STROKE CAREGIVERS' PREPARATION PROGRAM: EVIDENCE- BASED NURSING

JOTSNA AKTER

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Jotsna AK
.....
Mrs. Jotsna Akter
Candidate

Wimolrat Puwarawuttipanit
.....
Asst. Prof. Wimolrat Puwarawuttipanit,
Ph.D. (Neuroscience)
Major advisor

.....
Asst. Prof. Orapan Thosingha,
D.N.S.
Co-advisor

B. Mahaisavariya
.....
Prof. Banchong Mahaisavariya,
M.D., Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

Fongcum Tilokskulchai
.....
Assoc. Prof. Fongcum Tilokskulchai,
Ph.D. (Nursing)
Program Director
Master of Nursing Science
Faculty of Nursing, Mahidol University

Thematic Paper
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was submitted to the Faculty of Graduate Studies, Mahidol University for the degree of Master of Nursing Science (Adult Nursing)
on
November 24, 2014

Jotsna Ak
.....
Mrs. Jotsna Akter
Candidate

Orapan Thosingha
.....
Asst. Prof. Orapan Thosingha,
D.N.S.
Member

Aurawamon S.
.....
Asst. Prof.Aurawamon Sriyuktasuth,
D.S.N.
Chair

Teeranut Harnirattisai
.....
Asst. Prof.Teeranut Harnirattisai,
Ph.D. (Nursing)
Member

Wimolrat Puwarawuttipanit
.....
Asst. Prof. Wimolrat Puwarawuttipanit,
Ph.D. (Neuroscience)
Member

B. Mahaisavariya
.....
Prof. Banchong Mahaisavariya,
M.D., Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

Fongcum Tilokskulchai
.....
Assoc. Prof. Fongcum Tilokskulchai,
Ph.D. (Nursing)
Dean
Faculty of Nursing
Mahidol University

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Jotsna Akter

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JOTSNA AKTER 5538726 NSAN/ M

M. N. S. (ADULT NURSING)

THEMATIC PAPER ADVISORY COMMITTEE: WIMOLRAT PUWARAWUTTIPANIT, Ph.D. (NEUROSCIENCE). ORAPAN THOSINGHA, D.N.S.

ABSTRACT

Stroke is the major health problem all over the world. Stroke caregivers are the people who are primarily involved in helping stroke survivors. The purpose of this study is to summarize available evidence in regard to stroke caregivers' preparation programs and make a conclusion from the evidence. Data sources are reviews based on the related evidence available at the Mahidol University electronic databases from 2004 to 2012. Searching of evidence used the PICO framework by Melnyk and Fineout-Overhold (2005). The search results yielded six randomized control trials, one systematic review, and one quasi-experimental study. The author appraised searched evidence and made a conclusion based on recommendations on stroke caregivers' preparation programs. Recommendations were that the program should be hospital-based, either group or individual, before discharge from hospital to home. Programs were administered by nurses and multidisciplinary teams. Most of the evidence utilized teaching methods, lecture, and demonstration as well as a stroke guidebook The outcome was measured by caregiver strain index. Common contents provide information about stroke, causes of stroke, signs and symptoms of stroke, life style behavior to prevent severity of complications, and technical skills to assist the patients daily living activities. All evidence showed that the caregiver burden was reduced after the program.

Finally, from this study, it is recommended that the stroke caregivers' preparation program should be developed and provided to stroke caregivers in the hospital setting in Bangladesh. Further research to evaluate the effectiveness of caregivers' preparation programs based on evidence should be conducted.

KEY WORDS: STROKE CAREGIVE/ PREPARATION PROGRAM/ EVIDENCE-BASED NURSING

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CHAPTER I
INTRODUCTION

1.1 Background and significance of the problem

Stroke is a major health problem leading to high mortality and morbidity rates among people in their golden years across the globe. Each year, the number of people with stroke increase. Worldwide, 1 out of 6 people suffer from stroke. In developing countries, two-thirds of strokes result in death (Stroke Statistics, 2013**).** Approximately, 610,000 of these strokes were first attacks and 185,000 were recurrent attacks. In the United States in 2006, mortality data indicated that stroke accounted for approximately 1 stroke-related death in every 18 deaths. From 1996 to 2006, the stroke mortality rate fell to 33.5% and the actual number of stroke deaths declined by 18.4% (Lloyd-Jones et al., 2010). Most of the patients returned home after discharge from the hospital with family members who suddenly assumed the caregiver role with great hesitation. The majority of family caregivers do not feel ready for caregiving and are busy in their caregiver roles. Caregivers engage the provision of care as a result of changing lifestyles (King et al., 2012). In Thailand, stroke is also major health problem where the crude death rate from stroke is 10.9⁄100,000 people in the population and on the rise (Oupra, Griffiths, Pryor, & Mott, 2010).

Similar findings in Bangladesh indicate that stroke is a major cause of death and disability. Patients with stroke came from urban areas (54%) and rural areas (46%) with a significant number in low income groups (47%). The incidence of 61% for ischemic stroke and 39% for hemorrhagic stroke according to CT scan reported discovered (Hossain et al., 2011). Therefore, in Bangladesh where the health system and rehabilitation have not reached the scale of ordinary people in developed countries, it is obvious that this devastating condition not only affects the patient but also family members, particularly stroke caregivers who face increased caregiver burdens (Siddiqui, Islam, Iqbal, & Mosharraf, 2013). While rehabilitation programs

are needed for stroke patients, the non-availability of these programs results in impact on family members. Family caregivers suffer more in caring for stroke survivors due to time spent in caring for these patients. While family members attend to patients during hospitalization, little information is received about how to assist stroke survivors at home. As a result, caregivers are insufficiently trained, poorly informed and dissatisfied with the support available after hospital discharge. According to family caregivers' opinions, caregivers in this group suffer both physically and psychologically while working under stress with greater burden and fatigue (Oupra et al., 2010).

After stroke, most patients depend on family members who provide long-term care. Caregivers bear heavy workload concerning patient care. At the time, family caregivers may have negative experiences due to limited knowledge about caring for stroke patients. These negative experiences manifest as emotional instability due to the caring burden with a number of other emotions such as anxiety, depression, stress and strain from the burden of caring for patient with deteriorating health and quality of life (Kim et al., 2012). After stroke, approximately 25 to 74% of stroke survivors require help with for the activities of daily living, including physical, emotional, psychological and social support from family caregivers. As a result, most family caregivers suffer anxiety and depression in caregiving roles (Kalra et al., 2004). Depression is an important problem among the primary caregivers as much as it is for stroke patients, and that care-related factors matter for patient distress. Even though the relationship between patient distress and care related factors are most likely to be joint. Hence, the results of this study support the argument that stroke caregivers require support by proper education (Suh et al., 2005).

Several studies have indicated that caregiver preparation programs are highly effective for stroke patients and caregivers. Providing appropriate and sufficient knowledge is an important support in preparing caregivers for new roles as family caregivers and this can be achieved by specific educational programs. Providing education for stroke caregivers can reduce caregiver strain and enhance quality of life. Studies have also shown that family caregivers who receive preparation programs in hospital just before discharge experience less caregiver strain than those who do not receive preparation programs (Oupra et al., 2010).

Caregivers play an important role in supporting stroke patients who require long-term care to continue self-regulating while living in their own homes and communities. Moreover, caregivers need information about how to effectively manage stroke patients and stroke recovery, thereby promoting better quality of life for stroke patients. Transition assistance programs may be effective intervention to support stroke caregivers during the transition from hospital to home. The evidence showed that the family caregivers who received transition assistance programs had less caregiver strain reduce compared with those who received no such transition assistance programs (Perrin et al., 2010). Other evidence has revealed that family caregivers who participated in preparation programs including stress management and relaxation training while in hospital showed less caregivers' depression than caregivers who did not participate in any preparation programs (King et al., 2012).

