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Short-term Changes in Quality of Life among Women Who had Hysterectomy for Benign Indications at Young Age: A preliminary study

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ABSTRACT

Objectives: The objective of this study was to compare the quality of life scores between younger (≤ 45 years old) and older women (≥ 46 years old) who underwent hysterectomy for benign indications.

Materials and Methods: A prospective cohort study was performed at a tertiary hospital over a 12-week period. Younger and older women who underwent elective hysterectomy for benign indications were selected as study and control groups, respectively. Quality of life was measured using the Malay version of the World Health Organisation Quality of Life Assessment-BREF questionnaire. The difference in quality of life scores from pre-surgery to 12 weeks post-hysterectomy between the two age groups were measured using repeated-measures analysis of variance (ANOVA).

Results: A total of 18 women were enrolled in the study group and 45 in the control group. Except for the environment domain among control group, all other domains showed an improvement in quality of life scores. However, the group–time interaction of the repeated-measures ANOVA showed no difference in quality of life score changes of all domains between younger and older women following hysterectomy.

Conclusion: In this preliminary study, younger women demonstrated comparable quality of life scores at 12 weeks after hysterectomy in comparison with older women. The results of this study may assist the gynaecologist and patient during pre-surgery counselling

Keywords: hysterectomy, women, quality of life, analysis of variance, leiomyoma

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Introduction

Hysterectomy is a common surgical procedure generally performed for the treatment of benign gynaecological diseases[1, 2]. Over the past few years, there has been an increasing trend of young women opting for hysterectomy to mitigate their gynaecological problems. In a study of hysterectomy among inpatients in the United States, more than half (68.4%) of the procedures were performed in women younger than 50 years[3]. In another retrospective review conducted at the University of Pittsburgh Medical Center hospital, 40.8% of total hysterectomy cases during the years 2012–2014 were performed in women younger than 45 years[4]. A similar trend was also demonstrated in a Taiwanese population-based survey[5].

Hysterectomy provides a means to alleviate any distressing symptoms related to benign gynaecological problems such as fibroids and endometriosis. Nevertheless, it is often seen as the last resort to treat young patients owing to its detrimental long-term effects on patients' health, as well as its psychological and hormonal impact. In India, early induction of menopause in young women who underwent hysterectomy has become an issue raised by women's health activists[6]. Findings from a British birth cohort study also indicated that women who underwent hysterectomy before the age of 40 years had a higher risk of poor psychological health in their midlife[7]. Furthermore, women who underwent hysterectomy before the age of 45 had 2.29- and 1.14-times higher risk for having stroke and coronary heart disease, respectively, compared with those without hysterectomy[8].

On the other hand, as young women are mostly at the peak of their career while being a caretaker for the family and sexually active, eliminating unpleasant symptoms that result from uterine problems such as severe pain or irregular bleeding may significantly improve their quality of life (QOL). Such women might, therefore, gain greater benefits from hysterectomy. However, the evidence on the outcomes related to the QOL at young age following hysterectomy remains limited. Considering the growing trend among young women to opt for hysterectomy, an investigation to assess any association between QOL and the patient's age at the time of hysterectomy is warranted.

Therefore, this study aimed to describe the QOL scores changes in young women (aged ≤ 45 years) at 12 weeks following hysterectomy for benign indications by using the World Health Organisation Quality of Life Assessment-BREF (WHOQOL–BREF) questionnaire. We also compared the QOL scores between younger and older (aged ≥ 46 years) women who underwent similar procedure during the study period. We hypothesised that younger women would show significant changes in QOL scores following hysterectomy when compared with their older peers.

Materials and Methods

Study design and setting

A prospective cohort study was conducted at the Sultan Abdul Halim Hospital, Sungai Petani, Kedah, Malaysia. This centre is a tertiary referral hospital and is recognised as one of the training centres for gynaecological laparoscopic surgery by the Ministry of Health Malaysia. Over past 5 years, the centre has performed hundreds of laparoscopic hysterectomies as well as conventional abdominal hysterectomy procedures.

Study population

Women scheduled for elective total hysterectomy for a benign condition regardless of hysterectomy method from January to December 2014 were included in the study. Participants were also required to be able to understand and answer the questionnaire. All women who needed an additional procedure during hysterectomy, such as oophorectomy or prolapse repair, were

excluded to avoid the confounding effect of these procedures. In addition, women with a uterus larger than 18 weeks' gestational size, suspicious malignancy, or a previous lower midline incision were excluded from the study. Participants were divided into two groups according to the age when the hysterectomy was performed.

