PREVALENCE AND HEALTH SEEKING BEHAVIOUR OF URINARY INCONTINENCE AMONG POSTMENOPAUSAL WOMEN ATTENDING OUTPATIENT CLINIC HOSPITAL UNIVERSITI SAINS MALAYSIA

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ABBREVIATIONS

APCAB	Asia-Pacific Continence Advisory Board
BMI	Body mass index
CSB	Care Seeking Behaviour
FDA	Food and Drug Administration
HBM	Health Belief Model
HUSM	Hospital Universiti Sains Malaysia
ICS	International Continence Society
KRK	Klinik Rawatan Keluarga
LR	Likelihood Ratio
MUI	Mixed urinary incontinence
RM	Ringgit Malaysia
SUI	Stress urinary incontinence
UI	Urinary incontinence
UUI	Urge urinary incontinence

ABSTRACT

PREVALENCE AND HEALTH SEEKING BEHAVIOUR OF URINARY INCONTINENCE AMONG POSTMENOPAUSAL WOMEN ATTENDING OUTPATIENT CLINIC HOSPITAL UNIVERSITI SAINS MALAYSIA

Introduction: Urinary incontinence (UI) is common in adult women, but under diagnosed and under treated. Menopause leads to urogenital atrophy due to decline in estrogen which causes UI. Postmenopausal women often delay in seeking treatment. There were also limited studies conducted of UI among postmenopausal women.

Objectives: The objective of this study is to determine the prevalence of urinary incontinence and the health-seeking behaviour of postmenopausal women and their associated factors.

Methodology: A cross sectional study was carried out involving 348 postmenopausal women between 47 till 82 years old attended outpatient clinic from February 2015 to April 2015 through convenience sampling method. Every participant was given a validated self-administered Questionnaire Survey formulated by a panel of experts from the Asia-Pacific Continence Advisory Board (APCAB), which had Cronbach's alpha of 0.64. It consisted of three parts assessing sociodemographic data, urinary incontinence and health-seeking behaviour.

Results: The mean age of respondents was 67.4 (±5.8) years old. The majority of them had menopause for more than 5 years (70.4%) and attained at least

secondary education (61.7%). The prevalence of urinary incontinence was 58.9% with 24.9% having moderate and 7.8% severe UI. The most common type of UI was stress incontinence (83.4%). Only higher family income was significantly associated with UI (adjusted odds ratio [OR] 0.32, 95% confidence interval [CI]: 0.12, 0.85). Only 13.17% of patients with UI sought treatment. Factors significantly associated with health seeking behaviour were age of menopause (adjusted odds ratio [OR] 0.88, 95% confidence interval [CI]: 0.79, 0.97) and severe UI (adjusted odds ratio [OR] 9.50, 95% confidence interval [CI]: 1.84, 49.08).

Conclusion: The prevalence of UI among postmenopausal women attending Outpatient clinic was unexpectedly high, yet only a few sought treatment. This should promote both health care providers and women to a larger alertness of the situation.

ABSTRAK

PREVALEN DAN SIKAP MENDAPATKAN RAWATAN UNTUK MASALAH KETIDAKUPAYAAN MENGAWAL PEMBUANGAN AIR KECIL DIKALANGAN WANITA YANG PUTUS HAID DI KLINIK PESAKIT LUAR HOSPITAL UNIVERSITI SAINS MALAYSIA

Pengenalan: Masalah ketidakupayaan mengawal pembuangan air kecil di kalangan wanita dewasa adalah biasa, tetapi kurang didiagnosa dan dirawat. Putus haid mengakibatkan pengecutan otot pembuangan air kecil dan peranakan disebabkan oleh penurunan hormon estrogen dan ini menyebabkan ketidakupayaan mengawal pembuangan air kecil. Wanita yang putus haid selalu bertangguh untuk mendapatkan rawatan. Tidak banyak kajian mengenai ketidakupayaan mengawal pembuangan air kecil di kalangan wanita yang putus haid dilakukan.

Objektif: Tujuan kajian ini dijalankan adalah untuk menentukan prevalen masalah ketidakupayaan mengawal pembuangan air kecil dan sikap mendapatkan rawatan di kalangan wanita yang putus haid dan faktor-faktor yang berkaitan dengannya.

