# QUALITY OF LIFE AMONG POST-MENOPAUSE WOMEN IN KUBANG KERIAN, KELANTAN

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# SCHOOL OF HEALTH SCIENCES UNIVERSITI SAINS MALAYSIA

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# QUALITY OF LIFE AMONG POST-MENOPAUSE WOMEN IN KUBANG KERIAN, KELANTAN

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## DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF NURSING (HONOURS) SCHOOL OF HEALTH SCIENCES UNIVERSITI SAINS MALAYSIA

JUNE 2020

### CERTIFICATE

This is to certify that the dissertation entitled "Quality of Life Among Post-Menopause Women in Kubang Kerian, Kelantan" is the bona fide record of research work done by Ms Nur Syafiqah binti Anuar Shazuki during the period from September 2019 to August 2020 under my supervision. I have read this dissertation and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfillment for the degree of Bachelor of Nursing (Honours).

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### DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research and promotional purposes.

.....

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Date: .....

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## LIST OF ABBRVIATIONS

HM	Healthy Menopause
MHT	Menopausal Hormone Theraphy
MENQoL	Menopause-Spesific Quality of Life Questionaire
SF-36	36-Item Short Form
STRAW	Stages of Reproductives Aging Workshop
UQOL	Utian Quality of Life Scale
WHO	World Health Organization
WHOQOL-BREF	World Health Organization Quality Of Life

## KUALITI HIDUP DALAM KALANGAN WANITA YANG TELAH MENOPOS DI KUBANG KERIAN, KELANTAN.

#### ABSTRAK

Menopos adalah satu keadaan di mana seorang wanita berhenti haid secara kekal dan tidak berkeupayaan untuk mengandung lagi. Menopos melibatkan perubahan dari aspek biologikal, fisiologikal, dan fizikal yang mana boleh mempengaruhi kesihatan dan kesejahteraan wanita. Justeru kajian ini bertujuan untuk mengetahui kualiti hidup para wanita yang telah menopos di Kubang Kerian, Kelantan. Kajian keratan rentas telah dilakukan yang melibatkan 40 peserta melalui kaedah persempelan pemilihan rawak kebarangkalian. Soal selidik yang berstruktur dan kendiri telah digunakan untuk tujuan pengumplan data dari bulan Februari 2020 hingga Mac 2020. Ujian T- bebas telah digunakan untuk mengkaji hubungan antara ciri sosio-demografi dan kualiti kehidupan dalam kalangan wanita telah menopos. Hasil kajian menunjukan mejoriti 95% peserta mempunyai kualiti kehidupan yang baik. Statistik menunjukan hubungan yang ketara antara durasi menopos dan kualiti hidup p =0.037(p < 0.05). Hasil dari kajian ini dapat disimpulkan bahawa domain vasomotor merupaan domain yang sangat menjejaskan kualiti hidup dimana statistik menunjukan p=0.001 (p<0.05). kajian ini menunjukan penting untuk mengetahui kualiti hidup anita yang telah menopos supaya kualiti hidup mereka ditahap yang optimum.

## THE QUALITY OF POST-MENOPAUSE WOMEN IN KUBANG KERIAN, KELANTAN

#### ABSTRACT

Menopause is a condition in which a woman stops menstruation permanently and is unable to conceive again. Menopause involves changes in the iological, physiological anf physical aspects that afect the health and well-being of the women. The purpose of this study is to determine the quality of life of post-menopause women in Kubang Kerian, Kelantan. A cross-sectional study was conducted involving 40 participants through random probability selection method. Structured and self-administered questionaire were used for data collection purposes from February 2020 to March 2020. Independent T-test were used to determine the relationship beteen socio-demographic characteristics and the quality of life among the women. The results showed that 95% of the participants had good quality of life. Statisticss show a significant relationship between duration of menopause and quality of life p = 0.037 (p < 0.05). The results of this study can be concluded that vasomotor domain is the most domain that highly afected the quality of life where statistics shows that p = 0.001 (p < 0.05). This study shows that in it important to now the quality of life among post-menopause women so that their quality of life is at an optimal level.

