Clinical Study

Oncology

Oncology 2016;90:151–159
DOI: 10.1159/000443766

Received: November 1, 2015
Accepted after revision: December 23, 2015
Published online: February 17, 2016

Breast Cancer Survivors' Supportive Care Needs, Posttraumatic Growth and Satisfaction with Doctors' Interpersonal Skills in Relation to Physical Activity 8 Months after the End of Treatment: A Prospective Exploratory Study

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Key Words
Breast cancer survivors · Physical activity · Posttraumatic growth · Satisfaction with care · Supportive care needs

Abstract
Objective: We assessed whether breast cancer survivors' (BCSs) supportive care needs, posttraumatic growth (positive psychological changes) and satisfaction with doctors' interpersonal skills could be related to physical activity (PA). ***Methods:*** A total of 426 BCSs were approached during the last week of treatment. Eight months later, 278 (65%) provided information on their PA levels. Ordinal logistic multiple regressions were performed. ***Results:*** PA levels included no PA (n = 68), some PA (n = 83), high PA levels more than twice or more than 2 h per week (n = 127). The multivariate model significantly explained 13% of PA variance (p = 0.001). An increase in posttraumatic growth total scores (proportional OR = 1.310; p < 0.05) and a decrease in physical and daily living supportive care needs subscale scores (proportional OR = 0.980; p < 0.001) and in satisfaction with doctors' interpersonal skill scores (proportional OR = 0.898; p < 0.05) were significantly associated with an increase in the likelihood of performing higher levels of PA. A lower educational level was associated with a decrease in the likelihood of performing PA. ***Conclusion:*** The prevalence of PA in BCSs should be improved. Positive psychological changes after a breast cancer experience might contribute to performing PA. Encouraging PA needs to be accompanied by the alleviation of physical symptoms.

Introduction

Over recent years, research has demonstrated convincing evidence for the health benefits of physical activity (PA) in breast cancer survivors (BCSs). PA is associated with a reduction in cancer recurrence and improvement in cancer-specific and overall survival [1, 2]. PA also favours improvement in a number of quality of life aspects [3–7].

Promoting PA in cancer patients has become a public health mandate. It also responds to frequently expressed concerns by BCSs about adopting healthy lifestyle changes after completion of primary treatment [8]. However,

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PA levels decline in the 5 years following breast cancer treatment [9], and only a modest percentage of BCSs (37% 10 years after diagnosis [10]) meet international recommendations for PA (i.e. weekly moderate to intense PA of at least 150 min in several sessions) [11, 12].

A range of factors that impede PA among BCSs have been highlighted, including environmental/organisational factors (e.g. social support and lack of time [13, 14]), sociodemographic determinants (e.g. lower educational background [9, 13, 14], ethnic minority [14, 15] and active working status [13]), clinical factors (e.g. more severe disease stage [5] and treatment such as mastectomy or chemotherapy [9, 16]) and symptoms (e.g. fatigue, lack of energy, body image disturbances, physical side effects [13] and depression [17]).

In addition, sociocognitive psychological constructs that have been studied to design and tailor interventions, such as knowledge of the health benefits of PA, outcome expectations, life goals adjustment, perceived facilitators and impediments to PA, and particularly PA self-efficacy, have been pinpointed as explaining 40–71% of variance in PA among adult cancer patients [18].

Less attention has been paid to factors unique to hospital cancer care experiences and to how health care providers (HCPs) responded to breast cancer patients' supportive care needs that might relate to their PA levels. After hospital primary cancer treatment, BCSs have to autonomously engage in managing their own health. However, they often experience various persistent symptoms [19], decreased physical functioning [20] and fear of recurrence [21], which may require the management of ongoing symptoms and adverse effects, and health promotion advice [22]. Unmet supportive care needs may lead to greater persistent symptoms which in turn could result in detrimental effects on the practice of PA.

In addition, the experience of a cancer diagnosis also elicits positive psychological changes in the form of what has been conceptualized as 'posttraumatic growth' [23], namely a new appreciation of one's life or feelings of personal strength for having handled the ordeal of illness. BCSs engaging in PA may exhibit a wish to care for their health and regain a sense of self-control [24] corresponding to this posttraumatic growth.

