

# Dyadic effects of coping strategies on emotional state and quality of life in prostate cancer patients and their spouses

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## Abstract

**Background:** During cancer, coping strategies adopted by patients with prostate cancer and their spouses have an effect on their own emotional state and quality of life (QoL). However, the effects of coping strategies used by a member of a couple on the well-being of the other member are unknown. The aim of this study is to examine the dyadic effects of coping strategies on the emotional state and QoL of couples dealing with cancer.

**Methods:** Ninety-nine couples completed various self-questionnaires to assess psychological and physical QoL, anxiety, depressive symptoms, and coping strategies at the beginning, middle, and end of primary treatment.

**Results:** Results obtained with the actor-partner interdependence model showed that coping strategies used by patients or spouses play a key role not only in their own well-being but also in their partners'. Indeed, when patients use problem-focused coping or social support-seeking, they, as well as their spouses, experience fewer anxiety and depressive symptoms. Conversely, patients or spouses who use emotion-focused coping experience higher levels of anxiety and depressive symptoms. Finally, and it is a surprising result, when spouses seek social support, patients feel greater anxiety.

**Conclusions:** These findings suggest that both patients and spouses should be included in psychosocial programs, which develop and reinforce their ability to cope with cancer. Couples may benefit from membership in support groups allowing them to share their experiences.

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## Introduction

The French National Cancer Institute estimated that there were 71,000 new cases of prostate cancer and 8700 related deaths in France in 2011 [1]. Prostate cancer is the most prevalent cancer in France and in other western countries. Although incidence rates are increasing (because of more accurate diagnosis and aging population), mortality rates continue to decline and the survival rate at 5 years in France is about 80%. As a result, quality of life (QoL) has become the central issue for this population [2] because prostate cancer patients often experience an alteration of their QoL and emotional state [3–6]. This alteration can vary according to the treatment [7], and sexual and urinary aspects of QoL are often affected [3,8], and patients have to deal with it. It is well known that spouses can also be affected by the cancer and even more than patients themselves [9–11].

The significant similarity between the psychological distress experienced by cancer patients and that experienced by their spouses implies a dyadic mutuality, with spouse distress rubbing off and adding to patient distress [12]. So cancer must be studied as a couple's disease because, as said by Manne et Badr in 2008 [13], '[...]

the illness is something that happens to the couple and the focus on patient and partner separately may not be as beneficial from a theoretical and clinical perspective as a focus on the relationship'. Indeed, the patient's physical and mental states can have an impact on the spouse's psychological variables and vice versa. For example, impaired bowel function and mental health of the patient is associated with higher distress in spouses [14]. Kim *et al.* [15] studied the dyadic effects of distress on QoL in 168 survivor couples with breast ( $N=83$ ) or prostate ( $N=85$ ) cancer diagnosed approximately 2 years before and compared psychological distress and QoL between patients and spouses. Authors used the actor-partner interdependence model (APIM) and estimated model parameters using structural equation modeling. The authors concluded of actor and partner effects for patients and spouses. For breast cancer, the survivor's distress was negatively associated with the spouse's physical health; in prostate cancer, the spouse's distress lowers the survivor's physical health.

To deal with prostate cancer, patients use different coping strategies. Roesh *et al.* [2] in their meta-analysis note that men would use coping strategies to minimize the distress associated with cancer diagnosis.

Coping is a notion derived from Lazarus' transactional model of stress [16]. When confronted with stressful life events, individuals normally resort to a wide range of coping strategies to modify the impact of stress. One of the earliest nomenclatures established by Lazarus and Folkman in 1980 [17] used a rational approach to distinguish two separate types of processes: problem-focused coping (i.e., strategies directed at solving the impact of a stressful event) and emotion-focused coping (i.e., efforts directed at affect regulation). More recent research on conceptualizing coping included the addition of two other strategies, seeking social support [18,19] and meaning-focused coping. As highlighted by Folkman and Moskowitz [20], the adaptive value of coping process is dependent of specific stressful context in which they occur, especially if the situation is controllable or not.

In the case of cancer, problem-focused coping strategies are associated with higher health-related QoL and lower anxiety and depression symptoms [21,22] and better psychological adjustment [23]; however, emotion-focused coping was related to more symptoms of anxiety and depression [22]. In a meta-analysis, Roesch *et al.* [2] found that problem-focused coping used by men to deal with prostate cancer is positively associated with positive affects and social functioning. In the same study, they found that using emotion-focused coping is associated with less pain, depression, or physical and emotional limitations. However, other studies found opposite results; emotion-focused coping was positively associated with mood disturbance [24] and worse QoL [25]. The main explanation of these contradictory results could be due to several flaws in the way in which emotion-focused coping is measured and analyzed [26,27].