Metodologi: Kajian keratan rentas dijalankan melibatkan 348 orang wanita yang putus haid berumur antara 47 hingga 82 tahun yang datang ke Klinik Pesakit Luar dari bulan Februari 2015 hingga April 2015 melalui pensampelan mudah. Setiap peserta diberi borang soal-selidik dijawab sendiri, yang dihasilkan oleh kumpulan pakar dari Asia-Pacific Continence Advisory Board (APCAB) dan telah divalidasikan dengan nilai alpha cronbach 0.64. Ia mempunyai tiga bahagian iaitu

latar belakang sosioekonomi, ketidakupayaan mengawal pembuangan air kecil dan sikap mendapatkan rawatan.

Keputusan: Purata umur peserta adalah 67.4 (±5.8) tahun dan kebanyakkan mereka telah putus haid lebih dari 5 tahun (70.4%) dan mempunyai sekurang-kurangnya tahap pendidikan di sekolah menengah (61.7%). Kadar prevalen masalah ketidakupayaan mengawal pembuangan air kecil adalah 58.9% dengan 24.9 % mempunyai tahap pertengahan dan 7.8% tahap teruk. Jenis masalah mengawal pembuangan air kecil yang paling tinggi adalah masalah mengawal pembuangan air kecil jenis tekanan (83.4%). Hanya pendapatan keluarga yang tinggi merupakan faktor penting yang menyumbang kepada masalah mengawal pembuangan air kecil [OR] 0.32, 95% confidence interval [CI]: 0.12, 0.85). Hanya 13.17% pesakit dengan masalah mengawal pembuangan air kecil mendapatkan rawatan. Faktor-faktor penting yang menyumbang kepada sikap mendapatkan rawatan adalah umur semasa putus haid [OR] 0.88, 95% confidence interval [CI]: 0.79, 0.97) dan masalah mengawal pembuangan air kecil peringkat teruk [OR] 9.50, 95% confidence interval [CI]: 1.84, 49.08).

Kesimpulan: Kadar prevalen masalah ketidakupayaan mengawal pembuangan air kecil dikalangan wanita yang putus haid yang datang ke Klinik Pesakit Luar adalah tinggi daripada yang tidak disangka, namun hanya segelintir sahaja yang mendapatkan rawatan. Ia sepatutnya menggalakkan anggota kesihatan dan wanita untuk mempunyai kesedaran yang besar tentang masalah ini.

CHAPTER ONE: INTRODUCTION

1.1 Overview

Urinary incontinence (UI) is common in women, but is under reported and under treated (1). It remains largely under reported by patients because of social stigma and wrong belief that it is a normal feature of ageing. It is a condition that has an effect on quality of life.

1.2 Definition of UI

UI has been defined by International Continence Society (ICS) as the complaint of any involuntary leakage of urine (2). Study by Payne in 1998 defined UI as any involuntary loss of urine occurring on at least six days during the previous years or any clear cut history of stress or urge induced leakage (3). Another study by Chyeon et. al in ASIAN countries defined UI as involuntary loss of urine occurring within the last six months (4).

1.3 Classification of UI

UI can be classified as transient or chronic (5). It is very important to identify the classification of incontinence because it will assist us in the management. Transient incontinence is urinary leaking that spontaneously reverses after the underlying cause is resolved (6).

The mnemonic DIAPPERS is simple to recall the common transient causes of UI (7) as listed below:

D	Delirium
I	Infection (acute urinary tract infection)
A	Atrophic vaginitis
P	Pharmaceuticals
P	Psychological disorder, especially depression
E	Excessive urine output (hyperglycemia)
R	Reduced mobility (functional incontinence)
S	Stool impaction

Physicians also should take note of patients' medication as drug induced UI often can be reversed by stopping the offending drug. Chronic UI does not normally resolve spontaneously. There are five types of chronic UI.

1.4 Types of UI

There are five types of UI namely stress, urge, mixed, overflow and functional (8). However, the main types of UI are stress, urge and mixed (9). Many women have features of more than one type of UI (8). This study only discussed three types of UI based on the questionnaire which are stress UI, urge UI and mixed UI. Two other types of UI which are overflow and functional also occur in women, but they are far less common.

