Female Sexual Dysfunction Following Gynaecologic Cancer Treatment in Hospital Tengku Ampuan Afzan

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Dissertation Submitted in Partial Fulfilment of the Requirement for Degree of Master of Medicine (Obstetrics and Gynaecology)

UNIVERSITI SAINS MALAYSIA
2023

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AUC	Area Under the Curve
CCRT	Concurrent Chemoradiotherapy
DSM-IV	Diagnostic and Statistical Manual of Mental Disorder, 4th Edition
FSD	Female Sexual Dysfunction
FSFI	Female Sexual Function Index
HTAA	Hospital Tengku Ampuan Afzan
HUSM	Hospital Universiti Sains Malaysia
MVFSFI	Malay Version of Female Sexual Function Index
NMRR	National Medical Research Registry
QOL	Quality of Life
ROC	Receiver Operating Characteristic
RT	Radiation Therapy

1.4 ACKNOWLEDGEMENT

Praise to Allah S.W.T. the Most compassionate and Most merciful, with His blessings, has helped me through the entire completion of this book. It is a great pleasure to acknowledge the help of several individuals, and without that help, could not have been written this book.

First and foremost, I would like to express my appreciation to my research supervisors, Associate Professor Dr Nik Ahmad Zuky Nik Lah (Lecturer in Department of Obstetrics and Gynaecology, Hospital Universiti Sains Malaysia) and Dr Ahmad Muzamir Bin Ahmad Mustafa (Consultant Obstetrics and Gynaecology, Hospital Tengku Ampuan Afzan) for all support and guidance until completion of this dissertation. Without their assistance and dedicated involvement in every step throughout the process, I would have never accomplished this dissertation. I would like to thank you very much for your support and understanding over these past four years.

I am also grateful, and much respects are devoted to lecturers, specialists and colleagues in Hospital Universiti Sains Malaysia and in Hospital Tengku Ampuan Afzan for their assistance. I am extremely thankful and indebted to all for sharing expertise and sincere and valuable guidance and encouragement extended to me.

I wish to express my sincere thanks to the staff nurse and attendant in the gynaecology ward and in clinics Obstetrics and Gynecology Hospital Tengku Ampuan Afzan, for providing me with all the necessary facilities for the research. Last but not least, thanks to all the patients and all, who directly or indirectly, have lent their hand in this venture.

Tuan Norhanani Binti Tuan Ahmad

1.5 ABSTRAK

OBJEKTIF: Disfungsi seksual sangat lazim dalam pesakit kanser ginekologi. Menentukan faktor risiko disfungsi seksual dalam pesakit kanser membolehkan kita memberi lebih perhatian kepada mereka yang terdedah dan kepada strategi peranti untuk pengesanan awal, pencegahan dan rawatan disfungsi seksual di dalamnya. Matlamat utama kajian adalah untuk menentukan prevalens disfungsi seksual dan faktor-faktor yang berkaitan dengan pesakit kanser ginekologi di Hospital Tengku Ampuan Afzan, Kuantan, Pahang.

KAEDAH KAJIAN : Kajian '*cross sectional'* ini melibatkan pesakit gine-onkologi di Hospital Tengku Ampuan Afzan yang menepati kriteria kemasukan dan pengecualian untuk kajian ini. Mereka akan dinilai dengan menggunakan Indeks Fungsi Seksual Wanita Versi Bahasa Melayu (MVFSFI). Ia adalah 19 item soal selidik yang menilai fungsi seksual pada wanita dalam 6 domain berasingan. Data dianalisis menggunakan analisis univariat dan analisis regresi logistik untuk mencari prevalens dan faktor risiko yang berkaitan dengan Disfungsi Seksual Wanita.

KEPUTUSAN: Disfungsi seksual dalam pesakit gine-onkologi selepas rawatan adalah setinggi 63.2% dan FSD paling banyak diperhatikan adalah pada pesakit dengan kanser serviks (83%). Umur dan tahap pendidikan mempunyai perkaitan yang penting dengan masalah disfungsi seksual. Wanita berumur setahun lebih tua mempunyai 1.325 kali kemungkinan untuk mengalami masalah disfungsi seksual (95% CI: 1.201, 1.461, p-value <0.001). Wanita yang tidak melanjutkan pengajian tinggi mempunyai 1.884 kali ganda kemungkinan mengalami masalah disfungsi seksual berbanding mereka yang menamatkan pengajian sehingga pengajian tinggi (95% CI: 1.054, 3.364, p-value 0.032). Pesakit yang menjalani pembedahan dan kemoterapi mempunyai 0.343 kali kemungkinan dan pesakit yang

hanya menjalani pembedahan sebagai rawatan mempunyai 0.123 kali kemungkinan mendapat FSD jika dibandingkan dengan mereka yang menerima CCRT sebagai rawatan.

KESIMPULAN: Disfungsi seksual adalah salah satu kesan sampingan berikutan rawatan kanser ginekologi dan kajian ini menunjukkan prevalens adalah tinggi dan terdapat faktor lain yang berkaitan yang turut terlibat.

1.6 ABSTRACT

OBJECTIVE: Sexual dysfunction is highly prevalent in gynaecological cancer patients. Determining the risk factors of sexual dysfunction in cancer patients enables us to pay more attention to those who are vulnerable and to device strategies for early detection, prevention and treatment of sexual dysfunction in them. The main aim of the study was to determine the prevalence of sexual dysfunction and its associated factors in gynaecological cancer patients in Hospital Tengku Ampuan Afzan, Kuantan, Pahang.