#### CHAPTER 1

#### INTRODUCTION

#### 1.1 Background of the Study

Quality of life defined as an individual's perception about their position and role in life in context of culture and value system in which they live in. It also related to their goals, expectation, standard and concern. The broad context of quality of life may affect an individual in many way either by physical health, psychological health, personal belief, social relationship and their of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, or social relationships ("WHOQOL: Measuring Quality of Life", 2014). Every individual may experienced different level quality of life depending on their sociodemographic criteria. The common factors that affect the quality of life significantly is the socioeconomic background. In order to identify the factors that associated with worse or better quality of life it is vital to propose and scientifically test the targeted population (Namdar, Naghizadeh, Zamani, & Yaghmaei, 2017). Furthermore, not all instruments can be used to assess QoL in the different diseases, since the clinical features are not equal. Therefore, specific tools are required for each condition; menopause is not an exception(Fallahzadeh, 2010).

Menopause is when a women permanently stop having menstrual and can no longer being pregnant. Commonly a women said to be menopause when their last menstrual period is over 12 months in which no bleeding or any spotting observed (Izetbegovic, Stojkanovic, Ribic, & Mehmedbasic, 2013). Menopause is when periods stop permanently, and a woman can no longer get pregnant. Ones have reached menopause only after it has been a full year since their last period. This means they have not had any bleeding, including spotting, for 12 months in a row. Reduced secretion of estrogen and progesterone hormones are the common factors related to menopause as those hormones result in depletion of ovarian follicles.

The menopausal transition can be understood as a complex physiological process which usually involved the aging factors and social role adjustment (Kwak, Park, & Kang, 2014). According to Malaysian menopause society the average age of menopause women in Malaysia is 51 years old. But in some people, it can happen earlier or years later depending on various factors such as lifestyle, surgical intervention of removing both ovaries, chemotherapy and pelvic radiotherapy. The factors that does not related with menopause are menarche age , pregnancy, lactation, body weight and history of contraceptive method used (Potter, Schrager, Dalby, Torell, & Hampton, 2018). Women at their menopause phase does experience certain physical and psychological changes that related with urogenital, psychological-social, cardiovascular and neurological problems. In this case, women who are approaching the menopausal age need to have a good understanding and a positive mindset about menopause for them to get them mentally and physically ready. (Sultan, Sharma, & Jain, 2017).

#### 1.2 Problem Statement

Menopause is accompanied with the biological and psychological as well as physical changes that may affect women's health and well-being. Menopause happens because the woman's ovaries stop producing the hormones estrogen and progesterone. They include changes in durations (shorter or longer, lighter or heavier with more or less time in between), hot flushes and/ or night sweats, trouble sleeping, vaginal dryness, mood swings, trouble focusing and less hair on the head, more on the face, experience an age-related decline of physical and mental capacity (Paulose & Kamath, 2018). Those common symptom of postmenopausal may be experienced by menopause women but the bothering intensity might be different. The menopause seen as a natural biologic process and a general event for the women, it is not defined and experienced in the same way for all women. Individual's psychological and mental condition, emotional health, and sociocultural status are involved in this experience. Some women were able to adapt and adjust themselves into menopause phase while others find it hard to be done. The physiological, emotional and psychological changes leave women vulnerable in total and reduce the quality of life (QOL) (Paulose & Kamath, 2018). According to (Ibrahim et al., 2019) the impact of menopause-related symptoms on QOL varied through different stages of menopause.

Some studies reported that vasomotor and physical symptoms had a greater impact on postmenopausal women, while psychological symptoms affect women during menopausal transition much more than in their postmenopausal life.

Since menopause is an unavoidable period in every woman's life, it has been crucial in the scientific community to investigate the various aspects of this important period and their impact towards women's health and quality of life (Ibrahim et al., 2019). The quality of life among post-menopause women especially in Malaysia rarely being voice out. As Malaysia nowadays are known as aging country, we should expect that there will be large population who are in their menopausal age. According to Department of Statistic Malaysia (DOSM) mentioned that 70% of the whole Malaysian citizen are those who age 15-64 years old which within that range there are menopause women include. With that huge population percentage, we should pay attention more on middle age and old age group. In this research scope, the quality of life among post-menopausal women should be emphasize to make sure their quality of life are at the right level. (Li, Ho, & Sham, 2016)

#### 1.3 Research Objectives

#### 1.3.1 General Objectives

 To identify the quality of life among post-menopausal women in Kubang Kerian, Kelantan.