Posttraumatic growth has been related to PA in colorectal [25], gynaecological [26] and in young adult cancer survivors [27]. However, few studies have quantitatively addressed this relationship in BCSs [24, 28, 29]. Hawkes et al. [25] showed that higher posttraumatic growth was an independent predictor of sufficient PA at 12 months in colorectal cancer survivors. Hence, we found it relevant to assess this relationship in the context of BCSs. Apart from being beneficial to their well-being, promoting positive psychological reactions such as posttraumatic growth among these patients could also provide an additional strategy favouring PA.

Recommendations from an oncologist can increase exercising behaviour in the short term among breast cancer patients [30]. However, adherence to physicians' recommendations requires good oncologist-patient communication [31]. A good interpersonal relationship (i.e. showing interest in the patient as a person, listening and offering support) must have been created between them [32, 33]. Indeed, the doctors' willingness to listen and answer patients' questions has been related to their adherence to physical exercise in chronic illness [34]. So, the perception of doctors' interpersonal skills by BCSs during cancer care may ultimately facilitate a healthy PA level.

Over the past decades, supportive care in oncology has been advocated at the different phases of the cancer trajectory including the cancer remission phase [35]. Addressing BCSs' supportive care needs and satisfaction with doctors' interpersonal skills in relation to PA may highlight targets for care improvement in order to foster healthy behaviours. Moreover, satisfying relationships with doctors thanks to the support provided may also facilitate posttraumatic growth which, in turn, may be related to appropriate PA.

In this study, we prospectively explored the specific role of supportive care needs, posttraumatic growth and satisfaction with doctors' interpersonal skills from the last week of hospital care treatment to BCSs' PA levels 8 months later. We hypothesized that apart from already known sociodemographic and clinical factors and depression, supportive care needs, posttraumatic growth and satisfaction with doctors' interpersonal skills would also be related to BCSs' PA levels in the early recovery period.

Materials and Methods

Between March 2012 and February 2013, women affected with localized or loco-regional breast cancer (BC) were consecutively approached during their last week of radiation therapy at Institut Curie, Paris, France [mean 7.4 months (standard deviation [SD] 2.8; range 3–23) after BC diagnosis]. They were contacted again 8 months later. Approvals from the national CCTIRS (Comité Consultatif sur le Traitement de l'Information en Matière de Recherche dans le Domaine de la Santé) and from the CNIL (Comité National de l'Informatique et des Libertés) was obtained. Written informed consent was solicited.

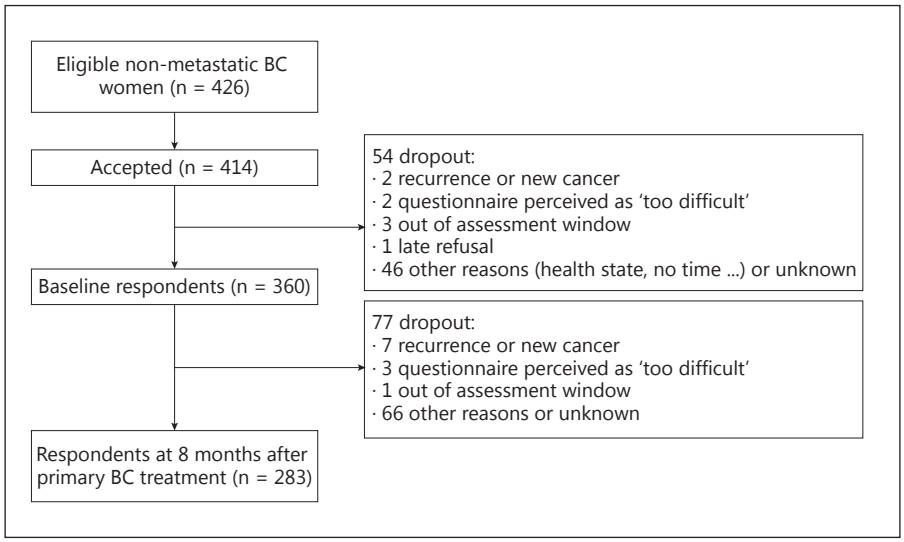

Fig. 1. Participants at baseline (end of primary BC treatment) and 8 months later.

