Nutritional status of breast cancer survivors within first year after diagnosis

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Outline for today

- Literature
- Methods for data collection
- Results
- Discussions and output

Overview

A systematic literature review and meta-analysis of 82 follow-up studies found that obesity is linked with poorer overall and BC-specific survival in pre- and post-menopausal BC patients, regardless of the time point at which the body mass index (BMI) is measured. Also, overweight or obesity are common, affecting about 36–62% of BC survivors, and contribute to a higher risk of cardiovascular morbidity and BC recurrence than in healthy-weight survivors.

Overview

Dietary changes before and after BC diagnosis were reported in a study conducted in Malaysia that used a dietary changes questionnaire. The changes include reduced consumption of red meat, seafood, noodles and poultry, but an increased consumption of fruit, vegetables, fish, low fat milk and soy products. However, earlier studies in Malaysia, which used retrospective dietary assessment methods such as diet history and 24-hour diet recall, showed that BC survivors are not meeting dietary recommendations, especially for fruit and vegetable consumption.

Objectives

1) To determine the body mass index and body fat composition of the breast cancer survivors at baseline (within 9-15 months), 3 years and 5 years.
2) To evaluate the breast cancer survivors energy and dietary intake at baseline (within 9-15 months), (within 9-15 months), 3 years and 5 years.

Tools & Devices

- Anthropometric measurement;

1) Height - Seca 213 Portable Stadiometer, Seca, Hamburg, Germany

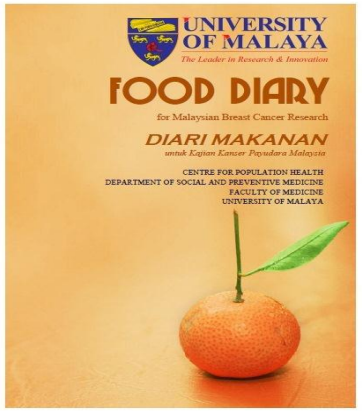
2) TANITA BC-418 Body Composition Analyzer

- Dietary assessment;

1) 3 days food diary (2 weekdays + 1 weekend)

2) Food album (guidelines)

3) Nutrionist Pro(single version 4.7) software



Inclusion and exclusion criteria

- Inclusion criteria:

  * Malaysian women aged between 18 to 80 years, newly diagnosed (Islam et al, 2015).

- Exclusion criteria:

  * Patients who couldn’t stand up (for BCA measurement)

  * Pregnant women and patients with pacemaker device

  * Patients who won’t able to write and read as well as with no caregiver assisted

Process of data collection

Registration

- Wednesday and Thursday in Transit ward level 2
- Explanation of the study and get the consent from the patients

Measurement

- Height, weight and body fat percentage measurement
- Will be followed up after baseline (within 9-15 months), 3 years and 5 years

Follow up

- Next appointment date will be follow through EHAS system
- Call the patients to confirm their attendance to the appointment and tell them their weight and body fat will be taken for second or third measurement
- For food diary, the data will be collected after 9-15months of diagnosis. Inform the participants on how to fill up the diary and provide them with food diary, food mini album and envelope attached with department's address and stamp.

Collection of food diary

- After finishing fill up the food diary, the patients will be asked to post the diary to the respective research assistant.
- The dietary intake will then be analyzed using Nutrionist Pro (single version 5.4) software

Results

- A total of 337 participants were eligible with the first year follow-up time point (9–15 months, after diagnosis).Of these, a total of 264 (78.3%) returned for the follow-up at this time point, while 73 (21.7%) dropped out. 31 were followed up later than one year (+ 3 months) after diagnosis (excluded).
- 233 participants received the food diary for the dietary assessment.
- 39 failed to return the food diary.
- The overall response rate for the dietary assessment was 83.3% and 194 participants who completed the food diary were included in this study.

Results

- Percentages of body fat of 25–35% and 25–36% were categorized as normal for the Asian population aged 20–59 years old and 60–79 years old, respectively.

