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Editorial Statement

I am delighted to welcome you to the International Conference on Advancement in Health Sciences Education and Professions: *Synergy and Reform for Better Health* (iHSEP2019), which is organized by the Praboromrajchanok Institute, the Ministry of Public Health during November 11-13, 2019 at The Miracle Grand Convention Hotel, Bangkok, Thailand.

This international conference has been organized with an intention to '*synergize and reform for better health*' through improving the standard of research and education, as well as ultimately the health care system. There is an expectation that this conference will provide a great opportunity to professionals inside and outside Thailand to share their knowledge and experiences, and to strengthen the collaboration for the better health. Importantly, this year there is the royal coronation ceremony for the King Rama X. The main activities of the conference include keynote addresses, workshops, plenary presentations, research presentations, discussion, as well as learning about Thai culture.

IJPHS aims to publish original articles and contributions relevant to public health and medical sciences. It is a non-profit, peer-reviewed, open-access, international, scientific journal that publishes articles in areas of health sciences disciplines. The scope of the IJPHS is broad, covering the following categories: original articles, reviewed articles, special articles, case reports, correspondence, and others in the fields of public health, medical sciences and related allied health. Three issues will be published annually. Authors from all areas of health and medical sciences are invited to submit scientific papers and contribute in this journal. This second issue is consisting of interesting variety topics covering public health and medical sciences which you can download articles in the journal at the website https://www.tci-thaijo.org/index.php/ijphs

The editorial board of IJPHS sincerely hope that the members, faculty members, students, medical, nursing and public health personnel as well as alumni who are interested in obtaining more detail from original articles, reviews, and other to use or transform research information into teaching and research fields.

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Content

Original article

The Problems that Affect Finances of Elderly Patients Undergoing Stroke Recovery at Home

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Abstract

Potential outcomes of stroke are fatigue, pain, dependence on others to complete activities of daily living, and economic problems. We conducted a qualitative study to investigate the economic needs of elderly patients undergoing stroke recovery at home. The sample group consisted of 10 elderly patients who were obtained by purposive sampling. Data were collected through interview. Obtained qualitative data were analyzed by using content analysis. Results of the study revealed that all of the informants were government official retirees having an income for 13,500 – 28,000 baht per month. Most of them stayed with their caregiver at home (60%). The rest of the participants were at home alone (20%) or stayed with family members (20%). They could not go to the bank or Automatic Teller Machine (A.T.M.) to withdraw cash money. They also could not trust anyone to manage their personal finances. All of the informants (100%) were financially taken advantage of in various forms. Examples include money was stolen from their house, they were overcharged for food and other things, or they were extorted for money and threatened with physically assault. Respondents identified desired potential solutions for their economic needs: 1) financial management system operated by a public agency, particularly the Ministry of Public Health or a public university; 2) inexpensive service charge with recognized standards and a system to submit complaints in the case of any improper charges or financial practices; 3) financial security system provided by a bank or concerned agencies; 4) house security system such as close circuit camera and online systems; and 5) effective elderly care taking training center.

Keywords: Economic needs, The elderly, Stroke

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Introduction

Nowadays, stroke is an accelerating public health problem for public health in Thailand and other countries across the world. There are 15 million new stroke patients each year (WHO, 2015). Of this amount, only 5 million survive but most eventually become disabled or permanent paralyzed 2/3 of those are in developing countries (WHO, 2015). According to the statistics from the Office of Policy and Planning, Ministry of Public Health, Thailand, the stroke causes morbidity, which ranks third after cancer and accidents. In 2012, stroke was mostly found in people who are 45 years old and above, particularly among the elderly. Although there is progress in medical science at present, 32 percent of the elderly that experience strokes become disabled (Punjaisri et al, 2015). That is, they have physical changes and perception deficiency that limit patients' ability to take care of themselves. Besides, physical and mental changes due to old age, strokes often result in long-term dependence on family members and others for help. Currently, after the stroke recovery, clinicians suggest that the patients rest at home to bed and undergo physical recovery (Anna et al, 2019). The initial period of stroke recovery of the patients is different. Typically, recovery begins at the first three months after the occurrence of the stroke, and the patient continually gets better until full recovery is reached after sixth months up to one year. However, some of the patients are still recovering even after passing one year (Spence and Barnett, 2012). Stroke recovery at home is very important. In fact, there is forward care system in Thailand in which patients visit Health Service units nearby the house and community medicine center, and health promotion hospital that the staffs from Health Service units do home visits in the patients' homes.

Boromarajonnai College of Nursing, Nakhonratchasima offers a training course on the elderly care-taking with the coordination of Nakhonratchasima Municipality office. Most of the elderly being taken care of are crippled due to stroke disease. Although the elderly stroke patients receive help from a caregiver, many stroke elderly patients that are well-educated and financially stable feel that they are forgotten and do not have a close relationship with the society (Phetruang et al, 2013). A previous study on needs for stroke recovery at home of the government official retirees found that most of stroke patients wanted a care-taking system for their personal finances. Stroke recovery patients also wanted to be at home rather than the hospital (Runkawatt et al, 2016; Rodsom et al, 2015). Based on the lack of previous studies on this issue based on our literature review, we decided that a study on the economic problems of elderly patients under stroke recovery at home was needed. This study aimed to explore contextual factors and economic problems of elderly government official retirees undergoing stroke recovery at home.

Theoretical Framework

The theoretical framework was an explicit mapping of the research problem of a specific domain of elderly government official retirees undergoing stroke recovery at home, and the economic problems that follow assessment.

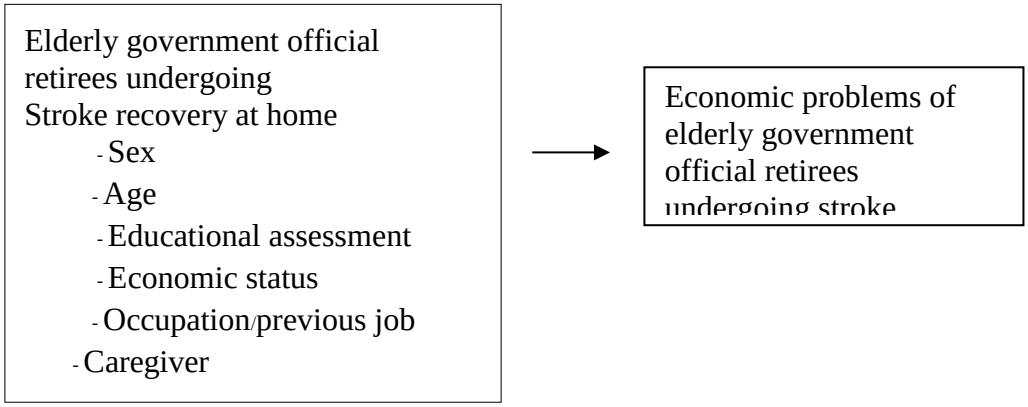

Figure 1. The theoretical framework of this study

Research Methods

Study population and Sample

The sample in this study consisted of 10 elderly government official retirees undergoing stroke recovery at home obtained by purposive sampling. The inclusion criteria were 1) Persons 60 years and above of both genders who were undergoing stroke recovery at home, and they must live in Muang district, Nakhonratchasima province and all were interviews conducted within one year of the patients' stroke incident, 2) Persons 60 years and above of both genders who were undergoing stroke recovery at home, and they must live in Muang district, Nakhonratchasima province and all were interviews conducted within one year of the patients' stroke incident, 3) Economic security: a monthly income of more than 10,000 Thai baht, 4) Residential security: participants had own house and were able improve their house and its environment to be suitable for receiving healthcare and caregiving, 5) Caretaker security and conditions that safe : participants had access to a personal caregiver, and 6) Patient had physically and mentally adequate health: Good consciousness and be able to provide reliable data during the interview.

Questionnaire Interviews

The research questionnaire interviews in this study included a team of researchers and interviewers, personal data recording form, questionnaire about economic problems of patients undergoing stroke recovery at home, field notes, and sound recording equipment.

Data collection

- The team of researchers submitted their research proposal to the Research Ethics Unit, Nakhonratchasima, Maharaj hospital and received human subjects ethics approval to conduct this study.
- The team of researchers met the participants individually at their house, introduced themselves, and explained the objectives of the study as well as steps of data collection to participants.
- The team of researchers asked for coordination for conducting the study. In addition, the sample group was informed that they could quit jointing the study without any explanation. All participants provided informed consent.
- Researchers completed in- depth interviews with participants. The informants gave information about their experiences, feelings, and needs about economic problems related to being an elderly stroke recovery patient. Each in-

depth interview lasted about 45- 60 minutes and was recorded.

- The interviewer also recorded field notes along with interview responses. At this stage, interviewers took notes based on facts and without interpretation.
- Researchers conducted daily data interpretation with the assistance of a tape recording of the interview. Correctness of data was checked. The interview was conducted again if data from the interview were not clear enough.
- Researchers checked the obtained data for completeness, and credibility of the findings. After that, they used the triangulation method to check the data obtained by interview with inquiries with the patients' relatives and caretakers.

Data Analyses

Qualitative data were analyzed by using content analysis. The following steps that can be followed to code a text or set of texts during relational analysis, including 1) Identify the questions, 2) Determine the type of analysis and reduce the text to categories and code for words or patterns. The requirement of one's specific research question may necessitate deeper levels of coding to preserve detail for analysis, 3) Choose to code for what words that have such an ambiguous nature in relation to the importance of the information directly related to those words, 4) Explore the relationships between concepts (strength, sign & direction), 5) Code the relationships, and 6) Perform statistical analyses and map out the representations that involve exploring for differences or looking for relationships among the variables, the researchers identified in this study which play a central role in exploring the relations among concepts.

