

**PREVALENCE OF SEXUAL DYSFUNCTION AND  
ASSOCIATED FACTORS AMONG ESSENTIAL  
HYPERTENSIVE WOMEN ATTENDING  
HYPERTENSIVE AND OUT-PATIENT CLINICS,  
HUSM**

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## **ABBREVIATIONS**

ACE I	Angiotensin converting enzyme inhibitor
ARB	Angiotensin receptor blocker
BMI	Body mass index
BP	Blood Pressure
CCB	Calcium channel blocker
DM	Diabetes mellitus
FSD	Female sexual dysfunction
FSFI	Female Sexual Function Index
HPL	Hyperlipidaemia
HPT	Hypertension
HUKM	Hospital Universiti Kebangsaan Malaysia
HUSM	Hospital Universiti Sains Malaysia
LR	Logistic regression
MVFSFI	Malay Version of Female Sexual Function Index
ROC	Receiver Operating Characteristics
UI	Urinary incontinence

## **ABSTRACT**

### **PREVALENCE OF SEXUAL DYSFUNCTION AND ASSOCIATED FACTORS AMONG ESSENTIAL HYPERTENSIVE WOMEN ATTENDING HYPERTENSIVE AND OUT-PATIENT CLINICS, HUSM**

**Objective** To determine the prevalence of sexual dysfunction and associated risk factors in hypertensive women.

**Research Design and Methods** Data was collected from 348 hypertensive women in the Hypertensive and Out Patient Clinic of Hospital Universiti Sains Malaysia using Malay Version of Female Sexual Function Index. Socio-demographics, marital profiles, obstetric and gynaecological problems, presence of hypertension, presence of other medical illness and husband chronic illness were recorded.

**Results** The prevalence of sexual dysfunction among hypertensive women was 21.3% (95% CI: 17.00, 25.60). Desire disorder was reported as the highest percentage (42.8%), followed by lubrication disorder (24.1%), arousal disorder (22.7%), satisfaction and sexual pain disorder (19.0%) and orgasm disorder (14.1%). Less frequent sexual intercourse, lack of satisfaction with husband's sexual performance, unhappy marriage, having urinary incontinence and ACE I administration were significant associated factors for sexual dysfunction in hypertensive women.

**Conclusion** The result showed that almost 1 in 5 hypertensive women suffered from sexual dysfunction. This indicates that sexual dysfunction is a major public health concern and health care providers should be more serious in evaluating this issue.

## ABSTRAK

PREVALEN DAN FAKTOR-FAKTOR YANG BERKAITAN DENGAN MASALAH FUNGSI SEKSUAL DALAM KALANGAN WANITA BERPENYAKIT DARAH TINGGI DI KLINIK HYPERTENSI DAN KLINIK PESAKIT LUAR, HUSM

**Objectif** Menentukan prevalen masalah fungsi seksual dalam kalangan wanita yang mengidap darah tinggi, menentukan jenis masalah fungsi seksual dan factor-faktor yang menyumbang kepada masalah fungsi seksual dalam kalangan wanita berkenaan.

**Metodologi** Data kajian telah diperoleh daripada 348 wanita yang mengidap darah tinggi di Klinik Hypertensi dan Klinik Pesakit Luar di Hospital Universiti Sains Malaysia, menggunakan Index Fungsi Seksual Wanita. Latar belakang sosio ekonomi, latar belakang perkahwinan, sejarah kesihatan wanita (obstetrik dan gynaecologi), status darah tinggi dan masalah penyakit yang lain serta status kesihatan suami telah direkodkan.

**Keputusan** Prevalen masalah fungsi seksual dalam kalangan wanita yang mengidap darah tinggi adalah 21.3% (95% CI: 17.00, 25.60). Masalah dengan keinginan seks dilaporkan sebagai peratus yang tertinggi (42.8%), diikuti oleh masalah pengeluaran cecair faraj (24.1%), masalah keghairahan seksual (22.7%), masalah kepuasan seksual dan masalah kesakitan semasa hubungan seks (19.0%) dan masalah untuk mencapai klimaks (14.1%). Kurang melakukan hubungan seks, kurang kepuasan dengan prestasi pencapaian seks suami, perkahwinan yang tidak bahagia, masalah tidak dapat mengawal air kencing dan pengambilan ACE I adalah factor-faktor yang menyumbang kepada masalah fungsi seksual dikalangan wanita mengidap darah tinggi.

**Kesimpulan** Keputusan menunjukkan seorang daripada lima wanita yang mengidap darah tinggi mengalami masalah fungsi seksual. Ini menunjukkan masalah fungsi seksual ini adalah satu masalah yang besar yang perlu di ambil berat oleh semua. Warga kesihatan perlu lebih pro-aktif dalam mengkaji masalah ini dikalangan pesakit supaya ianya dalam ditangani ketika masih diperingkat awal.

