Family Awareness toward Stroke Risk Factors among Patients with Hypertension

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Abstract

Background: Family awareness toward stroke is vital to confront the lack of information and practices regarding hypertension, stroke, and its associated factors for early stroke prevention. **Aim of the study:** This study aimed to assess family awareness toward stroke risk factors among patients with hypertension. **Research Design:** A descriptive analytical design was used. **Setting:** This study was conducted in the outpatient clinic and the Triage room in the emergency department at Manshiat El Barky General Hospital at Heliopolis Medical Area (Northeast of Cairo)in Egypt. **Subjects**: A purposive sample consisted of 365 patients with hypertension with family caregivers. **Tool of data collection:** One tool utilized to collect data; was a structured interviewing questionnaire, divided into 4 parts (demographic characteristics, medical history, family knowledge and practicals. **Results**: The present study revealed that 78.4% of the studied families had unsatisfactory knowledge levels regarding hypertension. 73.4% of the studied families had unsatisfactory knowledge levels about risk factors of stroke. 82.5% of the studied families had inadequate practice levels regarding hypertension to avoid stroke risk. **Conclusion:** the study results concluded that, the studied family caregivers had poor knowledge and inadequate practice regarding caring of their hypertensive patients and regarding to preventing stroke occurrence. **Recommendation:** Provide an education program through mass media concerning hypertension and methods of preventing stroke occurrence.

Keywords: Family awareness , stroke, hypertension.

Introduction:

Hypertension is a public health problem facing all countries worldwide and one of the leading causes of morbidity and mortality as it is responsible for 7.5 million premature deaths worldwide. Known as the “silent killer”, it is often diagnosed incidentally, affecting 31% of the world’s adult population. The European and American guidelines set the target blood pressure below 130/80 mm Hg (***Chakraborty et al., 2021)*.**

Hypertension is characterized by persistent high blood pressure.It is a systemic disease that causes serious complications and is an important health problem because it is common in the community. Untreated hypertension has been shown to increase the rate of heart failure, coronary heart disease, hemorrhagic and thrombotic stroke, renal failure, peripheral artery disease, aortic dissection, and death **(Şahinarslan, et al.,2022).**

Stroke is an acute cerebrovascular disease caused by many factors, and it is the second largest cause of death in the world. Untreated hypertension increases the risk of stroke seven times, diabetes, dyslipidemia, cardiovascular disease and unhealthy lifestyle are all risk factors of stroke. After understanding the relationship between hypertension and stroke among which hypertension is recognized as the main modifiable risk factor of stroke. In order to better observe and explore the risk probability and risk factors of stroke in hypertension patients.

The guidelines of the American Stroke Association also believe that controlling the risk factors of stroke is an effective prevention and control strategy for stroke (***Pu et al., 2023).***

Stroke has a significant impact on physical, mental, and social wellbeing of the individual life. It not only affects the individual,

but it also places a caregiver burden on family members, and the direct cost of stroke management and indirect loss of productivity from both the affected individual and their caregivers is enormous, resulting in a high social burden. Stroke is an enormous financial burden not only for patients but also for society as a whole by placing a great demand on family members and caregivers. Therefore, public stroke knowledge is the key point in stroke prevention (***Kuriakose & Xiao, 2020).***

The knowledge of stroke warning signs and risk factors has been found to be important for early treatment of stroke and prevention of stroke, which reduces mortality due to stroke and improves prognosis for stroke survivors. To a large extent, stroke is a preventable condition, there are many modifiable risk factors of stroke. Prevention strategies that focus on modifiable factors such as hypertension, diabetes mellitus, smoking, unhealthy diet, and sedentary physical activity practices can reduce the stroke burden by up to 80% (***Clare et al., 2023).***

Although healthcare providers may know the prevention of stroke and control the major risk factors, patients' lack of knowledge about risk factors for experiencing new events of stroke is a contributing factor to poor adherence to medical advice and treatment. Whereas, awareness of stroke risk factors and warning signs is important for stroke prevention and seeking care for hypertensive patients, ultimately reducing the occurrence of stroke. Patients living with chronic non-communicable diseases like hypertension are at high risk of developing strokes. Almost half of the stroke survivors were diagnosed with hypertension, and one fifth of them died in the hospital ***(Al-Senani et al., 2020).***

