ORIGINAL ARTICLE

Community Resources and Needs Assessment on Stroke in Tuba, Benguet: A Concurrent Triangulation Design

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ABSTRACT

Background. Worldwide, the WHO showed that stroke is the second leading cause of death for people above 60, and 5th among the aged 15 to 59 population. In the Philippines, statistics revealed that 500,000 Filipinos suffer from stroke annually. Although preventive efforts have brought about a steady decline in incidence over the last several years, stroke is still the third leading cause of death. Baguio-Benguet Chapter notes a rise in the number of stroke patients affecting both adult and younger age groups. The increasing cases of lifestyle diseases predispose people to stroke. Stroke prevention, management, and rehabilitation are essential in bringing back the normal functioning of stroke patients. Care for stroke clients is a challenging task because of the varied knowledge, practices, and attitudes (KAP) fostering the needs of a stroke client. In the Philippines, family members of the stroke client are more likely to be the preferred caregivers.

Objective. The study determined the knowledge, attitudes, and practices of the community members and the community resources on stroke prevention, management, and rehabilitation as a basis for program development.

Methods. This study utilized a mixed research design. Data were gathered from 275 residents of Camp 4, Tuba, Benguet using a structured questionnaire, and 10 FGD Groups. Frequency, percentage, and mean computations were done to analyze quantitative data, whereas descriptive analysis was done for qualitative data.

Results. The majority of the respondents (76%) knew that stroke happens due to insufficient blood supply to the brain. Generally, the community agreed about their attitude on the prevention (2.89), management (2.68), and rehabilitation (2.75) of stroke. The community sometimes practices stroke prevention (3.17), management (2.83), and rehabilitation (2.92). Qualitative data revealed that experiences on stroke resulted in scientific knowledge, evidence-based practices, and utilization of existing resources that include personnel, infrastructure, and programs for stroke prevention, management, and rehabilitation.

Conclusion. The experience, social support, and maximized utilization of existing community resources have assisted the knowledge acquisition, favorable attitudes, and safe practices of the community on stroke.

Keywords: stroke knowledge, attitudes, practices, community resources

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INTRODUCTION

Worldwide, approximately 500,000 people experience a new stroke, 100,000 experience a recurrent stroke, and approximately 160,000 die of a stroke each year.[1] According to the WSO, 1 in 6 people will have a stroke in their lifetime. Fifteen million people suffer a stroke each year that causes long-term disability, and 5.8 million people die from it.[2] In the Philippines, statistics revealed that 500,000 Filipinos suffer from stroke annually.[3] Although preventive efforts that include stroke prevention programs that highlight the recognition of stroke signs and symptoms like the FAST (facial droop, arm weakness, slurred speech and time to immediately call for help), immediate actions to take during a stroke which include a call for help and monitoring the stroke victim, reducing the risk of stroke, stroke rehabilitation and recovery as well as protecting self and loved ones from stroke, have brought about a steady decline in incidence over the last several years, stroke is still the third leading cause of death.

A community is a group of people with diverse characteristics linked by social ties, sharing common perspectives, and engaging in joint action in geographical locations or settings.[4] The researchers define community as a group of people living in the same place or having a particular characteristic in common, which implies a feeling of fellowship with others as a result of sharing common attitudes, interests, and goals. Based on these descriptions, community involvement is strongly encouraged to enhance their decision-making process in the planning, implementing, and evaluating of health projects as guided by the Community Based Health Program (CBHP). The researchers believe the CBHP will involve the community members in every study process and claim ownership of the study's outcomes.

To survive the consequences of illnesses, resources such as personnel, material resources, organizations, and health programs are needed within the community. Thus, every community develops its resources to meet health needs. In the study, the researchers define community resources as the community's available programs, facilities, services, knowledge, attitudes, and practices that address the residents' health needs. Thus, community needs assessments are determined in the study, specifically, determining the knowledge of the community about the nature, causes, signs, and symptoms of stroke as well as the practices and attitudes of the community about the prevention, management, and rehabilitation of stroke. The community resources for stroke prevention, management, and rehabilitation of stroke were also determined.

The community faces health challenges, one of which is stroke. Stroke also referred to as Cerebrovascular Accident (CVA) is a sudden neurologic deficit caused by impairment in the perfusion to the brain[5] resulting in severe and possible long-term disability in men and women[6]. When a person experiences stroke: motor, sensory, cranial nerve, or cognitive disruption occurs. Initially, general symptoms are experienced such as numbness, or weakness of the face, arm, or leg (especially on one side of the body), confusion or change in mental status, trouble speaking or understanding speech, visual disturbances, loss of balance, dizziness, difficulty walking, and sudden severe headache.[5] The World Health Organization (WHO) explained that stroke causes paralysis and problems with sexuality and nutrition, sensory disturbances including pain, and emotional disturbances.[1] Various literature discussed the nature, etiology, and signs and symptoms of stroke but did not explore the knowledge, practices, and attitudes (KAP) and resources of the community members in the rural area.

Moreover, care for stroke clients is a challenging task because of the varied knowledge, practices, and attitudes fostering the needs of a stroke client. Health education in the community setting effectively improves KAP on stroke prevention, management, and rehabilitation. Moreover, caregivers from both stroke-affected families (SAF) and non-SAF groups are aware of stroke but possess lesser knowledge about the many symptoms of stroke and risk factors, and caregiving skills.[7,8] Also, a study in Saudi Arabia found that most stroke clients and their family members had insufficient knowledge regarding the risk factors, and signs and symptoms of stroke, thus resulting in inadequate knowledge, attitude, and practice toward stroke.[9] Cited literature determined that KAP on stroke prevention, management, and rehabilitation among the population is poor, resulting in less practical caregiving skills. The cited literature showed the KAP of community members across different countries. Community resources of community members in the locality regarding stroke are not explored. Thus, the researchers aimed to determine the KAP of the community members on stroke prevention, management, and rehabilitation as an input for the community-based information material about stroke that will be developed with the community's participation.

Stroke prevention, management, and rehabilitation are essential in bringing back the normal functioning of stroke patients. A study showed that a short-term exercise program could improve and retain mobility, functional capacity, and balance in rehabilitating a stroke patient.[10] Other than its impact on rehabilitation, short-term exercise programs also have an excellent effect on the prevention and management of stroke patients. Moreover, Evans-Hudnall found that risk factors such as smoking, alcohol drinking, and anxiety among underserved ethnic minorities can prevent stroke.[11]

Conceptual Framework

The study was guided by the Health Promotion Model (HPM) of Nola Pender and the Social Health Model. The HPM defines health as "a positive dynamic state, not merely the absence of disease." Health promotion is directed at increasing a client's level of well-being. The model describes the multi-dimensional nature of persons as they interact within their environment to pursue health. The model assumes that individuals seek to regulate their behavior actively; individuals in all their biopsychosocial complexity interact with the

environment, progressively transforming the environment and being transformed over time.[12] Health professionals constitute a part of the interpersonal environment, influencing persons throughout their lives. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change. The model assumes that prior behavior, and inherited and acquired characteristics influence beliefs, affect, and enactment of health-promoting behavior, persons commit to engaging in behaviors from which they anticipate deriving personally valued benefits, perceived barriers can constrain commitment to action, a mediator of conduct as well as actual conduct, and perceived competence or self-efficacy to execute a given behavior increases the likelihood of adherence to action and actual performance of the behavior.

Significance of the Study

The study comprehensively documented the existing knowledge, attitudes, practices, and resources on stroke prevention, management, and rehabilitation in Tuba, Benguet. The results will be a basis for the development of community-based stroke prevention, control, and rehabilitation program, which will be the second phase of the study to address the learning needs of the community members and health care members like the Public Health Nurses (PHNs) and Barangay Health Workers (BHWs) in caring for stroke clients. Moreover, the community will be reflecting on their knowledge, attitude, and practices in stroke prevention, management, and rehabilitation and after determining the result of the study, the residents will be enlightened on their knowledge, attitude, and practices on stroke.

METHODS

Research Design

The study specifically utilized the concurrent triangulation design wherein collection and analyses of quantitative and qualitative data were done simultaneously to cross-validate data interpreted in the findings. Figure 1 summarizes the study flow showing a mixed-method research design using both quantitative and qualitative approaches in any phase in a single research process.[13-15]

Locale and Population

The study was conducted from October 2020 to December 2021 in Camp 4, Tuba, Benguet. The researchers selected Tuba for a compelling reason: Barangay Camp 4, Tuba, Benguet,