We could find in studies many different types of coping (positive thoughts, denial, avoidance, etc.); many of emotion-focused items are confounded with distress and therefore the correlations with mood are likely to be increased. Findings with spouses of prostate cancer patients are more consistent. The majority of studies found that those who adopt problem-focused coping, social support-seeking, information-seeking, and positive re-evaluation are less depressive than those who use impulsivity and helplessness [28–30].

Although most models of coping focus on the individual, a number of researches have undertaken exploration of interpersonal aspects of coping. Coping strategies used by spouses of cancer patients seem to have an impact on their QoL and on patients' QoL. Emotion-focused coping used by spouses is related to the emotional distress of patients [31]. Moreover, spouse distress seems to have an impact on patient distress as shown by Ko *et al.*, who evidenced that better spouse coping is associated with less distress in prostate cancer patients [32]. Male patients' use of avoidance was related to increased anxiety and depression amongst their wives [33]. When patients used more

problem-focused coping and less avoidance, husbands reported fewer mental health problems [34].

About social support-seeking, Manne and Badr's study [13] found that social support should help patient to face the deleterious effect of the disease on health and well-being. Authors add that the majority of studies evaluating the role of social support provided by the partner has reported that higher levels of spousal support are associated with lower levels of distress as reported by the cancer patient. So we can assume that the third strategy of coping, that is, social support-seeking, is associated with a better emotional state.

Few studies have investigated this issue across the entire duration of treatment. Couper *et al.* [35] studied coping patterns and psychological distress in female partners of prostate cancer patients at the time of diagnosis and 6 months later. They reported that avoidance and self-blame at the time of diagnosis predicted greater partner psychological distress.

Prostate cancer treatments can be associated with many side effects, and comorbidities can occur. These deleterious effects can accumulate during the treatment, involving a worsening in QoL and emotional state. But these variations can be different according to the type of treatment. For example, one study showed that patients having radical prostatectomy showed improvement in QoL 1 year after and that patients with hormone therapy or radiotherapy are stable over time [36]. Kim and Given [37] showed that QoL of family caregivers of cancer patients varies during the disease. So a prospective design is important to detect the impact of dyadic effects on QoL throughout treatment.

The objective of this study was to determine the dyadic effects of coping strategies on emotional state and QoL during treatment for prostate cancer. Basing on literature and theory, we hypothesized that problem-focused coping and social support-seeking strategies adopted by patients or spouses positively impact both patients and partners' emotional state and QoL, and we presumed that emotion-focused coping strategies adopted by patients or spouses prove deleterious for them or their partners.

We hope this study will complete data on the influence of coping strategies used by one member of the dyad on the other member during treatments. This has the objectives of identifying populations at risk of distress and anxiety in order to target actions of support and intervention toward patients and/or spouses.

## Methods

### Participants

Patients and spouses were initially contacted by a psychologist at the Bergonié Institute (Bordeaux, France) and at the Francheville Clinique (Périgueux, France) between March 2007 and September 2008. Patient have to be treated for

cancer, with radiotherapy or chemotherapy (they can have a surgery or not). The eligibility criteria were (a) over 18 years of age, (b) living with a person in treatment for primary, nonmetastatic prostate cancer, (c) living as a couple, and (d) no history of psychiatric illness, alcoholism, or drug addiction. Ninety-nine couples were included, on the 216 couples seen, representing an overall response rate of 45.8%. Major reason to refuse participation was a lack of interest to participate to this study.

An informed consent was obtained from all these subjects, and the study protocol has been approved by the Ethical Committee of Bordeaux.

Participants included 99, 89, and 79 couples at T1, T2, and T3, respectively. These dropouts could be explained by the constraints related to the study, and treatment is a challenging time for patients and spouses; side effects create considerable fatigue and stress. Spouses who abandoned used less problem-focused coping than others ( $p < 0.05$ ).

A complete description of the population at baseline is presented in Table 1. Briefly, we can say that mean age was 66.7 years ( $SD = 6.7$ ) for patients and 63.4 ( $SD = 8.6$ ) for spouses. A percentage of 26.2 of patients achieved a Gleason score less than or equal to 6 (which correspond to good prognosis); for 52.4% of them, this score was equal to 7; and for 21.4% of them, it was equal to or greater than 8 (which correspond to a bad prognosis). Additionally, 52.3% of them had a prostatectomy, and 87.6% of them underwent hormone therapy after treatment.

