

ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการรับประทานอาหารของผู้ป่วยชาวเวียดนาม  
หลังผ่าตัดนิ่วในไตหลังเป็นซ้ำ



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FACTORS RELATED TO DIETARY BEHAVIORS OF VIETNAMESE PATIENTS WITH  
RECURRENT KIDNEY STONE POST-OPERATION

Miss Quynh Anh Doan



จุฬาลงกรณ์มหาวิทยาลัย

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A Thesis Submitted in Partial Fulfillment of the Requirements  
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By	Miss Quynh Anh Doan
Field of Study	Nursing Science
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แอน ควิน โคน : ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการรับประทานอาหารของผู้ป่วยชาวเวียดนามหลังผ่าตัดนิ่วในไตหลังเป็นซ้ำ. (FACTORS RELATED TO DIETARY BEHAVIORS OF VIETNAMESE PATIENTS WITH RECURRENT KIDNEY STONE POST-OPERATION) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ผศ. ดร. สุนิดา ปรีชาวงษ์, 101 หน้า.

การวิจัยเชิงพรรณนารั้งนี้ มีวัตถุประสงค์เพื่อศึกษาพฤติกรรมการบริโภคอาหารและศึกษาความสัมพันธ์ระหว่างปัจจัยคัดสรรและพฤติกรรมการบริโภคอาหารในผู้ป่วยชาวเวียดนามหลังผ่าตัดนิ่วในไตหลังเป็นซ้ำ โดยใช้รูปแบบการส่งเสริมสุขภาพของ Pender เป็นกรอบแนวคิดในการวิจัย กลุ่มตัวอย่าง คือ ผู้ป่วยชาวเวียดนามที่มารับการรักษา ณ หน่วยศัลยกรรมระบบทางเดินปัสสาวะ จำนวน 112 คน เก็บข้อมูลระหว่างเดือนตุลาคม - ธันวาคม 2556 เครื่องมือที่ใช้ในการเก็บข้อมูลประกอบด้วย แบบบันทึกข้อมูลส่วนบุคคล แบบสอบถามการรับรู้ประโยชน์แบบสอบถามการรับรู้อุปสรรค แบบสอบถามการรับรู้สมรรถนะแห่งตนในการปฏิบัติพฤติกรรมการบริโภคอาหาร และแบบสอบถามพฤติกรรมการบริโภคอาหาร แบบสอบถามทั้งหมดได้รับการตรวจสอบความตรงตามเนื้อหาจากผู้ทรงคุณวุฒิและตรวจสอบความเที่ยงมีค่าสัมประสิทธิ์แอลฟาครอนบาคระหว่าง .80 - .86 วิเคราะห์ข้อมูลโดยสถิติเชิงพรรณนาและสถิติสัมประสิทธิ์สหสัมพันธ์เพียร์สัน ผลการวิจัยพบว่า

1. พฤติกรรมการบริโภคอาหารของกลุ่มตัวอย่างส่วนใหญ่ (68.8%) อยู่ในระดับปานกลาง
2. เพศมีความสัมพันธ์ทางลบกับพฤติกรรมการบริโภคอาหารอย่างมีนัยสำคัญทางสถิติที่ระดับ .05 ( $r = -.34$ ) ในขณะที่อายุและดัชนีมวลกายไม่มีความสัมพันธ์กับพฤติกรรมการบริโภคอาหาร
3. การรับรู้ประโยชน์ในการปฏิบัติพฤติกรรมการบริโภคอาหาร, การรับรู้สมรรถนะแห่งตนในการปฏิบัติพฤติกรรมการบริโภคอาหาร และการรับรู้อุปสรรคในการปฏิบัติพฤติกรรมการบริโภคอาหารมีความสัมพันธ์ทางบวกระดับสูงกับพฤติกรรมการบริโภคอาหารอย่างมีนัยสำคัญทางสถิติที่ระดับ .05 ( $r = 0.83, .72$ , และ  $.72$  ตามลำดับ)

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KEYWORDS: KIDNEY STONE RECURRENT / DIETARY BEHAVIORS / POST-OPERATION

QUYNH ANH DOAN: FACTORS RELATED TO DIETARY BEHAVIORS OF VIETNAMESE PATIENTS WITH RECURRENT KIDNEY STONE POST-OPERATION. ADVISOR: ASST. PROF. SUNIDA PREECHAWONG, Ph.D., A.P.N., 101 pp.

The purposes of this descriptive correlation study were to examine the dietary behaviors, and to investigate the relationships between selected factors and dietary behaviors among Vietnamese patients with recurrent kidney stone post-operation. The theoretical framework was based on Pender's Health Promotion Model. The study was conducted, based on a sample of 112 patients treated at the urological surgical departments from October to December 2013. Research instruments were five self-reported questionnaires, including 1) the Person Data Form; 2) the 11-items perceived self-efficacy of dietary behaviors; 3) the 14-items perceived benefits of dietary behaviors; 4) the 15-items perceived barriers of dietary behaviors; and the 19-items dietary behaviors. All questionnaires were assessed for content validity by a panel of experts and the Cronbach's alpha coefficients ranged from .80 - .86. Data were analyzed using Pearson's product moment correlation. The main results were summarized as follows:

1. More than two-third of patients with recurrent kidney stone post-operation (68.8%) had moderate dietary behaviors.

2. Age and body mass index were not significantly correlated with dietary behaviors but gender was negatively associated with dietary behaviors ( $r = -.34, p < .05$ ).

3. There were strong significant relationships between perceived benefits of dietary behaviors, perceived self-efficacy of dietary behaviors, perceived barriers of dietary behaviors and dietary behaviors ( $p < .05$ ;  $r = 0.83, .72, .72$  respectively).

Field of Study: Nursing Science

Student's Signature .....

Academic Year: 2013

Advisor's Signature .....

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## CHAPTER I INTRODUCTION

### **Background and Significance of the study**

Urinary stone disease is known as one of the most common suffering of modern society, although it has been described since ancient time. Based on the advancement of medical science today, physicians can remove or melt these stones in a few months by many ways. However, they do not know whether other stones can recurrent or not. If one patient has a kidney stone, the probability of re-occurrence is very high. The significance became more intensive in patients with recurrence urinary stones. Unal and his collaborators also figured out that in the group treated with open heart surgery and with previous recurrence history, the rate of stone recurrence was significant higher. (Unal, 2005)

The prevalence of renal stone is approximately 1 - 5% worldwide with a recurrent rate of 50%. Kidney stones affect a large percentage of the population with a life-time prevalence of 12% in men and 6% in women. (Curhan, 2007) In Vietnam, although no official statistics are available, the prevalence of renal calculi is about 2-3% and 40-60% of those are kidney stones. (Dang et al., 2011) According to the statistics of the Urology Department of the Military Medical Hospital 108, the proportion of patients having kidney stone was more than 40% in 2011. The proportion of recurrence post-operation is highly, approximately 75% in 20 years. (Dang et al., 2011) The patients who had made changes in their lifestyle were frustrated by the recurrence stones.

In fact that Vietnamese have not developed a frequent health check-up which leads to a small number of cases of kidney stones detected at early stages. Then, it may be costly and difficult to seek for treatments if they go to hospital in serious condition, for example severe complications like kidney pus, dump. The burden of this disease affects hospital expenditures and the national economy. At the same time many problems affected patients and families. They also need to be taken care of by their families. (Dang et al., 2011)

In addition, Vietnamese patients always need to recover and leave after post-operation as soon as possible, so they are taken care by their families with the dietary much animal protein intake, and drinking any kind of milk daily. Vietnamese people believe that the more animal meat intake, the earlier they can discharge hospital. However, previous study showed that excess animal protein intake is one of the risk factors to create stone. (Holmes, Goodman, & Assimos, 2001).

The structures of the stones normally are based on the diet which the patients took, for example, calcium oxalate, calcium phosphate, or uric acid stones. For example, if the patient's stone contains oxalate, the patients should avoid foods containing high levels such as chocolate, cocoa, beans, peanut and spinach. Some studies noted that it is necessary to provide a limited amount of calcium, or salt (Taylor and Curhan, 2006; Sorensen, et al., 2012; Borghi et al., 2002) to maintain normal metabolic processes in the body. However, the study by Dang and colleagues reported that the patients with recurrent kidney stones still took diet high animal protein and calcium even though they knew about stones prevention. It seemed that after the first operation, the patients had not recognized the complications of the disease and the waste of times when re-admission many times. Therefore, the study's population focuses on Vietnamese patients group who have recurrence kidney stone post-operation.

Empirical evidence has showed that dietary habit is one of the main factors related to stone recurrence. For example, nearly 85% of all stone patients could predict lower risk of stone recurrence which related to elementary reorientation of their lifestyle and dietary behavior. (Straub & Hautmann, 2005) A diet described by normal calcium and lower animal protein was more effective than a diet with low calcium and limitless protein intake for preventing stone recurrences in one randomized prospective trial study. (Borghi et al., 2002).

The formation of kidney stones which is a complex process, caused by multiple risk factors such as insufficient fluid intake, diets rich in animal (R. Siener, 2006); lack of fibre in diet, excessive intake of animal protein, calcium, salt, alcohol consumption (Holmes et al., 2001); excessive sodium intake (Sorensen et al., 2012)

and low potassium diet (Gupta & Kesarwani, 2002). Fluid intake is the important factor affecting urinary stone forming. Siener (2006) showed that there was an increase in figure of urinary stone performance of patients who drink less than 2 liters of water/day. Moreover, it was said that the chemical substances in the drinking water playing a role important for the stone formation. Most studies also showed the urinary stone correlated with drinking alkaline water (which has high quantity of calcium) and fluoride water.

The traditional Vietnamese diet is based on an agricultural lifestyle and is considered very healthy. Over the past decade, partly since urbanization and increased income, the diet of the Vietnamese people has significantly changing. For example, there were a quickly change in the economic growth and food supply at the macronutrient level. Especially, changes of the Vietnamese diet such as significantly more foods of animal origin, and an increase of fat/oils, and fruits. (Nguyen & Pham, 2008) In Vietnam, the average diet based on cereal, tuber, and vegetable expanded to include meat, eggs, milk, fat and sugar. However, fish and sea food is not much and has not popular from the 1980s. It is not important in using traditional foods, for example sesame, peanuts, tofu, green vegetables and fish. A percentage of the citizen has satisfied with fast foods and drinks, as well as animal-based foods and refined carbohydrates (sugars, sweets), which indicated that the most significant phenomenon of the nutritional transition and appears to be related to an increase in income. Consequently, nutritional problems in Vietnam now include not only malnutrition but also overweight/obesity, metabolic syndrome and other diseases related to nutrition and lifestyles. (Nguyen & Pham, 2008)

According to Recommended Dietary Allowance for Japanese patient after Extracorporeal shock wave lithotripsy (ESWL), seventy-three of participants, who did not undergo the counseling, had higher recurrence rate than that of group taking program. The dietary counseling is intake total protein, animal protein, fat and carbohydrate were all decreased (Nomura, Ito, Masai, Akakura, & Shimazaki, 1995). In another study, it was found that about 75% of patients could avoid a stone recurrence with general meta-phylaxis consisting of change in dietary behavior (Borghini et al., 1996). Thus, dietary behavior plays a major role in patients post operation.

Additionally, a change or control the dietary behaviors to decrease risk factors are known a core basis of urinary stone prevention (Hearty, McCarthy, Kearney, & Gibney, 2007)

In this study, dietary behaviors are that how the patients with recurrence kidney stone post operation taking food every day with a diet characterized for kidney stone prevention is (1) normal calcium (1200mg/day); (2) limited sodium intake such as hot dogs, luncheon meats, fast food; (3) low animal protein such as liver; (4) low salts levels (2400 mg/day) and (5) at least 2-3 lit fluid intake. To measure dietary behaviors, the researcher will explore the frequency of patients' performances.

The conceptual framework was adopted from Pender's Health Promotion Model. Based on Pender's Health promotion Model, this study considers dietary behaviors as behavioral outcomes. These are results of impacting by personal characteristic and by behavioral cognition. Each individual has different background and perceived self-efficacy, perceived barriers and perceived benefits, which lead to the behavioral out-comes will be not the same. This study applies the Pender model because through an organized intervention the designated population will be encouraged and provided with support to ultimately change health behaviors for an improved life outcome.

Pender's Health Promotion Model was initially designed in 1982 and revised in 1996. The model examines the factors that influence one's health promoting behaviors, which are defined as the activities that support positive health outcomes. Srof and Velsor-Friedrich (2006) summarize Pender's Model as a theoretical viewpoint examining the components and associations that compose health-promoting behavior and thus, lead to enhancement of physical wellbeing and quality of life.

Pender (1996) stated "perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior" (p 63). As previously mentioned this author believes that the concept of self-efficacy of the individual patient plays a major role in the patient's ability to "buy-in" to the working toward the goals to improve health care.

Pender's Model noticed that individuals can change cognitions, affect and their personal and physical environment to create positive health behavior action changes in their lives.

In the nursing profession, nurses not only give patients medication and clean wounds daily, they also educate on how to prevent recurrence of kidney stones. A previous study in Japan showed that dietary counseling might be a useful measure to prevent urinary stone recurrence post operation (Nomura et al., 1995). Few studies support the factors impact on patients' dietary behaviors. For example, socioeconomic status affects dietary behavior and may strongly influence stone formation and recurrence (Saint-Elie et al., 2010). Kahawong (2004) found that perceived self-efficacy and age correlated to dietary behavior positively whilst perceived health risks had a negative correlation among hyperlipidemic women. In addition, perceived self-efficacy and perceived benefits of action are predictive of healthy dietary among 261 Korean American adults in a study conducted by Shin (2009).

However, the studies about dietary behaviors and factors that affecting dietary behaviors among patients with kidney stones post-operation in Vietnam are limited. To develop appropriate nursing interventions for kidney stone patients, it is important to understand kidney stone patients' dietary behaviors and what factors influencing these behaviors. Therefore, the researcher hope that the result of this study may lead to change in people's awareness about appropriate health behaviors, decrease in recurrence of kidney stone and therefore, a reduction in patients' health care budget and the hospital costs.

### **Objectives of the study**

- 1) To examine the dietary behaviors of Vietnamese patients with recurrence kidney stone post-operation
- 2) To examine the relationship between age, gender, body mass image, perceived self-efficacy, perceived benefits, perceived barriers and dietary behaviors of Vietnam patients with recurrence kidney stone post-operation

### **Research questions**

In this study, research questions are,

- 1) What are the dietary behaviors of Vietnamese patients with recurrence kidney stone post-operation?
- 2) What are factors that related to dietary behaviors of Vietnam patients with recurrence kidney stone post-operation?

### **Rationale and hypotheses**

Health Promotion Model is a middle range theory, and it is simple and easy to understand since the factors in the concepts are logically connected (Sakraida, 2006). There is empirical evidence to support use of this model in a variety of populations regardless of age, gender, and culture (Sakraida, 2006). In addition, the HPM was applied in studies regarding eating habits study among different populations including Americans, Koreans, and Taiwanese. (Chen, Kuo, Chou, & Chen, 2007; Shin & Lach, 2011)

Dietary promoting behaviors have been mentioned in a variety of term, such as food patterns, food intake, food consumption, etc. In few of studies found several factors impacting on dietary in kidney patients. These factors include socioeconomic status (Saint-Elie et al., 2010) education background (Abbagani, Gundimeda, Varre, Ponnala, & Mundluru, 2010) gender, age, higher social class, tertiary education, lower body-weights (Hearty, McCarthy, Kearney, & Gibney, 2007) demographic variables,

self-efficacy, benefits/barriers, (Garcia et al., 1995). the perceived benefits, perceived barriers (Contento, 2011).

This study selected the variables that derived from the empirical literature, and used Pender's health promotion model (HPM) to guide for selecting some variables. From these perspectives, dietary promoting behaviors is one of the six dimensions of a health-promoting lifestyle: health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth and stress management (Pender, 1996). Nutrition is the essential constituent of health-promoting lifestyle because it is critical that promoting of good nutrition in sickness prevention and health promotion , also in perceived self-care and dependent care dimension (Pender, 1996).

According to Pender (1996), health promoting behavior is influenced by two groups of factors: 1) individual characteristics and experiences and 2) behavior-specific cognitions and affect. Individual characteristics and experiences include prior related behavior and personal factors that consists of biologic, psychologic, and sociocultural factors. Behavior- specific cognitions and affect include perceived self-efficacy, perceived barriers of action, and perceived benefits of action, activity-related affect, interpersonal influences, and situational influences.