Ethical Approval

This study was approved by the Ethic Committee of Boromarajjonnani College of Nursing, Nakhonratchasima (No. 008/2559).

Results and Discussions

Demographical data from our study showed that one-half of the informants were male. On average, they were 68 years old. The time span of stroke recovery ranged from 6 months to one year for two informants, and one year and above for 8 informants. All of the informants were government official retirees with a monthly income range for 13,500 – 28,000 baht, with 19,215 baht/month as the average. Most of the informants (60%) stayed at home with their caretaker. Twenty percent of the informants stayed alone at home, and the other 20 percent stayed with their family.

Results of the study revealed five key areas causing a range of problems, including economic challenges for elderly stroke patients, as well as possible solutions suggested by the study participants. A summary and excerpts from the interviews to illustrate these findings are as follows:

A. Physical needs: Informants did not have previous life plans to account for having a stroke and being crippled. They did not have a plan for their finance, residence, and caretakers after being affected by the stroke.

One informant described:

"I had never thought that I would be sick before my retirement and I made a plan to build an ancient style house in a sufficiency economy garden. Anyway, when I am sick I have to build a room downstairs and stay there up to the present. Now, I have no extra income but expenses."

Additional Problems: Other informants described difficulty accessing money and not having a social support network close by their home.

Interview excerpts that illustrate this include:

"I receive my pension every month, and think that my children will take care of me because I have money. I decided to buy a house in this province since I worked here with my close friend. I had never thought that my close friend and I would be sick with the same disease (both had experienced a stroke?). Unfortunately, our relatives are far away from us."

"I have a problem in being able to spend money because all of my money is in the bank and difficult to withdraw money from the A.T.M."

"I have to ask for others to buy me needed things such as clothes, underwear, and food. And my house is far from the city center. I have to hire a taxi when I need to go somewhere, and pay around 600 baht for traveling back and forth."

– **Proposed solutions**: Participants proposed different solutions to help them overcome their different problems. This information is particularly useful because it can inform policy makers, planners, and government officials in charge of putting together programs to assist elderly stroke patients in recovery.

"It will be good if there is a financial management system for me, or there is a food ordering and delivery program, or a system for me to purchase things I need which is inexpensive and affordable. It is too sad to stay at an elderly nursing home and too expensive to stay in a private hospital".

"I would like to have a caretaker from a reliable public agency which can be responsible for me in the case of I am hurt by the care-taker or my caretaker steals from me..... I am willing to pay for the close circuit camera installation, connecting to the public agency to monitor the caretaker".

"I would like to have a care-taker who loves the elderly, and can sometimes take us to relax elsewhere. It would nice if he/she has some knowledge about physical therapy. I would like the Public Health or University to be responsible for this matter".

B. Safety Needs

All of the elderly stroke patients that we interviewed felt there no safety in their life. They were concerned about their financial assets and were worried about keeping a lot of money at home because they are unable to protect it. A key problem was that the patients felt that they had no reliable person to be responsible for their finances. One hundred percent of the elderly had experienced being taken advantage in various forms such as loss of money in the bank account, loss of money or assets in the house, extorted with physically assaults, etc.

Descriptions of lack of safety included:

"I bought the house in a housing estate because I believed that it was safe, but there are thieves and burglars."

"I have my children withdraw money from the A.T.M. But some money gets lost every time. I can do nothing because I have to rely on them."

"It is dangerous to keep a lot of money with me……I think that it is safer to stay like poor people."

C. Social Needs

The informants had little social interaction with the community and felt socially isolated. Most of them oved from other places or were not born there.

Descriptions of the lack of social contact include:

"Before the retirement, I seldom had available time to mingle with local people and I preferred to stay at home. So, they seldom visited me."

"I bought the house in a housing estate but I only familiarized with my next door neighbors. I mostly travelled with my group of close friends."

" I had worked here for a long time so I decided to buy the house. I don't want to return to my hometown because no one there knows me and my parents have passed away already."

"My caretaker can't speak Thai clearly, and I don't know what he thinks about me being an old disabled person. He sometimes complains or shut a door loudly when I tell him to do some things for me."

"I am like a forgotten person. Many people think that I am rich, and that I do not like to mingle with others. Therefore, they ignore me. Indeed, I want someone to visit me."

Possible solutions for safety and social needs: Participants offered practical solutions for their needs.

"There is financial security system provided by the bank. However, I would like to be able to inform the bank in advance that I will have someone withdraw money for me because I am sick."

"I would like some concerned agencies to take care of us in terms of financial aspect for safety in spending money."

"The security system at home such as closed circuit camera installation and online system that can monitor the care-taker. The fact is my nephew living far away wanted me to stay with him. So I did as he wanted, but I was unhappy because I did not stay in my own house."

"I do not expect too much but at least I sometimes want someone to visit me."

"Anyone can invite me to join a chat line group so I will have a chance to familiarize with others."

D. Esteem Needs

Stroke recovery patients often struggle with feeling good about themselves, including their abilities and strengths. They feel a lack of acceptance and respect from others and the larger society and their ability. Interview excerpts that illustrate this point include:

"I used to be a volunteer taking care of patients and admired by them and others but few people visit me where I am sick. I want to see my friends but they only send me a "Hello" picture online and suggest me to order medicinal plants."

"I am crippled who only sit on a wheel chair and no one invites me to be a resource person. My students never call on me but I used to be invited to be the chairperson in New Year or Songkran festivals. I want to join the festivals but I am afraid that a person who will pick me up will be inconvenient."

"I cannot walk and no one listens to me. Unlike, in the past, people having a problem usually visited me and asked for my help."

E. Self-actualization Needs

Patients also feel difficulty with self-actualization that is fulfilling what they believe they are capable of now, or what they were able to do in the past.

Interview excerpts showing difficulty with self-actualization include:

"I used to have a perfect and happy life but now I am crippled and I can take care of myself if there is a good assistance system such as financial one."

"I have money but I can't spend it. My daily life is filled with cautiousness now. I don't want to stay at the hospital for the elderly but want to stay at my beloved home."

"I sometimes want to die because I don't want to be a big burden for my nephews and nieces."

Discussions

Findings from our study showed that what the informants needed most was an economic care-taking system. The informants wanted to be able to spend their money and manage it safely. The following needs and corresponding solutions suggested by the informants:

a. The financial management care-taking system managed by the public sector, particularly by the Ministry of Public Health and Public University. Based on previous literature review, a study related to our study was not found. However, previous studies have also identified a need for systematic care-taking of stroke patients (Peangsungnern, N. et al, 2016; Hafateinsdottir, T, et al, 2011). Our study provides further evidence that a public agency should be responsible for determination of policy and planning on the stroke patient caretaking.
b. A system of inexpensive, standardized service charges. Elderly patients with chronic diseases, such as those recovering from strokes, should be able to obtain to services that promote good quality of life and should receive

reasonable service charges so that the patients can access it.

c. Provision of the financial security system at home. This can be done through closed circuit camera installation and online monitoring system.
d. Provision of the financial security system by the bank and concerned agencies

We also suggest that there are more training centers to provide the required training for elderly patient caregivers. The care-taking training system is an important factor on stroke patient care-taking (Alimohammadi, N, et al.,2015). Another study (Helen, R. et. al., 2019) found that the desired characteristics of the elderly caretakers should include: knowledge, attitude, and practical skills. Each caregiver should meet specific standards and levels of skills so they can deliver high quality care.

Suggestions for Further Studies

We suggest that future studies could look at the effectiveness of a program that addresses the financial challenges of elderly disabled or chronic disease patients that stay alone at home. A long-term study of a financial program could monitor effectiveness of for 6-12 months after the stroke disease is found.

Conclusion

Elderly patients undergoing stroke recovery at home experienced financial and other problems in five areas: 1) physical needs, 2) safety needs, 3) social needs, 4) esteem needs, and 5) self-actualization needs. They identified desired potential solutions for their economic needs: 1) financial management system operated by a public agencies, particularly the Ministry of Public Health or a public university, 2) inexpensive service charge with recognized standards and a system to submit complaints in the case of any improper charges or financial practices, 3) financial security system provided by a bank or concerned agencies, 4) house security systems, for example, close circuit camera and online systems, and 5) effective elderly care taking training center.

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Original article

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Health Risk Behaviors of Formaldehyde Exposure among Salon Workers in Nakhon Si Thammarat Province, Thailand

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Abstract

An exposure study was conducted to characterize potential formaldehyde exposure of salon workers and clients during hair treatments. We also studied knowledge, attitudes, and behaviors on chemical usage of the formaldehyde among salon workers and assessed their health risk protection behaviors. Data from a total of 55 salon workers who worked at 39 different salon beauty shops were collected. Results were analyzed based on tasked sampling and treatment sampling. Most workers were female (96.4%) with an average age of 37 years old. A majority of workers graduated from lower or upper secondary schools (56.4%), are married (52%), and earn an average income of 15,372.7 Baht per month. Most salon workers had moderate or high knowledge of formaldehyde (80%), and had high attitude towards chemical management (56.4%), and had low level of formaldehyde risk of practice (70.9%). A health risk assessment based on the average concentration of formaldehyde revealed that the risk probability of cancer ranged from 8.34 in 10^9 to 1.00 in 10^3, with 30 beauticians exceeding the acceptable risk level. Cancer risk probability ranged from 1.97 in 10^8 to 1.40 in 10^3 based on the maximum concentration, with 31 beauticians exceeding acceptable risk level. Result of non-cancer risk assessment revealed that the risk ranged from 0.018-13.216 based on the average concentration, with 12 beauticians were exceeding the acceptable level. The results of this study show that at maximum concentration, the non-cancer risk were ranged from 0.024-18.488 and 13 salon workers professional hair treatments have the potential to produce formaldehyde concentrations that meet or exceed current occupational exposure limits according to US EPA.