Inclusion criteria included being aged 18 years or older, diagnosis of local or loco-regional non-metastatic BC (stage 0/non-invasive BC to stage III/with axillary node involvement), surgery followed by radiotherapy, with or without chemotherapy and with or without instated hormone therapy. Exclusion criteria comprised language or severe cognitive difficulties or BC recurrence.

Data Collection and Questionnaires

All questionnaires, distributed in the hospital at the end of radiotherapy (which was the last hospital cancer treatment for BCSs eligible for this study; T1) and sent by post 8 months later (T2), were to be completed at home within 6 weeks. Baseline sociodemographic data (age, educational level, marital status, professional status and having children or not) and clinical data (disease stage, type of anti-tumour treatment and comorbidity including any other medical condition co-existing with BC such as diabetes, heart or lung diseases) were provided by the subjects or recorded from medical files.

We assessed the frequency, duration and intensity of physical activities using the 'Past Year Total Physical Activity Questionnaire' which demonstrated acceptable test-retest reliability and construct validity (i.e. by comparisons with PA logs and accelerometer data) [36]. We modified the time frame to reflect the period since the end of BC treatment. BCSs were invited to report their regular PA (yes/no), its frequency ('once/2 weeks', 'once/week', 'twice/week', '3 times/week' or '4 times/week or more'), duration ('less than 1 h/week', 'between 1 and 2 h/week', 'between 2 and 3 h/week', 'between 3 and 4 h/week' or 'more than 4 h/week'). One item enquired about the type of recreational physical exercise, such as walking, cycling, gymnastics, team or combat sports, or muscle resistance training. PA refers to body movement produced by the contraction of skeletal muscles that increases energy expenditure [5]. Here, PA referred specifically to recreational rather than to work or commuter-related PA.

The following psychosocial questionnaires were administered at T1. Internal consistencies were computed for all scales on the data collected in the study sample. Supportive care needs were assessed using the 34-item Supportive Care Needs Survey (SCNS)-Short Form [37] validated in French [38], comprising subscales on psychological, physical and daily living, health and information, care and support, and sexual care needs. Each item is answered on a 5-point Likert scale ('not applicable', 'no need', 'low level of need', 'medium level of need' or 'high level of need'). Scores are standardized on a scale ranging from 0 to 100. Internal consistency coefficients ranged from 0.78 to 0.94.

Posttraumatic growth was measured on the 21-item Posttraumatic Growth Inventory (PTGI) [39] translated into French [40] assessing the degree to which positive change has occurred in a person's life as a result of a stressful life event (here, the diagnosis of BC) with 5 subscales: 'relating to others', 'new possibilities', 'personal strength', 'spiritual change' and 'appreciation of life'. Internal consistency coefficients ranged from 0.73 to 0.84, and it was 0.93 for the total score.

Satisfaction with doctors' interpersonal skills (e.g. 'their willingness to listen to all your concerns') was measured using the 3-item doctors' interpersonal skills subscale of the EORTC in-patient satisfaction questionnaire (EORTC IN-PATSAT32) validated internationally [41]. Standardized scores range from 0 to 100, with a higher score indicating greater satisfaction. The internal consistency coefficient is 0.93.

Anxiety and depression were evaluated using the 14-item Hospital Anxiety and Depression Scale (HADS) [42] validated in a French-speaking cancer population [43]. In this sample, internal consistency (Cronbach's α) coefficients for the HADS anxiety and depression scores were 0.81 for each scale.

Statistical Analyses

Comparisons between eligible subjects and respondents at T2 and between respondents according to PA levels were performed using χ^2 test for categorical data and ANOVA for continuous data.

