

Changes in control beliefs, emotional status and psychosocial adaptation among women with breast cancer

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Título: Cambios en las creencias de control, status emocional y adaptación psicosocial en mujeres con cáncer de mama.

Resumen: Diferentes investigaciones han demostrado que las creencias de control están relacionadas con mejor adaptación psicosocial y ajuste emocional. Nuestros *objetivos* fueron describir los cambios y la influencia a lo largo del tiempo de las creencias de control sobre el estado emocional y la adaptación psicosocial. *Método:* se entrevistaron 131 mujeres con cáncer de mama adscritas a un protocolo de seguimiento en la unidad de oncología del hospital general de Alicante. Se utilizaron diferentes cuestionarios estándar y también se diseñaron preguntas específicas para este estudio (creencias de control relacionadas con el protocolo de seguimiento. *Resultados:* No hubo diferencias significativas a lo largo del tiempo ni en las creencias de control ni en los resultados de salud. Las pacientes puntuaron alto en las creencias de control. El mejor predictor del estado emocional fue la creencia de Competencia Percibida en Salud. Tanto las creencias de control generales como las específicas del protocolo tuvieron capacidad predictiva sobre la adaptación. *Conclusión:* Las mujeres tuvieron una buena adaptación y estado emocional, además presentaron un perfil de locus externo. Las puntuaciones altas en las creencias de control se mantuvieron a lo largo del tiempo.

Palabras clave: Cáncer; protocolo de seguimiento; creencias de control; adaptación psicosocial y estado emocional.

Abstract: Studies using samples with chronic illnesses showed that control beliefs are associated with better psychosocial adjustment and emotional status. Our *aims* were to describe changes and long-term influence of general control beliefs and specific control beliefs over psychosocial and emotional adjustment. *Method:* We analysed 131 breast cancer patients with unilateral primary breast cancer attending the standard follow-up protocol in the Oncology Unit at the General Hospital of Alicante, Spain. Different standard questionnaires were used included and we also designed specific questions for this study (control beliefs regarding follow-up protocol). *Results:* There were no significant changes in control beliefs nor on psychosocial and emotional adjustment. Patients had high general and specific control beliefs. *Perceived Health Competence* was the best predictor of emotional status. Finally, both general control beliefs and specific control beliefs predicted some psychosocial areas equally. *Conclusions:* Women had a good emotional status and psychosocial adaptation and had an external locus profile. Moreover, control beliefs maintain across time.

Key words: Cancer; follow-up stage; control beliefs; psychosocial adjustment; emotional status.

Introduction

There are a variety of health behaviours ranging from health-enhancing behaviours (e.g. exercise and healthy eating), health protection behaviours (e.g. screening), to avoidance behaviours (e.g. not smoking, not consuming alcohol). Research showed that people engage in a variety of these behaviours (Ogden, 1996). In order to explain such variability, different social cognitive theories have been formulated. These models (e.g., The Theory of Planned Behaviour, TPB, Ajzen, 1988; Social Learning Theory, SLT, Rotter, 1966; Social Cognitive Theory, Bandura, 1997) have focused on cognitive variables like the perception of control and suggest that this construct plays an important role in psychological well being.

Research has consistently demonstrated that a sense of control is a robust predictor of psychosocial and emotional adaptation (Andrykowski & Brady, 1994; Bandura, 1977, 1989; Dodd, Dibble & Thomas, 1993; Folkman y Greer, 2000; Thompson & Spacapan, 1991). Individual differences in perceived control were related to a variety of positive outcomes such as optimism, persistence, motivation, coping and personal adjustment.

In the last decade, much research has shown relationships between perceived control and quality of life, emo-

tional status and behaviour about breast self-examination in cancer samples. For instance, high Self-efficacy was related to better quality of life and emotional status among cancer patients (Adachi, Ueno, Fujioka, Fujitomi, & Ueo, 2007; Hirai *et al.*, 2002; Lev, Paul & Owen, 1999). In addition, Internal health locus of control (Arraras, Wright, Jusue, Tejedor, & Calvo, 2002; Ramsay, Ramsay, & Main, 2007; Rondonf-Klym & Colling, 2003) and global evaluations of perception of control were related to less distress and better adjustment (Newsom, Schulz & Knapp, 1996; Osowiecki & Compas, 1998,1999; Wasteson, Nordin, Hoffman, Glimelius, & Sjöden, 2002).

