Postprint Version	1.0
Journal website	http://dx.doi.org/10.1002/pon.3963
Pubmed link	http://www.ncbi.nlm.nih.gov/pubmed/26403320
DOI	10.1002/pon.3963

Effect of the partner's health and support on cancer patients' use of general practitioner care.

HEINS, M.J., HOPMAN, E.P.C., KOREVAAR, J.C., SCHELLEVIS, F.G., DONKER, G.A., RIJKEN, M.

ABSTRACT

Objective

Cancer and its treatment often have a profound impact on patients, leading to increased health care use in the years after diagnosis. Social support is an important determinant of health care use. Partners of cancer patients may not always be able to provide all support patients need and patients may then revert to professional health care. We examined whether partners' health and the support they provide affect the use of general practitioner (GP) care in cancer patients.

Methods

Cancer patients aged ≥18, diagnosed <20 years ago with a cancer type with a 5-year survival rate >20% and no distant metastases were sent a questionnaire, along with their partners. Patients' self-reported recent use of GP care, i.e. whether they had discussed health problems with the GP in the past year, was assessed. Partner support as perceived by the patient was measured on three scales: Active engagement, protective buffering and overprotection.

Results

We included 219 patients and partners. Many patients discussed physical and emotional problems with their GP (60% and 28% of patients, respectively). Patients were less likely to discuss physical problems when they experienced active engagement and protective buffering, the latter only for females.

Conclusion

Partner support affects use of GP care in cancer patients. GPs should therefore pay attention to the support style of the partner. GPs could ask about the support provided by the partner and inform both patients and partners about support groups where they can share experiences.

INTRODUCTION

Cancer and its treatment often have a profound impact on patients, both physically and psychologically. Patients may experience health problems such as pain, fatigue and cognitive problems that develop during the course of the illness and during treatment and may persist for years. Other problems, such as osteoporosis, cardiopulmonary symptoms and secondary cancers, may develop years after treatment [1]. In countries with a strong primary care system, patients are likely to consult their general practitioner (GP) for these problems. Studies showed that use of GP care is indeed increased in the years following a diagnosis of cancer [2-7].

There are many factors that influence cancer patients' use of GP care. Andersen developed a widely used model describing determinants of health care use [8], which was also used in a review of health care use by adult cancer survivors [9]. According to this model, use of health care services is determined by three dynamics: predisposing factors, enabling factors and need. *Predisposing factors* are for example gender, age and health beliefs. For instance, women are more likely to seek help for health problems. *Enabling factors* are for example social support or access to health care insurance. *Need* for health care is influenced by general physical and psychological health. In cancer patients, comorbid chronic conditions could also modify the need for health care, considering that two-thirds of them have one or more chronic diseases besides cancer [10]. Additionally, need for health care is probably also influenced by cancer type, type of treatment received and time since diagnosis of cancer.

According to the Andersen model, social support is an enabling factor for health care use. Social support may facilitate health services use, e.g. when friends or family accompany patients to medical visits. Support from family and friends may also lessen the need for professional health care use. Informal care by family and friends is becoming increasingly important and partners of cancer patients often are an important source of support [11]. However, the cancer diagnosis and care giving may negatively affect the physical and psychological health of partners [12-18]. If the partner's physical or psychological health is poor they may not be able to provide the support the patient needs during the long period of care that often follows the diagnosis of cancer. This may lead to the use of formal health care as a substitute. In addition, partners do not always provide the kind of support patients prefer. Buunk et al. distinguished three types of support that partners may demonstrate to a greater or lesser extent. They may (a) actively engage in the care for their ill partner and help him/her to use constructive problem-solving methods (active engagement), they may (b) hide their own concerns to protect the patient (protective buffering) or they may (c) underestimate the patient's abilities to cope with cancer and its consequences for daily life, resulting in excessive efforts to protect the patient from the challenge of dealing with the illness (overprotection) [19]. The last two types are seen as 'negative' and may adversely affect psychological health of patients [20-24]. They may thus lead to increased health care use [25]. The reciprocity of the partner relationship, i.e. the balance between the amount of given and received partner support, may also change after a diagnosis of cancer. Perceived reciprocity has been related to psychological distress in patients with cancer [26, 27] and may therefore

also increase health care use. Concluding, partner's health and support may well influence use of GP care.