For each multi-item scale, items with missing data were allocated the mean value of the scale when at least half of the items on that scale had been completed. All multi-item scale scores presented less than 5% missing data, except for health promotion knowledge (missing data = 6%).

Table 1. Baseline sociodemographic and medical characteristics

	Eligible[a] (n = 426)	No PA (n = 68)	Some PA (n = 83)	High PA (n = 127)
Mean age ± SD, years	55.6±12.4	56.7±12.1	55.7±11.8	54.3±11.7
Missing data	6	0	0	0
Education**				
Less than secondary school	31 (9)	12 (18)	5 (6)	5 (4)
Secondary school	52 (15)	12 (18)	12 (14)	14 (11)
Vocational school	58 (16)	15 (22)	13 (16)	23 (18)
University or above	216 (61)	29 (43)	53 (64)	83 (65)
Missing data	69	0	0	2
Marital status				
Married/with a partner	281 (70)	43 (63)	62 (75)	86 (78)
Missing data	23	1	1	0
Professional status				
Active	91 (24)	20 (29)	21 (25)	31 (24)
Missing data	43	0	1	2
Children, yes	315 (76)	54 (79)	67 (81)	95 (75)
Missing data	13	0	0	1
Breast cancer stage*				
0	46 (11)	7 (10)	9 (11)	14 (11)
1	192 (46)	30 (44)	42 (51)	57 (45)
2	137 (33)	24 (35)	18 (22)	48 (38)
3	41 (10)	6 (9)	14 (17)	6 (5)
Missing data	10	1	0	2
Treatment				
Mastectomy	98 (23)	13 (19)	17 (20)	26 (20)
Missing data	0	0	0	0
Chemotherapy	194 (46)	29 (43)	39 (47)	56 (44)
Missing data	0	0	0	0
Hormone therapy	295 (72)	50 (74)	58 (70)	84 (66)
Missing data	15	5	1	5
Mean time since diagnosis ± SD, months[b]	7.4±2.8	7.3±2.3	7.4±2.8	7.3±2.9
Missing data	66	0	0	0
Comorbid condition	229 (54)	37 (54)	45 (54)	63 (50)
Missing data	4	1	0	3
PA program referral	80 (29)	20 (29)	24 (29)	36 (28)
Missing data	151	0	5	0

Values are n or n (%) unless otherwise specified. * $p < 0.05$; ** $p < 0.01$, for significant differences between levels of PA. [a] Missing data indicate mostly self-reported data not available due to study non-participation, ranging from 23 (marital status) to 151 (PA program referral). [b] Time since diagnosis and baseline assessment.

To discriminate levels of PA, 3 categories were determined, including no PA, some PA and high PA. 'Some' versus 'high' PA was defined by a frequency and duration cut-off of more than twice/week and more than 2 h/week. This categorisation could provide gradual levels of PA allowing for the 'high' level to closely correspond to PA recommendations [12].

Psychosocial variables significant at $p < 0.10$ in univariate analysis were eligible for multivariate analyses. As a result, we tested the effect of supportive care needs in physical and daily living, the posttraumatic growth (total score) and satisfaction with doctors' interpersonal skills on increasing PA levels, from no PA to some PA and from some PA to high PA.

Table 2. Baseline psychosocial self-reported assessment and PA data 8 months later (n = 278)

	No PA (n = 68)	Some PA (n = 83)	High PA (n = 127)
HADS – Anxiety (0–21)	7.9±4.1	8.0±4.3	7.0±3.9
HADS – Depression (0–21)**	6.5±4.1	4.7±3.9	4.8±3.5
SCNS – Psychological (0–100)	38.1±25.5	38.0±24.3	33.4±22.5
SCNS – Health system and information (0–100)	33.9±18.3	34.6±18.9	35.9±18.0
SCNS – Care and support (0–100)	27.6±16.5	27.5±17.4	27.0±15.9
SCNS – Physical (0–100)***	38.3±23.6	33.5±25.7	26.0±20.2
SCNS – Sexual care needs (0–100)	25.3±31.6	28.0±30.5	28.6±32.0
PTGI – Relationship to others (0–35)	2.63±1.11	2.51±1.07	2.82±1.04
PTGI – New possibilities (0–25)	1.82±1.23	1.86±1.22	2.00±1.19
PTGI – Personal strength (0–20)	2.17±1.28	2.32±1.19	2.45±1.22
PTGI – Spiritual changes (0–10)	1.35±1.62	1.32±1.49	1.38±1.46
PTGI – Appreciation of life (0–15)*	2.52±1.24	2.56±1.35	2.96±1.19
PATSAT – Interpersonal skills (0–100)	64.2±27.3	59.1±25.8	60.4±23.9