# **CHAPTER ONE**

## **INTRODUCTION AND LITERATURE REVIEWS**

### **1.1 Overview**

Hypertension is a significant global public health challenge. This is because of its high prevalence and associated risks of cardiovascular, cerebrovascular and kidney diseases. It is the third cause of disability and the leading risk factor for mortality <sup>(1)</sup>. About 25% of the adult population worldwide (nearly one billion) had hypertension in 2000, and this percentage will increase to 29% (1.56 billion) by 2025 <sup>(1)</sup>.

Worldwide, approximately 7.1 million deaths per year may be caused by hypertension and sub-optimal BP is accountable for 62% of cerebrovascular disease and 49% of cardiovascular disease <sup>(2)</sup>.

In Malaysia, hypertension is also a major public health problem. In 1986, the First National Health and Morbidity Survey showed that 14.4 % of adults aged 25 years and above suffer from hypertension in Peninsular Malaysia<sup>(2)</sup>. In 1996, the prevalence increased to 33% and the majority of the patients (67%) were unaware that they had hypertension. In terms of gender, females predominated from the age of 40 years onwards and Malay women had significantly higher prevalence of hypertension <sup>(2)</sup>.

Hypertension does not only affect the brain, heart and kidneys, but it also will affect sexual function of the person. Many studies have been done and documented the effect

of hypertension on sexual function in men <sup>(3, 4)</sup>. However, little interest has been given to the effects of hypertension on female sexuality and sexual function.

For decades, sexuality was considered a taboo subject and most women who suffered from it just keep silent. In recent years, sexuality has been discussed more openly internationally. Widespread discussion and research on this topic have been done and interest in male and female sexuality has increased. However, despite this rising interest, women's sexuality particularly for midlife and older women remain less understood and less studied compared to that of men. Laumann, Paik and Rosen stated that, even though the prevalence of female sexual dysfunction was high and appears to override male sexual dysfunction, not much attention has been given to it and most of the theories and beliefs about female sexuality are still inconclusive <sup>(5)</sup>.

Many women might not be aware of the availability of treatment for sexual dysfunction. As the cause of female sexual dysfunction can be complicated, all possible contributing factors should be revised in order to initiate a specific treatment. Treatment of female sexual dysfunction could be in the form of reducing substances that may interfere with sexual function. In addition to that, sex education or psychotherapy, and pharmacological treatment are also available <sup>(6)</sup>. Among pharmacotherapy treatments available in treating female sexual dysfunction are hormone replacement therapy, Sildenafil and sustained release Bupropion <sup>(6)</sup>.

## **1.2 Female Sexual Dysfunction**

Female sexual dysfunction (FSD) is a problem combining a variation of factors involving biological, psychological and interpersonal determinants. It is a prevalent

issue, but as yet, not much study has been done compared with male sexual dysfunction. Perhaps one of the major barriers is lack of a well defined diagnostic framework and classification of female sexual dysfunction <sup>(7)</sup>. Historically in many cases, psychiatrists and sex therapists have perhaps diagnosed and treated these disorders, according to limited perspectives based on literatures in psychiatric field.

According to DSM-IV, published in 1994, female sexual disorder is “disturbances in sexual desire and in the psychophysiological changes that characterize the sexual response cycle and cause marked distress and interpersonal difficulty”<sup>(8)</sup>. Later, a broader definition brought up in ICD 10 in which the outcome criteria is, the lack of ability to take part in a sexual relationship as he or she would expect. In 1998, a consensus was made after a panel meeting between nine expertises in FSD, proposed a modified definition of female sexual dysfunction. In this new consensus, the classification expanded to include organic and psychogenic cause in the categories involved which are: desire, arousal, orgasmic disorders and sexual pain disorders <sup>(7)</sup>.

Sexual desire disorder can be divided into two categories which are hypoactive sexual disorder and sexual aversion disorder. Hypoactive sexual desire disorder is defined as “the persistent or recurrent deficiency (or absence) of sexual fantasies/thoughts, and /or desire for/or receptivity to sexual activity, which causes personal distress”<sup>(7)</sup>. Sexual aversion disorder is “the persistent or recurrent phobic aversion to and avoidance of sexual contact with a sexual partner, which causes personal distress”<sup>(7)</sup>.

Sexual arousal disorder is the persistent or recurrent lack of ability to achieve satisfactory sexual excitement, causing personal distress. This may be shown by lack of

pleasure, or genital responses <sup>(7)</sup>. Orgasmic disorder is the persistent or recurrent difficulty in achieving and maintaining orgasm following sufficient sexual stimulation and arousal, causing personal distress <sup>(7)</sup>.

Sexual pain disorders are divided into three categories. First is dyspareunia which is the recurrent or constant genital pain related with sexual intercourse. Second is vaginismus which is the recurrent or constant spontaneous spasm of vaginal, which will lead difficulty in penetration. Third is noncoital sexual pain disorder which is recurrent or constant genital pain induced by noncoital sexual stimulation <sup>(7)</sup>.

