

Original Research



Unmet supportive care needs of breast cancer patients and correlates: a cross sectional study among government sector patients in Western Province

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Abstract

Introduction: Cancer incidence is in a rising trend and due to screening and advanced treatments, cancer prevalence is even higher. All cancer patients have supportive care needs which has to be addressed by the health system.

Objectives: To assess the prevalence and correlates of unmet supportive care needs, of female breast cancer patients followed up in government health sector in Western Province

Methods: An analytical cross-sectional study was conducted among 1415 breast cancer patients from Western Province who attend clinics at Apeksha Hospital. Study used a disproportionate stratified sample comprising of equal number of patients from the initial and 2nd to 6th treatment years. SCan-Br; a tool developed and validated in Sri Lanka to assess the unmet supportive care needs of breast cancer patients was administrated with a questionnaire to assess correlates by trained interviewers. Few clinical data were collected using a data extraction form. Correlates were assessed using multiple logistic regression and relevant adjusted odds ratio (aOR) and confidence intervals were calculated.

Results: Response rate of the study was 92.4%. Unmet supportive care needs were highly prevailing in the study population. Among the patients in the initial treatment year and the 2nd to 6th years, the prevalence of unmet supportive care needs ranged between 63.9% (n=473; 95% CI: 60.4, 67.5) to 94.3% (n=698; 95% CI: 92.7, 96.0) and 39.3% (n=265; 95% CI: 35.4, 43.0) to 87.1% (n=588; 95% CI: 84.3, 89.5) across different domains. "What to do to prevent this type of disease developing again" was the commonest unmet need among the participants of initial (n=589; 79.6%) as well as 2nd to 6th treatment years (n=499; 73.9%). Patients in the initial treatment year showed statistically significant high level of unmet needs for most of the domains except for social and spiritual domains. Specially, needs related to physical (aOR=3.25; 95% CI: 2.46, 4.3) and health system and information (aOR=2.51; 95% CI: 1.71, 3.71) were extremely high among patients of the initial treatment year.

Conclusions & Recommendations: Unmet supportive care needs were highly prevailing, especially among the patients in the initial treatment year. Implementation of a multi-sectoral plan of action is needed specially targeting the high-risk groups.

Key words: *supportive care needs, breast cancer, correlates*

In year 2015, 28 967 new cancer patients have been reported in Sri Lanka and out of all female cancer patients, 23.9% were breast cancer patients(1). Most, if not all patients, have needs beyond early cure averting death and preventing recurrences.

Cancer supportive care is defined as 'the provision of the necessary services for those living with or affected by cancer to meet their informational, emotional, spiritual, social, or physical needs during their diagnostic, treatment, or follow-up phases encompassing issues of health promotion and prevention, survivorship, palliation and bereavement' (2). A holistic care for a patient should include addressing the supportive care needs as well, in addition to treatment aimed at curing disease or relieving symptoms. An Australian study found that out of the total sample, 37% (95% CI: 34, 40) had at least one unmet need, when assessed 6 months after the diagnosis. Commonest needs were psychological needs (25%; 95% CI: 23, 27)(3). Another study done in Sydney, Australia to assess the supportive care needs of breast cancer survivors, 2-10 years after the diagnosis revealed that more than 30% of the participants needed help to manage the concerns about the cancer recurrence (4). A cross-sectional study carried out in Connecticut USA found that out of all domains, psychological domain showed the highest prevalence and the mean was 31.13 (SD=27) (5). A cross-cultural comparison on unmet supportive care needs has been carried out between 348 Hong Kong Chinese and 292 German Caucasian women with breast cancer, found that a lesser proportion of Chinese women (8%) compared to German women (14%) had no unmet supportive care needs and the difference was statistically significant ($p=0.013$)(6). A study done in India, to assess the informational needs of cancer patients, revealed that informational needs were highly prevalent and ranged between 71% to 96%(7). After an extensive literature search, the only study found to be done in Sri Lanka on unmet supportive care needs of cancer survivors was carried out at Apeksha Hospital. More than 85% stated that their needs have been identified well by the hospital staff and out of them 88% stated that their needs have been fulfilled. However, about 35% of the participants had unmet needs in relation to

information and 30% had unmet needs in relation to psychological needs(8).

