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DEVELOPMENT OF STROKE PREVENTIVE CARE MODEL FOR OLDER PERSONS IN A PRIMARY CARE CONTEXT

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Abstract: Stroke is a major cause of long-term disability among Thai older persons. Stroke prevention at a primary care level is an effective solution to this problem. This action research aimed to develop stroke preventive care model for older persons in the primary care context. Forty three participants were stakeholders of a community health system in the northeastern part of Thailand. Data were collected through in-depth interviews, and focus group discussions. They were analyzed using content analysis, and were validated through data triangulation. The research process comprised of 3 phases: situation analysis; development process and model synthesis. Results showed "The Integrated Stroke Preventive Care Service Model (ISPCSM)" comprised of 7 keys preventive activities which were: 1) community awareness raising and proactive screening; 2) risk behaviors modification; 3) proactive NCDs clinic; 4) stroke warning management; 5) strengthening stroke fast track; 6) stroke rehabilitation; and 7) integrated home care. The ISPCSM for community elders required the integration of care services among stakeholders of the primary care context at all stages of stroke prevention (primary, secondary, tertiary).

Keywords: action research, model development, older person, stroke prevention

Introduction

Stroke is a main cause of health burden in Thailand. It is the leading cause of death and long term disability in Thai elders both men and women. (Thammarungsri, 2014) These problems influence on health care services those are more focusing on treating disease and disabilities. Trend of stroke in Thailand was rising steadily every year. In 2013-2015, the mortality rates of stroke per 100,000 populations were 36.13, 38.66 and 42.62 respectively (Bureau of Non-communicable Disease, 2015). The average of age with stroke onset was 65 years (Suwanwela, 2011). It showed that older persons were the target group that effected from stroke more than other groups. While Thailand is moving towards to aged society; that meant stroke will be the serious problem in older persons.

Stroke is a dangerous disease for global and the Thai population. The World Stroke Organization (WSO) has put the emphasis on three pillars of the Global Agenda for Stroke: prevention, acute care, and long-term management. Prevention was focused on three main issues: raising awareness, promoting access to healthcare services and taking action to control disease (World Stroke Organization, 2016).

Developed countries, searched for how to achieve health problems from stroke. For example, The United Kingdom (UK) achieved stroke problems by integrating health and social care sectors in all levels of care service (Department of Health, 2007). In Japan, the government issued the long-term care policies for the elderly aimed to create multifaceted care integration at local communities. With respect to the value of

continuity of life in the community for the elderly, Japan attempted to build a community-based integrated care system in order to support the care delivery for elders in community (Okmoto et al, 2011).

In Thailand, the mortality rates of stroke increases each year; Thus, the Thai National Health Security Office (NHSO) offers health care services via an ongoing network of highly qualified "Stroke Fast Track" (SFT) as the choices of good care services in an acute stage (Sakunphanit et al, 2008). However, some studies showed that more than 75% of stroke patients could not get access to SFT system within golden periods. (Limpawattananon et al., 2014). Most of these were older persons in rural areas due to the traveling problems, financially constraints, and caregiver limitations, etc. (Goins et al, 2015).

Stroke warning signs could be recurrent in stroke survivors. Prevention of stroke recurrence as well as curative action within acute phase was important. Healthcare providers should not only provide curative care in acute stages, but also provide care covers all of healthcare stages and at all dimensions of care. Development of stroke preventive care model for older persons at all preventive care levels (primary, secondary, and tertiary) within the context of primary care services were suggested as the most effective solutions (Pinyo et al., 2015).

Therefore, this study aimed to develop stroke preventive care model for older persons within a primary care context in order to improve health and social care services for community elders with stroke. It is expected to be beneficial to clients (elders & their families), community stakeholders, and primary care organizations.

Methodology

The mutual collaborative action research was used in order to allow all key participants getting involve in the development process of stroke prevention model for older people.

Study setting: The study area was one community under a primary care unit (PCU) in the northeastern part of Thailand. The PCU was an extended primary care services of a district hospital that providing care for 5,999 people in its catchment area. This PCU had the second rank of stroke prevalence in elders, and the highest number of the risk group of stroke in the district. Most of clients had health care insurance under the universal coverage scheme. The study's setting provided variety of care services for stroke clients at the non-communicable diseases (NCDs) clinic and at home.