Key words: Health Risk, Formaldehyde, Exposure

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Introduction

Nowadays, being a beautician is an extremely popular careers. Beautician career opportunities have expanded in the large cities and even in the villages in Thailand. Based on registration data for beauty shops with the Thai Ministry of Commerce in 2004, the Thai Ministry of Public Health had announced approximately 400 hair salons or beauty shops businesses produced harmful effects on health nationwide. (Department of Health, Ministry of Public Health, 2007). In 1995, on behalf of the Ministry of Public Health, the Environmental Health Office, Department of Health conducted a survey on health and environment of hair salons and beauty shops throughout the country, including the area of Bangkok (Bureau of Environmental Health, Department of Health, Ministry of Public Health, 2013; Pollution Control Department, 1998). In 2007, it was discovered that 56.3% of beauticians of working at beauty shops or hair salons did not have annual health examinations, 60.4% of beauticians did not paid leave in case they had an illness while employed at the beauty shops, and no masks had been used in 39.5% of the beauty shops. According to the Environmental Affairs, 33.3% of the beauty shops contained the inappropriate ventilation. Additionally, according to the study authors, "it was discovered that the beauticians' most common health problems, occurring from chemical usage, were the respiratory system symptoms," which accounted for 49.9%. (Department of Health, Ministry of Public Health, 2007).

Beauty shops services that bring about the highest amount of income include haircut service, hair stretching service, hair dyeing service and trendy hair color business. Consequently, the entrepreneurs that provide the services listed previously support more chemical usage (Department of Health, Environmental Sanitation Division, 2011). Furthermore, hairdressing and beauty products distributors has been creating and encouraging the new styles of fashionable hairdressing, causing the chemical usage to extensively expand. Beauticians often have continuous exposure to chemical substances, which could provide them risk from chemical danger, even though the majority of chemical substance has been guaranteed to be "safe." The concern is that the safe amount of exposure has been identified and beauticians are exposed to extremely high levels. (Bureau of Environmental Health, Department of Health, Ministry of Public Health., 2013). The beauticians' health risk from chemical usage includes the toxicity from chemical substances found in shampoo, hair dyes, hair color shampoo, curls shampoo and hair stretching shampoo as well as nail polish, nail polish remover, etc. (Department of Health, Ministry of Public Health, 2007). These categories of chemical substance can cause irritation, and can be absorbed into human body. The common examples of chemical substance in products, found in the beauty shops include volatile organic compounds such as: acetone, acetonitrile, formaldehyde, toluene, Phthalates etc. Usually, formaldehyde is used in leather tanning and tissue condition maintaining process. However, formaldehyde can also be found in some unstandardized brands of hair stretching shampoo, hair conditioner or shampoo during beautifying process. By using these unqualified products, the fumes from Formaldehyde can spread in the air. (Pollution Control Department, 1998). The Occupational Safety and Health Administration (OSHA) has been obtaining complaints from hairdressers, hairstyling designers, as well as the entrepreneurs of beauty shops that formaldehyde is being found in the hair styling products used on their customers. OSHA started to collect the samples of hair conditions in many hair salons during the uses of hair styling products. Formaldehyde was actually found in products even though the labels of some hair styling products claimed that no formaldehyde is used as a component. Formaldehyde was also found in some hair styling products even though it was not listed in the mixture or on the material safety data sheet. (Pollution Control Department,1998). Unfortunately, based on the research and data mentioned above beauticians are likely exposed to formaldehyde through their job and may suffering from diseases as a result, especially respiratory diseases.

However, to our knowledge, no previous research has ever reported a health risk assessment on formaldehyde exposure for beauticians. As a result, our research team on behalf of public health researchers as well as

occupational health and safety researchers, feel a responsibility to investigate beauticians' health risk from formaldehyde exposure. Using the United States Environmental Protection Agency (US EPA) technique, which refers to the toxicity assessment in the air, this study aims to apply the risk level from the assessment to create a guideline of the beauticians' health development plans. This plan will aim to reduce the risk of diseases due to the beauticians' chemical usage. The objectives of this study are 1) to study the concentration of formaldehyde in the air of the salon workers' working space in Tha Sala District, Nakorn Si Thammarat Province and 2) to assess health risk behavior of formaldehyde exposure among beauticians in Tha Sala District, Nakorn Si Thammarat Province.

Methods

This research was a descriptive study in which the selected population and samples are the salon workers from 39 beauty shops in Tha Sala sub-district, Tha Sala District, Nakorn Si Thammarat Province. The criteria for the samples selection was that the services of the selected beauty shops must have been continually provided for at least 6 months.

Data Collection and Tools

We collected data using a study tool questionnaire based on a literature review and developed by the researcher and our team. The questionnaires include the following 3 parts: Part 1:General information about the questionnaires respondents, beauticians, and the beauty shops they worked at, Part 2: Information about illness and access to treatment services, and Part 3: Information about knowledge, attitudes and behaviors on prevention of chemical exposure.

We also collected data based on observing the salon workers' behaviors, activities and overall environment during their working hours. While visiting the salon shops, we collected air samples in accordance with NIOSH 3500 standard and analyzed samples for formaldehyde concentration in the laboratory. The analysis of the samples was performed by the use of Visible Absorption Spectrometry (VIS) analyzing techniques from the spectrophotometer according to NIOSH 3500 standard. The color was developed by chromo tropic acid and sulfuric acid, which absorbed light at 580-nanometer wave length. This research was approved on research ethics from Human Research Ethics Approval Committee of Walailak University, NO. 090/2014.

Data Collection

Data from a total of 55 salon workers and 39 beauty shops were collected through questionnaires. We also collected data on the number of beauty shops in the area and conducted surveys among salon workers in order to calculate the parameter values for the formaldehyde health risk assessment, and to gather information on salon workers' knowledge, attitudes and behaviors. Formaldehyde samples were collected in the salon workers' working space, and an observation form was used by researchers to observe and record their behaviors.

Data Analysis

The data about the exposure concentration of formaldehyde, as well as the data from questionnaires would be evaluated to assess the risk of cancer and non-cancer health problems that could be encountered by the beauticians as a result of formaldehyde. The formaldehyde exposure concentrations of beauticians at work would be compared with recommended values of USEPA. We analyzed the data to calculate the risk values of cancer and non-cancer health problems using readymade software. We also descriptive statistics including means, percentage, standard deviation and the findings of the statistical relationship of variables by Chi-square test. (Jirawatkul, et al 2009)

Results

Among 55 salon workers, 53 (96.4%) workers were female. The majority of the samples are 31-40 years old, accounting for 45.6% of the sample (minimum=23 years old, maximum= 65 years old). Additionally, the mean age of study participants was 37 years old. The majority of the participants were married (52.7%). The highest education level of the workers distributed among primary level (21.8%), lower secondary level (21.8%), upper secondary level (34.5%), bachelor degree

(12.4%) and master degree (9.1%). Workers reported receviing 1,000-40,000 baht of monthly income, with average income equaling to 15,372 baht/month. The distribution of their monthly income corresponded to 5001-10,000 baht (36.4%), 10,001-20,000 baht (34.6%), over 20,000 baht (20%), less than 5,000 baht (9%).

Workers reported between 1 to 30 years of work experience, with the average years of experience of 8 years. They reported their average daily working hours was 9 hours, which can be classified as 2-6 hours per day (14.5%), 7-11 hours per day (72.8%) and 12-16 hours per day (12.8%). Furthermore, the number of customers per day corresponded to 1-30 people, while the average number of customers was 9 people per day. According to the additional data on customers, the daily number of customers was between 1-10 people (85.5%), 11-20 people (10.9%) and 21-30 people (3.6%). The top five products used most frequently by the beauticians, included shampoo (96.3%), hair dye shampoo (89.1%), nails polish (89.1%), hair stretching shampoo (76.4%) and hair styling shampoo (65%).

Regarding their health condition, illness and access to health care services, workers reported that 67.3% had detected illnesses during the past 3 months of taking the questionnaire. The diseases that had been found included bronchitis (5.4%), pneumonia (2.7%), allergy (54.1%), asthma (13.5%), chronic bronchitis (2.7%), gastroesophageal reflux (2.7%), hemorrhagic fever (5.7%), cold, cough, headache and sore throat (24.3%), backache (2.7%) as well as tremor and exhaustion (2.7%). The chronic diseases were also found in 21.8% of the workers. Chronic diseases that had been detected included hypertension (5%), diabetes (5%), tuberculosis (41.7%), thyrotoxaemia (10%) and musculoskeletal pains (10%) as shown in Table 1.

Table 1 Demographic characteristics of salon workers (n=55) and results from salon workers' health questionnaire

Population Characteristics	Number (N)	Percentage (%)
Sex		
Males	2	3.6
Females	53	96.4
Age (years)		
20-30	12	21.8
31-40	25	45.6
41-50	13	23.6
51-60	4	7.2
61+	1	1.8
Mean = 37.40, S.D = 8.75, Min = 23, Max = 65		
Marital Status		
Single	13	23.6
Married	29	52.7
Widow/ Divorced/ Separated	13	23.6
Education Level		
Primary Level	12	21.8
Lower Secondary Level	12	21.8
Upper Secondary Level	19	34.6
Higher than Upper Secondary Level	12	21.8
Income (baht/month)		
Less than 5,000	5	9.0
5,000-10,000	20	36.4
10,001-20,000	19	34.6
Over 20,000	11	20.0
Mean = 15,372.73, S.D = 9,495.72, Min = 1000, Max = 40,000		
Years of working experience		
1-6	27	49.1
7-12	18	32.8
13-20	4	7.2
20+	6	10.9
Mean = 8.22, S.D. = 6.58, Min = 1, Max = 30		
Working hours (hours/day)		
2-6	8	14.5
7-11	40	72.8
12-16	7	12.8
Mean = 8.98, S.D. = 2.64, Min = 2, Max = 16		

Table 1 Demographic characteristics of salon workers (n=55) and results from salon workers' health questionnaire (cont.)