Almost all the researchers have assessed correlates of each domain separately. Most of the correlated factors were clinical factors. The time since diagnosis, treatment modality, TNM stage, whether on remission or not were the commonest clinical correlates identified. Socio-demographic and economic factors were identified as correlates as well (5, 9-10). It is essential to quantify the level of needs of the patients and correlates, as research studies are very limited in local setting in this regard. The current study aimed to assess the prevalence and correlates of unmet supportive care needs, of female breast cancer patients followed up in government health sector in Western Province.

Methods

An analytical cross-sectional study was conducted in Apeksha Hospital, Maharagama (National Cancer Institute Maharagama), which is also the provincial cancer treatment centre for Western Province while functioning as a national referral centre. All the female patients diagnosed with breast cancer and permanently residing in Western Province at the time of the data collection, registered and followed up at Apeksha Hospital were considered as the study population. Breast cancer patients diagnosed with any other primary cancer other than breast cancer, who were not physically or mentally capable in participation of the study, younger than 40 years (as this category is considered as a different disease entity (11)) at the time of registration and permanent clinic defaulters (the patients who had not attended the clinic for a time period which is adequate for at least two consecutive clinics to be held for the given patient, from the last clinic visit were considered as permanent defaulters) were excluded.

Unmet supportive care needs of cancer patients comprised of few different domains (physical, health system and informational, social, psychological, spiritual and financial). It was expected to assess the prevalence of unmet supportive care needs of each domain of 'patients who had been registered during

one-year period prior from the date of commencement of data collection (patients in the initial treatment year)' (Strata 1) and 'patients who had been registered during ≥ 2 years to ≤ 6 years period prior from the date of commencement of data collection' (Strata 2) separately for patients in the 2nd to 6th treatment year.

Sample size required to assess the prevalence of unmet needs with a confidence level of 95% and a precision of 0.05 was calculated for each domain separately using a standard formula.

As it is planned to assess the prevalence in two strata separately, the required sample size in one stratum was 384. Sample size required to assess the correlations was calculated using a standard formula for the assessment of correlated factors as well. Relative precision was taken as 25% and confidence level was taken as 90%. The sample size was calculated separately for each domain and the maximum sample size was estimated as 1486. After adding 10% non-response rate, the estimated sample size was 1651. As the sample size required for the assessment of correlates was much higher than that for the assessment of prevalence, the final sample size needed for the study was taken as 1651.

A disproportionate stratified sampling technique was used and 825 each were selected randomly out of all the patients in the initial treatment year, and 2nd to 6th treatment years. An interviewer-administrated questionnaire and a data extraction form were incorporated into a single instrument in a sequential manner and was the study instrument. Questionnaire had two sections, the first section was to inquire on socio-demographic, economic characteristics and other possible correlates. The second section was a tool developed to assess the unmet supportive care needs of breast cancer patients in Sri Lanka (SCaN-Br). ScaN-Br has showed adequate reliability and validity in former studied done in Sri Lanka (14). Data extraction form was to collect few clinical data from the clinic records. Further, the whole questionnaire and data extraction form were assessed by a multidisciplinary expert panel for content and face validity, clarity and conciseness. It was pretested before the administration.

Data collection was done at the hospital premises by three trained pre-intern medical officers under the supervision of the principal Investigator. Few patients who did not attend the clinic were traced using the address given in the clinic record and interviewed at their residencies. Informed written consent was obtained before the interview and privacy was maintained.

Data were analysed using Statistical Package for Social Sciences (SPSS) version 20. Patients recorded the level of unmet needs for each item in a four-point Likert scale ranging from 'no unmet need' to a 'high level of unmet need'. If a participant mentioned as having some degree of unmet need (little/average/large) for at least one item in a domain, that participant was considered as having unmet need of the respective domain. Prevalence of unmet needs of each domain were assessed and presented as percentages with 95% confidence interval (CI). Weighing was done when calculating the population point estimates, to revert the effect of disproportionate stratified sampling. Bivariate analysis was performed initially to assess the correlates of unmet supportive care needs of each domain. All variables which showed a probability value of less than 0.2 in the bivariate analysis were included in multivariate logistic regression model using entry method. All the variables entered in the model were applicable to the entire sample studied. Multicollinearity was assessed before the variables were entered into the model. None of the variables showed a significant multicollinearity with any of the other variables in the model. Omnibus test was used to test the statistical significance of the overall model. The cut-off point was considered as a p value of 0.05 or smaller. All the models showed a p value less than 0.05 indicating a good fit.