In this study, age, gender, BMI represented the personal factors. In addition, based on empirical evidence, only three factors (perceive self-efficacy, perceived benefits of dietary behaviors, and perceived barriers of dietary behaviors) were selected to represent behavior- specific cognitions and affect.

According to Pender et al. (2006) barriers are the blocks, hurdles and personal costs of task a certain behavior and may be real or imagined. Barriers usually wake purposes of evading in relation to a give behavior. The lower of readiness and the higher of barriers appear, the more occur of action will happen. Perceived barriers to action in the revised HPM affect health-promoting behavior directly as well as indirectly through decreasing component to a plan of action. For this study, it is hypothesized that perceived barriers of dietary behaviors is correlated to dietary behaviors in patients with recurrent kidney stone post-operation.



Pender et al. (2006) stated that self-efficacy is not be connected with the skills, but rather with the personal decision of what one can do with whatever skills one ownership in term of health behaviors. Perceived self-efficacy on dietary behaviors are defined as the level of confidence in the ability of patients with kidney stones post-operation to arrange and perform specific behaviors related to dietary. Of the studies testing the HPM, 86% supported self-efficacy as a determinant of health-promoting behavior, which implies that self-efficacy is the one of the strongest forecast factors in the model (Pender et al., 2006). For this study, it is hypothesized that self-efficacy of dietary behaviors would be positively related to dietary behaviors.

According Pender (2006), perceived benefits are the individual's perception or belief of profit of a health promotion behavior that directly influencing a person to participate in the behavior. In another definition, perceived benefits are positive outcome expectations that a person believes will increase from engaging in certain behaviors. Benefits of the behavior may be intrinsic or extrinsic. Inside benefits include the physical direction affected of achieving the behaviors. In this study, it is hypothesized that perceived benefits of dietary behaviors were positively related to dietary behaviors.

Pender's Health Promotion Model has been widely used as a framework for research to explain and specific health-promoting lifestyle in various groups (Pender, 1996). For instance, health responsibility of exercise behavior (Chinuntuya, 2001), nutritional promoting behavior of low income pregnant women (Kittichotpanich, 2001), and hearing protection among workers (Lusk, et al., 1994).

Therefore, the investigator hypothesizes that (1) individual characteristics such as age, genders, and BMI would correlated with dietary behaviors in patients with recurrent kidney stones post-operation; (2) behavior specific cognitions and affect such as perceived self-efficacy, perceived benefit and perceived barrier would be correlated with dietary behaviors in patients with recurrent kidney stones post-operation.

## The scope of the study

This study explored the dietary behavior and examined the relationship between age, gender, body mass index, perceived self-efficacy, perceived benefits, perceived barriers and dietary behaviors in patients with recurrence kidney patients post operation. This study focused on two Urological Surgical Departments in the hospitals: Viet Duc Hospital and Military Medical Hospital 103 in Hanoi.

The rationale which the researcher selected above hospitals was that:

1) This hospital is in Hanoi, and is the best one in Surgery in North Vietnam. Moreover, Viet Duc hospital treats for most people from many provinces around Hanoi. So there are many of admissions of patients in Viet Duc Hospital annually, especially the figure in kidney stones is up to 50 per month. In addition, the rate of operation of this disease is higher among the general operations.

2) Medical Hospital 103 in Hanoi is a hospital for military and all sick people. According the statistics in Surgical Urology Department of this hospital, there are approximately 1200 patients annual, in which, the number of operation is 1100, special in endoscopy and lithotripsy. Moreover, normally there are 65-85 in-patients in department.

## Operational definitions

Independent variables are age, gender, body mass index, perceived self-efficacy, perceived benefits and perceived barriers.

Body mass index (BMI) refers to the ratio of weight (kilograms) and height (meters) to the power of two (Prathepasen, 1996: 30). Its operational definition is the digital number from calculation of weight (kilograms) divided by the square of height ( $m^2$ ).

Perceived self-efficacy of dietary behaviors is defined as how much confidence in the ability of patients with recurrent kidney stones post-operation to organize and execute specific food and behaviors related to dietary in preventing recurrent kidney stone.

Perceived self-efficacy on dietary behaviors is operationally defined as the total scores in the Perceived self-efficacy of Dietary behaviors scale, developed by researcher based on Kahawong's study (2009).

Perceived benefit of dietary behaviors is the action-oriented that effects of properly preparing and eating food safety to prevent recurrence kidney stones post-operation.

Perceived benefits of dietary behaviors is operationally defined as the total scores in the Perceived benefits of Dietary behaviors scale, developed by researcher based on da Silva Pires and Mussi's study (2012).

Perceived barriers of dietary behaviors are un-abilities, difficulties, time consuming, inconveniences which are influencing on dietary behaviors among patients with recurrent kidney stones post-operation. They are also real blocking and personal cost or misinformation of undertaking dietary behaviors.

Perceived barriers of dietary behaviors is operationally defined as the total scores in the Perceived benefits of Dietary behaviors scale, developed by researcher based on da Silva Pires and Mussi's study (2012).

Dietary behaviors in patients with recurrence kidney stones post operation refer to the frequency the patients take a diet characterized such as normal calcium, limited sodium, low animal protein, less salt, and at least 2-3 lit fluid intake for kidney stone prevention after undergone previous treatments.

Dietary behaviors are operationally defined as the total scores on the Dietary behaviors scale which developed by researcher based on Kahawong's study (2009).

### Expected usefulness of the study

Diet is an important role in treatment of all diseases. Changing behaviors in diet should be started from giving up frequently routine of eating behavior and making new habit. Before nurse can help the patients change behaviors in daily eating, in my opinion, it is important to provide what factors related to patients' dietary habits. From results of this study, nurses have just enough evidence and knowledge to give information in dietary counseling for their illness people. It might be used as a guideline for nurses to make a plan of action to promote and provide information in advance about kidney stone which help the patients will recognize and perform good dietary behaviors earlier in their lives.

## CHAPTER II

### LITERATURE REVIEW

The study is the application of the Health Promotion Model theory aiming to explore the factors related to dietary behaviors in patients with kidney stones post-operation. This part presents the literature that covers the followings: (1) patients with of recurrent kidney stone (2) dietary behaviors in patients with recurrence kidney stones post operation (3) the Pender's health Promotion Model and (4) previous studies on factors that related to dietary behaviors in patients with kidney stone post-operation.

#### **1. Patients with recurrent kidney stones**

Stones (calculi) in the urinary tract (urolithiasis) or kidney (nephrolithiasis) occur in 5% of the population. The popularity of urolithiasis is about 2 to 3 percent in the general population. Approximately 50 percent of patients with previous urinary calculi have a recurrence within 10 years. The life time risk of passing a stone is 8-10%.

Stone disease is two to three times more frequency in males than in females. The occurrence of kidney stones rises dramatically as men enter their 40s and continues to rise into their 70s. Meanwhile, this figure peaks in their 50s among women. It occurs more often in adults than in elderly persons, and more often in elderly persons than in children. Whites are affected more often than persons of Asian ethnicity, who are affected more often than blacks.

Scientists have found evidence of kidney stones in a 7,000-year-old Egyptian mummy. Each year, people make almost 3 million visits to health care providers and more than half a million people go to emergency rooms for kidney stone problems.

For unknown reasons, there is an increase in amount of people in the United States suffered from kidney stones since 30 years. In the late 1970s, nearly 4 percent of the population had stone forming disease. By the early 1990s, the figure of this population had coming up more than 5 percent.

There are no popular data basis on the rate or frequency of kidney stones in Australia. International studies from other Western countries found that kidney stones are uncommon in youth people, their ratio rises in younger adults and then remains relatively constant until the age of 70 years, after which this figure reduces again.

### **1.1 Types of kidney stones**

There are several types of renal stones that differ in composition and pathogenesis. The most common type of kidney stone is composed of calcium oxalate and is caused by metabolic disorders that are often treatable.

Calcium oxalate stones: are the most common. They tend to form when the urine is acidic, meaning it has a low pH. Some of the oxalate in urine is produced by the body. Calcium and oxalate in the diet play a part but are not the only factors that affect the formation of calcium oxalate stones. Dietary oxalate is an organic molecule found in many vegetables, fruits, and nuts. Calcium from bone may also play a role in kidney stone formation.

Calcium phosphate stones are less common. Calcium phosphate stones tend to form when the urine is alkaline, meaning it has a high pH.

Uric acid stones are more likely to form when the urine is persistently acidic, which may result from a diet rich in animal proteins and purines substances found naturally in all food but especially in organ meats, fish, and shellfish.

Struvite stones result from infections in the kidney. Preventing struvite stones depends on staying infection free. Diet has not been shown to affect struvite stone formation.

Cystine stones result from a rare genetic disorder that causes cystine—an amino acid, one of the building blocks of protein—to leak through the kidneys and into the urine to form crystals.

### **1.2 Risk factors**

The presence of risk factors increases the risk of recurrent stone formation, although the majority of stone formers have none identifiable. Risk factors and conditions associated with renal calculi include (1) male sex, family history of renal calculi, obesity and the metabolic syndrome, (2) primary metabolic abnormalities (e.g. hypercalcinuria, hyperuricosuria, hypocitraturia, hyperoxaluria, cystinuria), (3) hypercalcemia of any cause (e.g. hyperparathyroidism, malignancy, sarcoidosis, prolonged immobilization), (4) intestinal disease (e.g. Crohn's disease, laxative abuse, jejunioileal bypass), renal tubular acidosis (Type 1), gout, recurrent urinary tract infection, (5) chronic volume depletion (e.g. inadequate intake or hot climates), (6) urological anatomic abnormalities promoting urinary stasis, and (7) drug use (loop diuretics, antacids...). A precipitating factor may be present: volume depletion (including recent diuretics, hot weather, do exercise too much) or increased protein intake.

In addition, urolithiasis occurs more frequently in hot, arid areas than in temperate regions. Decreased fluid intake and consequent urine concentration are among the most important factors influencing stone formation. Certain medications, such as triamterene (Dyrenium), indinavir (Crixivan) and acetazolamide (Diamox), are also associated with urolithiasis. Dietary oxalate is another possible cause, but the role of dietary calcium is less clear, and calcium restriction is no longer universally recommended.

### **1.3 The treatment for recurrent kidney stones**

Treatment options are depended on the location of the stone and its size. Stones which are less than 4mm in diameter, although painful, may be passed spontaneously and do not require intervention, other than adequate analgesia (Al Rifai and Ayub, 2007). Recently, medication in the form of an alpha1-adrenergic

blocker (e.g. tamsulosin), which helps to relax muscle, has been applied to assist spontaneous passing of the stone (Yilmaz et al, 2006; Lipkin and Shah, 2006). Stones greater than 4-5 mm in diameter require intervention for removal, which will be based on the patient's condition. At that time, preservation of renal function is paramount in determining clinical management.

#### The common situations

Most stones that cause renal colic are small and may pass out with urine in a day or so. The patient should drink plenty of fluid to encourage a good flow of urine. Strong pain killers are often needed to ease the pain until they pass the stone. No other treatment is usually needed. Some stones that form and stick in the kidney do not cause symptoms or any harm. They can just be left if they are small. Sometimes the patients may be prescribed with medicines to help the stone pass through.

#### Special cases

Some stones become stuck in a ureter or kidney causing persistent symptoms or problems. In these cases, the pain usually becomes severe and you may need to be admitted to hospital. There are various treatment options which include the following:

Extracorporeal shock wave lithotripsy (ESWL) uses high-energy shock waves which are focused on to the stones from a machine outside the body to break up stones. You then pass out the tiny broken fragments when you pass urine.

Percutaneous nephrolithotomy (PCNL) is used for stones not suitable for ESWL. A nephroscope (a thin telescope-like instrument) is passed through the skin and into the kidney. The stone is broken up and the fragments of stone are removed via the nephroscope. This procedure is usually done under general anesthetic.

Ureteroscopy is another treatment that may be used. In this procedure, a thin telescope is passed up into the ureter via the urethra and bladder. Once the stone is seen, a laser (or other form of energy) is used to break up the stone. The technique of which is suitable for most types of stones.



Stone removal can be done by a traditional operation where the skin has to be cut to allow access to the ureter and kidney, which is only necessary. Only in a very small number of cases where the above, newer techniques have not worked or are not possible. It may be done if patients have a very large stone in their kidney.

Another option for a stone made purely from uric acid (about 1 in 20 stones) is to dissolve the stone. This can be done by drinking plenty of fluids and making the urine alkaline with medication.

#### **1.4 Nursing care of patients with kidney stones post-operation**

Measurement to prevent recurrent include a low-calcium diet, often combined with oxalate-binding cholestyramine,, for absorptive hyperparacalcemia, parathyroidectomy for hyperparathyroidism, administration of allopurinol for uric acid calculi, and daily oral doses of ascorbic acid to acidify the urine.

In *Handbook of Medical –Surgical Nursing (2006)*, the nursing intervention are recommended that:

(1) To facilitate spontaneous passage of calculi, encourage the patient to walk, if possible. Also force fluids to maintain a urine output of 1.5 to 2 L/day (urine should be very dilute and colorless).

(2) If patient cannot drink the required amount of fluid, give supplemental injection vein fluids. To help acidify urine, offer fruit juices, especially cranberry juice.

(3) Consult a dietitian to help the patient identify foods he should avoid eating, depending on the type of the calculi, as well as foods he should eat to prevent recurrence of stones. The dietitian can also plan menus that consider the patient's preferences, while ensuring adequate nutrition.

(4) With the patients post-operation, nurses have duty record intake and output and daily weight to assess fluid status.

In conclusion, related the dietary behaviors in patients with recurrent kidney stones post-operation, nurses should give patient some information that are:

1) Avoid protein intake; usually protein is restricted to 60g/day to decrease urinary excretion of calcium and uric acid.

2) A sodium intake of 3 to 4 g/day is recommended. Table salt and high-sodium foods should be reduced, because sodium competes with calcium for re-absorption in the kidneys.

3) Low-calcium diets are not generally recommended, except for true absorptive hypercalciuria. Evidence shows that limiting calcium, especially in women, can lead to osteoporosis and does not prevent renal stones.

4) Avoid intake of oxalate-containing foods (eg, spinach, strawberries, rhubarb, tea, peanuts, wheat bran).

5) During the day, drink fluids (ideally water) every 1 to 2 hours.

6) Drink two glasses of water at bedtime and an additional glass at each nighttime awakening to prevent urine from becoming too concentrated during the night.

7) Check the intake and output and daily weight to assess fluid status.

## **2. Dietary behaviors in patients with recurrence kidney stones post operation**

### **2.1 Definition**

Kidney stones should not be neglected because the stone will lead to pain, block the flow of urine, and long-term kidney problems if it is not identified and cured properly. Actually, there is no more effective method of preventing any disease but proper suitable. Many experts are in agreement that the right diet is one of the important factors in curing and preventing popular diseases such as kidney stones. (E. N. Taylor, Stampfer, & Curhan, 2004) This is a reason that if diet are controlled, people can select the consume foods which cannot perform the more quickly formation and growth of kidney stones.

Dietary factors play an important role in kidney stone formation, and dietary modifications can decrease the risk of stone recurrence. Most stone formers will need to increase fluid intake to produce at least 2 lit of urine per day, and the calcium oxalate stone former with hyper-calciuria should be encouraged to take in adequate calcium and low in animal protein and sodium. Dietary interventions, and subsequent evaluations of therapeutic efficacy, should be based on the results of multiple 24h urine collections. (Taylor & Curhan, 2006)

It is indicated that excessive sodium intake increase the risk of kidney stone, and dietary animal protein intake may be less important for nephrolithiasis development than previous asserted (M. D. Sorensen et al., 2012). A recent trial evaluated whether dietary intervention affecting on urinary risk factors of recurrence in calcium oxalate stone formers. (Roswitha Siener, 2006) The findings of this study indicated that the diet characterized low fluid intake, more alcohol and protein were recognized as the most principal dietary risk factors of the patients on their dietary behaviors daily.