Individuals with stress incontinence have UI that occurs with increase in intra-abdominal pressure such as on exertion, coughing , sneezing, and laughing in the absence of a bladder contraction (10). There were two mechanism of stress UI,

urethral hypermobility and intrinsic sphincter deficiency (ISD). Urethral hypermobility is caused by inadequate support of pelvic floor or vaginal connective tissue to the urethra and bladder neck resulting in loss ability of urethra and bladder neck to close against anterior vaginal wall. Intrinsic sphincter deficiency is caused by loss of urethral tone to keep urethra close.

Urge UI is characterized by a sudden desire to void accompanied by an involuntary leakage of urine and occur commonly in older women (10). It is caused by detrusor over activity which is further divided into two subtypes namely sensory and neurologic. Sensory detrusor over activity is a result of local inflammation within the bladder and neurologic detrusor over activity frequently is caused by loss of cerebral inhibition of detrusor contractions (11). Mixed UI occurs from combination both of stress UI and urge UI. Prevalence of mixed UI increases with aging. About one third among adults women have mixed UI (12).

1.5 Risk factors of UI

Risk factors of UI include obesity, parity, mode of delivery, age and urogenital atrophy. Risk factors for UI such as smoking, restricted mobility, chronic cough, chronic straining for constipation, urogenital surgery and menopause have not been as commonly studied as age, parity and obesity (13).

Menopause has a great biological effect all over the body, which leads to alterations in numerous organs and systems. Genito-urinary system was also affected by menopause. Reduction of serum estrogen concentrations after menopause will lead to urogenital atrophy. Thinning of the vaginal, urethral mucosa and the trigone of the bladder and damage of the supporting tissues and ligaments

will lead to UI, frequency, urgency, dysuria and recurrent urinary tract infections (14). Menopause leads to a dramatic reduction in estrogen production with an approximately 95 percent decline in estradiol concentration from the premenopausal to postmenopausal state (15). These changes usually develop gradually over a period of years and persist unless they are treated.

1.6 Assessment of UI

Patients can be evaluated for UI in a primary care setting. The initial evaluation of UI usually does not need gynecologic or urologic assessment. History is the most important aspect in recognizing the type and severity of incontinence (16). Usually, physical examination and necessary tests are needed to perform and need more than one clinic visit (17). The aims of initial evaluation of UI are to assess the potential reversible causes of UI, to classify the type of UI and finally to identify underlying medical conditions.

The evaluation should start with a thorough history, physical examination and urinalysis (18, 19). Symptoms of UI and type of UI can be elicited by using short standardized questionnaires such as three incontinence questionnaires (3IQ), Questionnaire Survey formulated by Asia-Pacific Continence Advisory Board (APCAB) and Questionnaire for Urinary Incontinence Diagnosis (QUID). Women with UI must be evaluated for urinary tract infection symptoms. Assessment of functional status, mobility and cognitive status also should be done in older adults. Medications need to be reviewed since certain drugs can contribute to UI. Alcohol and caffeine intake should be specifically elicited. Voiding diaries are helpful in the assessment of UI symptoms. It may be helpful to determine if UI is associated with

high fluid intake and also to identify the maximum time interval that woman can reasonably wait between voids, a measure used to guide bladder training (20). Lastly, severity of UI need to be evaluated as this can help guide treatment.

1.7 Health seeking behavior

Many patients are reluctant to start a discussion about their incontinence. Women with UI frequently delay seeking care for several years (19, 21). There were several models of Health Behavior based on several studies that examine why people did and did not involve in seeking care. Models of Heath Behaviour consist of Health Belief Model (HBM), Theory of Reasoned Action, Triandis' Theory of Behaviour and A Theory of Care-seeking Behaviour (CSB). Among those models, HBM and A Theory of CSB were the popular theories about health behavior (22). HBM was formulated by a group of social psychologists in 1950s,who wanted to described why so few people were participating in activities to avoid and detect disease (23). HBM suggested that a person's health seeking behavior depends on the person's perception of three areas which were perceived susceptibility to that illness, perceived seriousness and perceived benefits of taking action. Barriers to taking action and cues to action also part of the HBM (23). The limitation of HBM including not discussed about cultural factors, socioeconomic status and previous experiences apart from health beliefs for factors that may influence health behavior practices (23).