Patients with chronic illness develop coping strategies and a previous sense of control experienced when coping with their illness might help them achieved good psychosocial and emotional adjustment. In addition, perceived control could also change across time due to these prior experiences. However, there are few studies that have investigated changes in perceived control over time and its relation to psychosocial and emotional outcomes. Some previous studies have found relationships among these variables across time (Bundek, Marks & Richardson, 1993; Grassi & Rosti, 1996). Therefore, we hypothesised that changes in perceived control will have an impact on psychosocial and emotional outcomes. Thompson and Spacapan (1991) suggested that perceived control is a multidimensional concept. Moreover, they claimed that in order to assess the complexity of the control concept it would be necessary to include the components of control beliefs, types of control, and levels of

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measurement of control. In this research we tried to differentiate levels of measurement of control: Global beliefs about control at a general level (e.g. overall perceptions of control in one's life, general self-efficacy), medium level (beliefs related to different life areas, eg. Perceived health competence and Health Locus of control) and perceptions of one's control in specific areas (e.g. control over family life, breast self-examination, and course of a disease). At the follow-up stage, women are well adjusted and do not have to cope with particular problems (e.g. diagnosis, chemotherapy) except relapses as in the previous stages. Therefore we hypothesised that overall perceptions of control (control beliefs at a general or medium level) in different areas of their life and health will have a greater impact on psychosocial and emotional adjustment than specific controls beliefs over their cancer (e.g. Relapse).

The general population perceives many aspects of cancer (e.g., cancer cell proliferation) as uncontrollable (Thomson & Collins, 1995). During diagnosis and treatment, women with breast cancer are faced with a threat compounded by multiple stress elements (e.g. fear of death, chemotherapy treatment, hair loss). After these stages their control beliefs will be higher because they have had experiences of successful adaptation and this has enhanced their control beliefs related to their cancer. Hence, their increase in control beliefs will probably also has an impact in psychosocial adjustment. The follow-up stage starts after treatment, it is a long period (10 years) where women are checked (twice or once a year) by doctors in order to control their cancer evolution. It constitutes a period where women breast cancer patients have to overcome problems encountered in earlier periods as well as try to resume normal activities, live with the mastectomy and the threat of a possible relapse. Thus, cancer is a chronic disease which patients must pass through periods with different emphasis on different key issues, and this permits the natural change of control beliefs to be assessed. Moreover, there are few research that have focused on perceived control of cancer patients at the follow up stage and assess its impact on emotional and psychosocial adjustment.

The first aim of this study was to assess perceived control in breast cancer women patients and its change across time. The second aim was to determine relationship among perceived control, emotional and psychosocial adjustment. We hypothesised that general control beliefs would be better predictors of emotional and psychosocial adaptation than specific control beliefs.

Method

Sample Description

This is a prospective, longitudinal study and is a part of a wider longitudinal research. Oncologists supervised sample selection. It was a randomised selection and inclusion criteria were: women with unilateral primary breast cancer free of other diseases and assigned to the standard follow-up proto-

col in the Oncology Unit of the General Hospital of Alicante, Spain. Standard follow-up protocol lasted for 10 years. In the first five years, a check-up was done once every six months. For the next five to 10 years, a check-up was done annually. Oncologist selected 173 women with breast cancer, twelve women (6.93%) refused to participate in this study and 30 women (17.34%) were not included because they were undergoing psychiatric treatment or had problems comprehending some items in the questionnaires. Our final sample consisted of 131 breast cancer patients whose mean age was 58 years (SD =11.15; Range = 26-82 years) who gave informed consent for participating in this study. The majority were married (74.8%), most of them were housewives (76.3%), and had a low educational level ("could read and write" and "had attended primary school", 81.7%). The mean time of follow-up at the first interview was 4.48 years (sd.: 35.47; Range = 0– 13.8 years). Most of the patients had received some surgical treatment (98.2%) (e.g., tumorectomy, simple or radical mastectomy). Most of the women had Stage I or II breast cancer at diagnosis (87.5%), and 49.6 % were receiving hormonal treatment.

