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The impact of the survivorship care plan on health care use: 2-year follow-up results of the ROGY care trial

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Abstract

Purpose The purpose of this paper was to assess the impact of survivorship care plan (SCP) provision and moderating factors on health care use following endometrial cancer treatment.

Methods Women newly diagnosed with endometrial cancer were included in a pragmatic cluster randomized trial at 12 hospitals in the Netherlands and were randomly assigned to SCP or usual care ($n = 221$; 75% response). The SCP was generated using the web-based Registrationsystem Oncological GYnecology (ROGY) and provided tailored information regarding disease, treatment, and possible late-effects. Cancer-related use of general practitioner, specialist, and additional health care was collected through questionnaires after diagnosis and at 6-, 12-, and 24-month follow-up and compared using linear multilevel regression analyses.

Results Women who received an SCP had more cancer-related primary care visits compared to the usual care arm during the first year after diagnosis ($β = 0.7$, $p < 0.01$). At 6-month follow-up, women in the SCP group used more additional health care compared to women receiving usual care (24 vs. 11%, $p = 0.04$). Women with anxious symptoms ($p = 0.03$) and women who received radiotherapy ($p = 0.01$)

had a higher primary care use within the first year after treatment, when receiving an SCP.

Conclusions The SCP increases primary health care consumption the first year after treatment, particularly in women treated with radiotherapy and women with anxious symptoms.

Implications for cancer survivors These findings imply that the SCP enables women in need of supportive care to seek relevant care at an early stage after treatment. Whether this results in improved patient-reported outcomes in the long-term needs to be further studied.

Introduction

Due to the rising population of cancer survivors, the management of survivorship care is increasingly being transferred to the primary care sector [1]. The general practitioner (GP) often holds in-depth knowledge of the patient and their life situation

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and is by many considered the optimal gate-keeper in the multifaceted management of survivorship care. Nonetheless, efficient survivorship care relies on a close collaboration between the patient, her GP, gynecologist, and oncologist. The cornerstone of this collaboration is efficient communication regarding the course of treatment, possible late effects, and their optimal management [2, 3].

In 2005, the Institute of Medicine in the United States of America recommended the use of survivorship care plans (SCP) for all cancer survivors [4]. The SCP is a formal document provided upon discharge from cancer treatment that contains a tailored treatment summary (diagnostic tests performed, disease characteristics, treatment summary, and treatment toxicities) and follow-up plan (content of follow-up, signs of recurrence, and availability of supportive services such as psychosocial services) [4]. The recommendation was not evidence-based but relied on the assumption that the SCP would improve communication between survivors, their GPs, and oncology specialists, and consequently improve the quality of care and outcomes after treatment [4]. Since the report in 2005, a number of studies have been conducted to evaluate the optimal content and dissemination of the SCP as well as its effect on patient outcomes [5]. Six randomized controlled trials have failed to find evidence of improved outcomes in patients receiving an SCP (distress, worry, quality of life) [6–11]. However, in the trial by Kvale et al., which involved coaching and motivational interviewing as part of the SCP process, a positive impact was found on self-reported health and social role limitations [12]. Furthermore, in a trial by Maly et al., the provision of an SCP accompanied by nurse counseling in a population of low-income Latina breast cancer survivors resulted in greater physician-led implementation of survivorship care, i.e., treatment of hot flushes and depression [13].

In the primary paper from the present Registrationsystem Oncological Gynecology (ROGY) care trial [14], we demonstrated that women receiving an SCP experienced more symptoms, were more concerned about their illness, more emotionally affected, and had more cancer-related contacts with the GP in the first 12 months after diagnosis [15]. In the current paper, we aim to better understand the effect of the SCP on health care consumption as we present 2-year follow-up data on health care use and identify moderators related to increased health care use in the SCP group. The objectives of the study were as follows: (i) to evaluate the impact of a survivorship care plan on health care use, i.e., cancer-related visits to GP, specialist, and use of additional health care; (ii) to identify potential moderators related to health care use in the SCP group. We hypothesized that radiotherapy treatment, impairments in physical functioning, high educational level, and emotional distress would result in higher health care use after receiving an SCP.

Details on the study design and the primary study aims are provided in the protocol paper [14] and on www.clinicaltrials.gov (NCT01185626).

Methods

Design

A pragmatic cluster randomized controlled trial.

Study population

Women diagnosed with endometrial cancer between April 2011 and October 2012 were invited to participate in the study. The women were recruited from 12 hospitals in the southern part of the Netherlands, including teaching and non-teaching hospitals. The women were excluded if they (i) underwent palliative care as these women will have other needs than those typically addressed in survivorship care plans or (ii) were unable to complete Dutch questionnaires.