A Theory of CSB was developed based on a theory of general behavior by Triandis since Triandis' Theory of Behaviour was beneficial in explaining health behavior. A theory of CSB consisted of three aspects namely clinical and socio

demographic, psychosocial and facilitating conditions regarding the behaviour. Psychosocial aspect was further divided into affect, expectations and values about outcomes, norms and habits (22). Affect was described as feelings associated with health seeking behavior such as shy about an examination. Expectations were defined as belief about the likelihood of relevant outcomes and values refer to the significance of those outcomes. Norms refer to social and personal norms to seek treatment. Social norms are others' beliefs about seeking for help whereas personal norms are individual's own belief in seeking care. Habits were described as how the individual normally reacts when he or she has the disease. Health insurance and having a similar health care practitioner were the facilitating conditions of seeking care (22).

Basically in this study, health seeking behavior of the participants was assessed based on practice of seeking treatment, which health care provider contacted if seeking treatment, duration taken to seek treatment and reasons of not seeking treatment.

Reasons of not seeking treatment covered mainly the psychosocial aspects of the participants as described in theory of CSB. Associated factors of health seeking behaviour examined about clinical and socio demographic factors aspect of theory of CSB.

1.8 Justification of the study

UI is common and can adversely change on physical, psychological health and socio-economic aspects of life which later may harm the general health of the patients with UI (24). Hence, it is essential to address this topic mainly in postmenopausal women since there were limited studies among this group. Unfortunately, many women are affected by UI still do not seek help and medical advice. By knowing the reasons of not seeking treatment, it can assist us in delivering suitable intervention strategies to decrease the problem of UI in this group.

CHAPTER TWO: LITERATURE REVIEWS

2.1 Prevalence of UI

UI was found to be highly prevalent worldwide. Prevalence of UI was reported to be between 12 percent and 42 percent for middle aged and younger women and 17 percent and 55 percent for older women (25). In European countries, reported prevalence of UI in adult women was more than 30 percent (13). In ASIAN countries, reported prevalence of UI among adult women was 15 percent. Among adult women in ASIAN countries, the condition was most common in Hong Kong, Korea, Pakistan, Philippines and Thailand with prevalence of 18 percent and less common in India and Taiwan which was less than 10 percent (26). In Malaysia, a study by Zarina et al in 2005 at HUSM revealed that prevalence of UI among adult women was 40.4 percent (27) and is relatively high, similar to Western figures. Estimates of prevalence vary depending on the population studied and the instruments used to assess severity.

2.2 Prevalence of UI among postmenopausal women

A study by Rekers et. al conducted in Netherlands and Ushiroyama et. al conducted in Japan among postmenopausal women revealed that the prevalence of urinary incontinence were similar which are 26.4 percent (28) and 26.3 percent (29) respectively. A study by Brown et. al from United States and Buchsbaum et. al from New York showed the highest prevalence of urinary incontinence in postmenopausal women which were 56 percent and 49.6 percent respectively (30, 31) in contrast with a study by Kirss et. al from Estonia showed the lowest

prevalence which were 18.12% (32). Limited study of urinary incontinence among postmenopausal women conducted in ASIAN countries. A study by Hsieh et. al, 2008 conducted in Taiwan revealed the prevalence of urinary incontinence are 29.8 percent (33).

2.3 Associated factors of UI

There are several factors associated with the prevalence of urinary incontinence among adult women. Age was associated with UI as evidenced by a cross-sectional study conducted in France revealed that age more than 50 year are more likely associated with urinary incontinence (OR 1.7,95% CI : 1.3-2.1) (34). Body mass index (BMI) also was associated with UI as the study also found significant association of BMI>25kg/m^2 and urinary incontinence (OR:1.7, 95%CI: 1.4- 2.2) (34). Another factor was parity, the study also showed that number of children (mean of two children) delivered are associated with urinary incontinence (OR:1.5, 95%CI: 1.1-1.9) (34). A cross-sectional study in adult women conducted in HUSM revealed that history of vaginal and forcep delivery are significantly associated with urinary incontinence (OR:3.0, 95%CI: 1.0-9.0) (27). A study by Avellanet et. al reported that lower family income was associated with UI (OR: 2.9, 95%CI: 1.34-6.31) (35). A study by Chyeon et. al showed that women used the squatting type of toilet was associated with UI (OR: 1.18, 95%CI: 1.03-1.36) (4).