Procedure

Data were gathered at two points: A pre-check-up interview and again at 6 or 12 months later. These assessment points are referred to as Time 1 and Time 2 respectively. The time period between Time 1 and Time 2 for patients who had the standard follow-up protocol for five years or less was 6 months. For patients who had the follow-up for more than five years, Time 2 was held 12 months after Time1. Socio-demographic, medical, psychological variables (General Self-efficacy, Perceived Health Competence, Locus of Control, and specific control beliefs), emotional status and psychosocial adaptation variables were all assessed at Time 1. General self-efficacy and Perceived Health Competence were only administered when patients came back to check-up 12 months after Time1. Hence we only used these two questionnaires to assess their prediction over outcome variables at Time 2.

Twenty-four (19.08%) of the 131 women dropped out during the study. The main reasons were due to a lack of motivation, recurrence of cancer or death. Data of these patients were excluded from the analyses and data from the remaining 110 patients were analysed.

Measures

Specific beliefs about protocol were measured with 18 items designed for this study. The items were based on Social Cognitive theory (Bandura, 1977, 1987, 1997) and conceptual reviews done on the control construct (Skinner, 1996; Thompson, 1995). Firstly, in a previous pilot study the possible outcomes expected by women of the follow-up protocol were assessed. The main responses were: *By coming for a check-up: I will know if illness has recurred; I will be less anxious;*

there is less chance of the illness recurring; with an earlier diagnoses I would have more possibilities of getting better. Based on these outcomes we asked the 16 questions; for each one, participants responded on a Likert scale ranging from 1 (completely disagree) to 5 (completely agree):

- *Protocol Outcome Expectancies*: beliefs that protocol will lead to desired and expected consequences were assessed by six items: “Do you believe that by coming to follow-up check-ups... you will know if illness has recurred?”, “...a recurrence will be detected on time“, “...with an earlier diagnoses you would have more possibilities of getting better?“, “... you will be less anxious for a time?, “...there is less chance of the illness recurring“, “...For all outcomes described above, do you believe that the more check-ups the better will be?”. The reliability analysis carried out showed that it had moderate internal consistency $\alpha = .45$; *Test Outcome Expectancies*: beliefs that test will lead to desired and expected consequences were measured by four questions: “For all outcomes described above how important do you believe that mammography; ... radiography; ...blood analysis; ...and breast examination is?”. Its internal consistency was also moderate $\alpha = .43$; *Professional Perceived Efficacy*: confidence in medical professionals’ ability to perform specific behaviours was assessed by three items: “Do you believe that the doctors carry out the protocol properly?”, “Do you believe that the doctors interpret the protocol tests correctly?”, and “Do you believe that the doctors are able to carry out breast examination effectively?”. Its internal consistency was $\alpha = .51$; *Self-efficacy in Breast Self-Examination* (reflecting confidence in one’s ability to perform breast self-examination, agents-means) was assessed by three questions based on Gonzalez’s scale (1990): “How confident are you in your ability to perform breast self-examination properly without anyone’s help?”, “... to find a lump in your breast?”, and “... to successfully teach breast self-examination to other women?”. It had good internal consistency ($\alpha = .66$); *Breast self-examination behaviour* was measured by one question: “How often do you carry out breast self-examination?” (Response scale: once a day, once a week, or once a month)
- *General beliefs* were assessed by three questionnaires: *Multidimensional Health Locus of Control Scale - Form C* (MHLC, Wallston, Stein, & Craig, 1994) is a measure of individuals’ beliefs regarding control over their health outcomes. Both the Internal and Chance subscales showed moderate internal consistency at both Time 1 and 2 ($\alpha = .58$ and $\alpha = .75$ respectively); *Perceived Health Competence scale* (Smith, Wallston & Smith, 1995; Spanish version by Pastor et al., 1997) is a domain-specific measure of an individual’s perceived competence or effectiveness in influencing personal health outcomes. It showed also good internal consistency at Time 1 ($\alpha = .71$); and *General Self-Efficacy* (Baessler & Schwarzer, 1996; Spanish version by Martín-Aragón, Pas-

tor, López-Roig, Rodríguez-Marín & Terol, 1997) is a measure of perceived self-efficacy in facing up to different types of events or problems. This measure included 2 factors with a combined total of 9 items: Self-Efficacy to handle difficult events ($\alpha = .75$); and Self-Efficacy focus on own effort ($\alpha = .58$).