The women were invited to participate after diagnosis by their gynecologist who administered written information about the study and an informed consent form. The ROGY care trial has been approved by the medical research ethics committees of all participating centers.

Intervention vs. usual care

Patients allocated to the intervention group received an SCP on paper following treatment. The web-based ROGY has been used by all participating oncology providers since 2006. For each patient, a detailed registration is made, regarding tumor characteristics, treatment, comorbidity, complications, and follow-up. For the present trial, an application was built in ROGY enabling automatic generation of an SCP by pressing a button (only visible in the SCP care arm). The SCP contained a treatment summary, including information on diagnostic tests, type of cancer, treatment, and contact details of the hospital and specialists. Moreover, the SCP contained a tailored follow-up care plan, including information on possible late effects, effects on social and sexual life, signs of recurrence, psychosocial support, and supportive care services.

A copy of the SCP was sent to the patient's general practitioner [16] and the SCP could be updated during follow-up if changes occurred.

Patients allocated to the control group received care as usual from the health care providers. This consisted of a number of follow-up visits related to years since diagnosis. Patients usually received general leaflets with information about endometrial cancer diagnosis and treatment, though not personalized. Furthermore, the information was given during the initial treatment phase and not updated during follow-up. Due to the pragmatic approach, the delivery of usual care was allowed to vary between hospitals and providers.

Questionnaires

Information on health care use was collected through questionnaires. The women were asked to answer the following questions: How often have you visited your GP/medical specialist in the past 12/6 months? How often were these visits to your GP/medical specialist related to your cancer or its consequences?

The questions were administered after treatment and at 6, 12, and 24 months of follow-up. At 6- and 12-month follow-up, the women were furthermore asked to indicate whether they had received additional care from other sources, including psychologist, sexologist, social worker, pastor, dietician, physical therapist, rehabilitation programs, creative therapy, in home care, or patient organizations.

Clinical information (date of birth, date of diagnosis, disease stage, and primary treatment) was obtained from ROGY. Socio-demographic characteristics (marital status, educational

level, employment status) were collected from the questionnaires. Comorbidity was assessed by the adapted self-administered comorbidity questionnaire (SCQ) [17].

Physical functioning, emotional well-being, and fatigue were assessed by the European Organization for Research and Treatment of Cancer Quality of Life Core Questionnaire (EORTC QLQ-C30) [18]. This is a generic quality of life questionnaire that has been validated in several cancer diagnoses and has demonstrated psychometrically robustness with high levels of reliability, face- and construct validity [18, 19].

Lymphedema was measured by a multi-item symptom scale in the EORTC Endometrial Cancer module (QLQ-EN24) [20]. This disease-specific questionnaire has demonstrated good reliability as well as convergent and discriminant validity without scaling errors [20].

Anxious and depressive symptoms were assessed using the Hospital Anxiety and Depression Scale (HADS) [21]. The