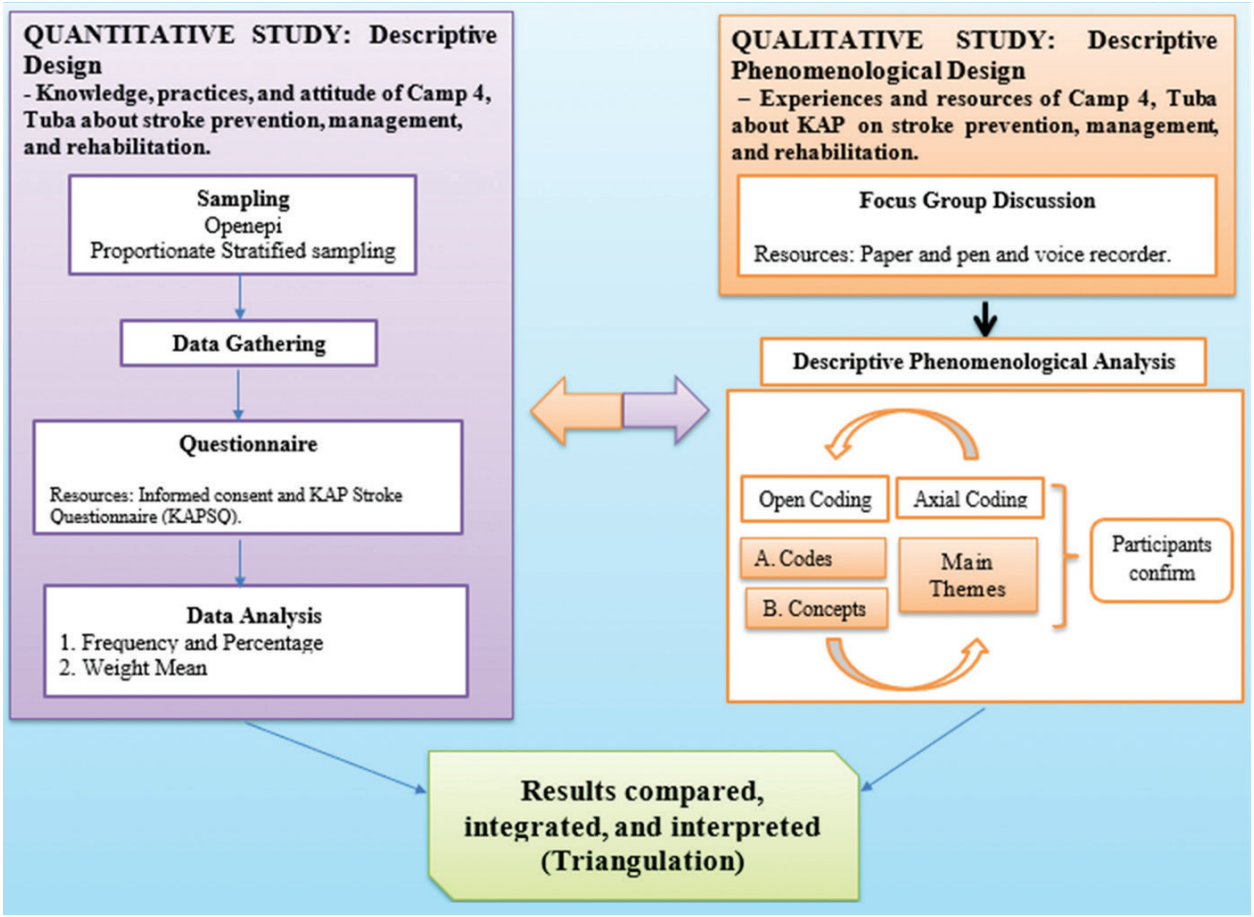

Figure 1. Research design flow.

accounted for 146 cases of hypertension with four mortality cases of the said condition out of approximately 7,000 individuals within the barangay.[16] Moreover, the increasing cases of lifestyle diseases predispose people to stroke, resulting in death among 5.28 per 100,000 population.[17] The incidence of stroke due to an unhealthy lifestyle is high in the community not only due to its geographic location but also its culture, diet, and drinking spree after work. Thus, health programs conceptualized in the community can help ease the burden experienced by the community. Planning and organizing a stroke prevention, management, and rehabilitation program with the community will enhance their capability of dealing with stroke and, therefore, may help prevent complications and reduce the burden for the family and the community. Participants were residents of Camp 4, Tuba, Benguet: (a) for more than six months, (b) aged eighteen years and above, and (c) with or without a history of stroke. Residents (a) with mental or cognitive disability and (b) those who cannot complete the questionnaires were excluded from the study.

Utilizing Openepi.com, the researchers determined the study sample size of 367 residents from an estimated population of 6,000 and a confidence level of 95%. A total of two hundred seventy–five (275) residents served as respondents for the quantitative part of the study. Using purposive sampling, ninety (90) community residents participated in the qualitative phase. There are eight FGDs and each FGD comprises 10-12 post-stroke patients, family caregivers of stroke patients, health workers, and barangay officials who volunteered to be in the FGDs.

Data Gathering Tool

The Knowledge, Attitude, and Practices Questionnaire (KAPQ) was developed to determine the community members' knowledge, attitudes, and practices regarding stroke prevention, management, and rehabilitation. The tool yielded a content validity index (CVI) of 0.996 which means the device is valid. To establish tool reliability, Cronbach Alpha yielded a value of 0.91 on the items about the nature, causes, and signs and symptoms of stroke. A value of 0.77 for attitudes towards the prevention, management, and rehabilitation of stroke, and a value of 0.80 for items on practices about stroke prevention, management, and rehabilitation.

After retrieving the questionnaires, Focus Group Discussions (FGD) were scheduled. A semi-structured questionnaire guided this method to explore the KAP and the resources of the community regarding stroke as well as their experiences with stroke.

Data Gathering Procedure

The study was approved by the Research Management and Research Ethics Committee of the Cordillera Regional Health Research and Development Consortium (CRHRDC) with the protocol number of CRHRDC REC 2019-04. After that, the researchers brought the communication letters personally to the Local Chief Executives, the Municipal Health Officer, and the Barangay Local Government Unit of Tuba, Benguet. Once permission was granted for the study, the researchers coordinated with the barangay council through the *Kagawad* on Health, the study's objectives, and the upcoming activities of this endeavor. During the quantitative phase, the researchers distributed the questionnaire to the identified residents with the help of the *kagawad* and barangay health workers. During the qualitative phase, eight FGDs were conducted. Each FGD comprises 10-12 post-stroke patients, family caregivers of stroke patients, health workers, and barangay officials. The researchers gave a general orientation about the activity before the FGD. During the FGD sessions, each participant shared his or her response to the questions asked by the research facilitator. A recap of their responses was done by the facilitator to which the participants agreed to, implying that their perceptions were similar. Their perceptions were reported in this paper with only one name appearing. Individual interviews were not conducted because the FGD participants have already answered the questionnaire in the quantitative method of the study. The field observation of their practices on stroke was not done because of restrictions related to the COVID-19 pandemic. A review of records was done with the barangay *kagawads* who gave the initial data statistics on stroke in the barangay.

Treatment of Data

Data from the respondents were treated with descriptive statistics using frequency and percentage computations to answer research question 1, while the mean was computed to answer research questions 2 and 3. The answer to question 4 was elicited in the qualitative portion of the study.

Data Management

Qualitative data from the participants were recorded and transcribed. Descriptive analysis was done in this study where the following steps were done: transcription, reading, and re-reading the transcript files. Open coding was done to make notations linked to the KAP and the resources of the community members. Similar codes were grouped then these codes were transformed into themes. Next, the researchers analyzed the emerging themes. In the clustering of themes, the researchers ensured that the themes were connected to the actual words of the participant. Further, the themes were organized such that they were identified based on the verbatims and narratives of the participants, and the researchers' thoughts. Finally, the main themes were formulated. The qualitative results were presented containing the experiences of the community respondents on stroke and interpretation of the needs and resources of the community on stroke supported by literature. Clarification regarding responses to the questionnaire was done through telephone calls with the *barangay kagawad* and some participants. The participants agreed to the themes formulated through phone calls, online modes, messenger chats because of the face-to-face meeting limitations due to COVID-19 restrictions.

Ethical Clearance

Since data were gathered from human participants through questionnaires and focus group discussions, therefore, their rights as participants have been safeguarded by ensuring the full disclosure of information about the research project where the aims, benefits, possible harms, and expectations about the project have been accurately and comprehensively explained to them, the voluntariness and willingness of the participants, written and oral informed consent in English and their dialects, anonymity of participants using number codes. Furthermore, the researchers declared that all data were kept confidential and used only for the specified research purposes, careful considerations were made on the objective and comprehensive recording and analysis of research data, proper citations were done, and a comprehensive memorandum of agreement was forged between all institutions involved in the project and the respective roles and responsibilities. The researchers further sought approval for an extended period to finish their project. Likewise, safety and health protocols have been strictly observed in this project. Proper coordination with the *barangay kagawads* was done to ensure safety for both participants and researchers. The researchers likewise explicitly declare no conflict of interest relative to the research program, including relations with the sponsoring agency, the beneficiaries of the program, and their own fields of practice, and personal interests.

Establishing the Trustworthiness of Data

Lincoln and Guba stated that the trustworthiness of a research study is important in evaluating its worth.[18] In the study, credibility was established by spending time with the participants through continuous dialogs using digital platforms, reading, and analyzing the data gathered during the FGDs. The researchers also maintained their journaling that contained their reflections, biases, ideas, and impressions, separating their responses from the participants' responses. The researchers also did member checking as they returned to the participants through online and SMS modes because of COVID-19 restrictions, validated given transcript data, and confirmed the study results. The participants have agreed to the results as presented and discussed with them.

To establish confirmability, the researchers did an audit trail to determine the course of the research procedure, using a voice recorder and field notes during data collection. The researchers did data reduction for analysis by reading the participants' responses and labeling them into essential codes. After this, data reconstruction and synthesis were done by formulating categories such as themes, definitions, and relationships.

A careful and comprehensive explanation of the study locale, participants, procedures, and the needs and resources of the community on stroke was done to establish the study's transferability.

Lastly, the researchers used field notes, tape recorders, and cameras to establish dependability. They also documented the processes done in the analysis and discussions of findings, creating an audit trail; the feedback of the research panel members was considered for more robust and better-articulated findings. Data analysis was done rigorously with coding, recoding, and data evaluation. Further, the participants and researchers agreed to the themes formulated.

RESULTS

Quantitative Results

This study section presents the results of the study as analyzed and interpreted. The first section presents the quantitative findings.

Table 1a presents the frequency and percentage distribution of the community's responses regarding the nature of stroke. The community answered YES that stroke is a brain attack (69.5%), happens when there is no or not enough blood supply to the brain (76%), happens when there is bleeding in the brain (68.4%), and is one cause of disability (73.4%). The community further knows that stroke is not only for the elderly (72.7%) and is preventable (53.3%). However, 73.5% of the community answered that a stroke is a heart attack which is not true. It appeared that the respondents did not know the meaning of heart attack.