### **1.3 Female Sexual Dysfunction and Hypertension**

Sexuality is a complex process, coordinated by various factor including psychological, neurological and vascular<sup>(9)</sup>. Hypertension is known to cause vascular disease throughout the body and its organs. It stands to reason that hypertension can also affect vascularisation to the genital area, resulting in damage to its blood vessels and decreased blood flow <sup>(9)</sup>. Physiologically, lubrication will take place once arousal sets the blood running through the vessels in the genital area. Once a woman is aroused sexually, the genital blood vessel becomes congested due to increased in blood flow. However, if the blood vessels are affected by hypertension, it may result in decreased lubrication and dyspareunia<sup>(9)</sup>.

Generally, it is well accepted that the prevalence of sexual dysfunction in a diseased population would be higher than in the healthy population. However, not much data is available for sexual dysfunction in hypertensive women and it is far from conclusive<sup>(10)</sup>.



Only a few studies have been done looking into female sexual dysfunction among women with hypertension.

In 1997, Richard et al proposed Treatment of Mild Hypertension Study (TOMHS) involving men and women with stage 1 diastolic hypertension <sup>(3)</sup>. It was a randomized controlled trial involving 902 hypertensive individuals. In this study, 557 of them are men and 345 are women, aged 45-69 years, treated with placebo or one of the five active drugs. It showed that, in long term the incidence of erection problems in men is relatively low but is higher with beta blocker treatment. However, the rate was low in women with hypertension (4.9%) and it was hypertension per se that resulted in sexual dysfunction rather than anti hypertensive medication <sup>(3)</sup>.

Basil and Ndudim did a study on female Nigerian hypertensives and found out that six out of 44 (13.6%) of newly diagnosed and not yet on treatment, five out of 29 (17.2%) in known hypertensive on Thiazides and two out of 43 (4.7%) of control group reported sexual dysfunction. The commonest aspect encountered was reduced desire for intercourse<sup>(11)</sup>.

In 2006, Dr Michael Doumas performed a study that evaluated sexually active Caucasians aged 31 to 60 years using Female Sexual Function Index questionnaires. 417 women were involved; in which 216 had hypertension (136 treated, 80 untreated) and 201 subjects were without hypertension <sup>(12)</sup>. 42.1% of women with hypertension had FSD compared to 19.4% of normotensive women. Among those with hypertension, FSD was more frequent in treated women especially with B Blocker, inadequate control of hypertension, older age and longer duration of illness <sup>(12)</sup>.

In Malaysia, no study had been done as yet with regard to sexual dysfunction among hypertensive women and the issue of sexual dysfunction itself is not widely discussed. Furthermore, none of the studies done abroad looked specifically into the associated factors involved such as on marital aspects (duration of marriage, husband's health status etc), obstetric and gynaecological factors (number of life children, methods of delivery etc) and concomitant medical problems.

#### **1.4. Female Sexual Dysfunction in general population**

Female sexual dysfunction is highly prevalent, affecting 20% to 50% of women <sup>(7)</sup>. In Malaysia, two studies were done involving women in Kuala Lumpur, the capital city of Malaysia. Sidi H et al studied this issue in 230 married women aged 18-70 years in 2007. The prevalence of FSD among normal population was 29.6 % <sup>(13)</sup>. The sexual pain disorder is in the higher percentage (67.8%) compared to other categories, which were lack of orgasm 59.1%, low sexual arousal 60.9%, lack of lubrication 50.4% and sexual dissatisfaction 52.2%. The risk factors involved are older age, Malay, infrequent sexual intercourse (less than 1-2 times a week), long duration of marriage (more than 14 years), married to an older husband (aged > 42years), having more children and having a higher academic status <sup>(13)</sup>.

In 2010, Izan IH did a study in a tertiary hospital-based primary care clinic in Kuala Lumpur. It was reported that 25.8% of the women suffered from sexual dysfunction, and desire problem (39.3%) was at the highest percentage followed by arousal problem (25.8%), lubrication problem (21.5%), orgasm problem (16.6%), satisfaction problem (21.5%) and pain problems (16.6%)<sup>(14)</sup>. However, another study done by Rawa et al in

Kelantan, the same location as this current study, showed that the prevalence was 20.0%, which was lower than the above study. The significant factors associated with FSD were marital disharmony, presence of hypertension and infrequent sexual intercourse <sup>(15)</sup>.

Internationally, in 1992, Laumann et al. had done a study conducted in the United States that evaluated sexual problems in 1749 women and 1410 men aged 18 till 59 years old. The study showed that sexual dysfunction is more prevalent within women (43%) than men (31%), and it is associated with various demographic characteristics which include age and educational level <sup>(5)</sup>. He found that 24.1% of women had problems with orgasm and 18.8% had trouble lubricating. Interestingly, married women were less likely to have problem in achieving orgasm (21.9%) than those who had never married (26.6%) or were divorced (28.6%) <sup>(5)</sup>. The level of education was one of the associated factors in which 13.3% of those with a master's or advanced degree had fewer problems in getting orgasm than those who were not completing high school (30%). Similarly, women with high incomes (20.8) had fewer problems in achieving orgasm than those with low incomes (27.4%). Interestingly, these findings were reversed in arousal problem <sup>(5)</sup>. Another study done among American Women in 1999 by the American Medical Association reported that nearly 43% of them affected by sexual dysfunction. It showed that women aged less than 20 and more than 50 reported to have problems with satisfaction, orgasm and arousal, and sexual function decreases as women age increases <sup>(16)</sup>