Population Characteristics	Numbers (n=55)	Percentage
Number of customers per day		
1-10	47	85.5
11-20	6	10.9
21-30	2	3.6
Mean = 8.78, S.D = 5.78, Min= 1, Max = 30		
Products used most frequently		
Shampoo	53	96.3
Hair dye shampoo	49	89.1
Nails polish/ Nails polish remover	49	89.1
Hair stretching shampoo	42	76.4
Hair styling shampoo	36	65.5
Health conditions and illness		
State of illness over the past 3 months		
No illness, occurring	18	32.7
Some illness, occurring	37	67.3
Diseases and illness, being found		
Bronchitis	2	5.4
Pneumonia	1	2.7
Allergy	20	54.1
Asthma	5	13.5
Cold, cough, headache, sore throat	9	24.3
Chronic systemic disease		
Not found	43	78.2
Found	12	21.8
Hypertension	1	5.0
Diabetes	1	5.0
Tuberculosis	5	41.7
Thyrotoxaemia	2	10.0
Myalgia	2	10.0
Other	3	7.2

Salon workers reported that they knew that adverse conditions like allergies and skin problem and musculoskeletal disorders and injuries were likely due to work chemical exposure. We assessed workers' knowledge about formaldehyde exposure through a 10-item knowledge test, in which one point would be given from one correct answer. Then, we classified the number of the knowledge points into the following 3 levels: low knowledge level (0-5 points), moderate knowledge level (6-7 points) and high knowledge level (8-10 points)s. According to the results of the test, we discovered that the majority of the workers' knowledge corresponded to moderate knowledge level (43.6%) and 36.4% of the workers displayed high level of the knowledge.

Regarding attitudes on the management of chemical substances, the attitudes were specifically divided into 3 levels (good, moderate, low). The results showed that the majority of the samples (56.4%) contained good attitudes towards the management of chemical substance and 43.6% had moderate attitudes towards management of chemical substances derived from 43.6% of the total samples. By combining the number of points about the knowledge about formaldehyde exposure and the attitude on the management of chemical substances, we assessed that 70.9%, of sampled workers had low risk and 23.6 % of sampled workers had low risk.

The data on beauticians' practice behaviors and working spaces was derived from the beauticians' behaviors observation forms. According to the data from the observation forms on 39 beauty shops, it was discovered that for the most part, only one beautician was available in each of 34 beauty shops (or 87.2%) whereas two beauticians were involved as the entrepreneurs in four beauty shops (or 10.3%). Only one beauty shop contained three available beauticians (2.6%). The services for most customers included haircuts, hair washing and hair drying services in 32 hair salons (82.1%), hair stretching service in 25 beauty shops (64.1%) as well as hair dyeing, manicure, facial makeup and hair styling services. According to the data of general working environment in 39 beauty shops from the beauticians' behaviors observation forms, 82.1% of the beauty shops contained sufficient lighting. Ventilation was available in 64.1% of the beauty shops. Ventilation equipment was already installed in 66.7% of the hair salons. Additionally, 48.7% of the beauty shops contained sufficient dustbins. Specific wash basins were sufficiently installed in 17.9% of the beauty shops. Clean hair wash basins were available in 79.5% of the beauty shops. In addition to the above data, clean drinking water was available for customers in 82.1% of the beauty shops. Electricity shock or electricity shot prevention system was installed in 33.3% of the hair salons. Clean and tidy management of the service facilities was established in 82.1% of the beauty shops. Moreover, chemical supplies in 35.9% of the service facilities were kept in clean and covered spaces. Correct and secure uses of the products in accordance with the announcement of the Ministry of Public Health was done for 82.1% of shops. 79.55% of the beauty shops owners had ever participated in the sanitation training for hair styling and beauty service facilities.

The concentration of formaldehyde samples from the working spaces of 19 beauty shops was higher than NIOSH standard, which specified the maximum concentration of formaldehyde of less than 0.016 ppm. Nevertheless, when comparing the sampled concentrations in our study to the formaldehyde standard from the Thai Interior Ministry Announcement on the security of working with chemical environment released in 1977 together with the information from OSHA, sampled concentrations of formaldehyde in the hair salons we visited was not excessive. The Thai Interior Ministry and OSHA specified the concentration of formaldehyde should be less than 3 ppm or 3.69 mg/m^3 and less than 0.75 ppm or 0.92 mg/m^3 World Health Organization and International Agency for Research on Cancer (2010). The increase in lung cancer, the only site for which cancer was increased in either sex, may depend on confounding from smoking. Bladder cancer was not increased among hairdressers. Hair dyes may contain a variety of chemical agents such as aromatic amines, some of which are considered proven, probable or possible human carcinogens.

Discussion

According to the overall image of knowledge, attitudes and behaviors on the beauticians' chemical usage, 43.6% of workers had moderate levels of knowledge about formaldehyde. Additionally, 56.4% of workers had the attitudes towards management of chemical usage were positive, whereas 43.6% had the moderate attitudes. As for risk of practice, it was discovered that 70.9% of the practice contained the low level of risk, which corresponded to the study (Hakim et al.*2019*; Department of Health, Ministry of Public Health,2007). Furthermore, it was also found that the beauticians perceived the risk of cosmetics products very well. The majority of the beauticians frequently read the labels of cosmetics products in advance of using them. Many salon workers learned how to use personal protective equipment to reduce chemical exposure from the warnings on the labels. The beauticians' knowledge and understanding on cosmetics products labels corresponded to the very high level of knowledge. Interestingly, 97.1% of workers reported that they purchased cosmetics products purchase were based on the regular observation of labels in which a name, a manufacturer and an importer in the Thai language were included. Moreover, the perception from popular TV channels accounted for 100%. As a result, this study suggests that the government sector should support the effective access to news and information for the beauticians on chemical risks from beauty products in the Thai language, and should directly provide them knowledge about the safety of chemical usage on product labels or packaging (Amodio et al, 2009).

Based on the result of the measurement and the analysis of formaldehyde concentration in the air of the beauticians' working spaces from 39 beauty shops, it was discovered that the concentration of formaldehyde from 19 beauty shops equaled to 0.00002-0.5710 ppm or 0.0002-0.7010 mg/m^3, which was considered higher than NIOSH standard. The NIOSH standard specified the concentration of formaldehyde in the working environment should be less than less than 0.016 ppm. In our study. the concentration of formaldehyde was not detected in 6 beauty shops. This finding corresponded to previous research (Naddafi et al.2019; Leino, 1999; Bureau of Environmental Health, Department of Health, Ministry of Public Health, 2013; Pollution Control Department,1998). In addition, it was also found that formaldehyde was included in some unstandardized brands of hair stretching shampoo, hair conditioner, and shampoo that were used in the beautifying process. OSHA received complaints from the beauticians and the hair stylists as well as the barbers that beauty product labels had no identification of formaldehyde, yet the products still contained formaldehyde as a component. Or in some cases products had formaldehyde but did not list formaldehyde in the mixture or on the material safety data sheet. By collecting the air samples from the beauty shops during the use of hair styling shampoo, it was discovered that formaldehyde in the air was actually detected, indicating that information on warning labels on the products didn't correspond to the list of real components. This inconsistency could lead to the occurrence of danger and health risk for beauticians handling products with formaldehyde. (Leaung-amphorn, et al.2014*;* Pak et al, 2013).

In our study, the formaldehyde residue was found in collected air samples. In our sample data, we discovered that 6 of 7 salon workers (85.7%) with 11-15 years of experience were exposed to formaldehyde levels that could pose cancer risk. This result corresponded to the previous study, which found that the illness from allergy and eczematous dermatitis, encountered by 5.9% of the salon worker was mostly resulted from hair curling shampoo. These types of illness were likely to be found from the beauticians with 6-10 years of experience. Furthermore, the samples from 11 closed beauty shops, where the ventilation systems were not installed, contained the highest formaldehyde air concentrations. Thus, these 11 closed beauty shops had the highest opportunity of cancer risk. Additionally, the samples from 4 closed beauty shops that did not have air conditioners installed had high formaldehyde concentrations. Thus, cancer risk due to formaldehyde exposure may possibly emerge in all 4 of these beauty shops due to the inappropriate ventilation. The connection

between inappropriate ventilation and increased cancer risk corresponded to the study by the Environmental Health Office, Department of Health, Ministry of Public Health. (Department of Health, Ministry of Public Health 2007). This study conducted by the Environmental Affairs Office showed that the ventilation in 33.3% of the how many) beauty shops was not appropriate. The Environmental Affairs Office recommended that beauty shop management should install a standard ventilation system and modify the beauty shop workplace to build up safety for both beauticians and customers. However, according the management, the compact spaces of beauty shops, the fact that the beauty shops often share space with other businesses, and the close proximity of beauty shops to other nearby community location and trade areas make it difficult to expand and manage the workplace to maximize safety in the workplace. In this case, closed ventilation system is needed to solve the problems, and this design may affect the adjacent buildings. Nonetheless, continuing to strengthen regulations, offerings safety and mitigation knowledge, and continuous follow-up of public health and safety officials with beauty salon workers and owners will build up understanding and increase awareness on the health risks that could happen with formaldehyde exposure. (Wonglakorn, 2013; Department of Health, Ministry of Public Health, 2007). We also assessed non-cancer risk of formaldehyde exposure using standard (Department of Health, Ministry of Public Health, 2007). It was discovered that the non-cancer risk due to formaldehyde exposure encountered by the total samples of the beauticians (n=55), equaled to between 0.00-18.5. Formaldehyde air samples from 13 beauty shops contained the risk value of over 1, which indicates the insecurity, which remained unacceptable for the samples to be handled. According to the sample data from beauty shops in the interior of the municipal area, 11 beauty shops had the risk value was more than 1. In comparison, among samples from the exterior of the municipal area, the range of risk values were from 0.00-1.79 and only 2 samples had risk value of more than 1 was involved. The majority of the beauty shops were located in the municipal area, corresponding with the research by PhornKeaw Leaung-amphorn and her team. (Leaung-amphorn, et al.2014)

According to this study, it was found that sex, education level, chronic disease, sufficiency of income, experience of danger from chemical substance, business sizes and the management of chemical danger prevention were significantly and statistically different with the p-value of less than 0.05. The above result was in agreement with the study of Jitniran Wonglakorn,(Wonglakorn, 2013). Indicating that the low level of the beauticians' environmental health knowledge was apparent.