STUDY METHOD: This cross sectional study involved gynaeoncology patients in Hospital Tengku Ampuan Afzan who fit the inclusion criteria for this study. They will be evaluated by using Malay Version of Female Sexual Function Index (MVFSFI). It is 19 item questionnaire that assess sexual functioning in women in 6 separate domains. Data were analysed using univariate analyses and logistic regression analysis to look for prevalence and factor associated with Female Sexual Dysfunction.

RESULT: Sexual dysfunction in gyaneoncology patients following treatment is 63.2% FSD is most observed in patient with cervical cancer (83%). Age and education level have significant association with having sexual dysfunction problems. Women of a year older has 1.325 odds ratio to have sexual dysfunction problems (95% CI: 1.201, 1.461, p-value <0.001). Women who did not pursue tertiary education has 1.884 odds ratio of having sexual dysfunction problems compare to those who complete until tertiary education (95% CI: 1.054, 3.364, p-value 0.032). Patients who underwent surgery and chemotherapy has 0.343 times the odds and patients who only underwent surgery as treatment has 0.123 times the odds of having FSD when compared to those who received CCRT as treatment.

CONCLUSION: Sexual dysfunction is one of the common side effects following gynaecological cancer treatment and this study shows the prevalence is high and there are other associated factors that also involved.

2.0 INTRODUCTION

Sexual health is defined by WHO as: “a state of physical, emotional, mental, and social well-being concerning to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence”(3).

The proportion of people living with and surviving gynecologic cancer is growing. This has led to increased awareness on the importance of quality of life, including sexual functions, in those affected by cancer. Sexual dysfunction is a very frequent and underestimated long-term complication of gynecologic cancer treatments (1). Even though gynecologic cancer treatments greatly affect sexual health, for cultural reasons, this subject is poorly studied and under-discussed.

Despite the high prevalence of sexual dysfunction in gynecologic cancer survivors, attention to sexual health issues by healthcare providers is still suboptimal. Patients would like to have more information regarding the effects of treatment on sexual health before therapy and desire counselling post-treatment to address sexual health (2), even if most of them do not ask directly.

A woman’s sexual functioning can be affected even before the diagnosis of a gynaecological cancer, with symptoms such as vaginal discharge, pain and bleeding. Treatment for gynaecological cancer usually involves a combination of surgery (hysterectomy, pelvic exenteration and/or oophorectomy), radiotherapy, and chemotherapy. Removal of reproductive organs may cause specific physiological and psychological effects. The uterus is

an integral part of sexual response, and its removal may affect sexual pleasure. An oophorectomy lowers oestrogen levels, which can affect vaginal lubrication.

The abrupt depletion of hormones may cause sudden changes that may be difficult to adjust to, as may the resulting menopausal symptoms (4,5). Feelings of a loss of femininity may occur. These effects may be less marked in the post-menopausal woman, who may have already experienced alterations in sexual response (5,6).

Chemotherapy often causes side-effects (eg: fatigue, weight changes, alopecia) that may affect the ability and desire to have sexual activity. Most women with cervical cancer and some with endometrial cancer receive radiotherapy which can cause persistent sexual dysfunction, including vaginal atrophy, vaginal stenosis, loss of elasticity of vaginal tissue and vaginal shortening (7). As well as physiological effects, women sometimes fear that intercourse will cause recurrence or damage.

A variety of measurement approaches are available for assessing FSD. Although physiological measures, such as vaginal photoplethysmography, are available, these are not suitable for use in large-scale clinical trials. Rather, a number of self-report and diary-based measures have been developed for multidimensional assessment of sexual function (8). This study will be used Malay version of Female Sexual Function Index Questionnaire. It is a brief (19-item) self-report questionnaire that assesses sexual functioning in women in six separate dimensions (desire, arousal, lubrication, orgasm, satisfaction and pain).

3.0 LITERATURE REVIEW

Globally, 40%−45% of women will have a sexual problem at some stage, with the prevalence increasing with age (22). Between 10% and 90% of women with any cancer will have sexual problems and over 50% of women with gynaecological cancer will have either temporary or persistent sexual difficulties. As diagnosis and treatments improve, the number of women surviving, cancer will increase, and survivorship issues including quality of life have become increasingly important (20).

In 2012, it was estimated that over 3 million women were living with gynecologic cancers globally. In the general population, female sexual problems are highly prevalent and affect up to 43% of women. In gynecologic oncology patients, sexual dysfunction has been reported to be as high as 90% (23), with an associated impact on psychosocial adjustment and quality of life. The effect on sexual functioning affects gynecologic cancer patients immediately following treatment and during long-term survivorship (24).

A study conducted by Jinbing Bai et al.2019 (9) to compare depression, sexual function, and quality of life between patients with gynae cancer and race-matched healthy controls. Patients with gynae cancer and healthy controls completed the Patient Health Questionnaire-9, Female Sexual Function Index, and Functional Assessment of Cancer Therapy–General measures at baseline and gynae cancer patients were assessed again at 6 months post–radiation therapy (RT). Analyses included 84 participants (51% white, 49% black), including 28 gynae cancer patients and 56 controls with similar marital status. Study findings reported that 82% of healthy controls and 92% of gynae cancer patients after treatment reporting sexual dysfunction. Patients pre-RT had greater sexual dysfunction and lower QOL (P= .001) than

controls did; patients at 6-month post-RT showed improved sexual function scores compared with pre-RT, with similar results to controls. White gynae cancer patients reported less sexual desire (P= .02), more pain (P= .05), and lower total Female Sexual Function Index scores (P= .01) than did black gynae cancer patients.