Table 1: Baseline characteristics of participants (N=194)

Characteristic	Participants
	n (%)
Socio-demographic	
Age at diagnosis, years [a]	55.6 ± 10.2
Age at study entry, years [a]	55.7 ± 10.2
Age categories	
< 40 years	10 (5.2)
40 – 59 years	124 (63.9)
≥ 60 years	60 (30.9)
Ethnic	
Malay	61 (31.4)
Chinese	103 (53.1)
Indian	29 (14.9)
Others	1 (0.5)
Marital status	
Single	25 (13.1)
Married	135 (70.7)
Widowed	19 (9.9)
Divorced	12 (6.3)
Education level	
Primary	46 (24.2)
Secondary	98 (51.6)
Tertiary	46 (24.2)

Table 2: Distribution of anthropometric and dietary variables of participant at one year after diagnosis

Variables	Participants
Anthropometric	n = 194
Weight (kg) [b]	60.1 (17.8)
Height (m) [a]	1.55 ± 0.06
BMI (kg/m^2) [b]	24.9 (7.2)
Body fat percentage [a] (n = 188)	34.7 ± 7.8
Weight status [c]	
Underweight	12 (6.2)
Normal weight	53 (27.3)
Overweight	62 (32.0)
Obese	67 (34.5)
Body fat status [c] (n = 188)	
Normal and below normal range*	102 (54.3)
Higher than normal range	86 (45.7)

Table 2: Distribution of anthropometric and dietary variables of participant at one year after diagnosis

Dietary	n = 193
Total energy (kcal) [a]	1576 ± 356
Carbohydrate	
Total in gram (g) [b]	216.1 (78.3)
Percentage from total energy intake (%) [a]	55.7 ± 6.2
Sugar [b]	
Total in gram (g)	29.8 (25.2)
Percentage from total energy intake (%)	7.7 (6.1)
Protein [b]	
Total in gram (g)	58.1 (21.7)
Percentage from total energy intake (%)	15.0 (3.5)
Fat	
Total in gram (g) [b]	50.0 (20.6)
Percentage from total energy intake (%) [a]	29.0 ± 5.5
Saturated fat [b]	
Total in gram (g)	9.3 (7.4)
Percentage from total energy intake (%)	5.4 (3.5)
Fibre (g) [b]	8.7 (7.2)
Sodium (mg) [b]	2207 (1155)
Calcium (mg) [b]	458 (252)
Supplement intake [c]	
Yes	100 (51.8)
No	93 (48.2)

Table 3. Association of nutrient components with various sociodemographic, clinical, and anthropometric characteristics (n=193) (*continued*)

Characteristics	n	Total energy (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Saturated fat (g)	Sugar (g)	Fiber (g)	Sodium (mg)	Calcium (mg)
Radiotherapy		[a]	[a]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
Yes	131	1,597±364	221.8±56.5	59.5 (20.4)	50.0 (19.5)	9.4 (7.9)	30.3 (26.6)	8.9 (7.9)	2,292 (1221)	443 (256)
No	62	1,533±337	214.8±48.7	54.3 (21.5)	48.8 (26.6)	8.9 (6.4)	26.6 (22.8)	8.5 (6.4)	2,075 (1167)	476 (252)
P value		0.25	0.40	0.07	0.42	0.30	0.17	0.70	0.16	0.87
Hormonal therapy (n=106)		[a]	[b]	[a]	[b]	[b]	[b]	[b]	[b]	[b]
Yes	65	1,557±343	213.1 (91.5)	59.8±13.1	50.3 (21.9)	10.0 (7.3)	33.1 (24.6)	9.0 (7.2)	2,096 (1206)	479 (282)
No	41	1,584±329	218.8 (67.2)	62.5±15.4	52.7 (19.2)	8.9 (8.0)	26.8 (29.1)	9.2 (5.4)	2,340 (1185)	494 (208)
P value		0.70	0.39	0.34	0.78	0.61	0.86	0.79	0.20	0.34
Anthropometric										
Weight status		[a]	[a]	[a]	[a]	[b]	[b]	[b]	[b]	[b]
Underweight	12	1,540±373	234.0±60.1	54.3±14.5	43.2±14.8	4.2 (5.3)	23.9 (10.8)	9.4 (2.7)	2,549 (1371)	415 (151)
Normal	52	1,557±313	216.6±51.2	59.6±15.5	50.7±14.0	10.6 (5.8)	31.5 (23.1)	8.9 (6.7)	2,286 (1481)	418 (206)
Overweight	62	1,533±361	213.7±54.7	58.6±14.4	49.8±16.0	8.0 (7.5)	30.7 (25.8)	9.5 (7.1)	2,040 (1167)	492 (271)
Obese	67	1,638±379	224.6±54.9	62.3±15.6	54.2±17.6	11.2 (8.4)	27.4 (31.9)	7.3 (7.7)	2,324 (1098)	472 (298)
F value/χ^2		1.079	0.765	1.291	1.976	15.076	2.671	4.903	3.534	1.595
P value		0.36	0.52	0.28	0.12	<0.01	0.45	0.18	0.32	0.66

