

Comparing Emotional, Relationship and Sexual Well-Being of Gynaecological Oncology Patients with a Matched Cohort in Singapore

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ABSTRACT

Introduction: Gynaecological oncology patients experience a high burden of physical and emotional symptoms that can affect their psychological and relationship well-being, yet not much has been published on women in Asian countries like Singapore. The current study compares levels of psychological distress (depression, anxiety), relationship satisfaction and sexual disturbance between patients with gynaecological cancer and an ethnicity, age, and education-matched comparison group.

Methods: This is a cross-sectional study in which 104 gynaecological cancer patients and 223 women with no history of gynaecological cancer were recruited from a tertiary-level hospital in Singapore. Using propensity score matching, 87 pairs of patient-comparisons were compared on their self-reported symptoms of anxiety, depression, relationship satisfaction, and sexual disturbance.

Results: Patients reported significantly higher levels of sexual disturbance in contrast to their comparisons ($M = 18.94$ vs 14.54 , $p = 0.002$) but not in anxiety, depression and relationship satisfaction. However, when we examined the subset of women below the median sample age (45 years), both depression scores ($M = 5.23$ vs 3.79 , $p = 0.04$) and sexual disturbance scores ($M = 18.13$ vs 13.91 , $p < 0.01$) in the patient group were significantly higher than the comparison group.

Conclusion: Sexual dysfunction is an important target to assess in gynaecological cancer patients to improve their quality of life and well-being. Women with gynaecological malignancies and who are younger are at higher risk of depression.

Keywords: psychological distress, relationship satisfaction, sexual disturbance, gynaecological oncology, cancer

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INTRODUCTION

Gynaecological cancers affect approximately 16.3% of women worldwide.[1] Cancers of cervix and ovaries are the 5th and 7th commonest causes of death from cancer in Asian women, respectively.[2] In Singapore, the most common gynaecological cancers are uterine (6.9%), ovarian (5.4%) and cervical (3.1%) reported between 2011 and 2015.[3] Overall survival of patients with gynaecological cancers is improving due to earlier detection of cancer and more effective treatment.[4] However, there may be side effects from treatment, some being long-term, that can be unpleasant or debilitating to live with.[5] Maintaining good quality of life, means addressing psychological or emotional distress and sexual issues affecting patient.

A significant proportion of patients with gynaecological cancers have been known to report depressive symptoms, however the literature is mixed. Studies show that in 12%-25% of patients with gynaecological cancers have depression .[6] However in a study done in which anxiety and depression scores were compared between patients with cervical cancer and comparisons, depression scores in cervical cancer patients were even lower than the comparison group, leading them to conclude that cervical cancer patients showed relatively good mental health compared with healthy comparisons.[7]

Patients with gynaecological cancers have areas of body associated with femininity, sexuality and reproduction affected; hence the distress associated can impact not only the emotional well-being but also their relationship and sexual well-being.[8] Surgical treatment can affect sexual functioning by impairing the vascular supply or the innervation of the pelvic organs. The approximation of the surgical edges causes tension that may interfere with the range of motion during sexual intercourse.[9] Women who have intracavitary radiation implants for cervical cancer or endometrial cancer may be left with a shortened and stenosed vagina, which may lead to dyspareunia.[10] Hysterectomy also interferes with sexual response cycle, as the absence of rhythmic contractions of the uterus may prevent orgasm.[11] Oophorectomy or ovarian ablation due to radiation or chemotherapy also leads to vaginal dryness and thinning which results in dyspareunia.[11] Even though it is commonly expected that there is a risk of sexual difficulties in this group of patients, sexual well-being is often overlooked following gynaecological cancer diagnosis and treatment.[12]

We know that 80% of patients have difficulty discussing with their doctors about sexual problems and 85% of the doctors do not ask their patients about it.[13] This is especially so in the Asian context where talking about emotional symptoms and sexuality is difficult and may even be considered taboo. As such there is limited information on cancer patient's psycho-sexual well-being, and limited resources for support for emotional or sexual impairments. The aim of the study is to compare levels of psychological distress (depression, anxiety), relationship satisfaction, and sexual

disturbance between patients with gynecological cancer to a comparison group matched for ethnicity, age and education level. We were also interested in examining risk factors that were associated with psychological distress.