There were very limited studies on associated factors of UI among postmenopausal women. A study by Kirss et. al from Estonia showed that there were three associated factors of UI among postmenopausal women which were

less educated women (OR: 3.29, 95%CI: 1.8-6.02), hysterectomy (OR: 1.73, 95%CI: 1.06-2.83) and used of hormone therapy (OR: 1.67, 95%CI: 1.17-2.39) (32). A study by Brown et. al revealed that higher BMI was associated with stress UI (OR: 1.1, 95%CI: 1.0- 1.3) (31). There were three associated factors of UI among postmenopausal women was found in a study by Buchsbaum et. al which were BMI (OR: 1.15, 95%CI: 1.07-1.25), depression (OR: 2.96, 95%CI: 1.21-7.55) and multiple urinary tract infections (OR: 3.37, 95%CI: 1.23-11.06) (30).

2.4 Health seeking behavior

A study by Hannestad et al, 2002 conducted in Norway revealed that percentage of seeking treatment of urinary incontinence among adult women was 26 percent (36). In ASIAN countries, reported percentage of seeking treatment of urinary incontinence among adult women ranged from 29.3% in Malaysia (27) to a low of 6.6% in China (37). Previous evidence investigating health seeking behavior among postmenopausal women with UI was limited in number. Reported percentage of seeking treatment of urinary incontinence among postmenopausal women ranged from 26.1 percent in Netherlands to as low as 7 percent in Japan (28, 29).

2.5 The associated factors of seeking treatment

There were several factors associated with seeking treatment among adult women with UI. The associated factors of seeking treatment among adult women were found by Hannestad et. al were the severity of urinary incontinence (OR: 2.5, 95%CI: 2.0-3.0) and was seen by a doctor in the last 12 months (OR:2, 95%CI:

