Development of Health Care Needs Mapping of the Elderly People with Chronic Diseases in Thuy Chau Ward, Huong Thuy Town, Vietnam

Vo Thi Diem Binh[1], Nguyen Thi Anh Phuong[2], Darunee Jongudomkarn[3]

[1,2]Faculty of Nursing, Hue University of Medicine and Pharmacy, Hue, Vietnam-53000
[3]Faculty of Nursing, Khon Kaen University, Khon Kaen, Thailand-40002
Email address: vtdbinh @ huemed-univ.edu.vn, phuong.nta @ huemed-univ.edu.vn, darjon @ kku.ac.th,

*Abstract— **Introduction:** Health care needs mapping is an easy-to-understand visual tool to demonstrate the demographic, community health care needs, available resources, and current health care infrastructure. In the developed countries, applying the community health mapping to assess and address the community health problems for a long time and the results have shown that health mapping provides visually reports on the local needs and assets but in the developing countries applying the community health mapping for planning and management community meet several barriers like shortage of quality basic data, the limited of resources **Methodology:** Mix-methods study was used in this study. Phase one was to develop a database by using Multiple approaches and sources were employed to determine the community health status at Thuy Chau ward. The health care mapping was designed based on findings of the needs assessment which evaluated the utilization of mapping and modified following feedback of focus group discussion among local health care workers at Thuy Chau Ward Station. **Results:** The designed health care need mapping was an effective tool for holistic rapid communication amongst health care providers about chronic health care needs at the community level. **Conclusions:** The study demonstrated that healthcare needs mapping tools were a useful and inexpensive tool for visualizing accessing healthcare data. Further health care needs mapping should focus on users' problems and requests for additional features, and health mapping should expand into the health system.*

Keywords— Elderly people; health care needs mapping; Vietnam.

I. INTRODUCTION

Health care needs mapping is an easy-to-understand visual tool to demonstrate the demographic, community health care needs, the available resources, and current health care infrastructure (1,2). They are an extensive analytical tool for the decision-maker in the classification of funds, human and construction health services to reduce health inequalities, ensuring proper selection of priority interventions to meet the needs of patients (2). In the developed countries, applying the community health mapping to assess and address the community health problems for a long time and the results have shown that health mapping provides visually reports on the local needs and assets (1,3,4) but in the developing countries applying the community health mapping for planning and management community meet several barriers like shortage of quality basic data, the limited of resources (1).

In Vietnam, the need for health care services among elderly people at the primary healthcare level had been increasing. However, the capacity of the health care worker is weak because trained human resources are very limited. Furthermore, the inadequate inter-linkages among geriatrics care networks affect the ability to provide comprehensive and continuous care for elderly people in the community. Some specific geriatric services have not yet received adequate attention; even though there are many policies to support health care for elderly people, the financial burden for the family of elderly people with non-communicable diseases was still high (5). Recent research was conducted with the main aim to assess general health care needs (6) or indicate the burden of chronic diseases (7) to provide the basic data for intervention. It still lacks comprehensive interventions to demonstrate the health care needs of elderly people with chronic diseases and multidisciplinary communications. Thus, these phenomena support my interest in the Development of the health care needs mapping of elderly people with chronic diseases in Thuy Chau Ward, Huong Thuy Town, Vietnam with the aim to create the health care needs mapping of the elderly people with chronic diseases to form which is easy to use and learn, less time-consuming and includes training to enhance the nurses' capacity to provide optimum care for local patients.