METHODS

Participants

A cross-sectional study was conducted between October 2015 and December 2016. One hundred and four female gynaecological cancer patients and 223 women with no history of gynaecological cancer were recruited from a tertiary-level hospital in Singapore. Patients who present with a history of gynaecological cancer (ovarian, uterine/endometrial, cervical, vulvar, vaginal cancer) of all stages, were at least 21 years of age, currently living in Singapore and able to read and understand English were considered eligible. Eligibility criteria for comparison participants included females not having a history of gynaecological cancer, being at least 21 years of age, currently living in Singapore and able to read and understand English.

Procedures

Eligible patient participants as determined by nurses who were seen or treated in Gynaecology-Oncology Unit were approached to take part in a one-time 20-minute survey. All patient participants gave written informed consent. Comparison participants were recruited either via recommendation of patient participant or through the waiting room at the pharmacy of the study site. Comparison participants were exempted from signing informed consent as the survey was anonymized. The comparison participant version of the survey took 10-minutes to complete. Electronic data collection was conducted for both patient and comparisons using the platform Qualtrics using tablets. The study was approved by SingHealth Centralised Institutional Review Board (Reference number: 2015/2888).

Measures

Psychological distress. The Hospital Anxiety and Depression Scale [14] was used to measure psychological distress (defined as anxiety and

depression). The Hospital Anxiety and Depression Scale was originally designed for detecting clinically significant anxiety and depression in medical outpatients. There are 14 items in the Hospital Anxiety and Depression Scale, with seven items measuring anxiety symptoms and seven items measuring depressive symptoms. Participants reported their responses on a 4-point scale with higher scores indicating greater symptoms. The internal reliability of the overall scale and subscales has been reported to be good, with Cronbach's alpha for the Hospital Anxiety and Depression Scale - Anxiety Index ranging from 0.78 - 0.93 and Cronbach's alpha for the Hospital Anxiety and Depression Scale - Depression Index ranging from 0.82 - 0.90. A study conducted in Singapore validated the use of Hospital Anxiety and Depression Scale in cancer patients in Singapore and established cut-off score for depression to be score ≥ 7 and anxiety to be score ≥ 5 .^[15]

Relationship satisfaction. If participants indicated they were in a romantic relationship, the 4-item Dyadic Adjustment Scale-4^[16] was used to measure participant's romantic relationship satisfaction. Participants responded to 3 items on a 6-point scale (1=all the time, 6=never) and 1 item on a 7-point scale (extremely unhappy-perfect) with higher scores indicating greater relationship satisfaction. The internal reliability (alpha 0.81-0.92) and construct validity of the measure has been shown to be good in its validation study. Cut-off scores to indicate clinically relevant relationship distress has been reported to be a score ≤ 12 .

Sexual disturbance. The Arizona Sexual Experience Scale ^[17] was used to measure sexual disturbance. The Arizona Sexual Experience Scale is a 5-item validated measure. Items were reported on a 6-point scale with higher scores (ranging 5-30) indicating greater sexual disturbance in sexual drive, arousal, lubrication, ability to reach orgasm, and sexual satisfaction. The cut-off to indicate sexual disturbance is reported to be a score of ≥ 19 , at least one item ≥ 5 , or 3 items ≥ 4 . In its validation report, reliability was good (alpha 0.80-0.89); convergent and discriminant validity was also

demonstrated. In this study, participants were given the option to skip this assessment if they wished.

Statistical Analytic Plan

Using propensity score matching (nearest neighbor matching), 87 pairs of patient-comparisons were matched based on ethnicity (Chinese, Malay, Indian, Other), age (± 5 years) and education (≤ 12 years of formal education or up to secondary school, >12 years of formal education) using Stata software. T-tests were used to examine the differences in scores of depression, anxiety, relationship satisfaction, and sexual disturbance. We also conducted post-hoc comparison analysis with a subgroup of our sample who are below the median sample age (≤ 45 years) consistent with the hypotheses that younger patients are expected to report more psychological distress. Subsequently, bivariate correlations and multi-variable linear regression analyses were conducted to examine factors that are associated with psychological distress. Significance was set at alpha <0.05 . All statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS) Version 24.