Fig. 1 CONSORT diagram showing the flow of hospitals and patients in the trial
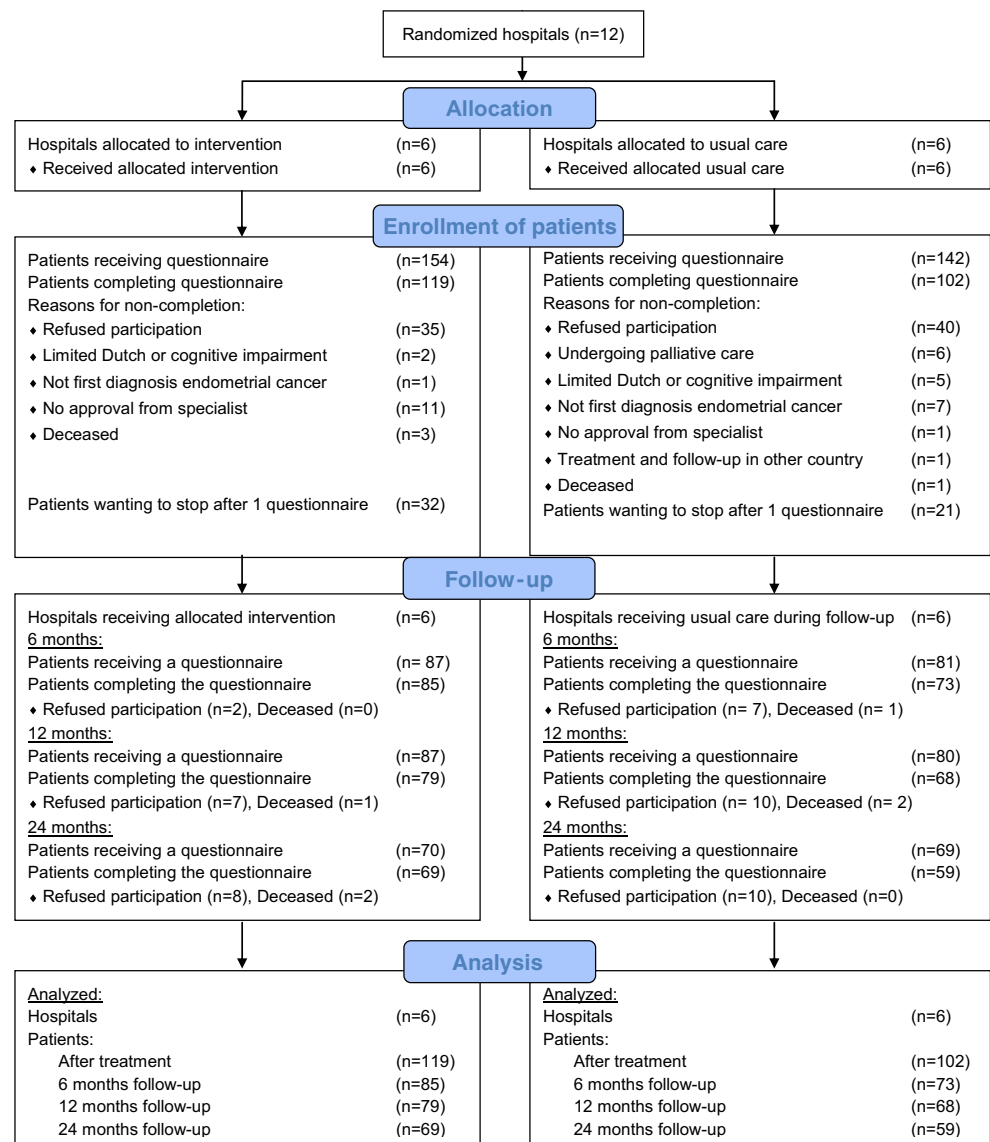
Table 1 Baseline characteristics of participants in both trial arms and of participants who completed 24-month follow-op versus patients who dropped out of the study at any time during follow-up

	SCP care N = 119 (%)	Usual care N = 102 (%)	p	Complete follow-up N = 128 (%)	Drop out N = 93 (%)	p
Age, mean(SD)	67.4 (9.1)	67.8 (8.9)	0.71	66.0 (8.7)	69.8 (8.9)	< 0.01
Months since diagnosis						
Median	3.0	2.0		2.0	3.0	
< 1	12 (10)	24 (24)		24 (19)	12 (13)	
1–2	40 (34)	46 (45)		53 (41)	33 (35)	
2–3	33 (28)	20 (20)		28 (22)	25 (27)	
> 3	34 (29)	12 (12)	< 0.01	23 (18)	23 (25)	0.34
FIGO stage						
I	0 (0)	1 (1)		0 (0)	1 (1)	
IA	70 (59)	52 (52)		83 (65)	39 (42)	
IB	32 (27)	34 (34)		36 (28)	30 (33)	
II	5 (4)	2 (2)		2 (2)	5 (5)	
III	8 (7)	7 (7)		3 (2)	12 (13)	
IV	3 (3)	4 (4)	0.21	3 (2)	4 (4)	< 0.01
Treatment						
Surgery	117 (99)	97 (98)	0.46	127 (100)	87 (97)	0.04
Radiotherapy	44 (37)	37 (37)	0.99	46 (36)	35 (39)	0.69
- VBT	21 (48)	25 (68)		28 (61)	18 (51)	
- EBRT	17 (39)	6 (16)		11 (24)	12 (34)	
- VBT + EBRT	1 (2)	1 (3)		1 (2)	1 (3)	
- Missing	5 (11)	5 (14)	0.12[a]	6 (13)	4 (11)	0.76[a]
Chemotherapy	6 (5)	12 (12)	0.06	4 (3)	14 (16)	< 0.01
Hormonal therapy	1 (1)	0 (0)	0.36	0 (0)	1 (1)	0.23
Comorbidity						
None	19 (17)	18 (18)		26 (21)	11 (12)	
1	32 (28)	20 (20)		29 (23)	23 (26)	
2 or more	64 (56)	62 (62)	0.41	70 (56)	56 (62)	0.26
Marital status						
Married/cohabitant	83 (71)	75 (74)		103 (81)	55 (60)	
Divorced/separated	10 (9)	5 (5)		5 (4)	10 (11)	
Widower	21 (18)	16 (16)		16 (13)	21 (23)	
Single	3 (3)	5 (5)	0.56	3 (2)	5 (5)	< 0.01
Educational level						
Low	30 (25)	19 (19)		18 (14)	31 (34)	
Intermediate	71 (60)	72 (74)		94 (75)	49 (54)	
High	17 (14)	7 (7)	0.09	13 (10)	11 (12)	< 0.01
BMI (SD)	29.3 (5.7)	31.1 (7.6)	0.04	31 (6.9)	29 (6.2)	0.44
Smoking status						
None	67 (58)	50 (49)		66 (53)	51 (55)	
Former	39 (34)	37 (36)		46 (37)	30 (33)	
Current	9 (8)	15 (15)	0.20	13 (10)	11 (12)	0.80
Lymphnode removal						
No	56 (81)	52 (78)		65 (82)	43 (75)	
Yes	13 (19)	15 (22)	0.70	14 (18)	14 (25)	0.43
Physical functioning, mean (SD)	70.0 (22)	68.6 (21)	0.66	67.6 (20)	72.0 (24)	0.17
Emotional functioning, mean (SD)	79.5 (21)	82.2 (19)	0.32	80.5 (20)	81.0 (20)	0.86
Fatigue, mean (SD)	33.2 (23)	34.3 (23)	0.72	35.7 (23)	30.9 (24)	0.13

