SEXUAL DYSFUNCTION AMONG WOMEN WITH BREAST CANCER IN NORTHEASTERN OF WEST MALAYSIA

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ABSTRAK

Pengenalan: Kegagalan fungsi seksual adalah satu komplikasi yang biasa berlaku di kalangan pesakit kanser payudara setelah menjalani rawatan.

Matlamat: Kajian ini mengkaji kelaziman dan faktor-faktor yang berkaitan dengan kegagalan fungsi seksual wanita di kalangan pesakit kanser payudara di Kelantan.

Metodologi: Ini adalah kajian secara keratan rentas yang merekrut pesakit wanita, umur antara 18 – 65, berkahwin dan mempunyai hubungan seksual yang aktif dengan pasangan, telah disahkan mengidap penyakit kanser payudara dan sudah menjalani pembedahan, tidak termasuk mereka yang mempunyai penyakit jiwa, pernah menjalani pembedahan bahagian pelvik dan suami yang mempunyai masalah seksual. Borang soal-selidik mengandungi maklumat sociodemographic, klinikal, bersama dengan Malay Version of Breast-Impact of Treatment Scale. Fungsi seksual mereka dinilai dengan menggunakan Malay Version of Female Sexual Function Index-6. Data dianalisa dengan regresi linear mudah dan berganda.

Keputusan: Sembilan puluh empat pesakit berkelayakan dimasukkan dalam kajian ini. 73.4% (n = 69) pesakit didapati mempunyai kegagalan fungsi seksual. Sejarah keluarga yang ada kanser payudara (p = 0.040), tempoh perkahwinan (p = 0.046) dan kekerapan menjalani hubungan seksual (p = 0.002) adalah faktor-faktor yang berhubungkait secara positif dengan kegagalan fungsi seksual wanita di antara pesakit kanser payudara selepas pembedahan.

Implikasi klinikal: Lebih banyak pesakit sepatutnya disaring untuk masalah kegagalan fungsi seksual di jabatan pesakit luar dan kauseling yang bersesuaian boleh disediakan kepada mereka yang positif.

Kelebihan dan limitasi kajian: Kelebihan kajian ini adalah ia merupakan kajian tempatan yang menggunakan borang soal-selidik versi singkat untuk menyaring kegagalan fungsi seksual wanita di antara pesakit kanser payudara, dan mengenal pasti faktor-faktor yang menyebabkannya. Limitasi termasuk hubungan kausal tidak dapat dikenalpasti kerana kajian secara keratan rentas digunakan. Terdapat juga pesakit yang layak tetapi enggan menyertai kajian ini kerana malu dan sensitif dengan topik ini.

Kesimpulan: 73.4% pesakit mendapat kegagalan fungsi seksual wanita selepas mendapat rawatan untuk kanser payudara dan tiga faktor yang berhubungkait secara positif adalah sejarah keluarga yang ada kanser payudara, tempoh perkahwinan dan kekerapan menjalani hubungan seksual. Petugas kesihatan dan pesakit kanser payudara sepatutnya bersedar dengan isu seksual ini dan membincangkannya semasa konsultasi.

Kata kunci: Kanser payudara, kegagalan fungsi seksual wanita, Breast Impact of Treatment Scale, Female Sexual Function Index-6

ABSTRACT

Background: Female sexual dysfunction (FSD) is a common complication among breast cancer patients following their treatment.

Aim: The present study assessed the prevalence and the associated factors for female sexual dysfunction among the breast cancer patients in Kelantan.

Methods: This is a cross-sectional study recruiting female patients, aged 18 – 65, married and sexually active with the partner, who were diagnosed with breast cancer and had underwent breast surgery, excluding those with underlying psychiatry disorders, previous pelvic surgery and husband with sexual problem. The questionnaire contains demographic, clinical information, together with Malay Version of Breast Impact of Treatment Scale. Their sexual function was evaluated by using Malay Version of Female Sexual Function Index-6. The data was analysed with simple and multiple linear regression.