RESULTS

The study recruited 104 female gynaecological cancer patients and 223 women with no history of gynaecological cancer. Eighty-seven pairs of patient-comparisons were matched based on ethnicity, age, and education. Refer to *Table 1* for study participant characteristics.

Comparison of outcomes between gynaecological cancer patients and matched comparisons

Patients reported significantly higher levels of sexual disturbance as indicated by difference in mean scores and proportion of those who met cut-off scores. Psychological distress and relationship satisfaction scores were not significantly different between the two groups (Refer to *Table 2*). A closer look at the items that capture sexual disturbance indicated that women in the gynaecological cancer group reported significantly higher disturbance in all the five stages of the sexual response cycle (Refer to *Table 3*). The most common problem was lack of sexual drive.

We further found that in women of 45 years of

age (median age in the sample) and below, the gynaecological cancer group reported higher scores than their matched comparisons in depression scores ($t(89) = 2.11, p = 0.04$) and sexual disturbance ($t(51) = 2.78, p < 0.01$). (Figure 1).

Factors associated with psychological distress in gynaecological cancer patients

Bivariate correlations were conducted to identify demographic characteristics (age, household income, whether patient had children under 21 years old), clinical characteristics (time since diagnosis, cancer stage,) and psychosocial factors (relationship satisfaction, sexual disturbance) that were associated with psychological distress (defined as the combination of depression and anxiety) in our sample of gynaecological cancer patients ($n = 104$). Age ($r = -0.25, p = 0.01$), days since diagnosis ($r = -0.26, p = 0.01$), and relationship satisfaction ($r = -0.53, p < 0.001$) were significantly associated with psychological distress and entered into subsequent multi-variable regression analysis. Household income, having children under 21 years old, cancer stage, and sexual disturbance were not associated with psychological distress.

Multi-variable linear regression results indicate that lower relationship satisfaction significantly predicted higher psychological distress, $\beta = -0.55$, $t(101) = -4.52, p < 0.001$, controlling for age and days since diagnosis. The model explained a significant proportion of variance in psychological distress scores, $R^2 = 0.32, F(3,101) = 7.41, p < 0.001$.

DISCUSSION

The aim of the study is to compare levels of psychological distress (depression, anxiety), relationship satisfaction, and sexual disturbance between patients with gynaecological cancers and their matched comparisons, and identify factors associated with psychological distress in gynaecological cancer patients.

Sexual disturbance is significantly higher in gynaecological cancers patients compared to comparisons matched for ethnicity, age and

education level. Generally, gynaecological cancers

patients reported sexual disturbance that on average occurred “quite a bit” while comparisons reported them to occur on average “sometimes”. The proportion of gynaecological cancer patients who met clinically relevant scores for sexual dysfunction was 68% vs 26% in the comparison group. Our findings are consistent with studies conducted in other parts of Asia - Hong Kong[18], China[19], and Malaysia[20] that have reported that sexual dysfunction sustained from treatment-related side effects can persist for many years into survivorship.[11, 21] Studies from US[22] and Europe[23] have also observed that sexual dysfunction was prevalent among gynaecological cancer survivors.

The gynaecological cancer patients reported greater problems in all aspects of sexual dysfunction measured: sexual drive, arousal, lubrication, orgasm and satisfaction. Lack of sexual drive was the most common sexual dysfunction being reported in our study. However, these findings contradict with certain previous studies that found sexuality were similar between cancer survivors and non-cancer women.[24] Literature on the most common sexual problem for gynaecological cancer patients was mixed, varying from vaginal dryness,[25] sexual desire,[20] orgasmic dysfunction[26] to pain.[25] The inconsistency could be due to the variations in assessment tools, treatment modalities and different diagnosis of gynaecological cancers, and direct comparison could not be made.

In examining a subset of younger women (age < 45) in our sample, we found that patients with gynaecological cancers reported more depressive symptoms and sexual disturbance than their matched comparisons. This finding reflect clinical observations and reports of recent studies that show younger survivors are more likely to suffer from psychological distress [27] and sexual dysfunction[28] compared to older gynaecological cancer survivors. Previous studies have reported that three-quarters of women below 45 years who were diagnosed with cancer are still interested in the prospect of bearing children.[29, 30] Potential loss of fertility from gynaecological cancer and treatments was an emotionally challenging experience and had a negative impact on both

sexual function and psychological well-being.[29]

leading to emotional distress, anxiety, and depression in patients, in particular those in their reproductive years.