The study group consisted of women aged 45 years or younger (≤ 45) at the time of hysterectomy, while the control group comprised women 46 years or older (≥ 46) at the time of surgery. All eligible women were identified and approached in the gynaecology ward one day before the surgical procedures. The purpose and method of the study were explained to the potential participants to obtain informed consent. The questionnaire was answered by each patient before the surgery (used as the baseline score) and at 12 weeks following the procedure during the follow-up visit (used as the 12-week score). Twelve weeks' follow-up for all patients was completed in March 2015. As this is a preliminary study, the sample size estimation was based on recommendation by Julious[9] that suggest a minimum sample size of 12 per group as a rule of thumb and justifies this based on rationale about feasibility and precision about the mean and variance.

Data collection instrument

The primary study outcome was comparison of the QOL score between the two age groups measured by the Malay version of the World Health Organisation Quality of Life-BREF (WHOQOL-BREF). The WHOQOL-BREF is a shorter version of the original WHOQOL-100 that consists of 100 questions. The validated Malay version of the WHOQOL–BREF comprises 24 items categorised into four domains: physical health, psychological health, social relationships, and the environment[10]. The internal consistency of the four domains ranged from 0.64 to 0.80. The intra-class correlation coefficient (ICC) ranged from 0.49 to 0.88 across all items in four domains[10]. In this short version, the physical health domain consists of seven items (pain, dependence on medical aids, energy, mobility, sleep and rest, activities of daily living, and work capacity), psychological health domains six items (positive feeling, personal belief, concentration, bodily image, self-esteem, and negative feeling), social relationships three items (personal relationship, sexual activity, and social support), and environment eight items (security, physical environment, financial support, accessibility to information, leisure activity, home environment, health care, and transport). All items are rated using a 5-point Likert scale (low score of 1 to a high score of 5). If an item was missing, the mean of the other items in the domain was used to replace the missing data[11]. If patients did not respond to more than 20% of the total items, they were excluded from further analysis[11]. Higher scores indicated a better QOL. Permission to use the WHOQOL-BREF was obtained for use in this study. We also collected information on the participants' socio-demographic characteristics (age, educational level, ethnicity, and occupation) and clinical characteristics (duration of disease, duration of surgery, and length of post-surgery hospitalisation).

Statistical analysis

Data were analysed using SPSS version 20.0 (IBM, Armonk, NY, USA). All socio-demographic characteristics were calculated as either means with standard deviations (SD) or medians with interquartile ranges, where appropriate, for continuous variables. Categorical variable were presented as number and percentage. The internal consistency of the WHOQOL-BREF questionnaire used in this study was determined by Cronbach's alpha coefficient for each domain. A repeated-measures analysis of variance (RM ANOVA) was used to assess the magnitude of changes in the QOL scores within and between the study group (≤ 45 years) and control group (≥

46 years) at 12 weeks after hysterectomy. A p value of less than 0.05 was considered statistically significant.

Ethical approval

The study was approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-13-1450-18563). The patient involvement in this study was voluntarily and non-respondent did not affect patient future care and treatment.

Results

Patients' characteristics

Of 104 women who underwent total hysterectomy during the study period, 39 were excluded as they had either simultaneous procedures during the hysterectomy (n=30), previous lower midline incision (n=7), or a uterus larger than 18-week gestational size (n=2). Of 65 women who fulfilled the study criteria, 18 were aged ≤ 45 and the remainder ≥ 46 years. Two women (both in the ≥ 46-year group) were lost to follow-up, and the others were successfully followed up until 12 weeks after surgery (retention rate 96.8%). The two groups were comparable with regard to demographic and clinical characteristics (Table 1). The majority of patients were Malay, were unemployed or a housewife, and had received up to secondary level education. All participants were married. Thirty-three women had a total abdominal hysterectomy, and 30 underwent total hysterectomy laparoscopically. The control group (≥ 46 years) had a shorter median duration of surgery (88.0 vs. 105.0 min), although the difference was not significant. Six women had an intraoperative complication (intraoperative bleeding, n=5 and pulmonary hypertension, n=1). However, no post-surgery complication or mortality was reported among the women who participated.

Internal consistency reliability

No missing data were found for any item in the WHOQOL-BREF questionnaire. The Cronbach alpha coefficient for all items assessed before surgery (baseline) and 12 weeks after surgery was 0.941 and 0.957, respectively. This result indicated a good internal reliability of the instrument.

