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Role of resilience and emotional control in relation to mental health in people with cancer

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Abstract

This study explored the relationship between emotional control, resilience, and mental health in cancer. Patients with cancer were recruited ($n = 170$). Courtauld Scale of Emotional Control, Connor-Davidson Resilience Scale, and the General Health Questionnaire were selected. Assuming the absence of interaction among the variables, they were analyzed separately. Four groups resulted, finding statistically significant differences ($F(4, 165) = 18.03$; $p < 0.001$). High resilience and low emotional control seem to be protective attributes, and high emotional control has demonstrated to be a risk factor for mental health. Considering differences in cancer-related psychological variables could derive in personalized psychotherapeutic interventions.

Keywords

cancer, emotional control, emotional expression, health, mental health, oncology, psycho-oncology, resilience

Background

Emotional control has proved to be an important variable in research of psychosocial factors related to cancer disease (Durá et al., 2010). In fact, emotional expression has been linked to positive health outcomes in adults with cancer in terms of psychological well-being and health. Resilience has also received clinical attention in research and practice in the oncological area (Eicher et al., 2015). Although the connexion between resilience and emotional expression is not very clear, both variables have been shown to be important factors in the prediction of psychological adjustment and well-being thorough the disease process (Cordova et al., 2003; Eicher et al., 2015).

As regards to emotional expression, it is defined as observable verbal and non-verbal acts to transmit or communicate the emotional experience (Kennedy-Moore and Watson, 2001), and has been shown to positively influence on physical and mental health (Iwamitsu et al., 2003;

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Pennebaker, 2000). Emotional expression of negative feelings can be a way of adaptive coping, to the extent that it contributes to the resolution of the source that is creating distress to the person (Kennedy-Moore and Watson, 2001). It has been related to psychological adjustment and mental health outcomes in cancer patients diagnosed and undergoing oncological treatment (Durá et al., 2010; Li et al., 2015). On the contrary, emotional suppression (individual's avoidance or attempts to control the expression of negative emotions, such as anger, sadness, or anxiety) has been associated with psychosocial maladjustment. For instance, anger suppression has been linked to depressive symptoms in breast cancer patients who were undergoing chemotherapy (Schlatter and Cameron, 2010). Furthermore, the Type C personality pattern, characterized by the lack of assertiveness, patience, inexpression of negative emotions (specially anger), and conformity (Durá et al., 2010; Li et al., 2015) has also been related to the cancer onset and prognosis (Greer and Watson, 1985; Gross, 1989).

Studies carried out by Pennebaker et al. (1997) have demonstrated that emotional expression and acknowledgement of traumatic events are more related to physical and psychological health. While emotional suppression has been linked to greater psychological distress, coping through emotional expression has been associated with adjustment to cancer disease (Brandão et al., 2016).

There are some key mechanisms related to emotional expression that might mitigate the effect of distress in patients: expression, reduces concern about distress, can influence interpersonal relationships in a positive way, and may also favor insight (Kennedy-Moore and Watson, 2001). Specifically, insight refers to the individual experience of a sense of emerging self-acknowledge that increases perception of one's emotions. Insight draws attention on own feelings, and facilitates a sense of self-direction to guide own thoughts and behaviors. It aids to self-regulate negative affectivity, and, in general, it increases the understood of the emotional experience, consequently leading to a more adaptive coping with it (Kennedy-Moore and Watson, 2001). The expression of negative feelings and emotions and a realistic optimistic attitude toward the disease, might reduce distress and improve adaptation in cancer patients (Cordova et al., 2003; Marroquín et al., 2016).

In terms of resilience (the capacity to cope with stressful or traumatic events, maintaining mental health despite the significant adversities or risks) (Bonanno, 2012), it has been conceived as an individual protective factor against the distress suffered by people with cancer (Dooley et al., 2017; Min et al., 2013). Suffering from cancer disease may encompass significant associated threats, such as the impact of the diagnosis of cancer (which is a considerably life-threatening disease), the adherence to complex treatments, and other consequential side effects (Eicher et al., 2015). Resilient people might be characterized by protective personal attributes including positive emotions, and cognitive flexibility through an active coping style, strategies such acceptance or even spirituality (Min et al., 2013; Southwick et al., 2005).