The effect of the partner's health and support on use of GP care of cancer patients has not been studied yet. If partner support indeed influences use of GP care of cancer patients, GPs and other health care providers could possibly intervene by paying attention to the amount and type of support that partners provide and advise them about 'positive' types of support. We aimed to study whether the health of partners, the type of support they provide and the balance between given and received support affect self-reported recent use of GP care of patients diagnosed with cancer, independently from predisposing and need characteristics of patients. Rather than the actual support provided by the partner, we chose to focus on received support as seen by the patient, as the patient ultimately determines use of GP care.

METHODS

Participants and data collection

Data were collected from a Dutch panel-study, called the 'Panel living with cancer' [28]. At the end of 2011, a random sample of patients diagnosed with cancer (all sites) in the past 15 years was taken from the Dutch cancer registry. Eligible patients were contacted and asked to for participation in the panel.Exclusion criteria were:

- Diagnosis of cancer before 18 years of age;
- Diagnosed with a cancer type that has a five year survival below 20%: i.e. cancer of the pancreas, oesophagus, stomach, gall way or gallbladder, liver, lower respiratory tract, central nervous system or unknown primary localisation;
- Distant metastases at diagnosis;
- Diagnosis more than 15 years ago.

The panel was established to get more insight into the long-term physical and psychosocial consequences of surviving cancer. Patients were asked to participate in the panel for a maximum of four years by their (former) medical specialist. Patients who agreed received (postal or online) questionnaires about various topics twice a year.

Data used in this paper were collected in November 2012. In this round, in addition to the questionnaire for patients, we sent one to be filled-out by their partners. No criteria for partnership were defined; patients themselves determined whether someone qualified as their partner. If patients indicated they had no partner they were excluded from the current analyses.

The study was carried out according to the precepts of the Helsinki Declaration, Dutch legislation on privacy and the regulations of the Dutch Data Protection Authority.

Measurements

An overview of all questionnaires used in this study is given in Table 1.

[TABLE 1]

Use of GP care

Patients' self-reported recent use of GP care was assessed by presenting them with a list of problems and asking whether they had experienced these in the past 12 months, and if so whether they had discussed them with their GP. The list of problems was derived from the Distress Thermometer [29], which categorises them into 'physical', 'emotional', 'practical', 'family-social' and 'religious/spiritual' problems. We used this existing categorisation.

Partner (related) characteristics

General physical and psychological health of the partner

Self-rated general health of the partner was measured with the corresponding subscale of the SF-36. This scale consists of five items and measures perceived general health ranging from 0 (poor) to 100 (excellent). Reported Cronbach's alpha was 0.78 in a general Dutch population sample [30]. Partners were also asked to indicate whether they had been diagnosed with one or more of a list of 18 chronic diseases (diabetes, cerebrovascular accident, myocardial infarction, other severe heart problems, migraine, hypertension, peripheral vascular disease, asthma or COPD, psoriasis, chronic eczema, vertigo with falling, severe bowel problems, urinary incontinence, arthrosis of hips or knees, rheumatoid arthritis, severe back problems, severe neck/shoulder problems and severe elbow/wrist/hand problems) [31].

To assess the psychological health of the partner, we measured levels of anxiety and depression with the Hospital Anxiety and Depression Scale (HADS). The total score ranges from 0 to 21, with higher scores indicating higher levels of anxiety and depression. Reported Cronbach's alpha was 0.88 in a general Dutch population sample [32].