Table 1 (continued)

	SCP care N = 119 (%)	Usual care N = 102 (%)	p	Complete follow-up N = 128 (%)	Drop out N = 93 (%)	p
Lymphedema, mean (SD)	15.1 (23)	9.8 (17)	0.06	14.0 (22)	10.7 (19)	0.24
Anxiety	32 (27)	23 (23)	0.54	33 (26)	22 (24)	0.70
Depression	24 (20)	15 (15)	0.32	22 (17)	17 (18)	0.83
Hospitals	SCP care N = 6 (%)	Usual care N = 6 (%)				
#endometrial cancer patients per year						
≤ 50	2 (33)	2 (33)				
> 50	4 (67)	4 (67)				
Gynecologic Oncology Center (Tertiary Referral Hospital)						
Yes	1 (17)	1 (17)				
No	5 (83)	5 (83)				

Data are given as number with percentage unless otherwise stated. Rounded percentages are given. Statistically significant p values are highlighted in bold

VBT vaginal brachytherapy, *EBRT* pelvic external beam radiotherapy

[a] Fisher's exact test

questionnaire is comprised of two 7-item scales for anxiety and depression, respectively. Scores were dichotomized using a cut-off of 8 for both scales [21]. The HADS has been widely used in cancer settings [22, 23] and has proved psychometrically robust [24, 25]. The EORTC QLQ-C30, -EN24, and HADS were administered after treatment and at 6, 12, and 24 months. A reminder was sent if the questionnaire had not been returned after 1 month.

Randomization and blinding

The 12 hospitals were pre-randomized to either usual care or SCP care. The use of pre-randomization was justified as it eliminated the potential problem of cross-over between the two arms, if health care providers had to provide both types of care. Randomization was done by a researcher who was not involved in the study and who was blinded to the identity of the hospital using a table of random numbers. Health care providers could naturally not be blinded to the allocation whereas participants were blinded to their group assignment.

Statistical analysis

Means with standard deviations and percentages were used to describe the dataset. Differences between the SCP and the usual care group were tested using *t* tests and Chi-square tests for continuous and categorical variables, respectively.

Use of GP and specialist care in the two groups was compared in an overall model, 1-year follow-up model, and in models for each individual assessment time: immediately after treatment, at 6-, 12-, and 24-month follow-up using linear multilevel regression analyses. This approach was used to account for clustering of observations within hospitals and within patient variation (repeated measures). The intention-to-treat approach was applied. Confounders adjusted for in the analyses included age, time since diagnosis, educational level, employment, marital status, comorbidities, disease stage, and treatment modality. Use of additional health care was compared between the two groups at 6-, 12-, and 24-month follow-up using Pearson Chi-squared test rather than multilevel analyses, due to the comparatively small sample.