Participants: A total of 43 participants engaged in the study, including, older persons (OPs) (N=12), family caregivers (FCGs)(N=12), healthcare providers (HCPs) (N=9), social care providers (SPs) (N=4), and key persons (KPs) in the community (N=6). Ops of both sexes, suffered from stroke and received stroke care service for at least one year, able to understand and speak Thai, had no communication disorder and willing to participate were recruited in this study. FCGs participated in this study were persons who lived in the same homes with older persons, had experiences of taking care stroke elders for at least one year, and volunteered to be research participants. HCPs and SPs were persons who had experiences of working with stroke elders. KPs were the villagers living in the studied community, and had experiences in working with HCPs and SPs in providing care for stroke elders.

Research procedure: The research process consisted of three phases: situational analysis; developmental process; and model synthesis phases. The action cycle based on Kemmis and McTaggart (2005) including, Plan; Act; Observe; Reflect; and Re-plan or revision, was used to guide the development phase. The 3 phases of the research process were described as follow:

Phase 1: Situation analysis phase lasted for 5 months, (from October 2015 to February 2016) aimed to analyze the situation of existing stroke care services for elder patients in the studied PCU. Data were collected from 43 stroke care providers using in-depth interviews, focus group discussions, participant observations, and field-note takings. Participants were encouraged to share their experiences on the existing stroke care services for elder clients. The researcher analyzed and categorized data in order to gain understanding about the situation of existing care services provided for stroke prevention in community elders. The interview guidelines regarding situation of stroke and care services provided for stroke elders in the study setting, were reviewed by three experts. Example of the questions as in Table1.

Table1. Examples of the interview guidelines

Topics/ questions
1. Could you tell me about your experience in stroke care? (receive caring or care giving)
- What you think about it?
2. Tell me what you felt and what you think about the existing care services for stroke elders?
- Could you identify it?
3. What is your perception of stroke prevention?
- Could you tell me? Could you elaborate more?
4. What are your needs of healthcare services for stroke prevention?
- I would like to know more details, could you tell me?
5. In your opinion, what are conditioning factors related to stroke prevention in the elderly?
- Could you identify it?
- Could you tell me more details?

Phase 2: Development process phase of the stroke prevention care service model lasted for 7 months (from March 2016 to September 2016). The information from the first phase was used to start the action cycle (Plan, Act, Observe, Reflect, and Re-plan). Principles of health prevention, and recommendations from previous studies were used as the input of the formal meetings. The researcher, research participants, and stakeholders met regularly in order to answer the question of; "What activities should be done for improving stroke preventive care services?" until planning and actions on the reoriented preventive care services were emerged. Data (Observe & Reflect) were collected through workshops, group discussions, and natural interviews to monitor the outcomes of stroke prevention care services plans and actions.

Phase 3: Model synthesis phase: this phase lasted for 3 months (from October 2016 to December 2016). Two focus group meetings and workshops were conducted to formulated model synthesis. The practical stroke prevention model for older persons was approved by the healthcare provider's team**.**

Data collection: Data were collected through in-depth interviews, natural interviews, focus group discussions (meetings & workshops), participant observations and field-note taking**.**

In-depth interviews: Forty three stakeholders were interviewed 45-60 minutes each. Interview guideline approach focus on finding out problems and needs for reorienting care services to prevent stroke in community dwelling elders.

Focus group discussion: Four focus group discussions were held in the studied sites by 9 health providers. They met and discussed until stroke preventive care services and action plans emerged. After action reviews were conducted in order to reflect the performances and to address the plan improvements at all steps of the model development process. The researcher took role as facilitator to the healthcare provider's participated in the study. Data from each focus group discussion was digitally recorded in 60 -90 minutes length. The focus group discussions guidelines were develop by researcher and 2 faculty members and 2 healthcare providers who expert in stroke care system. The probing questions were used to obtain more detail of the data, included; *"Please tell me more about what the social care providers and stakeholders do to help you in stroke care services for older persons?"* and *"Please tell me more about your problems in using stroke care services?".*

Participant observation and field note taking, were used in all phases of research process: in situation analysis phase, the researcher used participant observation and field note taking in the focus group discussions; in model development process, the researcher participated and took field-note on in group discussions and group activities; and in the model synthesis phase, participant observations and field note taking were used in data collection from focus group discussions.