The stroke burden cannot be diminished without sufficient public knowledge and the right attitude and practices regarding different aspects of Stroke or cerebrovascular accident. In addition, lack of knowledge of stroke's risk factors, symptoms are the possible causes of unfavorable outcomes. Stroke survivors' and their family members' awareness and attitude may affect their practices towards stroke complications and can play a nonnegligible role in the path of rehabilitation and prevent or minimize the occurrence of sequelae ***(Farpour et al., 2024).***

Significance of the study

Hypertension is a major reversible clinical obstacle leading to increased morbidity and mortality globally. It affects approximately 1.3 billion people and is responsible for 7.5 million deaths a year. Despite the progress in effective medical treatment, there has been a doubling in the incidence of Hypertension (HTN) worldwide, especially in low and middle-income countries with a deficiency in controlling blood pressure (BP). According to the USA registry, 47% of adults have hypertension, and 24% of patients with hypertension aren't controlled. The burdened cost was estimated at 131 billion dollars in the USA each year. (***Chakraborty et al., 2021).***

Stroke is a highly prevalent disease. According to the World Health Organization, around 15 million people, worldwide, suffer from stroke each year. Among those 5 million die and another 5 million are permanently disabled. Four out of five strokes occur in the low- and middle-income countries. Stroke has been shown to be a major cause of death and disability in all societies irrespective of communities (industrial, agricultural, urban, or rural). The incidence of stroke rapidly increases with age, doubling for each decade after age 55. Among adults ages 35-44, the incidence of stroke is 30-120 of 100, 000 per year, and for those ages 65-74, the incidence is 670-970 of 100, 000 per year (***Pu et al., 2023).***

In Egypt, hypertension is highly prevalent and is estimated to affect about, 29.2% of the adult population had hypertension, and only 27.1% achieved control. About two thirds of that hypertensive population has other cardiovascular risk factors leading to aggravated cardiovascular morbidity and mortality. Hypertensive population remain at high risk for developing hypertension-mediated organ damage such as premature Stroke or cerebrovascular accident and chronic kidney disease ***(Elbarbary et al., 2023).***

In Egypt, the incidence of stroke is 240/100,000 (250,000 new stroke patients per

year), 10% of whom die very early within 1-month post-stroke, and the remainder is left with variable degrees of disabilities which necessitate big changes in stroke logistics face this public health problem. One of the most important influencing factors is the residence which greatly affects stroke literacy and the best way of dealing with early stroke patients.***(Mahmoud Ebrahim et al., 2023)***

Aim Of The Study

This study aimed to:

Assess family awareness toward stroke risk factors among patients with hypertension through:

1- Assessing family knowledge regarding to hypertension disease.

2- Assessing family knowledge toward stroke risk factors among patients with hypertension.

3- Assessing family practical's with patient with hypertension to avoid stroke risk.

Research questions:

1.What is the family knowledge regarding hypertension disease?

2.What is the family knowledge toward stroke risk factors among patients with hypertension?

3.What the family practice regarding patient with hypertension to avoid stroke risk?

SUBJECTS AND METHODS:

I)Technical design:

The technical design used for the study included research design, setting, subjects, and tools for data collection.

A. Research design:

A descriptive analytical design was conducted to achieve the aim of this study and to answer the research questions.

B. Study setting:

The current study was conducted in the outpatient clinics and triage room in the emergency department, Manshiat El Bakry General Hospital (a government hospital affiliated with the ministry of health) at Heliopolis Medical Area -North East of Cairo, Egypt. The Outpatient clinics was consisted of two clinics; a male clinic located on the second floor while a female clinic located on the first floor and a triage room located in the first floor in the emergency department, Manshiat El Bakry General Hospital.