Moderation was tested by assessing the significance of the interaction between allocation group and the potential moderator in the 1-year follow-up multilevel linear regression model for GP and specialist use. The regression of each outcome, i.e., pooled 1-year use of GP and specialist due to cancer, was performed with the potential moderator and the interaction term in separate analyses for each potential moderator. The tested interaction terms were as follows: SCPxAge, SCPxStage, SCPxRadiotherapy, SCPxEducational level, SCPxComorbidities, SCPxPhysical functioning, SCPxEmotional functioning, SCPxFatigue, SCPxLymphedema, SCPxAnxiety, and SCPxDepression. In case of statistically significant interaction terms, the regression analyses were stratified by the moderator variable to estimate the effect of the intervention in the subgroups. Continuous moderators were dichotomized for these analyses. Scales from the EORTC QLQ-C30 and -EN24 were dichotomized as high level of functioning vs. low level and high level of symptoms vs. low level using the 75th and 25th percentile, respectively. Educational level was dichotomized to low vs. medium-high. Initially, the plan was to perform interaction and moderation analyses on all follow-up data combined. However, the pattern of health care use changed considerably at 2-year follow-up with a greater use of GP in the usual care arm. Consequently, pooling of 1-year follow-up data with 2-year data was not deemed appropriate. As the purpose of the paper was to explore the nature of increased health care use in the SCP group, and due to the

comparatively small sample at 2-year follow-up, the moderation analyses were only performed on 1-year data.

The data were analyzed using Statistical Analysis System (SAS) version 9.4 (SAS Institute, Cary, NC, 1999). The tests were two-sided and considered significant if $p < 0.05$, except for the interaction analyses where the p value was set to 0.10, as interaction terms generally have less power [26].
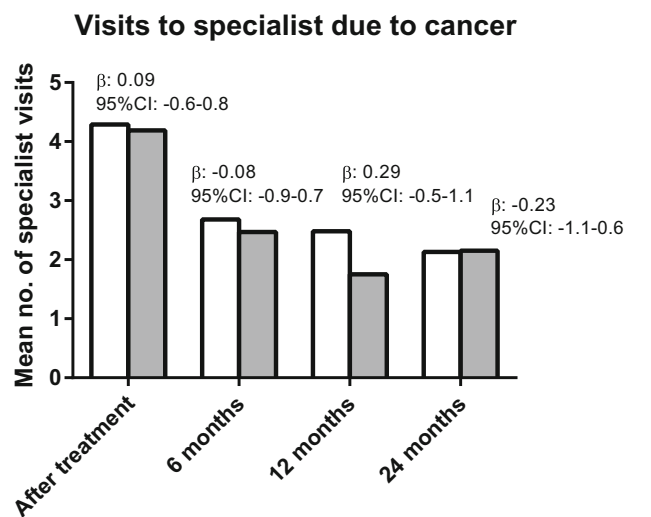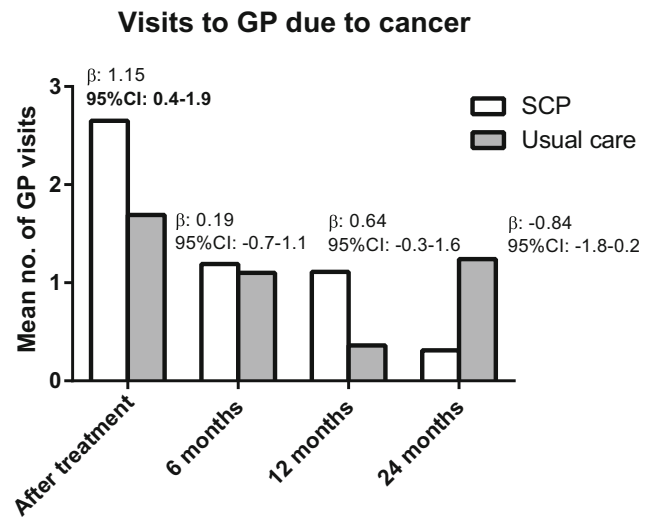
Results

Of the 296 women eligible for participation, 221 completed the first questionnaire (75%). At 6 months, 158 women (53%), at 12 months, 147 women (50%), and finally at 24 months 128 women (43%) completed the questionnaires. In both arms, three women died during follow-up. For the SCP arm, response rates were as follows: baseline 77%, 6 months 98%, 12 months 91%, and 24 months 99%. Corresponding response rates for the usual care arm were 72, 90, 85, and 86% (Fig. 1). The differences in response rates were not statistically significant.