Therefore, caregiver preparation programs are a primary source of ongoing care and support for caregivers of stroke patients (Hossain et al., 2011). Trained stroke caregivers experience less caregiving burden, including anxiety and depression, with increased quality of life (Kalra et al., 2004).

1.1.1 Roles of stroke caregivers: There are many roles of stroke caregivers throughout the recovery process (National Stroke Association, 2012).

1) Maintaining the patient's activities of daily living

Assisting with walking and transportation: When stroke survivors suffer an inability to transfer weight from one side of the body to the other in sitting and standing, caregivers play a key role in helping stroke survivors. The patient may begin walking when the patient has some standing balance and movement in a weak leg, then use a walking stick or walker at the right time to help to assist stroke survivors (Denno et al., 2013).

Meal preparation: In adhering to medication instructions, stroke survivors need to eat healthy diets and as an essential part of stroke recovery. Stroke caregivers can play key roles in meal planning. After all vegetables and fruits are bought, washed and precut, meals can be prepared. If patients who are disabled and unable to feed require nasogastric feeding, caregivers play an important role in

preparing food and maintaining nutritional balance (National Stroke Association, 2012).

Bathing: When stroke patients are unable to practice self-care, family caregivers play important roles in regular bathing with soap to prevent skin diseases in stroke survivors (National Stroke Association, 2012).

Dressing: Helping stroke patients get dressed is an easy way to be independent and maintain privacy. If stroke patients are disabled and cannot move themselves, caregivers must change the positions every two hours and change clothes, to ensure that patients wear clean, dry clothes to prevent pressure sores. To make it dressing easier, buy comfortable, loose-fitting clothing (Denno et al, 2013).

Communicating: When patients suffer stroke, speech and language may be affected. Stroke caregivers should be encouraged to have conversations by using fewer words and more gestures, only as necessary. If patients are severely impaired and have difficulty communicating, stroke caregivers should cordially help (National Stroke Association, 2012).

2) Preventing relapse:

Caregiver participation in informed decision-making and treatment planning: Most stroke patients are disabled concerning any decisions about treatment planning. In this situation, caregivers play important roles in making decisions about treatment planning for stroke survivors (National Stroke Association, 2012).

Co-ordinating appointments with healthcare professionals: Caregiver play a key role in helping stroke patients and ensuring that medication is taken properly as prescribed. If any medication-related problems or any side effects occur, caregiver must immediate contact a health care professional (National Stroke Association, 2012).

Monitoring survivor health: Stroke caregivers must always be prepared in addition to remaining aware of pain, dietary instructions, health behaviors and modifiable risk factors potentially leading to a recurrent stroke**.** Caregivers of stroke patients also need to manage financial and end-of life matters, providing encouragement and support for stroke survivors (National Stroke Association, 2012).

Controlling high blood pressure: If blood pressure cannot be lowered by diet and exercise, caregivers play a role in controlling blood pressure by immediately consulting with doctors and obtained advice from a healthcare professional for better management (National Stroke Association, 2012).

Controlling blood cholesterol: When proper nutrition and physical exercise are practiced, but cholesterol levels continue to exceed the normal range, caregivers help stroke survivors seek medical check-ups and take medication or consult with health care professionals to prevent the severity of complications (National Stroke Association, 2012).

Controlling blood sugar: Diabetes is the most important risk factor making people up to four times more likely to have a stroke than people with other health problems. Hence, in this critical situation, stroke caregivers must remain alert to control blood sugar by maintaining diet, medication adherence and discipline (National Stroke Association, 2012).

Smoking cession: Smoking is a double risk for stroke. Hence, if stroke survivors are smokers, caregivers play an important role in motivating stroke survivors to stop smoking and support efforts to quit (National Stroke Association, 2012).

1.1.2 Stroke caregivers' burden: Caregiver burden is defined as the extent to which caregivers perceive emotional**,** physical, health, social and financial aspects of life to be negatively affected due to caring for stroke survivors. Stroke caregivers experience caregiving burden in reference to the adverse personal consequences of caregiving on caregivers' activities or roles as experienced by stroke caregivers (Bergström, Eriksson, Koch, & Tham, 2011). Stroke caregivers experience caregiving burden. Caregiving burden refers to the adverse personal consequences of caregiving on caregivers' activities or roles. Stroke caregivers who have depressive symptoms and low educational attainments will experience more caregiving burden while providing care (Tang, Lau, Mok, Ungvari, & Wong , 2011).

Most caregivers reported personal health as being 'poor or fair'. Caregivers' health is related to caregivers' caregiving burden and depression. According to a recent study, approximately 40% of caregivers were diagnosed with

additional health problems such as diabetes mellitus, gynecological problems and backaches (Kamel, Bond, & Froelicher, 2011). Most of the time, caregivers are engaged in caregiving duties. Therefore, caregivers experience role changes from spouses or daughters to caregiver of stroke survivor. As a result, family caregivers may neglect personal health because they are always busy with stroke survivors' routine activities and refuse to follow up with personal or routine health promotion practices. In the current example, the majority of caregivers reported that they had difficulties sleeping while providing care stroke survivors. As a result, there were many problems and caregivers were constantly awakened which made them more vulnerable to fatigue and caregiver burden (Kamel et al., 2011).

1.1.3 Factors related to caregiver burden: Stroke caregiver burden leads to various problems in caregivers' living. The flowing factors are related to caregivers' burden: unemployed patients, comorbidities, patients with aphasia, dysarthria, dysphagia, cognitive dysfunction, depression, urinary incontinence, patient's age, gender, level of education, marital status, monthly income, presence of hypertension and sensory deficit (Choi-Kwon, Kim, Kwon, & Kim, 2005). If patients suffer from stroke over a long period of time, caregivers also have greater burden. If patients are older, age may be related to their functional abilities and caregivers will have greater burdens (Carod-Artal, Coral, Trizotto, & Moreira, 2009).

1.1.4 Impact of providing care: Caregivers who provide care for stroke survivors can find caregiving a difficult task. Providing help for physical activity may place demands upon the caregivers' physical strength, result in psychological problems, and result in persistent effects on family and social relationships (Salter, Zettler, Foley, & Teasell, 2010). A number of impacts can occur. In other words, stroke not only kills patients but has several impacts on family caregivers such as the following;

1) Physical impact on stroke caregivers: The caregiver has no necessary support and a shortage of time can result in nervous strain while causing the caregiver to suffer other health conditions such as hypertension, diabetes mellitus, cardiac problems, arthritis, and back problems (Hassan, 2009).

2) Psychological impact: The burden of family caregivers can be directly related to anxiety, depression psychological problems and mental health problems (Denno et al, 2013). Long hours spent in providing care not only have physical and psychological impact, but also emotionally kill stroke caregivers because stroke is a chronic disease requiring the provision of long-term care. As a result, caregivers are likely to worry at all times and have difficulty providing care (Hassan, 2009). Caregivers experience more stress with many symptoms such as depression, loneliness and other emotional problems (Draper et al., 2007). Caregivers' strain affects patient-caregiver relationships due to resignation from employment, current income, cognitive and perceptual problems, personality changes and swallowing problems (Hassan, 2009).

3) Social and economic impact: Caregivers have more marital difficulties and most have negative attitudes toward spouses (Draper et al., 2007**).** A heavy financial burden arises during the treatment of stroke patients. It is an unexpected financial burden including loss of income (Denno et al., 2013). The family suffers many financial burdens because most caregivers do not work at other jobs when providing care for stroke survivors. Hence, caregiving also has great economic impact on stroke caregivers (Stroke Statistics, 2013).

For the above reasons, caregivers may feel severe anxiety, depression, stress and strain eventually leading to burden and changes in health status (Choi-Kwon et al., 2005). Kamel and the others (2011) have found that caregivers who suffer more anxiety and depression have more burdens in providing care for stroke survivors.

