

# Home Nursing Care Strategies for Preventing Infection in the Bedridden Elderly at Home in Thailand

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## Abstract

*This mixed methods research, integrating both qualitative and quantitative approaches, is aimed at exploring condition in which home nursing care of the bedridden elderly and the related factors of nursing care activities, and identifying strategies for preventing infection in the bedridden elderly to recommend the policy strategies for managing the risk of infection in the bedridden elderly by the home visiting nurses in Thailand. The key informants for the qualitative research were 22 home visiting nurses and 22 caregivers of the bedridden elderly in Chachoengsao Province, totaling 44 people. The key informants were selected by using purposive sampling and snowball technique, and the data gathered were analyzed through content analysis. The sample of quantitative research consisted of 298 professional nurses who were working at the Sub-district Health Promoting Hospitals and making home visits. Data were collected by using questionnaires. The research results were revealed that among the bedridden elderly receiving care at home, most of them were in the middle and late elderly and most had some kind of underlying or chronic diseases. The results of the overall analysis of infection prevention among caregivers were found that they practiced washing hands, disposing of used needles or equipment and infectious waste, and overall management of cloth, environment, and various items at a high level. When considering each item separately, it was found that the highest score was the management of infectious waste. The second highest level of their prevention practice was the management of clothes, environment, various items, and the use of personal protective equipment whereas disposal of needles or equipment used in nursing had the lowest average score. Based on this research results, it was suggested for policy strategies for preventing infection in the bedridden elderly by the home visiting nurses in two key components: firstly, determining the problem-solving guidelines and/or additional factors of infection in the bedridden elderly, and secondly, promoting all agencies for participative cooperation and continuous monitor results. The first component included: 1) There should be given knowledge and advice about the disease and prevention of complications in the bedridden elderly; 2) Organizing nursing practice, nursing plan, and nursing operations; 3) Providing materials and equipment for nursing care of the bedridden elderly; 4) Economic aspect by organizing vocational training activities to supplement the family's income including career building; 5) Reducing stress for relatives taking care for the bedridden elderly; 6) Raising awareness of infection prevention, organizing training, and giving knowledge and understanding about infection prevention; 7) Building morale and mental encouragement in nursing practice. The second component was the supporting that all agencies in the community should participate in joint implementation of care and continuously monitor results.*

**Keywords:** Risk Management, Infection, Home Visiting Nurse, the Bedridden Elderly, Elderly Caregiver.

## BACKGROUND AND SIGNIFICANCE OF THE PROBLEM

Thai society is an aging society. From the population estimates of Thailand for the years 2010 - 2040 of the National Economic and Social Development Council (NESDB) using data from the Population and Housing Census, B.E. 2010 of the National Statistical Office as the basis for estimation found that in 2040 Thailand will have as many as 20.5 million elderly people aged 60 years and over, or equivalent to, accounting for 32 percent of the total Thai population in 2040. The structure of the Thai population entering an aging society, It will affect the development of the country because the decrease in the number of the working age population will affect the country's development potential. In addition, the increase in the elderly population also reflects an increase in the fiscal burden because the number of the population is at a dependent age in terms of economics, society, and health. Apart from health problems since the health care system that has not been yet up to standard for the elderly, the elderly people still face problems with living conditions and economic difficulty including income instability, especially among the elderly from poor families. In addition, most elderly people still lack development of skills for work and living in the rapid changing society. Around 95% of Thai elderly people have suffered from diseases or health problems, such as high blood pressure (41%), diabetes (18%), knee degeneration (9%), being disabled (6%), depression (1%), and bedridden patients (1%) while only five percent have no disease or health problems (Department of Health, 2013). And from the report of the study results of the project estimating health expenditures from the results of health promotion and health expenditures in Thailand in other areas in the next 15 years, it will be worth approximately 4.8 - 6.3 hundred billion baht. When combined with the aging society factor, the costs will increase to 1.4 - 1.8 trillion baht (Thailand Development Research Institute, 2017). That is a large amount, but if health care for the elderly could be managed well, this budget would be efficiently spent; and the budget would be used to effectively manage and develop in other parts of the country.

The bedridden elderly at home are one of the most vulnerable groups having difficulty in directly accessing medical and public health services because of mobility problems and having to always rely on caregivers. However, some elderly people may need medical equipment to take with them while being at home. This situation could create difficulties in organizing care at home because care activities are more complex than general daily care. In addition, sleeping in bed all the time or lying on the same position for a long time, the elderly might develop pressure sore and get infections in various systems in the body. This results in having to be readmitted to the hospital or having complications. The problem might result from that those who provide care do not have sufficient knowledge and skills in preventing infection. However, if the above complications occur in the elderly, then this may result in making care more complicated. The results are consistent with the study of Kanchana Panyathorn, Petchara Thongpao, Maneerat Pajjawong, Sukanlayanee Singsat and Jirawan Banbodee (2022) who studied the situation of caring for and problems with caregiving needs for chronically ill, bedridden elderly people during the COVID-19 outbreak of a community in Udon Thani province. It was found that of the 40 bedridden patients, 9 had stuck joints (22.5%) and 5 had pressure sores (12.5%); 12 family caregivers lacked necessary knowledge and skills, 3 people (25 percent), and 4 people (33.33 percent) improperly managed infectious waste. Perception of COVID-19 disease risk: The community recognizes that bedridden patients are at high risk of infection due to their weak bodies and low immunity. Caring for bedridden elderly people family care: 16.67 percent family members give little care. As for community care, bedridden patients receive care from 4 groups of people: caregivers of local government organizations, public health officer, village health volunteers. The problem found is that the care activities for each group has overlapped. Families

have little awareness and hope to rely on the community and not on themselves. Caregivers lack necessary knowledge and skills, receive inappropriate welfare, and lack necessary equipment. The community wants families to care for bedridden patients. A multidisciplinary team addresses all aspects of the problem including supporting necessary equipment and appropriate welfare. From the results of the research, it is recommended that relevant agencies develop a service system for chronically ill, bedridden elderly people in the community. Caregiver roles should be clearly defined and support essential needs according to the needs of the community. In Thailand's public health system, health care for people in the community has been determined to be the role of primary care agencies or sub-district health promotion hospitals. Therefore, taking care of bedridden elderly people at home is still an important problem for nurses at the Subdistrict Health Promoting Hospital who must go out and visit homes or nurses who do home visits who must find ways to care for and prevent infections and conditions of complications in bedridden elderly people are more effective.