II. METHODOLOGY

2.1. Study Design

This was the mix-method study, approach while going through 2 phases involved developing the health needs mapping, and applying and evaluating.
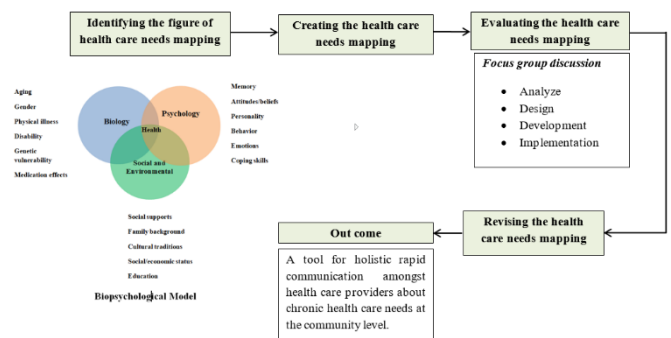

Figure 1: The conceptual framework of mixed-method study

2.2. Participants

A quantitative survey by Camberwell Needs Assessment of elderly people (CANE) on 422 elderly people for identifying

their needs of them, who have at least 1 chronic disease, were willingly joining research, Mini-Mental Health Scale (MMSE) score ≥ 24 points and have stable health, based on the opinions of the patient him/herself.

The focus group discussion was conducted with 6 health care staff. The inclusion criteria included those who directly used the health care need mapping to explore the health needs of the elderly with chronic disease and had as least 1–year-working experience, gender was female and the volunteer participants in his study. The participants have the same sex to prevent bias and dominant group voicing (Stewart et al., 2007). In this study, the researcher chose the participants who were female because the number of female health care workers at Thuy Chau Ward Health Center is over than males (6 females and 1 male). Purpose recruitment was used in this study to identify and select information-rich cases related to the phenomenon of interest. All participants were willing to join and aware of the aims of the study. All participants were informed that they could withdraw from this study anytime.

2.3. Research Procedure

2.3.1. Development the health care needs mapping

For identifying the health care mapping indicators, the multiple approaches and sources were employed to determine community health status at Thuy Chau ward including 1) Existing data review, 2) Interview community health station leader and the population-family planning collaborator; 3) Quantitative survey by Camberwell Needs Assessment of elderly people (CANE) on 422 elderly people for identifying the needs of them, who have at least 1 chronic disease, were willingly joining research, Mini-Mental Health Scale (MMSE) score ≥ 24 points and have stable health, based on the opinions of the patient him/herself.

Then developing the health needs mapping based on the administrative map provided by the People's Committee of Thuy Chau Ward. There are 3 elements were illustrated in the health care needs mapping including the needs of elderly people with chronic diseases identified by the CANE questionnaire survey; the health risk factors of the local areas collected by the in-depth interview with the Head of Thuy Chau Ward Health Station and the locally available supply. For the detailing data, there were specific data tables about the needs of the elderly people in the right corner and the demographic characteristic table in the left so that viewers can know the detailed data of the map.

2.3.2. Application and evaluation of the health care needs mapping

After the development of the draft health care needs mapping, the actual application of the mapping was performed for 2 weeks by the Thuy Chau Ward Health staff to try out using the mapping for identifying the health care needs of the elderly people with chronic diseases in Thuy Chau Ward. In the first week of application times, the conference was held in the meeting room of the health station to share the experiences of using mapping. While reflecting on their experiences, the participants wrote the following information in their notebooks: the advantages and disadvantages of the mapping; the mapping interface, the goals of health care an

2.4. Data Analysis

The qualitative data collected by group discussion were analyzed by dividing them into the advantages and disadvantages and the reflection to express the study results in a clearly understands for other people.

Statistics Package for Social Sciences (SPSS) version 20.0 was used to analyze data on the survey and content analysis will be used to analyze data from the transcripts. Ethical consideration: The study was approved by the Ethical Committee of Human Research at Khon Kaen University (KKU), Thailand (HE632154). Participant's identity was masked with a code number; was completely voluntary with the right to refuse at any time. All information collected in this study was kept confidential and used only for research purposes.

III. RESULTS

3.1. Reviewing existing data

Location: Thuy Chau Ward located in the Huong Thuy District, has 1795 ha. the population is estimated at 11846 in 2019 and the percentage of elderly people accounts for 11% (According to General Statistic Office).