Findings imply that the community is aware of the nature of stroke and that stroke is preventable and can happen at any age, as verbalized below:

> *"I am a mother of two, and I am 36 years old. I am very active, but I still suffered a stroke. Even though I suffered a stroke, I am still very thankful that I can move and do my household chores, so I believe that stroke can happen to anybody else, especially those with hypertension and diabetes mellitus."* – **(Angelina: FGD#5)**

Gleaned in Table 1b that most of the respondents know that the causes of stroke are high blood pressure (88%), high fat intake (83.3%), stress (81.5%), and due to family history of stroke and heart attack (81.8%). Interestingly, there are still respondents who cognize that stroke is a form of punishment (20.4%), a fate (20%), or sex differences, where men have a higher risk than women (33.1%).

The quantitative findings in Table 1b are supported by verbalizations:

> *"The work is heavy-duty, machine maintenance, and very hot, so I get irritated. My companion in Saudi snores when he sleeps, and when his blood pressure was checked, it was very high, so I know that triggers a stroke in one person. So it is important to have maintenance drugs, and they must not be forgotten."* – **(Romeo: FGD#7)**

> *"My mother has diabetes, so the stroke she experienced was a complication, I think. At the first stroke, half of her body was affected, but during the second stroke, it was a complication of diabetes. We have a history of stroke in the family."* – **(Juliet: FGD#1)**

Table 1c shows the respondents' knowledge regarding the signs and symptoms of a stroke. The majority of the respondents knew that numbness or weakness of the face, arm, or leg or on one side of the body are the warning signs of a stroke (83.6%), paralysis on one side of the body (81.5%), visual problems (80%), loss of balance (79.6%), and uncoordinated movements (78.9%). Interestingly, the community does not know that depression is a sign and symptom of stroke (73.5%), which may cause confusion that depression can affect the client or the family but not the sign and symptom of an actual occurrence of stroke.

This implies that the community has felt or has observed these signs and symptoms among their family members who suffered a stroke that they have shared during the FGDs, as seen in the following verbalizations:

"Suddenly, I cannot stand. Suddenly, I fell, then I could not stand anymore." - **(Tina: FGD#1)**

Table 1a. Frequency and Percentage Distribution of Responses on the Nature of Stroke

Nature of stroke	Yes		No		No Answer	
	F	%	F	%	F	%
Stroke is...						
1. brain attack	192	69.5	73	23.5	10	3.6
2. also a heart attack	203	73.5	64	23.3	8	2.9
3. happening when there is no or not enough blood supply to the brain	209	76.0	51	22.0	5	1.8
4. happening when there is bleeding in the brain	188	68.4	77	28.0	10	3.6
5. a disease of the elderly only	74	26.9	200	72.7	1	4.0
6. one cause of disability	201	73.4	59	25.2	4	1.5
7. not treated by any medicine or therapy	90	32.7	180	55.5	5	1.8
8. not preventable	98	35.6	174	53.3	3	1.1

Table 1b. Frequency and Percentage Distribution of Responses on the Causes of Stroke

Causes of Stroke	Yes		No		No Answer	
	F	%	F	%	F	%
1. high blood pressure	242	88.0	33	12.0	0	0
2. severe head trauma	199	72.4	59	25.1	7	2.5
3. family history of stroke and heart attack	224	81.8	49	17.9	1	0.4
4. stroke is a form of punishment	56	20.4	212	77.1	7	2.5
5. having a stroke is a fate	55	20.0	213	77.5	7	2.5
6. poor taking of medications results in stroke	172	52.5	85	30.9	18	5.5
7. heart failure	207	75.3	56	24.0	2	0.7
8. obesity	201	73.1	72	26.2	2	0.7
9. fat inside the veins	193	70.2	68	24.4	14	5.1
10. smoking	212	77.1	59	21.5	4	1.5
11. exposure to second- and third-hand smoke	203	73.8	65	23.6	7	2.5
12. diabetes mellitus	152	55.3	103	37.5	20	7.3
13. too much alcohol intake	213	78.5	51	18.5	8	2.9
14. malnutrition	213	77.5	56	20.4	5	2.2
15. high salt intake	229	77.5	41	14.9	5	1.8
16. high fat intake	213	83.3	56	20.4	6	2.2
17. high sugar intake	96	34.9	148	53.8	31	11.3
18. oral contraceptive use	211	76.7	61	22.2	3	1.1
19. lack of exercise	122	44.4	134	48.7	19	6.9
20. pneumonia	122	44.4	14.9	54.2	35	12.7
21. sex (men having a higher risk than women)	91	33.1	180	65.5	2	0.7
22. age (55 or older)	93	33.8	50	18.2	1	0.4
23. stress	224	81.5	50	18.2	1	0.4

Table 1c. Frequency and Percentage Distribution of Responses on the Signs and Symptoms of Stroke

Signs and Symptoms of Stroke	Yes		No		No Answer	
	F	%	F	%	F	%
1. Numbness or weakness of the face, arm or leg, or one side of the body	230	83.6	45	16.4	0	0
2. Paralysis of face, arm, and leg on one side	224	81.5	50	18.2	1	0.4
3. Sudden "exploding headache"	213	77.5	56	20.4	6	2.2
4. Confusion or change in mental status	206	74.9	65	23.6	4	1.5
5. Changes in speech like slurring, hard to speak, or loss of speech	214	77.8	60	21.8	1	0.4
6. Visual problems	220	80.0	53	19.3	2	0.7
7. Unable to identify persons or objects	191	69.5	80	29.1	4	1.5
8. Difficulty in swallowing	189	68.7	81	29.5	5	1.8
9. Difficulty in forming words	206	74.9	66	24	3	1.1
10. Depression	202	73.5	62	22.5	11	4.0
11. Loss of balance	219	79.6	54	19.6	2	0.7
12. Uncoordinated movements	217	78.9	56	20.4	2	0.7

Table 2. Attitude on Stroke Prevention

Attitude on Stroke Prevention	Mean	Description
Smoking is not healthy.	3.16	Agree
I do not feel healthy if I drink beer or alcohol.	2.93	Agree
I feel satisfied eating a low-fat meal.	3.23	Agree
I feel satisfied eating a low-sugar meal.	2.96	Agree
I do not feel healthy if I eat fruits and vegetables.	2.16	Disagree
I enjoy a 30-minute exercise every day.	3.13	Agree
I enjoy visiting a doctor even if I am not sick.	2.40	Disagree
Regular monitoring of blood pressure in health centers disturbs my activities.	2.45	Disagree
I feel comforted when I check my blood pressure.	3.37	Strongly Agree
Going for a blood test is not expensive.	2.97	Agree
I feel healthy when I drink 8-10 glasses of water.	3.49	Strongly Agree
Sleeping 6-8 hours a day is my priority concern.	3.43	Strongly Agree
I feel protected when I use an amulet.	1.89	Disagree
Average Mean	**2.89**	**Agree**

"It seems that if I twisted my mouth, then I cannot talk already." - **(Kevin: FGD#8)**

Table 2 presents the community's attitudes about stroke prevention. On average, the residents agree (2.89) with the habits presented in the questionnaire. They feel healthy when drinking 8-10 glasses of water (3.49), followed by sleeping 6-8 hours a day (3.43). Most respondents feel comforted when they check their blood pressure (3.37). Surprisingly, the community disagrees that they feel disturbed if they visit the health centers for BP monitoring (2.45), enjoy visiting a doctor even if they are not sick (2.40), and do not feel healthy if they eat fruits and vegetables (2.16) These items imply healthy living habits, which may have been a result of the experience when caring for stroke patients or having the stroke itself. Narrations of the community have shown a focus on a healthy lifestyle toward stroke prevention:

"Live a healthy life. Ma'am, there must be healthy living. Because if we do not care for ourselves, and we eat anything, smoke cigarettes, or drink alcohol, then our organs in the body will be affected, and we will have diseases." - **(Bruce: FGD#2)**

"I have to take my complete medicines because if not completed, it is useless because I cannot sleep. Sometimes, I go for a morning walk, back and forth, like jogging, so that I will perspire." - **(Kurt: FGD#1)**

Table 3 highlights the attitude of the community on stroke management. Though the average mean score presents that the community agrees (2.68) on the items in table 3, a strong agreement is shown on regular blood pressure monitoring would help a stroke patient manage stroke (3.42) and bringing a stroke patient to the hospital as soon

Table 3. Attitude on Stroke Management

Attitude on Management	Mean	Description
I feel that bringing a stroke patient to the hospital as soon as possible will save his or her life.	3.41	Strongly Agree
I feel that stroke will not re-occur if the patient takes prescribed medication religiously.	3.03	Agree
I believe that seeking faith healers is important in managing stroke.	2.03	Disagree
I feel that stroke patients feel well after an oil massage.	2.55	Agree
I feel that stroke patients feel well after reflexology.	2.90	Agree
I feel that stroke patients feel well after acupressure.	2.73	Agree
I feel that stroke patients feel better after acupuncture.	2.71	Agree
I believe that *"Hilots"* can manage stroke.	2.55	Agree
Regular monitoring of blood pressure helps a stroke patient in managing stroke.	3.42	Strongly Agree
Canao is believed to treat a stroke patient.	1.72	Strongly Disagree
I feel that stroke patients feel better after a steam bath.	2.75	Agree
I feel not satisfied with *"Bawang"* therapy	2.39	Disagree
Average Mean	**2.68**	**Agree**

Table 4. Attitude on Rehabilitation

Attitude on Rehabilitation	Mean	Description
I believe that massage with coconut oil helps bring back the normal movement of a stroke patient.	2.65	Agree
Physical therapy is expensive.	2.93	Agree
I believe that faith healing brings back the normal life of a stroke patient.	2.12	Disagree
Herbal therapy is cheaper.	2.79	Agree
Praying is believed to bring back the normal life of a stroke patient.	3.24	Agree
Average Mean	**2.75**	**Agree**

as possible will save his or her life (3.41). The community strongly disagrees that *Canao* is believed to treat a stroke patient (1.72). Table 3 also shows that the community is satisfied with *bawang* therapy (2.39). Findings imply that the community believes in professional care rendered by a healthcare institution. The verbalization below confirms the data as presented in Table 3.