Results

Out of the total sample of 1650, only 1530 were found to be residing in Western Province during the interview, even though the addresses given to the hospital at the time of registration were within the same province. Out of that, 1415 participated in the study. Response rate was 92.4%. Socio-

demographic, economic and clinical characteristics of the study participants are illustrated in Table 1. Weighted mean age of the study participants was 57.8 years (SD=9.4). All the socio-economic characteristics were on par with that of Western Province. Only 297 (20.9%) had recorded evidence of surgery in the clinic record, of which only eight (0.6%) had a surgery within one month (weighted percentage=0.3%). Only eight (0.6%) patients have taken any treatment other than Western Medicine (weighted percentage=0.7%). These eight patients have had taken Ayurvedic treatment. TNM staging was documented only among 46.5% of the records. Out of them, 48.6% did not show evidence of lymph nodes involvement (N_0). Among those who had TNM stage recorded, 91.3% have not been recorded on metastasis (M_x).

Table 2 presents the prevalence of unmet needs of each domain by the treatment year. Out of the patients in the initial treatment year, 698 (94.3%; 95% CI: 92.7, 96.0) had unmet needs for at least one item in the 'health system and informational' domain. It was followed by the 'financial' domain (87.3%; 95% CI: 84.8, 89.7). Among the participants in the 2nd to 6th treatment years as well, health system and information was the domain which showed the highest prevalence (n=588; 87.1%; 95% CI: 84.3, 89.5). It was followed by the financial domain (80.1%; 95% CI: 77.1, 83.3).

The item which showed the highest prevalence of unmet needs in each domain is illustrated in Table 3 for the patients in the initial treatment year and 2nd to 6th treatment years separately. The items with highest prevalence were the same among patients in the initial treatment year and 2nd to 6th treatment years except for physical and psychological (worries) domains. Out of all the items 'what to do to prevent this type of disease developing again' was the item with highest prevalence.

Table 4 shows the significant correlated factors of each domain after adjusted for confounders. Out of all the correlated factors assessed, being in the initial treatment year was observed as a correlated factor for unmet needs in majority of the domains after adjusting for the confounders. Being in the initial

treatment year was associated with higher odds for having unmet physical needs (aOR=3.25; 95% CI: 2.45, 4.3), health system and information needs (aOR=2.51; 95% CI: 1.71, 3.71), financial needs (aOR=1.67; 95% CI: 1.23, 2.28), psychological (worries) (aOR=1.77; 95% CI: 1.34, 2.34) and psychological (fears) (aOR=1.52; 95% CI: 1.21, 1.91).

Discussion

A study was carried out in Apeksha Hospital among breast cancer patients to assess the unmet supportive care needs. When considering the annual incidence, 40% of the breast cancer patients are diagnosed from Western Province(1), improving the generalizability of the study.

A disproportionate stratified sampling technique was carried out, oversampling the patients in the initial treatment year to improve the precision of estimates and to enable stable statistical comparisons. The study used SCaN-Br, a valid and reliable tool developed in Sri Lanka to address the more culture sensitive nature of the issue.

According to the current study the prevalence of unmet needs was high and ranged between 63% to 94% across seven domains during the initial treatment year and, relatively low ranging from 39.3% to 87.1% in 2nd to 6th treatment years. The prevalence of unmet supportive care needs varied between different studies. A study done in Australia found that the prevalence of unmet needs was 37% (95% CI: 34, 40) (3) and the cross-cultural comparison carried out between 348 Hong Kong Chinese and 292 German Caucasian women with breast cancer revealed that 8% and 14% of the women respectively no unmet supportive care needs (6). Though, adequate number of studies have not been done in countries with similar background, a study done in India to assess the unmet informational needs has found that informational needs were very high and ranged between 71% to 96% (7). Different cut off points used by different researchers to specify the presence of unmet needs is another explanation for the finding.