1.1.5 Needs of stroke caregivers to participate in caregiver preparation programs: Some evidence has been found to support that caregivers would be better able to comply with their roles and feel less stress if given the chance to participate in any preparation program (Kim et al., 2011; MacIsaac, Harrison, Buchanan, & Hopman, 2011). Nurses require a slightly different focus on stroke prevention, diagnosis, treatment, rehabilitation and management, while it remains important for the family to understand the patient's risk factors and the

pathophysiology behind the stroke. The focus is on self management at home for both family and patient (Cameron, 2013).

This basic need for caregivers to participate caregiver preparation programs stems from caregivers' need for extra time to provide complete care. Caregivers have a great opportunity to participate with multidisciplinary healthcare teams. Many needs are recognized and planning can include multidisciplinary team members such as physiotherapists in demonstrating the technique for physical activities, demonstration in activities of daily living performance by occupational therapists. Speech-language pathologists can demonstrate communication and swallowing strategies (MacIsaac et al., 2011). If caregivers participate in preparation programs the time spent in nursing can be reduced through teaching and coaching informal caregivers while ensuring that individual family members meet needs in learning how to care for stroke survivors. The formulation of a comprehensive specialized plan for stroke caregiver preparation program identification of specific individual needs is required for successful transition from in-patient to home care. Hence, caregivers can participate in preparation programs to meet many needs, including the following (MacIsaac et al., 2011).

1) Psychosocial Needs: All caregivers should recognize needs in this area. Most stroke caregivers suffer psychological problems and the majority of caregivers fulfill psychological needs with health care professionals. However, ninety percent reported unmet needs in being able to speak to the healthcare team (MacIsaac et al., 2011). When family caregivers are psychologically satisfied, their caregiving burden decreases and they provide appropriate care for stroke survivors (MacIsaac et al., 2011).

2) **Emotional Needs:** It is also important for family caregivers to recognize emotional needs. Many caregivers are emotionally distressed while providing care for stroke survivors. This is another domain where all caregivers recognized unmet needs. In this domain, the caregivers reported needs to include dealing with stress and anxiety, sadness and grief and the fear of a recurrent attack (MacIsaac et al., 2011).

3) Practical Needs: Most stroke survivors are dependent on a family member for activities of daily living performance. Most of the caregivers in the

present study reported practical needs to be exact needs in providing care for stroke survivors. If the caregivers participated in a caregiver preparation program, all practical needs were met (MacIsaac et al., 2011).

4) **Informational and Spiritual Needs:** Stroke caregivers fulfill their most important needs in this stage for understanding of stroke treatment, prevention and assessment of information regarding support for both patients and family members. Therefore the caregivers' need to participate in a preparation program can fulfill needs for all kinds of information (MacIsaac et al., 2011).

1.2 Clinical problem of the study

Stroke is a neurological disorder affecting patients and caregivers in physical, psychological, emotional, social, and economic dimensions potentially leading to mortality. The number of patients suffering from stroke increases daily in Bangladesh. Bangladesh is a developing country where most people live in rural areas where immediate access to medical facilities is unavailable. In addition to being more expensive for family caregivers, the burden for family caregivers also increases daily.

The author works at Saheed Suhrawardt Medical College Hospital, a tertiary Medical College Hospital. Many patients come with different complexities and numerous health problems. Of these, the hospital records stroke among the top ten diseases in the number of admissions. Cerebrovascular disease is the first in those top ten diseases in which the total admission rate was 12,761 patients. Out of the top ten diseases, stroke has the highest admission rate at 1,747 patients. The majority of stroke patients was also found to be disabled with requirements for ongoing support from family members in daily living (MOHFW, 2013).

From the author's work experience in the above clinical setting, most stroke caregivers have limited knowledge about caring for patients with stroke, patients discharged from hospital and patients readmitted to hospital. Stroke caregivers have no knowledge about the modifiable risk factors leading to comorbidity, severity of complications and recurrent attacks. Hence, the indication is that more preparation is required to acquire the necessary knowledge about the

caregiver burden to prevent severity of complications and readmission to hospital. However, most nurses do not provide sufficient education to stroke patients and caregivers because shortage of nurses and work load. Nurses do not utilize evidence-based practice and do not follow any evidence-based guidelines to reduce the caregiver burden, because in Bangladesh have no any evidence-based guideline among caregivers of patient with stroke. In this situation, the author recognizes the need to find evidence-based caregiver preparation programs that are applicable to the current setting. As a result, the setting will have a caregiver preparation program with best practice methods to reduce caregiver burden among caregivers for patients with stroke. According to much of the evidence obtained, caregiver preparation programs are most important to increase caregivers' knowledge and skills in managing the problems encountered by stroke survivors in addition to improving well-being for patients and caregivers (Mores et al., 2013; Tang et al., 2011). For caregivers participating in an education program during discharge from hospital to home offers an effective support mechanism associated with reduced caregiver strain (Perrin et al., 2010).

In Bangladesh, no caregivers' preparation programs are available. Therefore, the author would like to review the best available evidence and summarize the contents regarding caregiver preparation programs among caregivers of patients with stroke.

1.3 Purpose of the study

To summarize all related available evidence on stroke caregiver preparation programs and draw conclusions on recommendations based on the evidence obtained.

1.4 Expected benefits of the study

1.4.1 After completion of the study, the contents synthesized from the evidence can be used as recommendations for stroke caregivers' preparation programs.

1.4.2 The guidelines on stroke caregiver preparation programs can be further developed and implemented in the clinical setting in Bangladesh.

CHAPTER II
METHODOLOGY

The purpose of this study aimed to review samples of evidence-based practice involved with stroke caregivers' preparation programs. This study was based on the samples of evidence-based practice available at the Mahidol University electronic databases. The author used a search strategy to search and select evidence for this study. All of the selected samples of evidence-based practice were related to caregivers' preparation programs and measured the effects of the program in reducing the caregiver burden among adult patients with stroke. All of the related samples of evidence-based practice were evaluated for quality and feasibility by considering the setting and circumstances, health care resources, caregivers' preferences and values. In this chapter, the author describes the search strategy, evaluation methods and level of evidence according to the following steps:

2.1 Search Strategy

The search for samples of evidence based practice to reduce caregiver burden among adult patients with stroke used the PICO framework (Melnyk & Fineout-Overholt, 2005).

2.1.1 Search framework: After searching, the author selected samples of evidence-based practice for the caregivers' preparation program to reduce caregiver burden among adult patients with stroke by using the PICO Framework (Melnyk & Fineout-Overholt, 2005) as follows:

P (Population)	=	Caregiver of adult patients with stroke.
I (Intervention)	=	Preparation program.
C (Comparison)	=	Usual care.
O (Outcome)	=	Caregiver burden.

2.1.2 Scope of search: The samples of evidence-based practice on stroke caregivers' preparation programs for reducing caregiver burden among caregivers of adult patients with stroke were discovered within the following scope

1) Keywords used in the search according to the PICO frame work: The search used a Boolean operator for each PICO element and collected any synonyms by connecting terms with "OR", then located citations relevant to all of the PICO elements by linking with "AND".

P (Population) = "Stroke caregivers" or "Stroke career" or "Family caregivers" or "Informal caregiver"or "Primary caregivers".

I (Intervention) = "Preparation program" or "Education program" or "Training program" or "Supportive program"

O (Outcome) = "Caregiver burden" or "Stress" or "Strain" or "Depression" or "Anxiety"

2) The databases/Sources used for the search were as follows: Stroke caregiver preparation programs for reducing care-giving burden among adult patients with stroke based on validated evidence-based practice yielded by searching within the following scope:

In the Mahidol University Library system, the author used electronic databases/sources such as the Search Cumulative Index to Nursing and Allied Health (CINAHL), High Wire Ovid Full Text, Pro Quest nursing, Pub Med, Science Direct, and Springer Link which were used to search for single research studies , while the Cochrane Database was used to conduct a systematic review for the search.