In Lower Egypt, a study done on one thousand married women aged 16 to 49 years found that 68.9% of women had sexual dysfunction; 31.5% of women suffered from dyspareunia, 49.6% had decreased in sexual desire, 36% had difficulty in arousal and

16.9% had anorgasmia<sup>(17)</sup>. Safaraniad MR did evaluate female sexual dysfunction in 2626 women in Iran. He noted that 31.5% had the dysfunction with 37% had orgasmic disorder, 35% desire disorder, 31% desire disorder and 26.7% had pain disorder<sup>(18)</sup>. In Brazil, among 1219 women, 49% had at least one component of sexual disorder. Among them, 26.7% had reduce in sexual desire, 23.1% had dyspareunia and 21% had orgasmic dysfunction. None reported having arousal disorder <sup>(19)</sup>.

### **1.5 Female Sexual Dysfunction in chronic diseases**

Among chronic diseases, the presence of diabetic mellitus is the most studied area for female sexual dysfunction. Rawa et al did a study among women with diabetes mellitus in Kelantan population, one of state in Malaysia and it was reported that the prevalence was 26.4%. The significant associated factors were increasing age, married more than 20 years, unhappy marriage, husband with hypertension and duration of diabetes <sup>(15)</sup> .

Few studies on the presence chronic heart failure showed a significant effect on sexual dysfunction. In a study done in USA on 62 patients with a mean age of 53 years old who had been diagnosed with chronic heart failure, 75% of them reported a significant reduction in sexual interest<sup>(20)</sup>. They associated the sexual dysfunction as directly correlated with symptoms of heart failure<sup>(20)</sup>. In another study by the same author using a different population (European population), he found that the prevalence was lower than USA population but still significant<sup>(21)</sup>. 48% of them showed marked reduction in sexual interest with 33% claimed not having any sexual activity <sup>(21)</sup>.

The impact of chronic kidney diseases on female sexual function is still understudied. In a systematic review and meta-analysis of 50 observational studies, the prevalence of men sexual dysfunction (specifically erectile dysfunction) was 70% (95% CI, 62%-77%, 21 studies). Whereas for women, it was only gathered from 2 studies and showed the prevalence ranged from 30% to 80%. However, the result were significantly lower in FSFI score compared with normal population <sup>(22)</sup>.

### **1.6. Risk Factor for Female Sexual Dysfunction**

Female sexual dysfunction is a complex integrity which does not only involve physiological processes such as neurotransmitter factor, influence of sex hormones and genital response towards stimulus. It is also associated with interpersonal, psychological, medical, social and cultural factors <sup>(23)</sup>.

#### **1.6.1 Age factor**

The prevalence of female sexual dysfunction appears to increase with age. However, findings of previous studies regarding impact of age on women are quite inconsistent. In Malaysia, Sidi H et al identified increasing age as a significant risk factor <sup>(13)</sup>. This is supported by Ishak et al in a study on primary care setting and showed that older age had a significant impact on sexual function (OR 4.1, 95% CI 1.9-9.0)<sup>(14)</sup>. In a study done among Brazilian women aged 18 years and above, at least one type of sexual dysfunction in 57.4% of women 41 years old age, particularly in lacking of sexual desire and sexual dysfunction <sup>(19)</sup>. This is further supported by Safarinejad et al who did a study among Iranian women and noted that increase in age is significantly correlated with incidence of sexual dysfunction <sup>(18)</sup>. A study by Castelo-Branco et al found that

66% of women aged 60-64 years old had sexual dysfunction, which was three times more than women aged 40-44 year olds <sup>(24)</sup>. In contrast, Ismail et al in a study on a normal population in Kelantan reported that age was not associated with FSD <sup>(15)</sup>. Witting et al also noted that age is not related with female sexual dysfunction <sup>(25)</sup>. Laumann et al found that there was reducing prevalence of sexual dysfunction with age except for lubrication problems <sup>(5)</sup>.

### **1.6.2 Psychological, social and cultural factors**

These factors could contribute towards sexual dysfunction in many ways and it could also influence the way a person manifests the dysfunction. Psychological factors such as the perception of body image, the feeling of self-esteem, the quality of intimate relationship with the spouse and presence of emotional instability such as anxiety and depression might influence women's sex life <sup>(26, 27)</sup>. Socio-cultural factors such as upbringing, the value and expected relationship with partners in the society, the awareness and attitudes about sexual issues and the value of family and religion would contribute towards the integrity of sexual function <sup>(27)</sup>. Faith and Schare did a study on undergraduate and graduate students (108 male and 140 female) and results showed that body image significantly influenced frequency of sexual behaviors for both genders <sup>(27)</sup>.