Results: Ninety-four eligible patients were recruited into this study. 73.4% (n = 69) of the patients reported to have sexual dysfunction. Family history of breast cancer (p = 0.040), duration of marriage (p = 0.046) and frequency of sexual intercourse (p = 0.002) are the significant associated factors for female sexual dysfunction in breast cancer patients after surgery.

Clinical Implications: More patients should be screened for sexual dysfunction at outpatient department and appropriate counselling can be provided to them if they were positive.

Strengths and Limitations: The strength of this study is that this is a local study that using simple version of questionnaire to screen for FSD among the breast cancer patients, also to identify the likely possible factors that leading to it. The limitation includes the causal relationship cannot be established since a cross sectional study design was used. Also, there were few eligible patients who were approached but refused to participate in this study due to embarrassment and sensitive with the topic.

Conclusions: 73.4% of patients developed female sexual dysfunction after the treatment for breast cancer and the three significant associated factors that influence the female sexual dysfunction score are family history of breast cancer, duration of marriage and frequency of sexual intercourse.

Keywords: Breast cancer, female sexual dysfunction, Breast Impact of Treatment Scale, Female Sexual Function Index-6

CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION

Breast cancer is the second most common cancer across the globe. There were 1.67 million of new breast cancer cases were diagnosed in 2012 among the women, making it the most frequent cancer among them. It ranks at fifth as the cause of overall cancer death.(1) The most common cancer in Malaysia is breast cancer. For female patients with cancer, almost one third of them are breast cancer patients with total number of 18,206 cases from 2007 to 2011. The number of new cases diagnosed were increasing every year. The incidence of breast cancer tops the list for those female patients aged from 25 to 74.(2)

Local statistic showed that half of the breast cancer patient were diagnosed before the age of 50.(3) Their survival rate is better significantly if compared to women of 50 years old and above.(4) Despite with a better survival and longer lifespan ahead, they are at risk of living with sexual dysfunction following the diagnosis of breast cancer and its treatment. Worldwide studies reported 31.6 % - 91.2 % of breast cancer patients developed female sexual dysfunction (FSD) post treatment.(5-11) Breast cancer patients face many difficult tasks along the way to restore their sexual health after underwent the treatment for breast cancer including surgery.(5)

Almost all breast cancer patients in Malaysia reported to have FSD.(10) However, a qualitative study by Jaafar (12) exploring on the problems associated with breast cancer and revealed all participants denied having sexual problem. Most of their participants were middle aged women with three quarter of them belongs to stage 1 to 3 breast cancer. This result was skeptical since many studies related to FSD among general population and even those with chronic diseases other than cancer in Kelantan, Malaysia reported the prevalence as nearly 30%.(13-15). These local studies also found four main factors closely link with FSD, which

includes demographic and marital factors such as age, marriage duration, frequency of sexual intercourse and marital satisfaction

Younger age is found highly associated with FSD among patients who had undergone operation and completed adjuvant treatment for breast cancer.(6) However, studies in Iran and Brazil showed the opposite findings whereby increasing age resulting in lower sexual function.(16, 17) Treatments related to breast cancer including surgery, radiotherapy, hormonal therapy and chemotherapy are the reasons the patients developed sexual dysfunction.(18, 19) Patients who experience premature menopause after the treatment of breast cancer also pose greater risk for sexual morbidity.(5, 20)

Surviving breast cancer but living with sexual dysfunction can result in further distress and relationship difficulties. This is due to sexual dysfunction itself may interrupt the relationship intimacy, lead to emotional distress, reinforce negative body image, or become regular reminder of a patient's cancer history.(21) However, many doctors and patients are hesitant to discuss regarding this sexual issue. There are several reasons involved such as social barrier and traditional beliefs that open discussion about sexual is a taboo.(22, 23)

Identification of local breast cancer patient who are at higher risk to experience sexual dysfunction is essential so that prompt intervention can be provided to improve their sexual function and the overall wellbeing in the later part of their life. Thus, the aims of this study were to determine the prevalence of FSD among breast cancer patients and to identify the associated factors for the FSD among the them.