High levels of resilience have been related to mental and physical health outcomes in cancer patients, contributing to a better emotional accommodation (Markovitz et al., 2015). Resilience may contribute to the reduction of psychological distress and increase quality of life of cancer patients during the disease process (Seiler and Jenewein, 2019). In fact, patients who reflect high levels of resilience experience less physical (less fatigue, nausea, pain, insomnia, appetite loss, etc.) and psychological symptoms, such as less negative affect and depression, or even a better quality of life (Eicher et al., 2015). It has been found that resilience has a mediating effect in the relation between negative affect, stress, and quality of life (Ye et al., 2017). Indeed, a study conducted with breast cancer patients showed that high levels of resilience predicted a higher adaptive functioning (Dubey et al., 2015; Lam et al., 2017).

Although there are investigations that confirm the positive effects of emotional expression and resilience on patients' psychological adjustment to cancer, there is a lack of

information about the specific relationship and interaction between both variables. Both emotional control and resilience have been investigated in relation to mental health, but in a separate way. In other words, no investigations have been found that explore the interaction between these variables for explaining mental health. This study would elucidate how specifically emotional control and resilience are related to mental health of people with cancer, so that from this knowledge guidelines for the design of specific therapeutic interventions adapted to the patient could be derived.

On the assumption that emotional control could be a risk to mental health, this study aims to explore if resilience has any protective effect over this relation between emotional control and mental health. From this basis, the objective is to find out if resilience has any moderation or mediation effect on the relationship between emotional control and mental health. Finally, we also aim to explore different typologies of patients, combining levels of resilience and emotional control, with the purpose of contributing to the comprehension of the mental health in people with cancer disease. Considering the existing literature and the clinical experience in the area of psycho-oncology, we hypothesize that: (1) resilience will be a protective factor for cancer patients, related positively to mental health; (2) emotional control will be negatively related to mental health in cancer; (3) resilience will mediate or moderate the relation between emotional control and mental health."

Method

Participants

The sample of this study was composed by 170 participants (78.8% of them were women). They were individuals who had been diagnosed with cancer [breast cancer (35.4%), lung (10.2%), colon (7.1%), gynecological cancer (4%), prostate (3.9%), pancreas (2.7%), bladder (2.4), among others (34.3%)], ranging in age from 20 to 82 years ($M = 49$). Most of the participants were married (69.4%) and some of them had a university degree (21.2%) (Table 1). Almost all of them (92.9%) were receiving oncological treatment and all of them were attending the supporting and/or counselling services provided by the Spanish Association Against Cancer (AECC) of Biscay.

Procedure

The sample was collected through AECC, which asked patients to participate in the study. Participants were informed about this study and its goals by the psychologists of the Association or by email, and invited them to participate voluntarily.

Participants answered to a self-administered questionnaire (see Instruments), which on average took them 50 minutes. Participants could complete the questionnaire in paper, at the premises of the association, or online, as best suited them. If any emotional reactions emerged, psychologists of AECC were available for support. Legal holders and technical teams of AECC had given their approval to the study and participants had to give informed consent. The research project was approved by the Research Ethics Committee of the University of Deusto.

Measures

Questionnaires were used to collect the information, including socio-demographic data, clinical data related to the disease process and psychometric instruments to investigate psychological variables, such as resilience, coping strategies, emotional control, perceived stress, social support, personality, affectivity, and other outcome variables such as mental health and quality of life. For this study, with the aim of exploring their specific relation in cancer patients due to their significant relation with mental health, three variables of interest were selected: emotional control, resilience, and mental health in people with oncological disease.

The Courtauld Scale of Emotional Control-CECS (Watson and Greer, 1983) with 21 items was used. It was adapted to Spanish by Anarte et al. (2001). The scale presented a 4-point Likert

Table 1. Descriptive statistics of socio-demographic and clinical variables ranges for the sample of people with cancer.