Table 5. Practice on Stroke Prevention

Practice on Prevention	Mean	Description
Stop smoking.	3.27	Every time
Stop drinking alcohol.	3.29	Every time
Eat more fruits and vegetables.	3.61	Every time
Exercise 30 minutes three times in a week.	3.44	Every time
Visit his or her doctor only if the signs and symptoms happen.	3.23	Sometime
Go for regular checking of blood pressure.	3.45	Every time
Go for blood test once a year.	3.05	Sometime
Do *"Bawang"* therapy	2.87	Sometime
Do water therapy	3.30	Every time
Sleep 6-8 hours a day	3.47	Every time
Use amulet.	1.94	Never
Average Mean	**3.17**	**Sometime**

> *"For me, if I am not sure… if the patient is experiencing stroke… and I am at home, then I will bring the patient to the hospital because I don't want the patient to experience what I experienced before"* - **(Tina: FGD#1)**

Table 4 presents the attitude of the community toward stroke rehabilitation. Interestingly, an average mean of 2.75 shows that the community agrees on the items presented in table 4. Most residents do not believe that faith healing brings back the normal life of a stroke patient (2.12); instead, they believe that praying brings back the normal life of a stroke patient (3.24). The amount of sound energy created by praying can be channeled for healing as supported by a verbalization:

> *"I cannot completely move my right side. I did not lose faith and still pray for my healing. Now, I can do laundry, cook, and walk in the morning; I also take my maintenance medicines because it is difficult to have another stroke. I also go to the church without someone with me."* - **(Brad: FGD#5)**

Table 5 shows the practices of the community on stroke prevention. which revealed an average mean of 3.17 (Sometime Practice). This implies that although they agree with the statements on stroke prevention, as seen in Table 4,

it does not necessarily mean that what they believe in is what they practice. Practice means doing, which implies action. However, a close examination of their responses reveals that they do practice eating fruits and vegetables (3.61), go for regular checking of blood pressure (3.45), exercise 30 minutes three times a day (3.44), sleep 6 hours a day (3.47), do water therapy (3.30), stop drinking alcohol (3.29), and stop smoking (3.27). From the findings, it can be implied that the community is conscious of their health, and they do not want to suffer a stroke. Thus, they practice measures of prevention as seen in the following narrations:

> *"Ma'am, for me, I am afraid to suffer a stroke, so I go for a walk, especially since I am obese. I also do not consume food with too much lard. They said in the clinic that a sedentary life is not good, so I move a lot. I walk to reach my patients to check their blood pressures in my sitio assignment."* - **(Angelina: FGD#5)**

> *"Live a healthy lifestyle. Ma'am, there must be healthy living. If we do not care for ourselves, and we eat anything, smoke cigarettes, or drink alcohol, then our organs in the body will be affected, and we will have diseases. We do this not to prevent stroke alone, not for high blood pressure only. I had a relative who suffered a stroke because he had a heart problem. So we should take care of ourselves. We must be healthy and go for healthy foods, healthy living."* - **(Bruce: FGD#2)**

It is also good to note that the community does not practice using amulets for stroke prevention. The use of amulets being magical in treating diseases is a belief by our forefathers that they practice centuries ago, and it is good to note that the community respondents never use amulets, which means that they are more geared towards practices with a scientific basis. Sometimes, practicing *bawang* therapy is noted among the respondents (2.87). Garlic, a wonder plant, has medicinal properties. It contains a molecule called ajoene, which prevents blood platelets from accumulating in one place and forming a blood clot known to cause a stroke. Having strong anticoagulant properties, garlic acts as a natural blood thinner. This means that consuming it regularly can help prevent clot formation, which is known to cause various conditions like heart attack and stroke.[19]

Table 6 emphasized an average mean of 2.83 implying that the respondents sometimes practice the items under stroke management. Interestingly, the community recognizes the importance of professional help in a healthcare institution as evidenced by the highest mean score of 3.60 wherein the community immediately brings the patient with signs and symptoms of stroke to the hospital. The hospital is prioritized because, according to them, there are no first aiders in their barangay. This stroke management practice is highlighted in the following verbatim:

> *"I lived with an elderly aunt before. Her blood pressure increased because of her anger towards me. I noticed a changed in her speech, which I cannot fully understand. She complained of dizziness and lost her balance. So, we brought her to the hospital for further treatment."* - **(Juanita: FGD#7)**

> *"For the Kolkolis, ma'am, it is anytime as long as the stroke patient requests for it; just like me, I prefer at night because it is relaxing to the feet."* - **(Anton: FGD#2)**

Table 7 highlights the practices of the community on stroke rehabilitation. The majority of the community never seek faith healing (2.25). Instead, they prefer spiritual therapy (3.18) and physical therapy (3.17). The severity of stroke complications and each person's ability to recover vary widely. The responses of the community may be attributed to their understanding of the rehabilitation of stroke because their verbalizations during the FGD strongly mention the use of physical therapy, herbal therapy, and spiritual therapy, as seen in the following statements:

> *"I always pray, ma'am. When I cook or do the laundry, I try to move my paralyzed arm. Though it is hard but God is good. I can still do some household chores."* - **(Waldo: FGD#5)**

Table 6. Practice on Management

Practice Management	Mean	Description
Bring patient with signs and symptoms of stroke to the hospital as soon as possible.	3.60	Everytime
Take medication religiously given by the physician.	3.43	Everytime
Go for faith healing.	2.17	Never
Use reflexology and acupressure.	2.74	Sometimes
Use acupuncture.	2.59	Sometimes
Go for *"Hilot"* therapy.	2.68	Sometimes
Go for regular monitoring of blood pressure.	3.41	Everytime
Initiate *"canao"* and chants for healing.	1.93	Never
Do steam inhalation.	2.84	Sometimes
Do steam bath.	2.90	Sometimes
Do *"Bawang"* therapy.	2.84	Sometimes
Average Mean	**2.83**	**Sometimes**

Table 7. Practice on Rehabilitation

Practices on Rehabilitation	Mean	Description
Have body massage with oil.	2.93	Sometimes
Have physical therapy.	3.17	Sometimes
Seek faith healing.	2.25	Never
Receive herbal therapy.	3.06	Sometimes
Receive spiritual therapy.	3.18	Sometimes
Average Mean	**2.92**	**Sometimes**

"There is someone who comes and massages me, and I can relax; I can feel at ease, especially when I do much laundry." – **(Waldo: FGD#5)**

Qualitative Results

The qualitative section of this manuscript presents the results from the semi-structured interviews conducted with the FGD groups. Figure 2 summarizes the experiences of the community respondents regarding stroke.

The themes and sub-themes show the community's journey from unhealthy living to modified health behavior as they aim for healthy living supported by their community resources and family. The themes and sub-themes further contain the responses of the participants to the questions asked of them. Each sub-theme shows the quotes or verbatims from the participants in each FGD reflecting their knowledge, practices, and attitudes on stroke prevention and management. The verbatims show the collective responses of the FGD and the sample quotes belong to a member of the FGD group.

Theme 1: Before the Stroke

This theme shows the characteristics of the community before the stroke experience. The community shared the following stories emphasizing the different sub-themes:

Unhealthy lifestyle

"Pig fat is really tasty. It makes the soup tasty. Beef fat is very delicious. Our meal always has to have meat…" – **(Candy: FGD#1)**

"Nine years ago, my husband suffered a stroke, maybe because of smoking cigarettes and drinking alcohol." – **(Charise: FGD#2)**

These individual characteristics are risk factors for the occurrence of stroke. The participants show that while they have no illnesses like stroke, diabetes, or hypertension, they have poor lifestyles. The health promotion model of Nola Pender shows that some individual characteristics and experiences affect the behaviors of people regarding health promotion.[12]

Overwork and stress

The participants have verbalized that the work they do and the time spent working, especially in a warm environment, results in physical exhaustion, resulting in migraine or headaches and body pains. The emotional stress that they experience related to their work is considered a triggering factor of stroke. The following statements support this:

"Stress and focusing on the job as I maintain machines in Saudi. It is also very hot there." – **(Steve: FGD#3)**

"Ah stroke, when I was working as a carpenter, suddenly I fell; I managed to stand up, but I fell again, so I was advised to go home. When I was heading home walking, it seemed that I was looking up, I fell down and then rolled over, then when I came to my senses, I was already at BGH. They said I suffered a stroke." – **(Manuel: FGD#1)**

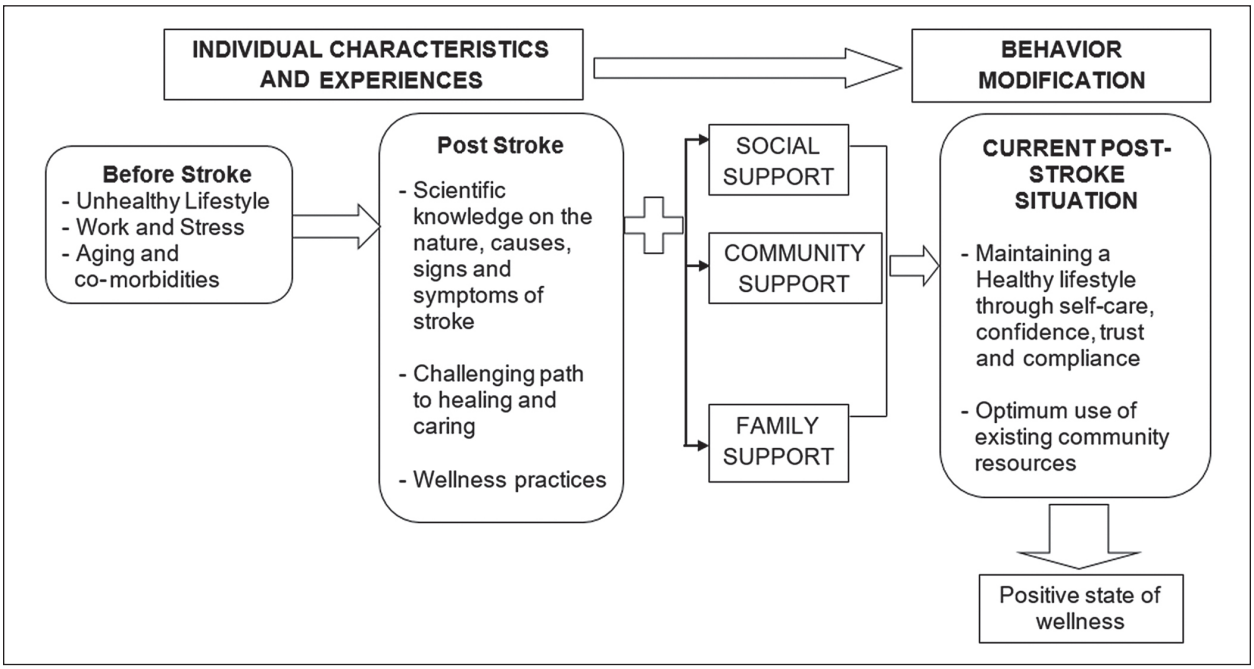

Figure 2. Experiences of the community on stroke.