There were no differences in baseline characteristics between the SCP and usual care arm except that women in the usual care group had a slightly higher BMI (31.1 vs. 29.3) whereas women in the SCP group completed the first questionnaire later than patients in the usual care arm (median 3 vs. 2 months, Table 1). Women who did not complete follow-up at 24 months were older (age: 69.8 vs. 66.0), had more advanced disease (greater than stage I: 22 vs. 6%), more often received chemotherapy (16 vs. 3%), were more often without a partner (40 vs. 19%), and had a lower educational level (34 vs. 14%) compared to women with complete follow-up (Table 1).

No difference was found in overall self-reported cancer-related primary care use between the two groups during 2-year follow-up ($\beta = 0.4$, 95% CI: -0.07, 0.94). However, in the first year after diagnosis, women allocated to the SCP group had more visits to their GP compared to women receiving usual care ($\beta = 0.7$, 95% CI: 0.2, 1.2). In multilevel analysis of the individual assessment times, this difference was only significant directly after treatment (mean 2.7 visits vs. 1.7 visits, 95% CI: 0.4–1.9) (Fig. 2). At 24-month follow-up, we observed an inverse trend with a higher use of GP in the usual care arm (mean 1.2 visits vs. 0.3 visits, 95% CI: -1.8–0.2) (Fig. 2). No difference was found with regard to the cancer-related use of specialist care between the two groups (Fig. 2). The mean number of visits to the specialist was 4.2, 2.6, 2.1, and 2.1, respectively, which corresponded well with the national guidelines for follow-up.

In the SCP group, more women used additional health care compared to the usual care group, although the difference was only statistically significant at 6-month follow-up (24 vs. 11%, $p = 0.04$) (Table 2). No significant differences were found for the individual types of additional care, but the numbers clearly trended towards an increased use in the SCP group (Table 2).

Visits to GP due to cancer

β: 1.15 **95%CI: 0.4-1.9**

β: 0.19 95%CI: -0.7-1.1

β: 0.64 95%CI: -0.3-1.6

β: -0.84 95%CI: -1.8-0.2

□ SCP
■ Usual care

Visits to specialist due to cancer

β: 0.09 95%CI: -0.6-0.8

β: -0.08 95%CI: -0.9-0.7

β: 0.29 95%CI: -0.5-1.1

β: -0.23 95%CI: -1.1-0.6

Legend: Unstandardized betas and 95% confidence intervals are reported or SCP care with usual care as the reference. Intention to treat approach was used. Statistically significant findings are highlighted in bold.

Fig. 2 Use of primary and specialist care immediately after treatment and at 6-, 12-, and 24-month follow-up

In the interaction analyses on primary care use within the first year after treatment, the provision of an SCP significantly interacted with radiotherapy ($p < 0.01$), anxious symptoms ($p < 0.01$), and depressive symptoms ($p = 0.049$). No significant interaction was found for age, stage, educational level, comorbidities, physical functioning, emotional functioning, fatigue, and lymphedema. The stratified analyses revealed that women, who were treated with radiotherapy, and women with anxious symptoms had a higher use of primary care when receiving an SCP compared to those not receiving an SCP (Fig. 3). In the interaction analyses on use of a specialist due to cancer within the first year after treatment, educational level ($p = 0.08$) interacted significantly with SCP provision. However, no clear moderation pattern was found in the stratified analyses (Fig. 3).

Table 2 Use of additional health care in the SCP group compared to usual care at 6-, 12-, and 24-month follow-up

	6 months			12 months			24 months		
	SCP N = 83 (%)	Usual N = 71 (%)	p	SCP N = 66 (%)	Usual N = 53 (%)	p	SCP N = 31 (%)	Usual N = 15 (%)	p
Any additional care	20 (24)	8 (11)	0.04	11 (17)	4 (8)	0.14	17 (37)	5 (11)	0.17
Psychologist	4 (5)	1 (1)	0.23	2 (3)	0 (0)	0.20	2 (4)	0 (0)	0.31
Sexologist	1 (1)	0 (0)	0.35	2 (3)	0 (0)	0.20	3 (7)	0 (0)	0.21
Social worker	5 (6)	2 (3)	0.34	2 (3)	3 (6)	0.48	4 (9)	2 (4)	0.97
Dietist	4 (5)	2 (3)	0.52	1 (2)	0 (0)	0.37	2 (4)	0 (0)	0.31
Physical therapy	6 (7)	1 (1)	0.08	7 (11)	2 (4)	0.15	5 (11)	2 (4)	0.80
Rehabilitation program	3 (4)	1 (1)	0.39	2 (3)	0 (0)	0.20	6 (13)	1 (2)	0.26
In home care	1 (1)	3 (4)	0.24	1 (2)	1 (2)	0.88	0 (0)	0 (0)	-
Patient organizations	1 (1)	0 (0)	0.35	1 (2)	0 (0)	0.37	1 (2)	0 (0)	0.48