C. Subjects:

The subjects (patients with hypertension with family caregivers) of this study were obtained by purposive sample technique from the previously mentioned setting 5600 from outpatient and 1800 from emergency room these are the statistics for the in the year 2021

D. Sample size calculation

The sample size for total population of 7400 patients with hypertension was 365 patients with hypertension which confidence level 95%.

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

n=sample size

z=the standard score

d= the error rate

p= Property availability and neutral ratio

N=size of population

Sites	Number of hypertensive patients in Sample
Outpatient	365/7400*5600=276
Emergency	365/7400*1800=89

Inclusion criteria:

All patients with hypertension over the age of 60 years old, from both sexes and with family caregivers.

E. Tools of data collection:

One tool was utilized for data collection, developed by the investigator after reviewing the relevant and recent literature related to hypertension, and stroke risk factors. The tool was used to collect the data required and it was written in simple Arabic language and used for the face-to-face interview.

Tool: interviewing questionnaire: (Appendix I)

Data were collected using the following four parts included.

Part I: Demographic characteristics:

It consisted of two subparts as the following:

Demographic data of patients with hypertension and Demographic characteristics of the family caregivers.it was consisted of a total fourteen questions.

A. Demographic characteristics of patients with hypertension:

It consisted of six questions as the following: age, gender, marital status, educational level, job (occupation) and monthly income, this section included **(Q1-Q6)**

B-Demographic characteristics of the family caregivers:

It consisted of eight questions as the following: caregiver (relations with the patient), numbers of hours of stay with the patient, age, gender, marital status, educational level, job (occupation) and monthly income, this section included (**Q7-Q14)**.

Part II: Medical history:

It consisted of three subparts as the following:

Family medical history of patients with hypertension, past medical history of patients with hypertension and present medical history of patients with hypertension.it was consisted of total twenty eight questions.

A) Family medical history of patients with hypertension:

It consisted of six questions include: "family history of hypertension, their relationship of kinship, family history of stroke, their relationship of kinship, history of other disease and their relationship of kinship " (**Q15-Q20)**

B) Past medical history of patients with hypertension:

It consisted of fifteen questions include: "the duration of the disease**,** level of elevated blood pressure, the symptoms that appeared on the patient as a result of hypertension, Action after diagnosed hypertension, history of other disease, types of comorbidities, complications related to hypertension, types of complications, admission to emergency room, last time of admission to the emergency room Emergency Room for hypertension, numbers of time go to the emergency room in years, having health insurance, smoke cigarettes, number of cigarettes per day and Numbers of years of smoke cigarettes " (**Q21-Q35)**

C) Present medical history of patients with hypertension:

It consisted of seven questions include: "weight, height, the mass index, the last blood pressure reading, change in lifestyle due to hypertension, types of change in lifestyle due to hypertension and the level of dependence on caregivers during the daily care" (**Q36-Q42)**

Part III: Family's knowledge related to hypertension and stroke:

a) Assessment family's knowledge regarding hypertension disease: It was adapted from ***(Mohamed, 2020)*** and it was aimed to assess family's knowledge regarding hypertension. It consisted of eight questions include "meaning of hypertension, normal range of blood pressure, risk factors that lead to hypertension, causes of hypertension, symptoms of hypertension, complications of hypertension, hypertension medications can be replaced with herbal(hibiscus) and sources of information about hypertension " (**Q43-Q50)**

b) Assessment family's knowledge toward stroke; it was adapted from ***(Bhat et al., 2021)*** it was aimed to assess family's knowledge regarding stroke among patients with hypertension**.** It consisted of four questions as the include" meaning of stroke, warning signs of a stroke that require immediate medical attention, complications of a stroke and sources of information about stroke" **(Q51-Q54)**

c) Family knowledge regarding stroke risk factors among patients with hypertension: it was aimed to assess knowledge regarding risk factors of stroke. It consisted of forty items with eight factors **(Q55-Q94)** as the follows;

- **Biological factors** which include two items as; age and gender.

- **Genetic factors** which include one item as; family history for stroke.

- **Physical (health) factors** which include eight items as; history of hypertension, stroke, high blood sugar, heart attacks, atrial disease, sickle cell disease, irregular heartbeat and obesity.

