

## Spiritual wellbeing in breast and cervical cancer survivors: differences in each stage of survivorship

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### ABSTRACT

Spiritual needs in cancer survivors are underappreciated compared to physical and psychological needs. This study aimed to: 1) compare and analyze the differences in spiritual wellbeing (SWB) between breast and cervical cancer survivors (BCS and CCS) generally, and between stages of survivorship specifically, and 2) determine the best predictor of SWB in both cases. This cross-sectional study involved 58 BCS and 47 CCS (n=105). Questionnaire of QOL-CS part IV was used in data collection. Various statistical tests were used in data analysis ( $\alpha < 0.05$ ). SWB was significantly different between BCS and CCS ( $p = 0.002$ ), which influenced by significant differences in religious activity, spiritual activity, uncertainty, positive life changes, life goals, and hope (all  $p < \alpha$ ). In BCS, overall SWB was not significantly different between survivorship stages ( $p = 0.179$ ); but religious activity, life goals, and hope were significantly different ( $p = 0.043$ ,  $p = 0.022$ , and  $p = 0.036$  respectively) which indicate that these three aspects change overtime along with the survivorship stages. While in CCS, SWB and all of its aspects were not significantly different between survivorship stages (all  $p > \alpha$ ) which indicate that SWB is stable/stagnant across the survival life span in CCS. Spiritual life changes and religious activity are the best predictors of SWB in both cases and were accounted for 70.3% ( $R^2 = 0.703$ ) and 69.7% ( $R^2 = 0.697$ ) variance of SWB in BCS and CCS respectively.

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## 1. INTRODUCTION

Cancer starts when cells grow out of control and crowd out normal cells [1]. Cancer is the growth of new cells that form abnormal tissue and characterized by uncontrolled function. Cancer is not just one disease, it can start in various parts of our body. In women, mostly cancer starts in the breast or cervix. A study in 187 countries from 1980 until 2010 was conducted to analyze the epidemic of cervical and breast cancer incidence and mortality worldwide [2]. Results showed that global breast cancer incidence increased from 641,000 (95% uncertainty intervals 610,000–750,000) cases in 1980 to 1,643,000 (1,421,000–1,782,000) cases in 2010, an annual rate of increase of 3.1%. Global cervical cancer incidence increased from 378,000 (256,000–489,000) cases per year in 1980 to 454,000 (318,000–620,000) cases per year in 2010—a 0.6% annual rate of increase. Nationally, the incidence of breast cancer occupied the first position followed by cervical cancer in 2<sup>nd</sup> position in Indonesian cancer statistics of 2014 [3]. Nothing changed much three years after, in 2017 breast cancer still reached the 1<sup>st</sup> position as the highest new cases and deaths followed by cervical cancer in 2<sup>nd</sup> position in Indonesian cancer statistics [4].

The life expectancy of people living with cancer increases steadily, due to advances in diagnosis and therapy, making cancer one of the non-communicable diseases (NCD) with long term burden needed long-term supportive and palliative care. The stage of survivorship in cancer categorizes into three, namely: acute (<1 year), short term (1-5 years), and long term survivorship (>5 years) [5]. Locally, a prior study towards 279 women living with cancer in Surabaya's communities showed that nowadays most women living with breast cancer were aged middle-up adulthood while older age were found in those with cervical cancer; the majority has been diagnosed with cancer for less than five years, but there was a tendency that the longer life expectancy was found in those with cervical cancer; more women with advanced stage cervical cancer were found to be long-term survivors [6].

Most individuals consider spirituality and religiosity to be central and so fundamental to the human experience that they represent an independent dimension of personality [7]. Spirituality and religiosity are rooted in culture, and culture is rooted in spirituality and religiosity [8]. Even though religiosity and spirituality are related, they are not synonymous and may differ with regards to prediction of various health outcomes [9]. Spirituality is the relationship people have with a force or power beyond themselves that helps them feel connected and enrich their lives, while religion is a specific set of beliefs or practices usually connected to an organized group [10]. Just as religiosity and spirituality are related yet differ in predictive abilities, nontheistic and theistic spirituality may be similar with regards to core content, but they may differ with regards to prediction of health outcomes. Not only do patients want their healthcare providers to acknowledge spirituality as part of their identity, empirical literature supports the relationship between spirituality/religiosity and various mental health and physical health outcomes [11].

Results of a literature review showed that religiosity and spirituality significantly contribute to psychosocial adjustment to cancer and its treatments. Religion offers hope to those suffering from cancer, and it has been found to have a positive effect on the quality of life of cancer patients. Numerous studies have found that religion and spirituality also provide effective coping mechanisms for cancer patients as well as family caregivers. Research indicates that cancer patients who rely on spiritual and religious beliefs to cope with their illness are more likely to use an active coping style in which they accept their illness and try to deal with it in a positive and purposeful way. Faith-based communities also offer an essential source of social support to cancer patients, and religious organizations can play a direct and vital role in cancer prevention by providing screening, counseling, and educational programs, especially in minority communities [12].

Wellbeing has been associated with physical health and longevity, social prosperity and satisfaction, as well as occupational success [13-15]. According to social determination theory, wellbeing is predicted on the basis of environmental conditions in which an individual is nested, by satisfying the basic psychological needs for autonomy, competence, and relatedness [16]. Quality of life in cancer survivors is formed by four dimensions of wellbeing, namely: physical, psychological, social, and spiritual wellbeing [17]. Unfortunately, the quality of life movement has virtually underappreciated the spiritual dimension of life and the part that such beliefs and practices in religiosity play in wellbeing.

