PREVALENCE OF PRIMARY DYSMENORRHEA AND ITS ASSOCIATION WITH THE QUALITY OF LIFE AMONG MEDICAL STUDENTS IN USM

By

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ANOVA	Analysis of Variance
BMI	Body Mass Index
HRQoL	Health Related Quality of Life
MCS	Mental Component Summary
PCS	Physical Component Summary
QoL	Quality of Life
SD	Standard Deviation
SF-36	Short Form 36
SPSS	Statistical Package for Social Sciences

ABSTRAK

ABSTRAK

Senggugut merupakan penyumbang utama morbiditi haid di kalangan wanita remaja dan dewasa muda. Kesan buruknya boleh menjejaskan kualiti hidup mereka. Suatu kajian irisan lintang telah dijalankan di Fakulti Perubatan Universiti Sains Malaysia (USM), Kelantan dalam tempoh kajian 10 September 2012 hingga 10 Mei 2013. Objektif umum kajian ini adalah untuk menentukan prevalens senggugut dan kesannya terhadap kualiti kesihatan yang berkaitan kehidupan (HRQoL) di kalangan pelajar perubatan wanita USM. Persampelan rawak mudah telah digunakan untuk pemilihan 188 pelajar perubatan wanita Tahun Satu dan Tahun Dua dari senarai nama pelajar yang dikenakan kriteria pengecualian dan kemasukan. Daripada borang soal selidik yang diedarkan, 172 pelajar mengembalikannya bermakna kadar respons sebanyak 91.5%. Prevalens keseluruhan senggugut adalah 77.9% dengan 30.2% pelajar wanita melaporkan mengalami seggugut ringan sementara prevalens senggugut sederhana dan teruk adalah 36.6% dan 11.0% masing-masing. Selepas mengawal *confounders*, iaitu ciri-ciri sosiodemografi (umur, pendapatan keluarga dan BMI) dan haid (teraturnya kitaran haid dan jumlah aliran darah haid), analisis ANOVA multifaktor menunjukkan terdapat perbezaan min statistik yang signifikan dalam skor ringkasan komponen fizikal (50.6 vs 55.5, $p < 0.001$) dan mental (49.4 vs 52.8, $p < 0.001$) di kalangan pelajar wanita dengan dan tanpa senggugut. Kesimpulannya, pelajar wanita dengan senggugut mempunyai kualiti yang secara signifikan lebih rendah dalam aspek kesihatan mental dan fizikal. Oleh yang demikian, kajian ini memberikan gambaran mengenai prevalens senggugut yang ketara dan kesannya terhadap kualiti hidup pelajar perubatan wanita yang sudah di bawah tekanan akademik. Beberapa batasan yang berkaitan dengan kajian ini dan kajian keratan rentas secara umum boleh juga ditangani dengan kajian membujur prospektif.

ABSTRACT

ABSTRACT

Dysmenorrhea is a significant contributor of menstrual morbidity among females in their adolescents and early adulthood period. Its adverse consequences could affect their quality of life. A cross sectional study was conducted at the Medical faculty of Universiti Sains Malaysia (USM), Kelantan during the study period of 10 September 2012 till 10 May 2013. The general objective of this study was to determine the prevalence of dysmenorrhea and its effect on the health related quality of life (HRQoL) among USM female medical students. Simple random sampling was used for the selection of 188 female Medical students in Year One and Year Two from the students name list that fitted the exclusion and inclusion criteria. Out of the questionnaires distributed, 172 students returned them meaning a response rate of 91.5%. The overall prevalence of dysmenorrhea was 77.9% whereby 30.2% of the female students reported having mild dysmenorrhea meanwhile the prevalence of moderate and severe dysmenorrhea was 36.6% and 11.0% respectively. After controlling the confounders, namely sociodemographic characteristics (age, family income and BMI) and menstrual characteristics (menstrual cycle regularity and flow amount), multifactorial ANOVA analysis showed that there was a statistically significant mean difference in summary scores of physical (50.6 vs. 55.5, $p < 0.001$) and mental (49.4 vs. 52.8, $p < 0.001$) components between the female students with and without dysmenorrhea. In conclusion, female students with dysmenorrhea had a significantly lower quality of life from the mental and physical aspects. Hence, this study provides an insight on the overwhelming prevalence of dysmenorrhea and its impact on the quality of life of female medical students who are already under much academic stress. Some of the limitations associated with this study and cross sectional studies in general could be well addressed by prospective longitudinal studies.