- **Behavioural factors** which include four items as; smoking, malnutrition, lack of movement and exercise and sleep disorder.

- **Environmental factors** which include ten items as; the roads are not paved to the house, no phone near the bed, risks of falling, The presence of curly or matt carpets, No railings for stairs, Lack or weakness of lighting in the house, Lack of prosthetic devices such as wheelchairs and movement supports, Not paying attention to ventilating the house permanently, Not taking care of the cleanliness of the house constantly and The lack of pure water.

- **Psychological factors** which include four items as; the feeling of isolation, depression and nervousness, excess anxiety and stress and Feeling helpless and insecure.

- **Social factors** which include eight items as; family disintegration as a result of the sons' preoccupation, the age problems, Psychological or mental disorder, Flabby or obesity, Constipation and wilting, Headache and nervousness, Insomnia and Worrying about the future.

- **Economic factors** which include three items as; lack of financial resources because of retirement, high prices and the absence of social security or an effective insurance system.

-Scoring system for total Family's knowledge

Each correct answer scored (1) and each incorrect answer scored (0), the total knowledge score was summed up and converted into score as:

- Satisfactory knowledge if score ≥ 60%
- unsatisfactory knowledge if score <60%

Part IV: Family reported practice regarding hypertension to avoid stroke risk

It was aimed to assess families' practices regarding avoiding stroke risks among patients with hypertension and included seven main parts

(Q95-Q133) as follows;

- **Monitor blood pressure** which include two questions as the following: place of blood pressure monitored and steps to measure blood pressure **(Q95-Q96)**

- **Proper nutrition** which include two questions as the following: determine type of diet he follows and foods should be avoided for a patient with high blood pressure **(Q97-Q98)**

- **Exercising** which include two questions as the following: determine what type of physical activity is the patient currently doing and numbers of times do physical activity **(Q99-Q100)**

- **Quit Smoking** which include two items as the following: if the patient smoke, has he considered quitting smoking and (steps) to quit smoking **(Q101-Q102)**

- Dealing with psychological stress which include two questions as the following: dealing with psychological stress and numbers of hours of rest or sleep per day **(Q103-Q104)**

- Safe housing which include one question as the following: the precautions for the ease of life at home and avoid the risk of stroke **(Q105)**

- Periodic follow-up (medicines-analysis-examinations) which include twenty eight questions as the following: go to continuous follow-up according to the doctor's instructions, numbers of visits the doctor for follow-up, taking medication according to the doctor's instructions and problems in taking medication (**Q106-Q133)**

- Scoring system for Family reported practice regarding hypertension to avoid stroke risk

Each correct answer scored 1 and each incorrect answer scored 0, the total practice was summed up and converted into score as:

- Adequate practical if score ≥ 60%
- Inadequate practical if score <60%

Tools validity and reliability:

a) Tool validity:

It was established for assure of content validity by a panel of five experts in community health nursing who revised the tool for clarity, relevance, comprehensiveness, simplicity, and applicability; minor modifications were done and the final forms were developed.

b) Tool Reliability:

In the present study, reliability was tested using Cronbach's alpha coefficients

Items	No.of cases	No.of variables	Alpha cronbach
Knowledge Hypertension	365	47	0.706
Knowledge Stroke	365	65	0.787
practice	365	142	0.756

II-Operational design:

The operational design of the study three main phases:

a) Preparatory phase
b) Pilot study
c) Field work.

A) Preparatory phase:

During the preparatory phase starts prior to development of the tool by reviewing up the literature of national and international resources (books, articles and internet's periodicals and journals) related to the study to develop tools for data collection.

B) A pilot study:

A pilot study was carried out August 2022; it involved 10% of the expected total sample size (36) of Family with patient with hypertension. To test clarity of included questions and statement, content validity, feasibility and consistency of tools and also helped to know the time needed for filling the tools. Minor changes were done in the tools based on the results of the study. These were in the form of some rewriting some items to increase their clarity; the tool was then finalized. The time needed to fill out the tool was about 30 to 45 minutes. Family with patient with hypertension were not included in the actual study sample.