Overall, our study provides support that there should be more training on basic toxicology and product safety specifically for the beauticians that applies directly to their working procedure in the real practice. (Bureau of Environmental Health, Department of Health, Ministry of Public Health., 2013). We should support beauty salon management to design and manage working spaces so that they have the appropriate ventilation system. In the future, a prospective cohort study should be conducted to study workers that use beauty products with little or none of these toxic ingredients in their products compared to the usual products used in practice. To improve health conditions in beauty salons, air quality guidelines or a mandatory occupational regulatory framework is needed.

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Original article

The Relationship between Vulva Hygiene and the Occurrence of Vaginal Discharge in 10th Grade High School Students in The 3-State High School

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Abstract

Leucorrhoea, also spelled leukorrhea, is a common problem for young women. Leucorrhoea describes a whitish vaginal discharge that may be normal or abnormal, and thus may or may not be sign of reproductive health problem. Not many young women know about vaginal discharge and sometimes may not realize be able to distinguish between normal, healthy vaginal discharge and pathological, abnormal vaginal discharge. Vaginal discharge may indicate health problems such as infection, pelvic inflammatory disease and infertility. One of possible cause of vaginal discharge is lack of knowledge about how poor vulva hygiene can cause vaginal discharge. The purpose of this study was to explore the relationship between vulva hygiene practices and the occurrence of vaginal discharge in 10th grade female high school students in Tuban 3. This study conducted a cross-sectional study of 77 10th grade students at SMA 3 Tuban High School in 2019. We used simple random sampling. We collected data using questionnaires and checklists. We conducted contingency coefficient tests with type 2 error (α) of 0.05. The results showed that 45.5% (n=35) of the female students practiced incorrect vulva hygiene and a majority of female students (66.2%, n=51) experienced leucorrhoea. Using a contingency test, we found a strong association between incorrect vulva hygiene and the occurrence of leucorrhoea in 10th grade high school students in Tuban 3 ($p < 0.001$). Based on our study results, we recommend that female students at Tuban State High School receive better resources and education on proper vulva hygiene to prevent pathological vaginal discharge. We recommend that the health education and medical personnel provide more books about vulva hygiene, reproductive magazines about the importance of vulva hygiene, and be available to answer questions that students may have about vulva hygiene.

Keywords: Leucorrhoea, Vulva hygiene, High school students, young women

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Introduction

As adolescents grow, they interact more with adult society. They no longer feel below the level of older people, but instead feel that they are at the same level. Young women have very complex problems, one of which is proper care of their reproductive health systems. This problem needs to be dealt with seriously, because adolescents still have insufficient access to information about reproductive health (Pudiastuti, 2011) . Adolescent reproductive health includes physical and mental well-being related to the functioning of reproductive processes of adolescents (Nugroho, 2012). Our study focuses on investigating whether female adolescents that have sufficient knowledge and information about how to clean their vulva, and if this knowledge enables them to better clean their vaginal area, and therefore have less pathological vaginal discharge (Notoadmojo, 2010).

Improper vulva hygiene is a factor that can cause abnormal vaginal discharge. Without good vulva hygiene, bacteria and fungi can grow quickly in the moist vaginal area. This can cause infections and pathological vaginal discharge. Good knowledge about vaginal discharge and a positive attitude about vulva hygiene can help young women adopt behaviour to prevent pathological vaginal discharge. Leucorrhoea is a symptom of a disease characterized by the discharge of fluid from the reproductive organs which does not contain blood (Diar, 2009). Leucorrhoea occurs due to infections caused by germs, bacteria, fungi, or mixed infections. Abnormal vaginal discharge due to continuing infection can cause health problems. Vaginal discharge is one of the symptoms of reproductive tract infections (Dwiana, 2008). Vaginal infections affect 100 million women, roughly 10- 15% of women worldwide. About 15% of adolescents are affected by *Candida* bacteria and experience vaginal discharge.

From the beginning, it is very important for young women to learn appropriate vulva hygiene . Reproductive organs often get less attention in everyday life. In the Indonesian culture, we are sometimes uncomfortable talking about sexual and reproductive health problems. In fact, these organs really need attention, especially health and hygiene. Before a person carries out the behaviour to maintain the cleanliness of the genital organs, there are 3 stages that must be passed: 1) attitude, 2) knowledge, and 3) practice or action. Knowledge and attitudes are dominant in shaping a person's behavior (Notoadmojo, 2010).

Attitude is the readiness to react to objects in a particular environment as an appreciation of objects (Notoatmodjo, 2010) . Inappropriate attitudes can weaken a person's motivation to behave in a healthy life in the prevention of pathological vaginal discharge. Knowledge and the information obtained greatly enables one to adopt values and knowledge that can influence the mindset and action of one source of one's information is through health education according to Susanto (in Dian Eka Purnama),. There is evidence that adolescents lack knowledge about problems concerning the reproductive organs (Utami ddk, 2014) and about prevention of harmful vaginal discahrge. In one survey, researchers found that 43. 22% of adolescents had "low" knowledge, 37.8% of adolescents had "sufficient" knowledge, while 19. 50% of adolescents had "adequate" knowledge about how to care for reproductive organs and prevent reproductive diseases. In a study by Sulistianingsih (2012) , female participants did not know how to differentiate between normal (physiological) vaginal discharge and abnormal (pathological) vaginal discharge. Thus, women in this study felt anxious they were suffering from a venereal disease. Or conversely, sometimes a woman ignored her suffering from vaginal discharge for so long that it caused a severe sexually transmitted infection. (IMS).

Young women also need knowledge about what vulva hygiene practices are harmful and which are helpful. Young women should learn that water needs to be clean and directed properly at the genitals to cleanse them after

defecating or urinating. Adolescent women need education about avoiding harsh soap cleansers, fragrances or excessive rinsing, wearing tight panties that do not absorb sweat, rarely changing panties, and rarely changing pads. There need awareness about harmful practices such as improper washing of hands, exchanging pants with other people, using dirty public toilets, not maintaining vaginal hygiene, and changing towels with other people. Poor personal hygiene can lead to the emergence of vaginal infections (Sevil et al, 2013) . An unhealthy vagina can be a cause of an imbalance in the ecosystem of bacteria in the vagina. Women also need to know that abnormal vaginal discharge may be caused by several factors including infection, foreign body, or a tumor (Ratna, 2010).

We conducted initial interviews in March 2019 with female students at Tuban 3 Public High School. At this time, 10 female students complained that they had white discharge in their genital areas. Based on these interviews, we found that: 3 female students often experienced vaginal discharge before and after menstruation. 3 female students were often stressed when they had many assignments. 4 female students did not know how to clean their vaginal areas.

Based on the background described above, we were interested in conducting research about whether there was a relationship between vulva hygiene and the occurrence of vaginal discharge in 10th grade female students of SMA 3 Tuban High School. We also recongized that it is especially important that young women know about abnormal vaginal discharge and its causes early (Aulia, 2012). In addition, health workers need to provide information on the importance of maintaining the cleanliness of the genital area. Good vulva hygiene can help prevent the occurrence of abnormal vaginal discharge. Though the reproductive health of adolescents is highly personal, the provision of information and services about reproductive health education is needed (Husni, 2005).

Research Methods

We conducted an observational, nursing research study examining the correlation between vulva hygiene and the occurrence of leucorrhoea in adolescents in Tuban State High School 3. We did not provide any intervention. We interviewed 10th grade female students of SMA Negeri 3 Tuban High School.

We gave a questionnaire to students asking them about their caravulva hygiene practices. For students that often experienced vaginal discharge, we also asked whether they were experienced characteristics of normal and abnormal vaginal discharge. We categorized students into categories of: 1) "had leucorrhoea," if they experienced characteristics of abnormal vaginal discharge, and 2) "had no leucorrhoea," if they experienced characteristics of normal vaginal discharge and/ or did not experience characteristics of abnormal discharge. I assumed that you categorized women with normal vaginal discharge characteristics as "had no leucorrhoea." Please confirm or revise the explanation.

We performed the contingency coefficient test for the association between self- reported vulva hygiene and self- reported leucorrhoea with a 95% confidence level using the SPSS 16.0 application. We also asked students if they participated in extracurricular activities at school such as UKS Cadre and the Student Council. We hypothesized that participation in these activities meant that students received more reproductive health education, and therefore more instruction on correct vulva hygiene. We also did a contingency coefficient test for the association between participation in UKS Cadre or OSIS with practicing correct vulva hygiene among 10th grade female students in SMA Negieri 3 Tuban

Results

Characteristics of Respondents

A very small portion (2.6%), respondents participated in a UKS cadre of 2 adolescents while not participating in a UKS cadre of 75 students (97.4%) (Table 1).

Table 1. Participation in UKS Cadres among female student respondents (n=77) at Tuban Public High School 3.

