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Vidura Jayasinghe
Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

Tilini Francis
Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

Dilinika Wanniarachchi
Apeksha Hospital Maharagama, Sri Lanka

Tharanga Rupasinghe
Apeksha Hospital Maharagama, Sri Lanka

Jimutha Jayalath
Apeksha Hospital Maharagama, Sri Lanka

URH Rathgamage
Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

Chandani Sooriaarachchi
Apeksha Hospital Maharagama, Sri Lanka

Corresponding Author:
Vidura Jayasinghe
Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

Health related quality of life among female breast cancer survivors followed up at tertiary care setting in Sri Lanka

Vidura Jayasinghe, Tilini Francis, Dilinika Wanniarachchi, Tharanga Rupasinghe, Jimutha Jayalath, URH Rathgamage and Chandani Sooriaarachchi

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Abstract
Background: Breast cancer survivors are treated with different methods such as mastectomy with chemotherapy and radiotherapy. However, these treating methods lead to reduce overall Health Related Quality of Life (HRQoL) among breast cancer survivors.
Aims: The main aim of the study was to assess the impact of treatment methods and other determinants on HRQoL among breast cancer survivors in Sri Lanka.
Settings and Design: A descriptive cross-sectional study was conducted at breast clinic in the Apeksha hospital Sri Lanka.
Method and Material: The total sample of 300 histologically confirmed breast cancer survivors were recruited to the study. An interviewer administered questionnaire and data extraction form were used to obtain socio – demographic data and modes of treatments respectively. WHOQOL – BREF instrument was used to assess HRQoL.
Statistical analysis used: The independent sample "*t*" test was applied to assess relationships between HRQoL and its determinants. Multiple linear regression was conducted to identify the predictors of HRQoL among breast cancer survivors.
Results: The mean (SD) age of the study population was 55.9 (9.9) years. Majority of participants (57.3 %) were treated with mastectomy with chemotherapy while 2.3% were treated with radiotherapy along. 21% underwent mastectomy along and 13.7% were treated with all three methods. 5.7% participants were awaiting to start treatment. Participants treated with mastectomy and chemotherapy and all three methods had low HRQoL in all four domains ($p<0.001$). further, younger age and unemployment status associated with low HRQoL in psychological and social domains respectively ($P=0.007$ and $P=0.003$). Lower score was observed among non – Sinhala participants in environmental domain ($P = 0.017$).
Conclusion: Breast cancer survivors had low level of overall HRQoL following multiple treatments. younger age, unemployment and non-Sinhala ethnicity are main predictors for low HRQoL in psychological, social and environmental domains respectively.

Keywords: Breast cancer survivors, health related quality of life, chemotherapy, radiotherapy, mastectomy

Introduction
Breast cancer is the commonest cancer among female worldwide [1]. The incident of breast cancer is in increasing trend during last few decades [2]. Similar pattern has been observed among Sri Lankan female too [3]. According to the published data, the breast cancer accounts for 25.2 % of total cancer among Sri Lankan female [4]. The most of the breast cancer patients are treated and followed up at state hospitals in Sri Lanka while, National Cancer Institute recently renamed as Apeksha hospital, is the pioneered service provision center for the breast cancer survivors in the country [5]. Breast cancer survivors can be defined as those who have received a diagnosis of breast cancer from the point of diagnosis, through and after treatment [6, 7]. Therefore, they may in different stages of the treatment process. Breast cancer survivors are treated with different treatment methods such as mastectomy, chemotherapy and radiotherapy [8]. Global evidence showed that, not only diagnosis of breast cancer but also treatment methods have negative impact on Health-Related Quality of Life (HRQoL) among breast cancer survivors [9, 10]. However, little evidence is available on how breast cancer treatments influence on HRQoL among patients in low- and middle-income countries.

The present study was planned to assess the HRQoL and its determinants among breast cancer survivors in tertiary care setting in Sri Lanka.