Aging and co-morbidities

The community has acknowledged that although stroke is experienced by the young and old, they admitted that most stroke victims in their community are those above 40 years old and with co-morbidities like hypertension and diabetes. As seen by their verbalizations, the scientific bases are highlighted.

"Commonly, among us, those who suffer a stroke are 40 years old and above." – **(Francisca: FGD#2)**

"It is due to increased blood sugar and increased blood pressure." – **(Laura: FGD#4)**

"What I can say is that our family has a history of diabetes." – **(Charise, FGD#2)**

Theme 2: Immediate Post-Stroke

The immediate post-stroke period showed changes in the community's knowledge, attitude, and practices about stroke, where their verbalizations imply a more accurate knowledge of the nature, causes, signs, and symptoms of stroke, a more favorable attitude toward stroke, and more evidence-based practices on stroke as seen in the following sub-themes:

Scientific knowledge on the nature, causes, signs, and symptoms of a stroke

"There is a lack of oxygen in the brain." – **(Eva: FGD#6)**

"Complication of diabetes and family history of diabetes." – **(Mando: FGD#6)**

"As what they say, if mother and father are hypertensives, then the children will also have increased blood pressure." – **(Sunny: FGD#1)**

The statements above indicate that the participants know a stroke's nature, causes, signs, and symptoms. The findings correlate well with the theory of constructivism where the processes of conceptual change between the existing knowledge and the new experience are emphasized. Some participants have experienced caring for a family member who has a stroke, some have experienced a stroke, while some have witnessed a person having a stroke and how they are taken care of. With this, participants construct their knowledge about stroke's nature, causes, signs, and symptoms by associating what they currently know with what they have experienced. As presented in Figure 3, the participants construct their knowledge about their previous experience.

Moreover, Kolb and Kolb discussed the key components of learning-by-doing, how it works, and the characteristics contributing to meaningful practice.[20] The theory of experiential learning explains this.

Challenging path to healing and caring

This subtheme implies the struggles of patients during the stroke period. They have experienced the ups and downs of their condition as they have to change their health behavior. It is difficult to change their lifestyle but the experience dictates them to modify their health behavior. The emotional impact of the stroke condition is also devastating as the fear of another stroke episode is commonly present among post-stroke individuals where not only the individual has been affected but also the family and the community. As Nola Pender reiterates, experience is a good teacher; as such, the community is always on the lookout for the members with co-morbidities whom they must assist so as not to experience stroke and also for speedy recovery post-stroke.[12] The following verbatim shows life with its ups and downs where the stroke victims and the community are cautious of their activities, meals, and work so that another stroke episode can be prevented.

"Yes, ma'am, even me, I experienced having a stroke patient. It's hard when you are in a Saudi, and I am alone there, so it is important to rest when you are tired." – **(Tony: 8 FGD#3)**

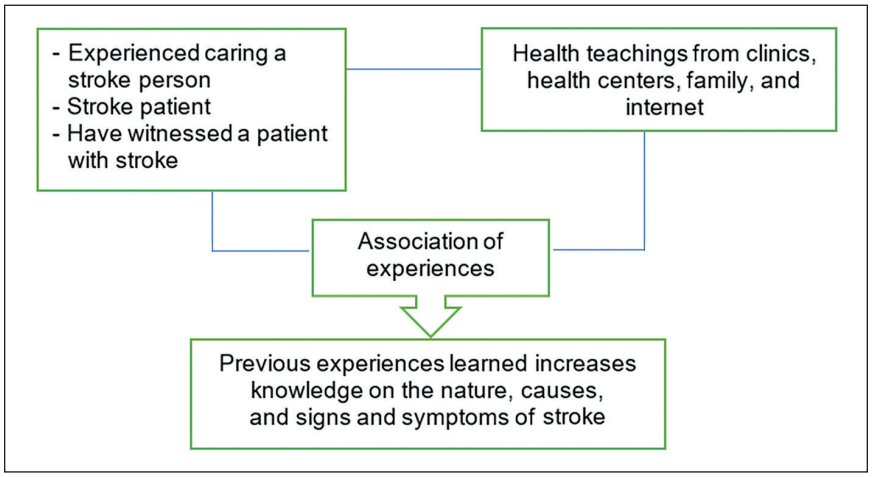

Figure 3. Stroke knowledge construction.

"If possible, I do not want to go to a doctor, so be cautious about food intake and vices." - **(Vivian: FGD#6)**

"It is a good feeling when we do not feel sick, so I go to the health center to check my blood pressure." - **(Kendra: FGD#7)**

Wellness practices

This subtheme implies that the practices of the community respondents about stroke are wellness-to-goodness practices where health modification practices were done (e.g., bad health habits have been modified). They have realized the importance of healthy practices. They can recognize the effects of these bad practices on an individual's health, so they start practicing a healthy lifestyle.

"Because if we do not take care of ourselves, we eat unhealthy foods, smoke cigarettes, drink alcohol, then we are destroying our organs, and we succumb to diseases." - **(Corazon: FGD#6)**

"Eat a small amount of rice and more intake of vegetables." - **(Waldo: FGD#5)**

"Pickled garlic and exercise keep me away from hypertension and stroke." - **(Romeo: FGD#7)**

The community had been living a healthy post-stroke period as they have been doing activities of healthy living and adhering to their treatment regimen, which include a healthy diet, exercise, and maintenance medications. As we understand, health is a state of being, whereas wellness is a healthy lifestyle. Health refers to physical, mental, and social well-being; wellness aims to enhance well-being. Based on the community respondents' verbatim, the stroke experience resulted in their wellness choice. Wellness practices result in healthy living. Healthy living to the community respondents means that they can function and contribute to community health development where their physical and mental health care is balanced and closely related so that a change (good or bad) in one directly affects the other.

Theme 3: Current Post-Stroke Situation

Theme 3 shows the present condition of the community after they had experienced a stroke wherein the community is happy to say that they are maintaining a healthy lifestyle with self-care, confidence, trust, and compliance because of the social support they are receiving. They are utilizing existing community resources for stroke prevention, management, and rehabilitation. The experience of stroke resulted in the community's cautious attitude because they now understand the nature of the stroke.

Maintaining a healthy lifestyle with self-care, confidence, trust, and compliance

The stroke experience taught the stroke clients and the community how to live a healthy lifestyle. They are confidently caring for stroke patients while the stroke patients take care of themselves and avoid isolating themselves. As implied in the following verbatim, isolation of self is not in their minds; they still mingle and show that they are a part of the community. They also show confidence in their self-care because of the support of their family and neighbors. Their healthy lifestyle is maintained as they comply with their treatment regimen. The participants stressed the importance of self-care in maintaining a healthy lifestyle. An individual who experienced a stroke must focus on self-care too; they try not to become a burden to the family and the community. Residents with history of stroke help themselves to maintain good blood circulation to the brain. Even if they are post-stroke patients, according to them, they have to remember doing their daily activities rather than be dependent on others because they have the willpower to do these activities. Furthermore, they can mingle with the community members and join community gatherings. There is adherence to the treatment regimen, avoiding cave syndrome (isolation).

"Sometimes, I go walking and jogging to sweat out." - **(Vivian: FGD#5)**

"I always pray, ma'am. When I cook or do the laundry, I try to move my paralyzed arm. Though it is hard but God is good. I can still do some household chores." - **(Waldo: FGD#5)**

Optimum use of existing community resources

Participants recognized that resources for stroke prevention, management, and rehabilitation do exist in their community, including their family members, barangay health workers, barangay council, health programs, and health care services offered by the barangay clinic. They also realize that caring for stroke survivors is not an easy task, so they need the assistance of the neighbors as well as the health care team. Indeed, the community has important resources that the community residents can make use of in the prevention, management, and rehabilitation of stroke. Figure 4 shows the existing community resources for stroke prevention, management, and rehabilitation:

The community resources for stroke prevention, management, and rehabilitation shared by the participants are categorized into three, which include personnel, infrastructure, and community programs.

The following verbatims show the use of existing resources for stroke.