## Measures

Each subject was evaluated at the beginning (T1), middle (T2), and end (T3) of treatment. T1 represented the first day of treatment. T2 was 1 month after T1 for patient treated with radiotherapy or 3 months after T1 for patients treated with chemotherapy. T3 was 2 months after T1 for radiotherapy or 6 months after T1 for chemotherapy.

Medical data were collected by medical staff and included the Gleason score (a measure of the severity of the cancer, the lower corresponding to a better prognostic) and the prostatic specific antigen level. At each study stage, several self-questionnaires assessing a broad range of psychological and physical components of QoL, anxiety, depressive symptoms, and coping strategies for patients and spouses were completed by both patients and spouses.

The State-Trait Anxiety Inventory is a 40-item questionnaire assessing state and trait anxiety [38]. For this study, we used only the state-anxiety part (20 items). The State-Trait Anxiety Inventory was proven a reliable tool for assessing French population samples [39]. Cronbach's alpha with our population is satisfactory ( $\alpha$  patients = 0.90;  $\alpha$  spouses = 0.84). The anxiety score ranges from 20 to 80; a high score represents a high level of anxiety.

The Center for Epidemiologic Studies Depression (CES-D) scale is a 20-item questionnaire assessing depressive

**Table 1.** Demographic and clinical characteristics of the study sample at baseline (99 patients and 99 spouses)

Characteristics	Patients	Spouses
	N (%)	N (%)
Age, years (mean, SD)	66.7 (6.7)	63.4 (8.6)
Having children (one or more)	92 (93.9)	84 (90.3)
Financial income (euro/month)		
< 1200	20 (21.7)	36 (44.4)
1200–1300	18 (19.6)	13 (16.0)
> 1300	54 (58.7)	32 (39.5)
Education level		
Secondary school	54 (60.0)	46 (51.7)
High school	13 (14.4)	16 (18.0)
Bachelor	9 (10.0)	22 (24.7)
Master's degree and higher	14 (15.6)	5 (5.6)
Marital status		
Married	90 (90.9)	87 (89.7)
Living as a couple	9 (9.1)	10 (10.3)
Treatment		
None	89 (89.9)	85 (89.5)
Anxiolytic	4 (4.0)	3 (3.2)
Antidepressant	5 (5.1)	7 (7.4)
Psychotherapy	1 (1.0)	0
Gleason score		
≤ 6	22 (26.2)	
7	44 (52.4)	
≥ 8	18 (21.4)	
PSA level at the beginning of the treatment		
< 4	39 (43.8)	
4–10	23 (25.8)	
> 10	27 (30.3)	
Hormonotherapy		
Yes	78 (87.6)	
No	11 (12.4)	
Prostatectomy		
Yes	46 (52.3)	
No	42 (47.7)	

PSA, prostatic specific antigen.

symptoms during the past week, validated in French by Fuhrer and Rouillon [40]. The depressive symptoms score ranges from 0 to 60; a high score signals significant depressive symptoms.

Cronbach's alpha with our population is also satisfactory ( $\alpha$  patients = 0.87;  $\alpha$  spouses = 0.91).

The Medical Outcome Study Short Form is a 12-item questionnaire assessing physical and mental QoL. It has been validated in French by Gandek *et al.* [41]. The physical and mental scores range from 0 to 100; a high physical or mental score means a good physical or mental QoL. For mental score, Cronbach's alpha is satisfactory, at 0.71 for spouses and 0.75 for patients; physical health scores can be considered as good, with values of 0.87 for spouses and 0.77 for patients.

The French version [42] of the Ways of Coping Checklist Revised (WCC-R) comprises 27 items and assesses three coping strategies: problem-focused coping (10 items),

emotion-focused coping (9 items), and social support-seeking (8 items). It was derived from Lazarus and Folkman's WCC and was validated by Vitaliano *et al.* [43] The French form of the WCC offers good construct and criterion validity for the general population. Respondents use a 4-point Likert-type scale ranging from No to Yes; a high score means that the coping strategy is often adopted. Patients were asked to answer in regard of their diagnosis and treatment announcement, and wives have to tell how they react toward their husbands' disease and treatment announcement.

In this questionnaire, for example, for social support-seeking, we have questions such as 'I talked to someone who could do something concrete about the problem'. For problem-focused coping, we have 'I changed something so things would turn out right'. And for emotion-focused coping, we have 'I wished the situation would go away or somehow be finished'.

Cronbach's alpha, with our population, for problem-focused coping ( $\alpha$  patients=0.79;  $\alpha$  spouses=0.72), emotion-focused coping ( $\alpha$  patients=0.72;  $\alpha$  spouses=0.64), and social support-seeking ( $\alpha$  patients=0.68;  $\alpha$  spouses=0.72) is satisfactory.