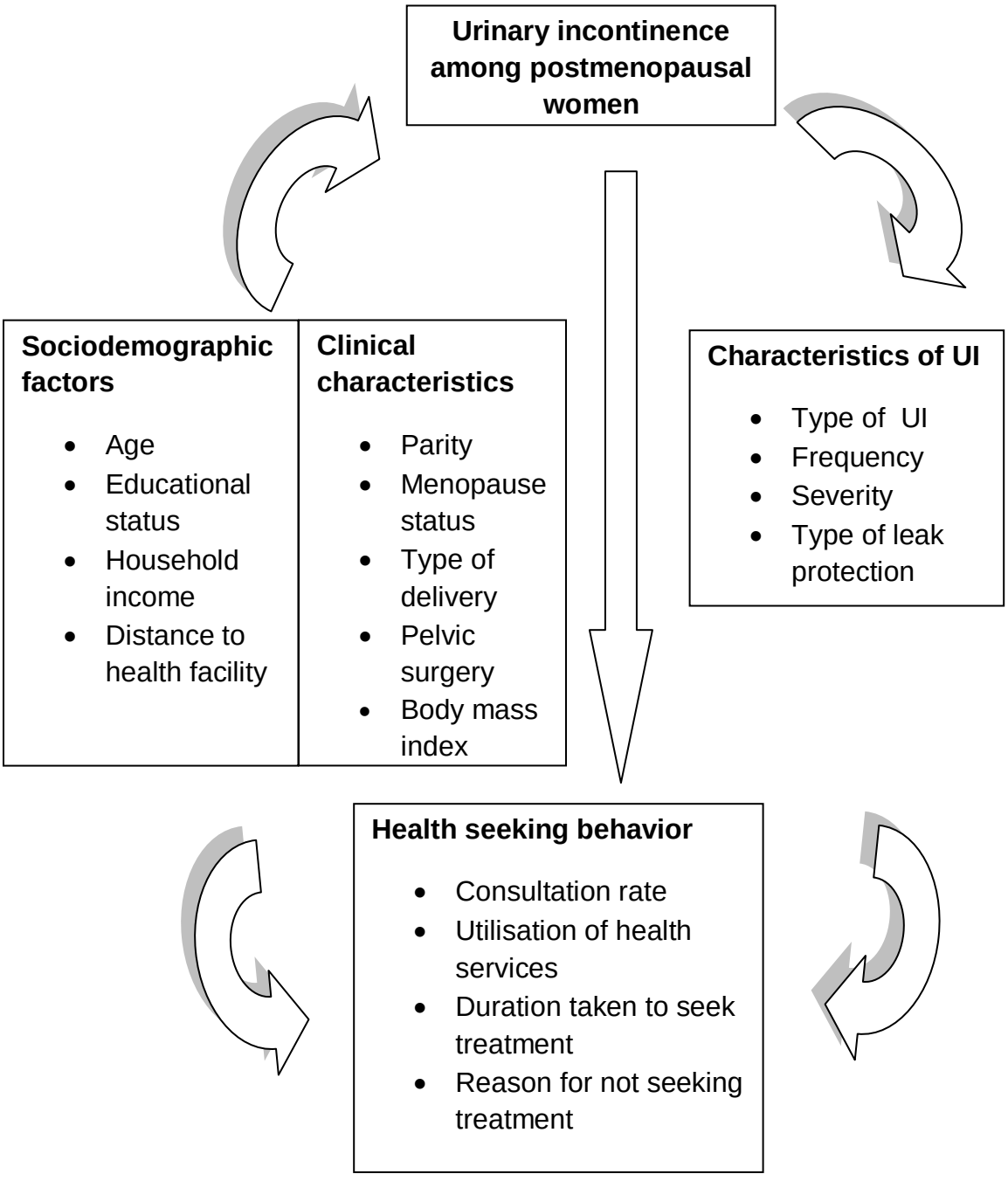
1.5-2.6) (36). Adedokun et. al from Nigeria reported that severity of urinary incontinence (OR: 4.2, 95%CI: 1.24-14.29) and less educated women (OR:4.05, 95%CI: 1.17-13.89) (38) were the associated factors of seeking treatment among adult women. Study by El-Azab et. al from middle East showed that husband encouragement (OR: 4.35, 95%CI: 1.58-11.9) and severe UI (OR: 2.69, 95%CI: 1.37-5.27) were the associated factors of seeking treatment (39). So far, there was no associated factor of seeking treatment among postmenopausal women was examined.

2.6 Effects of UI on women's health and importance of identifying it

UI is common and can adversely effect physical, psychological health and socio-economic aspects of life which later may harm the general health of the patients (24). It was estimated about 87.2% women in Turkey considered that UI have negative impact on their quality of life. Nervousness and anxiety were the most frequent impact (40). Study by Ko et. al showed that UI had a significant impact on both physical and mental aspects of quality of life (41). Other studies also revealed that they were prone to have depression, limited social and sexual function and more dependence on caregivers (16, 42, 43). Study by Sutherst revealed that 46% of women attending a urodynamic clinic experienced reduced frequency of sexual intercourse due to symptoms such as deep dyspareunia, wetness at night and during coitus, embarrassment and depression (44). Furthermore, UI in older women increased risk of falls and non-spine fractures (45) which can adversely affect quality of life and worsened general health of the women.

It is very important to identify UI because it can have considerable impact on quality of life of affected individual as mentioned before. Furthermore, UI can be evaluated in primary care and if treatment is required at this level of care, it will be mostly conservative and of an empirical nature. Referral to the specialized management is required when a diagnosis could not be established or when empirical treatment failed (20).

Figure 1: Conceptual framework



CHAPTER THREE: OBJECTIVES AND RESEARCH HYPOTHESIS

3.1 General objective

To study the proportion of urinary incontinence and the health-seeking behaviour and their associated factors among postmenopausal women attending Outpatient clinic, Hospital Universiti Sains Malaysia (HUSM)

3.2 Specific objectives

1. To determine the proportion of urinary incontinence among postmenopausal women.
2. To determine the factors associated with urinary incontinence in postmenopausal women.
3. To determine proportion of postmenopausal women with urinary incontinence who seek treatment.
4. To describe health seeking behaviour among postmenopausal women with UI.
5. To determine the associated factors of seeking treatment among postmenopausal women with UI

3.3 Hypothesis

1) There are associations between sociodemographic factors and clinical characteristics with urinary incontinence.