CHAPTER 1

INTRODUCTION

1

1.1 AN OVERVIEW OF DYSMENORRHEA

The period of adolescence for a girl is a period of physical and psychological transformation for motherhood. One of the major physiological changes that takes place in adolescent girls is the onset of menarche. Following that, many girls face problems of irregular menstruation, excessive bleeding and dysmenorrhea. Of these, dysmenorrhea is one of the common problems experienced by most girls from adolescence onwards (Kumbhar *et al.*, 2011).

Menstruation is a natural phenomenon which is an important indicator of womens' health, reflecting as it does their endocrine function. Dysmenorrhea is a common problem, yet it is rarely taken into consideration when assessing adolescents' health and life experiences. The high prevalence of dysmenorrhea among adolescents especially in the early years of their reproductive life, influences their daily activities including school absenteeism, and is thus a public health problem (Santina *et al.*, 2012).

Dysmenorrhea is derived from the Greek words 'dys' meaning difficult, painful or abnormal, 'meno' meaning month, and 'rrhea' meaning flow. Dysmenorrhea can be divided into broad categories of primary and secondary. Primary dysmenorrhea is defined as recurrent, cramp-like pain occurring with normal ovulatory menses in the absence of any pelvic pathology (Lefebvre *et al.*, 2005).

Meanwhile, secondary dysmenorrhea is menstrual pain associated with underlying pelvic pathology such as endometriosis, pelvic inflammatory disease, intra-uterine devices, infertility problems, ovarian cysts, adenomyosis, uterine myomas or polyps, intra-uterine adhesions or cervical stenosis (Unsal *et al.*, 2010).

Dysmenorrhea is determined by presence of one or more episodes of menstrual cramps or pain in the last 12 months (Patel *et al.*, 2006). The main symptoms are pain, nausea, vomiting, cramps, diarrhea, headache and syncope, which appear to be associated with menstruation with no any organic or pathological cause (French, 2008).

Primary dysmenorrhea is characteristically described as colicky pain associated with menstruation, beginning on the first day of bleeding and usually most severe on days two to three of the cycle before gradually tapering off towards the end of the menstrual flow. There are two common presentations of primary dysmenorrhea in general practice. The first occurs in the early teenage years, typically 11–13 years age group, usually after a few months of established and fairly regular cycles. The second common presentation affects the slightly older teenager, who suffers similar pain and symptoms (Davis and de Costa, 2011).

Adolescent gynaecology is a rapidly advancing field. Dysmenorrhea is one of the most common complain among young women of reproductive age. It is estimated that around 25-95% women suffer from dysmenorrhea with significant psychological, behavioural, social and physical stress (Gagua *et al.*, 2012). Age is a determinant of menstrual pain with

symptoms being more pronounced in adolescents than in older women (Lefebvre *et al.*, 2005).

The etiology of primary dysmenorrhea is not precisely understood, but most symptoms can be explained by the action of uterine prostaglandins (PG), particularly PGF2α. Patients with primary dysmenorrhea have higher PG levels in the endometrium and menstrual blood. Primary dysmenorrhea has its onset when ovulatory cycles begin, usually 6–12 months after menarche, peaks during the late teenage years and early twenties, then declines gradually with age (Juang *et al.*, 2006).

The menstrual function is deemed to be one of the factors reflecting the functional potentiality of women which may be affected by stress. There is also a growing evidence of an association between psychosocial stress and menses-associated health problems in women. Though not life threatening, these conditions can seriously decrease the quality of life of many women and affect their mental health and productivity (Lakshmi *et al.*, 2011).

1.2 BURDEN AND MANAGEMENT OF DYSMENORRHEA

Besides being a gynecological problem, dysmenorrhea is an important health problem concerning public health, occupational health and family practice, affecting both the quality of life and the national economy due to short-term school absenteeism and loss of labour. Menstruation with severe pain also affects development of motherhood (Kabirian *et al.*, 2011).

Since dysmenorrhea is a symptom that could be perceived differently by different women, it is difficult to establish its true incidence. However, the reported prevalence is age-related, increasing from around 40% in girls aged 12 years, to 70% in girls at 17 years of age. In the United States, the annual economic loss has been estimated at 600 million work hours and 2 billion dollars (Kolhe, 2011).