Data analysis: Qualitative data were analyzed using content analysis. All transcripts from in-depth interviews, focus group discussions, observation and field notes, were read to obtain a general overview of the content of the session. The transcribed sessions, then, were organized by way of coding content that appeared to fall under a distinct theme. As the themes emerged, data were categorized, interpreted, and identified for the major themes according to the research objectives.

Rigor and trustworthiness: This research employed Lincoln and Guba's principles of trustworthiness, including, creditability, dependability, conformability and transferability to ensuring the rigorous of the study (Lincoln and Guba, 1985). All three phases of this study used more than one data collection method, such as; in-depth interviews, focus group discussions, participant observations and field note taking. The research findings were returned to participants to recheck for their interpretation and to verify the findings.

Ethical Considerations: Research approval was obtained from the Ethics Committee for Human Subjects of the Researchers' Academic Institution on 14th September 2015 (approval number: HE 582226). All participants were informed about the purpose of the study; their involvement in the study; confidentiality and anonymity; and their withdrawal at any time without repercussions. All participants consenting to take part in the study were asked to sign a consent form.

Research Findings

Results of the three phases are presented in this section: situational analysis, the development, and the model synthesis phases.

Situational analysis: The forty three participants reflect two views of understanding about the existing stroke care services: client's view and health care provider's view. Stroke care services of both views comprised of five components: screening and surveillance services for NCDs and cardiovascular disease (CVD) risk groups; NCDs clinic services; stroke fast track networks and referral system; continuing care services; and outcomes of the services (Table 2).

Table 2. Finding of the situational analysis

Objective	Stroke care services	Clients' vs. Healthcare providers' views
To analyze the situation of existing stroke care services for elders patients	1. Screening and surveillance services for NCDs and CVD risk groups	The risk groups were normal groups, but patient groups needed treatment (Clients' view)
		Followed the Policies: Screening & surveillance for finding NCDs/CVD risk groups in the NCDs patients (healthcare providers' view)
	2. NCDs clinic services	NCDs patients needed treatment at NCDs clinic (Clients' view)
		NCDs clinic was provided for NCDs patients (healthcare providers' view)
	3. Stroke fast track network and referral system	Emergency services were for stroke patients with serious health problems (Clients' view)
		Referring patients for treatment via stroke fast track (healthcare providers' view)
	4. Continuing care services	Home visiting services were for vulnerable groups (Client's view)
		Home health care was provided for stroke patients with bed bound/ complex problems (healthcare providers' view)
	5. Outcomes of services.	Clients, especially elders could not get access to stroke prevention care service
		Clients, especially elders delayed getting access to stroke care service provided at PCU

Clients' view and health care providers' view are different, but both views were focusing more on the curative dimension than preventive dimension of stroke care. Clients' viewed stroke care as the curative services provided for stroke patients. In contrast to health care providers, they perceived stroke care as the curative services for CVD risk groups through stroke groups. For screening services, clients perceived as the services for separating normal and treatment groups, while health care providers perceived as the services for classifying NCDs, CVD risk, and treatment groups. For the NCDs clinic, both of them perceived as the service for NCDs patients only. For stroke fast track and referral services, clients perceived as the services for patients with stroke symptoms who needs upper levels of care. While providers perceived as an urgent services for patients with stroke. However, both of them did not aware of the stroke warning sign management. For continuing care services, clients perceived as the home visiting services for vulnerable stroke patients at home; while providers

perceived as the home care services for bed ridden and patients with complicated health problems. As the results of these, clients, especially elders were not aware of the risk and the warning signs. They tended to get delayed access to stroke care services. Health care providers were less aware of providing preventive/proactive services. Thus, there are the needs to develop prevention care services for elders at the primary care level.

Clients and healthcare providers stated their views as followed:

One client described that *"Dependence on curative when got illness"*.

One stroke patient said *"I did screening every year. After screening, it's up to the healthcare providers" Female CHV-aged 62)*

The head nurse said, *This PCU, we used SERVICE PLAN as the policy to perform and we set*

the key performance indicators (KPIs) of working in relation to the policy."

The results of situation analysis phase were used as input for the second phase: development of stroke prevention care service model for older persons by stakeholders' participation.

The development phase: development process consisted of 3 steps: raising awareness towards stroke prevention, community participation and involvement, and integrating health and social care services.