In examining factors associated with psychological distress (composite of depression and anxiety), poorer relationship satisfaction was found to be significantly associated with higher psychological distress, after controlling for age and time since diagnosis. This finding is also echoed in other studies which reported poor relationship satisfaction and predicted greater anxiety in gynaecological cancer women.[23, 31] The possible explanation could be that women confronted with the diagnosis and treatment of cancer had created intense emotional distress that may potentially drive partners apart and damage the relationship.[32] Women became anxious for fear of recurrence[24] or transmitting the cancer to their sexual partner [11, 18] if they resume sexual activity. Their reluctant to resume sexual intercourse may be interpreted as rejection or disinterest by their partner which can lead to deterioration of their relationship. Due to the feeling of guilt[33] or fear of losing their partners,[11] they feel the need to continue sexual intercourse primarily to satisfy their partners and to maintain the relationship[33] despite their own sexual difficulties. These experiences of physical and psychological trauma may result in poor relationship satisfaction. Furthermore, Asian women tend to hide their emotions [7] and are reluctant to discuss sexual issues with their partners.[31] Both cancer patients and their partners cope with adversity by self-silencing,[34] and this difficulty in communication creates more anxiety and depression between couples which can be detrimental to their marital relationship.[11]

Interestingly, our data demonstrated that sexual disturbance is not significantly associated with psychological distress, although it is found to be significantly different than the comparison group. This finding suggests that although sexual disturbance occurs more frequently in women with gynaecological cancers, they are not necessarily harmful. Patients may view sexual dysfunction as rather minor issue compared to a life-threatening disease and the side effects of treatment.[23] Furthermore, majority of the gynaecological survivors may have ceased sexual activities and

perceive sex as an unimportant part of life.[35] The literature has noted Asian women to report relatively lower sexual activity[24] compared to their Western counterparts and higher probability of not resuming their sexual life after cancer treatment.[18, 26] Sexual dysfunction was possibly not a salient issue in our sample, and hence, not emotionally bothersome to patients.

Study limitations:

The current study has several limitations. Our samples were recruited from a single site, thus may not be representative of the general population. The study design was cross-sectional, therefore, the causal effects and temporal relationship cannot be established. We did not evaluate the psychiatric history, sexual function and relationship satisfaction before the diagnosis of the gynecological cancer for our patient sample, so an assumption we make is that the differences between the two groups are due to disease status. Additionally, nearly half of the patient sample did not complete the questions on sexual disturbance; the reason is unclear. Despite these limitations, we believe that our findings provide insight into an important clinical problem on psychosexual well-being in the long-term survivorship of gynaecological cancer women and can help in developing clinical management strategies to improve the psychosocial well-being of this population.

Clinical implications:

This study highlights the importance of assessing sexual function and psychosocial well-being of gynaecological cancer survivors. Given the high rates of sexual morbidity for younger gynaecological patients, there is a clear need for integration of sexuality into routine clinical care, i.e. providing information on fertility preservation and early referral to reproductive medicine facility when appropriate. The provision of psychosocial support services to couples is vital in improving communication on their sexual dysfunction and adaptation, which can help couples to cope more effectively with their relationship dissatisfaction. Timely management of sexual dysfunction may have a positive impact on the psychological well-being of young women diagnosed with

gynaecological cancer.

Contributors: KGT and IT conceived the original concept of the research and oversaw data collection. SWWK assisted with data collection. IT conducted the analysis. KGT, SWWK, TYKL and IT contributed to the manuscript writing and preparation.