Partner support

The type of partner support as perceived by the patient was measured by three scales developed by Buunk et al., which were included in the patient questionnaire. These scales are: Active engagement (5 items), protective buffering (8 items) and overprotection (6 items). Reported Cronbach's alpha's in a general Dutch population sample range from .77 to .80 [19].

The balance between the amount of given and received support (reciprocity), as perceived by the patient, was measured by including the following question in the patient questionnaire: 'When looking at the relationship with your partner from a

viewpoint of give and take, how is your relationship?' A 5-point answering scale was provided, ranging from 1 (My partner does much more for me than I do for him/her) to 5 (My partner does much less for me than I do for him/her) [33].

Predisposing characteristics

As predisposing characteristics we included age and gender of the patient in our analyses, as these had been found to affect primary health care use in previous studies [6, 9].

Need characteristics

General physical and psychological health of the patient

General health of patients was measured with the corresponding subscale of the SF-36 [30] and levels of anxiety and depression with the Hospital Anxiety and Depression Scale (HADS) [32]. Patients were also asked to indicate whether they had been diagnosed with one or more of a list of 18 chronic diseases [31].

Cancer diagnosis and treatment

Data about the diagnosis of cancer (cancer type and time post-diagnosis) and type of treatment received were derived from the National Cancer Registry. Current treatment status at the time of filling out the questionnaire was reported by the patient.

Statistical analysis

We first determined the percentage of patients who indicated that they had spoken to their GP in the past year about 'physical', 'emotional', 'practical', 'family-social' or 'religious/spiritual' problems. We then determined whether the partner-related variables included in this study predicted if patients had discussed the five categories of problems mentioned above with the GP.

We used four steps to analyse the data. Steps one and two were used to test whether partner-related characteristics were related to use of GP care. In the first step, we tested this for each partner-related characteristic separately. To do this, we built logistic regression models for each type of problem presented to the GP (dependent variable) and partner-related characteristic (independent variable). As the effect of partner-related characteristics has been shown to differ between men and women, an interaction term with gender was added to each model. We removed the interaction-term if it provided a p-value above 0.20 [34]. In the second step, we combined the partner-related characteristics and interaction terms into one model. To do this, we built one logistic regression model per type of problem presented to the GP (dependent variable). We entered those partner-related characteristics and interaction terms whose estimates provided a p-value below 0.20 in step one (independent variables).

Steps three and four were used to test whether the relation between partner-related characteristics and use of GP care was partly explained by predisposing and need characteristics. In the third step, we first tested which predisposing and need characteristics were related to use of GP care. To do this, we built separate logistic regression models for each type of problem presented to the GP (dependent variable) and predisposing or need characteristic (independent variable). In the fourth step, we added those predisposing and need characteristics whose estimates provided a *p*-value below 0.20 to the models built in step two. In the interpretation of these final models a *p*-value below 0.05 was considered statistically significant.

RESULTS

Sample characteristics

Of the 479 panel members who received the questionnaire in November 2012, 397 patients (83%) returned a completed questionnaire. A total of 310 patients indicated they had a partner, and 219 partners (71%) returned a completed partner-questionnaire. Baseline characteristics of these 219 partners and the 219 patients are provided in Table 2. Patients were somewhat older than their partners and half of them were male. Patients' and partners' general health was similar to that of the general Dutch population (reference values corrected for the age of our sample are 62.8 in patients and 63.1 in partners [30]). Levels of anxiety and depression (mean 6.9 in patients and 7.3 in partners) were lower than in the general Dutch population (mean 8.4) [32].

[TABLE 2]

The most common cancer types were breast cancer (29%), cancer of the gastro-intestinal tract (20%) and cancer of the male genital system (19%). The majority of the patients had undergone surgery (76%), and a smaller percentage radiation (34%) or chemotherapy (26%). Seventeen patients (8%) had not received any therapy, and 76 patients (35%) had received more than one type of therapy. Most patients had finished active treatment, but were still on active surveillance by their specialist (70%).