The first step, raising awareness towards stroke prevention: the researcher and research assistants used strategies to raise awareness on stroke prevention and the need for development by presenting the situation of stroke and existing stoke care service of the study site to the stakeholders of the primary care unit. At this step, stakeholders volunteered to join the research project as the research participants. Then, the focus group discussions were conducted among researcher, research assistants and participants in order to share experiences on *"how to set up the guideline for stroke prevention and exploring problems and needs in developing health services to prevent stroke for the elderly?"*

At this stage, healthcare providers were aware of needs for reorienting healthcare services towards prevention of stroke at all stages. They were mutually agreed on developing stroke preventive care model for older persons. Results of this step, revealed key persons who were responsible for conducting stroke prevention care services at each stage.

The second step, community participation and involvement:

At this step, the collaboration among health and social care providers, clients (older persons and their

families) and research participants from the first step were formed. The strategies used consisted of: informal conversation, brainstorming, focus group discussion among stakeholders. Stakeholders shared ideas and provided feedbacks regarding new healthcare services for older persons at all stages/levels of stroke prevention. The result of this step, innovative preventive care services were developed, such as, stroke awareness, stroke

warning sign management, and home care support services. The roles and activities of keys stakeholders in providing stroke preventive care services for elders within their own contexts were developed.

The third step, integrating health and social care services:

The development of innovative preventive care services needed the collaboration of the social care and community care sectors. At this step, collaboration was expanded to social sector organization, especially, the local government organization (LGO). The researcher played the facilitator roles in the collaborative process among health and social care sectors, as well as, community care sectors to take parts in networking activities based on the action plans. Community leaders, elderly club members, care givers and social care providers were also taken parts in the development process.

The researcher employed informal interviews and focus group discussions for data collection methods in order to reflect stakeholders' views. Results of this step, continuing care services and long term care services of both health, social, and community care sectors were integrated and provided for stroke dependent patients who needed long-term care supports in community.

The model synthesis: Results of the development revealed the model of stroke prevention, *"the integrated stroke preventive care service model*, (ISPCSM)" (Figure 1) included 3 levels of stroke prevention.

1) Primary prevention was the health care services for all people and NCDs risk groups. Among those were people who had high blood pressure, and those who were stroke at risk or CVD risk groups of level 1-5. There were 3 primary preventive health care services: 1) awareness raising and proactive screening services for target groups in the community; 2) health behavior modification of the target groups by community involvement within cultural contexts, such as CVD risk groups; 3) NCDs clinic services provided by multidisciplinary care team. Primary preventive care could be work collaboratively among providers and clients.

2) Secondary prevention was service provided for stroke warning signs groups. The services consisted of stroke warning signs management and stroke fast track system. The stroke warning signs management was carried out primarily by community people, especially community volunteers and networking. They help managed stroke warning signs by educating stakeholders regarding the warning signs, the risks, and the management of the risk through stroke fast tract networks. Participation of community stakeholders was the key strategy of secondary prevention.

3) Tertiary prevention was the service provided for people suffered from stroke and dependent patients after stroke. This level of prevention was implemented through the involvement of all relevant sectors consisting of two services of care: **1)** rehabilitative service after discharge provided by physical therapists and **2)** integrated continuing care. Expected outcomes of tertiary prevention were disability reduction and patient's safety from complications. Collaboration and participation among three main sectors, health, social, and community sectors were the key strategies of the tertiary prevention.

Conditioning Factors: The integrated stroke preventive care service model could be successful upon 4 conditioning factors, consisting of '3 P&1R': Policy, Process, People, and Resources.

1): Policy; there were 2 policies that promote and support the stroke prevention model development. These were "service plan" and "long term care" policies: 1) The "service plan" focused on screening, the risk group surveillance and promotion of stroke fast track system. The key performance indicators were: to reducing mortality rate and increase access to health care service within golden period;

2) the "long term care" policy promoted the work integration among 3 sectors aimed at enhancing the stroke survival's quality of life.

2) Process; the 2 concepts of working process were, community participation and integrated care: 1) Community participation focuses on working together on problem analysis, service planning, and problem solving to achieve continuity and sustainability of the service model; 2) the integrated stroke preventive care service" consisted of teamwork from 3 key sectors (health, social and community). Nurse stroke case managers need was the key coordinators of the teamwork.

3) People; the integrated stroke preventive care team comprised of 3 main sectors (health care team; social care team; and community care team). They worked collaboratively by the coordination of the stroke nurse case manager.