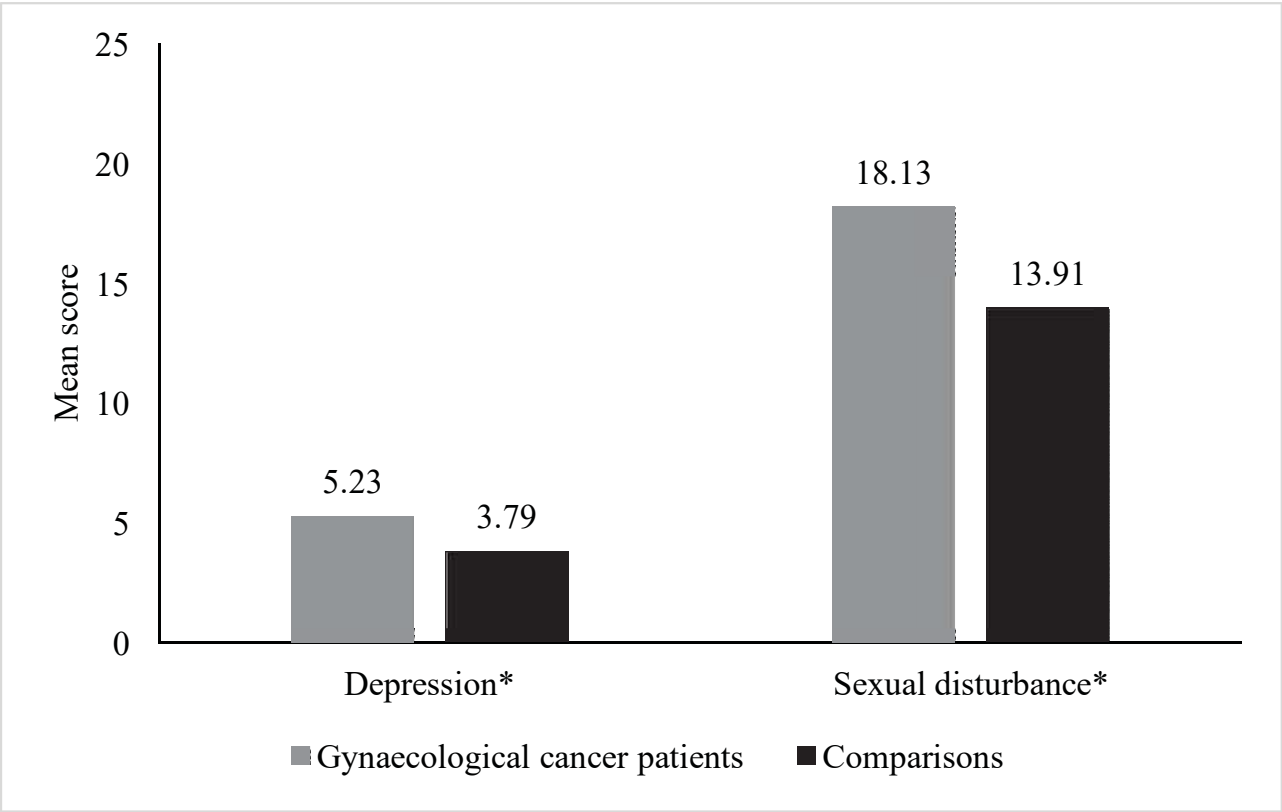
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Patient consent for publication: Not required.

Data availability statement: Data are available upon reasonable request.

Figure 1. Comparison in depression and sexual disturbance scores in gynaecological cancer patients and comparisons matched for ethnicity, age, and education who are ≤ 45 years old