Different kinds of kidney stones have need of different prevention diets. Drinking water and other fluids is the most important thing a person can do to prevent kidney stones. Drinking water is cheap and safe. Urine should be diluted among patients with kidney stone by drinking a lot of water frequently during a day. They also should recommended to consume the group of foods of appropriate foods, consider their body's need and slow down the consumption of high-oxalate foods. Avoiding the protein formation from animal sources and sodium should be recommended, because this kind of protein and sodium accelerate the excretion of calcium and reduce the excretion of citrate. They should consume a many kinds of foods and change their dietary behaviors.

Diets characterized much amount sodium can build up the excretion of calcium into the urine, so there is increase in the risk of calcium comprising kidney stones. Moreover, a diet with rich in animal proteins will lead to the increase in the risk of uric acid and calcium stones. To fight calcium oxalate stone, patients should decrease amount of rich oxalates foods, such as spinach and rhubarb. The conclusion is that a diet with more vegetable, high potassium, magnesium, citrate, and fiber and avoid in oxalic acid foods and salt with more fluid intake should help fight or at least greatly decline the recurrences of kidney stones in most patients.

The diet for patient in general post-operation is food consumption which is soft, easy to metabolic process. The patients with post operation are usually managed start with clinical monitoring of return of bowel function, then from a clear liquid diet that is advanced to regular solid food tolerated.

Flagg (2007) noticed that stone formation will be promoted by improper dietary behaviors. The appropriated diets include many kind foods consisting of 5 groups of nutrients, with proper quantity and specific age groups.

Regarding protein, excess protein in diets accelerated the excretion of calcium and uric acid but lowered the excretion of citrate. Among the people who took on high protein food, the growth risk of having stone rise to 1.33 times. The excretion of calcium will come up to 100 mg/d is a consequence of each more 75 grams protein intake. However, the protein consumed from vegetarian diets and eggs was not changed. Therefore, it is indicated that the rate of stone formation will be reduced if the amount of protein from animal sources decrease.

Sodium: The excretion of calcium and cystine in urine will be decrease if having the rich sodium in food normally and also will be reduce the excretion of citrate. It was discovered that eating increased high sodium diets 100 mmol resulted in the increased excretion of calcium up to 25 mg. Thus, the patients with stones that caused by calcium and cystine should be suggested to consume low-sodium diets.

Potassium: Consuming low-potassium diets accelerated the urinary stone. The high-potassium diets lowered the risk of having stone to 0.49, comparing the patients who consumed more than 4,041 mg/d and those who consumed potassium less than 2,896 mg/d.

Fiber: High-fiber foods can slow down the formation of stone because high-fiber foods create a state of alkalinity in the body resulting in the higher excretion of citrate. Fiber foods also contain low protein and low fat which reduce the formation of stone.

Carbohydrate: High-carbohydrate foods will accelerate the excretion of calcium in urine resulting in the increased oxalate in the body.

Oxalate foods: High oxalate can be absorbed and excreted more in urine. The decrease of high-oxalate foods is one measure for preventing hyperoxaluria. Furthermore, high quantity of oxalate is the important compound in a stone. One

study proved that the ones consuming high oxalate vegetables had the increasing oxalate crystal in urine which is result in urinary stone.

Borghi and his collaborators (2002) suggested that to the recurrent stones in men with idiopathic hypercalciuria would be prevent diet with normal calcium (1200mg/day), lower animal protein, and less amount of salts is more effective than the traditional low-calcium diet (400mg/day).

So, dietary behaviors in patients with recurrent kidney stones post-operation could be defined that the way they will take normal calcium, low animal protein, and low salts levels.

In conclusion, diet is an important role in the majority of patients with kidney stones. It is very important to eat right foods to prevent kidney stones. To prevent stone recurrences, it is recommended by using dietary modification. If physician recognize the importance of diet and urolithiasis, this will be useful for patients with urinary stone disease.

## **2.2 Dietary behaviors in Vietnamese patients with recurrent kidney stone**

According the Nguyen and Ha (2007), the researchers might attend the alterations in sustenance in developing countries, specific in the change of diet from a poor and simple ration to a various one rich in animal protein and lipid, and processed food. There are a relationship between this change and society, culture and economic in the context of demographic transition. They also concerned that the number of amount rich protein and more lipid are being consumed much more than in the past. Consequently, it leads to many health problem relating dietary behaviors.

In addition, there was an exciting example of the current and potential nutritional role of naturally occurring vegetables (NOV) in Vietnam. Vegetables plays a major role of Vietnamese food culture and the natural wild plants are used since long time ago by people there (Bui, 1986; Nguyen &Bui, 1994).

The dietary contribution of edible wild plants is well known and appreciated and some of the plants used as vegetables are also reportedly used for therapeutic purposes (WHO/IMM, 1990). They have been of specific importance in wartime and

during periods of unrest; a reason why this group of foods, to some people, has an added stigma of the past, of harsh times and of poverty. Their current role is thought to be greatest in the highlands, where the population density is low, and the diversity of natural plant foods is greater and farming systems are more extensive. These are also the regions where the majority of the over 50 ethnic minority groups in Vietnam live, many of whom have the most diverse traditions of including wild plants in their food culture. For populations in the lowlands and delta areas and to ethnic Vietnamese, natural vegetables are thought to be of lesser importance. (Ogle, Ha, Mulokozi, & Hambraeus, 2001)

### **2.3 Measurement of dietary behaviors**

Dietary behavior are defined as eating food consumption that people engage in, as well as behaviors related to consuming foods, such as shopping, eating out, or portion size. (Vries, 1997) Dietary behavior differs from some other types of health behavior in that it is, in its basic forms, essential for life. Of course, some dietary behaviors, such as drinking alcoholic beverages or smoking cigarettes, are not necessary to sustain life. It is recognized that dietary behaviors influence the development of many chronic diseases, including coronary heart disease, some cancers (e.g. breast, colon, prostate, stomach, and cancers of the head and neck), type II diabetes mellitus, and osteoporosis. Recommendations for healthful dietary behavior include limiting consumption of high-fat foods, having a high intake of fruit and vegetables, increasing fiber, and controlling caloric intake to prevent obesity. Although most Americans know about the health consequences of unhealthful diets, many of the public health goals for dietary behavior have not been met. The prevalence of obesity and type II diabetes mellitus increased markedly in the United States and Canada during the last decade of the twentieth century.

Dietary behaviors play a key role in preventing or managing disease when they are sustained over the long term. Behavioral considerations are keys to any attempts to promote healthful dietary behavior. Several core issues about dietary behavior have been recognized. First, most diet-related risk factors are asymptomatic and do not present immediate or dramatic symptoms. Second, health-enhancing dietary changes require qualitative change, not just changes in the amount of food

consumed. Third, both the act of making changes and self-monitoring dietary behaviors require knowledge about foods. Thus, information acquisition and processing may be more complex for dietary change than for changes in some other health behaviors.

In Kahawong's study (2004) the researcher measured the nutritional health promoting behaviors by 17-item-questionnaire consisting of 4 positive items and 13 negative items. The total score ranged from 17 to 85, with higher scores reflecting high level of nutritional health promoting behaviors. Moreover, this researcher interpreted the mean score by three levels: "good, moderate and poor nutritional health promoting behaviors"

In this study, dietary behaviors were measured by a 19 item questionnaire including 5 positive items and 14 negative items. The total score ranged from 19 to 95, with higher scores reflecting high level of dietary behaviors.

Therefore, dietary behaviors in patients with recurrent kidney stones post-operation could be measure by how often they took normal calcium, low animal protein, and low salts levels, drink 3-4 lit fluid every day. The frequency will be range from routinely to never.

#### **2.4 Factors related to dietary behaviors**

It is stated that discussing about dietary changes is easier than performing. Patients should be encouraged to change their behavior in a realistic space, increase the good progress, and notice the gain experience in advance rather than find the perfect. The roles of the urological nurses are identified in this situation, such as educating, providing praise and support for patients with kidney stones. So, it is helpful for urological nurses if they really understand which factors related to patients with kidney stone post-operation.

Age is the participant's chronological age, taken from the participant's medical document and is confirmed by an identification card.

It is noticed that having a balanced diet would not only guarantee that all the important nutritive but also make a lower risks level of some diseases such as kidney stones. For people suffering from this condition, they need to concern their diet because this leads to the degree or more serious level of the kidney stones.

Additionally, it is indicated that most of the patients with urinary stone are in the labor force, age 40-60 years and the development will predicted finding in the older age group in future. However, the rate was found among the younger group in the other countries.

Gender is a determinant factor on the management of disease. Most studies concluded that stone disease is two to three times more common in males than in females. From his research, Unal (2005) found that the recurrence rate were to be grater in males than females, in recurrent cases than in first-time cases.

In addition, Curhan (2004) suggested that there was a difference in some dietary risk factors based on age and genders because of the much more intake of dietary calcium reducing the risk of kidney stone formation in younger women.

Body mass index (BMI) is used to evaluate the relationship between weight and height, which is related to body fat and health risk. According to Lauderadale & Rathouz (2000), although Asians' mean BMI is lower than other ethnicities, they have a larger propotion of body fat and more upper-body subcutaneous fat. Another interesting statement from the study is that in developed countries, there is a strong negative relationship between socioeconomic status (Tur, Prieto, & Grases) and obesity for women; the higher the income they have, the lower the prevalence of obesity. On the other hand, in developing countries, the opposite tendency was observed; the higher the income they have, the higher the prevalence of obesity (Lauderadale & Rathouz, 2000). As a result, BMI reflects not only individual's health and eating habits, but also social backgrounds and cultural tendencies of that group.



Perceived self-efficacy:

Self-efficacy, as defined by Bandura (1977:74) is the dimension of personal capability to organize and execute a particular course of action. It is concerned not with the skill one has but with judgments of what one can do with whatever skills one possesses. Judgments of personal efficacy are distinguished from outcome expectations. Perceived self-efficacy is a judgment of one's abilities to accomplish a certain level of performance, whereas an outcome expectation is a judgment of likely consequences (e.g., benefits, costs) such behaviors will procedure. Perceptions and competence in a particular domain motivate individuals to engage in those behaviors that they excel in. Feeling efficacious and skilled in one's performance is likely to encourage one to engage in the target behaviors more frequently than feeling inept and unskilled.

In one study in Japan, there were 325 participants completed a self-administered survey containing nine scales reflecting six constructs of the Bandura's theory of self-efficacy to test a prediction model of dietary behavior in hemodialysis patients residing. (Oka & Chaboyer, 2001) The findings showed that there was 24% of the variance on a dietary behavior scale was reported for by self-efficacy, family support, and self-repressive behavior. In addition, it is predicted approximate 10-30% of the variability in behavior when analysis how much self-efficacy affects ordinary of dietary behaviors.

Perceived benefits

Perceived benefits are positive outcome dimension that a person believes will build up from be attractive in certain behaviors (Bruner, 1969 as cited in Walker et al, 2006). Perceived benefits have also been indicated as major factors in the expenditure of fruits and vegetables by people from other studies. Pawlak and Colby (2009) found that the internal profits of eating a healthy diet, for example better feeling or healthier status received the highest scores.

### Perceived barriers

The concept of barriers to action, or perceived obstacles, is often mentioned in theories of health behavior. On the other hand, it is expanded concept that what is known as "decisional balance." So, it is prefer to call this idea as the "net benefits of action" in the health belief model and "pros minus cons" in the stages of change model all these definitions showed that individuals engage in a relative weighing of the advantage and disadvantage of a prospective behavior change. This definition is essential of model of rational decision making, in which people thought about the convenience and the inconvenience of joining in a specific action logically.

### **3. The Health Promotion Model (HPM)**

This study applied Pender's Health Promotion Model (Pender, Murdaugh, & Parsons, 2006), which is a middle range theory developed to explain, predict health-promoting behavior and purposes to increase the state of clients' health. It explains that health – promoting behavior is results from the interaction of persons and the environment in several dimensions, in order to maintain their well-being, fulfillment, and the self-actualization of the individual. The model was first developed by Pender in 1982, and revised in 1987 and 1996, respectively. The basic concept of the model derives from the Social Cognitive Theory of Bandura (1977, 1986), which explains the interrelationship of environmental, personal and behavioral elements. It also derives from the Expectancy – Value Theory of Feather (1982), which explains people's motives. It contends that people's health-promoting behaviors are a result of intellectual processes in interpretation and decision-making given as information from the internal and external environment, and the response to the perception through behaviors. Moreover, behaviors are also a result of value expectancy or goals to be achieved.

In the early 1980s, the Health Promotion Model first appeared in nursing literature. It was proposed as a framework to integrate nursing and behaviors science perspectives on factors influencing health-promoting behaviors. It was offered as a guide for exploration of the complex bio-psychosocial processes that motivate individuals to engage in behaviors directed toward the enhancement of health.

Pender developed HPM in 1982 and conducted research to verify it. She found that some perspectives could not describe the phenomena about health-promoting behaviors. As a consequence, the model was revised in 1987 based on the social cognitive theory. In 1996, Pender revised the model once again after she did research to test the model. Therefore, the definition of health, perceived health status, and demographic and biological characteristics have been repositioned into the model and included in the category of personal factors. The importance of health, perceived control of health, and cues to action were deleted from the model because it was found out that the importance of health and perceived control of health did not contribute to the explanation of health-promoting behaviors. Furthermore, the reliability of cues to action was difficult to measure; therefore, the usefulness of this variable was unclear. Three new variables were added to the model; that is, activity-related affected, commitment to a plan of action; and immediate competing demands and preferences.

The revised Health Promotion Model (HPM), proposed by Pender, describes five aspects of Health promotion behavior (HPB) including health responsibility, physical activity, nutrition, interpersonal relationship, spiritual growth, and stress management (Pender et al., 2006). Due to the increasing prevalence of chronic diseases after 1950s, disease prevention and health promotion are important issues in health care policy in the United States. For that reason, the target of the HPM is to predict health promoting behaviors. The revised HPM uses ten concepts to predict an outcome variable, health-promoting behavior by direct effect or indirectly effect. (Pender et al., 2006)

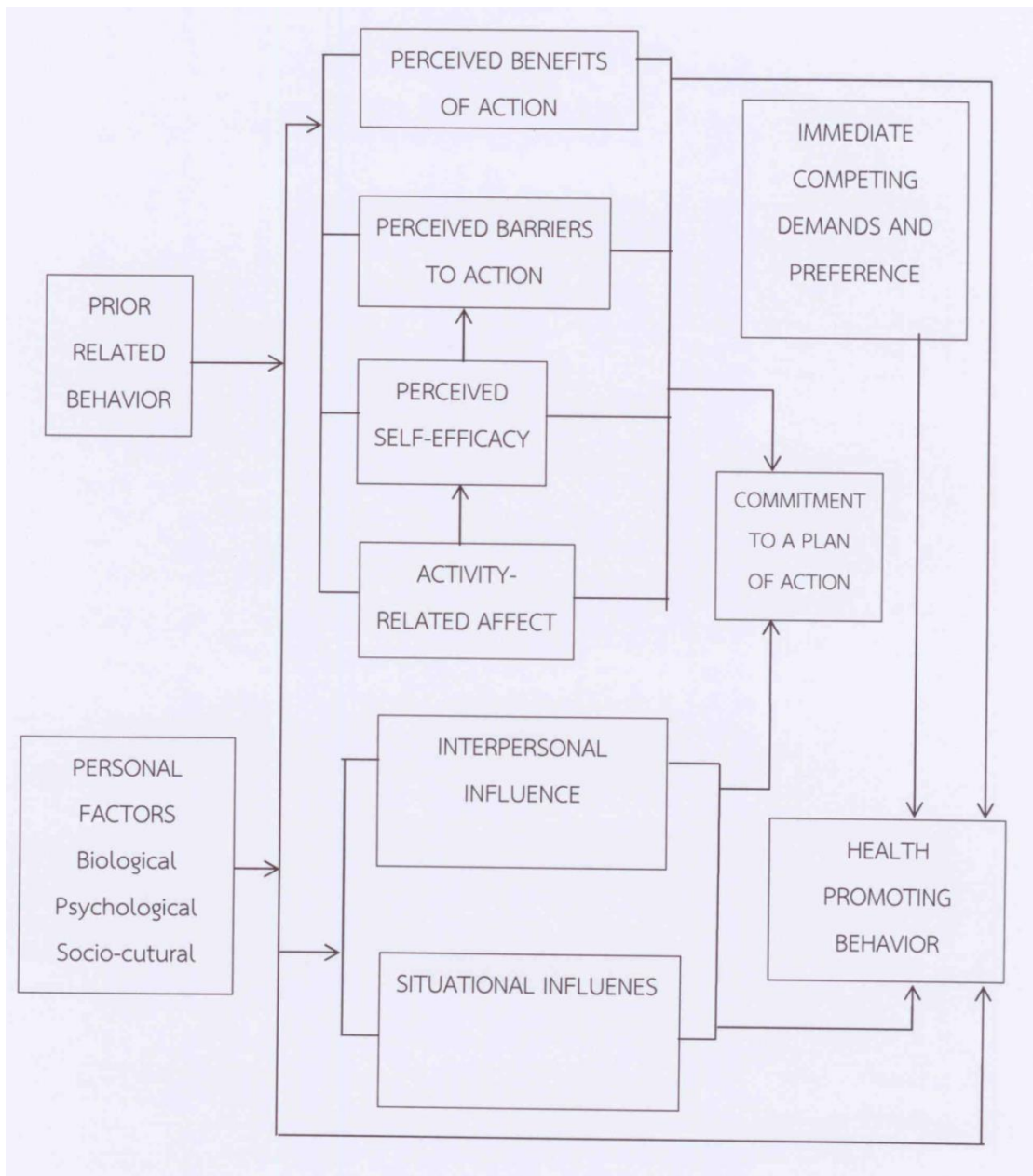


Figure The Health Promotion Model (from *Health Promotion in Nursing Practice* (5<sup>th</sup> ed., p.50) by N. J. Pender, C. L. Murdaugh, and M. A. Parsons)

Three constructs comprise eleven concepts in Pender's revised HPM (Pender et al., 2006). The three constructs include an individual's characteristics and experiences, behavior-specific cognition and affect, and behavior outcome. Two of concepts; prior related behavior and personal factors, are included in the construct of an individual's characteristics and experiences. The construct of behavior-specific cognition and affect consists of six concepts; perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, situational influences. The behavioral outcome construct involves three concepts; immediate competing demands and preferences, commitment to a plan of action, and health-promoting behavior.