Dysmenorrhea is known to cause physical and social disability resulting in school or class absence and inhibiting sports and school activities. A cross-sectional study conducted in a public secondary school in Selangor involving 300 female students (12 to 17 years old) found a 62.3% prevalence of dysmenorrhea and noted to be significantly higher in the middle adolescence (15 to 17 years old) age group with an overall 38% school absence (Liliwati *et al.*, 2007).

A larger cross-sectional study reviewing 1092 girls from 15 public secondary schools in the Federal Territory of Kuala Lumpur, Malaysia found that overall prevalence of dysmenorrhea was 74.5% whereby 51.7% of these girls reported that it affected their concentration in class, 50.2% that it restricted their social activities, 21.5% that it caused them to miss school and 12.0% that it caused poor school performance (Wong and Khoo, 2010).

Treatment for dysmenorrhea is aimed at relieving symptoms and is best treated with analgesics that are prostaglandin inhibitors. Many studies have utilised patient self-reporting using a visual analogue or other pain scales, quality of life scales or other similar measures such as the menstrual distress or menstrual symptom questionnaires. Whichever

system is used, grading dysmenorrhea according to severity of pain and limitation of daily activity benefits the treatment strategy (Kolhe, 2011).

Identification of modifiable risk factors for dysmenorrhea is important because the condition affects a large proportion of women of reproductive age and contributes to school absenteeism, lost work time, and reduced quality of life. Treatment of dysmenorrhea should be directed at providing relief from pain and associated symptoms whereby non-steroidal anti-inflammatory drugs and oral contraceptives are reported as being the most effective treatment (Wang *et al.*, 2004).

Non-steroidal anti-inflammatory drugs are highly effective in treating dysmenorrhea, especially when they are started before the onset of menses and continued through day two. They are readily available, relatively inexpensive and have minimal side effects when used cautiously in those who have no contraindications or allergies to these drugs. The prognosis for dysmenorrhea is excellent with the use of non-steroidal anti-inflammatory drugs (Gumanga and Kwame-Aryee, 2012).

CHAPTER 2

LITERATURE REVIEW

2.1 DIAGNOSIS OF PRIMARY DYSMENORRHEA

Typically, primary dysmenorrhea is characterized by a crampy suprapubic pain that begins somewhere between several hours before and a few hours after the onset of the menstrual bleeding. Symptoms peak with maximum blood flow and usually last less than one day, but the pain may persist up to two to three days. It is characteristically colicky and located in the midline of the lower abdomen but can also be described as dull and may extend to both lower quadrants, the lumbar area, and the thighs. Frequently associated symptoms include diarrhea, nausea and vomiting, fatigue, light-headedness, headache, dizziness and, rarely, syncope and fever which have been attributed to prostaglandin release (Lefebvre *et al.*, 2005).

In contrast, when a physical abnormality is detected the pain is considered an effect of this primary cause and the dysmenorrhea is described as being 'secondary'. The clinical presentation of secondary dysmenorrhea includes a history of pain that is not limited to the menstrual cycle, and the onset of which is much longer after menarche. The pain may be acyclic or chronic in nature (Jones, 2004).

Secondary dysmenorrhea is caused by organic pelvic pathology and it usually has its onset many years after the menarche. Any woman who develops secondary dysmenorrhea should be considered to have organic pathology in the pelvis until proved otherwise. Pelvic examination is particularly important in this situation and, if the findings are negative,

laparoscopy is indicated. The mechanism of pain in secondary dysmenorrhea is due to pelvic congestion which is more marked in the premenstrual period. Pain increases in its severity as menstruation approaches and is relieved by the onset of menstrual flow, due to the diminution of pelvic congestion.

2.2 DYSMENORRHEA AND STRESS

When persons are under stress, they undergo a cascade of neuroendocrine responses. Corticotrophin releasing hormone (CRH), the major hypothalamic regulator mediates pituitary adrenocorticotrophic hormone (ACTH) secretion resulting in enhanced adrenal cortisol secretion. Stress can also inhibit the pulsatile release of follicle stimulating hormone and luteinizing hormone, leading to impaired follicular development (Wang *et al.*, 2004).