Social-economic: In Thuy Chau Ward, 56% of the elderly people with chronic diseases are working in agriculture. Thuy Chau is famous for trading scrap materials therefore it causes noise and air pollution. The poor awareness of environmental sanitation not only makes a polluted environment but also causes Dengue Fever are endemic disease at Thuy Chau.

Religion, belief, and spirituality: the local people believe in Buddha and God, whenever they have health problems they access the health services station and also pray for Buddhists and God to help them recover and be healthy. Most elderly people live with their children. For daily activity, the elderly people take care of their home, prepare the food, and take care of their grandchildren when their children go to work or farming. The elderly people are taken care of by their children and their child when they get sick.

Language and communication: 100% of residents are of Kinh ethnicity. Communication in this village is convenient for the villager when they want to access the social place like Health Center, Province Hospital, schools, and markets.

Health belief: The elderly people change their healthy lifestyles they ate reduce salt, grow the vegetable for eating, did the exercise every day, reduce their sugar... However, there are still a few people who believe in the priest, they strongly believe that priests connect normal people with the spirit who helps them recover from illness, prevent disease and bring healthy life to their family members. So when they get sick, people access the health station for examination and also come to the priest's house to worship or some of them go to the church and pagoda for worship.

3.2. The health needs assessment of the elderly people with chronic diseases by CANE questionnaire survey (8)

Un-meet needs in the area of accidental self-harm were the highest with 11%, followed by the eyesight/hearing/communication with 5.2%, daytimes-activities were ranked the third. In the neighbor 2,4,7,8,9 and

10 the proportions of un-meet needs in the area accidental self-harm were the highest with 13.3%, 16.7%, 11.4%, 9.5%, 20.8% and 13.3% respectively. Meanwhile, the number of persons who scored un-meet needs in the eyesight/hearing/communication area was highest in neighbor 3 and neighbor 7.

TABLE 1. The meaning of the icon on the health care needs mapping of Thuy Chau Ward

Icon	Meaning
	The proportions of elderly people people with *cardiovascular diseases*.
	The proportions of elderly people people with *cancer*.
	The proportions of the elderly people people with *Chronic respiratory diseases*.
	The proportions of the elderly people people with *Diabetes*
	The proportions of the elderly people people with *Musculoskeletal disease*
	The proportions of the elderly people people with *eye diseases*
	The proportions of the elderly people people with *other diseases*
	Than Phu Market
	Than Phu Pagoda
	Than Phu Church
	Thuy Chau Ward Commitee
	Thuy Chau Ward Health station
	Huong Thuy District Hospital
	Foods
	Accidental self-harm
	Eyesight/hearing/communication
	Intimate relationships
	Company
	Memory
	Information (on condition and treatment)
	Physical health
	Benefits
	Money/budgets
	Dengue Fever
	Scrap fields

Foods and benefits were ranked the first among un-meets needs in the neighbors 5 and 6. Meanwhile, the number of persons who scored met needs in the information area was highest with 55.5%; the second was in the foods area with 22.1%

3.3. Health care needs mapping interface

The health care needs map was designed based on the administrative map provided by the People's Committee of Thuy Chau ward. This map includes 3 types of datasets: health care needs of the elderly people with chronic diseases, health risk factors, and available supply. The symbol (table 1) were designed depending on the local traditions and culture. The researcher was counseled by the Head of Commune and Population Assistant, who are the residents and have more than 15 years of work experience as a healthcare workers. Users could compare the health information of each neighbor by overviewing the symbols and the go to the table for more detail. Mapping interface: the mapping interface could be divided into four distinct parts: the top rights panel was the gloss of the symbols; the middle was the mapping; the bottom left panel consists of the data table related to the demography information of the elderly people with chronic diseases and the right side was the health care needs data.