Another study by Tee BC et al.2014 (10), was conducted to determine the prevalence of sexual dysfunction and its risk factors in gynaecological cancer patients in Hospital Sultanah Bahiyah, Alor Star, Malaysia. Sexual function of eighty-three gynaecological cancer patients who were married were assessed with self-rated MVFSFI (Malay version Female Sexual Function Index). With the cut-off point 55 or less for sexual dysfunction, the result shows the prevalence of sexual dysfunction was 65%. The number of patients with desire dysfunction was (77%), sexual arousal dysfunction (65%), sexual lubrication problem (71%), orgasmic dysfunction (57%), sexual satisfaction problem (70%) and sexual pain problem (57%).

With regards to the cancer subjects who were married, 44 out of 83 (53%) married patients did not have sexual intercourse with their spouses for more than one month. The duration of absence of sexual intercourse ranged from 2 months to 240 months (median = 12 months) (IQR = 5 to 24 months). The present study indicated that those with low education level experienced more sexual dysfunction (OR 3.055, 95% CI 1.009-9.250), patients with shorter cancer duration had higher prevalence of sexual dysfunction (OR 0.966, 95% CI 0.966-0.998), ongoing chemotherapy (OR 3.045, 95% CI 1.149-8.067), pain perception (OR 3.230, 95% CI 1.257-8.303) (10).

Tsai et al.2011 (25) conducted a study to investigate the prevalence of sexual dysfunction and associated factors among cervical cancer patients. The crude prevalence and age-standardized

prevalence of sexual dysfunction were 66.67% and 55%, respectively. Cervical cancer patients with a lower level of education (<9th grade) (adjusted odds ratio [AOR]: 3.14; 95% confidence interval [CI]:1.51–10.37), who were older (AOR: 1.16; 95% CI: 1.07–1.25) showed a significantly higher risk of sexual dysfunction.

Michael Krychman et al.2013 (11) did a systematic survey of currently available relevant literature published in English to characterize the etiology, prevalence, and treatment for sexual health concerns for women with gynecological cancer. Eighty-five percent of the subjects had low or no sexual interest, 35% had moderated to severe lack of lubrication, 55% had mild to severe dyspareunia, 50% reported a reduced vaginal dimension, while 45% were never or only occasionally able to complete sexual intercourse.

L.Del Pup. 2017 (12) did a comprehensive literature search of English language studies on sexual dysfunctions due to gynecologic cancer treatment has been conducted on MEDLINE databases. The results showed majority of ovarian cancer survivors face negative effects on sexual function following treatment. In endometrial cancer patients, 65% reported changes in sexual activity due to treatment, including decreased libido and frequency of sex, and 60% reported dyspareunia. cervical cancer patients treated with radiation have significantly more sexual dysfunction and vaginal morbidity including decreased libido (85%), dissatisfaction in sexual life (30%), reduced vaginal dimension (50%), dyspareunia (55%), and lack of lubrication (35%).

In study conducted by TG Hopkins et al. 2014 (13), women (n = 102, mean age 51.3 years) were invited to complete a questionnaire using both paper and online response formats. A validated tool, the Sexual Activity Questionnaire, was used to obtain information from

women following a diagnosis of ovarian cancer. 63% of women reported their ovarian cancer diagnosis had negatively changed their sex life.

Chloe Alice et al.2020 (14), synthesize evidence from primary qualitative and quantitative research studies exploring psychosexual morbidity in women with epithelial ovarian cancer to identify potential risk factors and common symptoms. Literature (2008–19) from 10 databases identified 29 suitable publications (4116 patients). The conclusion was up to 75% of women with epithelial ovarian cancer reported adverse changes in their sex lives.

Saketh R. Guntupalli et al.2017 (15), did a cross sectional study to assesses the extent of sexual and marital dysfunction women face following treatment of a gynecologic cancer. Three hundred twenty women with gynecologic cancer were enrolled (mean age, 56.0 [SD, 12.0] years) using a 181-item survey. Sexual dysfunction was measured by change in the Female Sexual Function Index score; marital dysfunction was measured by change in Intimate Bond Measure from pre diagnosis to post treatment. Paired t tests and Fisher exact test were used to compare women with dysfunction to those without dysfunction.

Among the 208 women who were sexually active at the time of study, sexual dysfunction after treatment was associated with age (50.9 [SD, 11.7] years to 57.3 [SD, 12.3] years), ovarian (40.7% vs 30.7%) or cervical (21.0% vs 10.2%) cancer diagnosis, chemotherapy treatment (72.8% vs 50.4%), and being in a relationship (97.3% vs 82.7%). Among women in relationships, 27% experienced marital dysfunction (15).