Chachoengsao Province has 17.23 percent of elderly people (124,040 people from a total population of 720,113 people, most of them are in early elderly (age 60-69 years), 53.16 %. Proportion of elderly people was more than the health region (15.37 %) but like the country (17.35 %). The first three districts with the highest number of elderly people are Khlong Khuean District with 23.28 %, Bang Khla District with 21.23 %, and Ban Pho District with 19.52 percent, respectively. As for the screening to assess ability to perform daily activities (Barthel Activities of Daily Living: ADL), in fiscal year 2021 (first quarter), 63.96 percent were screened and found the elderly people who had abilities to help themselves well (Social Addiction Group) 69,959 people, accounting for 97.71 %, those who were able to help themselves to some extent (Homebound group) numbered 1,130 people, accounting for 1.58 %, and those who were able to help themselves little or not at all. (bedridden group) numbering 510 people, accounting for 0.71 %. Although the number of bedridden groups is smaller than other groups, only one bedridden person, it could affect the quality of life of the whole family. This is consistent with the research of Wongprasit and Ruenchitt (2023) who found that families of the bedridden elderly must have at least one family member leave work to take care of the bedridden elderly, and other members must help and be responsible for expenses. That is, it could affect every member if any complication or infection occurs, it will cost more in treatment and take a long time to treat, and there is also a chance of death.

The research team is a professor in the Faculty of Nursing at Rajabhat Rajanagarindra University and a professional nurse at a subdistrict health promotion hospital in the province. Moreover, the university, the only university in Chachoengsao Province, has a mission to develop the local area and serve society. Therefore, researchers are interested in studying strategies for preventing infection in bedridden elderly people together with the community nursing operations department to propose policies and strategies for preventing infections in bedridden elderly people at home according to the role of home visiting nurses in Chachoengsao Province. The results of this research will provide guidelines for developing and promoting the role of home visiting nurses in caring for bedridden elderly people in Chachoengsao Province to have quality and is a good model for developing the potential of home visiting nurses in caring for bedridden elderly in other provinces.

## RESEARCH OBJECTIVES

- 1) To study the general condition, causes, additional factors, and care activities and results related to preventing infection in the bedridden elderly at home by home-visiting nurses in Chachoengsao Province.
- 2) To study elements of strategies for preventing infection in the bedridden elderly at home by home-visiting nurses in Chachoengsao Province.
- 3) To recommend policy strategies for preventing infection in the bedridden elderly at home by home-visiting nurses in Chachoengsao Province.

## RESEARCH METHODOLOGY

### 1. Population and Sample

The population included 1,288 nurses at the Sub-district Health Promoting Hospitals in Chachoengsao Province and 786 caregivers of the bedridden elderly who had completed the 70-hour Elderly Caregiver Training Course of the Department of Health.

Sample group: for qualitative research, the key informants were 22 nurses who were working at the Subdistrict Health Promoting Hospitals and visiting homes of 22 bedridden elderly people and 22 caregivers of the bedridden elderly who were qualified with certificate of the 70-hour Elderly Caregiver Training Course designed by the Department of Health.

The key informants were selected through purposive sampling and Snowball Technique for participation in research study.

The sample group for quantitative research, they were 298 nurses at the Sub-district Health Promoting Hospitals in Chachoengsao Province. The sample size was determined using the calculation method according to Krejcie and Morgan's table (Krejcie & Morgan, 1970). The participants were selected using a simple random method.

### 2. Tools used to collect data

The tool used to collect qualitative data included interview guide.

#### Validating quality of the qualitative tool

The interview form was validated for content validity by five experts and tried out with three people who were not in the sample to adjust the questions for understanding before being used.

#### Data Collection Techniques

Qualitative data were collected through an in-depth interview using a semi-structured interview guide, created according to the concepts of Patton (1990), among the key informants or until the data were saturated. The data were also collected through other methods including non-participant observation and fieldnote. Then the data were summarized and brought into group discussion among five members of expert for conclusion and assessment of the strategy model.

#### Data Analysis

The data gathered were analyzed through content analysis regarding strategies for preventing infection in the bedridden elderly at home by the home visiting nurses in Thailand. The analysis process included defining data codes using methods for interpreting and interpreting the data, and then creating concepts by comparing with theory and research results which had already been

researched according to the qualitative study method and use computer programs for organizing the data analysis system.

### Identifying the reliability of information

Data were examined validity through triangulation by interviewing at different times, places, and people, checking data consistency with data providers. In addition, in studying the same issue, researchers interviewed various groups of people to find information about the same topic from multiple sources.

### 3. Quantitative Research

The tools used to collect quantitative data included a questionnaire about preventing infection of bedridden elderly people at home.

