high as 88% The symptoms frequency was a high and minimal level of symptom severity (Chinprapat, 2010). The study was conducted on a group of people of similar ages. However, most participants in this study were independent in everyday activities and could walk, which decreased the severity of their difficulties in accessing restrooms as well as the effect of their symptoms and minimal disturbance to their everyday activities.

A cluster of emotional and psychological disorders, Moodiness was discovered to be more common than sadness. It can be defined by moodiness 33.30%, The Sadness was found to be 22.60%. Moodiness can frequently be defined by angry outbursts rather than injuries to the body. It is frequently encountered in people with post-stroke who have minimal symptoms and are found during the most acute phase. This might be because stroke patients are going through a denial phase. Additionally, it results in physiological changes that involve lifestyle changes. The patient is still stunned when they learn of their illness at this stage. Symptoms may include anxiety, passivity, or screaming, as well as a failure to manage their emotions. It will result in anosognosia, a condition in which the patient declines or ignores the symptoms of illness and abnormalities in their well-being, and it will affect body rehabilitation and recovery from disease. Another stage that the patient must go through is the anger stage. The patient will be anxious. Whenever they struggle to figure out the best way to solve a problem, become angry and blame someone or something, leading to moodiness and a failure to control emotions. Post-stroke moodiness may develop due to different reasons, which include abnormalities in living a life that necessitates greater dependence or effort on the part of others. Insufficient independence in managing life. The most prevalent change in responsibility was observed among family leaders. The investigation found a mild symptoms frequency. Symptoms severity and symptoms of distress were minimal. This is consistent with the results of a research investigation done by Dan Shi and colleagues, that was found moodiness showed in 67.80% of cases. The investigation revealed a moderate symptom frequency. Symptoms severity and symptoms of distress were minimal (Shi et al., 2018).

Symptom management and outcome of post-stroke

Physical stimulation was discovered to be the most effective in clusters of motor function impairment. Physical therapy was discovered to be present in 60.20% of cases. The results of symptom management were moderately effective. According to the findings of this study, the participants used physical therapy. There exist three types of exercise physical therapy which was performed at home by themselves or by caregivers, training in physical therapy with intermittent physical therapists, and ongoing image therapy training in a rehabilitation unit. Stroke patients who had severe limb paralysis and less than 50% capacity to aid themselves by spending time in a hospital or rehabilitation unit receiving constant physical therapy. The second was massage. Massage promotes muscular function in addition to increasing muscle circulation. The sample selected two types of massage: self-administered massage by the patient or caregiver, and professional massage by a professional, such as Thai massage. The massage was chosen by 42.60% of the participants. The outcomes of symptom management were moderately effective. The following rating is restricting activity or limiting movement (30.10%). The outcomes of symptom management were mild and effective. Wearing a soft splint while walking may help the foot by avoiding long-term foot malformations. Acupuncture was chosen by 7.50% of stroke patients with numbness. The outcomes of symptom management showed the most effectiveness. Acupuncture stimulates nerve cells and increases blood circulation. Acupuncture was found to be

useful in treating and helping restore the ability to do everyday activities in stroke patients three months after the onset of symptoms. (Sujitvattanasak, 2021).

The samples chose behavior change to increase rest time during the day for fatigue (46.20%). The outcomes of symptom management were most effective. It showed that the patients spent more time on relaxing activities. According to the survey, the most popular activities involve using the internet and going outdoors. This strategy was chosen by 41.90% of the participants. The outcomes of symptom management were mild effectiveness. This is consistent with the sample searching for information on fatigue reduction via online media. They discovered websites that suggested changing everyday habits as well as websites that offered energy-saving tips. The most common is activity planning or sequencing (Miller et al., 2022).

Dysphagia treatment included both physical stimulation and changes in diet. The physical stimulation chosen by the participants was facial and neck muscle training and oro-motor exercise, which involved regulating motions within the mouth and realistically moving the tongue. Exercise of the neck muscles mylohyoid, geniohyoid, suprahyoid, and digastric will improve swallowing efficacy (Chandrakasemjit, 2020). 12.90% of the participants were selected for this strategy. The outcomes of symptom management were most effective. The same strategy was applied to decrease the amount of drinking water or food consumed. The outcomes of symptom management were mild effective. The behavioral modification method selected by the samples was to avoid eating food with previously caused choking symptoms. 9.70% of the outcomes of symptom management showed mild effectiveness. This could be because the sample group studied swallowing exercises as well as how to take care of themselves to avoid choking while eating from their previous experience.

To set up a sleeping environment to be quiet and relaxing is needed. This was the primary strategy that the sample selected for managing symptoms of insomnia 28.00%. The outcomes of symptom management showed mild effectiveness. Controlling the brightness in the bedroom constitutes a popular environment setting. Noise reduction disables communication devices. Aromatherapy smells were used for relaxation. Sleeping medications were taken by 23.70% of the participants. The outcomes of symptom management were most effective. The sleeping drugs that the participants took were all approved by doctors. Most sleeping drugs utilized belong to the group of medication. Benzodiazepines is the primary medicines within this group include lorazepam, non-benzodiazepines like zolpidem, and antidepressants such as amitriptyline and trazodone.(Ahmad et al., 2022; H. Cai et al., 2021)

In managing constipation symptoms, the sample group had the highest prevalence of laxative usage, with a rate of 23.70%. The outcomes of symptom management were moderate. Modern medicines are used, which are prescribed by doctors and acquired by patients from pharmacies. Popular laxatives are drugs that increase intestinal peristalsis, such as senna and the herbal remedy senna. and medications that facilitate water reabsorption in the large intestine, such as Milk of Magnesium. The strategy for behavior changes was selected by the sample was eating behavior modification by eating high in dietary fiber 23.70%. The outcomes of symptom management were minimal. High-fiber foods increase stool volume and induce intestinal peristalsis, the water softens the feces, making it is easier to pass (Li et al., 2017).