### **1.6.3 Menopausal status**

Menopausal status is shown to have negative impact on sexuality <sup>(5, 24)</sup>. During menopausal transition, there is a significant reduction in estrogen levels while androgen levels slowly decline starting as early as 25-30 years of age<sup>(28)</sup>. The Melbourne Women's Midlife Health Project which was a prospective observational population-based study reported prevalence of sexual dysfunction in menopausal group to be as

high as 88%<sup>(29)</sup>. They also found that reduction in serum estradiol was associated with reduction in sexual desire and sexual responsivity <sup>(29)</sup>. Safarinejad MR in a population-based study in Iran also showed significant association between menopausal status with FSD <sup>(18)</sup>.

#### **1.6.4 Marital condition**

Several studies have shown association of marital factors with sexual dysfunction in women. In a study done on a healthy population of women in Malaysia, Sidi H et al reported that factors such as duration of marriage of more than 14 years, high parity, having less sexual intercourse and husband aged more than 42 years were contributing factors for sexual dysfunction <sup>(13)</sup>. Ismail A et al in a study on Kelantanese women also found that unhappy marriage was significantly associated with sexual dysfunction, whereas more frequent sexual intercourse was a protective factor against sexual dysfunction <sup>(15)</sup>. This is supported by Laumann et al who did a study on adult American women which showed that women who were dissatisfied with their sexual partner had a significantly poor sexual desire, increased arousal disorder and sexual pain disorder <sup>(5)</sup>.

#### **1.6.5 Chronic disease**

Chronic illness such as hypertension, diabetes mellitus, chronic renal failure are a slow progressive process in which the effect on sexuality could occur insidiously. Many people with chronic illness and at the same time, still having intimate relationship, are not aware of their risk to have sexual dysfunction and probably not aware of treatment available. This will lead to development of myth and misconception in the issue of sexual dysfunction <sup>(26)</sup>. In a patient with chronic illness, sexual activity can act as a comfort, pleasure and intimacy while dealing with non-end issues in chronic disease.

The effect of chronic illness on hormonal, vascular, and neural component of genitalia together with the side effects of medications could alter sexual expression and later can lead to sexual dysfunction<sup>(26)</sup>. Certain antihypertensive drugs give negative impact on sexual dysfunction such as diuretics, B blockers and centrally acting drugs<sup>(30)</sup>. Selective serotonin reuptake inhibitor which is used in treating depression and anxiety disorder is known to cause reduction in sex drive and difficulty in having orgasm<sup>(31)</sup>. Another class of medication is antidepressant. At the same time, conditions like cancer, lung disease, arthritis and mental illness can lead to lack of energy, physical ability and persistent pain<sup>(32)</sup>. This will give effect on sexual function and interest<sup>(32)</sup>. Surgical and medical treatment such as mastectomy, colostomy, scarring from amputation and tracheostomy can affect appearance and physical function and this can limit patient's sexual satisfaction<sup>(26)</sup>.

### **1.7 Assessment of female sexual dysfunction**

Diagnosis of female sexual dysfunction has been a challenging issue and it is one of the reasons for inadequate research done in this area. There is poorly defined distinction between normal and abnormal sexual function, and its ability to incorporate subjective findings into objective. A variety of measurements have been developed for assessing FSD. Physiological measurements (such as vaginal blood flow or clitoral engorgement) are available for quite a duration of time, but it is not suitable in a large-scale clinical trials<sup>(33)</sup>.

A number of self report or questionnaires have been developed and it has been a cornerstone in the assessment of FSD. There are a few questionnaires available with its



own advantages and disadvantages. Among them are Brief Sexual Function Index for Women (BSFI-W), McCoy Female Sexuality Questionnaire (MSFQ) and Female Sexual Function Index (FSFI).

Brief Sexual Function Index for Women (BSFI-W) is a 22-item questionnaire to assess the function and the degree of satisfaction of female sexuality. It assesses sexual function in seven dimensions: sexual thoughts/desires, arousal, frequency of activity, receptivity/initiation, pleasure/orgasm, relationship satisfaction, and sexual problems. It takes about 10 to 15 minutes to complete the items. Major advantages of this questionnaires are it is simple in term of administration and scoring, and it is suitable for use in both clinical and non-clinical samples<sup>(34)</sup>.

The McCoy Female Sexuality Questionnaire (MFSQ) is designed to measure the influence of changes in sex hormone levels onto female sexuality. It is focused on 2 factors which are sexuality (9 items) and partnership (5 items), which include sexual interest, satisfaction with sexual activity frequency, vaginal lubrication, sex partner and orgasm. It takes about 10-15 minutes to complete this questionnaire <sup>(35)</sup>.

Female Sexual Function Index (FSFI) is a concise (19-item) self-report questionnaire which evaluates sexual functioning in women in six separate dimensions (desire, arousal, lubrication, orgasm, satisfaction, pain). In addition, a total scale score can be computed according to a simple scoring algorithm. It contains 19 items which take 10-15 minutes to complete the questionnaire <sup>(36)</sup>. It has been validated in women with a range of sexual disorders and in women with normal sexual function. It has shown to have good discriminates validity, internal consistency and test-retest reliability <sup>(37)</sup>. FSFI

has been translated in different languages and validated in other populations including Malaysia. In Malaysia, FSFI was validated and translated as Malay Version Female Sexual Function Index (MVFSFI) by Dr Hatta Sidi et al in 2007 <sup>(38)</sup>. In this study, FSFI was chosen as it is the only questionnaire that has been translated and validated into Malay language.