The taxonomy of religiosity/spirituality is centered on the assumption that most religiosity/spirituality constructs could be understood and categorized within one of three primary dimensions, namely: affective (e.g. religious struggle, guilt, spiritual wellbeing, existential wellbeing), behavioral (e.g. religious practices and organizational religiousness, religious/spiritual involvement), and cognitive religiosity/spirituality (e.g. meaning, cognitive orientation towards spirituality, paranormal beliefs) [18]. It is clear now that spiritual wellbeing in cancer survivors is belong to the affective domain of religiosity/spirituality.

A fundamental study about spiritual wellbeing in 1983 found that self-esteem and spiritual wellbeing were positively related, while spiritual wellbeing and individualism, success, and personal freedom were negatively related; there was a consistent relationship between spiritual wellbeing and type of religious commitment which showed that individuals with a more internalized and intimate relationship with God not only had higher religious wellbeing but also higher overall spiritual wellbeing [19]. The recent study about religion and spirituality in cancer patients in 2019 found that cancer patients prayed more and had more positive religious attitude than non-cancer individuals who visited the tombs, consulted the religious officials, and more, in which religious women were more positive than religious men which influenced by lower education level; forgiveness, spiritual values, and beliefs were stronger in cancer patients than in non-cancer individuals [20]. Although women were found to be more religious than men, but this recent study did not only specified the measurement on female cancer, but also did not measure the changes in religiosity/spirituality happened overtime based on the concept of cancer survivorship.

In Indonesia, spirituality is highly related to religiosity due to cultural context. Every citizen in Indonesia has a religion in which they truly believe and this determine their daily religious and spiritual activity, which influence their spirituality to some extend. Life event of serious illness, such as cancer, may be perceived into various perception by individuals. It could be perceived as a punishment, a trial,

or a warning from God, and this perception may change overtime as influenced by various factors in the process. A study towards 254 Muslim women with cervical cancer showed that those who perceived the disease as a punishment from God were proved to had lower odds of having had Pap testing after controlling for socio-demographic factors [21]. Similar study in Muslim women with breast cancer is not found yet.

Spiritual wellbeing is really important to be studied because this is one of the domains determining quality of life in cancer survivors. This study aimed to: 1) compare and analyze the differences in spiritual wellbeing between BCS and CCS generally, and between stages of survivorship in both cases specifically, and 2) determine the best predictor of spiritual wellbeing in both cases. By knowing this study results, it will be beneficial for developing adequate spiritual support multidisciplinary, determining which group who more in need, when is the best time to provide spiritual support for cancer survivors, and which aspect of spiritual wellbeing that requires special attention from health care professionals. It is important to address the spiritual needs of cancer survivors appropriately to assure optimum quality of life. Each cancer survivor may have different spiritual needs, depending on cultural and religious traditions.

## 2. RESEARCH METHOD

This Cross-sectional study involved 58 BCS and 47 CCS in the district of Rangkah, Gading, and Pacarkeling, Surabaya, Indonesia. There were 27, 45, and 33 acute, short-term, and long-term survivors participated in this study respectively. CCS was 47, and BCS was 58. Sample size was 105. Inclusion criteria were being an adult (>18 years old), with cancer diagnosis that has been confirmed, and regularly home-visited (once a week) by a palliative volunteer under the supervision of Rangkah Public Health Center (PHC), Surabaya. Exclusion criteria were rejection on filling out the consent form, very poor condition, and consciousness loss or disorientation. "Very poor condition" was measured qualitatively by the researcher. The clinical signs were: unable to wake up from the bed (bed rest), avoiding guest, extremely fatigue; so that the researcher cannot meet the individual. Total sampling was applied and sample size of 105 was obtained. The researcher got the patients' data from Rangkah PHC via the head of the palliative volunteer group. The researcher then did "door to door" data collection by companion of the palliative volunteer because the researcher was unfamiliar for the patients.

Questionnaire of Quality of Life - Cancer Survivors (QOL-CS) part IV which developed by Ferrel, et al. (1995) was used in data collection [17]. It consists of seven items assessing religious activity, spiritual activity, spiritual life changes, uncertainty, positive life changes, life goals, and hope as the aspects of spiritual wellbeing. Spiritual wellbeing was assessed by the time of data collection (actual condition). Likert scale of 0 to 10 representing negative to positive attitude was used to distinguish individual response regarding to which extend changes happen in each item: 1) none=0, 2) minimum=1-3, 3) moderate=4-6, and 4) maximum=7-10. Total score then categorized into three categories, namely: 1) optimum wellbeing (47-70), 2) sufficient wellbeing (24-46), and 3) low wellbeing (1-23); but this category was made to ease the data presentation only in result section, and not for statistical analysis purposes. After instrument testing procedure, this instrument was proved to be valid and highly reliable ( $r=0.522-0.751$ ; Chronbach's Alpha= $0.710$ ). Data were collected since February until March, 2018. Ethical clearance was issued by Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia, with certificate number of 681-KEPK.