### Data analyses

To assess the dyadic effects of coping strategies on emotional state and QoL, we used the Kenny *et al.* [44] APIM. This model is based on the fact that the scores of a same dyad are not independent; they are more similar between them than two scores of two individuals not in the same dyad.

The APIM model is a type of mixed model using multilevel modeling to estimate parameters. To do the analysis, the data need to be rearranged to have pairwise data; that is to say, for each subject (patient or spouse), the score of the other member of the dyad needs to be associated with his own score. Because of this specific disposition of the dataset, when there was a missing data for one member of the dyad, the couple was deleted from the analysis.

This model describes the following effects: an actor effect occurs when a person's characteristics influence his or her own outcomes; a partner effect occurs when a person's characteristics affect his or her spouse's outcomes. The authors suggest that actor and partner effects may interact and that one way to consider such interaction is as a similarity (or dissimilarity) variable. We used multilevel modeling to estimate the model parameters and selected a  $p < 0.05$  probability threshold.

### Results

The actor effect of coping strategies was the degree to which the person's (patient or spouse) coping strategies predicted his or her emotional state. The partner effect was the degree to which the person's coping strategies predicted outcomes of the other member of the couple.

In this study, we analyzed the actor and partner effects of coping strategies evaluated at the beginning of treatment because coping strategies are stable during treatment. Results are presented in Table 2.

Examination of problem-focused coping effects showed evidence of actor and partner effects in both patients and spouses. When patients use this type of coping, they show lower anxiety and depressive symptoms. Problem-focused coping by patients also influences their spouses, diminishing their anxiety and depression at all time points, and increasing their physical QoL level at T2 and mental QoL level at T3.

In spouses, problem-focused coping predicted high anxiety levels for themselves (T2, T3) and high physical QoL level (T1) as well as low mental QoL level in patients (T2).

For emotion-focused coping, we mostly observed actor effects. This type of coping increases anxiety and depressive symptoms in patients and spouses and is associated with a decrease in mental QoL level. Only two partner effects were observed, at the beginning of treatment; patient's emotion-focused coping predicted low spousal anxiety, and spouse's emotion-focused coping was associated with low mental QoL level in patients.

Patients' social support-seeking was related to lower anxiety levels and depressive symptoms (at each time point), high mental QoL levels (T2) for themselves and for their spouses, and high physical QoL levels for their spouses. Spouses' social support-seeking predicted high anxiety levels in patients (T1 and T3) and low mental QoL levels at T2.

### Discussion

The results of this prospective study point to the idea that coping strategies have dyadic effects on emotional state and QoL, confirming our hypothesis. When patients are confronting the problem, seeking solutions, making efforts to obtain the sympathy of others, this reduces their anxiety and depressive symptoms and improves QoL. These results are in line with previous studies showing that a fighting spirit improves emotional state [45,46] and with the study conducted by Roesch *et al.* [2] indicating that problem-focused coping increases positive affects and social functioning. Patients' problem-focused coping or social support-seeking is associated with a decrease in anxiety and depression in spouses. We can assume that patients fight their disease or search help of others relieves spouses and so permit them to reduce their stress during treatments. We observed partner effects in spouses too; when they use social support-seeking, this is associated with high anxiety and low mental QoL levels in patients (T2). This can be surprising, but compared with patients, these partner effects are weak; they can be observed only for anxiety at the beginning (T1) and at the end (T3) of treatments and for mental QoL at T2. This negative effect of social support-seeking

**Table 2.** Dyadic effects of coping strategies at baseline on emotional state and quality of life during treatments<sup>a</sup>

		Problem-focused coping		Emotion-focused coping		Seeking social support	
		Patient	Spouse	Patient	Spouse	Patient	Spouse
Anxiety							
T1	Patient			0.43		-0.27	0.24
	Spouse	-0.29		-0.19	0.4	-0.4	
T2	Patient	-0.25		0.24		-0.24	
	Spouse	-0.31	0.23		0.39	-0.38	
T3	Patient	-0.21		0.34		-0.35	0.22
	Spouse	-0.34	0.18		0.4	-0.59	0.17
Depression							
T1	Patient			0.26		-0.23	
	Spouse	-0.27			0.46	-0.36	
T2	Patient	-0.19		0.34		-0.32	
	Spouse	-0.35			0.34	-0.4	
T3	Patient	-0.21		0.28		-0.3	
	Spouse	-0.36			0.38	-0.53	
Physical QoL							
T1	Patient		0.17				
	Spouse						
T2	Patient					0.35	
	Spouse	0.45					
T3	Patient					0.31	
	Spouse						
Mental QoL							
T1	Patient			-0.31	-0.2		
	Spouse						
T2	Patient		-0.19	-0.25		0.21	-0.3
	Spouse				-0.36	0.43	
T3	Patient			-0.29		0.44	
	Spouse	0.37			-0.28		