The first category is individual characteristics and experiences which consist of prior related behavior and personal factors. Personal factor, in the revised of HPM, comprise: (1) biologic factors, such as age, gender, and body mass index; (2) psychological factors, such as self-esteem, self-motivation and personal competence; and (3) socio-cultural factors, such as race/ethnicity, acculturation, education and social-economic status (Pender et al., 2006). Pender et al., (2006) suggested that individuals engage in health-promoting behaviors through a cognitive process that is related to the individual's intention to accomplish the health-promoting behavior. Predicting of future health-promoting behaviors begins with the developing awareness of relevant past behaviors, and then being able to either directly affect the HPM or indirectly affect through the behavior-specific cognitions and affect, the second category of HPM. These variables are considered to have major motivational significance because they are subject to medication. The individual variables of perceived benefits of action, personal barriers of action, perceived self-efficacy, activity-related affects, situational influences, and interpersonal influences can be modified to increase health-promoting behaviors.

Perceived benefits of action are the individual's perception or belief of benefit of a health promoting behavior that directly influencing a person to participate in the behavior. Benefits of the behavior may be intrinsic or extrinsic. Internal benefits include the direct physical effects of performing the behavior.

Perceived barriers to action refer to individual's perception concerning the unavailability, inconvenience, expense, or difficulty that viewed as blocks, or hurdles of activity of particular behaviors. Thus, behavior occurs more seldom if the higher barrier and the lower of willingness perform.

Perceived self-efficacy refers a personal judgment of ability to achieve a performance. Feeling efficacious in one's performance is expected to encourage individual in performing healthy behavior more often. The model explains that perceived self-efficacy either affect directly HPB by efficacy expectation or indirectly influencing perceived barriers and measuring level of component to a plan of action.

Interpersonal influences, such as social support from family, peers/friends, and health providers, affect health promoting behavior directly or indirectly through social pressures, leading to perform health promoting behavior. Situational influences are personal perceptions and cognitions of situation or context can facilitate or impede behavior. Behavior-specific cognitions and affects are influenced by immediate competing demands and preferences that can lead to a commitment to a plan of action and to health-promoting behavior, which is the desired outcome of the HPM.

The third category is behavior outcome. It includes the component to a plan of action, immediate competing demands and preferences, and health promoting behavior. Commitment to a plan of action initiates health promoting behavior. It involves fundamental cognitive processes, which are: (1) component to carry out a specific action at specific condition, and with individuals, (2) identification of ultimate strategies often results in intentions to a good plan only; but failure to perform a health behavior.

One of majority in theoretical affirmation of Pender's model is that behavior-specific cognitions and affects can build up or reduce component to and appointment in health-promoting behavior.

In conclusion, the researcher examined independent variables which were (1) individual characteristics including age, gender, body mass index; (2) behavior

cognitions and affect including perceived self-efficacy of dietary behaviors, perceived benefits of dietary behaviors, perceived barriers of dietary behaviors; and (3) behavioral outcomes was dietary behaviors.

#### **4. Previous studies on factors that related to dietary behaviors in patients with kidney stone post operation**

The subsequent actions and the purpose behaviors were impacted by the individual characteristics and experiences. The outlook of prior behaviors or personal characteristic chosen for measurement provide flexibility in the Health promotion model to take variables that may be correlated slightly with a particular health behaviors but not to all, or in a particular target population but not in all populations.

Ortiz-Alvarado and his collaborators stated that the interference of one dietary program is an integral commitment of fighting of kidney stones.(Ortiz-Alvarado et al., 2011) The results in their study supported the efficacy of dietary counseling by a registered dietician and the compliance with suggestions received in a multidisciplinary stone clinic in selected patients with mild-moderate metabolic abnormalities.

##### Age:

The most simply way to prevent kidney stones is by adopting a balanced and appropriate diet which suitable in each age group. Age is considered as one factor influencing eating behavior because of ageing process, since a advanced loss of taste buds of the tongue lead to reduced sensitivity to sweet and salty taste, but more sensitivity to bitter and sour (Pender, 1996). It also influences a person in performing eating healthy behavior due to physical ability changes. The difference among the age groups is also associated with competency of self-care where older age was associated with dependency on others (Opassanun, 1999; as cited in Chitwarin, 2001), in addition, age was significant predictor of diet behavior whilst older adults indicated a higher level of diet self-care than younger adults (Wen et al., 2004).

### Gender:

Many studies showed mixed-results related to gender and dietary behavior. Men tend to be more confident in their ability to control diabetes that felt more support from their wives, have fewer medical complications, and were likely to report depression and anxiety (Rubin & Peyrot, 1998). On the other hand, Vallis et al. (2003) reported that women had a better quality of life and healthier dietary behaviors than men. Moreover, women were more probably than men to join in health promoting behaviors such as diet (Nothwehr & Stump, 2000), and had higher nutritional and health-responsibility activities (Johnson, 2005). Curhan et al. observed no relationship between the intake of sugared cola and the risk for stone formation in men (G.C. Curhan, Willett, Rimm, Spiegelman, & Stampfer, 1996), while a clinical trial in healthy subjects conducted by Rodgers (1999) suggested an increased risk in men due to a significant increase in urinary oxalate excretion by 60  $\mu\text{mol}/24\text{ h}$  after consumption of 2.0 l of regular (non-diet) cola beverage.

The study by Hearty and his colleagues (2007) showed that women, older people, lower body-weights were combined with a lower odds ratio for having a negative attitude towards their healthy dietary behavior. Similarly, another study found that the older age, the more positive impact on compliance to diet advice in South Indian (Kapur et al., 2008).

### Body mass index (BMI):

Previous studies tested BMI as a predictor for healthy eating habits. According to Stranchan & Brawley (2009), BMI did not correlate with healthy eating behavior among Canadian University students (N = 101). In this study, healthy eating behavior was measured by intake of fruit and vegetable, salty snack, fast food, high calorie drinks, refined baked goods, and sweets. Also, Kahawong et al. (2005) reported that BMI was not a significant predictor for healthy eating among Thai women with hyperlipidemia (N = 263). In that study, healthy eating habits were measured by Nutritional Health- Promoting Behavior Scale (NHPBS), consisting of five subscales: 1) low cholesterol, 2) low fat, 3) low triglyceride, 4) low sugar, and 5) high fiber diet.



Recently, overweight was noticed to be a central risk factor for stone formation. In one study using multiple linear regression analysis, the researcher found that there was a significantly positive relationship between BMI and urinary uric acid, sodium, ammonium, and phosphate excretion; while BMI negatively correlated with correlation urinary pH among both genders (Roswitha Siener, 2006). A prospective study conducted by Taylor et al. indicated that overweight and weight gain led to the performance of stone formation (E. N Taylor, Stampfer, & Curhan, 2005)

Moreover, the results in study by Sarica et al. (2008) demonstrated that the larger of body size might the excretion of urinary stone-forming risk factors. It was easier in being overweight in female and there was an increase in excretion of these factors. Therefore, patients with a larger body size will be suffer from in kidney stone-forming more common than those with a normal BMI.

There are some keys diet recommendations for Kidney stone former, for example, Krieg noticed that “ If overweight, lose weight”. (Krieg, 2005) The value of weight loss for stone prevention has not been confirmed, however the profits of weight loss for general health, certainly it is should be mentioned to overweight patients who form kidney stone.

#### Perceived self-efficacy:

Perceived self-efficacy on dietary is defined to the dimension of personal ability to organize and execute an individual course of action. AbuSabha and Achterberg (1997) found that dietary self-efficacy has been explained as a main and greater forecast factor of a health and nutrition-related behaviors. Another study in Chinese Americans, the correlation between self-efficacy and each category of fat reduction behaviors were all statistically significant and positive for first and second generation of them living in New York City. (Liou, 2004) These findings support the significance of self-efficacy as key predictor of fat-dietary behavior.

Sun & Wu (1997) conducted a study in 239 Chinese adolescents living in New York and China to determine the relationship between self-efficacy and dietary behavior of them. The survey questionnaire consisted of demographic information,

dietary behavior, and self-efficacy of dietary behavior. Dietary self-efficacy for consumption of complex carbohydrates and fiber intake was highest among the native Chinese students followed by foreign-born and U.S.-born students, respectively. The findings noted that there was a positively correlation between self-efficacy with dietary behavior. Similarly, there was a positively correlation between the age of immigration of overseas-born students and scores of dietary behavior and self-efficacy to enact specific dietary actions. According to these researchers, based on the differences in environmental and cultural influences on dietary behavior of these students, the perceived self-efficacy would be differently.

Moreover, Pattanavanichnun (2000) noted that 29.6% of pregnant industrial workers were showed health-promoting behavior from perceived self-efficacy.

#### Perceived benefits

Perceived benefits had been proved in the study of Walker et al (2006) as a determinant for healthy eating in consuming fruits, vegetables, and whole grains and limiting meat group and fats foods intake. The study assessed perceived benefits by using the Healthy Eating Benefits and Barriers Scales which contains 9 items of benefits, having Cronbach's coefficient alpha was 0.80. Likewise, other previous studies revealed that perceived benefits were significant with healthy behaviors (Tongpila, 1999, Janchanakit , 1998 as cited in Patlak, 2002). Patlak's study investigated factors influencing health promoting behaviors among HIV infected patients. Perceived benefits were measured by a questionnaire developed by researcher based on HPM of Pender with positive dimensions concerning the benefits of performing health promoting behaviors. The reliability of the questionnaire was 0.84.

Several previous studies indentified the perceived benefits of dietary behaviors like preventing diseases, staying healthy (Holgado et al., 2000), controlling weight, promoting quality of life, and being fit (Zunft et al., 1997). Moser et al. (2005) for example, found that internal benefits including time-life, no gaining weight and having more energy were the best forecast factor of fruit intakes.

### Perceived barriers

Perceived barriers are impediment or negative outcome expectations that inhibit involvement of a person in a behavior. Perceived barriers of dietary behaviors among patients with kidney stones are influences determining recurrence this disease to diet among those patients. The previous study investigated the differences of patients' and educators' perspective of patient barriers to following a meal. The study revealed that certain barriers such as difficulty in maintaining a diet away from home; fondness of food outside the meal plan. Whilst, study of Walker et al (2006) revealed that perceived barrier was negatively related to healthy eating behaviors in older women. This study measured perceived barriers by using Healthy Eating benefits and barriers scale which developed by Walker et al (2006).

In addition, Mansyur et al. suggested that patients were difficulty in using less sodium even they reporting high self-efficacy for doing so, because the result in this study showed higher self-efficacy was not relevant with lower sodium level. This is similar with the findings of Lennie and colleagues (2008), which indicated that although 74% of the patients in their study reported following a low sodium diet most of the time, there was only 40% o adherent based on their 24h urine sodium excretion.

In their qualitative analysis of the cultural value of salt to African Americans in the South, Smith et al. (2006) stated that there may be a strong cognitive barrier to understanding that reducing salt is important, or that there is more to it than just not using the salt shaker. They also reported that sodium reduction is often confused with sugar reduction and both are perceived to affect the body in the same way. Following a low sodium diet may be especially difficult for older African Americans in the South because of the strong regional emphasis on its flavor enhancing qualities and its usage in traditional foods (Smith et al., 2006)

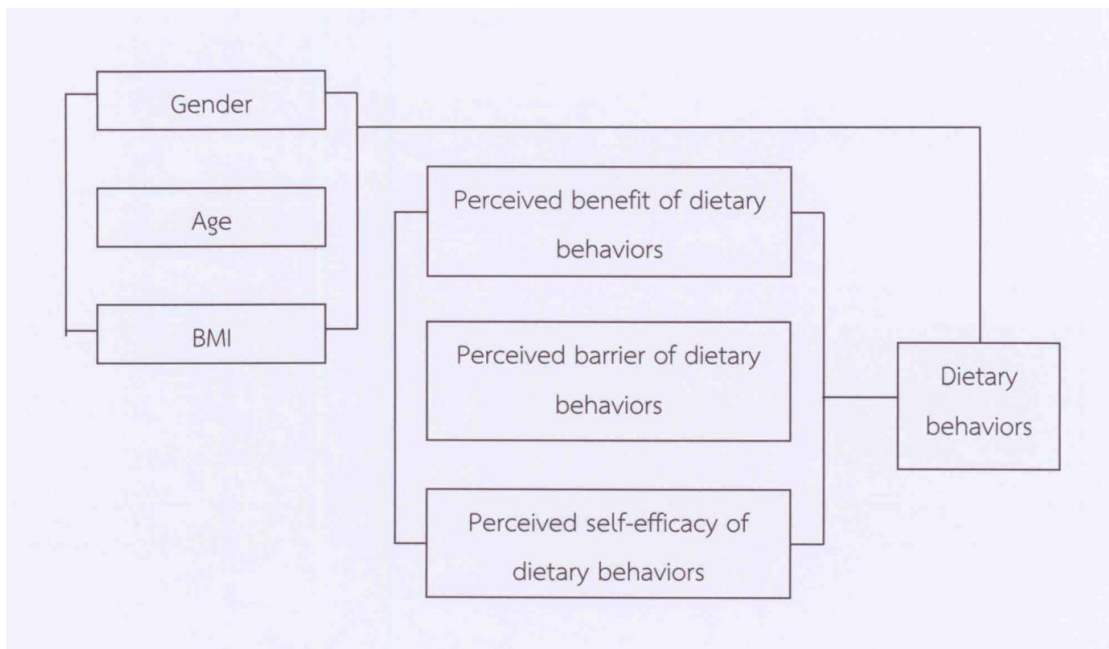
So, changing these beliefs such as by increasing the perceived benefits and decreasing perceived barriers, should increase the likelihood of through dietary behavior is the goals of health action. (Contento, 2011) Although participants in previous studies (da Silva Pires and Mussi, 2012) hardly disagreed on the negative

effects of salt, they perceived more beliefs regarding barriers to tasteless food when prepared with little salt, confirming the feeling of pleasure when consuming salty food. Hence, choosing low-salt food implies making efforts, feeling less pleasure and being involved in food preparation. These barriers reflect the importance participants attribute to salt and the reason for their resistance against changing their habits.