Values are mean ± SD. PATSAT = EORTC in-patient satisfaction questionnaire (EORTC IN-PATSAT32). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, for significant differences between levels of PA.

We controlled for sociodemographic variables (age at BC diagnosis as a continuous variable, educational level at or below secondary education level, secondary education or vocational training versus university education, single versus having a partner/married and professionally inactive), clinical data (BC stage 0, I or II vs. III and lumpectomy versus mastectomy) and depression.

For educational level and BC stage (categorical variables with more than two categories), omnibus tests were performed for the overall variable effect. Ordinal logistic multiple regression analyses [44] were performed on the dependent outcome variable: PA level at T2 (n = 261, due to missing data on some independent variables). The proportional odds assumption was assessed by the parallel lines test. As it was found non-significant ($\chi^2 = 15.64$, d.f. = 14, $p = 0.34$), we concluded that the assumption was adequate.

We also tested models including interactions between educational levels and supportive care needs in physical and daily living, posttraumatic growth and satisfaction with doctors' interpersonal skills on levels of PA.

Statistical analyses were performed with SPSS software version 22 (IBM, Somers, N.Y., USA). The PLUM function was used for ordinal logistic multiple regression analysis.

Results

Baseline Characteristics

Of the 426 BCSs approached to participate in the study, 278 (65%) completed the questionnaires at T2. A study participation flow chart is provided in figure 1. There were no significant differences on sociodemographic and medical characteristics between respondents (n = 278) and the eligible population.

The sociodemographic and clinical characteristics of the sample are detailed in table 1. Eligible BCSs' mean age (SD) was 55.6 (12.4) years. Most of them were married/partnered (70%), had above secondary school educational level (61%) and were diagnosed with stage 0–I BC (57%). Approximately 46% had undergone chemotherapy, and 72% were currently undergoing endocrine treatment.

PA Level and Psychosocial Assessment

At T2, 68 (24%), 83 (30%) and 127 (46%) BCSs reported no, some or high levels of PA, respectively. A higher PA level was more likely in women presenting a higher level of education ($p < 0.01$) and a less extended BC stage ($p < 0.05$; table 1).

Significantly higher PA levels were reported in women evidencing lower levels of physical and daily living needs ($p < 0.001$), lower depression ($p < 0.01$) and greater appreciation of life ($p < 0.05$; assessed at T1; table 2).

Multivariate Analyses

In ordinal logistic multiple regression analyses, the percentage of explained variance in PA level was 13% (Cox and Snell Pseudo R^2, $p < 0.001$; table 3). After controlling for other variables, among BCSs' physical and daily living needs, posttraumatic growth and satisfaction with doctors' interpersonal skills assessed at T1 were significantly related to PA level at T2. Lower physical and daily living needs [proportional OR (CI) = 0.980 (0.967; 0.992)], higher posttraumatic growth total score [propor-

Table 3. Multivariate ordinal logistic regression analysis[a]