[a]Normally distributed data were analyzed using analysis of variance (more than two groups) or Student's *t* test (two groups) and expressed as mean±standard deviation.
[b]Non-normally distributed data were analyzed using Kruskal-Wallis test (more than two groups) or Mann-Whitney U test (two groups) and expressed as median (interquartile range).
[a,b]Significant differences between groups were detected using post hoc Bonferroni test (analysis of variance) or post hoc Mann-Whitney test (Kruskal-Wallis test).

Discussions

- The results demonstrate a wide variation in nutrient intake among these survivors.
- Overall, the participants in this study had a low median fiber intake (8.7 g/day), which is lower than the WCRF/AICR recommendations for cancer survivors and the *Malaysian Dietary Guidelines* (2010) for the general population. Intake of sodium is also greater than the RNI.
- The median calcium intake (458 mg/day) in this study was only 46–57% of the RNI for women in this age group (800–1000 mg/day). Breast cancer treatments, dietary habits such as low calcium intake and vitamin D insufficiency and lifestyle habits such as inadequate exercise and high alcohol consumption increase the risk of developing osteoporosis. The prevalence of osteoporosis in midlife Malaysian women is 24.1%.

Discussions

- Malay participants had a significantly higher SF and lower fiber intake compared to the other participants.
- The sources of SF vary according to ethnicity and differ from those in the Western diet.
- The most common source of SF used in Malaysian cooking is palm oil, but coconut milk is also used in cooking by Malay, and pork fat is consumed by Chinese.
- One of the main strengths of this study is the robust manner in which the dietary assessment was conducted, as it does not rely on memory recall compared to other techniques.

Conclusions

- This study provides a better understanding of dietary patterns, nutritional intake and prevalence of overweight and obesity in the early phase of survivorship among BC survivors in an urban setting in Malaysia.
- Nutrition and lifestyle interventions by qualified dieticians and other healthcare professionals are crucial and should be urgently incorporated to ensure a successful BC survivorship program in Malaysia.
- Nutritional interventions should take into account not only the affordability of healthy food options, but should be ethnically and culturally appropriate.

RESEARCH
Original Research: Brief

Nutritional Status of Breast Cancer Survivors 1 Year after Diagnosis: A Preliminary Analysis from the Malaysian Breast Cancer Survivorship Cohort Study

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ABSTRACT

Background Lifestyle factors, such as diet, body weight, and physical activity, are linked to better survival after breast cancer (BC) diagnosis. A high percentage of the Malaysian population is overweight or obese. In addition, studies have shown a disparity in survival among Malaysian women compared with other higher-income countries. The Malaysian Breast Cancer Survivorship Cohort (MyBCC) study aims to study lifestyle factors that affect survival in BC survivors. These are the preliminary findings on the nutritional status of Malaysian BC survivors.

Objective Our aim was to evaluate the nutritional status of BC survivors at 1 year after diagnosis.

Design This was a cross-sectional study of 194 participants from the MyBCC study, recruited within 1 year of their diagnosis. Participants completed a 3-day food diary.

Participants Malaysian women (aged 18 years and older) who were newly diagnosed with primary BC, managed at the University Malaya Medical Center, and able to converse either in Malay, English, or Mandarin were included.

Main outcome measures Dietary intake and prevalence of overweight or obesity among participants 1 year after diagnosis were measured.

Statistical analyses performed Student's *t* test and analysis of variance or its equivalent nonparametric test were used for association in continuous variables.

Results About 66% (n=129) of participants were overweight or obese and >45% (n=86) had high body fat percentage 1 year after diagnosis. The participants' diets were low in fiber (median=8.7 g/day; interquartile range=7.2 g/day) and calcium (median=458 mg/day; interquartile range=252 mg/day). Ethnicity and educational attainment contributed to the differences in dietary intake among participants. Higher saturated fat and lower fiber intake were observed among Malay participants compared with other ethnic groups.