Socio-demographic variables		Total (n = 170)		Clinical variables	Total (n = 170)	
		n	%		*n*	%
Gender (%)	Woman	134	78.8	Stages:		
	Man	36	21.2	I	15	8.8
Studies (%)	Primary school	18	10.6	II	19	11.2
	Secondary school	8	4.7	III	22	13
	Bachelor	21	12.4	IV	60	35.5
	Professional training	36	21.2	Oncological treatment:		
	University	85	50	Yes	158	92.9
	Others	2	1.2			
Employment (%)	Paid work	81	47.6	No	12	7.1
	Unpaid work	1	0.6	Other medical treatment:		
	Unemployed	11	6.5	Yes	84	49.4
	Retired	28	16.5	No	86	50.6
	Inability	44	25.9			
	Others	5	2.9			
Civil status (%)	Single	25	14.7			
	Married, in couple	118	69.4			
	Separated, divorced	19	11.2			
	Widower	5	2.9			
	Others	3	1.8			

n: sample size.

scale, ranging from "1 = almost never" to "4 = almost always." The underlying construct of Type C behavior pattern is measured, with the aim of exploring how or to what extent individuals try to control their reactions when feeling or experiencing a negative emotion. It assess how individuals control the expression of negative feelings, such as anger, sadness, or anxiety in their daily life. The 21 items are subdivided into three subscales (Brandão et al., 2015): anger (e.g. "When I feel angry I keep quiet"), anxiety (e.g. "When I feel afraid I let others see how I feel"), and depressed-mood (e.g. "When I feel unhappy I refuse to do anything about it"). Cronbach's alpha in the original study and the Spanish version of the scale (into parenthesis) was 0.88 (0.94) for the total score, 0.86 (0.92) for the subscale of anger, 0.88 (0.93) for depressed-mood, and 0.88 (0.93) for anxiety subscale. The instrument also showed good psychometric qualities for this study, with a Cronbach's alpha of 0.91 for the total of the scale, and for each dimension: anger (0.82), depressed-mood (0.82), and anxiety (0.86).

In order to assess resilience, the Connor-Davidson Resilience Scale-CD-RISC (Connor and Davidson, 2003) of 10 items was used (Campbell-Sills and Stein, 2007). The items were rated using a 5-point Likert scale, with a response format ranging from "1 = totally disagree" to "5 = totally agree." The total level of resilience was given by the sum of the total items, so that higher scores indicate higher level of resilience. Cronbach's alpha in the original study was 0.85, and in the Spanish version of 10 items was 0.81 (Serrano-Parra et al., 2013). The instrument also showed good psychometric qualities for this study, with a Cronbach's alpha of 0.91.

The General Health Questionnaire-GHQ-12 (Goldberg and Hillier, 1979; Lobo et al., 1986; Sánchez-López and Dresch, 2008) is a self-reported questionnaire developed to detect diagnosable psychiatric disorders. It evaluates two dimensions: the inability to develop basic and healthy functions, and the presence of distressing phenomena. The questionnaire is intended for adults who must respond reflecting the frequency with which they have experienced different symptoms. The 12 items are evaluated with a Likert type response format with scores ranging from 0 (better than usual) to 3 (much worse than usual). Cronbach's alpha for the 12-items Spanish version was 0.76, and 0.94 for this study.

Statistical analysis

Descriptive statistics and correlations were calculated for the main variables. To facilitate a better comprehension, all the measures were transformed to a decimal scale, so scores ranged from 0 to 10. In line with the recommendations proposed by Baron and Kenny (1986), a step-by-step lineal regression model was conducted in order to explore if there was any mediation and/or moderation effect of resilience on the relation between the emotional control (principal variable) and the mental health (output variable). In order to avoid a statistical artefact given that units of measure can affect scores, variable scores were centered before being introduced into hierarchical regression analysis. In Step 1, emotional control, as the predictor variable of mental health, was associated with health. In Step 2, resilience was introduced in the model in order to explore if a possible mediation effect of this variable would influence in the level of mental health. In Step 3, the interaction factor between emotional control and resilience was introduced in the model, with the aim of analyzing if it had any influence over mental health. Additionally, this same procedure was analyzed through the Hayes' (2019) PROCESS application, using method 1 to check the moderation effect and method 4 for the mediation effect. Also, the Sobel test was calculated to assess the significance of the possible mediation effect, and test of highest order unconditional interaction for the moderation effect.