According to another study conducted to assess the prevalence and associated factors of female sexual dysfunction (FSD) in Lower Egypt, cross-sectional clinic-/hospital-based

survey was designed for implementation in married women aged between 16 and 49 years. The study was performed from June 2002 through April 2003. A total of 1000 married women were selected for the interview. Their ages ranged from 16 to 49 years, with a mean age of 29.9 ± 7.7 years. Nine hundred and thirty-six women complied with the study, while 64 refused to participate, giving a response rate of 93.6%. The questionnaire used to measure sexual dysfunction comprised six response items, each assessing the presence of a critical symptom or a sexual problem. Response items included lacking or having reduced desire for sex; frequency of sexual activity; arousal difficulty. The assessment questionnaire also included demographic characteristics such as respondent age, duration of marriage, other wives, residence status, level of education, work and other source of income, if any. Other aspects of reproductive function were included such as the number of children, mode of delivery and method of birth control, if any. The results show Six hundred and forty-five (68.9%) women had one or more sexual problems. decrease or loss of desire was the most common sexual problem among participants (49.6%), followed by orgasmic problems (43%), while arousal problems and dyspareunia occurred in 36 and 31.5%, respectively. Sexual problems were reported to be less common in women aged 20–29 years and more common in women aged 40–49 years. The level of education was also significantly correlated with the extent of sexual problems. Also, parity was a highly significant variable, in particular for those who had delivered more than five times (21).

A cross-sectional study where a questionnaire which included 19 questions in the FSFI (Female Sexual Function Index) was distributed to all allied health workers in a tertiary hospital in Singapore aged between 18 to 70 years old. Three hundred thirty completed questionnaires were involved in analysis. 56.0% of women were found to have sexual dysfunction. A significant difference was found in the prevalence of FSD when comparing

nurses to other allied health staff, where nurses had a decreased risk of developing FSD. Age was not found to be a significant risk factor in our study. Respondents below 40 years of age had significantly lower satisfaction scores than those above 40. Indians and Filipinos were found to have lower scores than the Chinese and Malay respondents in the lubrication ($p=0.02$) and pain domains ($p=0.02$) (17).

4.0 JUSTIFICATION OF STUDY

FSD is prevalent among the gynaeoncology patient which is poorly addressed in Malaysian population. Sexual dysfunction in gynaecological cancer is commonly underdiagnosed due to patients' reluctance to complain or lacking from health care provider side to assess regarding this issue as one of the long term effects experienced by gynaeoncology patients. It is important to address FSD among gynaeoncology patients in Malaysia because it can affect their lives. Hence, by determining its prevalence and associated factors, a database can be established in making an intervention for FSD. The purpose of this study is to provide local data on prevalence and associated factor of female sexual dysfunction in gynaeoncology cancer patient following treatment.

5.0 OBJECTIVES

5.1 General

To study the prevalence of female sexual dysfunction and associated factors following gynaecologic cancer treatment in HTAA.

5.2 Specific

1. To determine the prevalence of Female Sexual Dysfunction following gynaecology cancer treatment
2. To determine factors associated with the development FSD following gynaecology cancer treatment

6.0 METHODOLOGY

Study Design

This is cross sectional study on female patient following gynae oncology treatment in Hospital Tengku Ampuan Afzan.

Study Population

All gynae oncology or gynaecology cancer patient who received treatment in Hospital Tengku Ampuan Afzan.

Subject Criteria

Inclusion criteria:

1. Married
    - All patients who are married and still has spouse. Divorcee and those who are sexually active but not married will be excluded
2. Age 20-60 years old
    - Sexually active age
3. Histopathologically confirmed diagnosis
    - Diagnosis of cancer confirmed by tissue pathology
4. Completed treatment at least 1 month
    - Those who received treatment will be assessed after 1 month of completion of treatment

Exclusion criteria:

1. Loss to follow up
2. Defaulted treatment
3. Recurrence

Withdrawal criteria:

1. Subject voluntarily withdraw her consent to participate in this study
2. Principal Investigator (PI) terminates the subject's study participation.

Suspending or terminating study criteria:

1. Lack of recruitment or failure to include enough subject
2. Decision by the investigator due to inability to sustain or further manage the study

Sample Size

Sample size calculation using PS software 3.1.6

Sample Size Calculation: Objective 1

The Prevalence of Female Sexual Dysfunction among female following gynaecologic cancer treatment

$$n = \left(\frac{Z_{(1-\alpha/2)}}{\Delta}\right)^2 P(1-P)$$

Z	α	Δ	P	n	n+10%*	Author, Year
1.96	0.05	0.05	0.75	288	316	Chloe Alice Logue, Julia Pugh, Gordon Jayson; 2020
1.96	0.05	0.05	0.92	113	124	Jinbing Bai, Sarah M. Belcher, Rebecca Meador; *2019*
1.96	0.05	0.05	0.85	195	214	Michael Krychman, and Leah S. Millheiser; 2013

Sample Size Calculation: Objective 2

The sociodemographic factor association with Female Sexual Dysfunction among female following gynaecologic cancer treatment

Variables	P_0	P_1	m	n	2n+ 10%*	Reference
Age	0.60	0.75	4	97	213	Molouk Jaafar, ali khani, Javaher, Zeinab Suhrabi (2013)
Parity	0.70	0.82	2	151	332	Molouk Jaafar, ali khani, Javaher, Zeinab Suhrabi (2013)
Race	0.25	0.36	4	166	365	Farah Safdar, Chui Lee Julia Eng, Khin Lay Wai,

P_0 = Proportion of satisfied

P_1 = Estimated proportion of female sexual dysfunction

Power of study = 80%

$\alpha = 0.05$

*10% addition to sample size due to possibility of data entry error, missing and outliers.

Based on all estimations, a sample of 365 needed for this study.

Sampling Method

Selection of respondents for the study is based on inclusion & exclusion criteria

Research Tools

FSD will be evaluated by using Malay Version of Female Sexual Function Index (MVFSFI). It is 19 item questionnaire that assess sexual functioning in women in 6 separate domains. The 6 domains are desire, arousal, lubrication, orgasm, satisfaction and pain during sexual intercourse. The MVFSFI is a validated and locally accepted questionnaire for use in the assessment of FSD in the Malaysian population and permission to use this has been obtained from original author.