Because synthesis of progesterone is increased in the luteinized follicle following ovulation, stress induced impairment of follicular development may alter progesterone synthesis and release. Progesterone has been shown to affect both the synthesis of prostaglandins PGF2a and PGE2 and the binding of these prostaglandins to myometrial receptors. Prostaglandins affect uterine muscle and vascular tone, and an imbalance of prostaglandins could cause dysmenorrhea (Wang *et al.*, 2004).

A Nepali study among young, unmarried, non-smoker female medical undergraduate students aged 18-20 years indicated a positive relationship between psychological stress (supported by stress scores) and dysmenorrhea (Pramanik *et al.*, 2010). Also, a Chinese

study showed a significant association between stress and the incidence of dysmenorrhea, which is even stronger among women with a history of dysmenorrhea (Wang *et al.*, 2004).

2.3 EPIDEMIOLOGY OF DYSMENORRHEA

In a Turkish study, the prevalence of dysmenorrhea among female university students was 72.7%, and HRQoL showed a decrease in the presence of dysmenorrhea and with the increase in the severity of dysmenorrhea. In those with dysmenorrhea, the scores received from all the domains of HRQoL were lower (Unsal *et al.*, 2010).

In Brazil, a prevalence of 86% was noted for dysmenorrhea in female undergraduate health students at an institution of higher education (Brito *et al.*, 2012). Meanwhile, in a Mexican study recruiting medicine, nursing, nutrition, dentistry, pharmacy and psychology students, the dysmenorrhea prevalence was 62.4% and the pain that these women suffer can be severe, disabling and result in short-term absenteeism (Ortiz, 2010).

A study in Mangalore, India involving 560 female medical students found a 87% prevalence of dysmenorrhea (Charu *et al.*, 2012). Another study in Gwalior, India involving 970 adolescent girls of age 15 to 20 years studying in the higher secondary schools (pre-university colleges) reported a prevalence of 71.96% whereby these adolescent girls experience a number of physical and emotional symptoms associated with dysmenorrhea (Agarwal and Agarwal, 2010).

Meanwhile, a Tamilnadu, India study concluded that the severity of dysmenorrhea was significantly associated with college absenteeism (Anandha Lakshmi *et al.*, 2011). Yet

another Indian study also found that dysmenorrhea is highly prevalent (73.83%) among first and second year female medical students and is related to college/class absenteeism, limitations on social, academic, sports and daily activities (Singh et al., 2008).

In an Hong Kong study involving a total of 5609 Chinese girls from ten secondary schools, the. prevalence of dysmenorrhea was 68.7% with one in eight girls reported having been absent from school (Chan *et al.*, 2009). Dysmenorrhea was also a significant problem among 5561 girls aged 12 to 19 years old in Singapore with 83.2% respondents reporting it in various degrees and 24% girls reporting school absenteeism owing to it (Agarwal and Venkat, 2009).

The prevalence of dysmenorrhea was 84.2% in a Thai study involving 789 first and second year university students which acknowledged its impact on academic activities and being a significant public health problem More than 60% of dysmenorrheic women reported that their class concentration was effected, especially in severe dysmenorrhea (Tangchai et al., 2004).

A large cross-sectional study involving 16 public secondary schools in rural districts of Kelantan found that dysmenorrhea was reported in 76.0% of the participants. Concentration at school (59.9%) and participation in social events (58.6%) were most affected. Multivariate analysis shows that being in upper secondary level was the strongest predictor for poor concentration, absenteeism, and poor school grade due to dysmenorrhea (Wong, 2011).

A cross-sectional study done in Australia noted that the abnormal menstrual flow and higher BMI was associated with lower quality of life scores (Nur Azurah *et al.*, 2013). Meanwhile, higher age groups and better economic status were important determinants of reproductive health and quality of life among women in an Indian study (D'Souza *et al.*, 2011).

An Hong Kong study noted that the group with menstrual problems apart from dysmenorrhea such as irregular menses and abnormal flow independently had significantly lower quality of life scores in the domains of general health and social functioning compared to the controls (Yang and To, 2006).

2.4 RATIONALE OF STUDY

Dysmenorrhea is often disregarded by affected women who consider pain to be a normal part of the menstrual cycle. Thus, many women fail to report their pain to the physician who treated them. The consequences of untreated dysmenorrhea range from class absenteeism to family and personal disruption. Therefore, dysmenorrhea affects not only the untreated person but also the family, social and national economics as well.

Local studies especially among university students exploring dysmenorrhea and its association with the health related quality of life are scarce and it would be interesting to see the prevalence and impact of dysmenorrhea among undergraduate medical students.