Finally, high (above 5) and low (below 5) scores in both emotional control and resilience were combined, and the level of mental health in each category was resulting in four different groups: high resilience and low emotional control (Group 1), high resilience and high emotional control (Group 2), low resilience and high emotional control (Group 3), and low resilience and low emotional control (Group 4). The robust Brown-Forsythe analysis of variance was used for comparing the mean values. Scheffé post hoc test was also applied to know between which pairs of groups of participants were the differences. In addition, Cohen *d* was calculated to explore the effect size of the differences between the groups.

Results

Mental health had a mean of 4.46 (SD = 2.21) with a minimum value of 0.28 and maximum of 10 points (possible range from 0 to 10). About 29% of the participants presented high scores in the scale, which means low level of mental health. For resilience, a mean of 6.26 (SD = 1.73) was obtained with values ranging from 1 to 10 with a high percentage of individuals (53%) with scores above 5, reflecting a moderate-high level of resilience. Finally, for emotional control, the scores varied between 0.48 and 10, with a mean of 4.69 (SD = 1.75), and 18% of the participants with scores above 5.

Correlational analysis showed a positive relationship between the emotional control and mental health ($r = 0.29$, $p > 0.001$), while resilience was negatively associated with health ($r = -0.63$, $p < 0.001$). On the other hand, emotional control and resilience showed no association ($r = -0.09$, $p = 0.123$).

Subsequently, a hierarchic lineal regression model was conducted (Table 2). In Step 1, emotional control as the predictor of mental health, yielded the same result that was obtained before, as it was a simple association. In Step 2, the variable of resilience was introduced in order to

Table 2. Hierarchical regression analysis of emotional control and resilience over mental health.

	Step 1			Step 2			Step 3		
	β	*t*	*p*	β	*t*	*p*	β	*t*	*p*
CECS	.29	3.80	<0.001	0.23	3.94	<0.001	0.23	3.93	<0.001
RESI				−0.61	−10.46	<0.001	−0.62	−10.19	<0.001
CECS × RESI							0.02	0.25	0.806
$\wedge R^2$	–			0.371			0.000		
R^2	0.082			0.453			0.453		
F	14.44			109.32			0.06		
p	<.001			<0.001			0.806		

β: beta coefficient; *t*: *t*-Student; *p*: level of significance; $\wedge R^2$: increase of explained variance; R^2: coefficient of determination; *F*: F of Snedecor.