Quality-of-life score

The distribution of WHOQOL-BREF scores in all four domains for women in the study group (≤ 45 years) was normal. The range of scores for each domain at baseline and 12-week follow-up were as follows: physical health, 8.0–17.1 (baseline) and 9.7–17.1 (12 weeks); psychological health, 9.3–18.0 (baseline) and 10.7–18.0 (12 weeks); social relationship, 9.3–20.0 (baseline) and 8.0–17.3 (12 weeks); environment, 10.5–18.5 (baseline) and 11.5–19.0 (12 weeks). Likewise, the QOL domain scores for women in the control group (≥ 46 years) were normally distributed. The corresponding range of scores were 7.4–20.0 (baseline) and 12.0–17.7 (12-week follow-up) for physical health; 6.7–19.3 (baseline) and 12.0–19.3 (12 weeks) for psychological health; 8.0–20.0 (baseline) and 12.0–18.7 (12 weeks) for social relationship; and 8.5–19.5 (baseline) and 11.0–18.5 (12 weeks) for environment.

Table 2 shows the mean and SD of all domain scores in both groups. ANOVA showed no difference in all four domains of WHOQOL-BREF scores between women in the study and control groups at both time periods. Young women showed marked improvement from baseline to 12 weeks after surgery in physical health, psychological well-being and environment domains scores when compared with older age women (Table 3). However, only minimal score changes was noted for social domain of young women. Furthermore, the group–time interaction of the RM ANOVA showed no difference in QOL score changes of all domains between younger and older women following hysterectomy.

Table 1. Demographic and surgical characteristics of women with hysterectomy (N=63) in two different age groups.

Variable	≤ 45 years (n=18)				≥ 46 years (n=45)				p value
	Median	(IQR)	n	(%)	Median	(IQR)	n	(%)	
Demographics									0.715[a]
Ethnicity									
Malay			10	(55.6)			31	(68.9)	
Chinese			1	(5.6)			2	(4.4)	
Indian			5	(27.8)			9	(20.0)	
Others			2	(11.1)			3	(6.7)	
Employment status									0.803[a]
Employed			5	(27.8)					
Unemployed/housewife			13	(72.2)					
Level of education									
Secondary			17	(94.4)			40	(88.9)	
Tertiary			1	(5.6)			5	(11.1)	
Perioperative characteristics									
Duration of disease (months)[b]	9.0	(18.0)			8.0	(11.0)			0.110[c]
Indication for hysterectomy									0.324[a]
Uterine fibroid			6	(33.3)			15	(33.3)	
Adenomyosis			6	(33.3)			8	(17.8)	
Menorrhagea, failed medical treatment			3	(16.7)			10	(22.2)	
Endometriosis			2	(11.1)			2	(4.5)	
Dysfunctional uterine bleeding			1	(5.6)			10	(22.2)	
Type of surgery									0.787[d]
Total abdominal hysterectomy			10	(55.6)			23	(48.9)	
Total laparoscopic hysterectomy			8	(44.4)			22	(51.1)	
Postoperative characteristics									
Duration of surgery (min)[b]	105.0	(63.0)			88.0	(37.0)			0.107[c]
Duration of hospital stay after surgery (days)[b]	2.0	(1.0)			2.0	(1.0)			0.377[c]
Intraoperative complication									0.051[a]
Yes			4	(22.2)			2	(4.4)	
No			14	(77.8)			43	(95.6)	

[a] Fisher exact test,
[b] Data were not normally distributed,
[c] Mann-Whitney test,
[d] Pearson chi-square test.
IQR = interquartile range;
n = frequency.

Table 2. Comparison of WHOQOL-BREF domains scores between group (women ≤ 45 vs. ≥ 46 years) at baseline (pre-surgery) and 12 weeks after hysterectomy, using ANOVA.

WHOQOL-BREF domain	Baseline			12 weeks		
	≤ 45 years (n=18) Mean (SD)	≥ 46 years (n=45) Mean (SD)	p value[a]	≤ 45 years (n=18) Mean (SD)	≥ 46 years (n=45) Mean (SD)	p value[a]
Physical health	12.9 (2.45)	13.7 (2.44)	0.238	14.6 (1.98)	14.7 (1.46)	0.878
Psychological well-being	13.6 (2.62)	14.2 (2.86)	0.439	15.1 (1.92)	15.3 (1.55)	0.645
Social relationship	14.3 (3.03)	15.0 (2.89)	0.397	14.4 (2.56)	15.5 (1.71)	0.062
Environment	13.7 (2.30)	14.9 (2.54)	0.081	14.3 (2.41)	14.9 (1.77)	0.279

[a] by analysis of variance.
SD = standard deviation.

Table 3. Comparison of WHOQOL-BREF in all four domains scores between women ≤ 45 and ≥ 46 years at baseline (pre-surgery) and 12 weeks after hysterectomy, using Repeated Measure ANOVA.