Table 1: Socio-demographic, economic and clinical characteristics of the study participants

Characteristic	No.	%	Weighted %
<u>Socio-demographic characteristics</u>			
Race			
Sinhala	1242	87.8	86.6
Tamil	77	5.4	5.0
Muslim	88	6.2	7.0
Burger	8	0.6	0.4
Religion			
Buddhism	1081	76.4	76.8
Hinduism	48	3.4	3.0
Christianism and Catholic	197	13.9	13.2
Islam	89	6.3	7.1
Educational level			
No formal education/ or up to schooling up to grade 5 or less	150	10.6	10.6
Up to GCE Ordinary Level ¹	350	24.7	24.3
Passed GCE Ordinary Level ¹	513	36.3	36.9
Up to or passed GCE Advanced Level ²	324	22.9	23.0
Higher education	78	5.5	5.2
Civil status			
Unmarried	96	6.8	6.7
Married	1050	74.2	74.0
Living separated/ divorced	25	1.8	1.9
Widowed	244	17.2	17.5
District of residence²			
Colombo	667	47.1	47.5
Gampaha	446	31.7	30.6
Kalutara	295	21.0	21.5
<u>Economic characteristics</u>			
Employment			
Unemployed and retired	1194	84.4	84.0
Employed	221	15.6	16.0
Family income (Rs.)			
≤ 15,000	750	53.0	51.5
15,001-30,000	398	28.1	28.8
30,001-45,000	150	10.6	11.5
> 45,000	117	8.3	8.1
Insurance coverage⁴			
Yes (Totally)	83	5.9	4.7
Yes (Partially)	104	7.4	7.3
No	1217	86.7	87.3

Clinical characteristics**Time since diagnosis**

≤ 1 year	740	52.3	23.3
More than 1 year	675	47.7	76.7

Recurrence & CMC⁵

Yes	86	6.1	9.7
No	1329	93.9	90.3

Co-morbidities

Yes	744	52.6	55.6
No	671	47.4	44.4

Current treatment modality⁶

Chemotherapy (CT)	370	26.1	17.2
Radiotherapy (RT)	94	6.6	4.7
Hormonal therapy (HT)	649	45.9	54.4
None	341	24.0	26.7

Surgery within one month

Yes	8	0.6	0.3
No/not recorded	1407	99.4	99.7

Treatment modalities other than Western**Medicine**

Yes	8	0.6	0.7
No	1407	99.4	99.3

Total	1415	100	100
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¹General Certificate of Education Ordinary Level; ²General Certificate of Education Advanced Level; ³The district of seven participants were missing; ⁴The insurance coverage of 11 participants were missing; ⁵Contra-lateral breast cancer; ⁶Participants could be one more than one treatment modality
*Weighted average may be not 100% due to rounding off

Highest unmet needs prevalence was observed in 'health system and informational' domain in the studies done in Asian countries like the current study. In contrast to this, 'physical' unmet needs were the highest in western countries. Irrespective of the cultural background, 'psychological' unmet needs were highly prevalent (5, 13, 15-16). Spiritual needs were rarely assessed in international literature and the only study found to have assessed spiritual needs showed that unmet needs were present among 49% of African Americans, 60% of Hispanics and 31% of non-Hispanic Whites (9), implying that it is another important aspect of needs of cancer patients. Financial needs are another rarely assessed domain. A study done in Denmark revealed that 30% complained of financial needs (17) compared to 87.3% (2nd to 6th years) in the current study. The

finding could be explained by the differences in economic backgrounds of the two countries.

“What to do to prevent this type of disease developing again” was the commonest unmet need among the participants of initial (79.6%) as well as 2nd to 6th treatment years (73.9%). The highest prevalent individual unmet needs among cancer patients were to know whether they would be cured of the disease and what else could be done to ensure health, in most of the studies found in international literature (3-4, 13, 18-19).

Similar to the current study, a study done in Korea among 459 breast cancer patients has revealed that physical unmet needs were higher among low income (p=0.019) and low educational (p=0.001) categories and among those who underwent surgery

Table 2: Prevalence of unmet needs among breast cancer patients by domain

Domain	Unmet needs present			
	No.	%	Confidence interval	
			Lower %	Upper %
Initial treatment year				
Health system and information	698	94.3	92.7	96.0
Financial	646	87.3	84.8	89.7
Spiritual and religious	506	68.4	65.2	71.8
Social	473	63.9	60.4	67.5
Psychological (worries)	490	66.2	62.8	69.7
Psychological (fears)	476	64.3	60.8	67.8
Physical	512	69.2	66.2	72.5
Second to sixth treatment years				
Health system and information	588	87.1	84.3	89.5
Financial	541	80.1	77.1	83.3
Spiritual and religious	477	70.7	67.0	73.9
Social	439	65.0	61.3	68.8
Psychological (worries)	374	55.4	51.75	59.0
Psychological (fears)	386	57.2	53.43	60.8
Physical	265	39.3	35.4	43.0