Method

A descriptive cross-sectional study was conducted in a breast clinic at Apeksha hospital Sri Lanka during 1st October 2018 to 31st July 2019. Ethical approval was obtained from ethics review committee at Faculty of Medicine, University of Colombo. Informed written consent was obtained from all participants. In our study, the breast cancer survivors were defined as female patients those who histologically confirmed to have breast cancer and then followed up at breast clinic in Apeksha hospital. However, we excluded patients those who psychologically not suitable to participate to the study. We used judgmentally validated questionnaire to ascertain sociodemographic data. It included questions on age, ethnicity, religion, level of education, occupation, income, marital status, etc. A data extraction form was used to obtain information relevant to mode of treatment from the clinical records. In addition to that, WHO QoL BREF instrument was used to assess HRQoL. WHO QoL BREF instrument has been validated [11] and used in Sri Lankan context too [12]. Data collection was done without interfering routing management procedures. Also, participants' privacy and confidentiality were ensured during the study. Data collection was conducted among 300 participants. Data was analyzed with statistical software (SPSS 23rd version). The categorical variables were presented with absolute numbers and percentages while continuous variables were presented with means and standard deviations. Socio - demographic variables were divided in to two categories (ex-Sinhala and non – Sinhala) and bivariant analysis performed. Bi-variate analysis was conducted with students' "*t*"-test while multivariant analysis was conducted with multiple linear regression. The level of significance was considered as 5% and respective "*P*" values were described.

Results

The mean age (SD) of the participants was 55.87 (9.94) years. It ranged from 28 to 77 years. The study sample was divided into two groups such as young (age ≤ 55) and old (age > 55). The majority of participants were Sinhala and Buddhist which account for 84% and 71% respectively. Most of them (64.7%) educated above the ordinary level but only 22.3% employed at the time of data collection. In addition to that, 67.7% did not have permanent monthly income too. Further, 88.3% participants were married and 86% had living children (Table 1).

Table 1: Distribution of the socio – demographic characteristics among participants

Character of the participants	Number (%)
Age - less or equal to 55 years	187 (62.3)
Sinhala ethnicity	252 (84.0)
Buddhist religion	213 (71.0)
Education above to O/L [1]	194 (64.7)
Currently employed	67 (22.3)
Had permanent monthly income	97 (32.3)
Currently married	265 (88.3)
Had living children	258 (86.0)

[1]O/L = ordinary level

The HRQoL was divided into main four domains named as physical, phycological, social and environment. The mean (SD) sores in each domain among participants were shown in table 2.

Table 2: Distribution of HRQoL among participants

Domain	Mean (SD)[1]
Physical	61.93 (16.33)
Psychological	58.16 (16.64)
Social	52.94 (21.14)
Environment	65.90 (15.99)

[1]SD = standard deviation, HRQoL = Health Related Quality of Life

The breast cancer survivors in our study were in different stages in the treatment process. The majority of participants (57.3%) were treated with the combination of mastectomy with chemotherapy and only 2.3% were treated with radiotherapy along. Further, 21% participants underwent only the mastectomy while 13.7% were treated with all three methods. However, 5.7% participants were awaiting to start treatment at the time of data collection. As shown in table 3 participants treated with different methods had low HRQoL when compared to participants those who were waiting for treatments.

Table 3: Distribution of treatment methods and HRQoL among participants

Mode of treatment	Number (%)	Mean (SD)[1] scores of the HRQoL[2] in each Domain			
		Physical	Psychological	Social	Environment
Yet to be started	17 (5.7)	77.94(21.76)	85.53 (15.45)	76.12 (13.63)	83.17(9.12)
Mastectomy along	63 (21.0)	74.79(11.18)	75.68 (5.10)	64.77 (20.06)	76.39(11.62)
Radiotherapy along	7 (2.3)	68.14(4.14)	56.28 (8.14)	60.71 (25.64)	65.14(15.79)
Mastectomy with chemotherapy	172 (57.3)	58.05(14.71)	51.06 (13.27)	47.94 (19.47)	61.71(15.99)
Mastectomy, chemotherapy & radiotherapy	41 (13.7)	50.75(10.69)	49.97 (9.05)	44.81 (17.03)	60.34(12.93)