#### 1.3.2 Specific Objectives

- 1. To identify if the vasomotor domain highly affects the quality of life among postmenopausal women in Kubang Kerian, Kelantan.
- 2. To identify if the psychosocial domain highly affects the quality of life among postmenopausal women in Kubang Kerian, Kelantan.
- To identify the association between selected sociodemographic characteristics (age, ethnicity, education level and postmenopausal duration) with quality of life among postmenopausal women in Kubang Kerian, Kelantan

#### 1.4 Research Questions

- 1. Are vasomotor domains highly affecting the quality of life among postmenopausal women in Kubang Kerian, Kelantan?
- 2. Are psychosocial domains highly affecting the quality of life among postmenopausal women in Kubang Kerian, Kelantan?
- 3. Is there any association between selected sociodemographic characteristics (age, ethnicity, education level and postmenopausal duration) with quality of life among postmenopausal women in Kubang Kerian, Kelantan?

#### 1.5 Research Hypothesis

 H<sub>o</sub>: There is no significant mean different between selected sociodemographic characteristics and quality of life among post-menopausal women in Kubang Kerian, Kelantan.

H<sub>A:</sub> There is significant mean different between selected sociodemographic characteristics and quality of life among post-menopausal women in Kubang Kerian, Kelantan,

#### 1.6 Conceptual And Operational Definitions

- Quality of life : World Health Organization (WHO) define quality of life as one's perception towards life in terms of the culture and value system that they live in, the expectation, standards, goals and concern. While according to (Rejeski & Mihalko, 2001) quality of life define as a cognitive judgement of satisfaction with one's life that done with conscious. (Ysrraelit, Fiol, Gaitán, & Correale, 2018) stated that quality of life definition may also focus on subjective perceptions of health status. In this study the quality of life includes physical, emotional, psychosocial and well-being of an individual.
- Post-menopause :Post-menopause define as the period after menopause and followed by subsequent 12 months of spontaneous amenorrhea (Sowers, 2000)(Ruan et al., 2016). In this study the respondent chosen will likely to experience more than two years of amenorrhea.

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#### 1.7 Significance of the Study

The significance of this study to the society, the country, the government, the community and the institution is that it brings out informations such as about how the post-menopausal women reacted towards the menopause, their behavior and act, their interpretation about post-menopause and how does menopause do really affect their life. If the study is not conducted, the level of quality of life among post-menopausal women would not be known and further intervention plan could not be carried out. In addition, by conducting the study, we could know the target population that having low quality of life after menopause and in order to minimize the number of population in future, we must approach them and give the health promotion and health education prior to their menopausal age so that they will be mentally and physically ready to face menopause.

#### CHAPTER 2

#### LITERATURE REVIEW

#### 2.1 Introduction

The purpose of this study is to assess the quality of life among post-menopausal women in Kubang Kerian, Kelantan. In this literature review, it consists of definition, pathophysiology, sign and symptoms of menopause, complications, treatment and management, prevention, association between sociodemographic with level of quality of life, and conceptual framework. It is necessary for researcher to know what is the factors that contributed to lo quality of life among post-menopausal women and look for any association that related with selected sociodemographic data.

# 2.2 Review of Article2.2.1 Quality of Life

The quality of life is subjective and evaluated differenly among people. As for the study done in Hong Kong, the purpose is to describe the attitude of midlife women toward menopause and their QoL in an Asian context. It was found that post-menopausal women was the higher total of respondent as well as positive attitude score towards menopause, while perimenopausal women had comparatively lower scores. Attitudes toward menopause could be associated with the experiences of symptoms and transitioning through menopausal stages. Physical and psychological changes during these transitional periods could impact women's general wellbeing and quality of life (QoL). Besides menopausal these transitional periods could impact women's general wellbeing and quality of life (QoL) (Li et al., 2016).