3) Types of evidence: The author searched for systematic reviews, high quality single randomized controlled trials (RCT) and quasi-experimental studies acquired from full text studies published in English from 2004 to 2014.

2.2 Appraisal methods and level of evidence:

After obtaining the samples of evidence-based practice related to stroke caregivers' preparation programs for use as empirical samples of evidence-based

practice, the author evaluated the quality and strength of samples of evidence-based practice according to evaluation methods and level of evidence, then checked with the author's major advisor. The critical evaluation of samples of evidence-based practice and level of samples of evidence-based practice was carried out in line with Melnyk & Fineout- Overholt (2011) as described below:

2.2.1 Critical appraisal method: Critical evaluation was done by answering three questions as part of a rapid critical appraisal process in which studies were evaluated for validity, reliability and applicability to answer the following clinical questions (Melnyk & Fineout-Overholt, 2011):

1) Are the results of the study valid? (Validity): Evidence validity means whether the evidence was conducted through scientific method and able to scientifically answer to the questions in the study. Therefore, it is vital to evaluate the quality of the study methodology. The researcher needs to determine whether or not the study it was conducted properly. Its validity must be determined. To evaluate the study validity, possible sources of bias need to be identified. In addition, the possibility of confounding variables in the study design needs to be evaluated. Example randomization is an important step for the validity of an intervention, and makes it more likely that the results will be valid because it minimizes bias and potential impact of confounding variables. Thus, an appropriate random assignment process to minimize bias is needed to ensure the study's validity. In addition, invalid measurement tools can introduce measurement bias.

2) What are the results? (Reliability): Reliability means dependence on accuracy, honesty, consistency, achievement and repeatability in order to ensure that anyone can perform the same experiment by using similar equipment and conditions with exactly the same outcome. The reliability can be assessed by intervention effects by considering both the clinical significance of the results and the statistical significance of the findings. Thus, it is important not only to understand the research findings, but also to evaluate their reliability.(Melnyk, & Fineout-Overholt, 2011).

3) Will the results help in caring for patients? (Applicability): This third critical evaluation question includes asking whether the subjects in the study are similar to the patients for whom care is being delivered, whether or not the benefits are

greater than the risks of treatment, whether or not the treatment is feasible for implementation in the practice setting, and where or not the patients want the treatment (Melnyk & Fineout-Overholt, 2011).

2.2.2 Levels of evidence: The studies were identified for their level of evidence to evaluate the strength of evidence. Levels of evidence were classified in seven levels as described below (Melnyk&Fineout- Overholt, 2011):

Table 2.1 Levels of evidence

Level of evidence	Source of empirical evidence
Level I	Evidence from a systematic review or a meta-analysis of all RCTs or evidence from guidelines developed from a systematic review of research evidence from randomized control trials.
Level II	Evidence obtained from at least one RCT.
Level III	Evidence obtained from at least one well-designed controlled trial without randomized assignment.
Level IV	Evidence from well-designed case controlled and cohort studies.
Level V	Evidence from a systematic review of descriptive and qualitative studies.
Level VI	Evidence from a descriptive or qualitative study.
Level VII	Evidence from expert consensus on the issues or and/or a report written by an expert committee.

CHAPTER III
FINDINGS

The search results and summary of the samples of evidence-based practice are described concerning the intervention and its effects on stroke caregivers' preparation programs on caregivers' burden among adult patients with stroke. The details are described as follows:

3.1 Search results:

The author searched Mahidol databases for the samples of evidence-based practice on stroke caregivers' preparation programs. After completion of the search for the samples of evidence-based practice based on the search strategies, the author found 30 relevant samples of evidence-based practice from CINAHL, PubMed, Pro Quest and Science Direct. After revising the findings, eight studies were included in this study and the other 22 studies were excluded because the study outcomes were not about the caregivers' burden among caregivers of adult patients with stroke. Some of the studies did not clearly describe the interventions. The eight studies selected included one systematic review, six randomized controlled trials and one quasi-experimental study. A list of the selected samples of evidence-based practice with their respective levels of evidence is shown in Table 3.1.

Table: 3.1 Level and type of selected evidences:

Author, year and title	Types of evidence	Level of evidence
Oupra, R., Griffiths, R., Pryor, J. & Mott, S. 2010/ Effectiveness of supportive educative learning program on the level of strain experienced by caregivers of stroke patients in Thailand.	Quasi-experimental research	III

Table: 3.1 Level and type of selected evidences (cont.)

No	Author, year and title	Types of evidence	Level of evidence
2	Mudzi, W. 2010/ Impact of caregiver education on stroke survivors and their caregivers	RCTs	II
3	Perrin, P. B., Johnston, A., Vogel, B., Heesacker, M., Vega-Trujillo, M., Anderson, J., & Rittman, M. 2010/ A culturally sensitive transition assistance program for stroke caregivers: Examining caregiver mental health and stroke rehabilitation.	RCTs	II
4	Schure, L. M., Heuvel, E. T. P.V. D., Stewart, R. E., Sanderman, R., Witte, L. P.D., & Jong, B. M-de. 2006/ Beyond stroke: Description and evaluation of an effective intervention to support family caregivers of stroke patients	RCTs	II
5	King, R, B., Hartke, R. J., Houle, T., Lee, J., Herring, G., Alexander-Peterson, B. S., & Raad, J. 2012/ A problem-solving early intervention of stroke caregivers': One year follow-up.	RCTs	II
6	Kalra, L., Evans, A., Perez, I., Melbourn, A., Patel, A., Knapp, M., & Donaldson, N. 2004/ Training careers of stroke patients: Randomized controlled trail.	RCTs	II
7	Smith, J., Forster, A., & Young, J. 2004/ A randomized trial to evaluate an education program for patients and careers after stroke.	RCTs	II
8	Brereton, L., Carroll, C., & Barnston, S. 2007/ Interventions for adult family careers of people who have had a stroke: A systematic review.	RCTs	II

Each sample of evidence-based practice was summarized as follows:

Evidence No. 1

1.1Title: Effectiveness of supportive educative learning programs on the level of strain experienced by caregivers of stroke patients in Thailand.

1.2 Author: Oupra, R., Griffiths, R., Pryor, J. & Mott, S. (2010).

1.3 Publication source: Health and Social Care in the Community, 18 (1), 10–20 doi: 10.1111/j.1365-2524.2009.00865.x

1.4 Objectives: The objectives of this evidence were to develop and implement a nurse-led supportive educative learning program for family caregivers of stroke survivors in Thailand and to evaluate the effects of the supportive educative learning program for family caregivers on family caregivers' strain and quality of life.

1.5 Methodology:

1) Design: Quasi experimental research**;** pretest and post test design.

2) Setting: The study was conducted in two hospitals in different cities in Thailand**.**

3) Population: Caregivers of adult patient with stroke.

4) Sample: A total of 140 stroke survivors and 140 family caregivers were recruited with 70 patient/ caregiver pairs assigned to each group.

5) Duration: During June 2005–January 2006 at the intervention hospital.

6) Instrumentation: Outcome measured by the Caregiver Strain Index (CSI).

1.6 Components of preparation program

1) Program: Effectiveness of supportive educative learning program.

2) Teaching strategy: Lecture, group discussion, demonstration and hands-on practice with relatives.

3) Number of sessions and program duration: First session 60 minute, second session, 60 minutes, and last session 50 minutes and up to 3 months follow by telephone.

4) Performance: The nurse researcher and two research assistants perform the program.

5) Program setting: Hospital-based group program

6) The stroke caregivers' preparation program covered the following topics:

6.1 Explanation of the meaning of stroke.

6.2 Description the causes of stroke.

6.3 Stroke risk factors.

6.4 Stroke-related complications.

6.5 Methods for prevention or reducing the severity of complications.

6.6 Position during feeding via nasogastric tube.

6.7 Management of swallowing difficulties and urinary incontinence.

6.8 Foley's catheter care.

6.9 Walking assistance techniques.

1.7 Results: The family caregivers who attended the preparation program showed less care giver strain ($p < 0.001$) in comparison with the control group with improved quality of life following discharge ($p=0.006$) and at the three-month follow-up ($p<0.001$) than caregivers who did not attend the intervention.