Descriptive statistic, independent sample T test, Mann-Whitney U test, one way ANOVA test, Kruskal-Wallis H test, and simple linear regression test were used in data analysis ( $\alpha<0.05$ ). Data of religious activity, spiritual activity, spiritual life changes, uncertainty, positive life changes, life goals, and hope were not normally distributed (all  $p<0.05$ ), therefore Mann-Whitney U test and Kruskal-Wallis H test were used to analyzed the data. In the other hand, data of overall spiritual wellbeing was normally distributed ( $p=0.384$ ), therefore independent sample T test and one way ANOVA test were used to analyzed the data.

## 3. RESULTS AND DISCUSSION

There were 105 respondents who participated in this study respectively. All study respondents expressed their agreement to participate in this study, and they had signed the consent form. Most respondents are Javanese, Islam, married, housewife, with Gross Domestic Product (GDP) less than minimum wage of Surabaya in 2018 (IDR 3,300,000.00). Educational background, occupational status, and GDP were better in the group of breast cancer. CCS were mostly older than BCS. These results indicate that the majority of female cancer suffered by late adult women with lower-middle socioeconomic status. More single women were found to have breast cancer in this study. Table 1 shows the demographic characteristic of study respondents in details.

Table 1. Demographic characteristic

Characteristic	Cervical cancer (n=47)		Breast cancer (n=58)	
	Frequency	%	Frequency	%
1. Age (years old)				
a. <21	0	0	1	1.72
b. 21-30	0	0	5	8.62
c. 31-40	5	10.64	10	17.24
d. 41-50	11	23.40	15	25.86
e. 51-60	17	36.17	15	25.86
f. 61-70	13	27.66	8	13.79
g. >70	1	2.13	4	6.90
2. Religion				
a. Catholic	0	0	1	1.72
b. Christian	7	14.89	11	18.97
c. Islam	40	85.11	46	79.31
3. Ethnic				
a. Javanese	40	85.11	57	98.28
b. Maduranese	6	12.76	0	0
c. Chinese	1	2.13	1	1.72
4. Educational background				
a. Primary school	15	31.91	11	18.97
b. Secondary school	14	29.79	5	8.62
c. High school	13	27.66	26	44.83
d. Diploma/Bachelor degree	2	4.25	15	25.86
e. Uneducated	3	6.38	1	1.72
5. Marital status				
a. Single	3	6.38	8	13.79
b. Married	39	82.98	36	62.07
c. Widow	4	8.51	14	24.14
d. Divorce	1	2.13	0	0
6. Living at home with				
a. Spouse	39	82.98	30	51.72
b. Children	17	36.17	35	60.34
c. Alone	3	6.38	2	3.45
d. Parents	0	0	11	18.97
e. Sibling	0	0	2	3.45
7. Occupational status				
a. Full-timer	2	4.25	11	18.97
b. Part-timer	3	6.38	2	3.45
c. Retired	0	0	4	6.90
d. Housewife	40	85.11	37	63.79
e. Seeking for a job	0	0	1	1.72
f. Unemployed	2	4.25	3	5.17
8. GDP per month				
a. Less than minimum wage	34	72.34	34	58.62
b. Minimum wage-IDR 5 million	8	17.02	14	24.14
c. More than IDR 5 million	3	6.38	6	10.34
d. No income	2	4.25	3	5.17

The majority of respondents in both groups were diagnosed before 2014 (more than five years ago), indicating they were long term survivors. This finding indicates that the survival rate of breast and cervical cancer is particularly long, which makes both types of cancer a chronic disease needed long term care. Most respondents with breast cancer undertook surgery only, both for curative and palliative purposes. In the other hand, most respondents with cervical cancer undertook a more complex regiment, which was a modification of surgery and chemo-radiotherapy. The surprising fact was 1.9% of total respondents prefer not to undergo any therapy, they possibly use alternative therapy. Regardless of minimum information, lack of knowledge, financial problems, or personal beliefs/preferences, these 1.9% respondents expressed their good physical condition despite of not getting any therapy. Table 2 explains the primary data in details.

Most respondents in both cases agreed that religious and spiritual activities are very much important for their life, they felt maximum changes in their spiritual life and life as a whole positively, and they still had not only many life goals but also high hope. Differences between cases could be seen in the aspect of uncertainty with better outcome in BCS, in which they mostly felt minimum uncertainty compared to moderate uncertainty in CCS. Overall, optimum spiritual wellbeing was found in BCS and CCS. Table 3 explains the comparison of spiritual wellbeing between cases in details.

Table 2. Year of 1<sup>st</sup> diagnosed with cancer, and the type of received therapy

Characteristic	Cervical cancer (n=47)		Breast cancer (n=58)	
	Frequency	%	Frequency	%
1. Firstly diagnosed				
a. 2018	0	0	4	6.90
b. 2017	7	14.89	16	27.59
c. 2016	12	25.53	7	12.07
d. 2015	5	8.62	10	17.24
e. 2014	5	8.62	3	5.17
f. <2014	18	38.30	18	31.03
2. Type of therapy				
a. Surgery	5	8.62	26	44.83
b. Chemotherapy	13	27.66	8	13.79
c. Surgery+chemotherapy	2	4.25	11	18.97
d. Surgery+radiotherapy	0	0	1	1.72
e. Chemotherapy+radiotherapy	7	14.89	1	1.72
f. Surgery+chemotherapy+radiotherapy	17	36.17	5	8.62
g. Surgery+chemotherapy+radiotherapy+analgesic	1	2.13	0	0
h. Surgery+chemotherapy+radiotherapy+medicine	1	2.13	0	0
i. Surgery+chemotherapy+oral medicine	0	0	1	1.72
j. Oral medicine (various types)	0	0	4	6.90
k. Untreated	1	2.13	1	1.72