### **1.8 Justification of study**

Previous studies gave inconclusive data on the impact of hypertension on female sexual dysfunction. By knowing the data, we expect to help patient better in managing the problem. At the same time, we are going to determine the type of sexual dysfunction domain in hypertensive women so that intervention or treatment, such as in the case of lack of lubrication where estrogen cream can be given before the problem erupts into a bigger problem. As sexual life is an essential part contributing towards integrity in marriage, by doing this study, we expect to be able to save the marriage of persons who suffer from dysfunction of sexuality. Another reason is that, literatures available are mainly western data, even though some of them have shown the predicted risk factors involved, we still need to obtain a locally oriented data that represent our own populations who have a different sociodemographic background compare to western population. Sexual dysfunction is a recognized association with hypertension in men <sup>(4)</sup>. Considerable research has been conducted into the effects antihypertensive drugs on male sexual functioning . However, this remains under-explored in women and the data available are still lacking, even though almost half of treated hypertensive are women. In Malaysian communities, the issue of female sexual dysfunction is rarely discussed either by the patient or the health care provider. There are several reasons involved such

as social barriers and traditional beliefs that open discussion about sex is a taboo. Females are more reserved in our culture and less likely to express such a sensitive subject. Therefore, this study hopefully will make the health care provider aware about sexual problems which do exist in hypertensive women as much as it has been highlighted in men. This study also aims to enlighten the health care practitioner about the questionnaire available in the English and Malay languages to help in assessment of female sexual dysfunction.