Data are given as number with percentage. Statistically significant values are highlighted in bold. The percentage of women from the cohort who completed questions on additional health care use were 98% at 6 months, 84% at 12 months, and 45% at 24 months in the SCP group. Corresponding numbers in the usual care group were 97, 78, and 25%, respectively

Discussion

The study is the first of its kind to provide 2-year follow-up data on the effect of the SCP on self-reported health care use in endometrial cancer patients. During the first year after diagnosis, women receiving an SCP had more cancer-related visits to their GP compared to the usual care arm. In contrast, findings trended towards a higher use of GP in the usual care group at 24-month follow-up compared to the SCP group. The provision of an SCP resulted in higher primary care use in women with anxious symptoms and women treated with radiotherapy. Furthermore, women receiving an SCP used more additional health care at 6 months after diagnosis, but this difference attenuated in time.
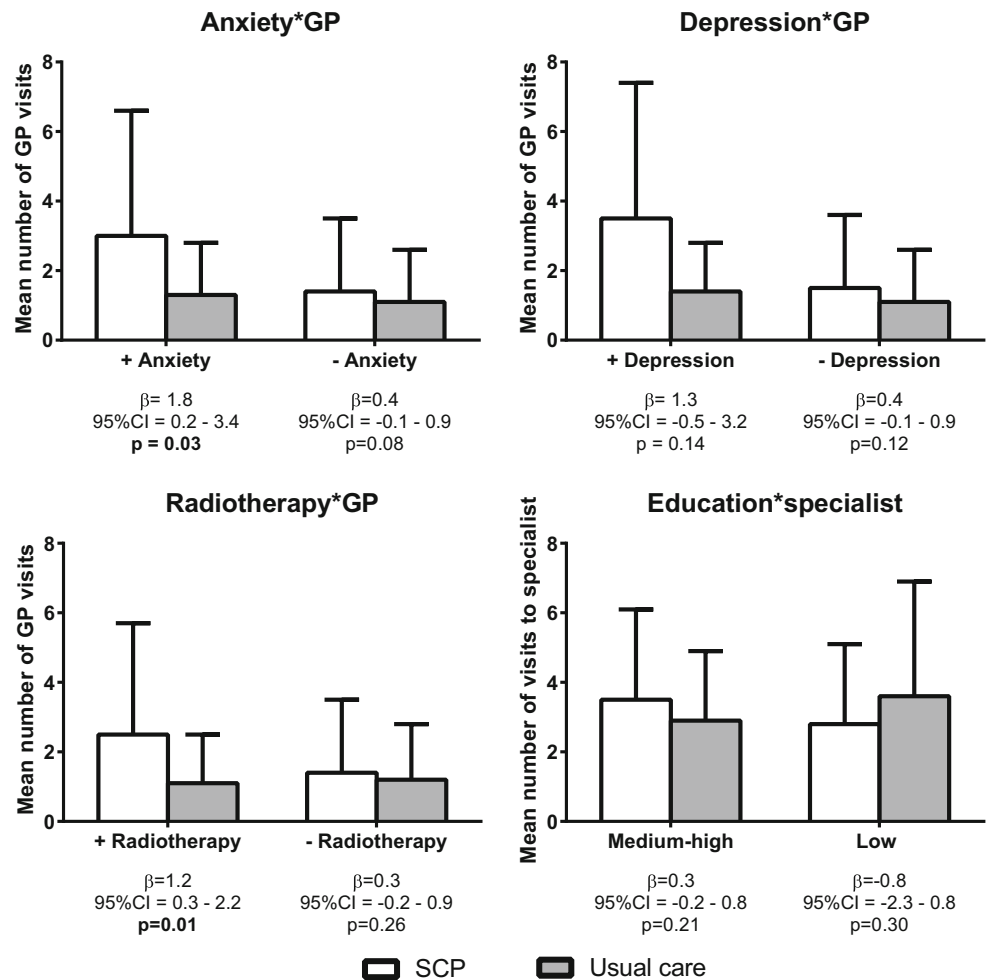
The purpose of the SCP is to support women who experience problems in seeking relevant help [4]. Furthermore, the sharing of the SCP with the GP is supposed to increase the awareness of possible long-term effects potentially facilitating early preventive efforts [16], i.e., GP-driven increase in health care use. In the present study, women receiving an SCP had more cancer-related visits to their GP compared to the usual care arm during the first year after treatment. Aside from the fact that the visits were considered cancer-related by the women, no information regarding the exact content of these consultations was available. However, access to additional health care relied on referral by the general practitioner and use of additional care was higher in the SCP-arm at 6-month follow-up. These findings suggest that the SCP resulted in referrals to specialized supportive care for women in need of these offers. Indeed, our results showed that women with anxious symptoms or treated with radiotherapy had a higher use of primary care, when receiving an SCP. Consequently, the SCP may empower women with these issues to seek help at an early stage. This hypothesis is underlined by the observed trend towards more GP use in the usual care arm at 2-year follow-up. More care in