[1]SD = standard deviation, [2]HRQoL = Health related quality of life

All socio-demographic variables were independently divided in to two variables and then compared mean scores in relation to each domain of HRQoL (Table 4). The participants those who employed had better HRQoL in physical domain when compared to unemployed participants (*P*=0.014). In psychological domain old age (age >55), better education (above ordinary level), having employment and having income were significantly associated with higher HRQoL. Similar pattern was observed in social domain where participants those who had better education, having employment and having income were enjoyed better HRQoL. However, in environmental domain Sinhala participants had higher HRQoL than non-Sinhala participants (*P*=0.011). In addition to that, better education, having employment and having income were significantly associated with higher HRQoL in the same domain.

Table 4: Association between socio – demographic characteristics and HRQoL

Domain	Character		Number (%)	Mean (SD)	P value[1]
Physical	Age	=<55	187 (62.33)	60.58 (15.31)	0.064
		>55	113 (37.67)	64.18 (16.81)	
	Ethnicity	Sinhala	252 (84.0)	61.89 (16.77)	0.915
		Non - Sinhala	48 (16.0)	62.16 (13.86)	
	Religion	Buddhist	213 (71.0)	62.06 (16.91)	0.837
		Non – Buddhist	87 (29.0)	61.63 (14.89)	
	Level of education	Up to O/L	106 (35.33)	61.25 (16.03)	0.594
		Above O/L	194 (64.66)	62.30 (16.52)	
	Employment status	Currently employed	67 (22.33)	66.23 (17.49)	0.014
		Currently unemployed	233 (77.66)	60.69 (15.79)	
	Income	Has income	97 (32.33)	64.36 (15.83)	0.075
		No income	203 (67.66)	60.77 (17.14)	
	Marital status	Currently married	265 (88.33)	62.20 (16.12)	0.443
		Currently unmarried	35 (11.66)	59.94 (17.91)	
	Living children	Has living children	258 (86.0)	62.57 (15.95)	0.092
		No living children	42 (14.0)	58.00 (16.32)	
Psychological	Age	=<55	187 (62.33)	56.44 (17.01)	0.022
		>55	113 (37.67)	60.99 (15.67)	
	Ethnicity	Sinhala	252 (84.0)	58.58 (17.08)	0.313
		Non - Sinhala	48 (16.0)	55.93 (13.98)	
	Religion	Buddhist	213 (71.0)	58.68 (17.23)	0.397
		Non – Buddhist	87 (29.0)	56.88 (15.11)	
	Level of education	Up to O/L	106 (35.33)	55.28 (16.31)	0.027
		Above O/L	194 (64.66)	59.73 (16.64)	
	Employment status	Currently employed	67 (22.33)	62.40 (17.71)	0.018
		Currently unemployed	233 (77.66)	56.93 (16.14)	
	Income	Has income	97 (32.33)	62.01 (17.09)	0.005
		No income	203 (67.66)	56.32 (16.13)	
	Marital status	Currently married	265 (88.33)	58.40 (16.64)	0.493
		Currently unmarried	35 (11.66)	56.34 (16.71)	
	Living children	Has living children	258 (86.0)	58.51 (16.74)	0.365
		No living children	42 (14.0)	50.45 (15.96)	
Social	Age	=<55	187 (62.33)	53.06 (22.31)	0.897
		>55	113 (37.67)	52.74 (19.17)	
	Ethnicity	Sinhala	252 (84.0)	53.76 (21.21)	0.123
		Non - Sinhala	48 (16.0)	48.62 (20.49)	
	Religion	Buddhist	213 (71.0)	53.40 (21.43)	0.559
		Non – Buddhist	87 (29.0)	51.82 (20.49)	
	Level of education	Up to O/L	106 (35.33)	49.67 (21.85)	0.048
		Above O/L	194 (64.66)	54.73 (20.58)	
	Employment status	Currently employed	67 (22.33)	62.04 (23.12)	<0.001
		Currently unemployed	233 (77.66)	50.33 (19.83)	
	Income	Has income	97 (32.33)	57.40 (23.01)	0.011
		No income	203 (67.66)	50.81 (19.91)	
	Marital status	Currently married	265 (88.33)	53.37 (21.25)	0.333
		Currently unmarried	35 (11.66)	49.68 (20.31)	
	Living children	Has living children	258 (86.0)	53.35 (21.38)	0.411
		No living children	42 (14.0)	50.45 (19.68)	
Environment	Age	=<55	187 (62.33)	65.39 (15.76)	0.476
		>55	113 (37.67)	66.75 (16.42)	
	Ethnicity	Sinhala	252 (84.0)	66.92 (16.22)	0.011
		Non - Sinhala	48 (16.0)	60.54 (13.71)	
	Religion	Buddhist	213 (71.0)	66.88 (16.26)	0.096
		Non – Buddhist	87 (29.0)	63.49 (15.15)	
	Level of education	Up to O/L	106 (35.33)	63.38 (16.12)	0.044
		Above O/L	194 (64.66)	67.27 (15.81)	
	Employment status	Currently employed	67 (22.33)	71.46 (15.13)	0.001
		Currently unemployed	233 (77.66)	64.30 (15.91)	
	Income	Has income	97 (32.33)	69.64 (14.69)	0.005
		No income	203 (67.66)	64.11 (16.31)	
	Marital status	Currently married	265 (88.33)	66.35 (15.93)	0.179
		Currently unmarried	35 (11.66)	62.48 (16.27)	
	Living children	Has living children	258 (86.0)	66.49 (15.83)	0.114
		No living children	42 (14.0)	62.28 (16.74)	