"No more canao practices here; if someone suffers a stroke, he is immediately brought to the hospital and must comply with his medicines." - **(Clarise: FGD#2)**

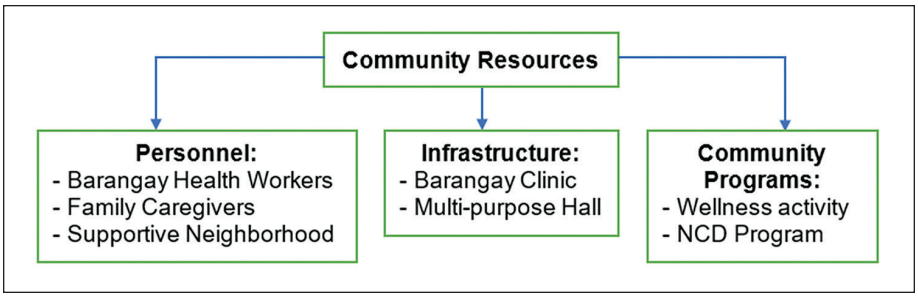

Figure 4. Community resources.

"We do not believe in amulets; when somebody gets sick, we bring him to the doctor for a checkup or to the hospital." - **(Tony: FGD#3)**

"For Kolkolis, it can be done anytime as long as the stroke patient requests for it; like me, I prefer to have it at night to relax my feet." - **(Anton: FGD#2)**

In the stories of the participants, respite care, support groups for stroke survivors and caregivers, adult day care, home health services, meal programs, and homemaker assistance help both the stroke survivor and the caregiver, traditional healing methods such as *kolkolis* and herbal medications are also mentioned as community resources for stroke prevention, management, and rehabilitation

Findings from quantitative data analysis indicate that most community respondents have proper knowledge about the nature, causes, signs, and symptoms of a stroke. They have favorable attitudes, and from time to time, practice stroke prevention, management, and rehabilitation. The experience of the community respondents on stroke yielded three themes that integrate their knowledge, skills, attitudes, practices, and resources for stroke. Findings from both forms of analysis can be integrated into one theme: a positive state of wellness.

Positive state of wellness

Every community member is proud to say that since they had the stroke experience, and now that they are going back to their pre-stroke state, they look at their neighbors, family, and the community as their sunshine. And to them, positivity means giving the brightest pieces of advice and support, as seen in the following verbalizations:

"Somebody comes over to give me a massage. I feel relaxed and at ease, especially when I am tired doing my laundry." - **(Brenda: FGD#5)**

"The BHW comes over every two weeks to check my blood pressure, then gives me a hand and foot massage to prevent muscle wasting." - **(Janet: FGD#4)**

"Prayers and trust in God are needed with exercise and proper diet. Sometimes, our pastor prays over my husband for more strength." - **(Lily: FGD#4)**

DISCUSSION

Nature of Stroke

Some of the respondents still need to be fully knowledgeable about the nature of stroke, which means that continuous awareness building about stroke and its nature must be done. It is also good to note that the community is aware that stroke can be treated, which is also highlighted by the National Health Services (NHS) of the UK that stroke is treatable.[21]

The findings of the study imply that the majority of the community adhere to the scientific knowledge related to the disease, which may be attributed to the information that the health workers may have shared in their community as the Department of Health (DOH) programs are made known to the people. One example is the Non-communicable Diseases (NCDs) of the DOH, where the majority of the community participate by availing of the services it renders, like lectures on non-communicable diseases, blood pressure monitoring, and healthy lifestyles. The study's findings contrast with the results of the study of Mvula et al., where they have reported a poor knowledge of the community on stroke.[22] Knowledge of stroke was poor: 71% knew no risk factors. Witchcraft (20.6%) was mentioned as frequently as hypertension (19.8%) as a cause. Knowledge of stroke was most remarkable in the most educated and wealthy, and lowest in men, the never-married, and the youngest age group. Roxas and Carabal-Handumon cited by Logan et al. support the findings of this study since they found out that the barangay health workers in Plaridel, Misamis Occidental, had fair to good stroke knowledge; 19 stroke families were identified with a significantly higher knowledge of stroke.[23]

Causes of Stroke

The respondents were able to determine that stroke is caused by high blood pressure as having not enough blood supply to the brain due to vasoconstriction. Moreover, some studies revealed that hypertensive patients were aware of stroke,[24] which is supported by this study.

The respondents determine stress as one of the causes of stroke. Similar to the study of Booth, psychosocial stress is connected with an increased risk of stroke.[25] Also, there is a known significant association between the perception of stress and transient ischemic attack.[26] Conversely, it is not reflected

as a traditional risk factor for stroke but as a contributing factor to more traditional risk factors like hypertension.[27]

In terms of sex, specifically on stroke, the respondents were least likely to believe that men have a higher risk than women. A study supports this notion since stroke occurrence among men and women depends on age. Stroke incidence is higher among women at younger ages, while stroke incidence slightly increases among older men.[28] Additionally, the occurrence of stroke is noted to be higher in women than in men, which is linked to women living longer, and the risk of stroke increases as age increases.[21]

Furthermore, the community recognizes stroke as least likely as a form of punishment or a fate because they can understand pathophysiological processes with their experiences or observations among those who have experienced such. As this is a fatal non-communicable condition, a series of information education campaigns done by government agencies and non-government organizations are observed on various platforms. In a study by Rasura et al., stroke educational campaigns have what it takes to expand knowledge and cognizance, and become a catalyst for behavioral change among individuals.[29] The researchers define lifestyle as the characteristics of community residents in a special time and place. It includes a day-to-day behaviors and functions of individuals in jobs, activities, fun, and diet. Problems like metabolic diseases, cardiovascular diseases, hypertension, and overweight have a relationship to stroke, and an unhealthy lifestyle can cause this problem.

Larsson et al. had similar findings about families with a history of hypertension, high cholesterol levels, diabetes, heart failure, or atrial fibrillation. The authors have concluded that a healthy lifestyle is associated with a substantially reduced risk of stroke in men at higher risk of stroke.[30] This indicates assisting the community in making healthy lifestyle choices that include a healthy diet, healthy weight, being physically active with 2 hours and 30 minutes of moderate-intensity aerobic physical activity, such as a brisk walk, each week.

Smoking remains the most important preventable cause of stroke in the Philippines. So public education must emphasize gradual quitting of smoking. Too much alcohol intake must be limited as alcohol is associated with stroke risk. It must also be emphasized that being overweight and obese, and leading a sedentary lifestyle may increase the risk of developing hypertension and diabetes, two risk factors for stroke. Since the community respondents are aware of these risk factors, then this awareness must be reinforced by health care workers to maintain and sustain these attitudes toward healthy living.

According to the World Health Organization, people working 55 or more hours each week face an estimated 35% higher risk of a stroke compared to people following the widely accepted standard of working 35 to 40 hours a week.[1,31] Thus, having a high-stress job, particularly one that is demanding but offers little personal control, may raise the risk of a stroke. Results of the present study imply that the community who have experienced work-related stress are now careful not to overwork themselves and to take restful periods because their awareness of being overworked and stressed in their job are risk factors for the occurrence of stroke.

Moreover, Branyan and Sohrabji have reported that there are co-morbidities and socio-demographic factors that contribute to the greater prevalence of and poorer outcomes after stroke in older females. Older females have a greater prevalence of and worse outcome after ischemic stroke than do males and younger females, which is attributed to the loss of estrogen after menopause, suggesting that certain risk factors tend to occur more often in older females, such as hypertension and atrial fibrillation, while others more adversely affect females than they do males, such as diabetes and smoking.[32] Sex-specific risk factors, such as oral contraceptive use and menopause, could also contribute to the discrepancy in stroke prevalence and outcome.

Consistently, aging is the most robust non-modifiable risk factor for incident stroke, which doubles every 10 years after age 55 years.[33] As the number of people aged ≥ 65 years is projected to grow, the number of incident strokes in older adults is expected to rise. Co-morbidities significantly influence subsequent hospital readmission, functional recovery, and mortality. Thus, it is good to note that the community is aware that as they age, they may develop diseases and may experience stroke, so their experience can become evidence or proof that they can use as they share information about healthy living with their neighbors. Health workers must emphasize healthy aging.

Signs and Symptoms of Stroke

The community respondents giving correct answers to the signs and symptoms of stroke may have also resulted from the public education being done by the Department of Health and rendered by the health workers of the barangay, including the health committee. Furthermore, their knowledge could also be due to word of mouth from one resident then spreading on to the others. The monthly health events in the barangay also contributed to the knowledge of the community residents on stroke. Though community respondents gave correct answers to the signs and symptoms of stroke, it was not yet concluded as proper knowledge since there were still percentages of wrong responses and no answers, which must be on the lookout of health professionals, which may further imply more efforts on public education. When the whole community is aware, then each community member becomes a great help in disseminating information (signs and symptoms) of stroke and can respond immediately and appropriately about the warning signs of stroke, thus preventing the occurrence of disability among community residents who are candidates for stroke. The findings imply that the respondents have knowledge of most of the warning signs of stroke; however, the respondents mistakenly recognized paralysis and depression as warning signs of stroke, which further suggests a limited understanding of

the warning signs and temporary or permanent symptoms following a stroke.

Attitudes of Stroke Prevention, Management, and Rehabilitation

The respondents' attitudes on the prevention of stroke imply an understanding of physical activity in the form of exercise, walking, and jogging. The community regards cigarette smoking as increasing the chances of the occurrence of stroke. The avoidance of too much alcohol drinking is favorable for them. These attitudes will be able to avoid the risk factors for stroke occurrence. It will also serve as a reminder to every community member to live a productive life and be a contributing member to community development as they will be able to work and will not be a burden or problem in the community.

The study's findings strongly indicate that the community respondents have received proper public education regarding stroke. Findings also imply that the community believes in scientifically-based management for stroke, including professional care and accepted medicinal herbal remedies, like *bawang*, endorsed by the Department of Health. The regular blood pressure monitoring is a good attitude of the community respondents to manage stroke. A blood pressure check at home is essential to managing high blood pressure.

The community disagrees that faith healing can bring back the everyday life of a stroke patient, which implies that the respondents are turning towards scientific beliefs for stroke rehabilitation. Though faith healing is the practice of prayer and gestures that some believe elicit divine intervention in spiritual and physical healing, the community still brings the client to a hospital or a clinic. The community agrees on some traditional ways of rehabilitation, like the use of massage and herbal medicines, because these bring relief from anxiety caused by the trauma of the stroke and resultant loss of function.