The findings of this study can serve as a guide to healthcare providers who want to design an effective systematic menstrual health education program for female adolescents. This

study aims to evaluate the prevalence of dysmenorrhea and its effect on health related quality of life (HRQoL) among female medical students at USM who are already under considerable academic related stress.

2.5 CONCEPTUAL FRAMEWORK

This study was aimed to determine the prevalence of dysmenorrhea and its effect on the health related quality of life (HRQoL) in USM female medical students. However, there are determinant factors being sociodemographic characteristics (age, family income and BMI) and menstrual characteristics (menstrual cycle regularity and flow amount) that were identified from literature review which independently could affect the HRQoL, hence considered as confounders which had to be controlled to determine the actual effect of dysmenorrhea on the HRQoL of USM female medical students.

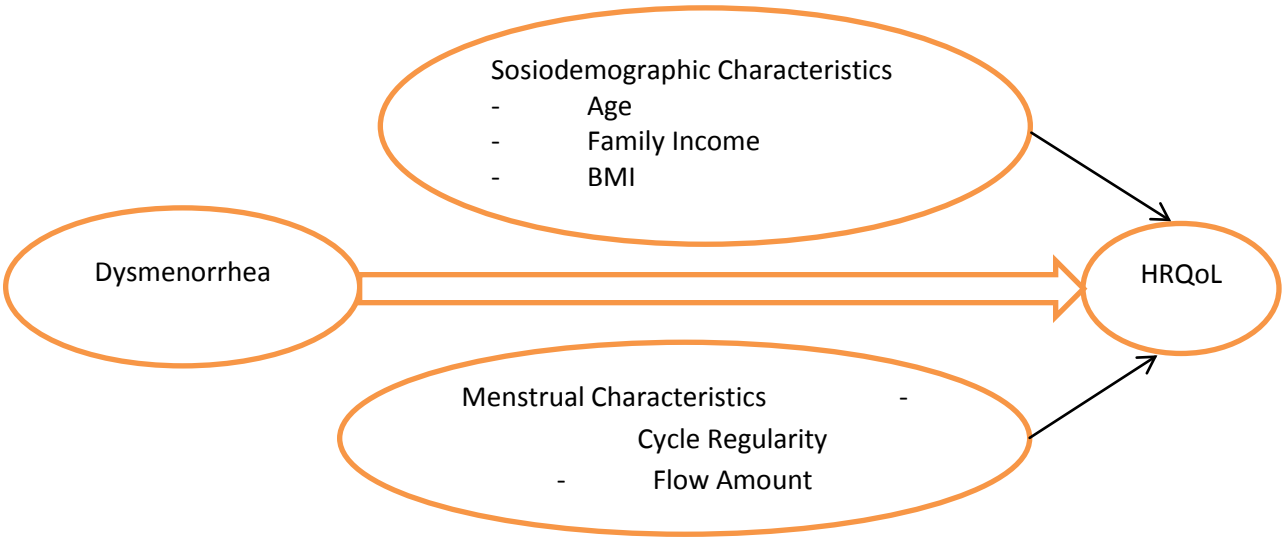

Figure 2.1 Conceptual Framework of This Study

CHAPTER 3

OBJECTIVES

3.1 GENERAL OBJECTIVE

The general objective of this study was to determine the prevalence of dysmenorrhea and its effect on the health related quality of life (HRQoL) in USM female medical students.

3.2 SPECIFIC OBJECTIVES

The specific objectives of this study were:

1. To determine the prevalence of dysmenorrhea in USM female medical students.
2. To describe the menstrual characteristics and severity levels of dysmenorrhea among USM female medical students.
3. To determine the mean difference of health related quality of life (HRQoL) scores among USM female medical students with and without dysmenorrhea.

3.3 RESEARCH QUESTIONS

1. What is the prevalence of USM female students with dysmenorrhea?
2. What is the menstrual characteristics and severity levels of dysmenorrhea among USM female medical students?
3. What is the mean difference of health related quality of life (HRQoL) scores among USM female medical students with and without dysmenorrhea?

3.4 RESEARCH HYPOTHESIS

There is no difference in the quality of life among USM female medical students health related quality of life (HRQoL) with and without dysmenorrhea.

CHAPTER 4

METHODOLOGY

4.1 RESEARCH DESIGN

The research design used in this study was cross sectional.