[1] Bold lettering indicates significant associations at 5% significance level, SD = standard deviation, O/L = ordinary level

We compared HRQoL in all four domains in relation to treatments offered to our study participants (Table 5). Surprisingly, participants underwent only Mastectomy had better HRQoL in all four domains when compared to participants treated with other methods. However, participants treated with both mastectomy and chemotherapy and all three methods had poor HRQoL when compared to others.

Table 5: Association between treatment method and HRQoL

Domain	character	Number (%)	Mean (SD)	*P* value[1]
Physical	Mastectomy only	63 (21.0)	74.79 (11.18)	<0.001
	Others	237 (79.0)	58.51(15.78)	
	Radiotherapy only	7 (2.3)	68.14 (4.19)	0.311
	Others	293 (97.7)	61.78 (16.45)	
	Mastectomy with chemotherapy	172(57.33)	58.05 (14.71)	<0.001
	Others	128 (42.67)	67.14 (50.75)	
	Mastectomy, chemo with radiotherapy	41 (13.66)	50.75 (10.69)	
	Others	259 (86.34)	63. 70 (16.37)	<0.001
Philological	Mastectomy only	63 (21.0)	75.69 (5.11)	<0.001
	Others	237 (79.0)	53.51 (15.49)	
	Radiotherapy only	7 (2.3)	56.28 (8.13)	<0.764
	Others	293 (97.7)	58.21 (16.79)	
	Mastectomy with chemotherapy	172(57.33)	51.06 (13.27)	<0.001
	Others	128 (42.67)	67.69 (15.95)	
	Mastectomy, chemo with radiotherapy	41 (13.66)	49.97 (9.05)	
	Others	259 (86.34)	59.45 (17.19)	<0.001
Social	Mastectomy only	63 (21.0)	64.77 (20.06)	<0.001
	Others	237 (79.0)	49.80 (20.33)	
	Radiotherapy only	7 (2.3)	60.71(25.63)	0.298
	Others	293 (97.7)	52.76 (21.04)	
	Mastectomy with chemotherapy	172(57.33)	47.95 (19.47)	<0.001
	Others	128 (42.67)	59.66 (21.51)	
	Mastectomy, chemo with radiotherapy	41 (13.66)	44.81 (17.02)	
	Others	259 (86.34)	54.23 (21.47)	0.008
Environment	Mastectomy only	63 (21.0)	76.39 (11.62)	<0.001
	Others	237 (79.0)	63.11 (15.86)	
	Radiotherapy only	7 (2.3)	65.14 (15.79)	0.899
	Others	293 (97.7)	65.92 (16.03)	
	Mastectomy with chemotherapy	172(57.33)	61.71 (15.73)	<0.001
	Others	128 (42.67)	71.53 (14.61)	
	Mastectomy, chemo with radiotherapy	41 (13.66)	60.34 (12.93)	0.016
	Others	259 (86.34)	66.78 (16.27)	