Most couples were living together (91%) and had been in a relationship for more than 10 years (Table 2). Patients reported that their partners mostly applied protective buffering and overprotection, and less often showed active engagement.

Use of GP care

In the past 12 months, the majority of patients had discussed physical problems with their GP (130 patients, 60%), followed by emotional problems (61 patients, 28%). Practical problems had been discussed by 24 patients (11%), family-related by 16 (7%) and religious problems by 1 patient (0.1%). We further examined only physical and emotional problems, as the low number of patients discussing the latter three categories did not result in meaningful conclusions.

Effect of partner-related characteristics on discussing physical problems

In the first step, estimates for general physical and psychological health of the partner and all three types of partner support provided *p*-values below 0.20. The balance between providing and receiving partner support did not. When these variables were combined in one logistic regression model (step two), discussing physical health problems with the GP was associated with partners being less actively engaged and performing less protective buffering (according to the patient), the latter only for female patients. These factors remained predictors after controlling for predisposing and need characteristics. (Step four, see Table 3)

[TABLE 3]

To get more insight into the effect of partner support, we calculated the probability of discussing physical problems with the GP for an average patient, while varying one characteristic at the time (Figure 1). We did this for the items that were significant in step four, which were (a) active engagement, (b) protective buffering, (c) number of chronic diseases and (d) chemotherapy. The probability of discussing physical problems for an average patient reporting low levels of active engagement (−1 SD) was about 25% higher than that of one reporting high levels of active engagement (+1 SD). A similar difference of 25% was found when we compared an average (female) patient reporting low levels of protective buffering with a patient reporting high levels of protective buffering, an average patient who has two or more chronic diseases with a patient who has less than two chronic diseases, or an average patient who received chemotherapy treatment with a patient who did not.

[FIGURE 1]

Effect of partner-related characteristics on discussing emotional problems

In the first step, estimates of the psychological health of the partner, perceived overprotection and the balance between given and provided support provided *p*-values below 0.20. When these variables were combined in one logistic regression model (step two), discussing emotional problems with the GP was only predicted by less overprotection as perceived by the patient. After controlling for predisposing and need characteristics of the patient, perceived overprotection no longer predicted discussing emotional problems with the GP (Table 3).

DISCUSSION

Results of this study show that the type of partner support cancer patients receive is related to their GP care use. Patients are less likely to discuss physical problems with their GP when they experience their partner to be actively engaged, which means that they can openly discuss their problems with their partner and he/she helps them to apply problem-solving coping strategies. This seems to confirm our hypothesis that when patients receive 'positive' support from their partner, they are less likely to seek formal support from their GP.

Female patients are less likely to discuss physical problems with their GP when they experience protective buffering from their partner, which means their partner does not share his worries and concerns in order to protect the patient. This seems contradictory, but through sharing their concerns, partners may encourage patients to visit their GP when they experience physical problems. Based on our results we cannot say whether these partners are adequately encouraging patients to take care of themselves or are causing unnecessary health care use. In fact, both may occur. It is difficult to explain why this effect only applies to female patients, although previous studies did show that (the effect of) spousal support differs between male and female cancer patients [35, 36].

A previous study found that overprotection by the partner may adversely affect psychological health of cancer patients [37], and we hypothesised that it may thus lead to increased GP care use. However, we found the opposite effect. Patients were less likely to visit their GP for emotional problems when they felt their partner was overprotecting. Maybe these patients were experiencing their partner as being overprotective because they had fewer psychological problems. After controlling for levels of anxiety and depression in the full model, overprotection was no longer related to discussing emotional problems with the GP.

We studied the effect of partner support in a sample of patients with a confirmed diagnosis of cancer. We focused on this disease as it may have a large impact on psychological and physical health in the years following diagnosis. Other diseases besides cancer may be important too, so in our analyses we adjusted for the effects of general physical and psychological health and the number of chronic diseases. Our results show that the number of chronic diseases besides cancer is an important predictor of patients' use of GP care. However, after adjusting for the general health of patients, the type of partner support received by patients was still a significant predictor of patients' use of GP care.