Factors	Classes	No PA versus some PA versus high PA		
		β (SE)	proportional OR	95% CI
Age		–0.009 (0.012)	0.991	0.968; 1.014
Education level**	below high school	–1.357 (0.516)	0.257	0.094; 0.708
	high school	–0.634 (0.360)	0.531	0.262; 1.075
	technical school	–0.291 (0.315)	0.748	0.403; 1.387
Marital status	single	–0.278 (0.288)	0.757	0.431; 1.331
Professional status	inactive	0.390 (0.284)	1.477	0.847; 2.575
Disease stage	0	0.215 (0.572)	1.240	0.404; 3.807
	1	0.388 (0.461)	1.475	0.598; 3.639
	2	0.654 (0.462)	1.924	0.778; 4.759
Surgery	lumpectomy	0.142 (0.340)	1.153	0.592; 2.243
SCNS – Physical***		–0.021 (0.007)	0.980	0.967; 0.992
HADS – Depression		0.003 (0.039)	0.995	0.911; 1.087
PTGI – total score*		0.270 (0.132)	1.310	1.012; 1.696
PATSAT – Interpersonal skills*		–0.011 (0.005)	0.898	0.979; 0.999
Model χ^2 (d.f.); p value		χ^2 (14) = 35.56; 0.001		
Pseudo R^2 (Cox and Snell, Nagelkerke, McFadden)		13%, 14%, 6%		

* p < 0.05; ** p < 0.01; *** p < 0.001. [a] n = 261 due to missing data on some independent variables.

tional OR (CI) = 1.310 (1.012; 1.696)] and (going against our hypotheses) lower satisfaction with doctors' interpersonal skills (proportional OR [CI] = 0.898 [0.979; 0.999]) were all associated with increased levels of PA, from no PA to some PA or from some PA to high PA.

Educational level below secondary school compared to university [proportional OR (CI) = –1.642 (0.067; 0.558)] was also related to lower levels of PA. Other sociodemographic and clinical variables and depression were not related to PA levels.

Interactions between education levels and supportive care needs in physical and daily living, posttraumatic growth and satisfaction with doctors' interpersonal skills tested in additional models were not significant, providing the following results, respectively: χ^2 (d.f. = 3) = 2.081, χ^2 (d.f. = 3) = 1.152, χ^2 (d.f. = 3) = 0.485.

Discussion

In this study on BCSs, we assessed whether supportive care needs, posttraumatic growth and satisfaction with doctors' interpersonal skills at the end of primary hospital treatment could be related to PA levels 8 months later. Little is known about these potential factors [16, 24, 34], although they could indicate areas actionable for supportive care improvement and highlight additional levers for healthy PA levels among BCSs following the end of hospital primary treatment.

As also reported in prostate cancer survivors [45], higher scores for physical and daily living needs were associated with decreased PA levels among these women. Patients' perceived physical and daily living needs reflect a gap between their actual state and an optimal state, noted by HCPs [46]. Exploring patient perceptions of supportive care needs clarifies where actions or resource allocation are necessary, desirable or useful to help patients to overcome their difficulties [47]. Oncology providers should pay more attention to difficulties experienced by BCSs in physical and role functioning (e.g. whether they have pain, fatigue, trouble doing their work or other daily activities). This may indicate suboptimal levels of PA and possible needs for exploration of PA barriers or symptom relief.

Posttraumatic growth was significantly associated with the level of PA in this BCS sample. In survivors of colorectal cancer, posttraumatic growth was evidenced as a significant predictor of sufficient PA [25]. Conversely, a significant effect of PA has been found on posttraumatic growth [26, 27]. It has been suggested that PA may have enhanced psychological features associated with psychological growth [27]. PA may also have shielded from the

negative impact of cancer (e.g. negative body changes and negative self-evaluation) and bolstered the positive effect of social support on posttraumatic growth [26].

As we did not assess baseline levels of PA (i.e. PA in the last week of hospital treatment), it is unclear whether posttraumatic growth is a predictor of a positive change in PA levels over the 8 months of follow-up. In bivariate analyses, this study found that a greater appreciation of life at the time of ending hospital cancer treatment was associated with higher levels of PA 8 months later. In line with Connerty and Knott [29], it can be suggested that positive psychological changes after breast treatment may be interrelated with activities aimed at adopting healthier habits, such as exercising. Posttraumatic growth could also reflect changes in life priorities such as devoting increased attention to ones' health and thus to performing PA. These, in turn, may have engendered the regaining of a sense of personal control and appreciation of life (e.g. experiencing PA as enjoyable) [48]. The potential mechanisms relating posttraumatic growth and PA needs to be further studied.