Determining the quality of the tools was done by: 1) checking the qualitative accuracy by giving the questionnaire to five experts to consider completeness, accuracy, consistency of the questionnaire and then calculate the index of consistency (IOC: Index of Item Objective Congruence) with a value of 0.99; and 2) finding the confidence value of the questionnaire using the alpha coefficient (Cronbach's Alpha-Coefficient) (Cronbach, 1990: 202 - 204) by taking the questionnaire that had passed its content validity and tried out with 30 people who had similar characteristics to the sample group, which had the reliability value at 0.97. After that, the questionnaire was used to collect further data.

### Data Collection

The researchers self-collected data of 298 questionnaires from respondents.

### Data Analysis

The researchers analyzed the data according to statistical methods using ready-made computer programs as follows: 1. To analyze general information of the respondents by calculating frequency and percentage. 2. To analyze data from questionnaires on opinions about infection prevention strategies among the bedridden elderly at home by the home visiting nurses in Thailand by analyzing the mean ( $\bar{X}$ ) and standard deviation (S.D.).

## RESEARCH RESULTS

### 1. Qualitative research results

The results of the interview on the condition of the bedridden elderly receiving care at home are as follows:

**General information:** The bedridden elderly receiving care at home included both males and females. Most of them were middle- and late-elderly elderly (age 70 and over) due to their physical deterioration and most had underlying diseases. Their common diseases included stroke, paralysis, diabetes, high blood pressure, and heart disease. Some older people had no underlying diseases, except only their old ages. Most of the bedridden elderly had necessary medication and needed to take them regularly for their chronic illnesses. In taking medicine, most of the time, their relatives took care of them and prepared medicine for them to take. Some people must give medicine by grinding and mixing it with water for the tube feeding.

Most the bedridden elderly needed help from relatives to fed them. Some people were unable to eat without assistance because they must be fed through a tube. In feeding food through the tube for the bedridden elderly, feeders must be careful about retching food, and choking on food, which was at risk to gastrointestinal and respiratory complications.

Most the bedridden elderly were unable to help themselves in their daily activities. Therefore, their relatives or caregivers were required to assist with daily activities such as cleaning the body, wiping the body, and washing mouth and teeth, cleaning the reproductive organs, and others. Most the bedridden elderly were unable to control their urine and defecation; they must wear disposable diapers.

They had risk of infection through the wound from baking and dampness. In some cases, they were unable to urinate on their own and had to use a urinary catheter. There must be a way to take care of it by drinking lots of water, swiping the urinary catheter to facilitate urine flow, not raising the urinary catheter higher than the body for preventing urine reversal back into the bladder, which could cause a urinary tract infection. Helping to turn the patient on his or her side frequently every two hours could prevent pressure sores. Most caregivers for the bedridden elderly were their relatives, including husbands or wives, children, and siblings. Few of them hired caregivers because they did not have relatives to take care of the bedridden elderly.

The community must reach out and help each other by providing care workers or a caregiver (Care Giver: CG) to help take care of the elderly together with neighbors. They helped family income, dividing duties in caring for the bedridden elderly so that their relatives could go to work. They also set up a schedule to help each other out. In some cases, relatives taking care of the bedridden elderly must stay at home to take care of the bedridden elderly, not go anywhere, but must work or earn money at home by making desserts and herbal juices to give to relatives who go to work to sell. Some relatives must sit and knit bags. Knitting hats to sell not only earned money but also was relaxing and distressing.

The duration of caring for the bedridden elderly could range from one year to seven years. Exercise for bedridden elderly people was mostly the responsibility of relatives who care for the bedridden elderly to help them exercise by lifting their arms, lifting their legs, and rotating their arms and legs. Most the exercises took place in bed. Relatives taking care for the bedridden elderly had been trained by hospitals to care for the bedridden elderly.

## 2. Quantitative research results

- 2.1 General information was revealed that almost all home visiting nurses (95.30 %) were female and most of them (36%) were 51-60 years old. Almost half (49.30%) of the home visiting nurses were of married status. Over half (63.40%) of the home visiting nurses had work experience of 10 years or more. Most of them (94.6%) had education of bachelor's degree.
- 2.2 The analysis results of the overall level of using personal protective equipment revealed that washing hands, disposing of needles or equipment used in nursing, and managing infectious waste, cloth, environment, and various items were found to be overall at a high level ( $\bar{x}=4.15$ ). When considering each item in order of the highest to the lowest average values, researchers found as follows: infectious waste management ( $\bar{x}=4.54$ ), cloth management, environment, various items ( $\bar{x}=4.48$ ), and use of body protection ( $\bar{x}=4.03$ ) were at a moderate level. In order of average values, it was found as follows: washing hands ( $\bar{x}=3.89$ ) and properly disposing of needles or equipment used in nursing ( $\bar{x}=3.82$ ). Disposing of needles or equipment used in nursing had the lowest average score, as shown in Table 1.

**Table 1: Study results of activities on using personal protective equipment, washing hands, and discarding needles or equipment used in nursing, infectious waste management and management of cloth, environment, and various items.**

No	List of Items	Statistical value		Level
		$\bar{x}$	S.D.	Operation
1	Using personal protective equipment	4.03	.48	high
2	hand washing	3.89	.45	moderate
3	Disposing of needles or equipment used in nursing	3.82	.70	moderate
4	Infectious waste management	4.54	.49	high
5	Handling fabrics, the environment, various items	4.48	.54	high
Total		4.15	.33	high

2.3 The analysis results of the level of using personal protective equipment in each area found that use of body protective equipment in overall was at a high level ( $\bar{x} = 4.03$ ). When considering each item separately, it was found that items at the high level were arranged in order of average values as follows: The highest was “wearing disposable gloves every time” ( $\bar{x} = 4.79$ ), followed by “taking off gloves and washing hands before continuing with activities” ( $\bar{x} = 4.78$ ), and the lowest average was “wearing boots when having a procedure” ( $\bar{x} = 2.59$ ).