There are certainly other characteristics that could influence use of GP care that we did not measure, such as e.g. the use of psycho(onco)logical support. However, the choice of characteristics was based on a model of determinants of health care [8]. This model was used previously to define determinants of health care use in a review on health care use of cancer survivors [9]. This review concluded that comorbidities and psychological distress were associated with visits to a GP, which is in accordance with the findings of our study. There are also differences, as they reported that GP contacts generally increased over time, while we did not find an effect of time after diagnosis on the probability of discussing physical or emotional problems with the GP (Step 3 in our analyses). This effect may be country-specific, as in a previous Dutch study we also did not find a change in GP contacts over time [6].

Although the relatively small sample size compelled us to use a stepwise approach in our analyses, it was adequate for our current analyses. Another limitation is that we relied on self-reported use of GP care, which may be subject to recall-bias. In addition, the questionnaire to measure use of GP care was not previously validated, but it was based on a validated instrument that is regularly used to evaluate health

problems in cancer patients [29]. Finally, in some couples both partners had been diagnosed with cancer ($n = 15$). We chose not to exclude them as we hypothesized that the general effect of partner support would be similar in these couples. However, it would have been interesting to perform separate analyses.

Concluding, we found that partner support has an effect on use of GP care in cancer patients. This is an important finding given the increasing role of informal support in an attempt to reduce costs of professional support. It is therefore important that after a diagnosis of cancer, GPs and other health care providers pay attention to the type of support the partner provides as this may affect health care use of patients. GPs could ask about the support provided by the partner and inform both patients and partners about support groups where they can share experiences.

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest.

REFERENCES

1 Stein KD, Syrjala KL, Andrykowski MA. Physical and psychological long-term and late effects of cancer. Cancer 2008;112:2577–2592.
2 Roorda C, Berendsen AJ, Groenhof F, van der Meer K, de Bock GH. Increased primary healthcare utilisation among women with a history of breast cancer. Support Care Cancer 2013;21:941–949.
3 Nord C, Mykletun A, Thorsen L, Bjoro T, Fossa SD. Self-reported health and use of health care services in long-term cancer survivors. Int J Cancer 2005;114:307–316.
4 Mols F, Helfenrath KA, Vingerhoets AJJM, Coebergh JW, van de Poll-Franse L. Increased health care utilization among long-term cancer survivors compared to the average dutch population: a population-based study. Int J Cancer 2007;121:871–877.
5 Khan NF, Ward A, Watson E, Austoker J, Rose PW. Long-term survivors of adult cancers and uptake of primary health services: a systematic review. Eur J Cancer 2008;44:195–204.
6 Heins M, Schellevis F, Rijken M, van der Hoek L, Korevaar J: Determinants of increased primary health care use in cancer survivors. J Clin Oncol 2012;30:41554160.
7 Khan NF, Watson E, Rose PW. Primary care consultation behaviours of long-term, adult survivors of cancer in the uk. Br J Gen Pract 2011;61:197–199.
8 Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? J Health Soc Behav 1995;36:1–10.
9 Treanor C, Donnelly M. An international review of the patterns and determinants of health service utilisation by adult cancer survivors. BMC Health Serv Res 2012;12:316.
10 Ogle KS, Swanson GM, Woods N, Azzouz F. Cancer and comorbidity: redefining chronic diseases. Cancer 2000;88:653–663.
11 Helgeson VS, Cohen S. Social support and adjustment to cancer: reconciling descriptive, correlational, and intervention research. Health Psychol 1996;15:135148.
12 Hagedoorn M, Buunk BP, Kuijer RG, Wobbes T, Sanderman R, Couples dealing with cancer: role and gender differences regarding psychological distress and quality of life. Psycho-Oncology 2000;9:232–242.