<sup>a</sup>For more clarity, only significant results ( $p < 0.05$ ) are shown. Numbers represent parameter estimates of the model.

by spouses on patients could be due to the perception by patients that the fighting behavior adopted by their spouses and their desire to be surrounded conflict with their own expectations. This would suggest that spouses' active coping may not be well perceived by patients and may induce a feeling of abandonment in patients. Spouses seem willing to cope with the problem themselves.

In our study, emotion-focused coping is deleterious to both patients and spouses' emotional state and mental QoL levels during treatment; it predicts high anxiety and depressive symptoms and low mental QoL level. These results are in line with previous studies [2,21,28–30,47,48]. If patients think that their disease is uncontrollable and inevitable, then repercussions on their well-being are important. We can therefore assume that when patients and spouses use self-blame, avoidance, or wishful thinking, they experience a high level of anxiety and depressive symptoms, which result in altered mental QoL.

We can conclude that coping strategies have an impact on the partner, which is different according to the strategy used. The fact that patients adopt coping strategies to face cancer reassures and relieves spouses. This active attitude of the patient is maybe seen by the spouse as a favorable behavior and so they do not feel alone with this stressful life event.

On the other hand, the fact that social support used by spouses increases anxiety and lower mental QoL of the patient at the middle of the treatment may be due to a feeling of invasion by spouse. This is possible that patients do not accept that spouses fight the disease instead of them. In fact, this could induce that patient believes that their spouses invest in the fight because they cannot or they are not strong enough to do that themselves.

Several limitations to our study should be noted. First, dyadic data analysis, the APIM model, was a univariate analysis, which means that the confusing impact of other variables was not taken into account. Secondly, all the variables included in our study were self-reported and therefore may not objectively reflect true anxiety, depressive symptoms, and QoL. Future studies should include physiological indicators of emotional state and QoL, as well as spouses' comorbid conditions. A third limitation is probably the selection bias. In fact, like in the majority of studies based on volunteer participation, people who accept to be involved in the study are often those who are in better health and have less psychological problems. This bias could lead to an underestimation of the emotional state of couples and thus of dyadic effect. A selection bias can come from the dropouts during the study and the low rate of couples who

agreed to participate to the study (45.8%). To lessen these problems, we would have to collect information on subjects who did not want to participate such as age and medical information (treatment, Gleason score, prostatic specific antigen level...), and knowing the reasons to drop out would be of great interest. The decision to quit came mainly from spouses. These two facts reflect the difficulty of including both partners during such stressful circumstances as cancer. Selection bias is often a problem to generalize our results to other cancer populations.

Variables were assessed during treatment only. It would seem logical and important to continue to gather this data through remission in order to see if dyadic effect is present even after the treatment.

This study also has strengths, for example, its prospective design, which allows us to study the impact of coping over the time. Moreover, this study focused on patients and spouses during treatment so with this study, we can have an idea of the impact of this particular moment of the disease on coping and distress in patients and spouses. And this study adds to the knowledge of the importance of considering spouses of prostate cancer patients during their treatments.

## Conclusion

These findings contribute significant information to the research on emotional state and QoL of prostate cancer patients and their spouses. Our results support the widely accepted belief that cancer impacts not only the patients but also their spouses. Indeed, our findings suggest that

when a couple is dealing with prostate cancer, the coping strategies used by patients or spouses not only play a key role in their own well-being but also in that of their partners.

So we see that coping of one member of the couple can have an impact on the other member of the couple, but we can ask whether patients and spouses facing together the disease can have a positive impact on well-being and adjustment to the disease. This was the objective of the study of Badr [49], which pointed out the importance of considering how the couple cope with the disease together in order to face cancer as a couple issue and not only as a personal issue. According to another study [50], the more the couple agrees about disease-related appraisals, the better the adjustment to the disease. Therefore, it would be of great interest to evaluate the impact of coping congruence during cancer treatment on well-being.

These results imply that both patients and spouses should be included in psychosocial programs, which develop and reinforce their ability to cope with cancer. Couples may benefit from membership in support groups, which allow them to share their couple's experience. Bottorff *et al.* stress the importance of prostate cancer support groups, which include both patients and spouses, arguing that prostate cancer is now perceived as a couple's disease during which gender identities and relations are challenged [51].

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