recently ($p=0.001$) (13). Even though higher age has not been found as a correlation for increased physical needs according to the literature, there is evidence that intensity of toxicity of chemotherapy could change with age of the patient (20). A study done in Korea has revealed that when the time since surgery is lesser the prevalence of unmet needs in the health system and informational domain was higher ($p=0.046$) (where the time since surgery could be considered as a proxy for time since diagnosis) (13). A study done in Scotland to assess the unmet informational needs has revealed that informational needs were higher in patients from more affluent areas (18). A study done in India has revealed that informational needs were significantly high among higher educational groups (7). These findings were similar to the correlates found in the current study for unmet informational needs.

The presence of unmet supportive care needs in the social domain was higher among patients with comorbidities ($aOR=1.26$; 95% CI: 1.01, 1.57) and on hormonal therapy ($aOR=1.27$; 95% CI: 1.01, 1.58).

Though it is assumed that the presence of comorbidities could increase the unmet need due to double burden of diseases, it is difficult to explain how being on hormonal therapy or no treatment could increase the needs in this domain. High unmet financial needs were significantly associated with low age (i.e., the economically active age group) ($aOR=1.88$; 95% CI: 1.37, 2.58) and low income ($aOR=2.1$; 95% CI: 1.54, 2.89). Several studies as well have showed that catastrophic health expenditure was more among patients from low income groups — (21-23) and those who do not have an insurance coverage (21-22, 24).

A study done in USA among 1516 cancer patients has found that low age and low educational level as significant correlations for unmet psychological needs (5). It has been frequently found that cancer patients of initial treatment year had significantly high level of unmet needs in the psychological domain (5, 13). Presence of recurrence was found as a correlate for unmet psychological needs in a study done in USA (5). According to a study done in Korea,

Table 3: Items with highest prevalence of unmet needs in each domain

Domain (Item)	No unmet need	Unmet needs present								
		Little		Average		High		Total		
	No.	%	No.	%	No.	%	No.	%	No.	%
Initial treatment year										
Physical (change in the taste of food)	491	66.4	55	7.4	111	15.0	83	11.2	249	33.6
Informational (what to do to prevent this type of disease developing again)	151	20.4	58	7.8	267	36.1	264	35.7	589	79.6
Financial (extra expenditure because of the disease)	177	23.9	40	5.4	268	36.2	255	34.5	563	76.1
Psychological (fears) (to alleviate fears about how the future health be)	291	39.3	41	5.5	203	27.4	205	27.8	449	60.7
Psychological (worries) (worries about being dependent on others)	448	60.5	48	6.5	138	18.7	106	14.3	292	39.5
Social (worries that your family members and friends worry about you)	346	46.8	61	8.2	173	23.4	160	21.6	394	53.2
Spiritual (engage more in religious activities)	317	42.8	20	2.8	186	25.1	217	29.3	423	57.2
2 nd to 6 th treatment years										
Physical (feeling lack of energy)	525	77.8	25	3.7	73	10.8	52	7.7	150	22.2
Informational (what to do to prevent this type of disease developing again)	176	26.1	44	6.5	218	32.3	237	35.1	499	73.9
Financial (extra expenditure because of the disease)	235	34.8	49	7.3	203	30.1	188	27.8	440	65.2
Psychological (fears) (to alleviate fears about how the future health be)	351	52.0	27	4.0	149	22.1	148	21.9	324	48.0
Psychological (worries) (difficulty in bearing up the changes to your routine lifestyle)	446	66.1	46	6.8	107	15.8	76	11.3	229	33.9
Social (worries that your family members and friends worry about you)	295	43.7	51	7.6	179	26.5	150	22.2	380	56.3
Spiritual (engage more in religious activities)	310	45.9	16	2.4	121	17.9	228	33.8	365	54.1

Table 4: Significant correlations for the presence of unmet supportive care needs after the multivariate analysis by domain