C) Field work:

Field work of this study was started and completed within six months from beginning of September (2022) to the end of February (2023). During this period all the data were collected from the study subjects.

The approval to conduct the study was obtained orally from Family members' after explaining the aim of the study.

The investigator started by introducing herself to family members, the aim of the study and the component of tools were explained the purpose of the study to family members at the beginning of data collection. Voluntary

participation and confidentiality were assured by investigator for each Family with patient with hypertension through clarifying to them that all information will be used for scientific research only.

Outpatient clinics operate 7days a week from 8 A.M to 8 P.M and The Triage room in Emergency department working 7days- 24hours per week at Heliopolis Medical area (North East of Cairo) in Egypt namely department in Manshiat El Bakry general hospital.

The investigator visited the outpatient clinic and The Triage room in Emergency department 3 days weekly (Sunday, Tuesday and Thursday) during the morning from 9 A.M to 2 P.M. by rotation. The aim and the process of the study was explained to the participant and data was collected by using the previously mentioned tools. The questionnaire was fulfilled by participant.

The investigator met 365 family of hypertension patient who agreed to be involved in the study sample.

The investigator started the interview with each family individually using the data collection tool.

The investigator collecting family's knowledge and practices as reported by the family.

The structured interviewing questionnaire sheet was read, explained and choices were refilled by investigator from each participant in the study individually.it took about 30 to 45 minute to be filled.

III-Administrative design:

An official permission was obtained by submission of official letters issued from the dean of faculty of nursing, Ain shams University to the director of Manshiat El Bakry general hospital at Heliopolis medical area (North East of Cairo), Egypt. The title and aim of the study was explained as well as the main data items and the expected outcomes.

Ethical considerations:

The study was conducted with careful attention to ethical standards of research and rights of the participants, approval from the research ethics committee at the faculty of nursing Ain Shams University

Ethical code : 25.02.557

- **Informed consent:**

An official permission from all participants' written consent was taken after full explanation of the aim of the study. The participant was given the opportunity to refuse participation, and were informed that the right to withdrawal at any time from the study during data collection.

The participation's confidentiality were kept, the study wouldn't be harmful at any of its stages and used for the research purpose only.

- **Anonymity and confidentiality:**

The respondent was assured that the data was treated as strictly confidential, furthermore, the respondent anonymity was maintained as they were not requiring mentioning their names.

- **Scientific honesty:**

To insure scientific honesty, the researcher used bucketing and intuiting to avoid bias.

IIII-Statistical analysis

Descriptive statistics were used to summarize demographic characteristics of the patients. Data were revised, coded, analyzed, and tabulated using number and percentage distribution and carried out using the Statistical Package for Social Sciences (SPSS) version 26. Appropriate statistical methods were applied (percentage, mean and standard deviation, chi square test, and Pearson correlation). Regarding P value, it was considered that: non-significant (NS) if **P> 0.05, Significant (S) if **P< 0.05, Highly Significant (HS) if** P< 0.01.

Results:

Figure (1). Reveals that 78.4% of the studied families had unsatisfactory knowledge level regarding hypertension. While 21.6% of them had satisfactory knowledge level regarding hypertension.

Figure (2). shows that 73.4% of the studied families had unsatisfactory knowledge level about risk factors of stroke. While 26.6% of them had satisfactory knowledge level about risk factors of stroke.

Figure (3).Shows that 82.5% of the studied families had inadequate practice level regarding their total practice about hypertension to avoid stroke risk.. While, 17.5% of them had adequate practice level regarding their total practice about hypertension to avoid stroke risk. Hypertension