No	UKS cadre	Frequency (N)	Percentage (%)
1.	Joined UKS cadres	2	2.6%
2.	Did not participate in UKS cadres	75	97.4%
	Total	77	100%

A small proportion (19.9%, n=15) of respondents joined the Student Council (Table 2). A large majority (80.%%) of respondents did not participate in the OSIS62, which is the Student Council.

Table 2. Participation in the Student Council among female student respondents (n=77) at Tuban 3 Public High School.

No	Join The Student Council	Frequency (N)	Percentage (%)
1.	Joined the Student Council	15	19.5%
2.	Did not participate in the Student Council	62	80.5%
	Total	77	100%

A small proportion (22.1%, n=17) of grade 10 students practiced vulva hygiene appropriately. Of these 17 students practicing good vulva hygiene, 2 of them participated in UKS cadre activities and 15 of the other students took part in student council activities every 2 weeks. These extracurricular activities at school included various socialization and educational sessions about health, including what vulva hygiene is and how they could practice it correctly. A little more than half of the respondents (51.9%, n=40). practiced less precise vulva hygiene. Slightly more than one quarter of respondents (26.0%, n=20) practiced vulva hygiene that is not appropriate. All respondents reporting "less precise" (n=40) and inappropriate" vulva hygiene (n=20) did not take part in the UKS or Student Councilactivities

.

Table 3. Self-reported level of vulva hygiene based on questionnaire responses among female 10th grade students of SMA 3 Tuban High School (n=77)

No.	Vulva Hygiene	Frequency	Percentage (%)
1.	Vulva hygiene is appropriate	17	22.1%
2.	Vulva hygiene is less precise	40	51.9 %
3.	Vulva hygiene is not right	20	26.0 %
	Total	77	100 %

Most 10th grade students (80.5%, n=62) experienced leucorrhoea, which is defined as abnormal vaginal discharge. All 62 teenagers that had leucorrhoea did not take part in the UKS Cadre or Student Councilactivities. Almost one-fifth of respondents (19.5%, n=15) reported that they had no vaginal discharge (Table 4).

Table 4. Prevalence of self-reported leucorrhoea among female students in Class 10 at SMA 3 Tuban High School (n=77)

No.	Leucorrhoea	Frequency	Percentage (%)
1.	Had leucorrhoea	62	80.5 %
2.	Had no leucorrhoea	15	19.5%
	Total	7	100 %

Table 5 shows a cross tabulation of self-reported vulva hygiene with the self-reported occurrence of leucorrhoea in 10th grade high school students at Tuban High School. Only a small number of female students (n=2; 2.6%) doing vulva hygiene properly experienced leucorrhoea. Among the 51.9% of respondents (n=40) that reported that their vulva hygiene was "less precise," all of them reported experiencing leucorrhoea. Among the 26.0% of respondents (n=20) that reported their vulva hygiene is "not appropriate," all reported having leucorrhoea.

Table 5. Cross Tabulation of Self-Reported Vulva Hygiene with Self-Reported Leucorrhoea among female students in the Class 10 at SMA 3 Tuban.High School (n=77)

Self-reported vulva hygiene	Self-reported occurrence of leucorrhoea		
	Had leucorrhoea N (%)	No leucorrhoea N (%)	Total N (%)
Vulva hygiene is appropriate	2 (2.6%)	15 (19.5%)	17 (22.7%)
Vulva hygiene is less precise	40 (51.9%)	0 (0 %)	40 (51.9%)
Vulva hygiene is not right	20 (26.0%)	0 (0 %)	20 (26.0%)
Total	62 (80.5%)	15(19.5%)	77 (100%)

Contingency coefficient test results (p = <0.001)

All of the respondents that reported that their vulva hygiene was "less precise" or "not appropriate" did not take part in UKS Cadre or OSIS (Student Council) activities. Therefore, we infer that they did not receive the same health education about vulva education and may have felt that discussing vulva hygiene was taboo. As a result, they may have lacked the necessary knowledge to practice good vulva hygiene. 60 of the 62 respondents that experienced leucorrhoea had "less precise" or "inappropriate" vulva hygiene. All 15 of respondents with no leucorrhoea carried out vulva hygiene appropriately

.

Discussion

Our study of female adolescents from 3 SMA Tuban High School showed that 1 7 respondents (2 2 .7 %) reported practicing good vulva hygiene. Of these 1 7 students, 2 participated in the UKS cadre and 1 5 participated in the Student Council every 2 weeks. By participating in these extracurricular activities, the respondents received reproductive health promotion from the health staff. We found that 40 (51.9%) respondents and 20 (26.0%) respondents reported practicing vulva hygiene that was " less precise" and " not appropriate," respectively. Of the 62 (80.5%) respondents that reported leucorrhoea, only 2 reported practicing correct vulva hygiene, UKS and OSIS = 0.05 and the calculation was carried out using the SPSS 16.0 application. 10th grade student in SMA Negeri 3 Tuban. We found that for teenagers that experienced normal vaginal discharge, their knowledge about vulva hygiene be good. For example, we found that the two respondents that reported leucorrhoea and having correct vulva hygiene experienced normal vaginal discharge which occurred before or after menstruation. The other 1 5 respondents did not report normal vaginal discharge, but reported pathological vaginal discharge. We observed that the 4 0 adolescent respondents with "less precise" vulva hygiene and 2 0 adolescent respondents with "not right" vulva hygiene experienced abnormal vaginal discharge. 15 (10.5%) of respondents reported no leucorrhoea. All of these respondents reported practicing correct vulva hygiene adolescents were right and did not experience vaginal discharge.

Conclusion and Recommendations

From the results of this study, we concluded that 10th grade female students of SMA 3 Tuban High School in 2019, they did not continue to do vulva hygiene and experience abnormal vaginal discharge. There is a strong relationship between vulva hygiene and the incidence of vaginal discharge in 10th grade students of Tuban 3 Senior High School in 2019 ($p <= 0.001$ and $r = 0.617$). Based on the results of our study, we make the following recommendations for young women, we provided evidence that better knowledge about vulva hygiene and reproductive health education through extracurricular activities are some of the factors that influence occurrence of leucorrhoea. We encourage female teenagers to be more familiar with how correct vulva hygiene can reduce the incidence of abnormal vaginal discharge.

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Original article

Development of Dhammanamai Health Promotion Handbook on Stress Management for Students in Kanchanabhishek Institute of Medical and Public Health Technology

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Abstract

Background: Stress has a powerful impact on individual's mind and well-being. Dhammanamai, a principle in Thai traditional medicine, has been recognized to reduces stress. However, scientific reports about the benefits of dhammanamai are limited. This study aimed to 1) develop dhammanamai health promotion handbook on stress management for students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT), 2) compare the knowledge on stress management before and after using the handbook and 3) evaluate satisfaction of subjects after using the handbook. **Methodology:** This research and development study was divided into four phases: 1) situational analysis to gather ideas for handbook, 2) development of handbook, 3) trial of handbook and 4) satisfaction evaluation of handbook. Participants included six lectures and six students in situational analysis phase. Ninety students in KMPHT were selected by purposive sampling to participate in the trial phase. The ninety subjects were directed to use the developed book for three days. Data was collected using focus group discussion questions, a media quality assessment form, a quiz on stress management knowledge and satisfaction evaluation questionnaire. We analyzed data using content analysis, descriptive analysis and paired t-test. **Results:** The situational analysis revealed that participants desire the new media on stress management based on dhammanamai principle to be a graphic book with more pictures and less text. Therefore, we developed dhammanamai health promotion handbook containing three sections: 1) basic knowledge about stress, 2) stress management with dhammanamai, and 3) alternatives methods for stress management. The average score of knowledge about stress management (scale = 0-20) after using the developed handbook ($\bar{x}$ = 18.16) was significantly higher than before using ($\bar{x}$ = 12.86) ($p<0.001$). The level of overall satisfaction (scale = 0-5) on the handbook was high ($\bar{x}$ = 4.40). The aspect of the handbook that earned the highest satisfaction was language ($\bar{x}$ = 4.45), followed by design ($\bar{x}$ = 4.40). Pictures earned the lowest satisfaction ($\bar{x}$ = 4.36).

Key words: Dhammanamai, Health promotion**,** Stress management

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Introduction

Stress affects everyone and has a powerful impact on individual' s mind, health and well-being. Stress is defined as physiological and psychological responses to environmental needs that occurs after people feel that they are unable to cope with their needs adequately (Lewis & Shaw, 2007) . Thai traditional medicine incorporates Buddhism into principle of maintaining balance and good health. The practice of Dhammanamai for optimum health encapsulates these practices. It composes of healthy body (*Kayanamai*), health mind (*Jitanamai*) and healthy lifestyle (*Chivitanamai*). To keep a healthy body, one should eat good food, especially fruit and vegetables to balance individual' s element and excercise adequately. Thai traditional stretching exercise which is called " rue-si-dud-ton" help to stimulate the blood flow in the body and reduce stress. In addition, an individual should keep a healthy mind or *Jitanamai* by practicing meditation and keep a healthy lifestyle by living on the middle path, called *Chivitanamai* (Somchai. N, 2014) . A study by Prapa Pithaksa (2012) explored the association between a Thai traditional medicine Dhammanamai health promotion program and quality of life in diabetes patients in Kantharalak district, Si Sa Ket Province, this research found that the Dhammanamai health promotion program was a good option for improving the quality of life in terms of environmental, social and emotional feelings of people with diabetes. Moreover, Dhammanamai has been successfully incorporate into Thai traditional medicine treatment of disease as well as improving quality of life of healthy people (Prasert Mogkaew, 2019).