4) Resources; the model could be sustained based on resources within and outside community.

The resources within community, such as, the model elder, who act as an educator in primary prevention. The elders practice the eight precepts in Buddhist Lent period who took role as the leader in spiritual health promotion. Resources outside community, such as the financial support from other organization, good health model volunteers, etc.

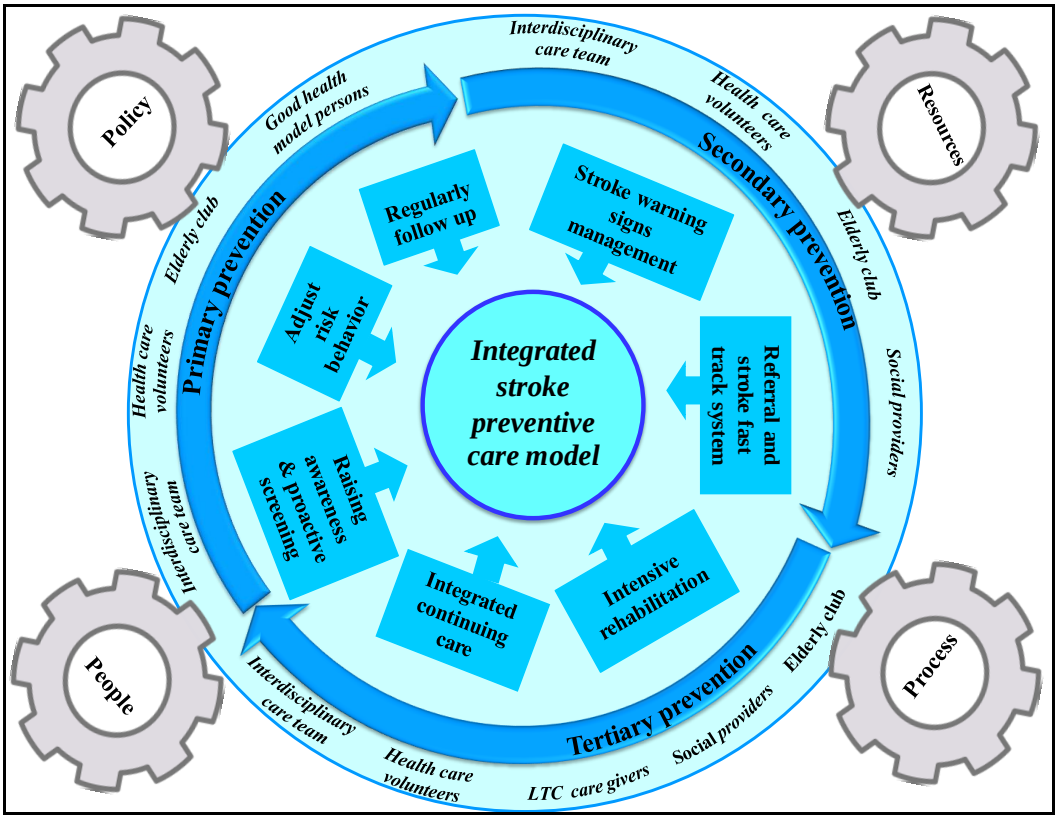

Figure1: The integrated stroke preventive care service model

Discussion

Results showed that stroke care services for older persons focused on curative rather than prevention. The existing stroke health services in this study setting were more focused on curative than prevention, and health-oriented services for the elders were not clear. The different views between providers and clients reflected the needs for reoriented health care service that promote access to services for older persons.

The existing stroke health care consisted of 4 services: 1) NCDs screening that could reduce factors of stroke (Assantachai, 2011); 2) NCDs clinic services that were the one stop service for risk group provided by multidisciplinary teams. However, the health care services for stroke prevention need the proactive service in community so that clients could equality getting access to health care services (Silpasuwan P, et al. 2012; Nualnetr N et al., 2015); 3) Stroke fast track services, were those services that could reduce the severity of stroke. But getting access to this service was limited in older people who live in community (Limwattananon et al, 2014; Nualnetr et al., 2015); 4) Continuing care after discharge, especially, rehabilitative service after discharge was still lacking. This could affect stroke patients suffering from complications.