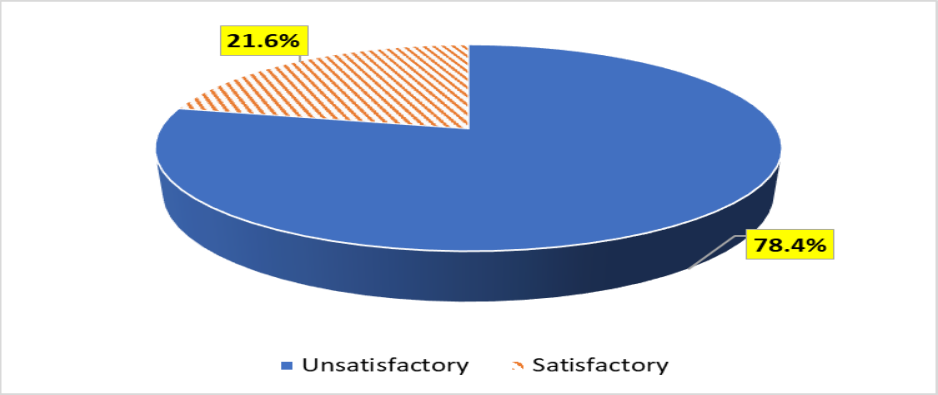

Figure (1): Percentage Distribution of family regarding their total knowledge about hypertension (N=365).

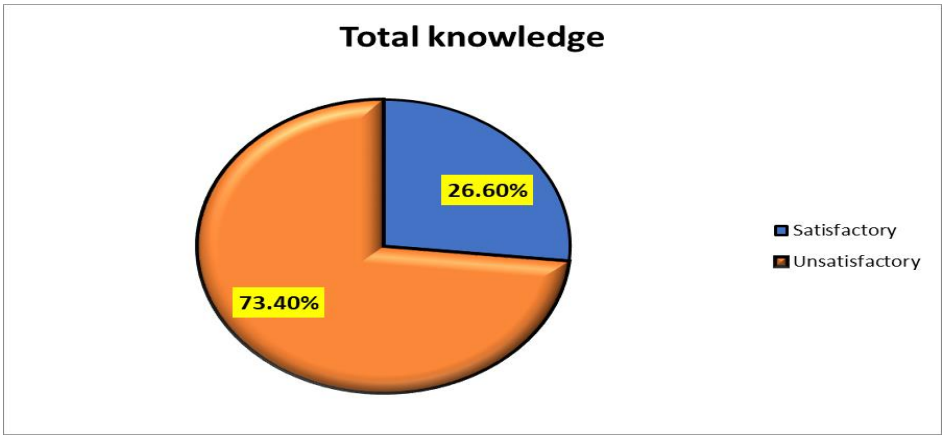

Figure (2): Number and percentage Distribution of family regarding their total knowledge about risk factors of stroke (N=365).

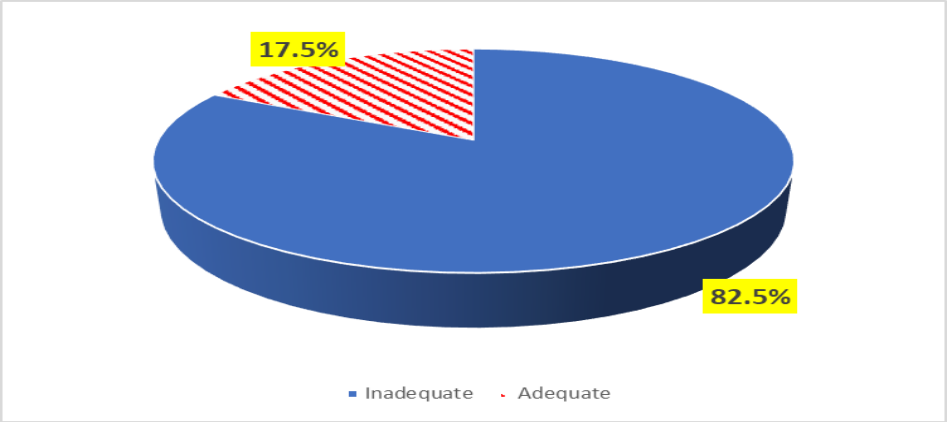

Figure (3): Percentage Distribution of family regarding their total practice about hypertension to avoid stroke risk (N=365).