In addition, the physiological, emotional and psychological changes leave women vulnerable in total and reduce the quality of life (QOL). The family support during this transition period is very significant as the women have changes occurring in physical, psychological and social domains of life. Women may experience feelings of guilt and embarrassment in the menopause. It is suggested that these feelings are guiding the behavior and affecting the image of one in the eyes of others (Paulose & Kamath, 2018)

A study conducted in mainland China using Menopause-Specific Quality of Life Questionnaire (MENQoL), and classifying menopause status according to the Stages of Reproductive Aging Workshop (STRAW) criteria43 observed a gradual decline in QoL from preme-to the peri- and postmenopausal(Li et al., 2016).

#### 2.2.2 Definition of Menopause and Post-Menopause Women

A women said to be be naturally menopause when she have experienced permanent cessation of menstruation which is determined 12 months after the last menstrual period (Shobeiri, Jenabi, Hazavehei, & Roshanaei, 2016). While post-menopause according to WHO defined as the time from the end of the menstrual period onwards. It is divided into early and late-senium after 70 years (Izetbegovic et al., 2013). In Eastern societies, menopause is considered to be a natural process, and women view this change more positively than in Western societies (Ghazanfarpour, Abdolahian, Zare, & Shahsavari, 2013). A community-based studies had been done and the result indicate that the distribution of menopausal age presented as a bell curve that range from age as early as 40 years old ending around age 54 years old. Generally, the cure cluster around the age of 45-5 years old which the common age of menopause. In another study the average age of menopause had been reported as 54 years old in Europe, 51.4 years old in North America, 48.6 years old in Latin America and 51.1 years old in Asia in general (Burcu Ceylan, 2014). Average age of menopause is around 48 years but it strikes Indian women at the age of 30 to 35 years. So menopausal health demands even higher priority in Indian scenario (Paulose & Kamath, 2018). According to Malaysian menopause society the average age of menopause women in Malaysia is 51 years old.

2.2.3 Kubang Kerian as Research Area.

World widely, every countries have different quality of life among post-menopause women. As for example in western asia countries such as Iran, in the study that been done in 2012, in overall they have a low quality of life that been measured in 4 dimensions which are physical functioning, general health, mental health, and vitality. In addition, the also measure the association between social demographice data such as level of education, household income and post-menopause years. It had been found out that those women with low level of education, low household income and longer post-menopause years eperienced lower quality off life compre to those who have higher education level, stable household income and eperienced less than 5 years post-menopause(Mohammad-Alizadeh-Charandabi, Rezaei, Hakimi, & Montazeri, 2012). While in Colombia, this study showed comparison in percentage of vateran and non-vateran postmenopause women reporting on vasomotor symptoms that they face. And the percentage of women that responed they having serious disturbance in vasomotor is higher in vateren group. This result in low quality of life among vateren post-menopause (Katon et al., 2016). The reason I am interested to carry this research was becouse since currently I lived in Kubang Kerian, Kelantan, I would like to know the quality of life among post-menopause women here.

2.2.4 The Etilogy and Symptoms of Menopause.

The etiology of menopause is reduction of ovarian hormones such as estrogen and progesteron which takes pace as finite store of ovarian follicles is depleted. However, menopause also can be induced by surgery, chemotherephy, and radiation . The menopausal transition usually begins when women are in their mid-to-late 40s and can last for several years about 4-5 years. The final menstrual period generally takes place in women between 40 and 58 years old. Other factors that may also affect the age of final menstrual period incuding menarche age, parity, previous oral contraceptives use, body-mass index, ethnic origin, and family history(Potter et al., 2018). Menopausal symptoms, though well tolerated by some women, may be particularly troublesome in others (Sultan et al., 2017). In addition, menopause also seen as a complex bodily process which approaching to aging. Thus women may also experience stress and pressure due to the changes. Menopause women may had psychological, physical, and vasomotor symptoms along with sexual dysfunction-related symptom (Shobeiri et al., 2016). The transition into menopause is related to different physical and mental changes that may affect women's health. Studies show that the physical, psychological, social and sexual changes in menopause have an adverse effect on women's quality of life (B. Ceylan & Özerdolan, 2014). This is important that the women have a good emotional control and stress management so that they can cope with the physiogical, psychological and social changes. Appropriate understanding of women that certain physical, mental, social and psychological changes occur during menopause helps them with greater readiness to cope with these changes (Kwak et al., 2014).