Table 3. Comparison of spiritual wellbeing between cases

Characteristic*	Cervical cancer (n=47)		Breast cancer (n=58)	
	Frequency	%	Frequency	%
1. Religious activity				
a. Much important	43	91.49	58	100
b. Relatively important	2	4.26	0	0
c. Not important	2	4.26	0	0
2. Spiritual activity				
a. Much important	39	82.98	51	87.93
b. Relatively important	5	10.64	4	6.90
c. Not important	3	6.38	3	5.17
3. Spiritual life changes				
a. Maximum	36	76.60	35	60.34
b. Moderate	8	17.02	15	25.86
c. Minimum	3	6.38	8	13.79
4. Uncertainty				
a. Maximum	7	14	9	15.52
b. Moderate	25	89	14	24.14
c. Minimum	15	31.91	35	60.34
5. Positive life changes				
a. Maximum	38	80.85	43	74.14
b. Moderate	9	19.15	13	22.41
c. Minimum	0	0	2	3.45
6. Life goals				
a. Maximum	43	91.49	57	98.28
b. Moderate	4	8.51	1	1.72
c. Minimum	0	0	0	0
7. Hope				
a. High	43	91.49	58	100
b. Sufficient	3	6.38	0	0
c. Low	1	2.13	0	0
8. Overall spiritual wellbeing				
a. Optimum	39	82.98	55	94.83
b. Sufficient	8	17.02	3	5.17
c. Low	0	0	0	0

\*Category was made to ease the data presentation only, and not for statistical analysis purposes

Descriptive statistic results showed that Mean and standard deviation (SD) of spiritual wellbeing in the case of cervical cancer was 51.34 and 7.57 respectively, while for breast cancer was 55.71 and 6.45 respectively. This indicates that averagely optimum spiritual wellbeing was found in both cases, but the data of spiritual wellbeing in BCS was more homogenous compared to CCS because of lower SD, and BCS had slightly better spiritual wellbeing than CCS due to higher Mean. Religious activity, spiritual activity, uncertainty, positive life changes, life goals, and hope were significantly different between cases ( $p=0.000$ ,  $p=0.002$ ,  $p=0.002$ ,  $p=0.007$ ,  $p=0.000$ , and  $p=0.000$  respectively), impacting significant

differences on spiritual wellbeing between cases ( $p=0.002$ ). Spiritual life changes was the only aspect of spiritual wellbeing which was not significantly different between cases ( $p=0.290$ ). Table 4 explains the significant differences in spiritual wellbeing between cases.

Table 4. Significant differences in spiritual wellbeing between cases

Factors	Cervical Cancer (n=47)		Breast Cancer (n=58)		Mean dif (CI=95%)	t-statistic	p-value
	Mean	SD	Mean	SD			
Religious activity	8.23	1.62	9.43	0.88	-	-	0.000
Spiritual activity	7.62	1.88	8.45	2.06	-	-	0.002
Uncertainty	4.53	2.42	2.94	2.94	-	-	0.002
Positive life changes	7.62	1.44	8.36	1.71	-	-	0.007
Life goals	7.98	1.34	9.51	0.94	-	-	0.000
Hope	8.00	1.68	9.64	0.69	-	-	0.000
Overall spiritual wellbeing	51.34	7.57	55.71	6.45	4.37	3.19	0.002

Most respondents were short term survivors (42.86% in total) with optimum spiritual wellbeing (70.48% in total). More acute to short term survivors were found in the case of breast cancer (n=20 and n=22 respectively) compared to more short to long term survivors in the case of cervical cancer (n=23 and n=17 respectively). Optimum spiritual wellbeing was found in the majority of all stages of survivorship in BCS and CCS, but the fullest was found in acute survivorship for both cases (100%). CCS, especially the individual in short and long term survivorship seemed to be more difficult in achieving optimum spiritual wellbeing than BCS in the same stage. Table 5 explains the spiritual wellbeing level in all stages of cancer survivorship for both cases in details.

Table 5. Comparison of spiritual wellbeing in all stages of survivorship between cases

Case	Survivorship Stage	Spiritual Wellbeing Level*	Frequency	%	
Cervical cancer (n=47)	Acute (n=7)	Optimum	7	100	
		Sufficient	0	0	
		Low	0	0	
	Short term (n=23)	Optimum	18	78.26	
		Sufficient	5	21.74	
		Low	0	0	
		Long term (n=17)	Optimum	14	82.35
			Sufficient	3	17.65
			Low	0	0
Breast cancer (n=58)	Acute (n=20)	Optimum	20	100	
		Sufficient	0	0	
		Low	0	0	
	Short term (n=22)	Optimum	21	95.45	
		Sufficient	1	4.55	
		Low	0	0	
		Long term (n=16)	Optimum	14	87.50
			Sufficient	2	12.50
			Low	0	0

\* Category was made to ease the data presentation, and not for statistical analysis purposes

In BCS, religious activity, life goals, and hope were significantly different between survivorship stages ( $p=0.043$ ,  $p=0.022$ , and  $p=0.036$  respectively), but overall spiritual wellbeing was not significantly different between survivorship stages ( $p=0.179$ ). In CCS, overall spiritual wellbeing and all of its aspects were not significantly different between survivorship stages (all  $p>\alpha$ ). Table 6 reveals the comparison of spiritual wellbeing between survivorship stages in BCS and CCS in details.