Color coding: Each health care center symbol was drawn in different colors and these colors were expressed also for the neighborhoods where the percentage of people visiting the center is highest.
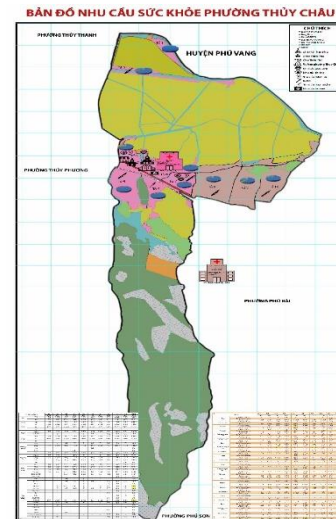
Figure 2. The vertical health care needs mapping which was completed similar to the administrative map.

Two drafts of the health care need mapping was designed to present for asking the health care worker's opinions in the focus group discussion. The first mapping was the vertical health care needs mapping which was completed similar to the administrative map (figure 2); the second one was the horizontal map which also focused on the residential area (figure 3).

3.4. Usability evaluation

After 2 weeks of using the health care needs a mapping for identifying the health care needs of the elderly people with chronic diseases at Thuy Chau Ward, Huong Thuy Town with

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the local health workers. The researcher collected their feedback to modify the map as well as simple and visual to use. We received positive feedback on the mapping as an Effective tool for interdisciplinary communication for identifying the needs of elderly people with chronic diseases and finding out the suitable intervention depending on the available resources to meet their needs.

"I felt that the visual representation of local health care needs and resources were very interesting."

"The health care needs mapping gave an overview of local health care needs and available resources before accessing specific data."
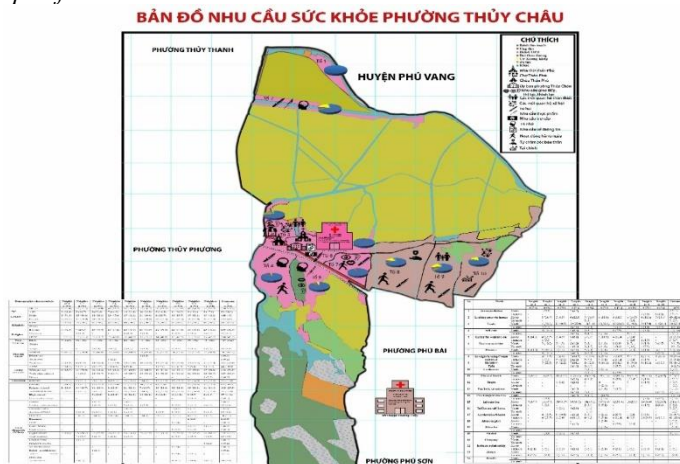

Figure 3. The horizontal health care needs mapping focused on the residential area.

"The current national health programs focused on the elderly people care rather than the maternal and child so every year, Hue Eye Hospital and Psychiatric Hospital visited and screened for the elderly people in the locality. However, this process only took place for 1 day, it was not enough time for screening all elderly people in Thuy Chau Wards. I strongly believed that I was able to use this tool for holistic rapid communication with the health care workers at Hue Eye and Psychiatric Hospital to choose the priority neighbor."

"The health care needs mapping produced visual results for presentations that would make the policymakers take action to improve the health and quality care of their resident"

Besides the positive feed-backs, the user had a few minor suggestions about the usability of the interface, the icons, and the color coding was changed to help them use the tool effectively. Regarding the interface of the mapping, the health care workers found that the horizontal map was more suitable to present information rather than the vertical one because the area of the residential was enlarged to easily access the information such as the model of diseases, the health care needs icon and supply resources; moreover, the horizontal map illustrated health model chart with specific proportion for each disease so the users do not needs collate the figures

In my opinion, the horizontal health care needs mapping was the most suitable because it overcomes all the disadvantages of the two maps above. In particular, the users were able to focus on the main content that the researcher would like to illustrate; the icons were big enough to clearly watch."

"I was able to read the figures at the two tables on the right and left corner from my position (far from the map 1.5 - 2m)."

"This chart impressed me more than the other two mappings because the content was clear."