Validation was carried out on aspects of face, content, discriminant, and criterion (concurrent) validity. The concurrent (criterion) validity in this study was measured using the

sensitivity and specificity of the MVFSFI against the DSM-IV as the "gold standard" instrument. The total scores of the MVFSFI were calculated by summing all the scores of all items in the scale. Multiple cutoff scores from the MVFSFI scoring were compared against DSM-IV diagnosis to determine the most sensitive and specific cutoff score for the questionnaire to detect FSD. Similar procedures were carried out for each domain.

The discriminant validity of the MVFSFI was calculated with an independent t-test that compared the mean score of the total score and the mean score of domains between cases (women with sexual dysfunction) and noncase (women without sexual dysfunction). The determination of the best cutoff point for the MVFSFI to differentiate cases and noncases was undertaken by examining the sensitivity and specificity of each score around the midpoint between the minimum and maximum scores of the questionnaire against the diagnosis of female sexual disorder by the DSM-IV. The minimum total score was 4 and the maximum was 95. Therefore, sensitivity and specificity of scores between 35 and 70 were examined, as shown in Table 10.

Table 10 Sensitivity and specificity of MVFSFI total score

MVFSFI total score	Sensitivity	Specificity	1-Specificity	AUC
35	0.76	1	0	0.619
40	0.82	1	0	0.739
45	0.9	1	0	0.866
50	0.94	1	0	0.925
55	0.99	0.97	0.03	0.986*
60	1	0.8	0.2	0.948
65	1	0.59	0.41	0.856
70	1	0.47	0.53	0.767

*The highest area under the curve calculated using SPSS.
AUC = area under the curve; MVFSFI = Malay version of the Female Sexual Functioning Index.

The sensitivity and specificity values were plotted using ROC curves, as shown in Figure 2. The best sensitivity and specificity was shown at the total score of 55 with the AUC value of 0.986.

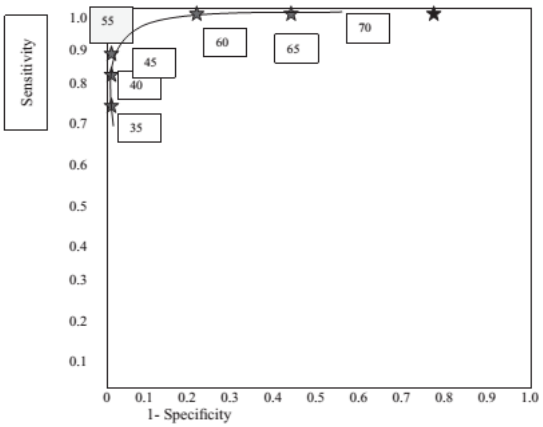

Figure 2 ROC curve for total score of the MVFSFI. MVFSFI = Malay version of the Female Sexual Functioning Index; ROC = receiver operating characteristic.

The calculation for cutoff points for all the domains was conducted in a similar manner. Table 11 shows the sensitivity and specificity values of each score nearing the midpoint between the minimum and maximum scores for each of the domains.

Table 11 Sensitivity and specificity of MVFSFI domains

MVFSFI score	Sensitivity	Specificity	1-Specificity	AUC
Desire				
3	0.61	1	0	0.662
4	0.71	0.92	0.08	0.794
5	0.95	0.89	0.11	0.849*
6	1	0.63	0.37	0.558
Arousal				
8	0.62	1	0	0.760
9	0.77	0.95	0.05	0.826*
10	0.80	0.70	0.30	0.791
11	0.91	0.67	0.33	0.653
Lubrications				
8	0.55	0.98	0.02	0.609
9	0.63	0.92	0.08	0.753
10	0.79	0.87	0.13	0.813*
11	0.85	0.68	0.32	0.609
Orgasm				
3	0.50	0.93	0.03	0.643
4	0.83	0.85	0.15	0.752*
5	0.85	0.70	0.30	0.811
6	0.93	0.48	0.52	0.717
Satisfaction				
9	0.56	0.96	0.04	0.679
10	0.74	0.87	0.13	0.728
11	0.89	0.82	0.18	0.822*
12	0.93	0.55	0.45	0.786

*The highest area under the curve calculated using SPSS.
AUC = area under the curve; MVFSFI = Malay version of the Female Sexual Functioning Index.

These were then plotted in an ROC curve, as shown in Figure 3. The most upper left point that gives the highest value under the curve was taken as the best cutoff point for each domain.

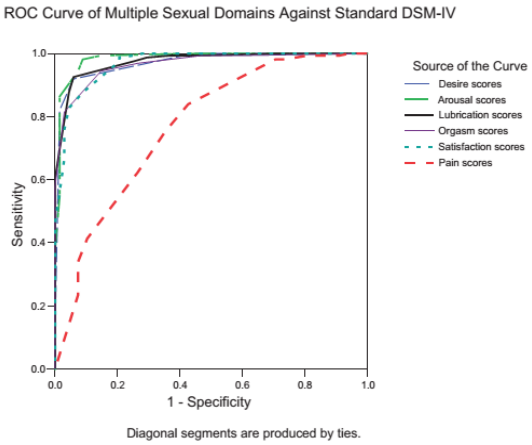

Figure 3 ROC curve for all domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; ROC = receiver operating characteristic.