In conclusion, previous literature addressing kidney patients, background characteristics, and other predictors, such as barriers, self-efficacy, and environmental factors, was reviewed. According to the literature review, some of the positive aspect of kidney patients' eating habits, such as high vegetable intake, high fluid intake, low animal protein and low sodium..., have gotten worse while some negative aspects, such as high sodium intake, too much animal protein, still remained in their diet (Kim et al., 2007). Overall, as Vietnamese dietary habits change, their health status including disease pattern has changed negatively due to high animal intake and continued high sodium intake.

Previous literature provided information about either eating patterns or nutrition of kidney patients. There were some previous studies exploring relationships between dietary behavior and selected demographic information. However, unfortunately, there was a lack of information about dietary behavior of kidney patients, encompassing both personal factors, such as age, gender and socioeconomic status, and behavior-specific cognitive factors, such as perceived self-efficacy, perceived benefit and perceived barriers. Nevertheless, there is still a lack of studies examining this factor within studies of dietary behavior in patients with kidney stones. Given this lack of information, this study included those multidimensional factors to fill the gaps in the literature, guided by HPM framework in kidney stones patients.

## 5. Conceptual framework



## CHAPTER III

### METHODOLOGY

#### Research Design

In this study, a cross sectional descriptive correlation design was used to explore the theoretical linkage among potential factors of personnel in Vietnamese patients with kidney stones post-operation. Generally, a descriptive correlation design facilitates researchers who wish to examine many inter-relationships in a situation that has already occurred or in a current situation (Burn and Grove, 2005).

#### Population and Sample

Population: The research population was patients with recurrent kidney stones post-operation who were in Vietnam Northern part and sought help from the Urological Department, Viet Duc Hospital and the Military Medical Hospital 103 from October to September 2013.

Subjects: patients who were treated in Hanoi

#### Inclusion criteria:

- 1) Being inpatients
- 2) Diagnosed with urinary stone diagnosis as a recurrent kidney stones (A new kind of kidney stone formation is also recurrent case)
- 3) Have at least one time operation (any kind of treatment such as Extracorporeal shock wave lithotripsy, Percutaneous nephrolithotomy, Ureteroscopy, Traditional operation)
- 4) Age 18 years old to 59 years old
- 5) free from chronic illness, such as blood disease, lupus erythemotosis, hypertension, peptic ulcer, and malignancy

Sample size: The sample size in this study was 112 which calculated by PASS program in test for one correlation. Settings in this study are:  $\alpha = 0.05$ , power was

the rate of rejecting a false  $H_0 = 0.9$ ;  $\beta = 0.1$ ;  $R_0 = 0$ , the moderate effect size was 0.3 (Cohen, 1988).

The researcher selected hospitals and sample of patients by convenience. Because of the geographic location and the high rate of recurrence kidney-stone patients annual in Urological Surgical Department at two hospitals Viet Duc hospital and Military Medical hospital 103. There are Urological Surgical Departments in both hospitals serving all people Northern areas in Vietnam. The researcher recruited 56 participants in each hospital.

### Research Instruments

Research instruments consisted of 5 questionnaires: the Personal Data Form, the Perceived self-efficacy of dietary behaviors scale, the Perceived benefit of dietary behaviors scale, the Perceived barriers of dietary behaviors scale, and the Dietary behaviors scale.

**1. The Personal Data Form:** requested patients' information regarding gender, age, weight and height, BMI, occupation, consumption and time for operation.

**2. The Perceived self-efficacy of dietary behaviors scale.**

The perceived self-efficacy regarding dietary behavior scale was developed by researcher based on literature review and the 21-item perceived self-efficacy questionnaire that developed by Kahawong (2009). In that study, the reliability for this instrument was .82. The answers were indicated by applying Likert's 5 point-rating scale construction method which was "very confidence, high confidence, moderate confidence, a little confidence and no confidence". In this study, ten items were deleted for appropriateness for Vietnamese dietary behaviors, for example coconut food, using oil when cooking, high-fat diet... Each item was rated on a five-point scale, ranging from no confidence (1) to very high confidence (5).

The total score is calculated by summation of the score for the 11 items, ranging from 11 to 55, higher score reflects high levels of perceived self-efficacy for dietary behaviors.

### 3. The Perceived benefit of dietary behaviors scale.

The 14-item perceived benefits of dietary behaviors was modified based on the perceived benefit questionnaire developed by da Silva Pires and Mussi (2012) to evaluate perceived benefits of action in dietary behavior. The reliability of this instrument was .78. Six items from original questionnaire such as sweet food, oil food and fatty food were deleted because they are not related to prevention recurrent kidney stone post-operation. The answers were indicated by applying Likert's point-rating scale construction method which is "totally agree, agree, uncertain, disagree and totally disagree".

The perceived benefits scale included of 14 items. The scoring of the answer was as follows:

Total disagree = 1 point

Disagree = 2 point

Uncertain = 3 point

Agree = 4 point

Total agree = 5 point

The total score for the perceived benefit questionnaire is calculated by summation of the scores of the 14 items ranging from 14 to 70, with higher score reflects high levels of perceived benefit.



#### 4. The Perceived barriers of dietary behaviors scale.

The 15-item barrier questionnaire for dietary behavior was developed by the researcher based on literature review. The reliability of this instrument was .84. The answers were indicated by applying Likert's point-rating scale construction method which is "totally agree, agree, uncertain, disagree and totally disagree".

The scoring of the answer was as follows:

Total disagree	= 5 point
Disagree	= 4 point
Uncertain	= 3 point
Agree	= 2 point
Total agree	= 1 point

The total score for the perceived barriers questionnaire is calculated by summation of the scores of the 15 items ranging from 15 to 75, with higher score reflects high levels of perceived barriers.

#### 5. Dietary behaviors scale

Dietary behaviors of patients with recurrent kidney post-operation were measured by use of a 19-item dietary behavior scale, which was modified from the 17 items Nutrition behaviors questionnaire that developed by Kahawong (2009). Two additional items, regarding to behaviors of alcohol drink and taking vitamin C or D, were added to the original. The answers were indicated by applying Likert's point-rating scale construction method which is routinely, frequently, sometimes, seldom and never.

In this study, the questionnaire consisted of 5 positive items (items 4, 13, 15, 17 and 18) and 14 negative items (items 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16 and 19). The meaning of the scoring of the answers was as follows:

	Positive items	Negative items
Routinely	5 point	1 point
Frequently	4 point	2 point
Sometimes	3 point	3 point
Seldom	2 point	4 point
Never	1 point	5 point

The total score for the dietary behavior is calculated by summation of the score of 19 items ranging from 19 to 95, with higher score reflects high levels of dietary behavior in general, or within a specific subscale.

All questionnaires were firstly written in English, and then were translated into Vietnamese by the researcher. The questionnaires in Vietnamese version were also reviewed by two experts who are affluent in both English and Vietnamese languages.

### Validity and Reliability of the Instruments

#### Validity

The content validity of the instruments was evaluated by four experts in Urology. The first one is a Thai professor nurse who has experience in dietary behaviors area. The second expert is a Thai professor nurse who is working in University. The third is a Vietnamese nurse who completed Master degree and had thesis topic in urology. The last is a Vietnamese professor who is working in Urological Surgical Department in hospital. They evaluated the instruments in English version.

Most experts rated each item of the instruments as 3 and 4 (from 1 = not relevant to 4 = very relevant), which met the criteria for appropriate content validity (Polit and Hungler, 1999: 419). A content validity index (CVI) score was 1.0. Based on the experts' recommendations, minor changes in the content and wording were made with suggestion from the adviser.

From their recommendations, several items were modified so that they can be subjected to empirical testing. The researcher would re-write the English and Vietnamese version instruments until they gave her agreements for those. Suggestions from the four experts were incorporated into the final version of questionnaires. Regarding content validity, most experts will rate each item of the instruments as 3 and 4 (from 1 = not relevant to 4 = very relevant), which will meet the criteria for appropriate content validity (Polit and Hungler, 1999: 419). A content validity index (CVI) score was 1.0.

### **Reliability**

The corrected instruments were tested as part of a pilot study. The researcher tested the reliability of the perceived self-efficacy of dietary behaviors, perceived barrier of dietary behaviors, perceived benefit of dietary behaviors and dietary behaviors questionnaire with 30 patients at Military Medical Hospital 103 who had the same characteristics with the sample in this study. The instruments were evaluated for their reliabilities using Cronbach's Alpha coefficient analysis. The reliability coefficient of each tools was 0.8-0.9 in acceptable.

The reliability results for the instruments were as follows:

- 1) Dietary behaviors scale = .856
- 2) Perceived self-efficacy of dietary behaviors = .805
- 3) Perceived benefits of dietary behaviors = .843
- 4) Perceived barriers of dietary behaviors = .845

### Protection of the rights of human subjects

The protection of human subjects in the current study was ultimately concerned. The researcher explained the purpose of this study to the potential subjects eligible for the study and asked for their permission to participate in the study. An informed consent was used to ensure that the subjects voluntarily participated in this study. The subjects assured that all of the responses would be kept strictly confidential, and their identity would not be revealed. Instead, a code number was used to ensure confidentiality. They also assured that they have the right to withdraw from this study anytime if they wish, and their decisions would not affect medical treatment and nursing care would receive in any way from healthcare providers at the hospitals. If the participants felt uncomfortable while filling out the questionnaire, the researcher would stop the interviews immediately and provide psychological support. Finally, the researcher explained that there were no harm to participants in this study and it would take approximately 15 to 20 minutes to complete all the questionnaires, with the researcher being readily available by mobile phone for all participants to reach if they need to ask any questions about the study. Protect the right of the individuals who volunteered as subjects by having each sign a consent form, which includes an explanation of the purpose of the research, assurance of confidentiality, informs about the questionnaire destruction when finishing the study as well as the option to withdraw from this study at any time with no consequence at all. This study received documentary proof of ethical clearance from the committee on Independent Ethics Committee in Hanoi Public Health University, Viet Nam.

## Data Collection Method

Data collection took place from October to December 2013. All data were collected by the researcher using the following steps:

(1) Two documents including “The announcement about proposal approval from Faculty of Nursing, Chulalongkorn University” and “The certificate of approval of this research from the Ethical review committee for research involving human research subjects” were showed to the directors and the Manager of two hospitals departments for asking the permission.

(2) After the permission, the researcher made an appointment with the physician and the head nurse of Urological Surgical Department of each department to introduce the study and ask for cooperation.

(3) The researcher selected the sample from the inpatients at two above departments based on the inclusion criteria by checking hospital document. The researcher went to the participants’ rooms, introduced herself to subjects and asked for their cooperation in answering the questionnaires during their waiting period or after the carry out procedures. When the subjects agreed to participate, the researcher explained the purpose of the study and gave the time for the subjects to ask questions.

(4) The researcher explained the questionnaires. When the subjects understood the method, the subject answered all the questionnaires by themselves. It took 15-20 minutes. When the questionnaires were returned, the researcher checked that all the information was be completed. The participants were asked to fill out the missing items if they agreed. The researcher thanked the participants for their cooperation. The questionnaires were been then rechecked before they were be taken for statistical analysis.

## Data Analysis

The statistical significance was set at the level 0.05. The statistics was used for data analysis as follows:

- The personal data form was analyzed by descriptive statistics such as frequency distributions, percentages, means and standard deviation.
- The means and standard deviations of age, BMI, gender, perceived self-efficacy, perceived benefits and perceived barriers were calculated, then Pearson correlation coefficient was performed to determine the relationship between independent variables and dependent variables

## CHAPTER IV

### RESULTS

This chapter presents the details of the study's results. They are illustrated in three parts as follows:

Part 1: Demographic and clinical characteristics of the patients by using descriptive statistics: frequency, percentage, means, and standard deviation.

Part 2: Distribution of dietary behaviors.

Part 3: Examine the relationship between selected factors and dietary behaviors by using Pearson, Spearman's rho and Eta.

## 1. The Characteristics of the Patients

### 1.1 The Demographic Characteristics of the Patients

**Table 1** The frequency, percentage, means and standard deviation of demographic characteristics of patients with recurrent kidney stone post-operation (N=112)

Characteristics	Frequency	Percent
<b>Gender</b>		
Female	57	50.9
Male	55	49.1
<b>Age (years)</b>		
20-30	3	2.7
31-40	11	9.8
41-50	29	25.9
51-59	69	61.6
<b>Marital status</b>		
Single	6	5.4
Married	106	94.6
<b>Educational Level</b>		
Secondary school	17	15.2
High school	50	44.6
College/ Bachelor	27	24.1
Master and Higher level	18	16.1
<b>Occupation</b>		
Solider	28	25
Farmer	32	28.6
Teacher/ Lecturer	17	15.2
Official staff	25	22.3
Others	10	8.9

According to Table 1 the results show that 50.9% were female and 49.1% were male. Most of the patient's age group was between 51 to 59 years old (61.6%). In term of marital status, the majority of the patients were married (94.6%). Almost half of participants received education in high school (44.6%). One-fourth of cases were soldiers and 28.6% of patients were farmers.



## 1.2 The Clinical Characteristics of the Patients

**Table 2** The frequency, percentage, means and standard deviation of the clinical characteristics of patients with recurrent kidney stone post-operation (N=112)

Characteristics	Frequency	Percent
<b>BMI</b>		
<18.5	8	7.1
18.5 – 23.9	91	81.3
24-26.9	13	11.6
<b>Number of operation</b>		
Once	79	70.5
Twice	31	27.7
Three + Four	2	1.8
<b>Take consumption supplement</b>		
Yes	10	8.9
No	102	91.1

Table 2 shows that most of patients (81.3%) were in the normal weight and 70.5% had undergone at least one kidney stone operation. Most of them have not taken any supplements (91.1%).

## 2. Distribution dietary behaviors.

**Table 3** Frequency distribution of dietary behaviors

Dietary behaviors	Routinely		Frequently		Sometime		Seldom		Never		Mean	SD
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)			
I drink 8 - 10 cups of water	100 (89.3)	6 (5.4)	1 (0.9)	2 (1.8)	3 (2.7)						4.77	.794
I eat salty sauce and gravy	78 (69.6)	33 (29.5)	0 (0.0)	1 (0.9)	0 (0.0)						4.81	.392
I drink a cup of coffee or tea	61 (54.5)	44 (39.3)	4 (3.6)	3 (2.7)	0 (0.0)						1.54	.696
I eat small portions of red meat	42 (37.5)	59 (52.7)	11 (9.8)	0 (0.0)	0 (0.0)						1.72	.633
I eat a pack of peanuts or cashews, soybeans	13 (11.6)	47 (42.0)	33 (29.5)	18 (16.1)	1 (0.9)						2.53	.930
I drink a glass of beer or a cup of wine	13 (11.6)	23 (20.5)	14 (12.5)	15 (13.4)	47 (42.0)						3.88	.720
I eat a slice of bread, a pack of cereal, biscuits or crackers	10 (8.9)	26 (23.2)	43 (38.4)	26 (23.2)	7 (6.3)						3.05	1.038
I add more salt to my meal at the table	5 (4.5)	49 (43.8)	31 (27.7)	20 (17.9)	7 (6.3)						2.78	1.002
I eat animal intestinal organs such as pig liver, pig heart, ...	3 (2.7)	29 (25.9)	32 (28.6)	30 (26.8)	18 (16.1)						3.28	1.100
I eat 1-2 eggs	2 (1.8)	15 (13.4)	81 (72.3)	14 (12.5)	0 (0.0)						2.96	.576
I eat sweet potatoes, celery, leeks	0 (0.0)	36 (32.1)	65 (58.0)	11 (9.8)	0 (0.0)						2.78	.611
I drink one glass of fruit, lemon, or tomato juice	0 (0.0)	26 (23.2)	78 (69.6)	6 (5.4)	2 (1.8)						3.14	.583
I drink one glass of fruit juice such as orange or grapefruit juice	0 (0.0)	15 (13.4)	52 (46.4)	44 (39.3)	1 (0.9)						3.28	.700
I eat spinach, beetroot, eggplant	0 (0.0)	14 (12.5)	79 (70.5)	19 (17.0)	0 (0.0)						3.04	.543
I eat seafood such as fish, crab, shrimp	0 (0.0)	0 (0.0)	36 (32.1)	53 (47.3)	23 (20.5)						2.46	1.488
I eat calcium citrate supplement with meals	0 (0.0)	0 (0.0)	19 (17.0)	41 (36.6)	52 (46.4)						1.71	.743
I eat a can of processed food such as processed meat, processed fish	0 (0.0)	0 (0.0)	16 (14.3)	27 (24.1)	69 (61.6)						4.47	.735
I take vitamin C or D	0 (0.0)	0 (0.0)	12 (10.7)	52 (46.4)	48 (42.9)						4.32	.661
I eat 1 small tub of yoghurt or high calcium milk	0 (0.0)	0 (0.0)	0 (0.0)	21 (18.8)	91 (81.3)						1.32	.525

Table 3 shows the frequency and percentage of each item of the dietary behaviors. The statements were ordered from appropriate to inappropriate behaviors. Most of patients drank 8-10 cups of water routinely (89.3%). Nearly a third of patients (28.6%) ate animal intestinal organs (e.g., pig liver or heart) once or twice a week. However, more than sixty percent (61.6%) of patients answered that they never ate a can of processed meat or fish. Most (69.6%) of patients eat salty sauces and gravy daily and (43.8%) add more salt at the table to their dishes. Lastly, 46.4 % patients indicated that they never ate calcium supplement with meals, and 81.3% of patients never ate a small tub of yoghurt or high calcium milk.