Conclusions Overweight and obesity were highly prevalent among BC survivors and suboptimal dietary intake was observed. Provision of an individualized medical nutrition therapy by a qualified dietitian is crucial as part of comprehensive BC survivorship care.

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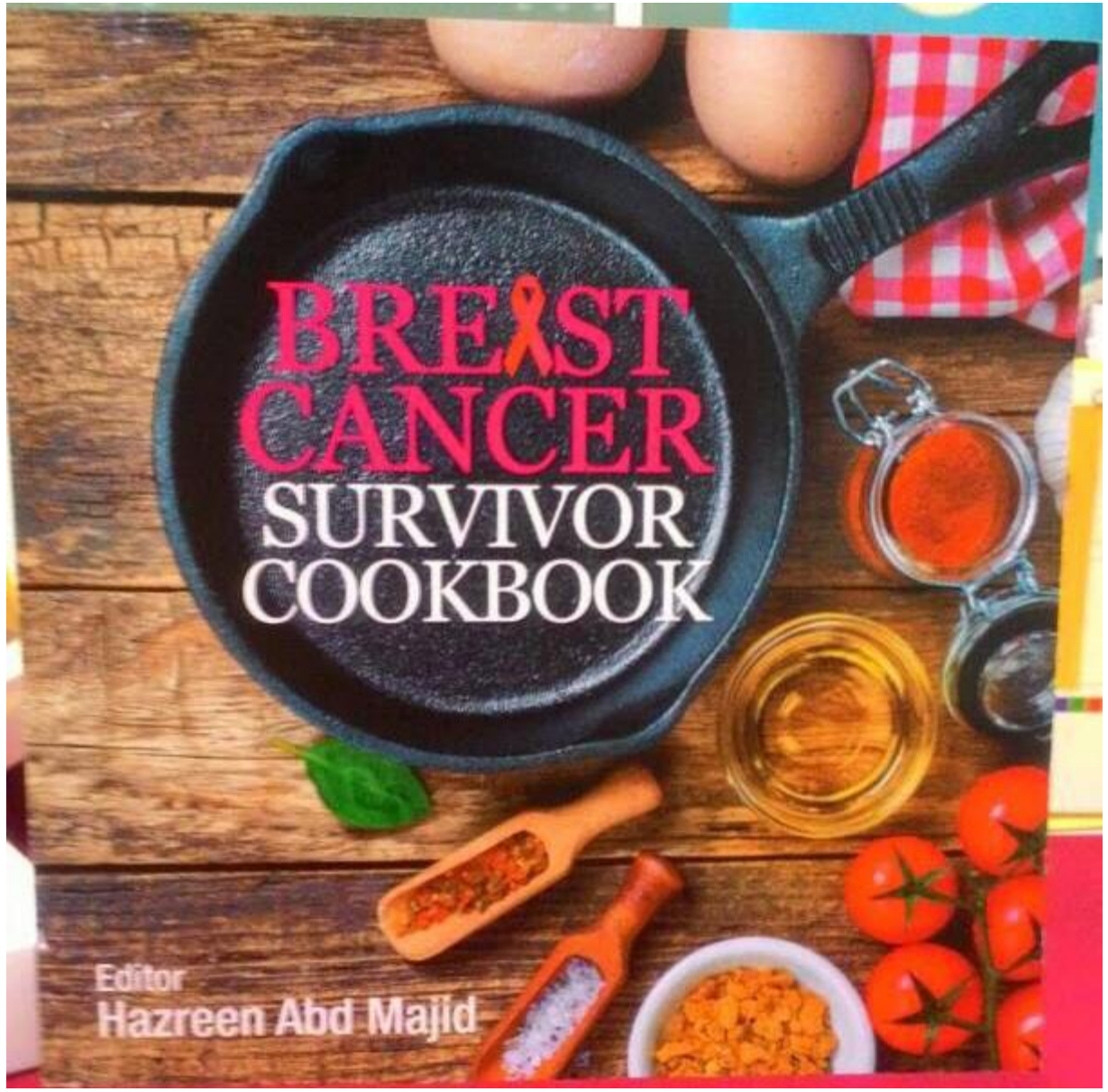
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