the beginning of the disease process may be preventive in the use of care later on. Similarly, in a study by Hill-Kayser et al., 61% of the users of an SCP reported a change in their health care behavior prompting them to be more active and more likely to include their health care team [27]. Whether this effect of the SCP improves long-term patient-reported outcomes and cost-effectiveness needs to be further studied.

In the population-based cross-sectional survey by Ezendam et al. [28], a relatively lower use of health care compared to this trial was found; endometrial cancer survivors visited their medical specialist twice per year and their GP once per year in relation to their cancer diagnosis. This was most likely caused by a longer time since diagnosis. Use of GP was higher among young women and use of the medical specialist was related to a high educational level, whereas radiotherapy and body mass index were not related to health care use [28]. In the present study, we hypothesized that radiotherapy treatment, impairments in physical functioning (including fatigue and lymphedema), high educational level, and emotional distress (anxious or depressive symptoms) would result in higher health care use after receiving an SCP. No interaction was found for physical functioning. Whether this is explained by the relatively small sample size, that the SCP more efficiently targets emotional and radiotherapy issues or that additional care is more easily sought in patients with physical problems irrespective of receiving an SCP needs to be further studied.

The present study is strengthened by the randomized controlled design and the long follow-up period. It is the first study to provide in-depth knowledge on the effect of the SCP on health care use and moderating factors in endometrial cancer patients. Among limitations, information on health care use was a patient-reported outcome, leaving the data exposed to recall bias. Women in the SCP arm would have received information on all potential late effects and complications and

Fig. 3 The effect of moderator variables that interacted significantly with the SCP on the use of primary and specialist care

Anxiety*GP

+ Anxiety
β= 1.8
95%CI = 0.2 - 3.4
p = 0.03

- Anxiety
β=0.4
95%CI = -0.1 - 0.9
p=0.08

Depression*GP

+ Depression
β= 1.3
95%CI = -0.5 - 3.2
p = 0.14

- Depression
β=0.4
95%CI = -0.1 - 0.9
p=0.12

Radiotherapy*GP

+ Radiotherapy
β=1.2
95%CI = 0.3 - 2.2
p=0.01

- Radiotherapy
β=0.3
95%CI = -0.2 - 0.9
p=0.26

Education*specialist

Medium-high
β=0.3
95%CI = -0.2 - 0.8
p=0.21

Low
β=-0.8
95%CI = -2.3 - 0.8
p=0.30

☐ SCP   ▨ Usual care

Legend: Unstandardized betas, 95% confidence intervals and p values of the linear multilevel regression analysis stratified by the dichotomized moderator variable. Anxiety, depression and radiotherapy moderated the effect of the SCP on GP use, whereas educational level moderated the effect on specialist use. Statistically significant values are highlighted in bold.

could thus be more prone to report a GP visit as cancer-related. However, women in the usual care group also received information on late effects of a more general nature, and the GP would be likely to explain the association between a late-effect and the cancer treatment. Therefore, we suspect that women in both groups were able to identify and report cancer-related visits, and recall bias would not be responsible for the differences between the two groups. Only 43% of eligible participants completed follow-up questionnaires up to 24 months after diagnosis. A drop-out of this size may introduce bias to the findings and reduce the external generalizability [29]. Women who did not complete follow-up were older, had more advanced disease, were more often treated with chemotherapy, had a lower educational level, and were more likely to be single. Hence, non-response was related to illness which would result in an underestimation of health care use [30]. Response rates in the two trial arms differed with 5–13% at the four assessment times with lower response rates in the usual care arm. However, the differences in response rates were not statistically significant.

Conclusion

The provision of an SCP to endometrial cancer survivors results in more cancer-related visits to the GP within the first year of follow-up. Particularly, women with anxious symptoms and women who receive radiotherapy have a higher use of GP when receiving an SCP. These findings suggest that the SCP enables women in need of supportive care to seek help from health care providers at an early stage after treatment. Whether this results in improved patient-reported outcomes in the long-term needs to be further studied.

Compliance with ethical standards

Conflicts of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in the study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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