**Table 4** The frequency, percentage, means and standard deviation of dietary behaviors of patients with recurrent kidney stone post-operation (N=112)

Dietary behaviors	Frequency	Percent
Poor (<61)	18	16.1
Moderate (55-61)	77	68.8
Good (>61)	17	15.1
Mean = 57.85, S.D. = 3.645		

Table 4 indicates that more than nearly 70% of patients had moderate dietary behaviors in recurrent kidney stone post-operation (68.8%). Only 15.1% of the total diet behaviors were at a good level, meanwhile 16.1% were at poor level.

3. Examine the relationship between selected factors and dietary behavior by using Pearson correlation

Table 5 Means and standard deviation of variables (N=112)

Variables	No. of item	Potential scores	Actual range	Mean	SD
Age			26 - 59	50.25	8.457
BMI			17.06 - 26.45	21.53	2.06
Perceived self-efficacy	11	11-55	26 - 37	33.08	2.308
Perceived benefits	14	14-70	38 - 53	45.64	3.116
Perceived barriers	15	24-45	45 - 66	56.70	4.501
Dietary behaviors	19	19-95	47 - 66	57.85	2.645

Table 5 indicates the mean scores and their standard deviations (S.D.) of age, BMI, perceived self-efficacy, perceived benefits, perceived barriers and dietary behaviors. They were 50.25 (8.457), 21.53 (2.06), 33.08 (2.308), 45.64 (3.116), 56.70 (5.501) and 57.85 (2.645). Their distributions were normal and narrow.

**Table 6** Correlation matrix of selected factors and studied variables (N=112)

Variables	1	2	3	4	5	6	7
1. Age	1						
2. Gender	.212	1					
3. BMI	.063	-.353*	1				
4. Perceived benefits	-.151	-.280*	-.007	1			
5. Perceived self-efficacy	-.096	-.338*	.153	.616*	1		
6. Perceived barriers	.019	.254*	-.021	-.624*	-.515*	1	
7. Dietary behaviors	-.031	-.341*	.053	.826*	.722*	-.717*	1

Note: \* $p < .01$

Pearson correlation analysis was performed to determine the correlation among selected factors. The results of correlation coefficients are presented in table 5. The results showed that age and body mass index were not correlated with overall dietary behaviors ( $r = -.031$ ,  $r = .053$ ,  $p > .05$ ). Meanwhile, gender was negatively associated ( $r = -.341$ ,  $p < .01$ ). There was no relationship between BMI and Dietary behaviors ahead ( $r = 0.053$ ,  $p > .05$ ). There are strong significant relationships between perceived benefits of dietary behaviors, perceived of self-efficacy dietary behaviors, perceived barriers of dietary behaviors and dietary behaviors ( $r = .826$ ;  $r = .722$ ;  $r = -.717$ , respectively)

## CHAPTER V

### DISCUSSION

The research aimed to examine the dietary behaviors of Vietnamese patients with recurrence kidney stone post-operation and to examine the relationship between age, gender, body mass image, perceived self-efficacy of dietary behaviors, perceived benefits of dietary behaviors, perceived barriers of dietary behaviors and dietary behaviors of Vietnam patients with recurrence kidney stone post-operation.

The following discussion is described in relation to the objective and hypotheses of the study, in major part: discussion with the other previous studies. The results of the study are discussed with the appropriate data in the following order: (1) age, (2) gender, (3) body mass index, (4) perceived self-efficacy of dietary behaviors, (5) perceived benefits of dietary behaviors, (6) perceived barriers of dietary behaviors and (7) dietary behaviors.

112 patients were conducted in two Urological Surgical Departments of two hospitals: Viet Duc Hospital and Military Medical Hospital 103. The inclusion criteria were: (1) Are inpatients;, (2) Representing both genders aged 18 years to 59 years old, with a diagnosis of recurrent kidney stones (including new kinds of kidney stone formation in recurrent cases); (3) Having had at least one operation (any kind of treatment such as extracorporeal shock wave lithotripsy, percutaneous nephrolithotomy, ureteroscopy, or traditional operation); and (4) Were free from chronic illness, such as blood disease, lupus erythemotosis, hypertension, peptic ulcer, and malignancy. The study period was from October to December, 2013.

Data collection used in this study consisted of five instruments: (1) the Person Data Form to (2) The perceived self-efficacy of dietary behaviors for 11 items, (3) The perceived benefits of dietary behaviors for 14 items, (4) The perceived barriers of dietary behaviors based on 15 items and (5) A 19-item score of dietary behaviors based on dietary behaviors including 5 positive items and 14 negative items. In this study, the content validity of the questionnaire was certified by four experts including two Thai and two Vietnamese experts. The content validity index was 1.0

acceptable. The reliability of each questionnaire was tested to establish internal consistency for each questionnaire (Cronbach's  $\alpha > .80$ ), using 30 persons who had the same characteristic with sample in Military Medical Hospital 103.

Data were analyzed using descriptive statistics such as frequency distributions, percentages, means and standard deviation. Also, Pearson's correlation coefficient with a statistical level at  $\alpha = 0.05$  was presented to find out the relationship between independent variables and dependent variables.

### **Summary the results of the study**

In this study, there were 50.9% and 49.1% male patients. Means age was 50.25, standard deviation (SD) was 8.457 and most of them were in 51-59 age group (61.6%). Additional, nearly 95% patients were married, and the majority of education level was high school (44.6%). One-fourth of them were soldier and 28.6% patients were farmers.

For the clinical characteristics, the majority of patients had normal weight (81.3%) and 70.5% had undergone once operation about kidney stone. Only ten patients had nutritional problems (8.9%).

The findings showed that age and body mass index were not correlated with total scale of the dietary behaviors. ( $r = -.031$ ,  $r = .053$ ,  $p > .05$ ). Meanwhile, gender was negatively associated with the sum of scale of dietary behaviors ( $r = -.341$ ,  $p < .05$ ). Perceived self-efficacy of dietary behaviors, perceived benefits of dietary behaviors and perceived barriers of dietary behaviors were positively correlated with total scale of dietary behaviors, in which, perceived benefits had the strongest correlation with that one (respectively  $r = -.722$ ,  $r = .826$ ,  $p > .05$ ,  $r = .729$ ,  $p < .05$ ).

## Discussions

### Dietary Behaviors

The findings of this study showed that nearly 70% of patients had moderate dietary behaviors in recurrent kidney stone post-operation (68.8%), whilst 15.1% of the patients had good dietary behaviors and 16.1% of those were at poor level dietary behaviors.

Additionally, it can be seen that the participants had favorable dietary behaviors to prevent kidney stones such as drinking 8-10 cups of water daily, and avoid processed meat or fish. It is recommended that patients who had recurrent kidney stones should be increasing in fluid intake daily to reduce the likelihood of recurrence. Higher fluid intake leads to increased urinary volume and, in turn, to a declined focusing of lithogenic factors, it would seem reducing the ratio of stone performing. Almost of patients ask which fluids are suggested, and which are prohibited. The regular answer is that water is the best, because it is cheap and safe. A key point is that the dilution of urine is necessary “24/7”, or all day long, daily. In addition, decreased consumption of processed food is beneficial. There is more salt and sodium in processed foods because they have to have a longer shelf life. If the patients with kidney stones eat processed foods regularly, they cannot control the amount of sodium they consume. A high sodium intake leads to rise urinary calcium excretion independent of calcium reabsorption in the proximal tubule and along the loop of henle.

The findings of this study show that the cases still practiced poor dietary behavior despite health education interventions. For example, most of the patients ate salty sauce and/or gravy dishes or they added more salt at the table. The sodium in salt might be caused more calcium to be excreted into the urine if by the kidneys. Additionally, too much salt in the diet will lead to a high urine pH and low urinary citrate. Therefore, a salt restriction will reduce the risk of kidney stones. The target of therapy should be a “no-added-salt diet” or the equal of 2g of salt a day or less. (Finch & Irving, 2007)



Another problematic behavior is that more than four-fifths of patients in this study never ate high-calcium-milk yoghurt even though they had no calcium stone formation. This might be explained by patient misunderstanding that calcium should be avoided in every form to prevent kidney stones. Another possibility is that they had not been properly counseled by health workers, especially clinical nurses. Nevertheless, the benefit of calcium is not only for kidney stone prevention but also to maintain bone density. People who form calcium oxalate stones are recommended to follow a daily 800mg -calcium diet. (Borghi et al., 2002) Moreover, the data show that twice the patients with recurrent kidney stones had a low-calcium diet is compared to those with a low-protein, low-sodium diet.

### **Relationships between independent and dependent variables**

From the statistical analysis, this study found that age was not correlated with dietary behaviors. This result is contrary to findings of previous studies. For example, Wen (2004) stated that the difference among the age groups is also associated with competency of self-care i.e., older age was associated with dependency on others. In addition, age was a significant forecast factor of diet behavior i.e., older adults showed a higher level of diet self-care than younger adults. Pender (1996) stated that age is considered as one factor influencing eating behavior and also influences a person in healthy eating behavior due to physical ability changes.

Meanwhile, gender was negatively correlated with dietary behaviors ( $r = -0.341$ ,  $p < .05$ ). However, the study of Unal (2005) found that there was higher recurrent rate in males who had first-time treatment. On the other hand, Curhan (2004) recommended that there may be a differential among dietary risk factors by age and gender because of the more intake of dietary calcium, decreasing the endanger of kidney stone performing in younger women. Likewise, Vallis et al. (2003) reported that women had a better quality of life and healthier dietary behaviors than men. Moreover, women were more probable than men to contribute in health promoting behaviors such as diet (Nothwehr & Stump, 2000), and had higher nutritive food and healthy action (Johnson, 2005).

In Kang's study, gender was not a significant predictor for healthy eating habits based on the regression model; however healthy eating self-efficacy mediated the effect of gender on healthy eating habits using the Sobel test. (Kang, 2012) According to these results in this study, females tend to eat healthier than males, but this effect was not caused directly by their gender, rather it was mediated by the influence of their self-efficacy on healthy eating.

Additionally, the results indicate that body mass index was not correlated with dietary behavior, which was consistent with Kahawong's study (2004). It is presumed that the reason that BMI was a significant predictor in this study was due to the low level of variation in the sample; further investigation is warranted. Moreover, BMI did not correlate with healthy eating behavior among Canadian University students (N = 101) (Stranchan & Brawley, 2009). In that study, healthy eating behavior was measured by intake of fruit and vegetable, salty snack, fast food, high calorie drinks, refined baked goods, and sweets. Likewise, Kahawong's study found that there was no correlation between body mass index and total Nutrition Health Promoting Behavior. (Kahawong et al., 2004) However, one previous study found that overweight and weight gain build up the risk of stone formation (Taylor et al., 2005). Another study in 2008, Sarica and her collaborators indicated that a big body size may rise up the excretion of urinary stone-formation risk factors. (Sarica et al., 2008)

As expected, perceived self-efficacy of dietary behaviors was significantly correlated with dietary behaviors. This result was consistent with previous studies. For example, a study of Chinese adolescents living in New York and China indicated that there was positive relationship between self-efficacy and dietary behaviors. (Sun & Wu, 1997) This finding is also similar to Kang's results in 2012. He found that self-efficacy was the strongest significant forecast factor for healthy eating habits among Korean-Americans.

Likewise, Shin (2011) supported in her study that healthy eating self-efficacy being a significant predictor for healthy eating behavior among other psychosocial factors including barriers ( $\beta = -.08, p > .05$ ) and benefits ( $\beta = .27, p < .05$ ) for healthy eating behavior ( $\beta = .34, p < .05$ ). Among different psychosocial factors such as barriers or perceived benefits, this study supports previous studies that self-efficacy was the strongest predictor for healthy eating habits. Another study in 2001, the researchers found that self-efficacy was predicted factors of dietary behaviors about 10-35% by using the multiple regression analyses (Oka & Chaboyer, 2001).

In Thailand, Kahawong et al. (2004) conducted a study to determine the predictors for nutritional health-promoting behavior. In sample of 263 women with hyperlipidemia, perceived self-efficacy was found to be positively correlated with nutritional health-promoting behaviors ( $r = .56, p < .001$ ). Among the three significant predictors of perceived self-efficacy, age, and perceived health risks ( $p < .01$ ), self-efficacy was the strongest variable influencing nutritional health-promoting behavior, explaining 30.9% of the variation in healthy eating habits using step-wise regression. Although the sample was Asian women who might have different nutritional intake and eating patterns, self-efficacy still was a significant forecast factor for nutritional health-promoting behavior.

However, in this study, perceived self-efficacy did not have the strongest correlation with dietary behaviors. It is possible that the patients in this study did not have a strong belief in their ability to adopt dietary behaviors to prevent recurrence of kidney stones. Based on the underlying assumptions of the HPM, people have free will in choosing their behaviors, and they tend to choose more desirable health behaviors if they found that conditions support them to do so. (Pender, Murdaugh, & Parsons, 2006) With regard to health-promoting behavior, the assumptions also support the idea that the larger the perceived self-efficacy, the more the person will act in the behavior in spite of the internal and external conflicts within the environment.

Similarly, perceived benefits of dietary behaviors were highly significantly correlated with dietary behaviors. This finding was similar to Patlak's study (2002), in which he indicated that perceived benefits were positive correlates with health-promoting behaviors among HIV-infected patients. Likewise, one study with Korean-Americans found that perceived benefits were significant predictors for healthy eating habits using structural equation modeling ( $\beta = .26$ ,  $t = 2.26$ ,  $N=261$ ). (Shin & Lach, 2011) In this study, perceived benefits of dietary behaviors had the strongest correlation with total score of dietary behaviors. It is possible that the patients knew how to prevent kidney stones by nutritional changes but had difficulty putting this knowledge into practice.

Another finding of this study is that perceived barriers of dietary behaviors were strongly and significantly correlated with dietary behaviors ( $r = -.719$ ,  $p < .05$ ). Barriers to health behavior include inconvenience, expense, difficulty, or time-consuming nature of a particular action or personal costs of performing a health behavior. (Pender et al., 2006) In this study, the main barrier to nutritional behavior was the restricted diet. Most of patients said that it was too difficult for them follow the diet, such as avoiding animal protein and alcohol. Moreover, although they knew the benefits of less salt in their diet, they could not always control this when they did not prepare food by themselves.

According to Pender et al. (2006) perceived barriers to action in the revised HPM affect health-promoting behavior directly as well as indirectly through decreasing component to a plan of action. In Lytle's study (2003), she found that the greater the perceived barriers, the fewer fruits/vegetables were consumed among adolescents. Similarly, Walker et al. (2006) explored the forming of physical activity and healthy dietary habits among rural older women ( $N=179$ ) according to the Health Promotion Model. It was indicated that barriers, benefits, self-efficacy, and interpersonal influences were significant factors related to healthy eating by conducting correlation analysis.

In conclusion, the present study found that perceived self-efficacy of dietary behaviors and perceived benefits of dietary behaviors were positively correlated, meanwhile perceived barriers of dietary behaviors was negatively correlated to dietary behaviors. It could be summarized that the participants who perceived fewer barriers, more self-efficacy or confidence, and more benefit of dietary behaviors had healthier dietary behaviors. Whereas, individual characteristics including age, gender and body mass index was negatively or not correlated to the dietary behaviors. Therefore, nursing interventions that address all the significant factors should be implemented to help patients modify their lifestyles, especially regarding diet, to reduce the number of recurrent cases of kidney stones.