Strategies for effectively managing symptoms of emotional and mood disorders, the research study utilized a pair of strategies: behavior modification and taking of antidepressants. Strategies for behavior modification were selected by 26.90% of the participants to identify activities that were entertaining or relaxing. The outcomes of symptom management were minimal effective. Popular relaxation activities included spending time with families and engaging in morale-boosting activities like making merit, leaving or traveling, and engaging in conversations with family or peers. The use of stress-relieving medicines was found to be 18.30% among patients who accepted that their mood disorders were illnesses that required medical treatment by a doctor. The outcomes of symptom management were minimal effective. Most of the medications given to the samples were in the selective serotonin reuptake inhibitor group, which performs by

reducing serotonin reuptake in nerve endings, causing serotonin to work better. Serotonin is crucial for modulating mood and promoting recovery in patients with strokes (Stuckart et al., 2021).

Dizziness relief medicines and behavioral changes are two popular methods for managing dizziness. 29% of them used medicine to treat dizziness. The outcomes of symptom management were moderately effective. Antihistamines were the medications used to treat dizziness by the study participants. It acts on the peripheral vestibular labyrinth, increasing blood flow to the inner ear, improving balance, and increasing blood supply to the brain (Alyono, 2018). Two approaches for behavioral change were selected by the sample: reducing movement speed, particularly when changing positions; modifying the sitting and resting positions; walking slowly; and avoiding bending. Performing a swift full motion by flexing or extending the neck, with 28%. The outcomes of management were minimal effective.

In summary, there are many symptoms experienced by patients with stroke, health care providers need to provide adequate medical and non-medical care for them. It is noticed that 'physical therapy or exercise' has been used to manage for more than one symptom with effective outcome. It should be recommended for those patients with stroke to recover their physical abilities to return to normal life. Health care providers also need to seek the adequate intensity and time period fit for 'physical therapy or exercise' which appropriate for those patients to recover from stroke.

Research Recommendation

Nursing Practice

1. Finding results from three dimensions of symptom experiences; symptom management strategies; and symptom outcomes can be used for caring for patient post-stroke. Healthcare providers should be concerned about the most common symptoms such as unilateral limb weakness, facial palsy, and unclear speaking. In addition, the level of severity and distress of those symptoms were moderate. However, it had minimal availability of competent physical training for addressing impaired symptoms. Before discharge, the training is learned in the hospital and practiced at home. The training was unstructured. It may have an impact on long-term recovery. In addition to experiencing facial palsy and unclear speaking, approximately 40% also reported difficulty swallowing. Although the level of severity and symptoms of distress were moderate, this may be an indication to cause aspiration pneumonia. According to the data from symptom management, limitation the amount of food or drink and performing muscle and neck exercises were the most common methods, a referral system for rehabilitation units to follow up on dysphagia among these patients is still needed to consistently assess symptoms. Before discharge form hospital, an occupational therapist should be referred to practice swallowing and provide knowledge about appropriate food characteristics, including symptoms that require special observation such as shortness of breath, high fever, increased sputum volume, and others. There should be a continuous follow-up system after discharge or referral to a nearby hospital for continuous and regular rehabilitation of symptoms. In sum, these results finding can be used as a nursing guideline for patient post-stroke.

2. Providing self-care knowledge about warning signs of post-stroke complications or developing a program to treat common post-stroke symptoms. Patients or family members should be informed about the risk of strange symptoms occurring as well as self-care measures to take when symptoms occur before being released from the hospital. In addition to the disabling effects resulting from stroke such as unilateral limb weakness, numbness, and dysphagia. According to the findings of this study, fatigue was a symptom experienced on an attractively frequently. Significant impact and disruption to daily activities. However, this may be a symptom of depression that delays rehabilitation. Another symptom was dizziness. Although uncommon, it was severity and disrupted daily living. These symptoms not only cause discomfort for the patient

but also worsen the disease's recovery. Patients and relatives, particularly those at risk for such symptoms, should be educated on appropriate symptom treatment.

3. Psychological health assessment and coordination of referrals to medical specialists should be the responsibility. A psychological physician should be consulted when abnormalities such as depression are identified. A cognitive assessment should be performed to screen for dementia and a referral to a physician for further treatment of symptoms of cognitive impairment.

Nursing research

- Longitudinal study should be conducted to explore the change overtime of the symptom experiences, management strategies, and its outcomes.

- Ground qualitative research should be conducted to explore the experience of symptom suffering, and how to manage those symptoms effectively until it recovers. This information can be used to promote health rehabilitation programs for reducing the suffering of symptoms in patients after stroke.

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Author Contributions

JK contributed conceptual framework and design, manuscript writing, data collection, data analysis, and interpretation. BS contributed conceptual framework and design, data analysis, manuscript writing, data interpretation and discussion. AS contributed conceptual framework and design, data analysis, manuscript writing, data interpretation and discussion.

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