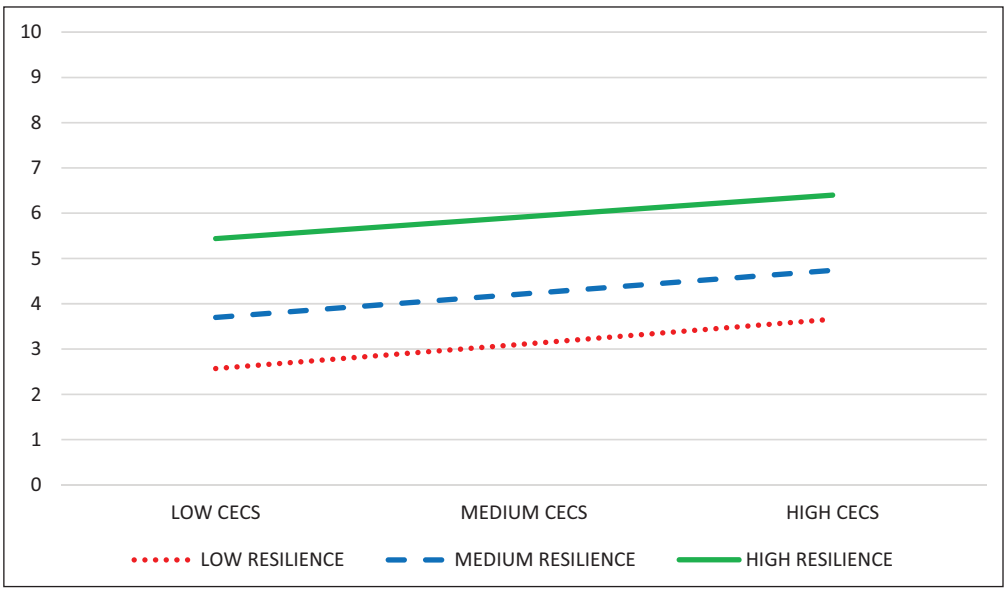

Figure 1. Prediction of mental health perception scores as a function of the combination of emotional control and resilience.

assess if it had any mediation effect, which would influence health scores. Results are statistically significant for emotional control ($\beta = -0.23$, $p > 0.001$) and resilience ($\beta = -0.61, p < 0.001$). In Step 3, the interaction of both variables was introduced and it did not show any interaction effect ($\beta = 0.02$, $p = 0.806$). As it can be observed (Figure 1), the relation between the variables was linear; it did not show any interaction. Additionally, the mediation effect was tested through the PROCESS application, resulting in a partial reduction of the total effect of emotional control on mental health ($B_c = 0.36$, $SE_c = 0.09$, $\beta = 0.29$) to its estimate of the direct effect ($B_{c'} = 0.29$, $SE_{c'} = 0.07$, $\beta = 0.23$) has not been statistically significant (Sobel-Test = 1.12, $p = 0.263$; $B_a = -0.09$, $SE_a = 0.08$, $B_b = -0.78$, $SE_b = 0.07$). Likewise, the analysis of the moderating effect through the PROCESS application has shown the

Table 3. Cancer patients' typologies regarding scores in CECS, RESI, and GHQ-12.

	G1 (n = 78)		G2 (n = 43)		G3 (n = 23)		G4 (n = 20)		F	df	p	Post hoc					
	M	SD	M	SD	M	SD	M	SD				G 1–2	G 1–3	G 1–4	G 2–3	G 2–4	G 3–4
GHQ	3.56	1.62	4.12	2.07	7.09	2.01	5.60	2.13	18.03	4;165	0.000	0.55	3.51*	2.02*	2.97*	1.48	1.49

*$p < 0.001$.
n: sample size; M: mean; SD: standard deviation; *F*: F of Snedecor; *df*: freedom grades; *p*: level of significance; G1: high resilience and low emotional control (Group 1); G2: high resilience and high emotional control (Group 2); G3: low resilience and high emotional control (Group 3); G4: low resilience and low emotional control (Group 4).

inexistence of an interaction effect (B_{int} = 0.01, SE_{int} = 0.04) being the Test of highest order unconditional interaction non-significant (F = 0.06, p = 0.805). These results would indicate that resilience does not present a mediating or moderating effect on the relationship between emotional control and mental health.

Assuming the absence of interaction and the linear relationship among the variables of interest, the model was discomposed and variables were analyzed separately, with the aim of exploring if the combination of emotional control and resilience, resulted in different behavior patterns in terms of mental health.

Four groups resulted: 45.9% of the participants showed high resilience and low emotional control (Group 1), 25.3% showed high resilience and high emotional control (Group 2), 13.5% showed low resilience and high emotional control (Group 3), and 11.8% presented low resilience and low emotional control (Group 4).

In Table 3 the differences in the scores in mental health are presented, showing statistically significant differences ($F(4, 165) = 18.03$; $p < 0.001$). The main differences have been found between Groups 1 and 3 ($t = -3.51$; $p < 0.001$; $d = 1.83$), Groups 1 and 4 ($t = -2.02$; $p < 0.001$; $d = 0.89$), and Groups 2 and 3 ($t = -2.97$; $p < 0.001$; $d = 1.50$), with notorious effect sizes (except for the differences between Groups 1 and 2).