The analysis results of level of hand washing found that the overall level was at a moderate level ( $\bar{x} = 3.89$ ). When considering each item separately at a high level, it was arranged in order of average values as follows: The highest mean “washing hands before and after nursing every time” ( $\bar{x} = 4.75$ ), followed by “washing hands correctly according to the steps every time” ( $\bar{x} = 4.08$ ), and the least average was “often washing hands with just water” ( $\bar{x} = 3.17$ ).

The analysis results of level of disposal of needles or equipment used in nursing found that the overall level was at a moderate level ( $\bar{x} = 3.82$ ). When considering each item separately, it was found that at a high level, it was arranged in order of average values as follows: discarding used needles in a special needle disposal box was the most practice ( $\bar{x} = 4.74$ ), followed by all types of disposable equipment used for nursing the elderly at home ( $\bar{x} = 4.41$ ), and at the lowest level was that using equipment for nursing the elderly at home must be washed and reused ( $\bar{x} = 2.81$ ).

The analysis results of level of disposal of needles or equipment used in nursing found that the overall level was at a high level ( $\bar{x} = 4.54$ ). When considering each item separately, all items were at a high level, arranged in order as follows: The most was clear separation of infectious, non-infectious, and dangerous waste ( $\bar{x} = 4.72$ ), followed by the correct disposal of infectious, non-infectious, and dangerous waste every time ( $\bar{x} = 4.69$ ), and the least caretakers followed the instructions for sorting separate garbage every time ( $\bar{x} = 4.32$ ).

The analysis results of management level of cloth, environment, and various items were found at a high level overall ( $\bar{x} = 4.48$ ). When considering each item separately, it was found that all items were at a high level, arranged in order of average values as follows: The highest was to discard infected cloth, not infected, correctly every time ( $\bar{x} = 4.68$ ) and give advice to caregivers in taking

care of the elderly's environment to prevent infection every time ( $\bar{x}=4.60$ ) and the least was caregivers follow your instructions every time ( $\bar{x}=4.26$ ).

### 3. Components of strategies for preventing infection in the bedridden elderly by the home visiting nurses

By summarizing both qualitative and quantitative research results, components of strategies for preventing infection in the bedridden elderly by home visiting nurses should consist of:

1. In terms of care activities and results related to infection prevention among the bedridden elderly at home according to the experience of home visiting nurses and caregivers of the elderly as follows:

- 1) Using personal protective equipment for home visiting nurses and caregivers of the elderly in following up with home visits for the bedridden elderly, all types of equipment to prevent infection and spread of infection should be strictly used.
- 2) Hand washing, nurse visiting home, and caregivers of the elderly should wash their hands before and after giving nursing every time.
- 3) Disposing needles or equipment used in nursing, home visiting nurses, and caregivers of the elderly should dispose the used needles in a special needle disposal box which was mostly used for disposable equipment for nursing the elderly at home.
- 4) Infectious waste management: the home visiting nurses and caregivers of the elderly should always clearly separate infectious, non-infectious, and dangerous waste; and they should strictly follow the waste separation standards.
- 5) Cloth management, environmental management and various items: the home visiting nurses and caregivers of the elderly should separate the infected and non-infected clothing and strictly follow the clothing separation standards.

2. Causes and/or additional factors of infection, from taking care of bedridden elderly people at home according to the experience of home visiting nurses and caregivers of the elderly, it can be summarized as follows:

Cause of infection in the bedridden elderly: Most the bedridden elderly had illnesses and underlying diseases which cause them to lose their mobility. The mobility loss could result from diseases such as stroke, diabetes, or heart disease, and other causes including severe accidents, being falls that led to brain injuries or spinal injury or other complications causing the body to be unable to move. The bedridden elderly could not turn on their side or could not stand up and sit on by themselves. Some people were unconscious; they had severe physical disabilities, and they must lie in bed all the time. Some cases required the insertion of a hidden assistive device that could easily cause infection, such as a feeding tube, urinary catheters, and other. Therefore, the bedridden elderly needed to be closely cared for by their relatives, the home visiting nurses, and the caregivers.

Additional factors of infection included economic conditions, poor status, and caregivers having to go out to work to make a living so that they had no time to take close care all the time.

From taking care of the bedridden elderly at home according to the experience of home visiting nurses and elderly caregivers, problems of infection found among the bedridden elderly, it could be summarized as follows:

1. Pressure sores: Pressure sores occur frequently among the bedridden elderly people whose skin is thin and lacks flexibility. Due to that patients have slept in the same position for a long time, it causes their skin under pressure of the body's weight and develop sores or wounds. Weight of bone pressure

on the mattress, sweating, friction with the mattress can also cause pressure sores. Pressure sores start out as red, bruised marks. Later, they may appear as blisters with clear fluid inside and as open skin abrasions. The wound spreads down to the subcutaneous layer. The tissue is decayed, bruised, bloody, pus-filled, deep, hollowed out. In some cases, it deepens into the bone, and wound widens more than 10 centimeters wide.