- Finally, two questionnaires were used to assess *emotional status and psychosocial adaptation*: *Hospital Anxiety and Depression Scale* (HAD; Zigmond & Snaith, 1983; Spanish version validation by López-Roig et al., 2000). A widely used questionnaire in illness population and specifically in cancer patient samples. This instrument has 14 items comprising of two factors: Anxiety and Depression (seven items in each factor). All items were assessed with a 4-point Likert scale. High scores meant higher anxiety and depression levels. Internal consistency in two factors was moderate at both times ($\alpha = .60$). Secondly, patients also completed *The Psychosocial Adjustment to Illness Scale* (PAIS, Derogatis, 1977; we made Spanish translation) This is a multidimensional, semi-structured clinical interview designed to reflect adjustment in seven principal psychosocial areas (low scores mean better adaptation.), all of which have been shown to have high relevance to medical illness adjustment: Health Care Orientation; Vocational Environment; Domestic Environment; Sexual Relationships; Extended Family; Social Environment and Psychological distress. Each subscale showed an internal consistency between .58 and .99. Health Care Orientation had weak internal consistency ($\alpha = .39$ at both times). Therefore, this subscale was not including in the global score and it was excluded in subsequent analyses.

Statistical analyses

To test for changes in perceived control and adjustment across time, data obtained at Time 1 was compared with those obtained at Time 2 using MANOVA. To test the prediction of independent variables over dependent variables we used regression with forward selection. General Self-efficacy, Perceived Health Competence, Multidimensional Health Locus of Control and specific beliefs about protocol (measured at Time 1) were treated as independent variables. Emotional status and psychosocial adaptation (measured at Time 2) were treated as dependent variables. We used SPSS statistical package (version 14.0) program for these analyses.

Results

Perception of Control

In relation to general control beliefs at Time 1, women perceived a high level of *General Self-Efficacy* and *Perceived Health Competence*. Mean scores for these two scales at Time 1 were over 70 (Table 1). At both Time 1 and 2, patients re-

ported high scores in the two external locus of control factors: *Chance* and *Others*. On the other hand, *Internal Locus of Control* were low at both times (i.e., scores were below 55). In addition, approximately 90% of subjects showed the highest scores in *Doctors* Control orientation in both times. As there was a lack of response variability (90% responses totally agree) and low internal consistency ($\alpha < .20$ at both times), this subscale was excluded in subsequent analyses. Only Internal Locus of Control changed over time: women in second period diminished significantly their belief about their illness was affected by one's own behav-

iours ($F = 11.26$, $p < .01$; Table 1), however effect size was too small ($\eta^2 < .10$).

Regarding to specific control beliefs, there were no significant differences across time. Women scored high in *Protocol* and *Test Outcome Expectancies* and *Professional Perceived Efficacy* (mean scores of over 76) at both times.

These results suggest an external locus of control orientation for both general and specific control beliefs. The profile of high external control was maintained over time while internal control diminished slightly.

Table 1: Descriptive data and Differences Analysis between Control Beliefs, Emotional and Psychosocial Adaptation from T1 to T2.

	MEAN (s.d.) T1 (N=131)	MEAN (s.d.) T2 (N=110)	F
<i>Control beliefs</i>			
GSE 1	80.31 (21.15)	a	
GSE 2	79.10 (21.52)	a	
Perceived Health Competence	79.32 (18.00)	a	
Internal – MHLC	54.10 (22.29)	49.43 (19.19)	11.26**
Chance – MHLC	75.97 (23.00)	75.11 (21.70)	...
Others – MHLC	75.61 (23.03)	73.86 (23.22)	...
Protocol outcome expectancies	77.19 (15.41)	76.06 (14.42)	...
Test outcome expectancies	82.47 (12.05)	81.17 (11.32)	...
Self-efficacy in breast self-examination	51.59 (35.37)	58.17 (33.45)	...
Professional perceived efficacy	97.20 (8.18)	96.51 (9.20)	...
<i>Emotional Status and Psychosocial Adaptation</i>			
HAD-Anxiety (direct score)	4.12 (4.36)	4.53 (4.40)	...
HAD-Depression (direct score)	2.22 (3.09)	2.18 (2.66)	...
Vocational environment	2.46 (9.27)	.88 (3.90)	...
Domestic environment	5.82 (10.03)	4.17 (7.03)	...
Sexual relations	10.43 (21.70)	4.57 (14.75)	7.39**
Extended familiar	3.87 (13.88)	1.00 (6.96)	...
Social environment	7.00 (20.17)	2.13 (9.11)	...
Psychological Distress	19.85 (19.63)	16.82 (15.05)	...
Global Adaptation	10.05 (8.63)	4.93 (5.44)	11.63***