Surprisingly, unlike our hypothesis, we found a significant but negative association between satisfaction with doctors' interpersonal skills and increasing PA levels. BCSs who reported no PA, some or high PA provided mean scores for satisfaction with doctors' interpersonal skills of 70.4, 62.3 and 64.9, respectively.

Satisfaction with care reflects the extent to which patients' care needs and expectations have been met [49]. It is possible that BCSs who reported that they were less satisfied with doctors' interpersonal skills had to compensate for dissatisfaction with the care provided by turning to their own internal resources looking for health promotion advice from any source, which resulted in better adherence to the PA recommendations obtained. BCSs who were less satisfied with doctors' interpersonal skills may also have been better acquainted with the importance of the care for the whole person and of a healthy lifestyle compared to those who were more satisfied and perhaps more focused on the technical and purely medical aspects of oncology care.

Over the period of BCS recruitment in the institution in which this study took place, the Supportive Care Department implemented a PA program for BCSs. Hospital oncologists were invited to refer their patients to this program at the last hospital BC treatment consultation. The findings of this study show that more than half of these women did not comply with adequate PA levels. Considering the health benefits of PA [50], increasing the number of BCSs reaching recommended PA levels is of utmost importance.

The prevalence rate of PA in this sample is comparable to the moderate PA reported in rural BCSs [51] and in mixed cancer survivors [52]. Our cut-off for PA level (i.e. >120 min/week of moderate-intensity PA) is slightly below the international PA recommendations (>150 min/week) and approximately equivalent to 6 metabolic equivalent hours per week. This suggests that to reach this fairly healthy level of PA, HCPs in oncology should more systematically provide BCSs with clear and adequate information on exercise guidelines for cancer survivors.

As in other studies, higher levels of PA in these BCSs were more frequent with a higher educational level [9, 13, 14]. However, in contrast to other studies [5, 17, 53], although significant in bivariate analysis, depression was no longer significant in our multivariate model. In this sample, the mean level of depression was generally low. These results could suggest that for most BCSs, fostering positive psychological change such as posttraumatic growth could be critical for PA levels, and relieving depressive symptoms should be targeted in priority among women presenting these needs.

These study findings should be viewed in light of the following limitations. The study was performed in a single institution which, as observed by the percentage of women with a university degree or above, is not representative of BCSs treated in any cancer centres in France. Thus, the study needs to be replicated to confirm the results. Although evidence suggests that patients with higher educational attainment are likely to report higher unmet care needs or dissatisfaction with care, we did not observe an interacting effect between educational level and supportive care needs or satisfaction with doctors' interpersonal skills on PA level. It may be useful to further address these relationships in a more representative BCS sample.

The response rate at follow-up was only 65%; however, the remaining BCS sample mostly reflects the eligible population. The assessment of PA was subjective and thus liable to overestimation [54]. We did not assess baseline PA and thus cannot isolate the specific factors related to changes in PA following BC treatment; some BCSs may have been already physically active independently from their experience of cancer.

The multivariate model in this study explained 13% of the variance in PA levels. This is a small proportion compared to the effects of sociocognitive psychological constructs (40–71%) [18]. This result points to the lower relevance of satisfaction with hospital doctors' interpersonal skills or posttraumatic growth relatively to sociocognitive determinants as levers to promote appropriate PA in BCSs.

Conclusion

Promoting the adoption of PA as recommended by international guidelines should be accompanied by the exploration of any physical and daily living functioning difficulties that could interfere with the healthy practice of PA. Besides, this study suggests that positive psychological changes following the experience of BC treatment, such as a posttraumatic growth, may be consistent with the adoption of a healthy lifestyle.

Acknowledgements

This study received a grant from the French National Cancer League, the French Ile-de-France region Canceropole and AG2R La Mondiale. The authors wish to thank Sophie Simandoux for her assistance in recruiting patients. We also express our gratitude to all study participants who accepted to provide their time completing questionnaires for this study.

Disclosure Statement

The authors declare that they have no conflicts of interest.

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