2. Joint stiffness, muscle atrophy: The elderly are bedridden and remain in the same position for a long time because they are unable to move their bodies by their own. Relatives who care for the bedridden elderly do not help with exercise because of no time to take care of them closely, lack of knowledge to help exercise; when they help exercise, the elderly stuck in bed cries out in severe pain. As a result, relatives who care for the bedridden elderly are unable to help them exercise. And the relatives let the patients sleep in the same position as the bedridden elderly pleased and they do not cry out in pain. As a result, various joints in the body such as elbows and knees become stuck. Along with not being able to eat food by themselves or not getting enough food, such as protein foods to build and repair tissues, resulting that the muscles are weak and atrophic.
3. Choking on food: The bedridden elderly with poor digestion could not eat food by yourself. Some people must be fed, due to that their teeth for chewing food are not good. They must be given soft, easily digested food. Their swallowing is poor; sometimes choking can occur. Some people are fed through a tube. The bedridden sometimes pull off their feeding tubes, or the plaster is not well attached which causes the feeding tube to move from its position and can cause food to be choked.
4. Lung infection: The bedridden elderly choke on food, causing lung infections. In some cases, they had been stuck in bed for a long time and had not moved their body anywhere. They had lied in bed for a long time, so they had coughing, phlegm in the throat, rapid breathing, fatigue, fever, respiratory infection, pneumonia.
5. Urinary bladder infection: Some of the bedridden elderly had retained urinary catheters, received little water intake, poorly care of the urinary catheter, poor cleaning of the genitals, and some cases, clogged urinary catheters causing obstructed or slow flowing of urine. It could cause urinary tract infection, fever, and dark yellow urine. The urine had cloudy sediment.
6. Constipation: The bedridden elderly were unable to move on their own, together with their poor digestive system; they could not eat fiber food; they received not enough water intake. These could cause them constipation. In some cases, because hard stool stuck in the anus, they must be given some laxatives or applied a liquid enema. If those solutions could not be solved, the caregivers had to put on gloves lubricated with soapy water and then slowly use your fingers to dig into the anus and scoop out the hard stool from the anus, bit by bit, until it's all gone. In doing so, the caregivers had to be careful of anal irritation. They must apply lubricant with soapy water to make finger slippery easily and use a small finger to gently reach in.
7. Rashes from wearing disposable diapers for a long time: Some of the bedridden elderly had to always wear disposable diapers for being convenient to maintain the cleanliness of their bowel movements which could dampen their private part, causing rashes and skin inflammation and could spread into infected wounds.
8. Anxiety and stress: Some of the bedridden elderly were conscious, responding to question and answer well and could communicate well. They used to have the ability to be a family leader before becoming the bedridden elderly. It caused stress and discouragement, leading to depression.

Relatives who care for the bedridden elderly encountered problems in caring for the bedridden elderly. It could be summarized as follows:

- 1) Knowledge of caregivers: Almost all the bedridden elderly had many chronic underlying diseases. The relatives taking care of them lack knowledge about the diseases and how to take care of the bedridden elderly with the chronic illnesses. They also lacked knowledge about infection conditions arisen from caring for bedridden elderly people. These limitations led to lack of confidence and uncertainty in caring for the bedridden elderly people and lack of awareness of infection prevention, such as washing hands sometimes after touching the bedridden elderly, wearing gloves necessary when touching the bedridden elderly due to lack of awareness of infection prevention.
- 2) Lack of care equipment: Some people had come to ask for borrowing medical equipment from the Subdistrict Health Promoting Hospital, but some equipment is limited, such as air beds to sleep on to prevent pressure sores, and mucus suction machine to reduce the amount of mucus in the respiratory tract. As a result, there was no equipment to use to prevent complications for the bedridden elderly.
- 3) Being left alone: in some cases, relatives taking care for the bedridden elderly had to go to work; they had no caregiver to always take care of the bedridden elderly.
- 4) Relatives taking care of the bedridden elderly were sick and tired; they were stressed in caring for the bedridden elderly. Because the elderly had been chronically bedridden for a long time, they were unable to help themselves. Therefore, helping the bedridden elderly had become a burden on relatives to do all the daily activities for them and special care for chronic diseases. In some cases, there were conflicts between relatives. These things caused stress for relatives who care for the bedridden elderly. As some informants said, N8 said, "Relatives who take care of the bedridden elderly feel sick and tired. It is stressful because the elderly have been bedridden and chronically ill for a long time. They cannot help themselves. Therefore, it is a burden on the relatives who take care of them to help take care of everything, including wiping, drying, bathing, feeding, watering, dressing, giving medicine, helping exercise, turning over on their sides, and other special care regarding chronic diseases."
- 5) The shortage of home visiting nurses. In each sub-district there were only 1-2 home visiting nurses. In addition to taking care of nursing care for bedridden elderly, the nurses still had many additional workloads, including having to provide care and nursing to patients throughout the subdistrict, being responsible for promotion, prevention, and basic medical care and rehabilitation. All nursing and caregiving work is the responsibility of the home visiting nurse. They also had various paperwork and data entry according to the indicators of the Ministry of Public Health. Due to having overwhelming workload, they had no time for continuous home visiting work. Home visiting service is the responsibility of only one home visiting nurse. Other nurses were not responsible for this work so that they did not visit the patients at home. Newly graduated home visiting nurses still lack knowledge and skills in performing work including performing procedures. And at present, there is more focus on data entry than on nursing practice in taking care of patients. In addition, home visiting nurses lack morale and moral support in nursing practice.

### **Suggestions for policy strategies for preventing infection among the bedridden elderly at home by the home visiting nurses in Chachoengsao Province**

1. Guidelines for solving the causes and or additional factors of infection among the bedridden elderly are as follows:

- 1) Providing knowledge and advice about the disease and prevention of complications among the bedridden elderly such as joint stiffness, muscle atrophy, it is caused by the body of the elderly being stuck in bed and lying in the same position for a long period of time, causing the joints to become

stuck. They were unable to stretch joints as usual. Relatives taking care for the bedridden elderly need to help exercise for the bedridden elderly every morning and evening. always Taking care of physical cleanliness for the bedridden elderly to prevent various complications, it was also important to take good care of the health of the bedridden elderly, assistance with daily life such as bathing, feeding, and cleaning the genitals after defecating and urinating, turning the patient frequently to prevent pressure sores. The physical condition of the bedridden elderly should be checked to see if the patient had any complications or not to take care of it in a timely manner. And there should be care for the mental state of the bedridden elderly to give them a good mental state. Controlling their diet according to chronic diseases, reducing the amount of sweet, fatty, salty, freshly cooked, easily digested foods such as fish. Be careful of choking on food as well as arranging the environment to be suitable for use, the caregivers must clean it regularly. And the windows should be opened to allow for easy ventilation. In addition, the place should be arranged to make it easy for the bedridden elderly to be moved in the event of an emergency.