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CHAPTER 2

OBJECTIVES OF THE STUDY

2.1. GENERAL OBJECTIVES

To determine the prevalence of female sexual dysfunction and its associated factors among breast cancer patients in Kelantan.

2.2. SPECIFIC OBJECTIVES

1. To determine the prevalence of female sexual dysfunction among breast cancer patients
2. To identify the associated factors for female sexual dysfunction among breast cancer patients

attending to Bestari Unit, Surgical Clinic and Oncology breast clinic in Universti Sains Malaysia Hospital and Surgical Clinic, Raja Perempuan Zainab II Hospital.

CHAPTER 3

MANUSCRIPT

3.1. TITLE

SEXUAL DYSFUNCTION AMONG WOMEN WITH BREAST CANCER IN NORTHEASTERN OF WEST MALAYSIA

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3.2. ABSTRACT

Background: Female sexual dysfunction (FSD) is a common complication among breast cancer patients following their treatment.

Aim: To assess the prevalence and the associated factors for female sexual dysfunction among the breast cancer patients in Kelantan.

Methods: A cross-sectional study recruiting female patients, aged 18 – 65, married and sexually active with the partner, who were diagnosed with breast cancer and had underwent breast surgery, excluding those with underlying psychiatry disorders, previous pelvic surgery and husband with sexual problem. The questionnaire contains demographic, clinical information, together with Malay Version of Breast Impact of Treatment Scale. Their sexual function was evaluated by using Malay Version of Female Sexual Function Index-6. The data was analysed with simple and multiple linear regression.

Outcomes: The prevalence and associated factors for female sexual dysfunction in breast cancer patients.

Results: Ninety-four eligible patients were recruited into this study. 73.4% (n = 69) of the patients reported to have sexual dysfunction. Family history of breast cancer (p = 0.040), duration of marriage (p = 0.046) and frequency of sexual intercourse (p = 0.002) are the significant associated factors for female sexual dysfunction in breast cancer patients after surgery.

Clinical Implications: More patients should be screened for sexual dysfunction at outpatient department and appropriate counselling can be provided to them if they were positive.

Strengths and Limitations: The strength of this study is that this is a local study that using simple version of questionnaire to screen for FSD among the breast cancer patients, also to

identify the likely possible factors that leading to it. The limitation includes the causal relationship cannot be established since a cross sectional study design was used. Also, there were few eligible patients who were approached but refused to participate in this study due to embarrassment and sensitive with the topic.

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Keywords: Breast cancer, female sexual dysfunction, Breast Impact of Treatment Scale, Female Sexual Function Index-6

3.3. INTRODUCTION

Breast cancer is the second most common cancer across the globe. There were 1.67 million of new breast cancer cases were diagnosed in 2012 among the women, making it the most frequent cancer among them. It ranks at fifth as the cause of overall cancer death.(1) In Malaysia, breast cancer is the most common cancer. For female patients with cancer, almost one third of them are breast cancer patients with total number of 18,206 cases from 2007 to 2011. The number of new cases diagnosed were increasing every year. The incidence of breast cancer tops the list for those female patients aged from 25 to 74.(2)

Local statistic showed that half of the breast cancer patient were diagnosed before the age of 50.(3) This group of patients did have significantly better survival compared to women of 50 years old and above.(4) Despite with a better survival and longer lifespan ahead, they are at risk of living with sexual dysfunction following their breast cancer diagnosis and treatment. Worldwide studies reported 31.6 % - 91.2 % of breast cancer patients developed female sexual dysfunction (FSD) post treatment.(5-11) Breast cancer patients face many difficult tasks along the way to restore their sexual health after underwent the treatment for breast cancer including surgery.(5)

Almost all breast cancer patients in Malaysia reported to have FSD.(10) However, a qualitative study by Jaafar (12) exploring on the problems associated with breast cancer and revealed all participants denied having sexual problem. Most of their participants were middle aged women with three quarter of them belongs to stage 1 to 3 breast cancer. This result was skeptical since many studies related to FSD among general population and even those with chronic diseases other than cancer in Kelantan, Malaysia reported the prevalence as nearly

30%.(13-15). These local studies also found four main factors closely link with FSD, which includes demographic and marital factors such as age, frequency of sexual intercourse, duration of marriage and marital satisfaction.