Range 0 –100

GSE1: Self-efficacy to handle of difficulties events; GSE 2: Self-Efficacy focused in own effort

** $p < .01$; *** $p < .001$; ... n.s. a= variables were not measure in time 2

Psychosocial Adaptation

We found that Psychological Distress (mean=19.85; SD.=19.63) and Sexual Relations (mean=10.43; SD.=21.70) areas had the highest scores at Time 1. However in Time 2 Global Adaptation and Sexual Relations were statistically lower than Time 1 ($F = 11.63$, $p < .001$; $F = 7.39$, $p < .01$ respectively; table 1) but effect size was also too small ($\eta^2 < .10$). Other areas assessed had not significant change across time. Emotional anxiety score was higher than depression score at both times. However, both scores were lower regarding to cut-off points which resulted in the Spanish validation of this scale with an oncology sample (10 and 4 for anxiety and depression, respectively). Therefore these patients had good emotional adjustment at both Time 1 and 2 (table 1).

Regression Analyses

We performed a regression analysis with a forward selection of all the control belief variables.

General control beliefs

Perceived Health Competence was the major predictor of emotional status ($R^2 = .106$, $\beta = -.31$, $p < .001$ for Anxiety; $R^2 = .070$, $\beta = -.26$, $p < .01$ for Depression) and it was also the best predictor for some psychosocial areas ($R^2 = .065$, $\beta = -.25$, $p < .01$ for domestic environment; $R^2 = .065$, $\beta = -.27$, $p < .01$ for extend family relationships; and $R^2 = .167$, $\beta = -.39$, $p < .001$ for psychological distress). However, better global adaptation was predicted by *General Self-Efficacy* to handle difficulties events ($R^2 = .074$, $\beta = -.32$, $p < .001$).

Specific control beliefs

Only *Professional Perceived Efficacy* predicted lower anxiety. ($R^2 = .032$, $\beta = -.18$, $p < .05$). *Test Outcome Expectancies*, *Self-efficacy in Breast Self-Examination* and *Professional Perceived Efficacy* were the specific control beliefs that predicted some

psychosocial adaptation areas. *Self-efficacy in Breast Self-Examination* predicted worse vocational environment ($R^2 = .047$, $\beta = .22$, $p < .05$), sexual relationships ($R^2 = .039$, $\beta = .20$, $p < .05$), extended family ($R^2 = .037$, $\beta = .20$, $p < .05$) and global adaptation ($R^2 = .056$, $\beta = .26$, $p < .01$). *Test Outcome Expectancies* predicted better vocational environment ($R^2 = .042$, $\beta = -.24$, $p < .05$). In addition, *Professional Perceived Efficacy* predicted better social environment ($R^2 = .039$, $\beta =$

$.20$, $p < .05$), psychological distress ($R^2 = .049$, $\beta = -.22$, $p < .001$) and global adaptation ($R^2 = .059$, $\beta = -.24$, $p < .01$). Finally, breast self-examination behaviour was predicted by *Self-Efficacy in Breast Self-Examination* ($R^2 = .21$; $\beta = .42$, $p < .001$). Women who felt more efficacious in carry out self-examination correctly and finding a lump, they examined their breasts more frequently.