- 2) Nursing practice, planning of nursing operations, planning nursing implementation as planned, preventing skin infections, subcutaneous tissue and pressure sores, preventing eye and oral infections, prevention of gastrointestinal infections, prevention of respiratory infections, prevention of urinary tract infections, arrangement of separate patient rooms, controlling the environment, wearing gloves, using a mask to cover the mouth and nose when taking care of the health of the bedridden elderly, and performance evaluation brought to improve and continue further operation.
- 3) Providing nursing care materials and equipment for the bedridden elderly by coordinating with the Subdistrict Health Promoting Hospitals. Subdistrict Health Promoting Hospitals may request or borrow from neighboring Subdistrict Health Promoting Hospitals or networking hospitals, local government organizations, temples, and communities.
- 4) Economic aspect: Relatives who care for the bedridden elderly must always take care of the bedridden elderly so that they are unable to go to work outside their home to earn money, resulting in no income to take care of their family. This can cause economic stress. The relevant agencies should lend a helping hand by organizing vocational training activities to supplement the family's income, building a career and relieving stress.
- 5) Reducing stress for relatives who care for the bedridden elderly: In addition to helping find a career to increase income, responsibilities for caring for bedridden patients should be allocated and shared among relatives by setting a schedule for caring for bedridden patients. Relatives caring for the bedridden elderly should find some time for private rest. At least one day of vacation per week or a long holiday, they should be rewarded themselves to travel for relaxation in a natural environment to fully energize the body and mind, meeting friends to chat to strengthen friendships and relieve stress or find a hobby to do for creating some peace of mind.
- 6) Raising awareness of infection prevention, organizing training and giving lectures, and creating the understanding of infection prevention: Encourage them to enhance their ability to recognize and understand feelings, emotions, desires, and the need to prevent infection to help the bedridden elderly receive care to prevent infection and spread of germs. It is beneficial to the bedridden elderly and those around them.
- 7) Building morale and mental encouragement in nursing practice: The home visiting nurses want to be respected for their success; administrators and supervisors should give importance to building morale and mental encouragement in nursing practice by honoring, accepting, and listening to their opinions. Administrators should be confident in the nurses' abilities and facilitate the home visiting nurses to perform their duties efficiently and effectively. It would create pride in one's profession and oneself, assigning tasks and workload appropriate to knowledge and competence of the home visiting nurses,

giving freedom to make decisions and providing opportunities for meeting with friends to exchange opinions. They could share and learn among one another about problems or obstacles in working as well as promoting career advancement, durability on the job, and future progress. These things could create happiness in work.

2. Agencies that should have roles in participating in preventing infection in the bedridden elderly at home, all sectors in the community should participate in the 4-step operation as follows:

Step 1 Participation in decision making (Decision Making). Using a process of community participation in joint decision making in planning among the following related agencies including Subdistrict Health Promoting Hospitals, community hospitals, District Public Health Offices, Provincial Public Health Office, Regional hospitals, local administrative organizations, temples, communities, and schools. They have participated in planning and selecting activities to prevent infection in the bedridden elderly at home. Community leaders, from the top leaders of the community and the government administration team, also play the important roles, both formal and natural leaders. By applying knowledge to benefit and in solving problems, providing opportunities for relatives to care for the bedridden elderly and the bedridden elderly take part in solving problems and determining needs together through prioritizing activities, choosing an activity, and joint decision-making in implementing care to prevent infection in the bedridden elderly as planned. The process for preventing infection in the bedridden elderly at home in the community. It must rely on community participation by other processes that are continuously involved in taking care of preventing infection in the bedridden elderly at home.

Step 2 Participation in Implementation. They together carry out activities to organize training to provide knowledge and practice in preventing infection in the bedridden elderly at home, consisting of educational activities and training to prevent infection in the bedridden elderly at home; they have coordination and joint management and sharing of responsibilities to support for materials and equipment, places for organizing activities, and various conveniences, etc. Strengthening the elderly care network and preventing infection in the bedridden elderly at home covers the roles of caregivers, in planning, providing services, and more diverse projects. These include work practices to prevent skin infections, subcutaneous tissue, and pressure sores, prevention of eye and oral infections, prevention of gastrointestinal infections, prevention of respiratory infections, prevention of urinary tract infections, arrangement of separate patient rooms, controlling the environment, wearing gloves, using a mask to cover the mouth and nose when taking care of the health of the bedridden elderly. These projects are supported by various funding sources, system development, and better integration of health and social systems to be more balanced. The coordination and division of responsibilities are as follows:

- 1) Providing knowledge and advice about the disease can prevent complications of the bedridden elderly, such as joint stiffness and muscle atrophy which is caused by the body of the elderly being stuck in bed and lying in the same position for a long period of time, causing the joints to become stuck and unable to stretch joints normally and other complications. The relevant agencies include the Subdistrict Health Promoting Hospitals, community hospitals, District Public Health Offices, Provincial Public Health Office, Regional Hospitals, and local government organizations come together to create training projects and activities to provide knowledge both in groups and individually to relatives who care for the elderly, elderly caregivers, village health volunteers, public health officers and people in the community, etc.
- 2) Raising awareness of prevention and control infection among bedridden elderly people