4.2 RESEARCH DURATION

The study commenced on 10 September 2012 and ended on 10 May 2013.

4.3 POPULATION AND SAMPLE

The study was conducted at the School of Medical Sciences, USM, Kubang Kerian, Kelantan recruiting pre-clinical (Year One and Year Two) female medical students.

4.4 INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria included:

1. Female medical students (Year One and Year Two)

Exclusion criteria included:

1. Students under gynaecology follow-up
2. Married students
3. Students on OCP (oral contraception pills)/medication

4.5 SAMPLE SIZE DETERMINATION

All USM female pre-clinical medical students from Year One and Year Two who fulfilled the inclusion and exclusion criteria - calculated using single proportion formula for objective 1 and 2 and two means formula for objective 3.

$$n = \frac{Z^2 * (p) * (1-p)}{\Delta^2}$$

Where:

Z = Z value (1.96 for 95% confidence level)

p = percentage of picking a choice, expressed as decimal

Δ = confidence interval, expressed as decimal, 0.1

Objective 1:

Characteristics	**p**	**α (level of significance)**	**n**	**Total sample size + 20% dropout**
Dysmenorrhea prevalence*	0.727	0.05	119	143

*Prevalence of dysmenorrhea obtained by literature review (Unsal *et al.*, 2010)

Objective 2:

Characteristics	**p**	**Δ (precision)**	**n**	**Total sample size + 20% dropout**
Menstrual bleeding duration > 7 days	0.8	0.08	96	115
Severity	**p**	**Δ (precision)**	**n**	**Total sample size + 20% dropout**
Mild dysmenorrhea	33.78	0.1	86	103
Moderate dysmenorrhea	42.38	0.1	94	113
Severe dysmenorrhea	23.84	0.1	70	84

Menstrual characteristics and severity levels of dysmenorrhea obtained by literature review (Unsal *et al.,* 2010)

Objective 3:

Factor	**Δ (Detectable difference)**	**σ * (standard deviation)**	**n**	**Total sample size + 20% dropout**
Physical functioning (SF 36 HRQoL domain)	5	17.85	78.4 x 2	188

* (Unsal *et al*., 2010)

$$n = \frac{2\sigma^2 \times (Z\alpha/_2 + Z\beta/_2)^2}{\Delta} = \frac{2(5)^2}{5} \times (1.96 + 0.84)^2 = 78.4$$

n = sample size per group

σ = standard deviation of means score of physical functioning domain of SF-36

= 17.85 *

$Z\alpha/_2$ = 1.96 if type 1 error at 5% (2 sided)

$Z\beta/_2$ = 0.84 if type 2 error at 20% (power=80%)

Δ , detectable difference = assumed as 5 (expert opinion)

Hence, largest sample size is **188** and this is the sample size chosen in this study.

4.6 SAMPLING METHOD

All Year One and Year Two USM female medical students who fulfilled the inclusion and exclusion criteria were included in the study using simple random sampling from the students name list.

4.7 MODE OF DATA COLLECTION

This study involved primary data collection conducted at School of Medical Sciences, USM using self-administered questionnaires comprising Visual Analog Score (VAS) and Short Form 36 (SF-36).

4.8 RESEARCH TOOLS

This study involved primary data collection and the questionnaire had **three** parts:-

First part : Socio-demographic and menstrual characteristics (self-reported).

Second part: Visual analogue scale (VAS) to assess the severity of dysmenorrhea.

The VAS uses a 10-cm line continuum of the female student's opinion of the degree of pain and classified mild (1–3 points), moderate (4–7 points), and severe (8–10 points).

Third part: SF-36 Questionnaire.

A multi-purpose, short-form health survey with only 36 questions determine the health related quality of life (HRQoL) using the four-week recall version. There is no single overall score for the SF-36 which generates eight domains and two summary scores.

The eight domains in the SF-36 are: physical functioning, role limitations due to physical problems, bodily pain, general health perceptions, vitality, social functioning, role-limitations due to emotional problems and mental health. For each of the eight domains that the SF-36 measures, an aggregate percentage score is produced. The percentage scores range from 0% (lowest or worst possible level of functioning) to 100% (highest or best possible level of functioning).