Table 2: Forward Regression using CONTROL BELIEFS at T1 to predict ADAPTATION/EMOTIONAL STATUS at T2

Criterion variable Predictors	R ² _c	Change R ²	F	β
HAD-Anxiety				
Perceived Health Competence ^a	.098	.106	8.55***	-.31***
Professional Perceived Efficacy ^b	.122	.032		-.18*
HAD-Depression				
Perceived Health Competence ^a	.061	.070	8.11**	-.26**
Vocational environment				
Tests Outcome expectancies ^b	.033	.042	5.22**	-.24*
Self-efficacy in Breast Self-examination ^b	.072	.047		.22*
Domestic environment				
Perceived Health Competence ^a	.056	.065	7.46**	-.25**
Sexual relationships				
Self-efficacy in Breast Self-examination ^b	.030	.039	4.43*	.20*
Extended family				
Perceived Health Competence ^a	.056	.065	6.09**	-.27**
Self-efficacy in Breast Self-examination ^b	.085	.037		.20*
Social environment				
GSE 1 ^a	.047	.056	5.58**	-.22*
Professional Perceived Efficacy ^b	.078	0.39		-.20*
Psychological Distress				
Perceived Health Competence ^a	.159	.167	14.74***	-.39***
Professional Perceived Efficacy ^b	.201	.049		-.22**
Global Adaptation				
GSE 1 ^a	.065	.074		-.32***
Self-efficacy in Breast Self-examination ^b	.114	.056	8.21***	.26**
Professional Perceived Efficacy ^b	.166	0.59		-.24**

* $p < .05$, ** $p < .01$, *** $p < .001$

GSE 1: Self-efficacy to handle of difficulties events; ^a General control beliefs; ^b Specific control beliefs

In summary, the most important control belief in the prediction of emotional status was Health Perceived Control. Psychosocial adaptation areas were predicted mainly by one General Control belief, Health Perceived Control, and two specific control beliefs predicted psychosocial adaptation areas: Self-efficacy in Breast Self-Examination and Professional Perceived Efficacy. Finally, the most power predictor of global adaptation was General Self-Efficacy in handle difficulties events.

Discussion

At follow-up stage, women with breast cancer are not faced with the threat of diagnosis and aggressive treatment, but they try to resume their normal activities, accept the mastectomy and cope with the threat of possible relapse. They have previous experiences of successful adaptation efforts and they make comparisons with the worse stages of their illness

(diagnose, treatment). As a result their psychosocial adaptation is generally good (note that there were no significant differences between Time 1 and 2 for most of the Psychosocial Adaptation). Our results confirmed that women had a good emotional and psychosocial adjustment; this level of adaptation was retained over time and even improved slightly after 6 or 12 months for some areas. It could be due to the fact that test outcomes and breast examination in each check-up were negative. These results enhance their feelings about their good psychosocial adjustment. In addition, women recovered their family and social roles that they had lost on previous stages. This kind of experience together with previous experiences (e.g. diagnose, treatment) in overcoming acute illness have resulted in a good level of adaptation and have an influence in control beliefs.

In addition, women also showed high control beliefs; as we have said above; previous successful experience in other stages had influenced their sense of control. Women had

increased their sense of competence and confidence to handle negative events in their life and their cancer over time. Furthermore, scores in specific control about follow-up protocol were also high, and this might be because in this stage follow-up protocol is the only way to let women know how they are progressing with regards to their cancer. Control beliefs were maintained across time may be due to the particular characteristic of this phase, there are not important changes among check-up time (6 or 12 months), and so women keep their beliefs which help them to get a good adaptation and emotional status.