*Difference of $p < 0.05$

Table 1. Baseline demographics of study participants

Characteristics	Median \pm Standard deviation / Count (%)	
	Gynaecological Cancer Patients (n=87)	Matched Comparisons (n=87)
Age (years)	46.7 \pm 11.8	42.7 \pm 9.8
Body Mass Index, BMI (kg/m²)	26.7 \pm 7.6	25.4 \pm 6.2
Race		
Chinese	47 (54.0)	49 (56.3)
Malay	23 (26.4)	24 (27.6)
Indian	11 (12.6)	9 (10.3)
Other	6 (6.9)	5 (5.7)
Marital Status		
Married/in a romantic relationship	59 (67.8)	64 (73.6)
Separated/Divorced	2 (2.3)	11 (12.6)
Widowed	6 (6.9)	0 (0.0)
Single and Never Married	20 (23.0)	12 (13.8)
Education*		
Secondary and lower (\leq 12 years)	47 (54)	33 (37.9)
Junior College/Polytechnic/ Diploma/Vocational / Technical Institute	21 (24.1)	28 (32.2)
University and above	19 (21.8)	25 (28.7)
Employment Status*		
Working full-time	45 (51.7)	52 (59.8)
Working part-time	12 (13.8)	6 (6.9)
Retired/Not working	13 (14.9)	6 (6.9)
Homemaker	15 (17.2)	23 (26.4)
Total monthly household income*		
Less than S\$999	6 (6.9)	5 (5.7)
S\$1000 - \$2999	23 (26.4)	24 (27.6)
S\$3000 - \$4999	28 (32.2)	26 (29.9)
S\$5000 and above	28 (32.2)	32 (36.8)
No. of children*		
0	29 (33.3)	18 (20.7)
1	9 (10.3)	19 (21.8)
2	26 (29.9)	23 (26.4)
3 or more	15 (17.2)	27 (31.0)

Characteristics	Median \pm Standard deviation / Count (%)	
	Gynaecological Cancer Patients (n=87)	Matched Comparisons (n=87)
No. of participants with children below 21 years	20 (23.0)	56 (64.4)
Religion*		
Christian	13 (14.9)	20 (23.0)
Buddhist/Taoist	27 (31)	21 (24.1)
Muslim	24 (27.6)	24 (27.6)
Hindu/Sikh	9 (10.3)	7 (8.0)
Others	12 (10.7)	15 (17.2)
Gynaecological cancer site		
Endometrial/uterine	34 (39.1)	
Ovarian	25 (28.7)	
Cervical	21 (24.1)	
Others	7 (8.0)	
Cancer stage*		
Stage I	54 (62.1)	
Stage II	7 (8.0)	
Stage III	15 (17.2)	
Stage IV	3 (3.4)	
Time since diagnosis	2ys \pm 2.7ys	
Treatment modalities		
Surgery	70 (80.5)	
Chemotherapy	37 (42.5)	
Radiotherapy	22 (25.3)	
Hormone therapy	2 (2.3)	

* Data do not add up to 87 due to missing data

Table 2. Descriptive, number of clinically relevant cases and t-test results comparing gynaecological cancer patients and comparisons matched for ethnicity, age, and education

Gynaecological Cancer Patients				Matched comparisons				<i>t</i> -test	<i>p</i> -value
	N	Mean scores (Standard deviation)	Clinically relevant cases	N	Mean scores (Standard deviation)	Clinically relevant cases			
Psychological distress (HADS)									
Depression	87	4.15 (3.38)	23%	87	3.56 (2.63)	15%	1.28	n.s.	
Anxiety	87	6.07 (4.12)	59%	87	6.26 (3.75)	64%	-0.33	n.s.	
Relationship satisfaction (DAS-4)	55	15.89 (4.66)	20%	64	15.27 (4.13)	20%	0.76	n.s.	
Sexual disturbance (ASEX)	27	18.94 (5.98)	68%	59	14.54 (4.65)	26%	3.38	0.002	

HADS = Hospital Anxiety Depression Scale, DAS-4 = Dyadic Adjustment Scale-4, ASEX = Arizona Sexual Experience Scale; Clinically relevant cases: psychological distress ≥ 13 , depression ≥ 7 , anxiety ≥ 5 , relationship satisfaction ≤ 12 , sexual disturbance ≥ 19 or at least 1 item ≥ 5 or 3 items ≥ 4 .

Table 3. Comparisons in sexual disturbance between gynaecological cancer patients and comparisons matched for ethnicity, age, and education

Aspect of sexual function	Gynaecological Cancer Patients (n=27)	Matched Comparisons (n=59)	<i>t</i> -test	<i>p</i> -value
Drive	4.26 (1.71)	3.31 (1.28)	2.72	.01
Arousal	3.87 (1.43)	3.10 (1.15)	2.63	.01
Lubrication	3.96 (1.42)	2.76 (1.10)	3.87	<.001
Ability to reach orgasm	3.64 (1.28)	2.98 (0.97)	2.41	.02
Satisfaction	3.54 (1.43)	2.52 (0.97)	3.43	.001

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