Evidence No. 2

2.1 Title: Impact of caregiver education on stroke survivors and their caregivers.

2.2 Author: Mudzi, W. (2010).

2.3 Objectives: This evidence had the objective of establishing the impact of caregiver education on the morbidity of stroke survivors and the quality of life of stroke survivors and their caregivers'.

2.4 Methodology:

1) Design: Randomized control trial.

2) Population: Caregivers' of adult patients with stroke

3) Sample: A total of 200 patients and their caregivers.

4) Setting: Chris Hani Baragwaneth Hospital, Soweto, Johannesburg, South Africa.

5) Instrumentation: Caregiver Strain Index (CSI).

2.5 Components of preparation program

1) Program: Education program on stroke survivors and their caregivers.

2) Teaching strategy: Lecture and demonstration

3) Number of sessions and duration: Approximately 45 minutes in a training session just before discharge from the hospital; training assistants visited the patients at three months as part of the follow-up assessment.

4) Performance: Three physiotherapists' and one occupational therapist.

5) Program setting: Hospital-based individual training program.

6) The stroke caregivers' preparation program covered the following topics:

6.1 Explanation of the meaning of stroke.
6.2 Stroke etiology.
6.3 Stroke risk factors.
6.4 Warning signs of a stroke.
6.5 Consequences of a stroke.
6.6 Prevention of complications and management options.
6.7 Stroke-related problems and preventive methods.
6.8 Lifting and handling techniques for stroke patients.
6.9 Back care for patients with stroke.
6.10 Shoulder care.
6.11 Techniques for mobility and transfers of the patient
6.12 Assistance techniques with activities of daily living

2.6 Results: The caregivers' who received the education program just before discharge from hospital had less caregivers' strain ($p < 0.001$) in comparison with those who did not receive the education program.

Evidence No. 3

3.1 Title: A Culturally sensitive transition assistance program for stroke caregivers: Examining caregiver mental health and stroke rehabilitation.

3.2 Authors: Perrin, P. B., Johnston, A., Vogel, B., Hesacker, M., Vega-Trujillo, M., Anderson, J. & Rittman, M. (2010).

3.3 Publication source: Journal of Rehabilitation Research and Development, 47, 605-616. doi:10.1682/JRRD.2009.10.0170

3.4 Objectives: The objectives of this study were to develop and implement the Transition Assistance Program (TAP) for stroke caregivers. The program was composed of (1) skills development; (2) education and (3) supportive problem-solving.

3.5 Methodology

1) Design: Randomized control trial.

2) Population: Caregivers' of adult patients with stroke.

3) Sample: Stroke patients and their caregivers' (n = 61 in each pair group) participated with thirty-nine from Puerto Rico and twenty-two from Texas.

4) Instrumentation: Caregiver Strain Index (CSI), and Version 10 of the Center for Epidemiologic Studies Depression (CESD-10).

3. 6 Components of the preparation program:

1) Program: Transition assistance program for stroke caregivers:

2) Teaching strategy: Stroke guidebook and videophone technology

3) Number of sessions and duration: Guidebook with chapters and three-month follow-up via video phone call after discharge.

4) Performance: A clinical interventionist; the San Juan site had a master's level of physical therapist. The Houston site had a doctoral level nurse practitioner.

5) Program setting: The transition assistance program focused on the transition period and began just prior to discharge from the hospital.

6) The stroke caregivers' preparation program covered the following topics:

6.1 Definition of stroke.

6.2 Signs and symptoms of stroke.

6.3 Prevention of secondary attacks.

6.4 Provision of care for stroke patients after discharge.

6.5 Promotion of recovery from stroke and prevention of disability.

3.7 Results: The stroke caregivers who received the transition assistance program had decreased caregiver strain ($p < 0.01$) and depression ($p< 0.01$) compared with the control group.

Evidence No. 4

4.1 Title: Beyond stroke: description and evaluation of an effective intervention to support family caregivers of stroke patients.

4.2 Authors: Schure, L. M., Heuvel, E. T. P.V. D., Stewart, R. E., Sanderman, R., Witte, L. P.D., & Jong, B. M-de. (2006).

4.3 Publication source: Patient Education and Counseling, 62:46–55.

4.4Objectives: To evaluate the strengths and weaknesses of a group support program and a home visiting program for family caregivers of stroke patients.

4.5 Methodology:

1) Design: Randomized control trial.

2) Setting: Rehabilitation clinics and media in four regions of the Netherlands.

3) Population: Caregivers' of adult patients with stroke.

4) Sample: Hospital group program (n= 83) stroke caregivers' and home visits (n=44 stroke caregivers).

5) Duration: February 1995 to June 1996.

6) Instrumentation: Outcome measured by Robinson's Caregiver Strain Index.

4. 6 Components of preparation program

1) Program: Group support program and a home visiting program for family caregivers of stroke patients.

2) Teaching strategy and teaching materials: Counseling and education strategies for helping family caregivers' deal with emotional and practical problems. Teaching materials used for intervention manual and guidebook.

3) Number of sessions and program duration: Eight session group program and four session home visiting program.

4) Performance: The program was performed by the nurses.

5) Program setting: Group program at the office of the home care service in the nearest city, and home visit program at home.

6) The stroke caregivers' preparation program covered the following topics:

6.1 Explanation of the meaning of stroke.

6.2 Complications of stroke for patients.

6.3 Consequences of stroke for patients.

6.4 Consequences of stroke for caregivers

6.5 Taking care of stroke patients.

6.6 Explanation of the meaning of stress.

6.7 Coping with and relieving stress.

6.8 Risk factors for stroke.

6.9 How to maintain lifestyles and financial effectiveness.

6.10 Techniques for assisting patient lifting.

6. 11 Communication techniques.

6.12 Assistance on the social map of where to get help.

6.13 Relaxation techniques and exercises.

6.14 Explanation about how to achieve a more balanced way of life.

6.16 Demonstrate and organize an enjoyable day.

4.6 Results: The caregivers' preference for type of intervention revealed that both types of intervention had supporters. The effectiveness of the program comparison between the individual home visits and the group support program showed that caregivers were more benefited by the group support program, especially with respect to informational and emotional components.

Evidence No. 5

5.1 Title: A problem-solving early intervention for stroke caregivers: One year follow-up.

5.2 Authors: King, R, B., Hartke, R. J., Houle, T., Lee, J., Herring, G., Alexander-Peterson, B.S., & Raad, J. (2012).

5.3 Publication source*:* Rehabilitation Nursing, 37(5). doi: 10.1002/rnj.039

5.4 Objectives: To assess the efficacy of a caregiver problem-solving intervention on stroke caregiver physical and psychological adaptation compared with a wait list in the control group.

5.5 Methodology

1) Design: Randomized control trial.

2) Setting: The study was approved by the intuitional review boards at two free-standing rehabilitation hospitals and rehabilitation units in two hospitals.

3) Population: Caregivers' of adult patients with stroke.

4) Sample: Stroke caregivers' (n=136).

5) Inclusion criteria: Caregivers and patients with stroke who were discharged from hospital. Primary caregivers' living with stroke survivors. Caregivers not involved in a support group or therapy. Access to a telephone and sufficient hearing to use a phone. Survivors and caregivers aged over 21 years.

6) Instrumentation: Outcome measured by Center for Epidemiologic Studies Depression Scale (CES-D).

5. 6 Components of program

1) Program: Intervention for stroke caregivers.

2) Teaching strategy and materials: Provision of handouts for tailored information and problem-solving technique role play. Material used for teaching stroke management booklets and manual guides.