Characteristic	B	SE	Wald	df	p value	Adjusted odds ratio (95% CI)
<u>Physical Domain</u>						
Age						
≤ 60 years	0.41	0.122	11.13	1	0.001	1.5 (1.17, 1.92)
> 60 years ¹						1.00
Educational level						
Higher education	0.53	0.27	3.98	1	0.046	1.72 (1.01, 2.85)
Up to or passed GCE A/L ^{1,2}						1.00
District of residence²						
Colombo	0.14	0.15	0.81	1	0.36	1.15 (0.86, 1.54)
Gampaha	0.35	0.16	4.51	1	0.034	1.42 (1.02, 1.96)
Kalutara ¹			4.89	2	0.087	1.00
Employment						
Unemployed	0.43	0.16	6.71	1	0.01	1.54 (1.11, 2.14)
Employed ¹						1.00
Family income (Rs.)						
≤ 30,000	0.27	0.12	5.07	1	0.024	1.3 (1.04, 1.65)
> 30,000 ¹						1.00
Time since diagnosis						
Initial year	1.18	0.14	68.09	1	<0.001	3.25 (2.46, 4.3)
2 nd to 6 th year ¹						1.00
<u>Health System & Information Domain</u>						
District of residence²						
Colombo	0.75	0.23	10.52	1	0.001	2.1 (1.34, 3.3)
Gampaha	0.46	0.24	3.74	1	0.053	1.58 (0.99, 2.53)
Kalutara ¹			10.57	2	0.005	1.00
Time since diagnosis						
Initial year	0.92	0.19	21.76	1	<0.001	2.51 (1.71, 3.71)
2 nd to 6 th year ¹						1.00
<u>Social Needs Domain</u>						
Civil status						
Ever married	0.45	0.22	4.29	1	0.038	1.57 (1.02, 2.4)
Never married ¹						1.00
Co-morbidities						
Yes	0.23	0.11	4.31	1	0.05	1.26 (1.01, 1.57)
No ¹						1.00

Current treatment modality						
Hormonal therapy (HT) or no treatment	0.24	0.12	3.99	1	0.05	1.27 (1.01, 1.58)
Chemotherapy or radiotherapy, ^{1,3}						1.00
Financial Needs Domain						
Age						
≤ 60 years	0.63	0.16	15.17	1	<0.001	1.88 (1.37, 2.58)
> 60 years ¹						1.00
Religion						
Buddhism	0.46	0.21	5.07	1	0.024	1.58 (1.06, 2.38)
Others ^{1,4}						1.00
Family income (Rs.)						
≤ 30,000	0.74	0.16	20.7	1	<0.001	2.1 (1.54, 2.89)
> 30,000 ¹						1.00
Insurance coverage						
No	0.11	0.21	24.6	1	<0.001	2.94 (1.96, 4.34)
Yes (fully or partially) ¹						1.00
Time since diagnosis						
Initial year	0.51	0.16	10.52	1	<0.001	1.67 (1.23, 2.28)
2 nd to 6 th year ¹						1.00
Psychological (worries) Domain						
Age						
≤ 60 years	0.43	0.12	12.78	1	<0.001	1.54 (1.24, 1.94)
> 60 years ¹						1.00
Religion						
Others ⁴	0.30	0.14	4.83	1	0.028	1.35 (1.03, 1.78)
Buddhism ¹						1.00
Educational level						
Up to or passed GCE A/L ²	0.64	0.26	6.12	1	0.013	1.88 (1.15, 3.12)
Higher education ¹						1.00
District of residence²						
Kalutara	0.32	0.132	6.11	1	0.013	1.38 (1.07, 1.79)
Gampaha	0.62	0.25	16.4	1	<0.001	1.85 (1.37, 2.5)
Colombo ¹			17.68	2	<0.001	1.00
Employment						
Unemployed	0.40	0.16	6.13	1	0.013	1.49 (1.09, 2.06)
Employed ¹						1.00
Family income (Rs.)						
≤ 30,000	0.35	0.12	8.56	1	0.003	1.41 (1.12, 1.78)
> 30,000 ¹						1.00