WHOQOL-BREF domain	Age group	EMM (95% CI)		Diff.	F stat (df)	p value[a]
		Baseline scores	12-weeks scores			
Physical health	≤45	12.9 (11.74, 14.04)	14.6 (13.87, 15.40)	1.7 ↑	0.9 (1, 61)	0.347
	≥46	13.7 (12.97, 14.43)	14.7 (14.22, 15.19)	1.0 ↑		
Psychological well-being	≤45	13.6 (12.24, 14.87)	15.1 (14.29, 15.86)	1.5 ↑	0.6 (1, 61)	0.426
	≥46	14.2 (13.33, 15.00)	15.3 (14.79, 15.78)	1.1 ↑		
Social relationship	≤45	14.3 (12.92, 15.68)	14.4 (13.51, 15.38)	0.1 ↑	2.4 (1, 61)	0.130
	≥46	15.0 (14.12, 15.87)	15.5 (14.91, 16.09)	0.5 ↑		
Environment	≤45	13.7 (12.53, 14.86)	14.3 (13.35, 15.21)	0.6 ↑	3.0 (1, 61)	0.088
	≥46	14.9 (14.18, 15.66)	14.9 (14.29, 15.46)	0		

[a] Group–time interaction of repeated-measures analysis of variance.
↑ = score increase.
CI = confidence interval; df = degrees of freedom; Diff. = difference; EMM = estimated marginal mean; F stat = F statistic.

Discussion

The WHOQOL-BREF questionnaire was chosen for this study because it is the most widely used assessment of QOL, and its short version has reduced the response burden of participants[10]. In fact, to the best of our knowledge, this is the first local report on QOL using WHOQOL-BREF among women who have undergone hysterectomy. Unfortunately, therefore, no local studies were available for comparison. The results showed that the mean QOL scores in all domains of women who underwent hysterectomy at the younger age (≤ 45 years) did not differ from those of women who had the same procedure when older (≥ 46 years). This

finding rejects our earlier hypothesis, as the QOL outcomes did not significantly differ whether the hysterectomy was done at the younger age or later. Given many other negative impacts of hysterectomy at younger age as found in other studies[6–8], the current finding supports the notion of delaying hysterectomy beyond the perimenopausal period[12]. This finding does provide additional information to aid gynaecologists and patients in deciding on the appropriate time for hysterectomy for benign indications[13–15].

In general, this study demonstrated that hysterectomy helps in improving QOL domain scores up to 12 weeks after surgery in our cohort irrespective of age at the time of surgery. Only environment domain scores among women ≥ 46 years remained unchanged. This finding was consistent with those of other studies that favoured hysterectomy as the treatment modality of choice for benign uterine conditions among pre-menopausal women. A multicentre trial comparing the effect of hysterectomy and symptomatic treatment showed that women who underwent hysterectomy generally had greater improvement in overall health and satisfaction with their health status[16]. In another study that assessed the satisfaction of 1,299 patients 12 months after hysterectomy, 85.3% of women reported that their health was better than that before surgery[17].

Young women demonstrated marked improvement in QOL score changes in physical health, psychological well-being and environment domains following hysterectomy. The possible explanation for these positive changes was related to mitigation of the symptoms. Relief from such unpleasant symptoms improved the women's ability to perform their daily activities undisturbed which was one of the item asked in physical health domain. Several previous studies have shown similar result which indicated that hysterectomy results in a more rapid return to daily activities[18,19]. Suffering from gynaecological illness have restricted these young women from carrying out their routine activities. Thus, hysterectomy resolved their symptoms as shown by increased satisfaction in performing activities of daily living. In concordance with the findings of Cohen, et al[20], post-hysterectomy young women also demonstrated a better body image and improved self-esteem (items in psychological well-being domain). Social relationship domain showed the least score changes among young women after hysterectomy. The plausible reason for this minimal improvement was that majority of our studied young women were unemployed or housewives. Compared to those employed women, unemployed women may have less involvement with social activities and relationship. Thus, the hysterectomy did not have major impact on their social life.

The main limitation of this study was the small number of patients enrolled, chiefly due to the difficulty in finding women able to fulfil the study criteria, especially when the hysterectomy was performed alongside other simultaneous procedures such as oophorectomy or prolapse repair. Because of the small number of participants, findings from this study may not be representative of other women who choose hysterectomy. Other problems of generalizability included the fact that this study was conducted at a single centre. Thus, similar studies in other populations would generate a worthier national picture of the effects of hysterectomy at a younger age, particularly regarding QOL. The second limitation was that this study assessed the QOL only at 12 weeks after surgery. Other long-term effects of hysterectomy on the QOL not captured herein represent an avenue of future research.

In conclusion, our preliminary study demonstrated that QOL scores in all four domains were improved during the short-term (12-weeks) post-operative period following hysterectomy for benign indications among young women. However, this score changes were comparable to the QOL scores by older women who underwent a similar procedure for benign conditions. The results of this study may assist the gynaecologists and patients during pre-surgery counselling.

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Potential conflicts of interest

The authors declare no conflict of interest.

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