Many students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT) revealed that they experienced stress during their study. Interestingly, students considered stress as the greatest barrier to their academic performance and the greatest health impediment during the academic year. Balancing class schedules and homework schedules, preparing for exams, taking exams, and balancing personal life with the demands of school were all potential stress triggers in students' life (Araas, 2008). Increased levels of stress may lead to poor academic performance, burn-out, and the development of inadequate coping mechanisms (Lewis & Shaw, 2007) . Burn-out is defined as emotional exhaustion and diminished interest in daily activities (Gibbons, 2010) . Participants in the study reported that the stress caused them to feel indifference, helplessness, and as though they had lost control. In terms of cognitive effects, participants reported a decrease in focus and concentration during periods of stress. The stress also resulted in physiological discomfort, including weight changes, chest pain, fear, panic, nausea, and lack of sleep. The emotional effects of stress were reported as crying, avoidance, withdrawal, and consumption of increased levels of alcohol (Gibbons, 2010).

Therefore, developing a self-management tool based on dhammanamai principle to alleviate stress would provide great benefit for students in order to increase their study performance and quality of life. This research aimed to 1) develop dhammanamai health promotion handbook on stress management for students in Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT), 2) compare the knowledge on stress management before and after using the handbook and 3) evaluate satisfaction of subjects after using the handbook. The findings from this study could provide a valuable tool for better understanding on stress management using dhammanamai principle that students could adopt and practice throughout their student lives.

Research Methodology

This research was a research and development study conducted at Kanchanabhishek Institute of Medical and Public Health Technology (KMPHT). The study was divided into four phases: 1) situational analysis phase, 2) development of dhammanamai health promotion handbook on stress management phase, 3) trial phase and 4) satisfaction evaluation phase.

Phase 1: Situational analysis

In this step, focus group discussions (FGD) were carried out using FGD question guideline in two groups of participants: 1) six Thai traditional medicine lecturer teaching at KMPHT and 2) six KMPHT students from different departments and class years. The data collected from situational analysis was then analyzed by content analysis. Results from the content analysis was used as input information to design dhammanamai health promotion handbook on stress management for students in KMPHT in the next step.

Phase 2: Development of the Dhammanamai health promotion handbook on stress management

The dhammanamai health promotion handbook on stress management was developed in this phase according to information derived from situational analysis phase. In this stage, the developed handbook was assessed by three media experts using media quality assessment form covering four aspects of the handbook: 1) content and presentation, 2) pictures, 3) language, and 4) design.

Phase 3: Trial

Ninety participants were recruited in this stage using purposive sampling technique. Inclusion criteria of the sampled students included: 1) Aged 18-30 years 2) A student who was currently studying in the first to third year of high vocational education program in Medical Audiology, high vocational education program in Medical Record, Bachelor's degree of public health program in Medical Record and Bachelor's degree of Thai traditional medicine program in KMPHT and 3) willingness to cooperate in data collection and participate in all activities of research process. The tools used in this phase included the developed handbook and twenty-question quiz on stress management with dhammanamai. The quiz was quality tested using Kuder-Richardson Method (Webster, 1960) earning the reliability value of 0.803. The discrimination and difficulty of each question in the quiz ranged from 0.2-0.8 which implied that the quiz was qualified. The subjects were given fifteen minutes to do the quiz to assess their knowledge before using the developed handbook and after three days of trial phase. The descriptive statistics including mean and standard deviation were applied to characterize the independent variables presenting in. Furthermore, the paired t-test with a level of significance at p-value of 0.001 was used to compare participants' knowledge score before and after using the dhammanamai health promotion handbook on stress management for students in KMPHT.

Phase 4: Satisfaction evaluation

Satisfaction of ninety subjects with the Dhammanamai health promotion handbook on stress management for students in KMPHT was evaluated using satisfaction evaluation questionnaire. The questionnaire was divided into two parts: 1) baseline demographic characteristics and satisfaction of users covering five aspects (content and presentation, pictures, language, design, and application). Subjects could rate their satisfaction with the specific aspect in the questionnaire on a scale from 0 to 5. The satisfaction evaluation questionnaire was tested for content validity and reliability by checking if the Index of item objective congruence (IOC) greater than 0.5 and if Cronbach' s Alpha Coefficient higher than 0.80. The questionnaire was qualified as the IOC of all items were higher than 0.5 (0.5-1) and Cronbach's Alpha Coefficient was 0.959. The descriptive statistics were applied to analyzed data presenting in mean and standard deviation.

Ethical Approval

This study was officially approved by the Institutional Review Board (IRB) in Kanchanabhishek Institute of Medical and Public Health Technology coded as KMPHT-59020113.

Results

Phase 1: Situational analysis

Focus group discussions carried out among two groups of participants, a lecturer group and a student group revealed that the current education on stress and stress management of students were not ambiguous as it was usually added into classroom lecture. Most common stress management techniques for students included watching

movies, listening to music, playing game and resting. The existing sources for information on stress and stress management education were not attractive and included: the Department of Mental Health website; TV programs on Dhamma, mental health, and natural medicine; and different type of media (magazines, books, leaflets and posters) Therefore, participants requested a new form of media was needed such as a graphic book or cartoon which contained more pictures and less text. The book should be clear, accurate, easy to understand, not too academic, have less pages, be colorful and interesting, and have an appealing cover. The main content should contain stress assessment, stress measurement, knowledge on Dhammanamai and its application, and other alternative stress managements related to Thai traditional medicine.

Phase 2: Development of Dhammanamai health promotion handbook on stress management

The dhammanamai health promotion handbook on stress management for students in KMPHT was drafted and proofread by Thai traditional medicine experts. The final draft was evaluated by media experts. The resulting handbook was 20x20 cm in size, had 36 pages containing infographics and three sections of contents; (1) Basic knowledge about stress, (2) Stress management with Dhammanamai and (3) alternative ways for stress management.

Phase 3: Trial

In the trial phase, ninety subjects from Kanchanabhisek Institute of Medical and Public Health Technology were instructed to use the dhammanamai health promotion handbook on stress management for students in KMPHT for three days. The subjects were asked to perform a test before and three days after using the developed handbook, to assess their knowledge on stress and stress management using Dhammanamai. In this test, the range of scores possible was 0 (lowest) to 20 (highest). Table 1 showed that before trial, the knowledge of most subjects (54.5%) was at an intermediate level (score =7-13). After three days of using the handbook, the knowledge of all subjects (100%) was at a high level (score =14-20).

Table 1. Frequency and percentage of pre-test and post-test score of subjects using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

Test	Score	Level	Frequency	Percentage
Pre-test	0-6	Low	1	1.1
	7-13	Intermediate	49	54.5
	14-20	High	40	44.4
Total			**90**	**100.0**
Post-test	0-6	Low	0	0.0
(after 3 days)	7-13	Intermediate	0	0.0
	14-20	High	90	100.0
Total			**90**	**100.0**

Table 2 shows the comparison between pre and post-test results. The average score of knowledge after using the developed handbook for three days($\bar{x}$ =18.16) was significantly greater than the average score before using the handbook ($\bar{x}$ = 12.86) using the level of significance of 0.001.

Table 2. The average score of knowledge before and after using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

	$\bar{x}$	S.D.	t	P-value[b]
Pre-test	12.86	2.51	-21.41	<0.001
Post-test	18.16	1.48		

[a] Range of knowledge score is 0 (lowest possible) to 20 (highest possible).
[b] P-value was less than 0.001.

Phase 4: Evaluations

After using the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology, the satisfaction of subjects was evaluated. Baseline demographic characteristics revealed that the majority of subjects were female (73%), at the age of 19 (47.8%), studying in year 1 (50%), and studying in high vocational education program in Medical Records (36.7%).

Table 3 showed that the level of overall satisfaction of subjects on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (Table 3) was high ($\bar{x}$ = 4.40). Looking at the broad categories that the handbook was evaluated on, the aspect that earned the highest satisfaction was language ($\bar{x}$ = 4.45), followed by design ($\bar{x}$ = 4.40). While as a broad category, pictures obtained the lowest satisfaction ($\bar{x}$ = 4.36). Considering the satisfaction of subjects in specific aspects of each broad category, the satisfaction in the application of handbook gained the highest satisfaction ($\bar{x}$ = 4.54), followed by an interesting cover ($\bar{x}$ = 4.52) while the order of the content earned the lowest satisfaction ($\bar{x}$ = 4.27).

Discussion and Conclusions

In this study, the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology was developed according to the results from focus group discussions. Focus group discussions suggested that the handbook should be a graphic or cartoon book containing more pictures and less text. These suggestions conformed to concepts of informational graphics design (Tessana, 2012) in which summarized information and ideas are transformed into text and graphics using drawing, symbols, charts, pictures, and diagrams to illustrate the information. The advantages of these design principles were that the media could deliver message to readers promptly and clearly with no need of a presenter to explain the concepts further. In our study, the developed handbook on stress management was designed and validated by Thai traditional medicine experts. It was then assessed by media experts using evaluation form examining 5 aspects according to media assessing criteria for education outlined by Promyong (2007): content, language, illustration, medical application, and type of media.

Table 3. Mean ($\bar{x}$) standard deviation (S.D.) of level of satisfaction of users on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90)

	Satisfaction level		
	$\bar{x}$ [a]	S.D.	Level
Content and Presentation			
1. The form of presentation is suitable	4.43	0.56	High
2. Series of presentation is suitable	4.27	0.58	High
3. The presentation is interesting	4.37	0.68	High
4. The content is suitable for the student	4.39	0.71	High
5. The content is clear and easy	4.41	0.63	High
6.Overall content is consistency	4.33	0.56	High
Average	**4.38**	**0.43**	**High**
Pictures			
7. Pictures are displayed appropriately and conform with objectives	4.37	0.63	High
8. Size and details are appropriate	4.32	0.67	High
9. Pictures are interesting	4.43	0.70	High
10. Pictures' resolution is appropriate	4.32	0.73	High
Average	**4.36**	**0.52**	**High**
Language			
11. The content are in correct language	4.44	0.58	High
12. The language is clear and easy to understand	4.50	0.60	Highest
13. Words of choice are appropriate	4.40	0.60	High
Average	**4.45**	**0.50**	High
Design			
14. Size and background of letters are appropriate	4.39	0.67	High
15.Color is appropriate	4.44	0.66	High
16. The handbook is well designed	4.31	0.65	High
17. The cover is interesting	4.52	0.65	Highest
Average	**4.40**	**0.52**	**High**

Table 3. Mean ($\bar{x}$), standard deviation (S.D.) and level of satisfaction of users on the dhammanamai health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology (n=90) (Cont.)