In this study, the participants agreed that most of the health care needs icons reflected local culture and reality; however, it should modify some icons involves health model charts should be changed colors to avoid confusion when distinguishing different diseases; the accidental self-harm needs the gas stoves icon was more appropriate than the crescent. The participants mentioned that Thuy Chau Ward Committee directly managed the station in administrative terms; hence, it was necessary to fill the information to emphasize the role of the committee and add more information to the Huong Thuy District Hospital. In the datasheet, it should use three different colors to mark the un-meet needs were ranked the first, the second, and the third.

"I thought these needs icons reflect the culture and reality of the locality."

"elderly people often forgot to turn off the gas when cooking or forget to lock the door. So I thought the icon of a gas stove to indicate the accidental self-harm would be more appropriate than a crescent because the crescent reminds me of patient suicide or killer him/herself with a crescent but this event had never ever taken place."

The subjects also reported some usability challenges that took a lot of time because they have to collect the health needs of elderly people people with chronic diseases by the standard tools (CANE questionnaire) and the questionnaire was too long with 24 items and then they have to analysis and synthesis the annual health data as well

"As I mentioned before, most local elderly people were still working as farmers; scrap collectors, or small traders at their homes so after assessing the health station for examination, they came back home to continue their work. Moreover, the older patients usually assess the health station in the morning because it was cool so after the examination was completed then conducting the questionnaire survey, this process made the quire times for the next person was longer"(HN)

"There were only 7 health care workers at Thuy Chau Ward Health Station and we must health managed for more than 11000 so sometimes we did not have enough time for the health needs assessment." (NP)

"It still lacked the quality health data at the community level so it was the most challenge for the health care workers to create the health care needs mapping because the staffs must to synthesized and analyzed the health data by themselves but usually we did not have to do it." (NH)

The printed health needs map was available for a short time because the health needs of the elderly people participants as well as the local resources would change over time. As a result, printing news mapping was costly and the user cannot compare local figures over time.

"This printed map has to be changed when people's needs change so it was difficult for users to compare the current data of the interesting area to the previous data."(NP)

"Unlike the administrative map which changes very rarely, the health care needs mapping change over time. If I conducted an annual health needs assessment of the elderly people, it took money for printed the new one." (HN)

"I thought that we did not have enough space for store old mapping also." (VH)

After receiving feedback from health care workers, health care needs mapping was revised sufficiently. The horizontal map which focuses on the residential area was chosen to continue modifying.
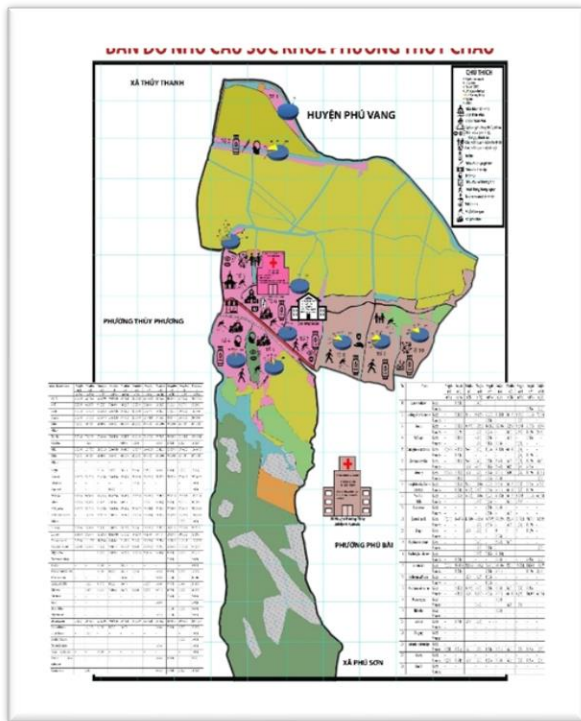