3) Number of sessions and program duration: The program consisted of 10 sessions; the first two sessions started at hospital admission with 3 to 7 sessions with weekly contact by telephone.

4) Performance: The program was performed by a multidisciplinary team with a nursing practitioner and a psychological doctoral student.

5) Program setting: Caregivers of patients with stroke in hospital

6) The stroke caregivers' preparation program covered the following topics:

6.1 Stress management for stroke caregivers.

6.2 Early problem-solving techniques for stroke caregivers.

6.3 Descriptions of depressive symptoms and management.

6.4 Explanation of self-care management.

6.5 Description of family roles.

6. 6 Emotional and social impact of care-giving.

6.7 Preventive methods for complications.

6.8 Cognitive and coping strategies.

5.7 Results: The stroke caregivers' who received the problem-solving early intervention had decreased depression p=.035 and life change p=.033 than those who did not receive the program.

Evidence No. 6

6.1Title: Training caregivers of stroke patients: Randomized controlled trial.

6.2 Authors: Kalra, L., Evans, A., Perez, I., Melbourn ,A., Patel, A., Knapp, M., Donaldson, N. (2004).

6.3 Publication source: Biomedical Journal, 328, 1-5.

6.4 Objectives: The objective of this evidence was to evaluate the effectiveness of training caregivers in reducing the burden of stroke caregivers.

6.5 Methodology

1) Study design: Randomized controlled trial.

2) Setting: Stroke rehabilitation unit.

3) Population: Caregivers of adult patients with stroke**.**

4) Sample: 300 Stroke patients and care givers. The sample size was randomly assigned two groups, an experimental group (n=151) and a control group (n=149).

5) Instrumentation: This evidence outcome was measured by the Hospital Anxiety and Depression Scale and Caregivers' Burden Scale at 22 for emotional health and the used Euro Qol Visual Analogue Scale for quality of life among stroke caregivers.

6. 6 Components of preparation program

1) Program: Training program for caregivers of stroke patients.

2) Teaching strategy: Provision of information by lecture and demonstration with some technical skills.

3) Number of sessions and duration: Training of caregivers in 3 to 5 sessions in which every session lasted 30-45 minutes. The hospital team conducted a follow-up

4) Performance: Program performed by multidisciplinary team member.

5) Program setting: In-hospital stroke rehabilitation unit.

6) The stroke caregivers' preparation program covered the following topics:

6.1 Information on stroke consequences.

6.2 Prevention and management options for patients with stroke.

6.3 Care of pressure areas to prevent bed sores.

6.4 Care of urinary incontinence.

6.5 Maintenance of patients and caregivers' nutrition.

6.6 Positioning of stroke patients for prevention of pressure ulcers.

6.7 Assistance in the activities of daily living.

6.8 Techniques for the transfer of patients from one place to another.

6.7 Results: The stroke caregivers' who received training experienced less care-giving burden P = 0.0001, with decreased anxiety (p = 0.0001) and depression (P = 0.0001) as well as increased quality of life (P = 0.001).

Evidence No. 7

7.1 Title: A randomized trial to evaluate an education program for patients and caregivers after stroke.

7.2 Authors: Smith, J., Forster, A. & Young, J. (2004).

7.3 Publication source: Clinical Rehabilitation 18:726-736. doi: 10.1191/0269215504cr790oa

7.4 Objectives: To evaluate the effectiveness of an education program for patients and careers in recovering from stroke.

7.5 Methodology

1) Design: Randomized controlled trial.

2) Setting: The setting of this study was a stroke rehabilitation unit in a district general hospital in the north of an English metropolitan city.

3) Population: Caregivers of adult patients with stroke.

4) Sample: Stroke patients (n= 170), intervention group (p = 84), control group (p=86) and caregivers' (n=97) intervention group (p =49) control group (p=48).

5) Duration: 1st March 2000 to 31th January 2002.

6) Instrumentation: Outcome measured by Hospital Anxiety and Depression Scale.

7. 6 Components of preparation program

1) Program: The effectiveness of an education program for patients and caregivers.

2) Teaching strategy: Designed stroke information manual. Stroke Association leaflets were available and prominently displayed in the stroke unit.

3) Number of sessions and program duration: Before discharge from hospital to home (approximately 20 minutes).

4) Performance: The program was performed by a multidisciplinary team with doctors, nurses, physiotherapists and occupational therapists.

5) Program setting: Preparation program arranged in hospital before discharge in ward dayroom.

6) The stroke caregivers' preparation program covered the following topics:

6.1 Information on the background of stroke.

6.2 Stroke etiology.

6.3 Consequences of stroke.

6.4 Recovery of stroke.

6.5 Anxiety management.

6.6 Discussion about patients' progress.

7.7 Results: The education program was associated with a significantly greater reduction in patient anxiety scores at three months (p=0.034) and six months (p=0.021) in comparison with the control group which did not receive any education program.

Evidence No. 8

8.1 Title: Interventions for adult family caregivers of people who have had a stroke: A systematic review.

8.2 Authors: Brereton, L., Carroll, C., Barnston, S. (2007).

8.3 Publication source*:* Clinical Rehabilitation 21, 867–884. doi:10.1177/0269215507078313

8.4 Objectives: This evidence-based practice was conducted with the objective effective interventions for adult family caregivers of people with stroke and an exploratory examination of the relationships between the conceptual basis of these interventions and their effectiveness.

8.5 Methodology

1) Design: Systematic review.

2**)** Population: Caregivers' among adult patient with stroke.

3) Sample: Eight experimental studies.

4) Inclusion criteria: Randomized controlled trials of adult family

5) Caregivers of people post-stroke; caregivers were the primary sample.

6) Setting of the study: From the USA 4 articles, UK 1 article, Sweden 1 article, and the Netherlands 2 articles.

7) Inclusion criteria: Randomized controlled trial, carers were the primary sample.

8) Exclusion criteria: Intervention only education or information-giving; if the evidence was a systematic review, outcome was focused only on cost-effectiveness.

9) Instrumentation: Outcome was measured as such instruments; General health measured by the Short Form 36 (SF-36), depression measured by Center for Epidemiologic Studies Depression Scale (CES-D), burden was measured by the Caregiver Burden Scale (CBS); caregiver strain was measured by the Caregiver Strain Index.

8. 6 Components of preparation program

1) Program: Two study nurse-led support programs and another six studies with caregiver training, a psycho-educational telephone support program, a hospitalized group program and an individualized home visit program with interventions for adult family caregivers (counseling, group program).

2) Teaching strategy: Lecture and video, stroke guidebook, telephone contact, demonstration.

3) Number of sessions and duration: Approximately one-hour counseling session, 3-hour group sessions and telephone contact at home.

4) Performance: Program performed by research nurses and other multidisciplinary team members.

5) Program setting: Total of 8 studies composed of 5 studies conducted in hospital and 3 studies conducted in home visits**.**

6) The stroke caregivers' preparation program covered the following topics:

6.1 Information about stroke.

6.2 Education about stress management.

6.3 Techniques for coping with depression.

6.4 Caring for patients with stroke.

6.5 Impact of stroke.

6.6 Cognitive behavior.

6.7 Demonstration of the personal care technique.

6.8 Knowledge about how to maintain physical and psychological well-being.

6.9 Social problem-solving technique.

8.6 Results: This systematic review covered some studies on training for caregivers and a combination of education and counseling, both with positive effects for caregivers. The training of caregivers improved caregivers' well-being and quality of life by reducing depression, anxiety and burden. The programs also improved caregivers' knowledge. Support groups and home visits led by health education nurses improved caregivers' coping skills such as self-efficacy, confidence in knowledge about patient care and seeking social support. One study revealed that caregiver training significance reduces caregiver burden. The intervention provided by telephone significantly decreased burden e.g. stress and depression.