[1] Bold lettering indicates significant associations at 5% significance level, SD = standard deviation

Multivariate analysis was performed with multiple liner regression to identify determinant factors for HRQoL among breast cancer survivors. As shown in table 6 combination of treatment methods (mastectomy with chemotherapy and combination of all three methods) were main determinant factors for poor HRQoL in all four domains ($p<0.001$). In addition to that, younger age (age <= 55) was another predictor for low HRQoL in psychological domain (P=0.007) while unemployed status also determined poor social HRQoL (P=0.003). When considering environmental domain ethnicity (non – Sinhala) was a determinant factor for low HRQoL.

Table 6: Determinant factors for HRQoL for breast cancer survivors

Domain	Character	*P* value[1]
Physical	Mastectomy with chemotherapy	<0.001
	Mastectomy, chemo with radiotherapy	<0.001
Psychological	Age <=55	0.007
	Mastectomy & chemotherapy	<0.001
	Mastectomy, chemo with radiotherapy	<0.001
Social	Currently unemployed	0.003
	Mastectomy with chemotherapy	<0.001
	Mastectomy, chemo with radiotherapy	<0.001
Environment	Non – Sinhalese	0.017
	Mastectomy with chemotherapy	<0.001
	Mastectomy, chemo with radiotherapy	<0.001

[1] Bold lettering indicates significant associations at 5% significance level.

Discussion

The breast cancer has become a major Non-Communicable Disease (NCD) worldwide [13] and more breast cancer patients were identified in low- and middle-income countries such as Sri Lanka recently [14]. With the advancement of medical facilities breast cancer patients

have been successfully treated in many counties. However, there has been an unanswered question whether breast cancer survivors enjoy their life even after successful treatment. Therefore, assessment of Health-Related Quality of Life (HRQoL) among breast cancer survivors explore a new angle in management process and will be helpful to provide better care for them [10, 15]. Different treatment methods such as mastectomy, chemotherapy and radiotherapy are offered for breast cancer patients [16]. Most of the time combination of different methods are used to manage breast cancer survivors rather than stick to one. These treatment methods cause many complications and side effects which lead to reduce HRQoL [9]. In addition to that HRQoL can be influenced by many socio – demographic factors. Thus, the main objective of this study was to identify factors which determine HRQoL among breast cancer survivors.

We conducted a cross sectional study at Apeksha hospital Sri Lanka. It provides services for breast cancer survivors those who come from all parts of the country. Therefore, we were able to obtain representative sample for Sri Lanka which reflect in our socio – demographic results. Percentages in ethnicity, religion and level of education were almost similar to country profile [17]. However, more participants were belonged to age <=55 years which was contrast to similar studied conducted in the country [12]. Majority of participants had better education which was expected due to well-functioning free education system in Sri Lanka. However, most of the participants were unemployed and did not have permanent monthly income which showed poor female contribution in Sri Lankan the labour market.