Area Under the Curve

Test Results Variable(s)	Area
Total Desire	.971
Total Arousal	.984
Total Lubrication	.975
Total Orgasm	.966
Total Satisfaction	.968
Total pain	.769

For the domain of desire, the midpoint score of this domain was 5 (range 2–10). The calculation for the values around the midpoint showed the highest AUC to be at the total score of 5. Therefore, this value was taken as the cutoff score with a sensitivity of 95% and a specificity of 89%. For the domain of arousal, the midpoint score was 10 (range 2–20). The best cutoff point appears to be at the total score of 9, with the AUC value of 0.826 and a sensitivity and a specificity of 77% and 95%, respectively. For the domain of lubrication, the minimum total score was 2 and the maximum was 20. The best cutoff point was 10 with a sensitivity and a specificity of 79% and 87%, respectively. For the domain of orgasm, the minimum total score was 0 and the maximum was 10. The best cutoff point was 4 with a sensitivity of 83% and a specificity of 85%. For the domain satisfaction, the best cutoff point

was shown at the total score of 11 with the highest AUC value of 0.822 and a sensitivity and a specificity of 89% 82%, respectively. For the domain of pain, the minimum total score was 0 and the maximum was 15. The highest AUC value (0.853) was observed at the total score of 7. At this point, the sensitivity and specificity for the domain of pain were 86% and 95%, respectively.

Reliability studies on test–retest and on internal consistency were conducted with Cronbach's alpha and Pearson correlation, respectively.

Test–Retest : The Pearson product–moment correlation coefficient (r) for the six domains ranged from 0.767 to 0.973, as shown in Table 4.. When the mean scores of each domain in the test and retest were analyzed with a paired t-test, no differences were found (P<0.05). This applied to all the six domains, as shown in Table 5. This means that the MVFSFI is able to produce consistent results over time.

Table 4 Test–retest reliability of the MVFSFI

MVFSFI	No. of questions	Pearson (*r*) N = 53	Significant (two-tailed)
Desire	2	0.872**	0.000
Arousal	4	0.767**	0.000
Lubrication	4	0.945**	0.000
Orgasm	2	0.973**	0.000
Satisfaction	4	0.948**	0.000
Pain	3	0.855**	0.000

**Correlation is significant at the 0.01 level (two-tailed).
MVFSFI = Malay version of the Female Sexual Functioning Index.

Table 5 Test–retest mean score and paired sample *T*-test

			Mean difference				
				95% confidence interval of the difference			
Domains	N = 53 Test mean score (SD)	N = 53 Retest mean score (SD)	Mean differences (SD)	Lower	Upper	*t*	Significant (two-tailed)
Desire	3.69 (1.61)	3.64 (1.66)	0.06 (0.53)	−0.0906	0.2038	0.772	0.444
Arousal	8.43 (3.53)	8.45 (3.43)	−0.02 (0.72)	−0.2174	0.1797	−0.191	0.850
Lubrication	10.47 (4.56)	10.00 (4.62)	0.47 (1.60)	0.0305	0.9129	2.146	0.037
Orgasm	4.81 (2.64)	5.02 (2.50)	−0.21 (1.03)	−0.4903	0.0752	−1.473	0.147
Satisfaction	10.77 (4.08)	10.53 (4.12)	0.24 (1.19)	−0.0831	0.5737	1.499	0.140
Pain	9.87 (3.20)	9.51 (2.80)	0.36 (1.67)	−0.1005	0.8175	1.567	0.123
Total score	47.15 (16.0)	47.15 (16.3)	−0.90 (3.35)	−1.8314	0.0201	−1.963	0.055

All scales show the mean differences are not significant at $P < 0.05$.

The internal consistency of the scale was examined by measuring the item reliability index, which provides an indication of the reliability of the survey. This was performed by calculating the Cronbach's alpha values for assessing the relatedness of each domain in the questionnaire and of each item in every domain.

The Cronbach's alpha values for the total sample ranged from 0.8665 to 0.9675. Among women with sexual dysfunction (case), the Cronbach's alpha values ranged from 0.7913 to 0.9438, whereas among those without sexual problems (noncase), the values ranged from 0.5438 to 0.8937 (Table 6).

Table 6 Internal consistency of the MVFSFI in total sample, cases and noncases groups

	Internal consistency (alpha)		
	Full sample (N = 230)	Case (N = 68)	Noncase (N = 162)
Desire	0.8665	0.7913	0.5438
Arousal	0.9259	0.8345	0.7638
Lubrication	0.9302	0.8988	0.7829
Orgasm	0.8950	0.8165	0.7168
Satisfaction	0.9496	0.8467	0.8871
Pain	0.9060	0.9438	0.8345
Total	0.9675	0.8646	0.8937

A Cronbach's alpha of less than 0.6 was considered poor or weak, 0.6–0.8 moderate but satisfactory, and of 0.8 and above indicative of high internal consistency.

INDEKS FUNGSI SEKSUAL WANITA

ARAHAN: *Soalan-soalan di bawah adalah untuk mengetahui tentang perasaan dan reaksi seksual anda dalam masa 4 minggu yang lepas. Sila jawab secara jujur dan jelas yang mungkin. Jawapan anda adalah rahsia dan tidak akan didedahkan kepada mana-mana pihak yang tidak berkaitan dengan kajian ini.*

Aktiviti sekual adalah termasuk dalam meraba, bercumbu dan bersetubuh.
Hubungan Sekual adalah bermaksud bersetubuh.
Ransangan seksual adalah seperti bermesra dengan pasangan dalam keadaan yang sangat intim tetapi belum bersetubuh atau berfantasi mengenainya.