Time since diagnosis						
Initial year	0.57	0.14	16.12	1	<0.001	1.77 (1.34, 2.34)
2 nd to 6 th year ¹						1.00
Recurrence & CBC⁵						
Yes	1.54	0.33	22.12	1	<0.001	4.65 (2.45, 8.8)
No ¹						1.00
Psychological (fears) Domain						
Age						
≤ 60 years	0.26	0.11	5.0	1	0.025	1.29 (1.03, 1.63)
> 60 years ¹						1.00
Educational level						
Up to or passed GCE A/L ²	0.64	0.25	6.8	1	0.009	1.88 (1.17, 3.03)
Higher education ¹						1.00
Civil status						
Ever married	0.47	0.22	4.5	1	0.033	1.6 (1.04, 2.46)
Never married ¹						1.00
District of residence²						
Kalutara	0.41	0.133	9.51	1	0.002	1.29 (1.03, 1.62)
Gampaha	0.576	0.15	14.5	1	<0.001	1.78 (1.32, 2.39)
Colombo ¹			18.31	2	<0.001	1.00
Time since diagnosis						
≤ 1 year	0.42	0.12	13.04	1	<0.001	1.52 (1.21, 1.91)
More than 1 year ¹						1.00
Spiritual & Religious Needs Domain						
Religion						
Buddhism	0.47	0.14	12.3	1	<0.001	1.6 (1.23, 2.09)
Others ^{1,4}						1.00
Recurrence & CBC⁵						
Yes	0.88	0.29	9.27	1	0.002	2.41 (1.37, 4.25)
No ¹						1.00
District of residence						
Colombo	0.462	0.176	6.86	1	0.009	1.58 (1.12, 2.24)
Kalutara	0.182	0.137	1.756	1	0.185	1.19 (0.917, 1.56)
Gampaha ¹			5.26	2	0.072	1.00
Current treatment modality						
Hormonal therapy or no treatment	0.43	0.13	10.92	1	0.001	1.53 (1.19, 2.0)
Chemotherapy or Radiotherapy ^{1,3}						1.00

¹Reference category; ²General Certificate of Education Advanced Level /Ordinary Level; ³Chemotherapy and hormonal therapy or radiotherapy and hormonal therapy were also added; ⁴Hinduism, Christianity (& Catholic) and Islam were amalgamated;

⁵Contra lateral breast cancer

the unmet psychological needs were highest in the lowest income group, even though this finding was not significant (13). All these findings were in-line with the correlates of unmet psychological needs found in the current study.

A study done in New York to assess the unmet needs of cancer patients has revealed that, there was a significant difference observed among ethnic groups, in relation to spiritual needs (9). A study done using a small sample of cancer patients in USA has revealed that, perceiving cancer as incurable is associated with higher spiritual needs (25). Current study revealed that Buddhist religion (OR=1.6; 95% CI: 1.23, 2.09), recurrence & contra-lateral breast cancer which usually have a poor prognosis (OR=2.41; 95% CI: 1.37, 4.25) were correlates for the unmet spiritual needs in the current study, similar to international studies.

Even though all possible steps were taken to improve the generalizability, the results may not be applicable to the populations, which are considerably different from the study population, including breast cancer patients from different cultural backgrounds such as the estate sector residencies and cancer patients diagnosed with other types of cancer. Further, needs of cancer patients who are in the very early period after the diagnosis are expected to be different. As there is a time gap between the diagnosis and attending the Apeksha Hospital, current study was not able to identify the needs of patients in the very early period after the diagnosis.

Conclusions & Recommendations

Unmet supportive care needs were highly prevailing in the study population. Among the patients in the initial treatment year and the 2nd to 6th years, it ranged between 63.9% to 94.3% and 39.3% to 87.1% across different domains respectively. Unmet supportive care needs were significantly higher among the patients in the initial treatment year. Identification and implementation of strategies to address the unmet supportive care needs of breast cancer patients is highly recommended as a priority area. Since supportive care needs is a multidimensional issue, a

'whole of society approach' is needed. Unmet needs, which are highly prevailing, and relatively easily achievable including informational needs and spiritual needs could be targeted at the initial phase. Even though, it is needed to serve all the cancer patients throughout their cancer trajectory, more vigilant and prompt attention should be given for the identified risk groups, especially the breast cancer patients of initial treatment year.

Public Health Implications

- 'A whole of society approach' led by the National Cancer Control Programme must be implemented to address the unmet supportive care needs of breast cancer patients.
- High-risk groups specially the patients in the initial treatment year must be given the first priority.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethical approval was obtained from the Ethics Review Committee at University of Kelaniya, Sri Lanka (Reference No: P/13/02/2014). Informed written consent was obtained from each participant prior to data collection. Permission for data collection was obtained from the Director, NCIM and all the oncologists of the hospital.

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