Appraisal of all samples of evidence-based practice: The author evaluated all of the evidence and confirmed with the thematic paper advisors. A brief summary of the evidence appraisal according to the appraisal methods is provided as follows:

Validity: The first step for the critical evaluation of a review is to establish methodological quality to determine the validity of the findings. Most of the selected samples of evidence-based practice had strength with the samples of evidence-based practice according to the evidence levels with one study at Level I, six studies at Level II and one study at Level III. The study objectives were clearly stated. All of the samples of evidence-based practice had populations comprised of caregivers of patients with stroke with adequate sample size. The intervention program was a preparation program for caregivers of patients with stroke. The validity of the relevant evidence was assessed based on the research process consistency of the research design, data analysis and conclusion. Most of the experimental studies had comparisons with control and experimental groups. Only one study did not randomly assign the sample to either a control or experimental group. This may have caused biases and sources of confounding variables. However, the researcher tried to minimize possible biases. Statistical analysis methods were appropriate and conclusion was clear within the scope of the study.

Reliability: The author assessed the reliability of the selected evidence by considering intervention effects and interpreting the research findings. The preparation program of each selected sample of evidence-based practice statistically and clinically reduced caregivers' burden. Importantly, the results were also consistent among all of the samples of evidence-based practice. The evidence quality in terms of reliability was satisfactory.

Applicability: The author assessed the implications of the selected studies in the clinical setting. According to the findings, the characteristics of caregivers and stroke patients in the studies had quality similar to the characteristics of caregivers and stroke patients in the author's setting. In Bangladesh, however, there may be greater limitations in terms of information technology and instruction. Some interventions utilizing video, phone calls and guidebooks for self-study may not be appropriate for the country.

3.2 Conclusion

3.2.1 Summary of the samples of evidence-based practice: According to the studied samples of evidence-based practice, the preparation programs that were effective for caregiver burden included decreased stress, strain, anxiety and depression with improved quality of life. When caregivers were prepared and educated, they were able to manage their patients and gain ability to cope with their mental stress. Most of the studies revealed that if a caregiver attained the preparation program, they were most benefited and increased their understanding of patient management. The types of preparation programs were different according to the environmental situation and participant's beliefs and values. According to the evidence, the author found that the preparation program can be delivered as hospital-based training programs or a combination of education and counseling before discharge from the hospital. The programs can be either individual or group-based with training followed by individual home visits. The programs can be provided by nursing researchers and multidisciplinary teams. The strategies for the preparation programs included lecture, demonstration, discussion and telephone follow-ups. Among the above strategies, the majority of the studies used lectures and skills training. The teaching materials used were stroke guidebooks, booklets and videos. However, hospital-based group or individual programs were the most appropriate for reducing the caregiver burden in the author's clinical setting. The sessions for the program averaged one to three sessions lasting for 30 minutes to one hour per session.

The common content used in the preparation programs provided information about the meaning of stroke, stroke etiology, risk factors, stroke-related complications, warning signs, signs and symptoms and how to maintain lifestyle and change the modifiable risk factors to prevent secondary attack. Provide skills training about methods to prevent or reduce the severity of complications, describing assistance with the activities of daily living, management of swallowing difficulties, positioning of the patient to prevent bed sores, nasogastric tube feeding and management with swallowing difficulties, stress management technique, Foley's catheter care, patient lifting and handling techniques and techniques for communication with stroke patients. Stroke caregivers' preparation programs are the

most important and a convenient process than pharmacological treatment for every country while creating healthy lifestyles for stroke patients and their caregivers'. Bangladesh is a developing country where most of the people live in rural areas and have extremely limited access to medical facilities. Furthermore, stroke is a chronic disease in which caregivers carry heavier burdens. Thus the perspective of Bangladesh caregivers' preparation program is the most important issue. It is expected that applying these samples of evidence-based practice in clinical practice can reduce the caregiver burden, and complete the mission for stroke caregivers' preparation programs in Bangladesh.

3.2.2 Recommendation from the above the samples of evidence-based practice

1) Caregiver preparation programs should be provided for all caregivers of patients with stroke because of their effectiveness. After program participation, stroke caregivers should gain more knowledge and skills to provide care for patients to enable reduced burden, include reduce strain, stress, depression and anxiety with improved quality of life **(**Brereton et al., 2007/ Level I; Kalra et al 2004/ Level II; King et al., 2012/ Level II; Mudzi, 2010; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Schure et al., 2006/ Level II; Smith et al., 2004/ Level II).

2) Stroke caregiver preparation programs should be performed in hospital-based programs. The programs can be either group or individual. After discharge from hospital, individual home visits or telephone contact should be performed **(**Brereton et al., 2007/Level I; Kalra et al., 2004/ Level II; King et al., 2012/ Level II; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Smith et al., 2004/ Level II).

3) The stroke caregivers' preparation programs should be performed by nurses for effective reduction in caregiver burden among adult patients with stroke (Brereton et al., 2007/ Level I; King et al., 2012/ Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Schure et al., 2006/ Level II; Smith et al., 2004/ Level II). However, other health care personnel such as physiotherapists, occupational therapists, and doctors should be included in the programs for more effective results

(Brereton et al., 2007/ Level I; Kalra et al., 2004/ Level II; Mudzi, 2010/ Level II; Perrin et al., 2010/ Level II; Smith et al., 2004/ Level II).

4) In terms of teaching strategies for stroke caregiver preparation programs, most of the stroke caregivers' preparation programs should be applied in the following methods such as lecture and skills training **(**Brereton et al., 2007/ Level I; Kalra et al., 2004/ Level II; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Schure et al., 2006/ Level II).

5) Teaching materials should be used, e.g. stroke guidebooks, booklets and videos **(**Brereton et al., 2007/ Level I; King et al., 2012/ Level II; Perrin et al., 2010/ Level I; Smith et al., 2004/ Level II).

6) Contents for preparation programs:

6.1 The background and meaning of stroke should be described in stroke caregivers' preparation programs in order to help caregivers understand about the disease (Brereton et al.,2007/ Level I; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Schure et al., 2006/ Level II; Smith et al., 2004/ Level II).

6.2 Complications of stroke should be described in the programs (Brereton et al., 2007/ Level I; Kalra et al., 2004/ Level II; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Schure et al., 2006/ Level II; Smith et al., 2004/ Level II).

6.3 Descriptions of the preventive methods of severity of complications should be described with methods on how to reduce the complications of stroke in order to reduce the caregiver burden (Brereton et al., 2007/ Level I; Kalra et al., 2004/ Level II; King et al., 2012/ Level II; Mudzi, 2010/ Level II; Oupra, Griffiths, Pryor, & Mott, 2010/ Level III; Perrin et al., 2010/ Level II; Smith et al., 2004/ Level II).

6.4 Techniques for assistance during the walking of stroke patients should be demonstrated (Kalra et al., 2004/ Level II; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Schure et al., 2006/ Level II).

6.5 Stress management techniques should be explained in the programs for reducing caregiver stress (Brereton et al., 2007/ Level I; King et al., 2012/ Level II; Schure et al., 2006/ Level II; Smith et al., 2004/ Level II).

6.6 The etiology of stroke should be described to improve caregiver knowledge (Mudzi, 2010/Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Smith et al., 2004/ Level II).

6.7 Stroke caregivers' preparation programs should describe the risk factors of stroke to modify the risk factors and improve the well-being of stroke patients and caregivers' lives (Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Schure et al., 2006/ Level II).

6.8 Demonstrations of the techniques of nasogastric tube feeding and maintain nutritional balance should be recommended (Kalra et al., 2004/Level II; Oupra et al., 2010/ Level III).

6.9 The studies should emphasize skills training to prevent pressure ulcers by position changes (Kalra et al., 2004/ Level II; Mudzi, 2010/ Level II).