Discussion

The aim of this study was to explore the relationship of emotional control and resilience with level of mental health in people with cancer. Results in this study have shown a significant association between resilience and emotional control with cancer patients' mental health, which have reflected to be related in an independent way. These findings confirm the idea that both resilience and emotional control are important factors implicated in the physical and psychological adjustment to the disease process (Eicher et al., 2015; Li et al., 2015).

Furthermore, with the objective of exploring the interaction between the three variables of emotional control, resilience, and mental health, a hierarchical regression model was conducted. The purpose was to analyze if resilience had any mediation or moderation effect on the relation between emotional control and mental health. In this case, results have not shown any interaction effect between emotional control and resilience on mental health. This absence of interaction could be explained since both variables are related to mental health, but in a separate way. Both resilience and emotional control might be associated with mental health, but through different mechanisms. For instance, resilience implies the ability to cope with adversity and emerge even stronger from stressful events (Masten, 2001). Resilient people may have some protective personal attributes that involve key mechanisms related to active coping, cognitive flexibility and positive emotions (Min et al., 2013). It could be linked to more stable personal characteristics. On the other hand, emotional expression (the opposite of emotional suppression) can act as a protective factor that might mitigate distress in patients

(Kennedy-Moore and Watson, 2001). It implies the expression of negative feelings, adopting a positive and realistic attitude toward disease (Marroquín et al., 2016). These aspects may have a more temporary and modifiable character than those related to resilience, which are the result of a process of learning to cope with an adverse and even traumatic situation.

Considering the absence of interaction between the main variables, the third hypothesis of the study was tested, which implied the exploration of different health patterns or typologies when combining the level of resilience and emotional control in participants. Results have shown that the group of people with higher level of resilience and lower level of emotional control (Group 1) shows higher levels of mental health than any other group. Moreover, it seems that presenting a higher level of resilience protects more than having a lower level of emotional self-control (in terms of a low emotional expression). These findings support the idea that resilience is a protective factor of cancer patients' well-being and adjustment (Eicher et al., 2015; Temprado et al., 2019). It enables patients to develop effective coping strategies and achieve improved health outcomes, such as physical and mental quality of life (Huang et al., 2019; Ristevska-Dimitrovska et al., 2015; Yin et al., 2015). Resilient patients show a more adaptive cognitive, emotional and social functioning. They report less severe physical and psychological symptoms related to the disease in comparison to others with lower level of resilience. Less resilient patients reflect a more pessimistic attitude toward life, a worse body image, worse physical functioning and more severe side effects (Ristevska-Dimitrovska et al., 2015).

Along the same lines, the group with higher scores on the GHQ, which means lower mental health, is the group of people who presents low level of resilience and high levels of emotional control (Group 3). However, the group of people with low resilience but also with low level of emotional control (Group 4) presents lower risk than the one who presents high level of emotional control. Consequently, all of this leads to the conclusion that a higher level of emotional control is the factor that contributes more to the risk of presenting a lower level of mental health in people with cancer. These results reveal similarities with other studies that have found that cancer patients who showed less emotional expression present higher psychological distress (Marroquín et al., 2016).

It has been found that patients with higher emotional suppression show more psychological distress that people with higher levels of emotional expression, and that psychological distress was related to feelings such as resignation, fear and conflicts in patients (Nakatani et al., 2014). In contrast, other authors that have rejected the idea of the importance of emotional control over well-being and adjustment of patients suffering somatic distress. A study conducted by Janowski et al. (2014) showed that emotional control was less important than coping styles in influencing patients' adjustment to disease. These authors found that the level of emotional control of negative emotions was related to task-oriented coping, suggesting that certain degree of emotional control of negative emotions could be beneficial in controllable adverse situations, when task-oriented coping could result to be more effective. In fact, they found that emotional suppression was weakly associated to illness acceptance and adjustment.