By organizing training lectures to provide knowledge and create understanding of the need to prevent infection, they could encourage the ability to recognize and understand feelings, emotions, desires, and the need to prevent infection to help the bedridden elderly receive care to prevent infection and spread of germs. It is beneficial to bedridden elderly and those around them. Every agency should

give importance to relatives who take care of bedridden elderly. It is therefore necessary to help exercise the bedridden elderly every morning and evening, always taking care of the physical cleanliness of the bedridden elderly to prevent various complications. In addition, they should take good care of the health of bedridden elderly, assistance with daily life such as bathing, feeding, and cleaning the genitals after excretion of stool and urine, turning the patient frequently to prevent pressure sores and the physical condition of the bedridden elderly should be checked if the patient has any complications or not. To take care of it in a timely manner and that there should be care for the mental state of bedridden elderly. To give the bedridden elderly a good mental state, controlling diet according to chronic diseases, reducing the amount of sweet, fatty, salty, freshly cooked, easily digested foods such as fish. They should be careful of choking on food as well as arranging the environment to be suitable for use. They must clean it regularly and the windows should be opened to allow for easy ventilation. In addition, the place should be arranged to make it easy for the bedridden elderly to be moved in the event of an emergency.

- 3) Economic aspect: Relatives who care for the bedridden elderly must always take care of bedridden elderly so that they are unable to go to work outside their home to earn money, resulting in no income to take care of their family and economic stress. The related agencies including local government organizations should reach out and help them by organizing a training project and vocational training activities to supplement family income. In addition to creating a career, economic assistance also helps relieve family stress.
- 4) Reducing stress for relatives caring for the bedridden elderly: In addition to helping find a career to increase income within the family, those who are responsible for caring for the bedridden elderly should be allocated together with relatives by setting a schedule for caring for bedridden patients. Relatives caring for the bedridden elderly should find some time for private rest. At least one day of vacation per week or a long holiday, they should travel to relax in a natural environment to fully energize their body and mind, meeting friends to chat to strengthen friendships and relieve stress or find a hobby to do to create some peace of mind.
- 5) Providing materials and equipment to provide nursing care to the bedridden elderly by coordinating with the Subdistrict Health Promoting Hospitals. The Subdistrict Health Promoting Hospitals may request or borrow from neighboring Subdistrict Health Promoting Hospitals, hospital networks, local government organizations, temples, and communities to acquire medical material supports.
- 6) Building morale and mental encouragement in nursing practice in caring for the bedridden elderly. As for relatives, they should be supported in terms of equipment used to care for the bedridden elderly, continuous periodic home visits by the health care team (doctors, nurses, village health volunteers, physiotherapists, traditional Thai doctors, pharmacists, and dentists, etc.), local administrative organizations, and administrative organizations, etc. In providing nursing care for the bedridden elderly, providing advice on various problems, and talking and asking questions are essential. As for village health volunteers (VHVs) and caregivers of the elderly (Care Giver: CG), they should receive support in terms of materials and equipment for the voluntary functions such as blood pressure monitors, thermometers, gloves, and other equipment, etc. Supportive agencies in terms of materials and equipment supports include the Subdistrict Health Promoting Hospitals, community hospitals, District Public Health Offices, Provincial Public Health Office, Regional Hospitals, local government organizations, temples, communities, and schools, etc. Building morale and mental encouragement in implementation by honoring and announcing honors in the community, the home visiting nurses want recognition and respect for their work's success. Administrators and supervisors should give importance to building morale and mental encouragement in nursing practice. By honoring, accepting, and listening to opinions, confidence in the abilities and facilitation of home visiting nurses

to perform their duties efficiently could create pride in their profession and themselves. Given assignment of work and workload appropriate to knowledge and competence, the home visiting nurses could exert their effective performance. Providing professional freedom of decision-making and being opportunities to participate in professional meeting and exchange of ideas are also necessary; they could present the results of work or obstacles in work, getting to promote in career advancement, durability on the job, and secured future progress. These things could create happiness in nursing practice.

Step 3 Participation in receiving benefits (Benefits). The related agencies including Subdistrict Health Promoting Hospitals, community hospitals, regional hospitals, local government organizations, temples, communities, and schools, etc., have been involved in receiving benefits from the results of their implementations. On the positive side, they can take care of and prevent infection in the bedridden elderly at home and not cause serious and dangerous complications. The community also reduces the burden of care and uses a reduced budget. On the negative side, they could work together to improve, think together, and plan further implementations.

Step 4 Participation in evaluation (Evaluation). The related agencies including Subdistrict Health Promoting Hospitals, community hospitals, District Public Health Offices, Provincial Public Health Office, Regional Hospitals, local administrative organizations, temples, communities, and schools jointly evaluate their implementation. The results of implementation are both good things and things that need to be added. Things that are already good could continue implementing activities which are practical and efficient. They should be applied and continued to be consistent. Participatory care planning of all sectors should be integrated to continuously develop the service system for controlling and preventing infection in the bedridden elderly at home. Providing knowledge to relatives and caregivers of the elderly should be continuous monitoring and evaluation.