It is known that spiritual wellbeing in cancer survivors is influenced by religious activity, spiritual activity, spiritual life changes, uncertainty, positive life changes, life goals, and hope [17]. We tried to determine which one of all these aspects being the best predictor or major determinant of spiritual wellbeing in BCS and CCS. Simple linear regression test results showed that spiritual life changes and religious activity was the best predictor of spiritual wellbeing in BCS and CCS respectively. Uncertainty was the only aspect that did not influence spiritual wellbeing in CCS, in which most of them felt moderate uncertainty according to Table 3 (53.19%). Table 6 shows the influence of each determinant towards spiritual wellbeing in BCS and CCS in details.

Table 6. Comparison of spiritual wellbeing between survivorship stages in both cases

A. Breast cancer (n=58)						
Factors	Acute (n=20) Mean (SD)	Short Term (n=22) Mean (SD)	Long Term (n=16) Mean (SD)	Mean Square (CI 95%)	F or X <sup>2</sup> (df)	p Value
Religious activity	9.80(0.62)	9.27(0.88)	9.19(1.05)	-	6.30	0.043
Spiritual activity	8.30(2.56)	8.50(1.60)	8.56(2.06)	-	0.63	0.731
Spiritual life changes	8.45(2.16)	6.50(3.16)	7.19(3.35)	-	3.08	0.215
Uncertainty	2.75(3.31)	3.50(2.72)	2.44(2.80)	-	1.97	0.373
Positive life changes	8.85(1.69)	7.91(1.51)	8.38(1.93)	-	5.06	0.079
Life goals	9.80(0.89)	9.23(1.02)	9.56(0.81)	-	7.62	0.022
Hope	9.90(0.45)	9.41(0.80)	9.63(0.72)	-	6.67	0.036
Overall spiritual wellbeing	57.85(5.19)	54.32(7.25)	54.94(6.39)	71.88	1.77	0.179

  

B. Cervical cancer (n=47)						
Factors	Acute (n=7) Mean (SD)	Short Term (n=23) Mean (SD)	Long Term (n=17) Mean (SD)	Mean Square (CI 95%)	F or X <sup>2</sup> (df)	p Value
Religious activity	8.57(0.98)	7.91(1.62)	8.53(1.81)	-	3.49	0.175
Spiritual activity	7.71(1.50)	7.43(2.06)	7.82(1.85)	-	0.45	0.800
Spiritual life changes	8.00(0.58)	7.26(2.05)	7.23(2.31)	-	0.68	0.712
Uncertainty	5.86(2.04)	4.78(2.37)	3.65(2.42)	-	4.65	0.098
Positive life changes	8.00(0.00)	7.43(1.34)	7.71(1.83)	-	2.02	0.365
Life goals	8.29(0.76)	7.83(1.30)	8.06(1.60)	-	0.86	0.652
Hope	8.00(0.00)	7.61(1.97)	8.53(1.50)	-	4.37	0.112
Overall spiritual wellbeing	54.43(2.70)	50.26(7.74)	51.53(8.90)	47.08	0.816	0.449

Table 6. Predictors of spiritual wellbeing in both cases

A. Predictors of spiritual wellbeing in BCS				
No.	Determinant	R Square	% of Influence	p Value
1	Religious activity	0.327	32.7	0.000
2	Spiritual activity	0.172	17.2	0.001
3	Spiritual life changes	0.703	70.3	0.000
4	Uncertainty	0.094	9.4	0.019
5	Positive life changes	0.156	15.6	0.002
6	Life goals	0.330	33.0	0.000
7	Hope	0.470	47.0	0.000

  

B. Predictors of spiritual wellbeing in CCS				
No.	Determinant	R Square	% of Influence	p Value
1	Religious activity	0.697	69.7	0.000
2	Spiritual activity	0.351	35.1	0.000
3	Spiritual life changes	0.423	42.3	0.000
4	Uncertainty	0.037	-	0.194
5	Positive life changes	0.691	69.1	0.000
6	Life goals	0.655	65.5	0.000
7	Hope	0.395	39.5	0.000

Results showed that optimum spiritual wellbeing was found in most BCS and CCS, especially in the acute stage of survivorship. This study also found that BCS had slightly better spiritual wellbeing than CCS. This study results were supported by a study towards 240 patients with advanced cancer in Thailand which showed that most respondents had moderate to high level of spiritual wellbeing, in which it was correlated with symptom severity [22], which confirmed the results of previous study by results BCS reported more optimal physical wellbeing compared to CCS [23]. This happened potentially because more optimal physical wellbeing in BCS was influenced by the slightly better spiritual wellbeing found in BCS also in this study. This is consistent with the results of a meta-analysis study which found that religiosity/spirituality was associated with physical wellbeing, functional wellbeing, and physical symptoms; greater religiosity/spirituality is associated with better patient-reported physical health [24].

Results showed that overall spiritual wellbeing was significantly different between BCS and CCS which was influenced by significant differences on religious activity, spiritual activity, uncertainty, positive life changes, life goals, and hope. Specifically in BCS, religious activity, life goals, and hope were significantly different between survivorship stages, but overall spiritual wellbeing was not significantly different. This indicates that religious activity, life goals, and hope change overtime along with the survivorship stages in BCS. While in CCS, spiritual wellbeing and all of its aspects were not significantly

different between survivorship stages, which indicate that spiritual wellbeing is relatively stable or stagnant across the survival life span in CCS.