Community respondents also agree with the use of herbal therapy for stroke recovery. This is a good sign because the community advocates herbal medicine, and according to studies, herbal supplements improve blood circulation in the brain and help prevent another stroke. Complementary and Alternative Medicine (CAM) may help with stroke prevention and recovery. CAM treatments include massage, dietary supplements, or acupuncture to manage stress.

Rehabilitation aims to assess and treat people who are at risk of having stroke. Keeping hypertension under control involves quitting smoking and reducing exposure to environmental tobacco smoke, losing weight through a healthy diet, reducing one's dietary sodium intake and increasing one's potassium, calcium, and magnesium intake through supplements, becoming more physically active, and complying with a prescribed medication regimen.

Practices on Stroke Prevention, Management, and Rehabilitation

In a study entitled Religious Faith May Help Stroke Victims, the researchers' analysis revealed that higher scores on the anxiety and depression scale correlated significantly with lower scores on the religious and spirituality questionnaire, and the association remained significant after adjusting for other factors that could influence a stroke patient's degree of emotional distress (such as mental and physical functioning, living conditions and marital status).[34] Dr. Salvatore Giaquinto, chairman of the Department of Rehabilitation at the San Raffaele Pisana Rehabilitation Center, shared that religious people who are active in their communities are more likely to receive external aid that volunteers can provide. The support they receive lets them experience feelings of care, love, and esteem, suggesting that stroke patients are not alone. The study does not establish that religious beliefs will reduce emotional distress. Still, it shows that religious people have better coping abilities, as Dr. Lalit Kalra, a stroke professor at King's College London School of Medicine in Britain, commented.[35]

The community residents are aware of the treatment regimen for stroke, including regular BP check-ups, diet, medications, and exercise. They had been verbalizing that they were adhering to their regimen because of the fear of another stroke event. It is noted that they can make use of the stroke resources that they have in their community, which includes the barangay clinic for their regular blood pressure check and weight checks, the barangay health workers and the midwives whom they get health advice, and also their significant others who support them. The barangay council is also considered a community resource in stroke management because of the medicines that they distribute for their maintenance, the multi-purpose hall where they gather for public education about healthy living, and where they can participate in health lectures and seminars, and events about stroke prevention, management, and rehabilitation.

The community respondents sometimes use *bawang* therapy. Though they have verbalized that *bawang* is good, some do not like the taste and smell of it, but some also emphasized that it lowered their blood pressure by eating it raw. According to Lau et al., daily garlic intake is an independent predictor of endothelial function in patients with severe injury and may play a role in the secondary prevention of atherosclerotic events.[36]

It is also noted that the community sometimes use acupressure, reflexology, and *hilot* therapy. Although reflexology appears to be quite similar to massage, there is much more to it than simply massaging the hands or feet. As observed, reflexologists use specific techniques to trigger reflex points which they say can heal the body organs. The community respondents consider this as *kolkolis*, which results in relaxation that can promote positive changes in the levels of stiffness that they feel on their joins. *Kolkolis*, according to them, can also result in good sleep.

The community respondents sometimes practice acupuncture. Acupuncture involves pricking the skin or tissues with needles to alleviate pain and treat various physical, mental, and emotional conditions. According to them, they go to town to avail of the treatment. Upon further exploration, the community respondents claimed that they had just heard about acupressure but were not practicing it. They do appreciate the benefits of acupressure as explained by the doctor in Baguio City. These therapies can be used to stimulate blood flow and therefore improve overall mobility, decrease fatigue by releasing muscle tension and toxins, reduce cortisol levels, stimulate circulation, decrease lactic acid build-up, deliver oxygen-rich blood to extremities and create warmth, reduce insomnia by creating a more relaxed state, both physically and mentally, and activate the parasympathetic nervous system which is responsible for allowing the body to relax, and alleviating sore, stiff joints, and cramps through better blood supply and circulation.[37-39] Moreover, the positive attitude scores of the members of the family and the community maybe used to provide evidence that caregivers or the stroke patient himself/herself can perform rehabilitative skills because when a family member or the stroke patient feels that they are in any way supported, it is expected that the family and the patient are more likely to participate in stroke rehabilitation practices.

Community Resources

Social support is very evident in the immediate post-stroke period of the victims, where family and community support are present to help the stroke victim go back to his pre-stroke life. It had been shared that stroke patients were found to be challenged by a lack of mobility and failure to perform basic functional activities such as walking and feeding using the affected hand, which resulted in sudden dependence on the spouse for basic self-care and daily activities.[18] In consequence, spouses were burdened by caregiving responsibilities while, on the other hand, most participants had limited access to rehabilitation and health services at the grassroots level. The present study findings show a supportive family and community because these support systems are always there to help in the recovery of the stroke victims, as stroke patients appreciate the presence and assistance of the family members in doing their activities of daily living until such time that they can do them independently. The stroke patients have appreciated the support given by the family. They can understand stroke because of the lectures and home visits.

The Family Systems Theory discussed understanding human functioning that focuses on interactions between people in a family and between the family and the context in which that family is embedded.[40] Family systems theory has been applied to health care where a family member is experiencing an illness; other competent members facilitate collaboration with health care providers, community, and health care systems.[41] In addition, this theory also encloses self-reorganization, which refers to adaptation to the environment. For example, a father loses his job because of a stroke. This prompts the family to reorganize itself around new roles, such as the mother becoming the primary source of income. At the same time, the children can take turns caring for their father. The family's priority becomes the healing of their father. According to Gilbertson and Graves, family systems theory is a theory of human behavior that defines the family unit as a complex social system in which members interact to influence each other's behavior.[42] Family members interconnect, making it appropriate to view the system as a whole rather than as individual elements. Any change in one individual within a family will likely influence the entire system and may even lead to changes in other members. Based on a review by Gilbertson and Graves, parents and other adult caregivers have a dominant effect on the physical and social elements that impact the health of the family members.[42] Caregivers of stroke clients decide the quality of foods brought to the home or eaten at home and decide what, when, where, and how many family members consume. Regarding physical activity, caregivers monitor that stroke clients have an exercise, be it active or passive. Moreover, stroke Filipino patients are cared for by immediate family members or relatives during and after hospitalization, which is closely related to family collectivism, wherein Filipinos strongly value, prioritize, and bond with each member to promote smooth interpersonal relations. This bonding indicates the exchange of ideas within the family in caring for a stroke patient. Caregivers also learn from what they observe from the patient, like the signs and symptoms, and learn from what the health caregivers teach about the nature and causes of stroke. The stroke patient also learns from his/her health condition and reflects on its cause. Sometimes, stroke patients share their experiences with other people, especially with their family members, so that the next generation or other members of the family will not experience his/her condition.

In the Filipino culture, religion has been, and is, a part of society. Faith and praying are acts of communicating with God that Filipinos have been taken for the rehabilitation of those who have experienced illnesses, especially if it is a severe disease that alters the normal functioning of the person, resulting in non-contribution to the family and society. In addition, some studies provided evidence to support the view that faith-based programs positively affect stroke patients' rehabilitation.[34]

The utilization of community resources for stroke prevention, management, and rehabilitation has been evident among the community residents. They recognize the importance of the barangay health clinic, health workers, and community volunteers.

Limitations of the Study

Several limitations transpired, especially during the data-gathering process. Changes in attitudes and practices can occur over time that may outdate the study results. Factors such as media and peer influence may have shaped

attitudes and practices in ways that are difficult to measure. The participants may not accurately remember past behaviors or knowledge, leading to inaccurate data collection.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the researchers conclude that the experience of stroke has assisted in the knowledge acquisition of the community on the nature, signs, symptoms, and causes of stroke. The community has favorable attitudes about stroke prevention, management, and rehabilitation. The community safely practices the prevention, management, and rehabilitation of stroke. Community resources for stroke prevention, management, and rehabilitation are available and are optimally utilized by the community. Social support is very important for stroke prevention, management, and rehabilitation.

The community's statements recognize practices that improved stroke patients, like exercise, traditional *hilot*, and prayers. Recognition of help from other people and the community is needed in providing physical, social, and spiritual support to the family members and the stroke client. Further, participants with stroke would not want another attack; thus, he/she needs to help himself/herself through exercise, massage, and compliance with medication. Post-stroke residents with strong Faith in God is one of their sources of self-trust and confidence for healing to become productive.