2) There are associations between sociodemographic factors and clinical characteristics with health seeking behaviour among postmenopausal women with urinary incontinence.

3.4 Definition of operational terms

Health seeking behaviour is defined as any action undertaken by individual who perceived them to be ill to find help or treatment (22). In this study, health seeking behaviour that has been examined were practice of seeking treatment, which health care provider contacted if seeking treatment, duration taken to seek treatment and reasons of not seeking treatment.

Duration in seeking treatment in this study is defined as time taken by individual who perceived them to be ill to find treatment or medical advice.

Postmenopausal is defined as women who have no menses for the past 12 months (46)

Urinary incontinence is defined as the complaint of any involuntary leakage of urine occurring on at least six days during the previous years (3).

Stress incontinence is defined as involuntary urine leakage on effort or exertion or on sneezing or coughing (2)

Urge incontinence is defined as involuntary urine leakage accompanied or immediately preceded by urgency (a sudden compelling desire to urinate that is difficult to defer) (2)

Mixed incontinence is defined as involuntary urine leakage associated with urgency and exertion, effort, sneezing or coughing (2).

Family income is defined as men or women who are the head of household and members who live with total monthly household income. The income can be received from paid employment, self-employed and income from property and investments (47, 48).

Poorly controlled Diabetes Mellitus is defined as any individual with diagnosis of Diabetes Mellitus presented with symptoms of hyperglycemia.

Psychiatric related illness is defined as any individual with psychiatric diagnosis of mental illness

The number of children is defined as number of children delivered by any women or parity.

The types of delivery is defined as method used to deliver babies whether through vagina, caesarean section, instrumental methods such as forceps or vacuum extraction or combination of any methods.

How long have you had urine leakage? Is defined as duration of experienced urinary incontinence which are less than three months, three months to six months, six months to twelve months, one to five years or more than five years based on study by Zarina et. al (27).

How often do you have involuntary leakage of urine? is defined as frequency of urinary incontinence ranged from hourly, daily, weekly, fortnightly, monthly and occasionally or sometimes (at least six days during the previous years) based on study by Zarina et. al (27).

Severity of bother is defined as how bothersome is the problem to postmenopausal women which ranged from none of the time, very mild, mild, moderate, severe and very severe. It is an individual perception of severity of UI in their daily activities which can affect their quality of life. The classification of severity was taken from study by Zarina et. al (27).

CHAPTER FOUR: METHODOLOGY

4.1 Study design

This was a cross sectional study which has taken 18 months to complete. It was started in February 2015 and ended in June 2016.

4.2 Study area

HUSM is located about six kilometers from Kota Bharu, the capital city of Kelantan, Malaysia. Out-Patient Service in HUSM consisted of a Klinik Rawatan Keluarga (KRK), Specialist Clinic and an Accident and Emergency Unit. This study was conducted in Outpatients Clinics HUSM namely Klinik Rawatan Keluarga. The Klinik Rawatan Keluarga is an out-patient clinic that provides primary care services. Total attendance of patients to this clinic ranged from 200 to 250 patients per day. Attendance of elderly patients per day was about 80 to 90 patients and about 38 to 44 elderly women came to our clinic per day.

4.3 Study population

4.3.1 Reference population

The reference population for this study was postmenopausal women in Kota Bharu, Kelantan

4.3.2 Source population

The source population was postmenopausal women attending outpatient clinic namely Klinik Rawatan Keluarga, HUSM.

4.4 Sampling frame

The sampling frame was postmenopausal women in Klinik Rawatan Keluarga, HUSM who fulfilled the inclusion and exclusion criteria

4.4.1 Inclusion criteria

All postmenopausal women

4.4.2 Exclusion criteria

1. Psychiatric related illness
2. Patient on diuretics
3. Patient with history suggestive of urinary tract infection
4. Poorly controlled Diabetes Mellitus
5. Urological diseases such as bladder cancer or bladder stone
6. Neurological diseases such as stroke or multiple sclerosis

4.5 Sample size determination

Objective 1: To determine the proportion of urinary incontinence among postmenopausal women.