Younger age is found highly associated with FSD among patients who had undergone operation and completed adjuvant treatment for breast cancer.(6) However, studies in Iran and Brazil showed the opposite findings whereby increasing age resulting in lower sexual function.(16, 17) Treatments related to breast cancer including surgery, chemotherapy, radiotherapy and hormonal therapy are the reasons the patients developed sexual dysfunction.(18, 19) Patients who experience premature menopause after the treatment of breast cancer also pose greater risk for sexual morbidity.(5, 20)

Surviving breast cancer but living with sexual dysfunction can result in further distress and relationship difficulties. This is due to sexual dysfunction itself may disrupt relationship intimacy, contribute to emotional distress, reinforce negative body image, or become constant reminder of a patient's cancer history.(21) However, many doctors and patients are hesitant to discuss regarding this sexual issue. There are several reasons involved such as social barrier and traditional beliefs that open discussion about sexual is a taboo.(22, 23)

Identification of local breast cancer patient who are at higher risk to experience sexual dysfunction is essential so that prompt intervention can be provided to improve their sexual function and the overall wellbeing in the later part of their life. Thus, the aims of this study were to determine the prevalence of FSD among breast cancer patients and to identify the associated factors for the FSD among the them.

3.4. MATERIALS AND METHODS

A cross sectional study was conducted at Breast Cancer Awareness & Research Unit (BestARi) and oncology clinic of Hospital Universiti Sains Malaysia (HUSM) and Surgical Outpatient Department (SOPD) of Hospital Raja Perempuan Zainab II, from November 2018 till July 2019.

Population and sample

The study population was female patients age of 18 to 65 years old, diagnosed with breast cancer and underwent breast cancer surgery, married and sexually active with the partner, and physically fit. The exclusion criteria were participants with psychiatry disorders such as depression, anxiety and schizophrenia, unable to understand Bahasa Malaysia, husband who known to her to as having any sexual problems such as erectile dysfunction and premature ejaculation, and previous history of pelvic surgery excluding caesarean section. The sample size to identify the associated factors for female sexual dysfunction among breast cancer patients are based on comparing two proportions for categorical variables and comparing two means for numerical variables, using α of 0.05, with power of 0.8. The proportion of breast cancer survivors underwent endocrine therapy among non-FSD patients, P_0 is 0.31.(19) The P_1 used is 0.63. After considering 30% dropout rate, the estimated sample size is 96 patients.

Research tools

The questionnaire used in this study consist of 3 parts. The first part was about the biodata of the participants which comprise of sociodemographic characteristics, marital profile

and clinical history, obtained via interview and medical record of the patients. The second part was Malay Version of Breast-Impact of Treatment Scale (MVBITS). The original English version of the Breast-Impact of Treatment Scale (BITS), assess body image distress for female breast cancer patients following the traumatic stressor of breast cancer and breast surgery.(24) The validation of MVBITS was tested among 70 female breast cancer survivors underwent chemotherapy in Oncology Clinic of University Malaya Medical Centre, Kuala Lumpur, Malaysia.(25) The internal consistency reliability of MVBITS was good with Cronbach's alpha of 0.945 and showed temporal stability over a 3-week period. Principal component analysis suggested two factors termed as 'Intrusion' and 'Avoidance' domains. The MVBITS contain 13 items and each of them is weighted in 4 points scale (0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often) which covers the domains of body image, sexual behaviour, sexual affects and cancer-related traumatic stress. The 13 items are summed for a total score ranging from 0 to 65, with higher scores indicating greater body change stress.