A similar study towards cancer survivors showed that among the quality of life domains, spiritual domain was ranked highest; cancer-specific worry emerged as a significant predictor for overall quality of life; survivors rated high on positive life changes and sense of purpose but this was tempered by worries and uncertainty [25]. An autobiographical study towards 16 adults with cancer showed that religious meaning was found when the disease was discovered as a calling from God, spiritual meaning was discovered within a buffered identity and important relationships, and secular meaning was found in the courage to make a career change [26].

Religious activity is defined as any activity that primarily promotes or manifests a particular belief in or about a deity or an ultimate reality according to law and legal definition [27]. Most respondents were Muslim in this study (totally 81.9%). Muslims engage in a variety of devotional religious practices to increase their God-consciousness and to discipline their attitudes towards others. Sunni Muslims have identified five pillars of Islam as a focus for their ritual practices which based on Quran and Sunnah, namely: 1) the *shahadah* (the testimony of the unity of God and the prophethood of Muhammad), 2) *salat* (canonical prayer), 3) *zakat* (alms), 4) *sawm* (the fast of Ramadan), and 5) *hajj* (pilgrimage to Mecca) [28]. These five pillars are obligatory acts of worship, and following Islamic law (*sharia*), which touches on virtually every aspect of life and society of Muslims.

Results showed that religious activity was significantly different between BCS and CCS. This aspect was significantly different between survivorship stages in BCS especially, and being the best predictor of spiritual wellbeing in CCS. Most respondents in both cases agreed that religious activity is very important for their life. A longitudinal study towards 45 community-dwelling cancer survivors in four years period after diagnosis showed that newly diagnosed participants were more likely to decrease church attendance but they had an increase in non-organizational religiosity behaviors and intrinsic religiosity; baseline religiosity was the strongest predictor of religiosity at 48 months after cancer diagnosis (short term survivors) [29]. There is a high possibility that this study results which found that religious activity changes overtime along with the survivorship stages in BCS is caused by the increase in non-organizational religiosity behaviors and intrinsic religiosity. The baseline of religiosity at the time first time of cancer diagnosis was not measured in this study and being one of study limitations.

Rosmarin had explained that even though religiosity and spirituality are related, they are not synonymous [9]. Ferrel who developed the instrument used in this study gave example of spiritual activity, such as meditation and yoga [17]. Spiritual activity is not relegated to what we do when we attend a worship service or spirituality seminar; it permeates our ordinary existence on a conscious and subconscious level, and it is intensely personal yet binds us to our community [30]. Cardoso defined any practice as meditation if it (1) utilizes a specific and clearly defined technique, (2) involves muscle relaxation somewhere during the process, (3) involves logic relaxation [31]. At the physical level, Yoga is defined as a physical harmony & health and mental balance & peace [32]. Other than meditation or meditative breathing and Yoga, National Comprehensive Cancer Network gives another example of spiritual activity that may help cancer patients cope with the disease and its treatments, such as: praying alone or with someone else, having someone else pray for the patient, reading scripture or other holy works, saying one passage from particular religious tradition over and over again like a mantra, using the language of certain religion, listening to classical or spiritual music, and talking about spiritual matters with others [10].

Results showed that spiritual activity was significantly different between BCS and CCS. Most respondents in both cases agreed that spiritual activity is very important for their life. Spiritual activity was not significantly different between survivorship stages in BCS and CCS. This indicates that spiritual activity is stable/stagnant overtime along with the survival lifespan in both cases. A comparative study towards 202 women newly diagnosed with breast cancer and 110 healthy women showed that there were no significant differences in religious/spiritual beliefs and practices between groups, but cancer patients reported that their belief in God, strength of faith and private religious/spiritual practices significantly increased shortly after surgery compared to a year prior to surgery [33]. Similar study in women newly diagnosed with cervical cancer is not found yet.

Many patients with cancer rely on spiritual or religious beliefs and practices to help them cope with their disease; this is called spiritual coping [34]. A qualitative study towards 10 participants with cancer showed that they mentioned about emotion-focused roles of spirituality: feeling supported by a transcendental confidant, the expression of negative emotions (in prayer), acceptance, allowing feelings of misery, and viewing problems from a distance [35]. Spirituality is important in regulating their emotions and considered as helpful in adjustment after cancer. Another study towards 94 women with mastectomized breast cancer showed that all respondents used spiritual/religious coping (SRC), mostly at high and very high

level; SRC proved to be an important coping strategy in stress situations experienced by women with breast cancer and helpful in coping with the disease and the consequences of the treatments [36]. Similar study in women with cervical cancer is not found yet. A study in different context towards 901 adults with HIV showed that doing regular spiritual activities for one year was associated with reduced risk of death, in other words it improved survival [37]. Similar study in the context of female cancer needs to be conducted in the future.