Bivariate results showed that, employed participants enjoyed better HRQoL in all four domains. Also, as multivariate results indicated it was a main predictor for HRQoL in social domain. This may be due to employment status gives better opportunity to engage them and build up good partnerships which are invariably helpful to improve their health. On the other hand, they can earn money and spend for their requirements. It was reflecting in psychological, social and environment domains where participants those who had permanent monthly income had higher HRQoL. Similar pattern was observed in the study conducted in India too [18]. Those who had better education had higher HRQoL in psychological, social and environment domains. This may be due to education drives people to understand the life and enable them to cope up with many challengers. Younger participants had low HRQoL in psychological domain. Multivariate results further showed the influence of younger age on low HRQoL in psychological domain. This is comparable with the finding of many studies [18, 19]. One explanation was that younger patients are not mentally sound enough to tolerate consequences due disease status. On the other hand, body pain is more common among younger patients due to physiological reasons [20] which leads to lessen many aspects of HRQoL.

Evidence showed that chemotherapy cause many complications such as pain, nausea, vomiting, anorexia, fatigue, etc. [21] and radiotherapy also leads to pain, skin changes, sensation changes, fatigue, etc. [22]. In addition to that, mastectomy itself leads to complications such as post mastectomy pain syndrome [5] and psychological burden [23]. It was reflecting in our results as HRQoL in all four domains were low among participants treated with any form of treatment than participants waiting for treatments. It was further low among participants treated with combinations of methods such as mastectomy and chemotherapy and mastectomy, chemotherapy and radiotherapy. However, our results further showed that, those who underwent only mastectomy enjoyed better HRQoL when compared to participants treated with other forms. Further, those who had radiotherapy only did not show any significant different. Therefore, it was quite obvious that, combination of treatments has more negative impact on HRQoL. Multivariate results further showed the impact of combination of treatments on HRQoL. In addition to that, Non - Sinhala ethnicity was a determinant factor for low HRQoL in environmental domain. Perhaps, being the majority in the country Sinhalese are in a better position to get different facilities. Also, language barrier may be a key factor for non – Sinhala population.

Global studies showed that, chemotherapy is a main determinant factor for HRQoL [9]. However, our study sample did not consist of participants who received chemotherapy only. Therefore, we could not differentiate variation of HRQoL due to chemotherapy which is the major limitation in our study. As it is common to all cross-sectional studies, we could not elicit cause effect relationship between treatment methods and HRQoL. Also HRQoL is vary over the period of time [24] but we did not assess time duration from the point of diagnosis of breast cancer to time of data collection which is another limitation of the study. Therefor we recommend to conduct a longitudinal study to understand how HRQoL changing with deterrent treatment methods.

We conclude that, multiple treatments such as mastectomy with chemotherapy and mastectomy, chemotherapy with radiotherapy have negative impact on HRQoL among breast cancer survivors. Also, relatively young patients have lower HRQoL in psychological aspect. In addition to that, unemployed and non – Sinhala patients have poor HRQoL in social and environmental aspects respectively. Thus, sufficient care program needs to be implemented to enhance overall living standards of such breast cancer survivors.

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References

1. Ataollahi MR, Sharifi J, Paknahad MR, Paknahad A. Breast cancer and associated factors: A review. J Med Life. 2015;8(S4):6-11.
2. Huang Z, Wen W, Zheng Y, Gao YT, Wu C, Bao P, et al. Breast cancer incidence and mortality: trends over 40 years among women in Shanghai, China. Ann Oncol. 2016;27(6):1129-34.
3. Fernando A, Jayarajah U, Prabashani S, Fernando EA, Seneviratne SA. Incidence trends and patterns of breast