TANDAKAN (X) HANYA PADA SATU KOTAK UNTUK SETIAP SOALAN

Keinginan seks adalah perasaan keinginan untuk mengadakan hubungan seks atau perasaan mendapat ransangan daripada pasangan anda dan memikirkan atau berfantasi mengenai mengadakan hubungan seksual.

1. **Sepanjang 4 minggu yang lepas, berapa kerapkah anda mengalami keinginan seks?**

☐	Hampir sentiasa atau sentiasa
☐	Kebanyakkan dari masanya (lebih separuh dari masanya)
☐	Kadang-kadang (separuh dari masanya)
☐	Jarang sekali (kurang dari separuh masa)
☐	Hampir tidak pernah atau tidak pernah

2. **Sepanjang 4 minggu yang lepas, bagaimana anda mengkadarkan tahap keinginan nafsu seks anda?**

☐	Sangat tinggi
☐	Tinggi
☐	Sederhana
☐	Rendah
☐	Sangat rendah atau tiada langsung

Ghairah adalah perasaan di mana anda mengalami perasaan atau perubahan fizikal dan mental terhadap ransangan seksual. Ini termasuk perasaan hangat atau geli pada kemaluan, terkeluar cecair faraj atau otot menjadi sedikit kejang.

3. **Sepanjang 4 minggu yang lepas, berapa kerapkah anda menjadi ghairah (teransang) semasa melakukan hubungan seks?**

☐	Tiada hubungan seksual
☐	Hampir sentiasa atau sentiasa
☐	Kebanyakkan dari masanya (lebih separuh dari masanya)
☐	Kadang-kadang (separuh dari masanya)
☐	Jarang sekali (kurang dari separuh masa)
☐	Hampir tidak pernah atau tidak pernah

4. **Sepanjang 4 minggu yang lepas, bagaimana anda mengkadarkan tahap keghairahan seksual anda semasa melakukan hubungan seks?**

☐	Tiada hubungan seksual
☐	Sangat tinggi
☐	Tinggi
☐	Sederhana
☐	Rendah
☐	Sangat rendah atau tiada langsung

5. **Sepanjang 4 minggu yang lepas, bagaimanakah keyakinan anda untuk menjadi ghairah semasa melakukan hubungan seks ?**

☐	Tiada hubungan seksual
☐	Keyakinan yang sangat tinggi
☐	Keyakinan yang tinggi
☐	Keyakinan yang sederhana
☐	Keyakinan yang rendah
☐	Keyakinan yang sangat rendah atau tiada keyakinan

6. **Sepanjang 4 minggu yang lepas, berapa kerapkah anda merasa puas dengan keghairahan anda semasa melakukan hubungan seks?**

	Tiada hubungan seksual
	Hampir sentiasa atau sentiasa
	Kebanyakkan dari masanya (lebih separuh dari masanya)
	Kadang-kadang (separuh dari masanya)
	Jarang sekali (kurang dari separuh masa)
	Hampir tidak pernah atau tidak pernah

7. **Sepanjang 4 minggu yang lepas, berapa kerapkah anda mengeluarkan cecair faraj semasa melakukan hubungan seks ?**

	Tiada hubungan seksual
	Hampir sentiasa atau sentiasa
	Kebanyakkan dari masanya (lebih separuh dari masanya)
	Kadang-kadang (separuh dari masanya)
	Jarang sekali (kurang dari separuh masa)
	Hampir tidak pernah atau tidak pernah

8. **Sepanjang 4 minggu yang lepas, berapa sukarkah anda mengeluarkan cecair faraj semasa melakukan hubungan seks?**

	Tiada hubungan seksual
	Tersangat sukar atau mustahil
	Sangat sukar
	Sukar
	Sedikit sukar
	Tiada kesukaran

9. **Sepanjang 4 minggu yang lepas, berapa kerapkah anda dapat meneruskan pengeluaran cecair faraj sehingga selesai hubungan seks?**

	Tiada hubungan seksual
	Hampir sentiasa atau sentiasa
	Kebanyakkan dari masanya (lebih separuh dari masanya)
	Kadang-kadang (separuh dari masanya)
	Jarang sekali (kurang dari separuh masa)
	Hampir tidak pernah atau tidak pernah

10. Sepanjang 4 minggu yang lepas, berapa sukarkah untuk anda meneruskan pengeluaran cecair faraj sehingga selesai hubungan seks?

☐	Tiada hubungan seksual
☐	Tersangat sukar atau mustahil
☐	Sangat sukar
☐	Sukar
☐	Sedikit sukar
☐	Tiada kesukaran

11. Sepanjang 4 minggu yang lepas, apabila melakukan hubungan seks, berapa kerapkah anda mencapai kemuncak (atau klimaks)?

☐	Tiada hubungan seksual
☐	Hampir sentiasa atau sentiasa
☐	Kebanyakkan dari masanya (lebih separuh dari masanya)
☐	Kadang-kadang (separuh dari masanya)
☐	Jarang sekali (kurang dari separuh masa)
☐	Hampir tidak pernah atau tidak pernah

12. Sepanjang 4 minggu yang lepas, apabila melakukan hubungan seks, berapa sukarkah untuk anda mencapai kemuncak (atau klimaks)?