13 Grunfeld E, Fitzpatrick R, Mant D, et al. Comparison of breast cancer patient satisfaction with follow-up in primary care versus specialist care: results from a randomized controlled trial. The Br J Gen Pract 1999;49:705–710.

14 Glasdam S, Jensen AB, Madsen EL, Rose C. Anxiety and depression in cancer patients' spouses. Psycho-Oncology 1996;5:23–29.

15 Nijboer C, Tempelaar R, Sanderman R, Triemstra M, Spruijt RJ, Van den Bos GA. Cancer and caregiving: the impact on the caregiver's health. Psycho-Oncology 1998;7:3–13.

16 Stenberg U, Ruland CM, Miaskowski C: Review of the literature on the effects of caring for a patient with cancer. Psycho-Oncology 2010;19:1013–1025.

17 Gregorio SW, Carpenter KM, Dorfman CS, Yang HC, Simonelli LE, Carson WE, III. Impact of breast cancer recurrence and cancer-specific stress on spouse health and immune function. Brain Behav Immun 2012;26:228233.

18 Sjovall K, Attner B, Lithman T, et al. Influence on the health of the partner affected by tumor disease in the wife or husband based on a population-based register study of cancer in sweden. J Clin Oncol 2009;27:4781–4786.

19 Buunk BP, Berkhuysen MA, Sanderman R, Nieuwland W, Ranchor AV. Actieve betrokkenheid, beschermend bufferen en overbescherming. Meetinstrumenten voor de rol van de partner bij hartrevalidatie. Gedrag Gezondheid 1996;24:304–313.

20 Dagan M, Sanderman R, Schokker MC, et al. Spousal support and changes in distress over time in couples coping with cancer: the role of personal control. J Fam Psychol 2011;25:310–318.

21 Hinnen C, Ranchor AV, Sanderman R, Snijders TA, Hagedoorn M, Coyne JC. Course of distress in breast cancer patients, their partners, and matched control couples. Ann Behav Med 2008;36:141–148.

22 Manne SL, Norton TR, Ostroff JS, Winkel G, Fox K, Grana G. Protective buffering and psychological distress among couples coping with breast cancer: the moderating role of relationship satisfaction. J Fam Psychol 2007;21:380–388.

23 Regan TW, Lambert SD, Kelly B, et al. Cross-sectional relationships between dyadic coping and anxiety, depression, and relationship satisfaction for patients with prostate cancer and their spouses. Patient Educ Couns 2014;96:120–127.

24 Hagedoorn M, Kuijer RG, Buunk BP, DeJong GM, Wobbes T, Sanderman R. Marital satisfaction in patients with cancer: does support from intimate partners benefit those who need it the most? Health Psychol 2000;19:274–282.

25 Hodgkinson K, Butow P, Hunt GE, Wyse R, Hobbs KM, Wain G. Life after cancer: couples' and partners' psychological adjustment and supportive care needs. Support Care Cancer 2007;15:405–415.

26 Kuijer RG, Buunk BP, Ybema JF, Wobbes T. The relation between perceived inequity, marital satisfaction and emotions among couples facing cancer. Br J Soc Psychol 2002;41:39–56.

27 Fyrand L. Reciprocity: a predictor of mental health and continuity in elderly people's relationships? A review. Curr gerontol Geriatr Res 2010;2010: doi: 10.1155/2010/340161.

28 Hopman P, Rijken M. Illness perceptions of cancer patients: relationships with illness characteristics and coping. Psycho-Oncology 2015;24(1):11–18.

29 Tuinman MA, Gazendam-Donofrio SM, Hoekstra-Weebers JE. Screening and referral for psychosocial distress in oncologic practice: use of the distress thermometer. Cancer 2008;113:870–878.

30 Aaronson NK, Muller M, Cohen PD. Translation, validation, and norming of the dutch language version of the sf-36 health survey in community and chronic disease populations. J Clin Epidemiol 1998;51:1055–1068.