7) The number of sessions and the duration of the stroke caregivers' preparation programs at hospital before discharge should cover only one session for 45 to 60 minutes. **(**Brereton et al., 2007/ Level lI; Kalra et al 2004/ Level II; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Schure et al., 2006/ Level II). However, the programs can be provided for up to three sessions with 30 to 60 minutes per session as appropriate for covering all of the topics **(**Brereton et al., 2007/ Level I; King et al., 2012/ Level II; Perrin et al., 2010/ Level I; Smith et al., 2004/ Level II).

8) After discharge from the hospital, caregivers of patients with stroke should receive hospital follow-up until 3 months (Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II).

9) Instrumentation used to evaluate the caregiver burden in stroke caregivers' preparation programs:

9.1 Caregiver burden should be measured by the Caregivers' Burden Scale (Brereton et al., 2007/ Level I; Smith et al., 2004/ Level II).

9.2 Apart from the burden of caregivers, such as strain and stress should be measured by the Caregiver Strain Index (Brereton et al., 2007/ Level I; Mudzi, 2010/ Level II; Oupra et al., 2010/ Level III; Perrin et al., 2010/ Level II; Schure et al., 2006/ Level II).

9.3 Other outcomes such as caregivers ‘depression should be measured by the Center for Epidemiologic Depression Scale (Brereton et al., 2007/ Level I; Kalra.et al., 2004/ Level II; Smith et al., 2004/ Level II).

CHAPTER IV
CONCLUSION AND SUGGESTIONS

4.1 Conclusion

Stroke is a major health problem all over the world. Stroke caregivers are people who are primarily involved in helping stroke survivors. Most caregivers suffer many physical, psychological, emotional, social and economic effects. As a result, caregivers have many burdens, including increased anxiety, depression, stress, strain and reduced quality of life in patients and caregivers. In Bangladesh, health care facilities for patients with stroke are limited. Stroke is a chronic disease requiring long-term specialized care that differs from care for other acute diseases. In the author's work setting, there are no facilities to provide special care for patients with stroke. There are no stroke specialist nurses and no evidence-based practice. Evidence-based practice is essential because it integrates scientific documents, updates information, adds to clinical skills and improves patient values. Hence, evidence-based practice is useful for stroke caregiver preparation programs. The aim of this study was to summarize all related available evidence in regard to stroke caregivers' preparation programs and draw conclusions from the evidence obtained.

For the abovementioned reasons, the author searched for available current evidence-based practice by using the Mahidol University library databases and other websites to search for related evidence-based practice. The Cumulative Index to Nursing and Allied Health (CINAHL), Ovid Full Text, Pro-Quest, PubMed and Science Direct were used to search for single research studies. Cochrane was used to search for systematic reviews. The PICO framework was used to guide the keywords for the search. The keywords used were Population (stroke caregivers); Intervention (preparation program); and Outcome (burden). Evidence was included in the systematic reviews of randomized controlled trials, high quality single randomized controlled trials and quasi-experimental studies published in English from 2004 to 2012. The author evaluated the evidence by using the methods and criteria set for

testing validity, reliability and applicability. After searching, the author finally selected eight articles relevant to the objectives of the study. From the eight articles selected, six articles were RCTs, one article was a systematic review and one article was a quasi-experimental study.

From the eight articles, the author found that caregivers' preparation programs should be provided for all caregivers of patients with stroke because of their effectiveness. Most of the samples of evidence-based practice should be able to reduce the caregiver burden, including reduced strain, stress, depression and anxiety with improved quality of life of stroke patients and their caregivers. Most stroke caregiver preparation programs should be performed in hospital-based settings. The programs can be either group or individual programs. After discharge from hospital, individual home visit telephone contact should be offered. Most stroke caregivers' preparation programs should be performed by nurses for effectiveness in reducing the caregiver burden among adult patients with stroke. However, other health care personnel such as physiotherapists, occupational therapists, and doctors should be included in the programs for more effective results.

In teaching strategy applied to stroke caregivers' preparation programs, some information should be given by lecture and some activities should be provided by skills training, the use of booklets, stroke guidebooks and videophone calls. The common content used in preparation programs should provide information about the meaning, etiology, risk factors, associated complications, warning signs, signs and symptoms of stroke, as well as how to maintain lifestyle and change the modifiable risk factors to prevent secondary attacks. Skills training should be provided about the methods for achieving reduced severity of complications, describe assistance in activities of daily living, manage swallowing difficulties, position the patients' nasogastric tube feeding and management with swallowing difficulties, patient lifting and handling techniques, techniques for communication with stroke patients and counseling with caregivers to relieve stress. The session and duration of the stroke caregivers' preparation program at hospital before discharge covered only one session for 45 to 60 minutes. But, most of the programs were able to provide up to three sessions with 30 to 60 minutes per session as appropriate to cover all contents. In addition, after discharge from the hospital, caregivers of patient with stroke should

receive hospital follow-up until three months. Caregivers' burden was measured by the Caregivers Burden Scale, strain was measured by the Caregiver Strain Index and depression was measured by Center for Epidemiologic Depression Scale.

According to the abovementioned findings, it can be concluded that stroke caregiver preparation programs are effective in reducing stroke caregiver burden.

4.2 Suggestions

According to the study of all the related evidence, suggestions for implication in nursing practice and nursing research are made as follows:

4.2.1 Implication for nursing practice

1) Presentations on the findings from the evidence obtained to the hospital administrator should include support resources and consideration of the benefits, suitability, and feasibility of implementation.

2) The stroke caregiver preparation programs yielded by the current a hospital-based program. The program can be either group or individual and should include follow-up by telephone contact following discharge and in line with the contest of Bangladesh.

3) The stroke caregivers' preparation program should be modified in line with the context of Bangladeshi clinical settings. The resources used for providing stroke caregivers preparation programs, as well as the method and materials for arranging the preparation programs, should be modified to suit the clinical practice context.

4) In-service and short course training programs should be designed for Bangladeshi nurses to improve the quality of care with provision of appropriate information and skills training for caregivers before implementation of the program. Training needs to be provided for hospital administrators, head nurses and nursing instructors to understand the importance of stroke caregiver preparation programs.

5) The stroke caregivers' preparation program should be implemented in order to evaluate the intervention process and evaluate the practice of the program for

real practice and maximum effectiveness, including evaluation of the satisfaction of program providers and caregivers of patients with stroke.

6) In addition to raising awareness about effective reduction of caregiver burdens, the structure of the preparation program should be disseminated to determine the effectiveness of the program in other settings.

7) Multidisciplinary team member should comprise a neurologist, a nursing superientendent, physiotherapist, dietician, pharmacists, and head nurse of the stroke unit.

4.2.2 Implication for nursing research

1) Caregiver preparation intervention should be developed based on recommendations in order to reduce the caregiver burden.

2) A pilot study should be conducted prior to implementation of the recommendations for stroke caregiver preparation programs to ensure the feasibility and suitability of the interventions.

3) A clinical trial should be conducted to evaluate the effects of the preparation program for caregivers of adult patients with stroke.

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BIOGRAPHY

NAME	Jotsna Akter
DATE OF BIRTH	November 1st, 1978
PLACE OF BIRTH	Bangladesh
INSTITUTIONS ATTENDED	Jahurul Islam Nursing Training Institute, Bajitpur, 1995-1998 Diploma in Nursing and Diploma in midwifery Nursing College, 2008-2009 Bachelor of Science. Mahidol University, Bangkok, Thailand, 2012-2014 Master of Nursing Science (Adult Nursing)
SCHOLARSHIP RECEIVED	Government of Bangladesh
HOME ADDRESS	Md. Salahuddin, 263 East Nakhal Para, Tejgoan 1215 Dhaka, Bangladesh. Mobile No:+88- 01815418896 Salahuddin.dti @gmail.com
EMPLOYMENT ADDRESS	Jotsna Akter Staff Nurse Shaheed Suhrawardy Madical College Hospital, Shere Bangla Nagor Dhaka 1207,Bangladesh Tel: +88-08122101 Emai:ssh@hospi.dghs.gov.bd