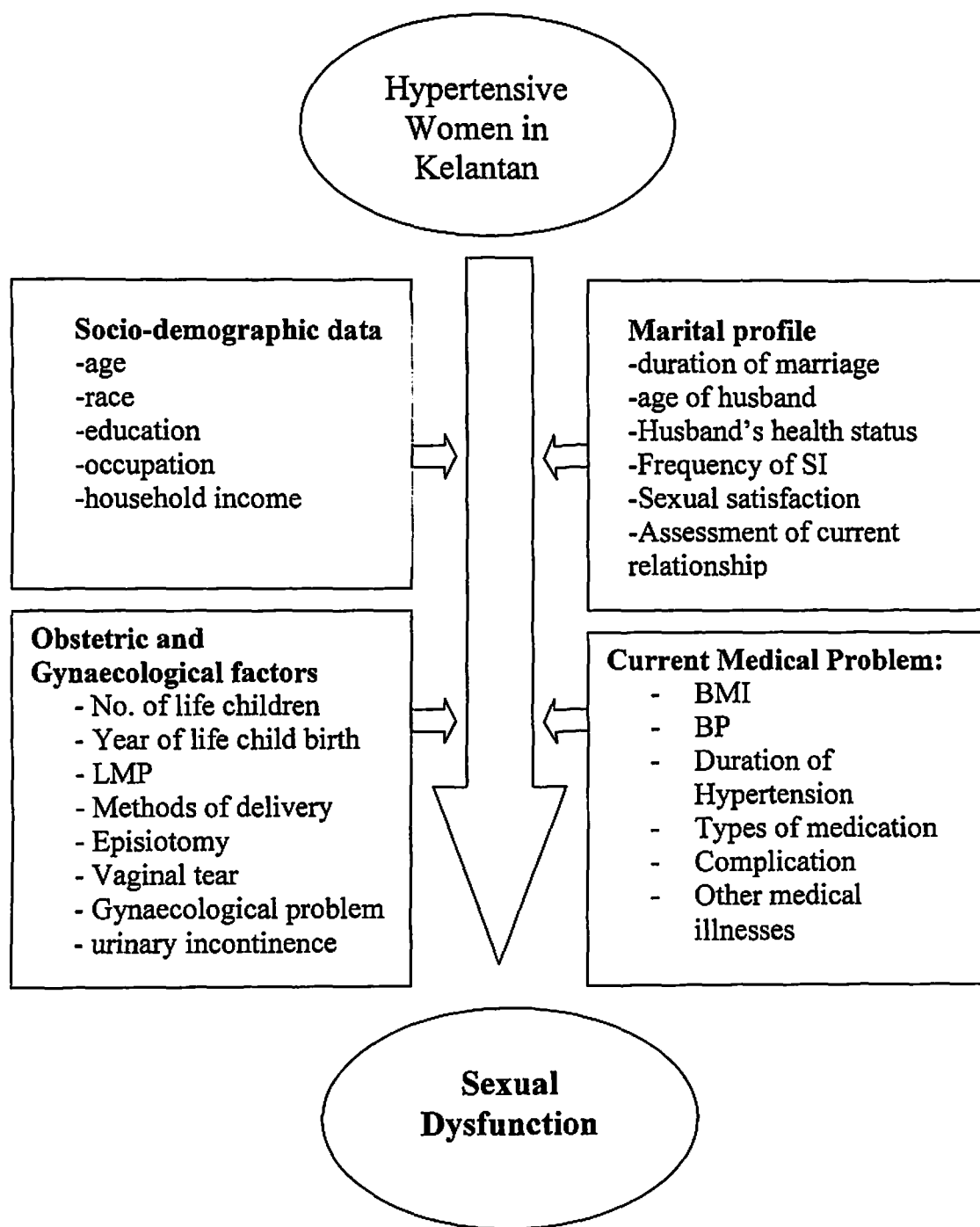


Figure 1. Theoretical framework of the study

## **CHAPTER TWO**

### **OBJECTIVES AND RESEARCH HYPOTHESES**

#### **2.1 General Objective**

To determine the prevalence of sexual dysfunction and associated factors among hypertensive women

#### **2.2 Specific objectives**

1. To determine the prevalence of sexual dysfunction among hypertensive women attending Hypertensive Clinic (Klinik Pakar Perubatan) and Klinik Rawatan Keluarga (K RK), HUSM.
2. To determine associated factors for sexual dysfunction among hypertensive women attending Hypertensive Clinic (KPP) and Klinik Rawatan Keluarga (K RK), HUSM.

#### **2.3 Hypothesis**

Socio-demographics, marital profiles, obstetric and gynaecological problems, presence of hypertension, presence of other medical illness and husband chronic illness are significant associated factors of sexual dysfunction among hypertensive women.

## 2.4 Definition of operational terms

**Body mass index** is calculated by  $\text{Weight (kg)}/\text{Height}^2 \text{ (m)}^2$ . Underweight is less than 18.5kg/m<sup>2</sup>, normal weight 18.5-22.9kg/m<sup>2</sup> and overweight is more or equal to 23kg/m<sup>2</sup> <sup>(39)</sup>.

**Female sexual dysfunction** is defined as various ways in which an individual is unable to participate in a sexual relationship as she wish, which include decrease in sexual desire, difficulty to achieve orgasm and pain during intercourse <sup>(40)</sup>.

**Hypertension** is defined as persistent elevation of systolic BP of 140 mmHg or greater and/or diastolic BP of 90 mmHg or greater, on the average of two or more readings taken at two or more visits to the doctor <sup>(41)</sup>. Target blood pressure for hypertensive patient is less than 140/90mmHg.

**Primary (essential) hypertension** is the term applied to the 95% of cases in which no cause for hypertension can be identified. The onset is usually between ages 25 and 55 years old <sup>(42)</sup>.

**Post menopausal** is defined as absence of menses after 12 consecutive months of amenorrhea, either natural or induced <sup>(43)</sup>.

**Psychiatric illness** is defined as already been diagnosed or treated for psychiatric problem such as depression, anxiety, obsessive compulsive disorder and psychosis.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Study design**

Cross sectional study

#### **3.2 Study population and sample**

##### **3.2.1 Reference population**

All hypertensive women in Kota Bharu, Kelantan

##### **3.2.2 Source population**

Hypertensive women attending Hypertensive Clinic and Klinik Rawatan Keluarga, HUSM

##### **3.2.3 Study population**

Those who fulfill inclusion and exclusion criteria

Inclusion criteria:

1. Female patient age 35 to 65 years old
2. Had essential hypertension based on WHO criteria for diagnosis , on medication or on diet control
3. Had been diagnosed of essential hypertension for more than 1 year
4. Married and sexually active

## Exclusion criteria

1. Known active psychiatric problem
2. Unable to understand Malay
3. Bedridden secondary to other chronic illness such as severe stroke, heart failure or end stage renal failure

### 3.2.4 Sampling Method

A systematic random sampling in a ratio 1:2 based on the attendance list from the clinics.

### 3.2.5 Sample Size calculations

**Objective 1** was to determine the prevalence of sexual dysfunction among hypertensive women in HUSM. Sample size was calculated using single proportion formula (Danial, 1999)

$$n = \frac{(Z\alpha)^2 \times P(1-P)}{\Delta^2}$$

n = minimum required sample

$Z\alpha$  = value of normal standard distribution = 1.96

$\Delta$  = precision = 0.05

P = prevalence of sexual dysfunction among female hypertension in Greece = 0.42 <sup>(12)</sup>

Based on previous study, the prevalence of sexual dysfunction among female hypertensive patient at Greece was 42.0% <sup>(12)</sup>. Taking the precision at 0.05 at 95% confidence interval, the minimum required sample size was 375. The precision was set



at 0.05 after considering its clinical importance and feasibility of the study. After considering the non-response rate of 10%, the sample size calculated was 413.

However, after discussion with our expertise in this area, Professor Hatta Sidi, he had estimated the prevalence of sexual dysfunction among hypertensive women in Malaysia is much lower. Since there was no available data for sexual dysfunction among hypertensive women in Malaysia, the nearest reference was prevalence in general population, which was 29.6% <sup>(13)</sup>. Using the single proportion formula as above, the minimum sample size was 321 and after considering 10% non response, the calculated sample size was 353.