Sample size to determine the proportion of urinary incontinence among postmenopausal women was calculated using a single proportion formula using prevalence from a study by Hsieh et. al from Taiwan. This was chosen because it reflects more on our population since it was from ASIAN country:

$$n = \left[\frac{Z}{\triangle}\right]^2 p(1-p)$$

Where,

n = calculated sample size

p = prevalence of urinary incontinence among postmenopausal women based on study in Taiwan = 0.29 (33)

$\triangle$ = Precision = 0.1 (10%)

Z= 1.96 for 95% CI

$n= (1.96/0.1)^2 \text{ X } 0.29 \text{ X } 0.44$

= 316

Hence total sample size should be 316 + 10% non-response, it should be 348 samples.

Objective 2: To determine the factors associated with urinary incontinence in postmenopausal women

Sample size was calculated using Power and Sample Size Calculation Software for objective two. For association between urine incontinence and education, the sample size was calculated using independent dichotomous relative risk outcome with uncorrected chi-squared test.

Parameters used in calculation of sample size for association between urinary incontinence and education were:

alpha = 0.05

power = 0.8

Po = 0.1 (the proportion of not less educated women with urinary incontinence) based on expert opinion

OR = 3.29 (relative risk of less educated women to have UI) from a study by Kirss (32).

m = 1 (case: control = 1:1)

Sample size = 83 x 83 = 166

After considering 10% non-response: 166 + 10% = 183 samples

Objective 3: To determine proportion of postmenopausal women with urinary incontinence who seek treatment.

Single proportion formula is used:

$$n = \left[\frac{Z}{\triangle}\right]^2 p(1-p)$$

Where,

n = calculated sample size

p = proportion of seeking treatment among postmenopausal women with UI in Netherlands = 0.26 (28)

$\triangle$ = Precision = 0.1 (10%)

Z= 1.96 for 95% CI

$n= (1.96/0.1)^2 \text{ X } 0.29 \text{ X } 0.44$

= 296

Hence total sample size should be 296 + 10% non-response should be 325 samples.

Objective 5: To determine the associated factors of seeking treatment among postmenopausal women with UI

Sample size was calculated using Power and Sample Size Calculation Software for objective five. For association between seeking treatment and severe UI, the sample size was calculated using independent dichotomous relative risk outcome with uncorrected chi-squared test.

Parameters used in calculation of sample size for association between seeking treatment and severe UI were:

alpha = 0.05

power = 0.8

Po = 0.1 (the proportion of not having severe UI with seeking treatment), based on expert opinion

OR = 2.5 (the relative risk of severe UI with seeking treatment based on study in Norway (36)

m = 1 (case: control = 1:1)

Sample size = 100 for each group

After considering 10% non-response; 200 + 10% = 220 samples

Therefore the estimated sample size for this study was from the objective 1, the highest number = 348 subjects.

4.6 Sampling method

Convenience sampling was applied in this study where any postmenopausal women who fulfilled the study criteria were selected.

4.7 Research tools

Data collection was done by using :

1. Pilot study on part three of Questionnaire Survey formulated by APCAB
2. Questionnaire Survey formulated by APCAB
3. Anthropometric measurement

4.7.1 Pilot Study on part three of Questionnaire Survey formulated by APCAB

Questionnaire Survey formulated by APCAB Malay version was derived from questionnaire survey formulated by a panel of experts from the Asia-Pacific Continence Advisory Board (APCAB), validated in the previous study by Zarina et. al (27) with Cronbach's alpha 0.64. The principle aim of the Questionnaire Survey formulated by APCAB was to provide prevalence of UI, type of urinary incontinence, characteristics of UI, prevalence of overactive bladder and health seeking behaviour in Asia. However in this study, the questions that have been used only focus on UI.

The questionnaire consisted of three parts which are sociodemographic factors, characteristics of urinary incontinence and health seeking behavior respectively. There are two questions regarding health seeking behavior in the Questionnaire Survey formulated by APCAB. The two questions are about practice of seeking treatment and which health care provider contacted if seeking