The third part was Malay Version of Female Sexual Function Index-6 (MVFSFI-6). The original English version of the Female Sexual Function Index (FSFI) was developed by Dr Raymond Rosen.(26) It is a simple, multidimensional self-report measure of sexual functioning that includes six basic components of female sexual dysfunction, such as desire, subjective arousal, lubrication, orgasm, satisfaction, and pain with total of 19 questions. The Malay version of FSFI was developed and validated among married female patients in primary health care clinic at Bandar Tun Razak, Cheras, Kuala Lumpur.(27) The questionnaire is used to assess the participant's sexual function for the last four weeks. The sensitivity and specificity of MVFSFI were 99% and 97% respectively with the Cronbach α ranged from 0.87 to 0.97. With the aim to provide a faster tool to screen for FSD and easy use in outpatient visits, epidemiological studies, and assessment of treatment response, a 6-item version of FSFI was

created. The FSFI-6 has one question for each of the six domains, each question has score of 0-5, the score from all the six questions will be added and cut-off score of ⩽ 19 is used to define FSD. The sensitivity and specificity were 0.93 and 0.94, respectively.(28) The MVFSFI-6 was tested among 128 breast cancer patients in another study with Cronbach's alpha of 0.93.(29)

Data collection

Convenient sampling was used in this study whereby the eligible patients from the aforementioned clinics were identified and approached by the researchers. They were explained regarding the aim of the study and ensured about the confidentiality of the information gathered. Their consents for participating in this study were obtained. They were guided to a separate and quite room for filling up the questionnaires. The questionnaires were completed within half an hour. At the same time, their medical record from clinic were reviewed.

Data analysis

The data were analysed using the SPSS version 24. Categories with small sample size were identified and meaningful combination of categories were done. Simple linear regression was used to screen for potential associated factors for FSD scores. All variables with p value less than 0.25 and clinically significant variables were included in multiple linear regression to determine the associated factors for FSD while other confounders in the model were being controlled. The dependent variable was the FSD score.

3.5. RESULTS

A total of 94 eligible post-surgery female breast cancer patients were included into this study making its response rate to be 98%. The other two patients were not able to complete the questionnaire as they were called for consultation during the interview. The sociodemographic and clinical data are summarised from Table 1. The mean of the MVBITS score was 17.0 with standard deviation of 14.15. 69 participants had positive symptoms for FSD. The mean of the FSD score and its domains are in Table 2. Table 3 showed the associated factors for FSD using simple linear regression analysis. Family history of breast cancer, duration of marriage and frequency of sexual intercourse were significantly associated with FSD using multiple linear regression (Table 4).

3.6. DISCUSSION

Breasts have a significant role as woman's body image, sexuality and motherhood.(30) Sexuality is an essential and basic domain of human experience that can be impaired during and after a cancer treatment.(31) Following the diagnosis and treatment of breast cancer, a person may have deteriorating effect on the sexual health due to the changes of body image, fertility, physical condition leading to emotional distress and sexual dysfunction. This sexual dysfunction is a neglected quality of life matter in a breast cancer patients.(32)

Sociodemographic of the women with breast cancer

The mean age of participants when they were diagnosed with breast cancer was 45.5. This is lower than the age-specific incidence rate among breast cancer patient in Malaysia where the highest is among those 55-59 years old.(2) Among the different ethnic groups of

patients with breast cancer, Malay ranks third behind Chinese and Indian women in Malaysia.(2). However, our findings unable to display similar result due to the main ethnic group in Kelantan and east coast of Peninsular Malaysia is Malay. Most of the participants are housewife or currently unemployed which is similar to those breast cancer participants from Iran.(6, 16) According to a systematic review, married and older patients are less likely to return to work after completing treatment. Other factors that make the patient unlikely to return to work includes treatment related factors such as side effects from the chemotherapy, psychological related factors such as changes in emotion and work related factors.(33) Our findings showed most of the patients have no family history of breast cancer. Study from Brazil also reported that 83% of the breast cancer patients had no family history of breast cancer. With a family history of breast cancer, it can lead to earlier screening and making diagnosis of breast cancer as well as better cancer features and better quality of care even after treatment given.(34) With these, the incidence of FSD might be lowered.