Figure 4. The modified health care needs mapping

In terms of icons and health model charts, the researcher modified them based on the health care worker's ideas. For the health model charts, the color of the components was changed for making sense to distinguish the different diseases and fill the specific proportion of the diseases illustrated on the chart also. In particular, the dark blue marked other diseases was changed by light blue; the Aqua marked the musculoskeletal disease was changed by the light yellow. Regarding the icons, the crescent was changed by the gas bottle icons to present the accidental self-harm demands. There was the information filled inside the Thuy Chau Ward Committee and Huong Thuy District Hospital icons "Thuy Chau Ward Committee was the administrative management"; "Thuy Chau Ward Committee functions such as financial and national health care program management, coordination of local resources"; "Huong Thuy District Hospital was the specialize management". For the data table, red, yellow, and light blue were used to mark the three demands with the highest ratios respectively.

To overcome the barriers to development the health care needs mapping, for subsequent surveys, it is convenient for the health care worker to add the new research results (demand icons, health risk icons, and datasheets) by sticking the news

ones on top of the old (like flipbook models). As a result, the user easily accesses and compares the demographic data, and the resident demands at different times.

IV. DISCUSSION

In this study, the problem in the community that health care workers WAS the lack of knowledge to collect and report the needs of elderly people with chronic diseases. This problem emerged because they have never training about the health needs assessment and reports this process results as well, as one of the health care workers said: "Vietnamese Ministry of Health does not have the Circulation or Funding or training for knowing how to synthetic and analyze medical information at the Commune Health level". These quotes showed a gap of knowledge IN the collection and report of health data among the health care workers at the community level, which lead to lacking the quality health data for taking action to improve the health and the quality of health care in their regions. This study indicated that low-quality health care is related to the lack of holistic knowledge about the patients of the health care workers in the community. As the main objective of this study IS to develop a tool for holistic rapid communication amongst healthcare providers about chronic HEALTHCARE needs at the community level, therefore the first step should enhance the capacity of health care needs assessment among the HEALTHCARE workers IN the community. To support this statement, detailed discussions are described below. In line with this study, several studies have indicated that there is a lack of reliable baseline data to the difficulty in implementing health mapping in the developing countries (6,9,10). The researcher collected data for the health care mapping by the CANE questionnaire to identify the health demands of the elderly people participants; interviewed knowledgeable long-term health care workers about the local customs, health issues, and the health risk factors in the local area; and in consultation with the Thuy Chau authorities to sketch out the boundaries of Thuy Chau Ward. The health care needs mapping in this study illustrated 3 elements such as the demands of the elderly people participants, the health risk factors, and the available supply. The relationship between the 3 elements is important for the health marker when assessing health needs (Wright et al., 1998). The tool was reviewed by the health care workers at Thuy Chau Commune Health Center, who had experience within the health care services for a long time. The results of THE Focus Group Discussion among Health Care Workers at Thuy Chau Commune indicated that the health needs mapping is the health data picture that gives AN overview OF the partners of diseases in the elderly people participants; learning more about the patient's needs and their priority; highlight the areas of unmet needs and providing the available resource to set of the intervention to meet these needs; the health policy and the interagency collaboration. This information helps the foreign researcher and the health care marker understand more about the community and set up the priority interventions for improving the health care of elderly people with chronic diseases. In Indonesia, a study about applying the health mapping in a low resource setting showed similar results that the simple, easy, and flexible health mapping was suitable for

the community level and the health mapping was very helpful for the clinics (1).

V. CONCLUSION

The tools presented in this study offer an inexpensive, reliable, and efficient means of assessment and communication among the interdisciplinary. However, whether a community health station adopts the use of these tools is depending on factors such as staff preparation and training, client needs, and agency goals. Based on the feedback from the health care workers, we further adjusted the tool regarding the format, icons, and content.

The limitation was minor the family caregivers were excluded, which impacts insufficient information on the holistic assessment of older people. Although the information about these objects is also valuable the number is immense, hence requiring a long time and enormous resources thus, my study is unable to cover this object.

ACKNOWLEDGMENT

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