cancer in Sri Lanka: an analysis of the national cancer database. BMC cancer. 2018;18(1):482.
4. Cancer Incidence Data Sri Lanka 2010. [Internet]. from National Cancer Control Programme. 2016. Available from: http://www.nccp.health.gov.lk/images/PDF_PUBLICATIONS/Cancer_Incidence_Data_2010.pdf.
5. Jayasinghe V, Nandasena S. Post mastectomy pain syndrome: A hidden facet among patients underwent mastectomy in Sri Lanka. Journal of the College of Community Physicians of Sri Lanka, 2018, 24(2).
6. Denlinger CS, Carlson RW, Are M, Baker KS, Davis E, Edge SB, et al. 10.6004/jnccn.2014.0005. Journal of the National Comprehensive Cancer Network: JNCCN. 2014;12(1):34-45.
7. Breast cancer survivors 2018. Available from: https://www.wcrf.org/int/research-we-fund/continuous-updateproject-findings-reports/breast-cancer-survivors.
8. Sharma GN, Dave R, Sanadya J, Sharma P, Sharma KK. Various types and management of breast cancer: an overview. J Adv Pharm Technol Res. 2010;1(2):109-26.
9. Chee Chean D, Kuo Zang W, Lim M, Zulkefle N. Health Related Quality of Life (HRQoL) among Breast Cancer Patients Receiving Chemotherapy in Hospital Melaka: Single Centre Experience. Asian Pac J Cancer Prev. 2016;17(12):5121-6.
10. El Fakir S, El Rhazi K, Zidouh A, Bennani M, Benider A, Errihani H, et al. Health-Related Quality of Life among Breast Cancer Patients and Influencing Factors in Morocco. Asian Pac J Cancer Prev. 2016;17(12):5063-9.
11. Kumarapeli V, Seneviratne Rde A, Wijeyaratne C. Health-related quality of life and psychological distress in polycystic ovary syndrome: a hidden facet in South Asian women. BJOG: An international journal of obstetrics and gynaecology. 2011;118(3):319-28.
12. WasanaHarshani M. Quality of Life and Satisfaction with Care among Breast Cancer Survivors Receiving Different Treatments Strategies in Sri Lanka. Cancer therapy & Oncology International Journal. 2016;2(1).
13. Anderson BO. Breast Cancer and Noncommunicable Diseases: Where in the World Do We Start?; c2012.
14. Confortini CC, Krong B. Breast cancer in the global south and the limitations of a biomedical framing: a critical review of the literature. Health Policy and Planning. 2015;30(10):1350-61.
15. Chen Q, Li S, Wang M, Liu L, Chen G. Health-Related Quality of Life among Women Breast Cancer Patients in Eastern China. BioMed research international. 2018;2018:1452635.
16. How Is Breast Cancer Treated: Centers for Disease Control and Prevention; 2019. Available from: https://www.cdc.gov/cancer/breast/basic_info/treatment.htm.
17. Department of Census and Statistics-Sri Lanka 2018. Available from: http://www.statistics.gov.lk/Pocket%20Book/chap02.pdf.
18. Gangane N, Khairkar P, Hurtig AK, San Sebastián M. Quality of Life Determinants in Breast Cancer Patients in Central Rural India. Asian Pac J Cancer Prev. 2017;18(12):3325-32.
19. Akhtari-Zavare M, Mohd-Sidik S, Periasamy U, Rampal L, Fadhilah SI, Mahmud R. Determinants of quality of life among Malaysian cancer patients: a cross-sectional study. Health and Quality of Life Outcomes. 2018;16(1):163.
20. Variawa ML, Scribante J, Perrie H, Chetty S. The prevalence of chronic postmastectomy pain syndrome in female breast cancer survivors. Southern African Journal of Anaesthesia and Analgesia. 2016;22(4):14-9.
21. Nurgali K, Jagoe RT, Abalo R. Editorial: Adverse Effects of Cancer Chemotherapy: Anything New to Improve Tolerance and Reduce Sequelae? Front Pharmacol. 2018;9:245-.
22. Knobf MT, Sun Y. A Longitudinal Study of Symptoms and Self-care Activities in Women Treated With Primary Radiotherapy for Breast Cancer. Cancer Nursing. 2005;28(3):210-8.
23. Arroyo JMG, López MLD. Psychological Problems Derived from Mastectomy: A Qualitative Study. International Journal of Surgical Oncology. 2011;2011:8.
24. Lu W, Cui Y, Chen X, Zheng Y, Gu K, Cai H, et al. Changes in quality of life among breast cancer patients three years post-diagnosis. Breast Cancer Research and Treatment. 2008;114(2):357.

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