The two summary scores are the physical component summary (PCS) covering physical functioning, role limitations due to physical problems, bodily pain and general health perceptions, meanwhile the mental component summary (MCS) covers vitality, social functioning, role-limitations due to emotional problems and mental health. The scoring was obtained using the online scoring tool www.sf-36.org/demos.

4.9 OPERATIONAL DEFINITIONS

Dysmenorrhoea is defined as cramp-like, dull, throbbing pain in the abdominal, groin or lumbar region on the day before or at the onset of the menstrual period and lasting one to

three days (Unsal *et al.*,2010). It is determined by presence of one or more episodes of menstrual cramps or pain in the last 12 months (Patel V, 2006).

Primary dysmenorrhea is defined as painful menses in women with normal pelvic anatomy, usually beginning three years after menarche.

4.10 STATISTICAL ANALYSIS

Data entry and analysis were performed using Statistical Package for Social Sciences (SPSS) version 20 (SPSS Inc., Chicago). Data were checked, explored and cleaned. The prevalence of dysmenorrhea was presented using percentage and 95% confidence interval (CI) meanwhile the second objective to describe the menstrual characteristics and severity levels (mild, moderate or severe) of dysmenorrhea used frequencies (percentage).

For the third objective, univariable analysis by T-test done for dysmenorrhea, menstrual cycle regularity and menstrual flow amount meanwhile one-way ANOVA analysis was done for age, family income and BMI.

Then, the analysis proceeded to multivariable level using multifactorial ANOVA for the dependent variable being the HRQoL physical and mental component summary scores whereby the main effect model was determined, followed by checking interactions whereby none was significant and confirming assumptions were met.

4.11 FLOW OF STUDY

Beginning with the reference population of undergraduate female USM medical students, the source population was narrowed to current pre-clinical medical students. The sampling frame was drawed from eligible Year One and Year Two medical students using simple random sampling from the name list.