Discussion:

In relation to total knowledge of hypertension, the present study represented that more than three- quarters of the studied families had an unsatisfactory knowledge level regarding hypertension, (**figure 1).**This study was similar to ***Guo & Lyu, (2023)*** study entitled "Assessment of patient knowledge about stroke risk factors in western India," who conducted a study in India with a sample size of 374 and reported that less than two-thirds of the studied family caregivers had unsatisfactory information levels regarding hypertension. this finding was agree with ***Seangpraw & Ong-Artborirak, (2020)*** who conducted a study entitled "Comparative study to assess the knowledge regarding hypertensive patients rural and urban areas of Wardha district," who conducted the study in India, sample size 600, and found that less than one- quarter of the studied family caregivers had satisfactory knowledge levels regarding hypertension.

From the researcher point of view, this result may be due to limited health education and lack of access to reliable medical information. Many relied on informal sources or personal experience rather than professional guidance.

Concerning family caregivers' total knowledge about stroke and risk factors of stroke, the present study reported that less than three-quarters of the studied families had an unsatisfactory knowledge level about stroke and risk factors of stroke **(figure 2).** This study was supported by ***Qian, (2023)*** who conducted a study entitled "A Study to Assess the Knowledge Regarding stroke risk factors ,"who conducted study at Karnataka State, sample size 134, which reported that more than half of the studied family caregivers had unsatisfactory knowledge levels regarding stroke. Contrariwise, this finding was in disagreement with ***Aziz et al., (2022)*** that conducted a study entitled "Effect of health education about care of stroke patients on the burden of family care providers and their quality of life. ," who conducted study at Egypt, sample size 615 and mentioned that more than two-thirds of the studied family caregivers had satisfactory knowledge levels regarding stroke.

Concerning family caregivers' reported total practice about hypertension to avoid stroke risk, the present study revealed that the majority of the studied families had inadequate practice levels to avoid stroke risk. While the minority of them had adequate practice levels regarding hypertension to avoid stroke risk (**figure 3**). This study was in agreement with ***Ibrahim et al., (2021)*** study entitled "Risk factors of stroke in eldrly ," who conducted a study in Saudi Arabia with a sample size of 450 and mentioned that most of the studied family caregivers had inadequate practice levels regarding caring for patients with hypertension and stroke. Also, this result was on the same line with ***Abo El Hussien et al., (2022)*** who conducted a study entitled "Assessment of care provided by family

caregivers for post stroke patient at home," who conducted the study in Minia with a sample size of 211 and revealed that more than one-third of the studied family caregivers had adequate practice levels regarding caring for patients with stroke.

From the researcher point of view, this result may be due to limited health awareness and lack of proper education on stroke prevention. Additionally, cultural beliefs and misinformation may hinder the adoption of healthy lifestyle practices.

Conclusion

Based on findings of the present study, it can be concluded that more than three-quarters of the families studied had an unsatisfactory level of knowledge regarding hypertension and more than half of them had an unsatisfactory level of knowledge regarding stroke risk factors**.** And less than three-quarters of the families included in the study had an unsatisfactory level of total knowledge about stroke and stroke risk factors**.** Additionally, the majority of families included in the study had inadequate practices level to avoid stroke risk. Moreover, there was strong positive correlation between total knowledge and total practices regarding avoiding stroke risk.

Finally, concluded that, the studied family caregivers had poor knowledge and inadequate practices regarding awareness of their hypertensive patients and regarding to preventing stroke occurrence.

Recommendation

Based on the findings of the present study, the following suggestion can be recommended:

- Health education through mass media concerning hypertension and methods of preventing stroke occurrence.

- Developing a simplified illustrated and comprehensive booklet for improving patients and their family caregivers' knowledge and practice regarding hypertension and preventing stroke.

- Develop a team of discharge plan to be responsible about providing the patients and their family caregivers with the knowledge and practice about hypertension care and stroke prevention.

- Activate telehealth services to improve patients with hypertension and their family caregivers' knowledge regarding hypertension and preventing stroke.

- Create a program to increase practicals of family caregivers about high blood pressure to avoid the risk of stroke

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