	Satisfaction level		
	$\bar{x}$	S.D.	Level
Application			
18. The handbook meets individual's desire	4.34	0.62	High
19. The handbook is easy to use, collect and maintenance	4.41	0.58	High
20. Overall satisfaction for the application	4.54	0.60	Highest
Average	**4.43**	**0.51**	**High**

[a] Range of satisfaction score was 0 (lowest possible) to 5 (highest possible)

The pre and post-test knowledge score test results revealed that the knowledge of most subjects was at an intermediate level prior to using the handbook. After three days of using the handbook, the knowledge of all subjects was at a high level. The average score of knowledge after using the handbook was significantly higher than before, using the significance level of 0. 001. The results suggested that the developed handbook could be applied to effectively educate students about stress and stress management. Our results were similar to a study conducted by Income (2016) in which researchers developed a health promotion handbook about heart disease awareness for clients in Buddhasothon hospital. The knowledge score about heart disease awareness after using the handbook was significantly higher than before, using at a significance level of 0. 05. The overall satisfaction of users in this study was at a high level, which is also like the results in the study by Income (2016).

The results from Income's study reported that the clients in Buddhasothon hospital found the health promotion handbook about heart disease awareness interesting for users (Income, 2016). It was noteworthy that in our study the aspect that earned the highest satisfaction was language, followed by design. However, pictures obtained the lowest satisfaction. The pictures were considered interesting. But participants reported that the size, details and resolution of the picture needed to be improved. We concluded that the *dhammanamai* health promotion handbook on stress management for students in Kanchanabhisek Institute of Medical and Public Health Technology was a useful tool in stress management for KMPHT students. A hard copy of this handbook is in KMPHT library for students who might seek for stress management techniques. It could also be developed further for other groups of people who suffered from stress either in the form of hard copy or online tools.

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Author Guideline and Instruction

International Journal of Public Health and Health Sciences (IJPHS)

Instruction for Authors & Guidelines (Revised March 18, 2019)

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Manuscripts should be prepared in the following manner. Submissions that do not conform to the instructions will be returned unread. The Editorial Office holds the right not to publish an article at any stage of the submission, review, and copyediting if the manuscript does not follow the required format and style.

6.1. Manuscripts should be written in English. Non-native English authors are encouraged to seek the assistance of an English-proficient colleague or commercial English editing services before submission of manuscripts to the journal.

6.2. Manuscripts should be typed in MS Word 97/03 for Windows or higher version, size 12-point type with margins of 2.5 centimeters on A4 (ca.22 × 28 cm) paper. Double spacing should be used throughout, and the right margin should be unjustified.

6.3. All papers should be organized to include the following: a title page, abstract, text, acknowledgments, references, figure legends, tables and figures. Each of the elements should begin on a separate page.

6.4. Pages should be numbered consecutively, beginning with the abstract. Line numbers should be put in the left margin of each page of the text.

6.5. Title page. The title page should include the following: a concise and descriptive title, name of each author, departmental and institutional affiliation of each author, the telephone and fax numbers as well as the e-mail address of the corresponding author, type of contribution, running title (not more than 60 letters including spaces), the number of words in the abstract and the text and the number of tables and figures.

6.6. Abstract. For all submissions except Letters to the Editor, structured abstracts should not exceed 250 words and should normally be organized under the following headings: Objectives, Methods, Results, and Conclusions. Abstracts are necessary for Opinions; however, abstracts for Opinions can be unstructured if appropriate.

6.7. Word count. Originals and Field Studies should be limited to 4,000 words, and Reviews should be limited to 6,000 words, excluding the abstract, acknowledgments, references, tables and figure legends. Brief Reports should not exceed 3,000 words and should contain no more than a total of 2 short tables or figures.

6.8. Format. Originals should generally use the following format: Introduction, Subjects (or Materials) and Methods, Results, and Discussion. Subheadings are paragraph titles should be used whenever possible. Brief Reports and Case Studies should be limited to four printed pages (normally, 800–1,000 words (text base) per page) including references, tables and figures.

6.9. Key words. For all submissions, give a list of 3-5 key words in alphabetical order. The authors are recommended to refer to Medical Subject Headings (MeSH) selected from main headings listed in Medical Subject Headings in Index Medicus, published by the National

Library of Medicine (http://www.nlm.nih.gov/mesh/MBrowser.html). Key words will be placed after the abstract for Reviews, Originals, Case Studies and Field Studies.

6.10. Tables and figures. Tables and figures should be of adequate quality to withstand reduction in size. Each table and figure should be submitted on a separate A4 sheet. Their locations in the text should be indicated in the right margin of the text. Only 6 or fewer tables and figures are permitted in total. Each table and figure should constitute a single unit of communications; that is, it should be completely informative in itself without reading the body of the text.

6.11. References. The style of references should follow the Uniform Requirements for Manuscripts Submitted to APA Formatted References, 6th Edition (http://lumenjournals.com/wp-content/uploads/2017/08/APA6thEdition.pdf).

Please refer to the examples of references listed below. List all authors when there are six or fewer; when there are seven or more authors, list the first three authors, followed by "et al." References should be numbered according to the order in which they appear in the text and should be listed at the end of the text. References should be limited to 30 original papers. Please ensure that the references include the most current articles and information.

Originals

Yuychim, P., Niratharadorn, M., Siriumpunkul, P., Buaboon, N. (2018). Effects of a Family Participation Program in Managing Drug Managing Drug Use Behaviors among Older Adults with Chronic Disease in Phun Phin Community. *Journal of Public Health*, *48*(1): 44-53.

Thepaksorn, P., Fadrilan-Camacho, V. & Siriwong, W. (2017). Respiratory symptoms and ventilatory function defects among Para rubber wood sawmill workers in the South of Thailand. *Human and Ecological Risk Assessment: An International*, *23*(4):788-797.

Fraenkel, R. J., Wallen, E. N. & Hyun, H. H. (2012). *How to Design and Evaluate Research in Education*. (8th ed.). New York: McGraw-Hill.

Praboromarajchanok Institute of Heath Workforce Development. (2013) Collection of Academic Performance in Humanized Service Mind. Nontaburi: Ministry of Public Health.

Citation in book chapter

Waite, J. (2011). "Information and Documentation. In Potter, A.P., Perry, G.A., Stockert, A.P. & Hall, A." *Basic Nursing Challenge*. (pp. 142-164). Missouri: Mosby/Elsevier.

Internet

Chen, M.W., Santos, H.M., Que, D.E., Gou, Y.Y., Tayo, L.L., Hsu, Y.C. (2018). Association between Organochlorine Pesticide Levels in Breast Milk and Their Effects on Female Reproduction in a Taiwanese Population. *International Journal of Environmental Research and Public Health*. Retrieved June 3, 2018 from http://www.mdpi.com/1660-4601/15/5/931.

Thesis/dissertation

Hom, K. E. (2018). *Association of Air Pollution with Longitudinal Changes in Arterial Stiffness and Correlated of Longitudinal Changes in Arterial Stiffness in the Multi-Ethnic Study of Atherosclerosis (MESA)*. A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctoral of Philosophy, University of Washington.

7. Charges

7.1. Page charges. No charge will be imposed on the authors of papers comprising up to ten printed pages with exemption for 200 $ in 2019-2020. However, charges for papers comprising more than ten pages will be levied on the authors at a rate of $50 per page.

7.2. Color figure charges. Color figures will incur a charge of $50 per each page.

8. Submitting a manuscript

Manuscripts should be submitted online through the web site at https://www.tci-thaijo.org/index.php/ijphs Authors can suggest preferred / non-preferred reviewers for their manuscript, but the editors are not obliged to use/not to use author suggested reviewers. In the IJPHS editorial process, six filed editors and their associate editors will handle submitted papers according to their relevant areas of expertise. Please choose 2 appropriate fields in the order you prefer, as this will help ensure a prompt and efficient editorial process. The editorial board may allocate papers to fields other than those chosen by the authors when appropriate, but authors should endeavor to select the appropriate fields. Selection of inappropriate fields will delay the editorial process.

9. Accepted manuscripts

9.1. Research articles accepted for publication in the IJPHS will appear initially as author-supplied unedited files online in the IJPHS -in-Press section on the website (https://www.tci-thaijo.org/index.php/ijphs) shortly after acceptance. The date the articles was included on the website will be considered the publication date. Any substantive changes at this stage will require an erratum to be published. Articles will be published in the print version in order of acceptance as journal space permits.

9.2. Copyediting

Accepted manuscripts will undergo copyediting. The authors of the accepted manuscript are asked to make appropriate changes requested by the Editorial Office. The authors will be asked to submit the corrected manuscript to the Editorial Office as a Microsoft Word file(s).

9.3. Page proofs will be made available once to the submitting author.

9.4. Accepted manuscripts can also be accessed from the journal's page on the website free of charge. Authors can download the PDFs of their accepted articles and send then to colleagues for noncommercial use.

10. Editorial Office contact information

Questions regarding the instructions for authors should be addressed to the journal office via e-mail (ijphs@scphtrang.ac.th) or Tel. 66-88-7531547.