## DISCUSSION

The researchers discuss the research results according to important points as follows:

**Point one:** The research results revealed that problems found from visiting the homes of the bedridden elderly were that caregivers lacked knowledge on care and prevention of infection and recommendations for policy strategies for preventing infection in the bedridden elderly at home of the home visit nurses. It is recommended that the caregivers should be given knowledge and advice about the disease and prevention of complications in the bedridden elderly because almost all bedridden elderly people had many chronic diseases. Relatives taking care for the bedridden elderly lack knowledge about the disease and how to take care of bedridden elderly people. And lacked knowledge about infection conditions from caring for the bedridden elderly. This would cause them to feel unconfident and uncertain in caring for the bedridden elderly people and lack of awareness of infection prevention. These findings are consistent with the study of Wantana Kokaew (2022), who studied about nursing for the bedridden elderly with lung infections in the COVID-19 situation. That study was found that the potential of home visiting nurses should be increased in giving counseling in the form of Motivational Interviewing (MI) to create motivation to help change behavior. It would make home visits more successful. This might result from that majority of caregivers for the bedridden elderly were relatives and children who had never had knowledge about diseases and nursing care for the elderly before. They only had experience caring for the bedridden elderly at home and receiving advice from the home visiting nurses or doctors who provided treatment. In addition, diseases and caring to prevent infectious diseases in the elderly were complex and had many factors, so they could not be easily understood, which caused caregivers to lack confidence and awareness in caring for and preventing infections in the bedridden elderly.

**Second Point:** Suggestions for policy strategies for preventing infection in the bedridden elderly at home by the home visiting nurses were two main components: The first component is to find ways to solve the causes and/or additional factors of infection among the bedridden elderly, including: 1) There should be giving knowledge and advice about the disease and prevention of complications in the bedridden elderly; 2) Nursing practice, planning nursing operations; 3) Providing materials and equipment for nursing care for the bedridden elderly; 4) Economic aspect by organizing vocational training activities to supplement family income by building a career and relieving stress; 5) Reducing stress for relatives who care for the bedridden elderly, including helping find a career to increase income, allocation of duties in caring for the bedridden patients with relatives by scheduling time to care for the bedridden patients; 6) Raise awareness of infection prevention, organizing training and giving lectures and helping understanding in preventing infection; 7) Build morale and encouragement in nursing practice. The second component is that all sectors in the community should participate in joint operations and continuously monitor results. It is consistent with the study of Phisamai Butimarn, Sangarun, Itsaramalai and Ploenphit Thaniwattananon (2018) about the development of nursing guidelines to prevent complications for the elderly who were bedridden at home. Their study was found that the developed practice guidelines had 4 elements:

- 1) Assessment of problems and needs of the bedridden elderly group; 2) Planning nursing care to prevent complications from being bedridden; 3) Carrying out care activities to prevent complications from being bedridden at home, using a nursing system that supports and provides knowledge according to Orem's theory; and 4) follow-up evaluation by using a manual for caregivers as a guideline and record care activities. The complications of being bedridden are classified into five types (pressure ulcers, adhesions and muscle atrophy, respiratory tract infections, urinary tract infections, and depression). This may be due to that nursing the bedridden elderly is an important and delicate task. Caregivers must use nursing skills and art to provide care that considers the minds of the elderly and their families and participation of all sectors in the community to take care of one another in a systematic process, starting from finding problems, cause of the problem, and use it to plan the solution, choose a solution and execute the plan, follow up, evaluate, and improve to achieve the goal of solving problems for the elderly and their families. These processes require systematic thinking to cover the problems and needs of the elderly. Therefore, it is necessary to suggest strategies for caring for the bedridden elderly. There are many steps and a clear system.

## SUGGESTIONS

### Suggestions for using research

1. The analysis results of the overall level of using personal protective equipment revealed that hand washing, disposal of needles or equipment used in nursing, infectious waste, and overall management of cloth, environment, and various items were at a high level, but not the highest, which should be at the highest one. Because it is to prevent infection and spread of germs from caregivers to the elderly or vice versa, which is the last step before providing services and is the most necessary. Therefore, it is recommended that health policy makers in nursing and home visiting increase awareness of home visiting nurses and teach and advise home caregivers to see the importance and practice of using all types of protective equipment according to the standard practices.
2. The study found that there is a shortage of home visiting nurses because they have other duties as well and home visiting nurses lack morale and mental support in nursing practice. Therefore, it is recommended that the health and nursing policy makers should review, and revise workload of the

home visiting nurses to appropriate their roles and responsibilities. Since the number of the elderly is increasing and Thailand is already a completely aging society, it is important to consider increasing the number of the home visiting nurses and classifying their duties to be primarily home visiting roles as well as supporting equal career growth with other professions in a fair manner to promote morale and encouragement for home visiting nurses.

3. Suggestions for policy strategies for preventing infection in the bedridden elderly at home by the home visiting nurses, which were found to cover factors related to every sector, the recommendations should be used as guidelines for relevant agencies to use in formulating strategies so that they could effectively prevent infection in the bedridden elderly at home by the home visiting nurses.
4. The study results found economic problems because caregivers of the bedridden elderly must take care of them all the time so that they were unable to go to work outside their home to earn money, resulting in no income to support their family, and resulting in economic stress. It is recommended to relevant agencies, including local government organizations, social development and human security development, developmental professionals, Sub-district headmen, village headmen, and wealthy people in the community should be assistance by organizing volunteer training programs and vocational training activities to supplement family income and provide a sales market and have someone come to pick up the products at home, and establishing a system for compensation to be returned fairly.

### **Suggestions for future research**

- 1) The public participation to prevent infection in the bedridden elderly in the community should be encouraged and further studied.
- 2) The developing and promoting the quality of life of elderly caregivers with participation in the community should also be further studied.
- 3) There should be a research study to solve the problem of the lack of nursing staff to visit homes in various levels of communities to propose policies for the production and further development of the potential of nurses in Thailand.
- 4) There should be an analysis of needs of home visiting nurses based on the actual nature of their work to be able to allocate home visiting nurses to take care of the elderly's health thoroughly and realistically.

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