The core four domains that related in this study is the physical, psychological, sexual and vasomotor domains. And the purpose of the study is to look for which domains that shows significant impact on quality of life (QOL) among post-menopausal women.

#### 2.2.5 Instrumentation

As the study goes by, menopause known to has a negative impact toards the quality of life (QoL). In oder to asses the dimension of QoL that influenced by the menopause, a number of generic and specific questionaire havve been used. In a systematic reiew done by Jenabi et al identified that there are eight specific and three general tools and also found specific and genera instrument such as 36-item short form (SF-36) and the Menopause Specific Quality of Life Questionnaire (MENQOL) that mostly being used(Jenabi, Shobeiri, Hazavehei, & Roshanaei, 2015).

The first instrument and which also being used in this study is The Menopause Specific Quality of Life (MENQOL). It is a validated questionaire and an effective instrument that mostly used by the researcher. It consist of 32 questions that comprises of four domains which are physical, psychological, vasomotor and sexual. The four domains the the comman symptom that experienced by the menopause women. This questionnaire had seven-point Likert scale and ranged from 0 to 7.

A "zero" is equivalent to a woman responding "no", showing she had not experienced this symptom in the past month. Score "one" shows that the woman experienced the symptom, but it was not bothersome at all. Scores "two" through "seven" show increasing levels of bother experienced from the symptom and corresponded to "1" through "6" check boxes on the MENQOL. Each item was manually calculated into a 0-7 score. Hence, the average for each domain was calculated between 0 and 7. The high scores in MENQOL subscales indicate low QOL (Shobeiri et al., 2016). Nisar et al and Poomalar in their research found that the score of physical domain is significantly related with the quality of life among menopause and postmenopause women. In another study by Norozi et al in 2013, they did research on the QoL in postmenopausal women correlated with age, educational level, marital status, and employment status(Jenabi et al., 2015).

The second instrument is the 36-item short-form (SF-36) was designed for use in clinical practice and research, health policy evaluation, and general population surveys. It was found that natural menopause is an independent predictor of a lower QoL in physical functioning. Budakoglu et al in 2007 presented that the QoL in postmenopausal women was worse than that of premenopausal women. They also showed that rural populations of women were in need of public health care in the postmenopausal period. In another study, Pan et al in 2014 reported an inverse association between weight gain and changes in physical health in the dimensions of physical functioning, physical role limitations, bodily pain, general health, and vitality(Jenabi et al., 2015).

The third instrument is World Health Organization Quality of Life (WHOQOL-BREF) instrument comprises 26 items, which measure the broad domains such physical health, psychological health, social relationships, and environment. The WHOQOL- BREF is a shorter version of the original instrument and can be used for assessing the QoL in different cultures and populations using this instrument. Ozkan et al in 2005 showed that the QoL was significantly lower in women with vasomotor complaints. A high educational level correlated with an improvement in the QoL in menopausal women (years one to five) and women more than 10 years post-menopause had a better QoL(Jenabi et al., 2015).

The fourth instrument is Utain Quality of Life Scale (UQOL) assessed how women perceived their life in each dimension independently of somatic or psychological complaints. Utian Quality of Life Scale (QoL) consisted of 4 domains which are occupational, health, emotional, and sexual. The questionnaire composed of 23 questions, each was answered within a 5-point Likert scale (1=not true for me, 3=moderately true, 5=very true for me)(Li et al., 2016). In a study by Greenblum in 2013, found that menopausal symptoms commonly associated with the menopausal transition and early post-menopause negatively affected QoL (Jenabi et al., 2015).

#### 2.3 Conceptual/Operational Framework

The conceptual framework used for this study was the healthcare model for healthy menopause(HM). Healthy menopause (HM) model is defined as a dynamic state, in which related with the permanent loss of ovarian function, characterized by self-perceived satisfactory physical, psychological and social functioning, incorporating disease and disability as well as a woman's desired ability to adapt and capacity to self-manage. Thus, HM incorporates both obtained and developed resources aiming to maintain, adjust, recover and improve that dynamic balance. Most importantly, the conceptual HM framework encamp-passes women as a whole, beyond their hormonal, reproductive and physiological health.