31 Statistics Netherlands (CBS). Health survey from 2010, 2014.

32 Spinhoven P, Ormel J, Sloekers PP, Kempen GI, Speckens AE, Van Hemert AM. A validation study of the hospital anxiety and depression scale (hads) in different groups of dutch subjects. Psychol Med 1997;27:363–370.

33 Kuijer RG, Buunk BP, De Jong GM, Ybema JF, Sanderman R. Effects of a brief intervention program for patients with cancer and their partners on feelings of inequity, relationship quality and psychological distress. Psycho-Oncology 2004;13:321–334.

34 Maldonado G, Greenland S. Simulation study of confounder-selection strategies. Am J Epidemiol 1993;138:923–936.

35 Taniguchi K, Akechi T, Suzuki S, Mihara M, Uchitomi Y. Lack of marital support and poor psychological responses in male cancer patients. Support Care Cancer 2003;11:604–610.

36 Luszczynska A, Boehmer S, Knoll N, Schulz U, Schwarzer R. Emotional support for men and women with cancer: do patients receive what their partners provide? Int J Behav Med 2007;14:156–163.

37 Kuijer RG, Ybema JF, Buunk BP, de Jong GM, Thijs-Boer F, Sanderman R. Active engagement, protective buffering, and overprotection: three ways of giving support by intimate partners of patients with cancer. J of Social and Clin Psychol 2000;19:256–275.

TABLES AND FIGURES

Domain in Andersen model [8]	Characteristic	Reported by patient#	Reported by partner#	Questionnaire	Subscales	Values	Higher value means	Cronbach's α literature	Cronbach's α current sample
Health care use	Use of GP care	—	—	Based on distress thermometer	Physical	Yes/no	—		
					Emotional	Yes/no	—		
					Practical	Yes/no	—		
					Family-social	Yes/no	—		
					Religious	Yes/no	—		
Enabling factors	Type of partner support	—	—	Buunk 1996	Active engagement	5–25	More active engagement	0.80	0.89
					Protective buffering	5–40	More protective buffering	0.79	0.72
					Overprotection	5–30	More overprotection	0.77	0.76
	Balance between given and received partner support	—	—	Kuijer et al. 2004		1–5	Patient does more than partner	n/a*	n/a*
Need	General health	—	—	SF-36 general health		0–100	Better health	0.78	0.76
	Psychological health	—	—	HADS		0–21	More anxiety and depression	0.88	0.89
	Chronic diseases	—	—	POLS		0–18	More chronic diseases	n/a*	n/a*

Table 1. Summary of questionnaires

* Not applicable, only 1 item or sum score of dichotomous items.

Coloured cell means the item was measured in this study.

Table 2. Characteristics of patients and their partners		
	Patients (*n* = 219)	**Partners (*n* = 219)**
Age		
18–49	16 (7%)	18 (8%)
50–64	80 (37%)	79 (36%)
65–74	85 (39%)	76 (35%)
≥75	38 (17%)	38 (17%)
Unknown	—	8 (4%)
Gender		
Male	106 (48%)	111 (51%)
Female	113 (52%)	98 (45%)
Unknown	—	10 (5%)
General health	63.0 (20.0)	64.7 (17.8)
Chronic disease		
0	63 (29%)	69 (32%)
1	65 (30%)	68 (31%)
2	45 (21%)	42 (19%)
>2	46 (21%)	40 (18%)
Anxiety and depression	6.9 (6.0)	7.3 (6.1)
Cancer type		
Breast	64 (29%)	
Gastrointestinal	43 (20%)	
Male genital system	42 (19%)	
Skin	25 (11%)	
Other	41 (19%)	
Unknown	4 (2%)	
Treatment received		
Surgery	154 (76%)	
Radiotherapy	69 (34%)	
Chemotherapy	52 (26%)	
Hormonal therapy	37 (18%)	
Current treatment		
Receiving treatment		
with curative intention	12 (5%)	
with palliative intention	9 (4%)	
Not receiving treatment		
Under active surveillance	154 (70%)	
No longer under surveillance	37 (17%)	
Unknown	7 (3%)	
Time after diagnosis		
≤1 years	9 (4%)	
2–5 years	126 (48%)	