Prevalence of female sexual dysfunction

The current study reported a prevalence of 73.4%, suggestive of the risk for breast cancer patients to have FSD following breast surgery is high. The participants from this study are based in Northeast part of Malaysia, comparing with another study done at a more urbanised city in another state, the prevalence was reported to be as high as 90%.(10) The difference might be due to the unique social demographic background between the two cities whereby the main participants in this study were the Malays (87.2%) while the Chinese (43%) were the main subjects in the other study. The lower prevalence of FSD in this predominate Malay community was supported by other local study in which highlighted the possibility of Malay identity itself obscure the FSD findings.(35)

Muhamad, et al. (23) in their qualitative study among Malay women with FSD found that Malay women less likely to claim that they have FSD since they adhere to Malay identity which characterised by 'appropriate' use of language in their daily communication, *adat* (local custom) that encourage them to become shy and showing respect to husband and the influence of Islamic teaching making them easily felt *redha* (acceptance) with what had happened to them.(12, 36) Thus, Malay women are expected not to disclose their private history unnecessarily and easily feel embarrass to share the symptoms and any the relationship problems even with their doctors.(23) They also possibly ignore their symptoms since having cancer much stressful for them than having FSD.(36) This finding is considered more than double when compared to prevalence of FSD in other chronic diseases among Malaysian populations which includes diabetes mellitus (26.4%), hypertension (20.1%), rheumatoid arthritis (29.4%) and obesity (12.3%).(13-15, 37)

Shandiz, et al. (16) conducted study among patients with breast cancer in Iran, using FSFI-19, showed slightly lower prevalence of FSD (63%) as compared to current finding. This is probably because the study included all patients who were on chemotherapy and only half (51.1%) underwent combination therapy with breast surgery which much more impact on body image, thus leads to FSD. Before that, in 2012, another study was done in Iran also highlighted the effect of breast surgery and other treatment modalities (radiotherapy and hormonal therapy) towards occurring of FSD. They assessed the sexual function before and after completion of breast cancer treatment which include surgery and found that the percentage of patient with sexual dysfunction increased from 52% to 84% after the treatment ends.(6)

Meanwhile in United States, the prevalence of FSD among the 83 breast cancer patients were almost similar at 77% even with different sociodemographic background and treatment options. All the breast cancer patients already underwent breast cancer surgery, but the participants were generally older with mean age of 56.2 and most of them were diagnosed early at stage 1 (37%). A total of 74.7% and 65.1% underwent radiotherapy and hormonal therapy, respectively but only 57.8% of them were treated with chemotherapy compared to 92.6% in current study.(5) To compare with a younger age group of breast cancer patients, another study with mean participant age of 37.7, using similar questionnaire, showed that the prevalence of FSD among this group of breast cancer patient is only 52.5%.(7) Thus ethnic identity, age, treatment options and body image may play a role in determining FSD among women with breast cancer.

Cancer is link directly with the reduction of certain domains in sexual dysfunction. Lee, et al. (8) reported 31.6% of 269 women who remained sexually active post breast cancer treatment having sexual dysfunction in one or more domains in the validated Korean version of FSFI. For each domain, a score below three was classified as indicative of a sexual problem. The two lowest domain score were low desire (27.5%) and low arousal (15.2%) which is almost similar with the current study. Current study showed the mean scores for desire and arousal were both 2.3, which were lowest among the six domains as well (Table 2). The problem in psychological state which is the sexual desire can reduce the sexual function more as compared to organic or functional nature (vaginismus, sexual pain). The disturbances from sexual pain can reduce the quality of sex life but does not compromise it completely since the patients remain sexually active.(38)

Factors associated with female sexual dysfunction

The findings from this study showed that those who have sexual intercourse more than once per month have less sexual dysfunction compared to those with less than once per month. One explanation for this association is that higher frequency of sexual activity can improve the intimate relationship between the patients and their partners, leading to less issue in sexual functioning. Those with family history of breast cancer were found to have higher sexual functioning score compared to those without family history of breast cancer. This group of patients were able to receive social support from family members with similar disease, about practical approaches to handle the stress including sexual problems associated with their breast cancer. (39)