Despite the omnipresence of all kinds of media, there is a lack of knowledge among women regarding menopause, treatment options and possible risks associated with menopausal hormone therapy (MHT), making informed decisions difficult for individual women. Furthermore, some women may feel completely ignored by their healthcare providers. Thus, first of all, women want their healthcare providers to start listening to what they report(*Menopausal symptom experience : an online forum study*, 2008).

Secondly, women want clear, evidence-based information about the various hormonal and non-hormonal treatment options(Manson & Kaunitz, 2016). In addition, they want to discuss and seek helpful non-vasomotor menopause-related symptoms, such as weight gain, sleep disturbance, tiredness, moodiness and low sexual desire.

The conceptual HM framework is a holistic model of care covering physical, psychological and social functioning. It also reflects the need of midlife women to at least maintain if not improve their (health-related) quality of life (QoL), which is now an integral component of contemporary healthcare. The specialist nurse(s) should provide and/or support strategies or empowerment in relation to educational interventions, physical activity/exercise, healthy diet, management, healthy lifestyle, and prevention of stress noncommunicable diseases(Yazdkhasti, Simbar, & Abdi, 2015)



Figure 2.1: Healthcare model for Healthy Menopause

#### CHAPTER 3

#### METHODOLOGY

#### 3.1 Introduction

This chapter elaborated on the research design, population and setting, the sampling plan which consist of inclusion and exclusion criteria, the sampling method, instrumentation used in the study, the variables, and also explain how the data of the study will be collect, present and analyze.

#### 3.2 Research Design

This study used a cross-sectional survey research design. The purpose of the study is to determine the most affective factors on quality of life among postmenopausal women in Kubang Kerian, Kelantan. The research conducted within Kubang Kerian, Kelantan. This is because this study design enabled the researcher to do data collection and at the same time enabled them to make inference about the population interest at one point in a time. It is also less time consuming because it allowed multiple variables to be accessed simultaneously in which the outcome was more accurate. It is also an inexpensive study design since it does not require a long-term follow-up and it only involve certain specific time of data collection.

3.3 Research Population and Setting.

In Kubang Kerian there were 12 sub-districts which are Demit, Chicha, Wakaf Stan, Kenali, Telo Bharu, Pulau, Bunut Payung, Lundang, Wakaf Siku, Paya Rambai, Langgar and Telipot. In this study, two villages from two sub-district respectively have been choosen as the target population since both od the sub-district are near to each other, easy to reach and have high number of population that meet the inclusion and exclusion criteria. The two villages was Kampung Demit Sungai, Demit and kampung Pulau Hilir, Pulau were choosen in order to meet the estimated sample size which is 100 participant.

### 3.4 Sampling Plan

3.4.1 Inclusion and exclusion criteria

### Inclusion Criteria

- 1. Women whose last menstrual period at least 1 year had passed.
- 2. Age 47 58 years old.

#### **Exclusion** Criteria

1. Women who were not willing to participate in this study.

#### 3.4.2 Sampling Method

This study is using probability random selection sampling method. At the first place I approached the district headman to know the average population in the certain village within my study area which is Kubang Kerian. After knew the village with high average population of postmenopause women, I discussed with the selected head village to obtain the namelist of the villagers. I personally had met the district headman to discuss the suitable village to be selected for my study. I was informed that every village had an electoral list with complete information such as full name, identity card number and address. After the ethical approval obtain, then I proceed the with the participant selection. From the list received, I selected the participant and approached the participant that met my inclusion and exclusion criteria. Moreover this sampling method is more time convenient and every women who have the criteria had a chance to partipate in this study.

#### 3.4.3 Sample Size Estimation

In order to calculate the sample size, single proportion formula which p = 0.937 (Kwak et al., 2014) used.

 $n = (Z/\Delta)2p(1-p)$ 

Whereby,

n = Required sample size

Z = Value representing the desired confidence level (CI:95%, Z = 1.96)

 $\Delta$  = Level of precision, ±5% (0.05)

p = Anticipated population proportion from previous study, p = 0.937 (Kwak, Park, & Kang, 2014)

Vasomotor domain

Calculation:

 $n = (Z/\Delta)^2 p(1-p)$ 

 $n = (1.96/0.05)^2 \ 0.937 \ (1-0.937)$