## **Recommendations**

### **For the nursing practice**

The findings of the study illustrates the strongly correlation between perceived self-efficacy, perceived benefits, perceived barriers and dietary behaviors in recurrent kidney stone post-operation. Thus, clinical nurses in Urological Surgical Departments should provide patients knowledge about this and the benefits of change behaviors step by step, which lead to decrease the number of recurrent kidney stone post-operation. Moreover, appropriate and effective intervention when the patients stay in clinical should be developed so as to prevent or reduce re-occurrence of this disease. In addition, clinical nurse should prepare the discharge plan of dietary behaviors before they come back community.

### **For the nursing education**

These findings of this study provide new knowledge about the dietary behaviors and factors of those. Nursing curricula should be included this knowledge in the field of nursing, particular in field of urological surgical nursing. Moreover, health behaviors should be chosen one topic in this filed.

### For further studies

This study examined the relationship between 6 factors and dietary behaviors in recurrent kidney stone post-operation. However, further researches should be study more regarding associated factors in this population. Additionally, settings will be enlarged in more departments and more hospital, especially in community in further studies. Another non-pharmacological intervention study should be developed to manage the dietary behaviors to prevent admission cases in recurrent kidney stone post-operation.



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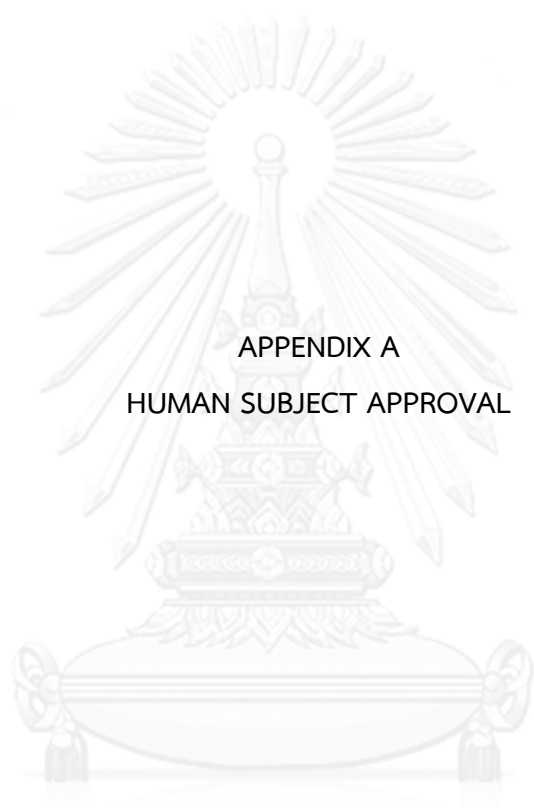
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APPENDIX

จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**



APPENDIX A  
HUMAN SUBJECT APPROVAL

จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

MINISTRY OF HEALTH  
HANOI SCHOOL OF PUBLIC HEALTH

SOCIALIST REPUBLIC OF VIETNAM  
Independence – Freedom - Happiness

No.: 165/2013/YTCC-HD3

Ha Noi, October 4, 2013

Subject: Ethical Approval

## DECISION

**On Ethical approval for research involving human subject participation**  
THE CHAIR OF THE ETHICAL REVIEW BOARD FOR BIOMEDICAL RESEARCH  
HANOI SCHOOL OF PUBLIC HEALTH

- Based on Decision No. 201/QĐ-YTCC by the Dean of Hanoi School of Public Health on Establishment of The Institutional Ethical Review Board of Hanoi School of Public Health; 12 April 2012 ;
- Based on decision No. 202/QĐ-YTCC by the Dean of Hanoi School of Public Health on the Issuing Regulation of the Institutional Ethical Review Board of Hanoi School of Public Health; 12 April 2012;
- After reviewing research ethics application No. 013-165/DD-YTCC;
- And based on the memo dated **October 4, 2013**.

### DECIDED

Article 1. Grant ethical approval for ethnographic study project:

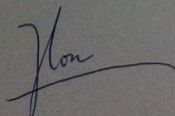
- Project Title: **Factor related to dietary behaviors of Vietnamese patients with recurrence kidney stone post-operation**
- Principal Investigator: **Quynh Anh Doan**- Master student, Faculty of Nursing, Chulalongkorn University, Thailand.
- Supervisor: Asst. Prof **Sunida Preechawong** - Faculty of Nursing, Chulalongkorn University, Thailand.
- Research site: Viet Duc Hospital and Military Medical Hospitals 103, Hanoi, Vietnam.
- Project time: from 25/04/2013 to 15/12/2013
- Data collection time: from 15/10/2013 to 15/12/2013
- Review process: expedited review

Article 2. This decision is effective from **04/10/2013**

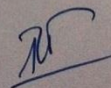
Article 3. Principle Investigator should notify the Institutional Ethical Review Board of Hanoi School of Public Health (IRB of HSPH) immediately of any adverse effects arising from this study (e.g. unexpected adverse outcomes, unexpected community/subject risk factors or complaints, etc.). Active research projects are subject to random audit by the IRB of HSPH.

**CHAIR OF INSTITUTIONAL ETHICAL REVIEW BOARD**  
(Signature and full name)

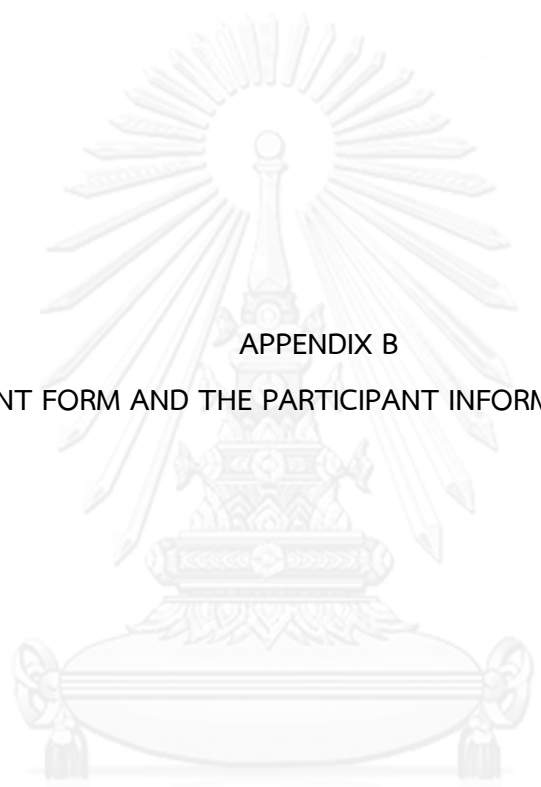
**SECRETARY**  
(Signature and full name)



**Do Mai Hoa**



**Nguyen Thi Minh Thanh**



APPENDIX B  
CONSENT FORM AND THE PARTICIPANT INFORMATION SHEET

จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**

### Informed Consent Form

Address.....

Date .....

Code number of participant .....

I who have signed here below agree to participate in this research project

**Title** “Factors related to dietary behaviors of Vietnamese patients with recurrent kidney stone post-operation”

**Principle researcher’s name** Doan Quynh Anh

**Contact address** 79/1 Nguyen Chi Thanh, Dong Da District, Hanoi

**Telephone** 66 855-135-688 or 84 983-795-289

I have (read or been informed) about rationale and objectives of the project, what will be done upon me, risk/harm and benefit of this project. The researcher has explained to me and I clearly understand with satisfaction.

I willingly agree to participate in this project and consent the researcher to response to the questionnaires that the researcher gave me for once in about 15 to 20 minutes. I have the right to withdraw from this research project at any time as I wish with no need to give any reason. This withdrawal will not have any negative impact upon me by all means.

I have been guaranteed that the researcher will act upon me exactly the same as indicated in the information. Any of my personal information will be kept confidential. Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

If I am not treated as indicated in the information sheet, I can report to the Ethics Review Committee Board for Biomedical Research Human Research Subjects, Hanoi School of Public Health, 138 Giang Vo Street, Ba Dinh District, Hanoi. Phone: (84)4-6266-2386. E-mail: [ntmt1@hsph.edu.vn](mailto:ntmt1@hsph.edu.vn)

I also have received a copy of information sheet and informed consent form.

Sign .....

(.....)

Doan Quynh Anh

Sign .....

(.....)

Participant

Sign .....

(.....)

Witness



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY



**XÁC NHẬN THAM GIA NGHIÊN CỨU**

Địa chỉ .....

Mã số tham gia .....

Tôi đã ký tên dưới đây đồng ý tham gia dự án nghiên cứu này

Tiêu đề **"Các yếu tố liên quan đến thói quen ăn uống của bệnh nhân sỏi thận tái phát sau phẫu thuật"**

Nghiên cứu viên: Đoàn Quỳnh Anh

Địa chỉ: số 2 – ngách 79/1 – ngõ 79- Nguyễn Chí Thanh, Láng Hạ, Đống Đa, Hà Nội

Điện thoại 0983795289

Nghiên cứu viên đã giải thích cho tôi rất rõ ràng về mục đích, quyền lợi, nghĩa vụ, những nguy cơ tiềm tàng và lợi ích của đối tượng tham gia nghiên cứu.

Tôi sẵn sàng đồng ý tham gia vào nghiên cứu này và đồng ý trả lời bộ câu hỏi mà nghiên cứu viên cung cấp cho tôi trong khoảng 15 phút.

Tôi có quyền rút lui khỏi dự án nghiên cứu này tại bất kỳ thời gian như tôi muốn mà không cần phải đưa ra lý do nào và sẽ không có bất kỳ tác động tiêu cực đến tôi.

Tất cả thông tin cá nhân của tôi sẽ được giữ bí mật. Kết quả nghiên cứu sẽ được báo cáo bằng hình ảnh và các bảng, biểu đồ. Những thông tin cá nhân sẽ không xuất hiện trong báo cáo.

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Tôi cũng đã đồng ý tham gia nghiên cứu này và để lại giấy này làm bằng chứng.

*Hà Nội, ngày tháng năm 2013*

Họ tên của Nghiên cứu viên  
(Kí và ghi rõ họ tên)

Họ tên của Đối tượng tham gia  
(Kí và ghi rõ họ tên)

Họ tên của Người làm chứng  
(Kí và ghi rõ họ tên)



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### Patient/ Participant Information Sheet

**Title of research project** Factors related to dietary behaviors of Vietnamese patients with recurrent kidney stone post-operation

**Principle researcher's name** Doan Quynh Anh

**Position** Lecturer of Nursing Surgical Department

**Office address** NamDinh University of Nursing, 257 Han Thuyen Street, NamDinh

**Home-address:** 79/1 Nguyen Chi Thanh Street, Dong Da District, Hanoi.

**Telephone (home)** +8438358463

**Cell phone** +84983795289

**E-mail:** [quynh\\_anh2406@yahoo.com](mailto:quynh_anh2406@yahoo.com)

I am Doan Quynh Anh, nursing student in master degree at Chulalongkorn University. I would like to cooperate as participant in my study.

1. The objectives of the project are:

- To examine the dietary behaviors of Vietnamese patients with kidney stone post-operation
- To examine factors that related to dietary behaviors of Vietnam patients with kidney stone post-operation

2. The patients in this study are (1) inpatients, (2) both males and females, who received urinary stone diagnosis as a recurrent kidney stones (a new kind of stone formation is also recurrent case) and post-operation; (3) post operation; (4) have at least one time operation (any kind of treatment such as Extracorporeal shock wave lithotripsy, Percutaneous nephrolithotomy, Ureteroscopy, Traditional operation); (5) age 18 years old to 59 years old, and (6) free from chronic illness, such as blood disease, lupus erythemotosis, hypertension, peptic ulcer, and malignancy. Number of participants needed is 112

3. The researcher will go to the participants' rooms, then introduce herself to subjects and ask for their cooperation in answering the questionnaires during their waiting period or after they carry out procedures. When the subjects agree to participate, the researcher will explain the purpose of the study and give the opportunity for the subjects to ask questions. The participant will receive the information from the researcher about objectives of the study and the process of data collection. Then, the researcher gives the questionnaire to the participant to answer. The researcher explains the way to answer the questionnaires. When the subjects understand the method, the subject will answer all the questionnaires by themselves. The total amount of time is about 15-20 minutes.

4. For benefit of the project, the researcher wants study in this topic with the expectation of the result may lead to change in appropriate health behaviors, decrease in recurrence of admission with kidney stone, reduction in expenditure of patients' families and the hospital.

5. There will be no harm for the patients in this study. Protect the right of the individuals who volunteered as subjects by having each sign a consent form, which includes an explanation of the purpose of the research, assurance of confidentiality, informs about the questionnaire destruction when finishing the study as well as the option to withdraw from this study at any time with no consequence at all.

6. Information related directly to you will be kept confidential. Results of the study will be reported as total picture. Any indirect information which could be able to identify you will not appear in the report.

7. Participant will receive souvenir from the researcher

8. If researcher does not perform upon participants as indicated in the information, the participants can report to the Ethics Review Committee Boar for Biomedical Research Human Research Subjects, Hanoi School of Public Health, 138 Giang Vo Street, Ba Dinh District, Hanoi. Phone: (84)4-6266-2386. E-mail: [ntmt1@hsph.edu.vn](mailto:ntmt1@hsph.edu.vn)



## BẢN CUNG CẤP THÔNG TIN CHO ĐỐI TƯỢNG

### THAM GIA NGHIÊN CỨU

Tiêu đề : Các yếu tố liên quan tới thói quen ăn uống của bệnh nhân sỏi thận tái phát sau phẫu thuật

Nghiên cứu viên: Đoàn Quỳnh Anh

Chức vụ: Giảng viên Bộ môn Điều dưỡng Ngoại

Địa chỉ văn phòng: Đại học Điều dưỡng Nam Định, 257 Hàn Thuyên, thành phố Nam Định

Địa chỉ: 79/1 Nguyễn Chí Thanh, quận Đống Đa, Hà Nội.

Điện thoại (nhà) 0438358463

Điện thoại di động 0983795289

E-mail: [quynh\\_anh2406@yahoo.com](mailto:quynh_anh2406@yahoo.com)

Tôi tên là Đoàn Quỳnh Anh, sinh viên thạc sỹ điều dưỡng của trường Đại học Chulalongkorn. Tôi muốn mời anh (chị) tham gia vào nghiên cứu của tôi.

1. Mục tiêu của nghiên cứu là:

- Khảo sát các thói quen ăn uống của bệnh nhân sỏi thận tái phát sau phẫu thuật.
- Tìm ra các yếu tố có liên quan đến thói quen ăn uống của bệnh nhân sỏi thận tái phát sau phẫu thuật.

2. Tiêu chuẩn lựa chọn người tham gia: (1) cả hai giới, những người được chẩn đoán sỏi thận tái phát (sự hình thành một loại sỏi mới cũng được coi là sỏi thận tái phát); (2) đã trải qua ít nhất 1 cuộc phẫu thuật (tất cả các hình thức phẫu thuật như tán sỏi ngoài cơ thể dùng sóng chấn động, lấy sỏi qua da, tán sỏi thận nội soi ngược dòng

với máy soi mềm, phương pháp phẫu thuật cổ điển; (3) có độ tuổi từ 18 đến 59; (4) là bệnh nhân điều trị nội trú tại khoa Phẫu thuật Thận Tiết niệu, bệnh viện Việt Đức và khoa Ngoại Tiết niệu, bệnh viện Quân Y 103.

Số đối tượng tham gia là 112

3. Nghiên cứu viên sẽ đi đến phòng của người tham gia, sau đó tự giới thiệu cho các đối tượng và yêu cầu hợp tác của bằng cách trả lời các câu hỏi. Khi các đối tượng đồng ý tham gia, nghiên cứu viên sẽ giải thích mục đích của nghiên cứu và thông báo rằng đối tượng nghiên cứu có thể được giải đáp các thắc mắc bất cứ lúc nào. Nghiên cứu viên sẽ hướng dẫn cách trả lời các câu hỏi. Khi đối tượng tham gia đã hiểu, họ sẽ trả lời được các thắc mắc của mình. Sau đó, nghiên cứu viên sẽ đảm bảo rằng sẽ được bảo vệ quyền lợi của các đối tượng tham gia.

4. Nghiên cứu viên mong muốn kết quả của nghiên cứu có thể giúp bệnh nhân thay đổi trong hành vi ăn uống phù hợp, giảm sự tái phát sỏi thận, giảm chi phí của gia đình bệnh nhân và của bệnh viện.