☐	Tiada hubungan seksual
☐	Tersangat sukar atau mustahil
☐	Sangat sukar
☐	Sukar
☐	Sedikit sukar
☐	Tiada kesukaran

13. Sepanjang 4 minggu yang lepas, bagaimanakan kepuasan anda dengan kebolehan anda untuk mencapai kemuncak (atau klimaks)?

☐	Tiada hubungan seksual
☐	Sangat puas
☐	Sederhana puas
☐	Kepuasan dan ketidakpuasan adalah seimbang
☐	Sederhana tidak puas
☐	Sangat tidak puas

14. Sepanjang 4 minggu yang lepas, bagaimanakah tahap kepuasan kemesraan/keintiman emosi semasa hubungan seksual dengan pasangan anda?

☐	Tiada hubungan seksual
☐	Sangat puas
☐	Sederhana puas
☐	Kepuasan dan ketidakpuasan adalah seimbang
☐	Sederhana tidak puas
☐	Sangat tidak puas

15. Sepanjang 4 minggu yang lepas, bagaimanakan tahap kepuasan anda dengan pasangan anda?

☐	Tiada hubungan seksual
☐	Sangat puas
☐	Sederhana puas
☐	Kepuasan dan ketidakpuasan adalah seimbang
☐	Sederhana tidak puas
☐	Sangat tidak puas

16. Sepanjang 4 minggu yang lepas, bagaimanakan tahap kepuasan seks anda secara keseluruhannya?

☐	Tiada hubungan seksual
☐	Sangat puas
☐	Sederhana puas
☐	Kepuasan dan ketidakpuasan adalah seimbang
☐	Sederhana tidak puas
☐	Sangat tidak puas

17. Sepanjang 4 minggu yang lepas, berapa kerapkah anda mengalami kesakitan (atau ketidakselesaan) <u>semasa</u> melakukan hubungan seks?

☐	Tiada hubungan seksual
☐	Hampir sentiasa atau sentiasa
☐	Kebanyakkan dari masanya (lebih separuh dari masanya)
☐	Kadang-kadang (separuh dari masanya)
☐	Jarang sekali (kurang dari separuh masa)
☐	Hampir tidak pernah atau tidak pernah

18. Sepanjang 4 minggu yang lepas, berapa kerapkah anda mengalami kesakitan (atau ketidakselesaan) <u>selepas</u> melakukan hubungan seks?

☐	Tiada hubungan seksual
☐	Hampir sentiasa atau sentiasa
☐	Kebanyakkan dari masanya (lebih separuh dari masanya)
☐	Kadang-kadang (separuh dari masanya)
☐	Jarang sekali (kurang dari separuh masa)
☐	Hampir tidak pernah atau tidak pernah

19. Sepanjang 4 minggu yang lepas, bagaimana anda mengkadarkan tahap kesakitan (atau ketidakselesaan) anda semasa melakukan hubungan seks?

☐	Tiada hubungan seksual
☐	Sangat tinggi
☐	Tinggi
☐	Sederhana
☐	Rendah
☐	Sangat rendah atau tiada langsung

A total score of 55 was taken as the cut off point for the MVFSFI to distinguish between women with sexual dysfunction and those without (sensitivity=99%, specificity=97%). Scores lower than 55 indicate sexual dysfunction. The cut off score for each domain was also established for the MVFSFI: ≤5 for sexual desire disorder (sensitivity 95%, specificity 89%); ≤9 for sexual arousal disorder (sensitivity 77%, specificity 95%); ≤10 for disorder of lubrication (sensitivity 79%, specificity 87%); ≤4 for orgasmic disorder (sensitivity 83% and specificity 85%); ≤11 for sexual dissatisfaction (sensitivity 83%, specificity 85%); and ≤7 for sexual pain disorder (sensitivity 86%, specificity 95%).

RISALAH MAKLUMAT PESERTA DAN BORANG PERSETUJUAN atau KEIZINAN PESERTA

1. **Tajuk penyelidikan:**

   INDEKS GANGGUAN FUNGSI SEKSUAL WANITA DALAM KALANGAN PESAKIT GYNAEONKOLOGI YANG MENERIMA RAWATAN KANSER DI HOSPITAL TENGKU AMPUAN AFZAN

2. **Nama institusi and nama penyelidik:**

Peranan	Name	Institution
Penyelidik Utama	Dr Tuan Norhanani Binti Tuan Ahmad (MPM 64849)	HTAA/HUSM
Penyelia Bersama	Prof Nik Ahmad Zuky Nik Lah (MPM 33701)	HUSM
Penyelidik Bersama	Dr Ahmad Muzamir Bin Ahmad Mustafa (MPM 33128)	HTAA

3. **Nama penaja**: Penajaan sendiri

4. **Pengenalan:**

   Risalah ini menjelaskan hal-hal berkenaan penyelidikan tersebut dengan lebih mendalam dan terperinci. Amat penting anda memahami mengapa penyelidikan ini dilakukan dan apa yang dilakukan dalam penyelidikan ini. Sila ambil masa yang secukupnya untuk membaca dan mempertimbangkan dengan teliti penerangan yang diberi sebelum anda bersetuju untuk menyertai penyelidikan ini. Jika ada sebarang kemusykilan ataupun maklumat lanjut yang anda ingin tahu, anda boleh bertanya dengan mana-mana kakitangan yang terlibat dalam penyelidikan ini. Setelah anda berpuas hati bahawa anda memahami penyelidikan ini, dan anda berminat untuk turut serta, anda dikehendaki untuk menandatangani Borang Persetujuan atau Keizinan Peserta, pada muka surat akhir risalah ini.