This finding highlighted the need to develop stroke services to address the problems and the need for the elderly, a key risk group of stroke. The role of the health providers such as the nurses in the primary care unit should cover all dimensions of health care. They should coordinate operations that link health care networks with stakeholders from other sectors of primary care in order to provide equality of health care services for older persons with stroke. (Srisupan and ChanThai, 2013)

The integrated stroke preventive care service model: care services covered 3 levels of prevention. The outcome of the development process provided a stroke prevention model for older persons in the context of primary health care was the "Integrated stroke preventive care service model, ISPCSM". This model covered all levels of stroke prevention; primary prevention, secondary prevention and tertiary prevention through the use of collaborative action research. The community stakeholder's participation set up from three main actors: 1) health sector such as health care providers, multidisciplinary team, 2) Social sector by local government organization, such as sub-district municipality and 3) Community/People's sector, which were clients and their family, people and organizations in the community. The community participation could contributing to the value of existing social capital in the study setting, leading to the solution of people's health care needs in accordance with needs within their social and cultural context (Nantabut, 2008; Casey et al., 2015). The key success of this model is the cooperation of the key actors of three main sectors in primary care context, including, health, social and community sector. This will contribute to the sustainability and continuity of the integrated care model.

Conclusions

The ISPCSM had been developed as a guideline for all groups of older persons with stroke, including, the risk groups of stroke, stroke warning signs group, and the stroke group. The developed model had comprehensive coverage at each level of stroke prevention and linked the integrated operational between health and social services in order to provide coverage services for community elderly. This model covers services at all levels of prevention; primary prevention, secondary prevention and tertiary prevention. It was practical for community elders and required the integration of services among stakeholders of the primary care context. Community collaboration and involvement was the key concept of networking in order to develop the stroke prevention model for the older persons in the context of primary care. This study suggests that stroke prevention model in community requires the collaborative of key actors among three sectors, including, health, social and community sectors.

Limitation and Recommendations

This study was conducted in the context of a primary care unit in the Northeast of Thailand. Therefore, the users must take into account the nature of the primary care unit that is similar to the study area. Future research needs to consider the study of multiple primary care units and sites that are located in various geographical areas.

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The volunteers' consent form

For the volunteers who answer the in-depth interviews

First Name (Mr., Mrs., Miss)……. Last Name……. Age……..Years

Address….. Tambon…… District …… Province……..

When I received any description in this research from Miss Sakorn Intolo to be a volunteer in the research project which has title as the "Development of Stroke Preventive Care Model for Older Persons in a Primary Care Context."

A statement to the informant scribes that asked permission to take note and record audio and use the time approximately 45-60 minutes. This data will obtain to develop stroke preventive care model for older persons in the primary care context. The researcher will be certified that the information which received from you will be kept confidential. The interview Tape will be destroyed when the study ended. The researcher will present research findings in an all overview picture only. That will not cause more damage, but any. The researcher will use the code instead your real first and last name in the research's record and will be used for academic purposes only

"Participation in research projects as a volunteer. I joined voluntarily I can withdraw from the study at any time, if I want, and if there are unwanted events."

I have read and understand, as described above, and have signed consent to join this research project.

Signature…….volunteer

(……..……)

Signature ……..Witness

(……..)

Date…….Month……Year…

I can't read this consent by myself, but the researcher has read this consent for me to listen and understand well. I was pleased to participate as a volunteer in this study. Printed my right hand's thumb and put wholehearted on this consent by myself.

Signature
……..Researcher

The volunteers' consent form

For the volunteers who answer the Focus Group Discussions

First Name (Mr., Mrs., Miss)……. Last Name……. Age……..Years

Address….. Tambon…… District …… Province……..

When I received any description of this research from Miss Sakorn Intolo to be

a volunteer in the research project which has title as the "Development of Stroke Preventive Care Model for Older Persons in a Primary Care Context."

A statement to the informant describes that asked permission to take note and record audio for and use the time approximately 60–90 minutes. This data will obtain develop stroke preventive care model for older persons in the primary care context. The researcher will be certified that the information which received from you will be kept confidential. The interview Tape will be destroyed when the study ended. The researcher will present research findings in an all overview picture only. That will not cause more damage, but any. The researcher will use the code instead your real first and last name in the research's record and will be used for academic purposes only.

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Signature…….volunteer

(……..……)

Signature ……...Witness

(……..)

Date…….Month……Year……

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Signature

……..Researcher