In addition, the longer the duration of marriage, the sexual functioning score among our participant decreases. This factor was not previously discussed in the literature among breast cancer patients. This association might due to marital satisfaction decreases with a longer relationship length.(40) The most common aggravating factors among women with FSD was marital disharmony and hate; and unfavourable life conditions including difficult economic or social life circumstances.(41) However, looking at the subdomain score of the FSD in our study, sexual satisfaction score remained high. The meaning of sexuality changes as a woman age with underlying chronic diseases and post-menopausal since they are experiencing physical changes after having breast cancer and its treatment. Also, the position of women is passive in the relationship with men, men will empathies their wives during this difficult time. Intimate affection will become the priority in getting sexual pleasure, instead of sexual intercourse.(36, 42)

Shandiz, et al. (16) revealed that older age resulted in lower sexual function score. Also, Cavalheiro, et al. (17) and Bredart, et al. (43) reported breast cancer patients who are over 55 years old have lower sexual function score. Younger patients had less sexual dysfunction because they still have functional ovaries.(11) On the other hand, Harirchi, et al. (6) reported younger breast cancer patients having FSD after the breast cancer treatment. Young patients who underwent adjuvant therapy can develop premature menopause that is associated with poorer quality of life, lower sexual functioning, menopausal symptom and psychosocial distress related to infertility.(44) However, this study showed that age of the participants did not show significant association with the FSD score. This was in accordance with two studies in which they have sample size ranging from 83 to 120 participants which is almost similar with our study.(5, 18)

The different modalities of treatment including chemotherapy, radiotherapy and hormonal therapy were all not associated with lower sexual functioning score in this study. FSFI scores had been shown to be lower in patient with breast cancers post diagnosis compared to those without malignancy.(17) This decline in sexual functioning score in pre-treatment stage is contributed by survival-related concern. The FSFI scores dropped further in all domains significantly after one cycle of anthracycline-based chemotherapy was given to them. The reduction of the score post chemotherapy is contributed by the effect of the chemotherapy itself such as hair loss, pallor and weight gain leading to feeling of unattractiveness. Besides, the chemotherapy can have effect of vaginal dryness, dyspareunia and making them have less desire in having sex.(17, 45) Moreover, chemotherapy can induce menopause which resulting in less sexual activity.(8, 46) Numerous other studies also reported diminished sexual function after the breast cancer patients were given chemotherapy.(18, 47) However, the current study showed that chemotherapy was not associated with FSD, a finding which is similar from a

study done in Brazil.(48) The reason for it might be due to the participants who were included in the study from Brazil already completed chemotherapy and therefore the unwanted effect is less. As in current study, only 11 from the 87 participants were still on chemotherapy, majority of them already completed chemotherapy as well.

Breast cancer patients often receive long-term adjuvant hormonal therapy to reduce the risk recurrence. However, the adherence to the hormonal therapy is suboptimal due to the experience of symptoms such as sexual dysfunction, fatigue, and pain; or concerns such as thyroid dysfunction.(19) Patients treated with aromatase inhibitor were dissatisfied with their sexual life in general and reported low sexual interest, which is less likely to be noticed in tamoxifen-treated patients.(49, 50) This can be the reason the participants in our study who receive hormonal therapy did not have lower sexual functioning score since most of them were also given tamoxifen. As for the radiotherapy treatment for breast cancer, it can lead to lower sexual, physical and psychosocial well-being; and less satisfaction with breast appearance.(51) But it does not seem to have significant effect on our respondents, which is also supported by Webber, et al. (47), a study done to assess sexual functioning of breast cancer patients before and after completion of treatment.

Our study selected patients who underwent breast surgery as respondents to assess their body image distress. The mean score for the MVBITS is only 17 from the maximum of 65, indicating that the participants are not having much distress with their body image post operation. In addition, it is not significantly associated with FSD among them. This is contrary to other studies showing patients experiencing greater body image problems post mastectomy,