However, other authors have proposed that emotional control was considerably linked to the hypothesis of the Type C personality behavior pattern in people with cancer (Greer and Watson, 1985; Gross, 1989). Results in this study support this idea, reflecting that the group with higher risk of presenting low mental health was the group of people with higher level of emotional control.

Conversely, findings confirm the protective effect of resilience on cancer patients' mental health. The higher the level of resilience, the higher the mental health of participants (Temprado et al., 2018). Other studies have also supported the protective effect of resilience on patients' well-being (Ristevska-Dimitrovska et al., 2015). Vaughan et al. (2019) found that resilience was negatively related to distress in

people suffering from cancer disease. In fact, these authors found that the relation between resilience and a good adjustment to illness was mediated by emotion regulation, suggesting that difficulties in emotion regulation could be a key factor for guiding screening for patients at risk of maladjustment and emotional distress.

Study limitations

There are some limitations in this study. First, it would have been desirable to increase the sample, in order to know if statistical significance would increase. Specifically, it would be interesting to analyze deeply if the interaction between emotional control and resilience with respect to the level of health would be different.

Second, there might be a lack of homogeneity regarding the types of cancer in the sample. The sample presents a big variability and results could be different if specific types of cancer were analyzed. The same occurs for participants who are in different stages; there could be some differences in the scores between participants who are in early stages and those who are suffering from a metastatic disease.

Third, this is a cross-sectional study. A longitudinal study with at least two periods would be advisable for analyzing if there are any predictive effects of emotional control and resilience in mental health in people with oncological disease.

Clinical implications

Considering the protective effect of resilience over mental health, it would be advisable to offer some interventions toward this aspect. Increasing resilience might contribute to improve coping and would lead to a better adjustment to the disease. Likewise, findings have supported the benefits of emotional expression on cancer patients. In fact, emotional control has been shown to be a risk factor regarding well-being and health in participants. It would be recommendable to design specific psychological interventions focused on the increase of resilience capacity in conjunction with emotional expression that would contribute to reduce distress, depression, and anxiety level, as well as increasing the quality of life and adaptation, in terms of an increased mental health. Psychological interventions should incorporate ways of canalizing emotional expression, for instance, through psychotherapy itself (Herbette and Rimé, 2004; Kennedy-Moore and Watson, 2001), group-centered interventions that work on social sharing (Cordova et al., 2003), and/or written-based interventions (Hoyt et al., 2016; Pennebaker, 1999).

Conclusion

The findings obtained in this study make a contribution to the comprehension of the relationship between significant psychosocial variables such as resilience and emotional control when considering mental health in people with cancer. Results indicate that apparently there does not exist a direct relation between resilience and the emotional expression; however, when combining both variables, interesting behavior and health perception patterns are observed. Specifically, cancer patients who present higher level of resilience and lower emotional control seem to have more protective attributes, which allow them to perceive a better mental health. On the contrary, a high level of emotional control has demonstrated to be a factor of risk for the perception of mental health in oncological disease. This might be important information for psychologist who work in the oncological services, who could guide their therapeutic interventions through the encouragement of emotional expression. Likewise, protective resilience resources should be promoted among cancer patients, in order to improve their quality of life and the adjustment to the disease process that could contribute to the increase of patients' mental health.

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Author contributions

PM has conducted the statistical analysis and the drafting of the manuscript, and has worked on the acceptance of the final paper. SG has conducted the statistical analysis and the drafting of the manuscript, and has worked on the acceptance of the final paper. MB has participated in the planning and design of the study. She has also be responsible for the coordination of the field study. She has also worked on the final drafting of the manuscript. EA has participated in the planning and design of the study and worked in the final drafting of the manuscript. II has conducted the statistical analysis and the drafting of the manuscript, and he has worked on the acceptance of the final paper. He is the Principal Investigator of the "*Evaluación, Clínica y Salud*" research team of Deusto University.

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Data availability statement

The dataset generated for this study can be found in the Figshare data repository: DOI: 10.6084/m9.figshare.11558604.

Supplemental material

Supplemental material for this article is available online.

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