5. Nghiên cứu này không gây hại cho đối tượng tham gia. Bảo vệ quyền của các đối tượng tham gia nghiên cứu bằng hình thức đối tượng tham gia sẽ kí vào đơn tình nguyện tham gia nghiên cứu, bao gồm một lời giải thích về mục đích của nghiên cứu, đảm bảo giữ bí mật, thông báo như rút khỏi nghiên cứu này bất cứ lúc nào cũng không có ảnh hưởng gì tới đối tượng tham gia.

6. Những thông tin cá nhân liên quan trực tiếp đến đối tượng tham gia sẽ được giữ bí mật và không xuất hiện trong báo cáo. Kết quả nghiên cứu sẽ được báo cáo là tổng số hình ảnh.

7. Người tham gia nghiên cứu sẽ nhận được quà lưu niệm từ nghiên cứu viên.

8. Nếu nghiên cứu không thực hiện khi tham gia như đã nêu trong bảng thông tin, đối tượng tham gia có thể báo cáo sự việc cho Hội đồng đạo đức – Trường Đại học Y tế Công Cộng, Hà Nội, 138 Giảng Võ, Ba Đình, Hà Nội. ĐT: 0462662386. Email: [ntmt1@hsph.edu.vn](mailto:ntmt1@hsph.edu.vn)



APPENDIX C  
INSTRUMENTS

จุฬาลงกรณ์มหาวิทยาลัย  
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Code: \_\_\_\_\_

### Section 1: Personal Data Form

Please answer the questionnaire about yourself by selecting only one answer for each question with the mark (x) in the  or fill in the space

#### Demographic

1. Age: \_\_\_\_\_ years
2. Gender:  Female  Male
3. Height: \_\_\_\_ (m)      Weight: \_\_\_\_\_ (kg)  
Body mass index (BMI, for researcher only): \_\_\_\_\_ kg/m<sup>2</sup>
4. Marital status:
 

<input type="checkbox"/> Single	<input type="checkbox"/> Widowed
<input type="checkbox"/> Married	<input type="checkbox"/> Divorced/ Separated
5. Current occupation: \_\_\_\_\_
6. Number of operation related to kidney stone you have undergone? \_\_\_\_\_  
\_\_\_\_\_ Times
7. Education level:
 

<input type="checkbox"/> Primary education	<input type="checkbox"/> University
<input type="checkbox"/> Secondary education	<input type="checkbox"/> Master and higher education
<input type="checkbox"/> High school education	
8. Food supplement
 

<input type="checkbox"/> Yes. Please specify that is .....
<input type="checkbox"/> No.

**Section 2: Perceived self-efficacy of performing dietary behaviors in patients  
with recurrent kidney stones post-operation**

**Instructions:**

The perceived self-efficacy for dietary behaviors scale seeks information about your perception of your ability to practice dietary behaviors.

Please answer each statement and select the response that is in best agreement with your personal perception, by marking (X). Please provide only one answer for each statement. There is no right or wrong answers.

- (1) Very high confidence means you totally believe in your ability to perform dietary behaviors regularly, or every time.
- (2) High confidence means you have a high belief in your ability to perform dietary behaviors frequently, or almost every time.
- (3) Moderate confidence means you have a moderate belief in your ability to perform dietary behaviors sometimes, or occasionally.
- (4) A little confidence means you have a slight belief in your ability to perform dietary behaviors.
- (5) No confidence means you do not have a belief in your ability to perform dietary behaviors.

Statement	Very high confidence	High confidence	Moderate confidence	A little confidence	No confidence
1. I am confident that I use lower a half of teaspoon salt than before as doctor's suggested					
2. I am confident that I choose frozen dinners with less than one-fourth salt teaspoon					
3. I am confident that I avoid processed foods such as processed meat, processed fish, sauce, gravy					
4. I am confident that I read food labels for sodium content before buying processed frozen food					
5. I am confident that I have supplied calcium anytime if possible.					
6. I am confident that I avoid foods with high oxalate, such as spinach, beetroot, eggplant, celery, leeks.					
7. I am confident that I eat 1-2 eggs					
8. I am confident that I avoid eating animal meat such as meat, fish					

Statement	Very high confidence	High confidence	Moderate confidence	A little confidence	No confidence
9. I am confident that I avoid drinking strong black tea to reduce stone formation					
10. I am confident that I avoid drinking orange juice, apple juice and grape fruit juice to reduce stone formation					
11. I am confident that I drink a glass of beer or a cup of wine daily to reduce stone formation					

### Section 3: Perceived benefits of performing dietary behaviors in patients with recurrent kidney stones post-operation

#### Instructions:

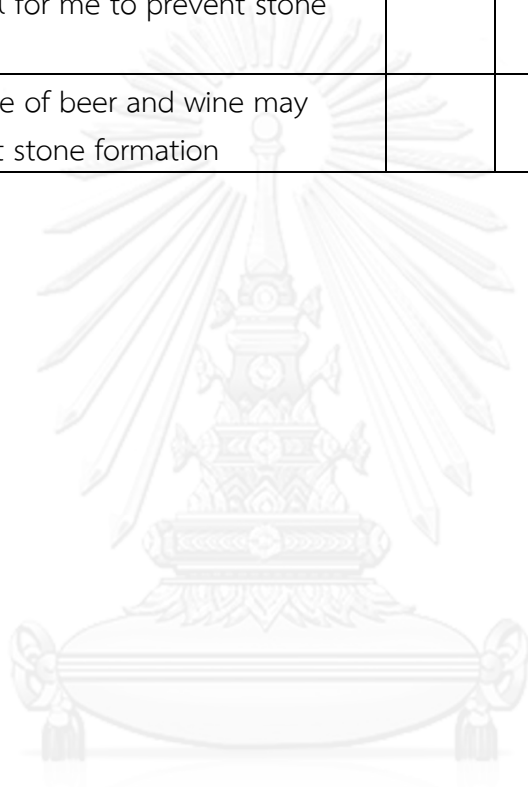
The perceived benefit for dietary behaviors scale seeks information about your perception of your belief in the benefits of performing dietary behaviors. Please answer each statement and select the response that is in best agreement with your personal perception, by marking (X). Please provide only one answer for each statement. There is no right or wrong answers.

- (1) Totally agree means you have a strong agreement in your belief in the benefit of performing dietary behaviors.
- (2) Agree means you have an agreement in your belief in the benefit of performing dietary behaviors.
- (3) Uncertain confidence means you are not sure about your belief in the benefit of performing dietary behaviors.
- (4) Disagree means you have a disagreement in your belief in the benefit of performing dietary behaviors.

Totally disagree means you have a strong disagreement in your belief in the benefit of performing dietary behaviors

Statement	Totally agree	Agree	Uncertain	Disagree	Totally disagree
1. Using little salt in food would help me decrease kidney stone formation					
2. Using alternative foods such as garlic, curry, chili, fresh herb , freshly ground pepper can help me more appetite when using less salt					
3. Reading food labels on sodium content can help me control sodium intake					
4. Eating calcium supplement with meals is no harmful to me in increasing stone formation					
5. Calcium from food can help me not only prevent kidney stone formation but also maintain a strong bone and teeth density					
6. Eating dairy products like 1 small tub of yoghurt help me reduce kidney stone formation					
7. Avoiding foods with higher oxalate such as spinach, soy products and sweet potatoes are useful for me to reduce kidney stones formation					
8. Eating less animal protein such as liver will decrease my chance of getting stone.					
9. Eating fiber food such as breads, cereals, biscuits and cracker will decrease my chance of getting stone.					
10. Weight control can help me reduce the risk of stone formation					
11. Drinking about 8-12 glasses of water daily is helpful for me to reduce stone formation					

Statement	Totally agree	Agree	Uncertain	Disagree	Totally disagree
12. Drinking some fruit juice such as tomato, lemon is helpful for me to prevent stone formation					
13. Avoid drinking apple, grape fruit juice and sugary is helpful for me to prevent stone formation					
14. Moderate intake of beer and wine may help me prevent stone formation					



#### Section 4: Perceived barriers of performing dietary behaviors in patients with recurrent kidney stones post-operation

##### Instructions:

The perceived barriers for dietary behaviors scale seeks information about your perception of your belief of block factor of performing dietary behaviors. Please answer each statement and select the response that is in best agreement with your personal perception, by making (X). Please provide only one answer for each statement. There is no right or wrong answers.

- (1) Totally agree means you have a strong agreement in your belief of block factor of performing dietary behaviors.
- (2) Agree means you have an agreement in your of block factor of performing dietary behaviors.
- (3) Uncertain confidence means you are not sure about your belief of block factor of performing dietary behaviors.
- (4) Disagree means you have a disagreement in your belief of block factor of performing dietary behaviors.

Totally disagree means you have a strong disagreement in your belief of block factor of performing dietary behaviors



Statement	Totally agree	Agree	Uncertain	Disagree	Totally disagree
1. Food with little salt is tasteless					
2. It is hard for me to reduce amount of salt in food because I have not prepared meals by myself					
3. Eating food without sauce or gravy makes me tasteless					
4. It is hard for me to avoid processed food and canned soup					
5. Eating calcium with food is harmful for me to increase kidney stone formation					
6. It is difficult for me to avoid eating animal protein such as liver, pigs intestines, sausage casing foods					
7. It is hard for me to avoid eating some vegetable specially spinach, beetroot, eggplant, sweet potatoes, celery, leeks					
8. It is hard for me to follow a restricted diet such as low animal protein diet, low salt diet.					
9. It takes long time to select foods followed a restricted diet					
10. I spend more money on following a restricted diet to protect my kidney					
11. I feel more fatigue after following a restricted diet					
12. Only one restricted diet can help me prevent all kinds of kidney stones					
13. Drinking fresh water make me tasteless					
14. Drinking about 10 cups of fresh water makes me more fatigue because I go to bathroom more often.					
15. No alcohol would make me less appetite					

**Section 5: Dietary behaviors in patients with  
recurrent kidney stones post-operation**

**Instructions:**

The dietary behaviors scale seeks information about dietary behaviors of patients with kidney stones post-operation. Since you had the first operation of kidney-stone, please try to recall how many times you have consumed these foods. Please answer each statement and select the most relevant to what you did by marking (X). Please provide only one answer for each statement.

- (1) Routinely means you practice the dietary behavior regularly or daily, or 5-7 times a week.
- (2) Frequently means you often practice the dietary behavior regularly, or 3-4 times a week.
- (3) Sometimes means you practice the dietary behavior occasionally, or 1-2 times a week.
- (4) Seldom means you practice the dietary behavior rarely, or 1-2 times a month.


Never means you do not practice the dietary behavior at all

Statement	Routinely	Frequently	Sometime	Seldom	Never
1. I eat a can of processed food such as processed meat, processed fish					
2. I eat salty sauce and gravy					
3. I add more salt to my meal at the table					
4. I eat calcium citrate supplement with meals					
5. I eat 1 small tub of yoghurt or high calcium milk					
6. I eat a pack of peanuts or cashews, soybeans					
7. I eat spinach, beetroot, eggplant					
8. I eat sweet potatoes, celery, leeks					
9. I eat small portions of red meat					
10. I eat animal intestinal organs such as pig liver, pig heart, ...					
11. I eat 1-2 eggs					
12. I eat sea food such as fish, crab, shrimp					
13. I eat a slice of bread, a pack of cereal, biscuits or crackers					
14. I take vitamin C or D					
15. I drink 8 - 10 cups of water					
16. I drink a cup of coffee or tea					

Statement	Routinely	Frequently	Sometime	Seldom	Never
17. I drink a glass of beer or a cup of wine					
18. I drink one glass of fruit lemon or tomato juice					
19. I drink one glass of fruit juice such as orange or grapefruit juice					



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APPENDIX D  
RELIABILITY COMPUTER OUTPUT

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### Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded <sup>a</sup>	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

### Section 1: Reliability results of Perceived self-efficacy of dietary behaviors

#### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.810	.805	11

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Self_efficacy_1	31.83	54.557	.402	.511	.801
Self_efficacy_2	31.57	54.875	.486	.381	.794
Self_efficacy_3	31.40	53.697	.477	.608	.794
Self_efficacy_4	31.23	59.840	.196	.387	.816
Self_efficacy_5	31.43	51.633	.559	.542	.785
Self_efficacy_6	31.90	52.990	.531	.735	.789
Self_efficacy_7	31.23	55.289	.420	.551	.799
Self_efficacy_8	31.27	55.995	.379	.500	.803
Self_efficacy_9	31.47	51.982	.576	.526	.784
Self_efficacy_10	31.20	50.372	.578	.584	.783
Self_efficacy_11	31.13	50.189	.547	.477	.786

## Section 2: Reliability results of Perceived benefits of dietary behaviors

## Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.848	.843	14



## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Benefit_1	43.57	60.461	.430	.680	.842
Benefit_2	44.07	63.444	.309	.473	.848
Benefit_3	44.47	62.189	.368	.820	.845
Benefit_4	44.20	63.062	.369	.421	.844
Benefit_5	44.13	61.154	.529	.660	.836
Benefit_6	44.33	56.299	.663	.728	.826
Benefit_7	44.13	62.189	.477	.486	.839
Benefit_8	44.50	56.190	.700	.806	.823
Benefit_9	44.33	59.747	.505	.655	.837
Benefit_10	44.53	67.430	.113	.454	.855
Benefit_11	43.27	59.375	.613	.700	.831
Benefit_12	44.63	58.102	.614	.612	.830
Benefit_13	44.27	61.582	.533	.635	.836
Benefit_14	44.80	56.510	.580	.704	.832

## Section 3: Reliability results of Perceived barriers of dietary behaviors

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.855	.845	15

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Barrier_1	47.50	120.466	.213	.643	.861
Barrier_2	47.47	115.361	.367	.795	.853
Barrier_3	47.40	113.766	.408	.479	.851
Barrier_4	48.60	127.972	-.006	.503	.865
Barrier_5	47.63	108.792	.649	.792	.837
Barrier_6	47.17	107.040	.706	.717	.834
Barrier_7	47.27	109.444	.609	.722	.839
Barrier_8	48.13	111.085	.557	.592	.842
Barrier_9	47.43	105.702	.676	.759	.835
Barrier_10	47.53	109.568	.636	.685	.838
Barrier_11	47.70	118.355	.319	.688	.855
Barrier_12	48.70	119.459	.370	.523	.852
Barrier_13	48.50	119.569	.314	.631	.854
Barrier_14	47.30	106.976	.684	.755	.835
Barrier_15	47.53	104.257	.709	.808	.832

## Section 4: Reliability results dietary behaviors

## Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.850	.856	19

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Dietary_behavior_1	51.23	123.771	.188	.712	.852
Dietary_behavior_2	54.57	125.220	.327	.673	.850
Dietary_behavior_3	53.17	117.385	.473	.734	.842
Dietary_behavior_4	53.80	123.062	.164	.769	.854
Dietary_behavior_5	51.77	103.909	.681	.837	.830
Dietary_behavior_6	53.27	115.995	.501	.854	.841
Dietary_behavior_7	52.60	113.352	.696	.833	.835
Dietary_behavior_8	52.87	121.499	.382	.718	.846
Dietary_behavior_9	53.90	116.990	.441	.842	.843
Dietary_behavior_10	52.50	119.362	.274	.473	.851
Dietary_behavior_11	52.90	115.679	.630	.807	.838
Dietary_behavior_12	52.03	113.068	.585	.799	.837
Dietary_behavior_13	52.87	117.844	.291	.559	.851
Dietary_behavior_14	51.87	113.361	.468	.798	.842
Dietary_behavior_15	51.83	104.075	.623	.878	.834
Dietary_behavior_16	53.57	116.392	.298	.687	.852
Dietary_behavior_17	53.07	107.720	.501	.583	.842
Dietary_behavior_18	52.40	120.386	.370	.646	.846
Dietary_behavior_19	52.40	109.628	.725	.869	.831

## VITA

Mrs Quynh Anh Doan was born in 1987. She received bachelor degree of nursing science from Nam Dinh University of Nursing in 2009. She had 2 years of clinical experience in Urological Surgical Department at Nam Dinh General Hospital during 2009-2011. She studied master program in nursing science, Faculty of Nursing, Chulalongkorn University since 2011-2014.