Table 2. Characteristics of patients and their partners		
	Patients (*n* = 219)	Partners (*n* = 219)
5–10 years	62 (27%)	
10–19 years	22 (10%)	
Living together	200 (91%)	
Duration of relationship		
<6 months	1 (0.1%)	
6–12 months	—	
1–3 years	1 (0.1%)	
3–10 years	5 (2%)	
10–30 years	40 (18%)	
Longer than 30 years	160 (73%)	
Unknown	12 (5%)	
Type of support		
Active engagement	12.2 (3.9)	
Protective buffering	30.0 (5.3)	
Overprotection	25.8 (3.8)	
Balance between given and received support	2.8 (0.8)	

Table 3. Influence of partner's health and partner support on discussing physical and emotional problems with GP by panel members expressed in ORs with 95% confidence intervals					
		Physical problem(s) discussed		**Emotional problem(s) discussed**	
		Unadjusted model# (*n*=192)	Adjusted model## (*n*=177)	Unadjusted model# (*n*=190)	Adjusted model## (*n*=190)
Enabling	Gen. health partner	1.00 (0.98–1.02)	1.01 (0.98–1.04)	—	—
	*gender	—	—	—	—
	Psych. distress partner	1.06 (1.00–1.13)	1.07 (0.99–1.16)	1.07 (0.98–1.16)	0.99 (0.90–1.09)
	*gender	—	—	1.09 (0.96–1.23)	1.08 (0.94–1.24)
	Type of support				
	Active engagement	0.87 (0.79–0.96)	0.81 (0.72–0.92)	—	—
	* gender	—	—	—	—
	Protective buffering	1.05 (0.96–1.15)	1.10 (0.98–1.23)	—	—
	* gender	0.83 (0.72–0.95)	0.78 (0.65–0.93)	—	—
	Overprotection	0.94 (0.84–1.05)	0.93 (0.81–1.08)	0.90 (0.82–0.99)	0.96 (0.86–1.06)
	* gender	0.97 (0.79–1.18)	1.03 (0.80–1.33)	—	—
	Balance between given and received support	—	—	0.63 (0.35–1.14)	0.84 (0.43–1.63)
	*gender	—	—	1.43 (0.62–3.31)	0.87 (0.33–2.26)
Predisposing	Gender(female)	1.76 (0.91–3.41)	1.57 (0.68–3.62)	1.89 (0.88–4.05)	2.03 (0.81–5.11)
	Age				
	18–64		—		Ref
	65–74		—		0.43 (0.16–1.17)
	≤75		—		2.02 (0.68–5.94)

Table 3. Influence of partner's health and partner support on discussing physical and emotional problems with GP by panel members expressed in ORs with 95% confidence intervals					
			Physical problem(s) discussed		**Emotional problem(s) discussed**
Need	General health		0.98 (0.96–1.01)		1.00 (0.97–1.03)
	Anxiety and depression		1.08 (0.98–1.20)		1.16 (1.04–1.28)
	No. of chronic diseases				
	0		Ref		Ref
	1		0.95 (0.35–2.55)		5.52 (1.41–21.59)
	2		4.43 (1.38–14.23)		4.68 (1.09–20.03)
	>2		4.81 (1.46–15.86)		6.69 (1.55–28.94)
	Chemotherapy		4.26 (1.64–11.05)		—

\# Model from step two.

\## Model from step four.

Figure 1. Effect of varying active engagement, chronic disease, protective buffering and chemotherapy on the probability of discussing physical problems with GP in an average patient.* calculated for females only