Spiritual needs in health care may be distinct from religious ones and are integral to palliative care, and it changes with time and circumstances [38], especially in the case of cancer. A study towards 18 cancer patients showed that spiritual needs should be recognized, realized, and considered in patient care; which includes four kinds of needs, such as connection, peace, meaning and purpose, and transcendence [39]. Spiritual life changes was the only aspect which differed insignificantly between cases, but it was being the best predictor of spiritual wellbeing in BCS. This indicates that spiritual life changes were happened similarly great in BCS and CCS. Table 3 confirms this result in which most respondents in both cases experienced maximum changes in their spiritual life after cancer diagnosis. A study towards 614 cancer survivors showed that having cancer had positively affected their spiritual wellbeing; in which 40.3% respondents experienced highly positive spiritual changes and 75.9% respondents reported being very hopeful; while the rest who experienced negative spiritual changes (36.1%) reported that some of them experienced high level of uncertainty (27.2%) [40].

Uncertainty is simply defined as the state of uncertain. Situationally, uncertainty is a situation in which something is not known; while emotionally, uncertainty is the feeling of not being sure what will happen in the future [41]. A literature review about uncertainty in cancer patients showed that uncertainty was found to comprise three main themes, namely: 1) uncertainty because of limited or lack of information, 2) uncertainty concerning the course and treatment choices related to cancer, and 3) uncertainty related to everyday life and coping with cancer [42]. Uncertainty may represent a key mechanism during the transition from cancer patient to survivor.

Results showed that uncertainty was significantly different between BCS and CCS, and CCS experienced more uncertainty than BCS. Uncertainty was not significantly different between survivorship stages in BCS and CCS. This indicates that uncertainty is stable/stagnant overtime along with the survival lifespan in both cases. A qualitative study towards 35 cancer survivors and 25 partners showed that participants described medical (e.g. cal sources of uncertainty included), personal (e.g. ambiguous valued identities and career-related questions), and social sources of uncertainty (e.g. unclear communicative, relational and familial consequences of illness) [43]. Another study towards 313 breast cancer survivors who were aged 24 to 50 years and were 2 to 4 years post-treatment showed that cancer-related uncertainty was significantly associated with more self-reported fatigue, insomnia, negative affect, and less positive affect; uncertainty about cancer-related symptoms, treatment, and disease course has been related to poorer mental and physical health [44]. Similar study in women with cervical cancer is not found yet. Schapira suggested few ways to manage uncertainty in cancer patients, such as: 1) health professional can leverage the knowledge and compassion to help steer the patients towards treatment decisions, and 2) offering a steady presence and a promise to stay with them all the way [45].

Positive life changes or post-traumatic growth in appreciating life was the most salient area for cancer survivors, including compassion for others and health-related life changes [46]. Post-traumatic growth (PTG) can be defined as positive life changes that result from major life crises or stressful events [47]. Literature review showed that PTG is an important phenomenon in the adjustment to cancer and it can be modified through psychological and pharmacological interventions [47]. A qualitative study towards 10 cancer patients found that participants experienced everyday life changes, which consist of normal life changes, people changing behavior, and changes hurting significant others [48].

Stephan explains how life changes after having breast cancer, which reflected on emotional adjustments and stages, changes in appearance, physical challenges, effects on fertility, changing roles in relationships, changes in sexuality and intimacy, changes in work life and finances [49]. Another study towards 35 cervical cancer survivors showed that the disease impacted their physical and psychological sequelae, family distress, financial burden, and disruptions to their social functioning and sexual life; there were positive gains including changes in their outlook on life, treasuring their life, and better family relationships [50].

Results showed that positive life changes was significantly different between BCS and CCS, however most BCS and CCS reported maximum positive life changes. Positive life changes were not significantly different between survivorship stages in BCS and CCS. This indicates that positive life changes is stable/stagnant overtime along with the survival lifespan in both cases. A qualitative study towards some breast cancer long term survivors showed that life patterns after five years or more of breast cancer diagnosis clustered around positive, expansive interactions, and transforming themes indicating they had grown from

the experience which consistent with characteristics of young's stage of centering [51]. After surviving their cancer, participants consciousness shifted from the binding stage to that of centering, some even evidenced the characteristics of the choice stage. These changes in life patterns reflect the expansion of consciousness experienced by this group of women survivors of breast cancer. Similar study towards acute and short term breast cancer survivors, and cervical cancer survivors is not found yet.

A cancer diagnosis affects patients' quality of life as well as their pursuit of life goals. Life purpose and goal is one of the aspects of meaning in life, together with harmony and peace, life perspective, confusion and lessened meaning, and benefits of spirituality [52]. A study towards 60 women with breast cancer showed that the level of meaning of life among respondents is low, in which marital status and education were found to be significantly associated with the meaning in life and life satisfaction; there was significant relationship between meaning of life and life satisfaction, and the low sense of identity as a whole leads respondents to be dissatisfied with their lives [53]. Similar study in women with cervical cancer is not found yet.

Results of a systematic review showed that cancer impacts patient's life goal characteristic and processes, and life goal disturbance is related to poorer psychological outcomes; there were seven life goal characteristics and processes [54]. The role of goal adjustment or goal reengagement (i.e. disengagement from unattainable goals and reengagement in alternative goals) and cognitive emotion-regulation strategies (i.e. rumination, catastrophizing, positive refocusing) after cancer is important for increasing psychological wellbeing [55]. A comparative study between 159 cancer patients and 160 healthy controls which followed up at nine and 18 months later showed that cancer patients reported: 1) fewer achievement-related goals and leisure goals, and 2) more health-related barriers to goal pursuit, and had a shorter time perspective for their goals [56]. Therefore cancer influences loss-based goal selection after time of first diagnosis and that the change goal perspective is widely maintained for 1.5 years ahead.