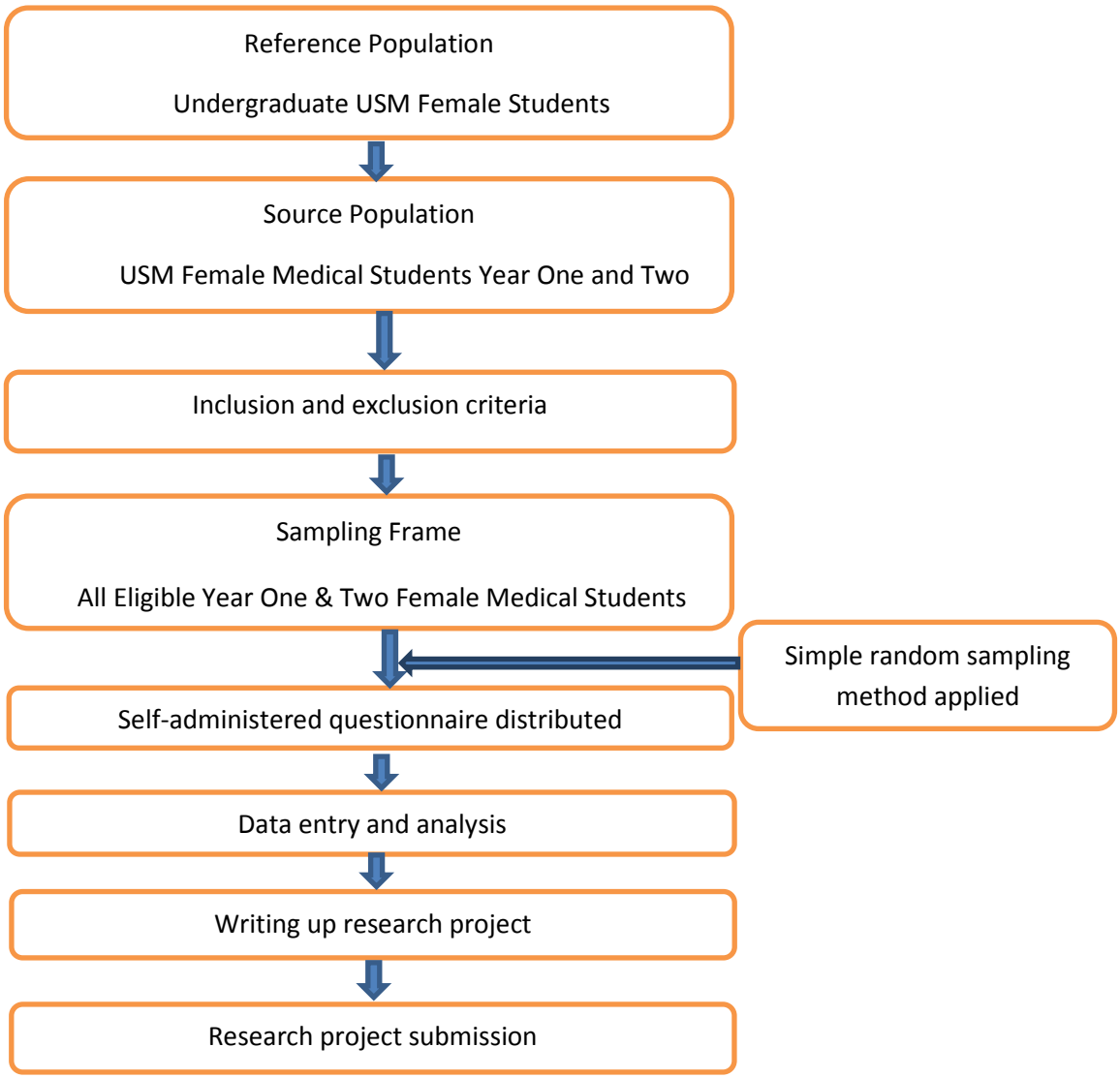

Figure 4.1 Flowchart of Study Methodology

4.12 ETHICAL APPROVAL

Ethical approval to conduct the study was obtained from the Human Research Ethics Committee, Universiti Sains Malaysia (FWA Reg. No: 00007718; IRB Reg. No: 00004494). All participants were given written consent to seek their permission to participate in this study and confidentiality of the data and the purposes of study informed to all.

CHAPTER 5

RESULTS

5.1 SOSIO-DEMOGRAPHIC CHARACTERISTICS

The students comprised Year One and Year Two pre-clinical medical students with Year Two accounting for 59.3% of the total respondents. Of the total respondents, the mean age was 20.8 with a standard deviation of 1.03.

The students were mostly Malays (80.8%), followed by Chinese (10.5%), Indians (7.6%) and other races (1.2%). Majority (85.5%) were aged between 20 to 22 years old and around 6.4% were 19 years old and less. As for family income, the distribution was fairly equal to around one third for each of the income categories being less than RM 2000, RM 2000 to RM 5000 and above RM 5000. Meanwhile, majority (76.2%) of the respondents were normoweight, with 11.6% being underweight and 12.2% categorized as either overweight or obese.

Table 5.1 Socio-demographic characteristics of USM female medical students

Variables	n (%)
Year of Study	
Year 1	70 (40.9)
Year 2	102 (59.3)
Age (years)	
<20	11 (6.4)
20 – 22	147 (85.5)
>22	14 (8.1)
Race	
Malay	139 (80.8)
Chinese	18 (10.5)
Indian	13 (7.6)
Others	2 (1.2)
Family income	
< RM 2000	52 (30.2)
RM 2000 - RM 5000	59 (34.3)
> RM 5000	61 (35.5)
BMI	
< 18.5 (underweight)	20 (11.6)
18.5 – 24.9	131 (76.2)
≥ 25 (overweight/obese)	31 (12.2)

5.2 PREVALENCE OF DYSMENORRHEA

A total of 172 female medical students returned the questionnaire out of the targeted 188 sample size meaning a response rate of 91.5%. The female students comprised of 70 (40.7%) Year One students and the remaining 102 were Year Two students. Of the total, 134 students reported having dysmenorrhea whereby the prevalence was 77.9%.

Table 5.2 Prevalence of dysmenorrhea among USM female medical students

Dysmenorrhea	n (%)	95% CI
Yes	134 (77.9)	(72.0, 84.0)
No	38 (22.1)	

5.3 MENSTRUAL CHARACTERISTICS

Most of the students described their menses as regular with only 36 (20.9%) students having irregular menses. As for the menstrual cycle length, 29.7% of students had a cycle length of 20 days or less, meanwhile 62.2% had a cycle length between 21-34 days. Only 14 (8.1%) students had a cycle length of 35 days or more.

The menstrual bleeding duration was 6 days or less for 74 (43.0%) students and 7 days or more for the remaining number. Generally, 89.5% of the students considered their menstrual flow as normal with 2-3 soaked pads per day without any spotting or excessive bleed.