**Objective 2** was to determine the associated risk factors for female sexual dysfunction among female hypertensive patient. Sample was calculated using Power and Sample Size Calculation software (Dupont and Plummer, 1997). The parameters were as follow:

$$\alpha = 0.05$$

$$\text{power} = 0.8$$

$$P_0 = \text{proportion of female hypertensive patient on B blocker without FSD} = 0.3$$

(estimated by expertise)

$$P_1 = \text{proportion of female hypertensive patient on B blocker with FSD} = 0.16^{(12)}$$

$$m = 1$$

The minimum sample size was 141 and after considering 10% of non-response, the calculated sample size was 155.

After considering the calculated sample size above, the biggest sample size was from objective 1. Hence, the sample size will be 353.

### **3.3 Research Tool**

1. Case report form
2. Medical record

#### **3.3.1 Case report form**

The case report form consists of two parts, part 1 is the patient sociodemographic and marital profile, part II is the Malay Version of Female Sexual Function Index (MVFSFI)

##### **1. Sociodemographic and marital profile**

Sociodemographic and marital profile consist of patient socio demographic data and marital profile which including age, race, education level, occupation, monthly family income, duration of marriage, age of husband, husband health status, frequency of sexual intercourse, marital happiness, obstetric and gynecological history and menstrual history.

##### **2. Malay version of the Female Sexual Function Index (MVFSFI)**

MVFSFI is a Malay translated version of the Female Sexual Function Index develop by Raymond Rosen <sup>(36)</sup>. The validated Malay version was developed and validated by Sidi et al from HUKM <sup>(38)</sup>. This questionnaire contains 19 questions and categorizes sexual dysfunction in the domains of desire, arousal, lubrication, orgasm, satisfaction and pain. The questionnaire assesses participant's sexual function during the last four weeks.

Sexual desire was assessed as frequency and desire level with two questions. Arousal was assessed as frequency, level of arousal, and arousal satisfaction with four questions. Lubrication was assessed as frequency, difficulty, frequency of maintaining and difficulty in maintaining with four questions <sup>(36)</sup>. Orgasm was assessed as frequency,

difficulty and satisfaction with three questions. Satisfaction was assessed as the amount of intimacy with partner, sexual relationship and overall sexual life with three questions. Pain was assessed as frequency during and after sexual activity and level of pain with three questions<sup>(36)</sup>. Each question in the questionnaire has five to six options for patient to choose the most likely answer representing their sexual function within four week prior to the time of answering the questionnaire <sup>(36, 38)</sup>. The score of each answer is given from 0 to 5. Lower score indicate higher probability of having sexual dysfunction <sup>(36, 38)</sup>.

Table 1. FSFI scoring for each domain

Sexual Function Domain	Item Number	Score range	Minimum score	Maximum score	Cut off point
Desire	1,2	1-5	2	10	5
Arousal	3,4,5,6	0-5	0	20	9
Lubrication	7,8,9,10	0-5	0	20	10
Orgasm	11,12	0-5	0	10	4
Satisfaction	13,14,15,16	0/1-5*	2	20	11
Pain	17,18,19	0-5	0	19	7
Total	1-19		4	95	55

\*Range for item 14=0-5; range for items 15 and 16=1-5

FSFI is a validated questionnaire using self administered method and has been shown to have discriminate reliability between women with and without sexual dysfunction <sup>(36)</sup>. The validation includes face, content, concurrent (specificity and sensitivity) and discriminant validity. Those who score less than the cut off point for each domain was indicated to have dysfunction in that specific domain and those who scored more than the cut off point indicate no dysfunction in that specific domain<sup>(36)</sup>. A total score of  $\leq 55$

was used as the cut-off point for the MVFSFI to distinguish between women with and without sexual dysfunction <sup>(38)</sup>.

The sensitivity and specificity of MVFSFI was 99% and 97%, with the cronbach  $\alpha$  ranged from 0.8665 to 0.9675 <sup>(38)</sup>. The sensitivity and specificity for each domain was also established; sexual desire disorder with sensitivity 95% and specificity 89%; arousal disorder with sensitivity 77% and specificity 95%; lubrication disorder with sensitivity 79% and specificity 87%; orgasm disorder with sensitivity 83% and specificity 85%; satisfaction disorder with sensitivity 83% and specificity 85%; sexual pain disorder with sensitivity 86% and specificity 95% <sup>(38)</sup>. The permission to use the questionnaire has been obtained from the author.

### **3.3.2 Medical record**

Medical record is used to gather patient's medical information eg BP, BMI, duration of hypertension, type of medication taken, presence of complication such as retinopathy, stroke and peripheral vascular disease.

### **3.4 Data collection procedures**

Data collection was conducted in June 2010 till February 2011 at Hypertensive Clinic and Klinik Rawatan Keluarga, HUSM. Participants were explained regarding the study and reassured that all the information would be kept confidential and only for the purpose of the study. Once they agreed, they were required to sign the consent form and guided self-administered questionnaires were given to them. The questionnaire was only tagged with index number which only known to the researcher for the confidentiality purposes. Medical records were reviewed.