Life goal was significantly different between BCS and CCS, and this aspect was significantly different between survivorship stages in BCS especially. However, BCS had the same maximum life goals as CCS. A comparative study towards 159 cancer patients and 160 healthy controls showed that cancer patients reported fewer achievement-related and leisure goals, and had a shorter time perspective for their goals; this happened due to the existence of health-related barriers to goal pursuit, therefore cancer influences loss-based goal selection especially in the first days after diagnosis [56]. A longitudinal study towards 153 cancer patients who got chemotherapy and followed up nine months later showed that higher purpose in life was related with high importance of social, psychological, and health-related goals; having high levels of social goals predicted an increase in purpose of life over time; higher importance of material goals was associated with lower purpose in life and with a decline of purpose in life over time [57]. Another longitudinal study towards 86 cancer patients which followed up 20 months later showed that the overall attainment of life goals was associated with quality of life, over a period of 20 months, perceived quality of life and goal attainment remained stable, whereas importance of life goals decreased; lesser importance and improved goal attainment were predictors of increases in quality of life [58]. A specific study in women with breast or cervical cancer is not found yet.

Hope is an *inner power that facilitates the transcendence of the present situation and enables a reality-based expectation of a brighter tomorrow for self and/or others* [59]. Hope is a positive future orientation, refers to hope as looking forward to a good future [60], some experts link hope to goals [61], others link hope to life purpose [62], "time refocusing," "spiritual beliefs," "uplifting energy" [59], and a sense of "inner strength" [63]. Owen stated that there were six subthemes of hope in cancer patients, namely: goal setting, positive personal attributes, future redefinition, meaning in life, peace, and energy which emerged as a strand running through each of these six subthemes and served as a focal point in the description and model of hope [62]. Each of the subthemes described a component of the process whereby energy was exchanged, transformed, or moved, resulting in the preservation or loss of hope. A decade after, Benzein & Saveman argued that there were five subthemes of hope in cancer patients, namely: inner strength and energy, significant events, support from relatives and/or a familiar environment, confidence in treatment, and nursing actions and treatment [63]. Results of a comprehensive systematic review showed that the biopsychosocial factors that were most consistently associated with hope and hopelessness included sociodemographic variables (education, employment and economic status); clinical factors (cancer stage, physical condition and symptoms); and psychosocial factors (emotional distress, social support and connections, quality of life, control or self-efficacy, adjustment and resilience) [64].

Results showed that hope was significantly different between BCS and CCS, and this aspect was significantly different between survivorship stages in BCS especially. This sense of 'shifting hope' is recognized by Hagerty, who concluded that perceptions of hope change along the disease trajectory, relatives and caregivers have a significant role to play in influencing hope for the patient [65].

In this study, most respondents live with their family, especially spouse (65.71% in total) and children (49.52% in total). In practice however, supporting hope in a loved one is difficult for relatives and caregivers, particularly when trying to strike a balance between honesty and hope [66].

Both BCS and CCS had high hope. A study towards four groups of cancer patients with various types of cancer, one of which was women with breast cancer, showed that hope was not significantly different between cases; the level of hope was high and was positively related to coping regardless of gender, age, marital status, education, or site of malignancy [67]. A longitudinal study towards 50 cancer patients which followed up four months later, showed that highest priority of initial hopes included cure, other positive health outcomes, emotional wellbeing, life achievements/return to normalcy, interpersonal goals, and other; treatment intent was not associated with highest priority hope, and after four months revealed no significant differences in the distribution pattern of hopes [68]. Study of hope specifically in women with breast or cervical cancer needs to be conducted in the near future to support optimum quality of life.

In CCS, overall spiritual wellbeing and all of its aspects were not significantly different between survivorship stages. This results indicate that spiritual wellbeing seemed to be stable/stagnant across the survival lifespan in CCS. A qualitative study towards 15 CCS showed that they experienced anxiety, depression, suicidal tendencies as well as impaired relationships, isolation and financial difficulties. They reached spiritual wellbeing by praying and having hope in God as a way of coping. Most CCS received support from spouses, family, workplace and health workers [69]. Another study towards 110 CCS compared to 80 healthy controls showed that spiritual wellbeing and social support were the predictor factors that statistically affected quality of life among the studied cohort, it accounted for 81% of the variance in quality of life scores [70]. Study about spiritual wellbeing in CCS is so limited compared to the study in BCS, especially the longitudinal study/Cohort, which open a broad chances for worldwide researchers to explore more in this area.

#### 4. CONCLUSION

BCS and CCS have optimum spiritual wellbeing. BCS has a slightly higher spiritual wellbeing than CCS. Spiritual wellbeing differs significantly between BCS and CCS, which influenced by significant differences on religious activity, spiritual activity, uncertainty, positive life changes, life goals, and hope. Spiritual life changes was the only aspect which differed insignificantly between cases. Specifically in BCS, religious activity, life goals, and hope were significantly different between survivorship stages, but overall spiritual wellbeing was not significantly different. This indicates that religious activity, life goals, and hope change overtime along with the survivorship stages in BCS. While in CCS, spiritual wellbeing and all of its aspects were not significantly different between survivorship stages. This indicates that spiritual wellbeing seemed to be stable/stagnant across the survival lifespan in CCS.

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