The researchers recommend that the community's knowledge, attitudes, and practices on stroke be continuously enhanced, strengthened, and sustained through health promotion and maintenance of a healthy lifestyle. Social support is advocated to be sustained within the community which the researchers need for the successful implementation of the second phase of this study. A developmental study at the community level should be undertaken for stroke prevention, management, and rehabilitation. Lastly, a second phase of this study is needed for implementing the community-based stroke prevention, control, and rehabilitation program.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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REFERENCES

1. World Health Organization, Long working hours increasing deaths from heart disease and stroke: WHO, ILO. [Internet]. 2021. [Cited 2020 January]. Available from: https://www.who.int/news/item/17-05-2021-long-working-hours-increasing-deaths-from-heart-disease-and-stroke-who-ilo.
2. World Stroke Organization, Uniting the stroke community. [Internet]. 2012. Available from: https://www.world-stroke.org/what-we-do/uniting-the-stroke-community/past-congresses.
3. Gonzalez-Suarez CB, Dizon JM, Grimmer K, Estrada MS, Liao LA, Malleta AR, et al. Protocol for audit of current Filipino practice in rehabilitation of stroke inpatients. J Multidiscip Healthc. 2015 Mar 2;8:127-38. doi: 10.2147/JMDH.S61813. PMID: 25784814; PMCID: PMC4356451.
4. MacQueen KM, McLellan E, Metzger DS, Kegeles S, Strauss RP, Scotti R, et al. What is community? An evidence-based definition for participatory public health. Am J Public Health. 2001 Dec; 91(12):1929-38. doi: 10.2105/ajph.91.12.1929. PMID: 11726368; PMCID: PMC1446907.
5. Auriel E. Anatomy and Physiology of Stroke. In: Bornstein NM. Stroke: Practical Guide for Clinicians. Switzerland: Karger. 2009. pp. 1-8. doi: 10.1159/000210267.
6. Brunner LS, Smeltzer SCOC, Bare BG, Hinkle JL, Cheever KH. Brunner & Suddarth's Textbook of Medical-surgical Nursing. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins. 2010.
7. Pandit RB, Mathews M, Sangle S. Assessment of neurological deficit among cerebrovascular accident patient in selected hospital. Int J Health Sci Res. 2017; 7(2):221- 6.
8. Zeng Y, He GP, Yi GH, Huang YJ, Zhang QH, He LL. Knowledge of stroke warning signs and risk factors among patients with previous stroke or TIA in China. J Clin Nurs. 2012 Oct;21(19-20): 2886-95. doi: 10.1111/j.1365-2702.2012.04118.x. PMID: 22985321.
9. A Singh SK, Dhar DK. Knowledge, attitude and practice about the risk factors of ischemic stroke and warning symptoms- A case-control study. J Community Health Manag. 2018;5(4):205-8. doi: 10.18231/2394-2738.2018.0042.
10. Eng JJ, Chu KS, Kim CM, Dawson AS, Carswell A, Hepburn KE. A community-based group exercise program for persons with chronic stroke. Med Sci Sports Exerc. 2003 Aug;35(8):1271-8. doi: 10.1249/01.MSS.0000079079.58477.0B. PMID: 12900678; PMCID: PMC3471946.
11. Evans-Hudnall GL, Stanley MA, ClarkAN, Bush AL, Resnicow K, Liu Y, et al. Improving secondary stroke self-care among underserved ethnic minority individuals: a randomized clinical trial of a pilot intervention. J Behav Med. 2014 Apr;37(2):196-204. doi: 10.1007/s10865-012-9469-2.
12. Alligood MR. (2014). Nursing theorist and their work. 8th ed. Elsevier, Inc. 396-403.
13. Holloway I, Galvin K. Qualitative Research in Nursing and Healthcare, 4th ed. John Wiley and Sons, Ltd. 2010.
14. Creswell J. Research design: Qualitative, quantitative, and mixed methods approaches (2nd ed.). Thousand Oaks, CA: Sage. 2006.
15. Cameron R. A sequential mixed model research design: design, analytical and display issues. Int J Mult Res Approaches. 2009;3: 140-52. doi: 10.5172/mra.3.2.140.
16. Municipality of Tuba, Barangay Camp Four. [Internet]. 2016. Available from: http://tuba.gov. ph/index.php/barangays/camp-4#.
17. Cordillera Administrative Region, Cordillera Administrative Region Health Profile. [Internet]. 2015. [cited 2018 February 14]. Available from:http://caro.doh.gov.ph/wp-content/uploads/2016/11/CORDILLERA-ADMINISTRTATIVE-REGION-2015-health-profile.pdf
18. Lincoln YS, Guba EG. Naturalistic Inquiry. Newbury Park, California: Sage Publications, Inc. 1985. doi: 10.1016/0147-1767(85)90062-8.

19. Apitz-Castro R, Badimon JJ, Badimon L. Effect of ajoene, the major antiplatelet compound from garlic, on platelet thrombus formation. Thromb Res. 1992 Oct 15;68(2):145-55. doi: 10.1016/0049-3848(92)90030-e. PMID: 1475777.
20. Kolb AY, Kolb DA. Experiential learning theory: A dynamic, holistic approach to management learning, education and development. In: Armstrong SJ, Fukami C, eds. Handbook of management learning, education and development. 2011. doi:10.4135/9780857021038.n3.
21. Kuriakose D, Xiao Z. Pathophysiology and treatment of stroke: present status and future perspectives. Int J Mol Sci. 2020 Oct 15;21(20):7609. doi: 10.3390/ijms21207609. PMID: 33076218; PMCID: PMC7589849.
22. Mvula H, Chisambo C, Nyirenda V, Geis S, Glynn JR, Crampin AC, et al. Community-level knowledge and perceptions of stroke in rural Malawi. Stroke. 2019 Jul;50(7):1846-9. doi: 10.1161/STROKEAHA.119.025105. PMID: 31164071; PMCID: PMC6594749.
23. Logan A, Faeldon L, Kent B, Ong A, Marsden J. A scoping review of stroke services within the Philippines. BMC Health Serv Res. 2024 Aug 30;24(1):1006. doi: 10.1186/s12913-024-11334-z. PMID: 39215352; PMCID: PMC11363380.
24. Dar NZ, Khan SA, Ahmad A, Maqsood S. Awareness of stroke and health-seeking practices among hypertensive patients in a tertiary care hospital: a cross-sectional survey. Cureus. 2019 May 28;11(5):e4774. doi: 10.7759/cureus.4774. PMID: 31367493; PMCID: PMC6666879.
25. Booth J. Evidence of perceived psychosocial stress as a risk factor for stroke in adults: a meta-analysis. BMC Neurology 2015;15:233. doi: 10.1186/s12883-015-0456-4.
26. Ramirez-Moreno, J. Association between self-perceived psychological stress and transitory ischaemic attack and minor stroke: a case–control study. Neurología (English Edition). 2020;35(8):556-62. doi: 10.1016/j.nrleng.2017.09.004.
27. Kaddumukasa M, Kayima J, Nakibuuka J, Mugenyi L, Ddumba E, Blixen C, et al. A cross-sectional population survey on stroke knowledge and attitudes in Greater Kampala, Uganda. Cogent Med. 2017;4(1):1327129. doi: 10.1080/2331205X.2017.1327129. PMID: 31098388; PMCID: PMC6516782.
28. Navarro JC, Baroque AC 2nd, Lokin JK, Venketasubramanian N. The real stroke burden in the Philippines. Int J Stroke. 2014 Jul;9(5):640-1. doi: 10.1111/ijs.12287. PMID: 24844610.
29. Rasura M, Baldereschi M, Di Carlo A, Di Lisi F, Patella R, Piccardi B, et al; Promotion and Implementation of Stroke Care in Italy Project Working. Effectiveness of public stroke educational interventions: a review. Eur J Neurol. 2014;21(1):11-20. doi: 10.1111/ene.12266. PMID: 24102755.
30. Larsson SC, Åkesson A, Wolk A. Primary prevention of stroke by a healthy lifestyle in a high-risk group. Neurology. 2015 Jun 2;84(22):2224-8. doi: 10.1212/WNL.0000000000001637. PMID: 25934859; PMCID: PMC4456657.
31. Reinberg, S. Job stress tied to stroke risk, Study suggests. WebMD. [Internet]. 2015. Available from: https://www.webmd.com/stroke/news/20151014/job-stress-tied-to-stroke-risk-study-suggests
32. Branyan TE, Sohrabji F. Sex differences in stroke co-morbidities. Exp Neurol. 2020 Oct;332:113384. doi: 10.1016/j.expneurol.2020.113384. PMID: 32585156; PMCID: PMC7418167.
33. Yousufuddin M, Young N. Aging and ischemic stroke. Aging (Albany NY). 2019 May 1;11(9):2542-4. doi: 10.18632/aging.101931. PMID: 31043575; PMCID: PMC6535078.
34. Stoddard, E. Religious faith may help stroke victims: study. Reuters. 2007 Aug 10; Retrieved from https://www.reuters.com/article/world/religious-faith-may-help-stroke-victims-study-idUSN12313231/
35. Brainin M, Feigin V, Bath PM, Collantes E, Martins S, Pandian J, et al. Multi-level community interventions for primary stroke prevention: A conceptual approach by the World Stroke Organization. Int J Stroke. 2019 Oct;14(8):818-25. doi: 10.1177/1747493019873706. PMID: 31500553.
36. Lau KK, Chan YH, Wong YK, Teo KC, Yiu KH, Liu S, et al. Garlic intake is an independent predictor of endothelial function in patients with ischemic stroke. J Nutr Health Aging. 2013 Jul;17(7):600-4. doi: 10.1007/s12603-013-0043-6. PMID: 23933870.
37. Li X, Wang Q. Acupuncture therapy for stroke patients. Int Rev Neurobiol. 2013;111:159-79. doi: 10.1016/B978-0-12-411545-3.00008-0. PMID: 24215922.
38. Kang, HS, Sohyune, RS, Kang, JS. Effects of Meridian Accupressure for Stroke Patients in Korea. J. Clin. Nurs. 2009 July 06. 18.15. https://doi.org/10.1111/j.1365-2702.2008.02522.x
39. Lämås K, Häger C, Lindgren L, Wester P, Brulin C. Does touch massage facilitate recovery after stroke? A study protocol of a randomized controlled trial. BMC Complement Altern Med. 2016 Feb 4;16:50. doi: 10.1186/s12906-016-1029-9. PMID: 26846253; PMCID: PMC4743203.
40. Watson, W. Family Systems. In Encyclopedia of Human Behavior (Second Edition). [Internet]. 2012. [cited 2020 January]. Available from https://www.sciencedirect.com/topics/medicine-and-dentistry/family-systems-theory
41. Shen J, Zhao S, Horn T, Benkart R, Busch T, Vrabec A, et al. Family matters: a systematic review and meta-analysis on the efficacy of family-oriented interventions for children with acquired brain injuries. Clin Psychol Rev. 2023 Feb;99:102218. doi: 10.1016/j.cpr.2022.102218. PMID: 36401964; PMCID: PMC9839654.
42. Gilbertson S, Graves B. The role of caregivers and families. Lifestyle in Heart Health and Disease. 2018;35-46. doi: 10.1016/B978-0-12-811279-3.00004-5.