In this study, women showed external locus of control. They believed that the behaviour of physicians and other people had influenced their health and the course of their cancer. In addition, as the relapse is perceived as an uncontrollable thing they also believed that chance could influence their health. Bourjolly (1999) also found that women with breast cancer tended to attribute control for their cancer to external forces more than to their own control. They also showed a moderate internal locus of control level. In the case of cancer, it is unclear which is a better predictor of adjustment and behaviour because different studies have shown that both were related to outcomes (Bundek *et al.*, 1993; Taylor, Lichtman & Wood, 1984). Wallston *et al.* (1994) showed that patients with cancer tended to be more external in their locus of control than were patients with less serious diseases. They proposed a combination of internal and external locus (in terms of doctor's control), which might agree with an adaptive profile in chronic illness, although this profile was not related to outcomes over time. Similarly, our results showed that women who had high external locus of control and medium internal showed good health outcomes. Regarding internal locus of control, Wallston (1992) made a modification of the social learning theory, because he claimed that Locus of control is only a small component of the construct of perceived control. Other forms of control are necessary in order to predict changes in health status and behaviour. Hence, he referred to the construct of perceived competence as a more powerful predictor than internal locus of control because this construct combines a behavioural expectancy with outcome expectancies without the ambiguity of the locus of control. Women might have believed their health was affected by their own behaviour, but that does not mean they felt able to adopt the right behaviour in order to control their health. This is where perceived competence fits in. Our results confirm the idea of Wallston (1992) that perceived competence is a more powerful predictor than internal locus of control of emotional and psychosocial adaptation. Perceived Health Competence was the best predictor in emotional status and different adaptation areas. In this sense, although in cancer there are no studies which have assessed it, but in other chronic disease as chronic pain this variable was related to better emotional status (Martín-Aragón, *et al.*, 2001). It would be necessary to conduct more research with this construct. In future research, it would be interesting to include

this Perceived Health Competence as an independent variable to predict health outcomes.

Finally, General Self-Efficacy had more predictive power in social environment and global adaptation than other beliefs. This could suggest that this belief can be considered a general capability in which cognitive, social, emotional and behavioural skills must be organised to serve general purposes (Schwarzer, 1992; Bandura, 1997). Hence, they will have more influence in general rather than particular behaviours and as a consequence, predict more global outcomes. Contrary to our expectations, general control beliefs did not have more power than specific beliefs in the prediction of psychosocial adaptation; they predicted some psychosocial areas equally. It could be because this period of time women are free of disease so, they may have other worries about their life in general besides cancer, hence both types of beliefs (general and specific) are suitable to manage their present situation. Patients' perception of professional efficacy in interpreting the test outcomes is important in this stage. Our results showed that this belief predicted psychological distress, social environment and global adaptation confirming the importance of this control belief in the follow-up stage. On the other hand, Self-efficacy in breast self-examination predicted worse adaptation in some areas. Although, this result is contradictory with other studies which found that self-efficacy was related to quality of life (Cunningham, Lockwood & Cunningham, 1991; Lev, 1997; Taylor *et al.*, 1984). However our results showed that women who have a high self-efficacy in breast examination perform more frequently the examination of their breast. Therefore, these women could have been more worried about a possible relapse and this view might have a negative impact in their adaptation.

As was hypothesised, women in this stage had good adaptation across time but this was predicted by both general control beliefs and specific control beliefs. However, emotional status was only predicted by Perceive Health Competence. Hence our hypothesis was confirmed only for emotional status and not in psychosocial adaptation. The profile of locus of control is coherent with the proposal of Wallston (1992); that is, a combination of internal and high external locus of control) which might be adaptive in chronic illness. However in this study, they were not related to emotional and psychosocial adaptation. In other stages of cancer treatment (e.g., diagnose, treatment), studies found strong relationships between control beliefs, emotional status and psychosocial adaptation (Bekkers *et al.*, 1996; Berckman & Austin, 1993; Blood, Dinee, Kauffman & Raimondi, 1993; Lev & Owen, 1996). Our results suggest that these variables were not as important at the follow-up stage as we had thought, because they accounted for only a very small part of the dependent variables variance.

This study has some limitations. We did not measure the variables in previous stages (diagnostic and treatment); therefore, we were not able to compare their previous adaptation to their present adaptation. Moreover, the size of our

sample is small for the large number of variables and some questionnaires used have low internal consistency. In future research, it would be interesting design more longitudinal studies from early stages of cancer (diagnose, treatment) in order to know whether control beliefs are maintained across time, as our results have shown, or on the contrary, they

change. In addition, their influence on psychosocial adaptation and emotional status can also be investigated. More research may also be required to validate the questionnaires used in this study in other countries using similar clinical samples.

Acknowledgement: This research was funded by a grant from the Fondo de Investigaciones Sanitarias (FISS 99-0856). Thank are due to Yong-Peng Why for their helpful comments on English style and their suggestions on an earlier draft of this manuscript.

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(Artículo recibido: 14-11-2007; aceptado: 5-3-2009)