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Difficulties in emotion regulation and well-being in breast cancer

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ABSTRACT

Objective: Breast cancer is responsible for disruptive changes in women's lives, causing them to experience diverse and intense negative emotions that can affect their perception of well-being. The present study aimed to characterize difficulties in emotion regulation (ER), according to Gratz and Roemer's multidimensional assessment, in women with breast cancer and to relate them with General Well-Being and its different domains: Physical, Social/Familial, Emotional, and Functional.

Method: Ninety-five Portuguese women with breast cancer aged between 32 and 75 years answered a sociodemographic and clinical questionnaire and the Portuguese versions of the Difficulties in Emotion Regulation Scale and the Functional Assessment of Cancer Therapy – General. Data were collected in an oncology public hospital.

Results: In general, difficulties in ER presented negative correlations with General Well-Being and its domains. The multiple regression analysis findings indicated that two specific types of difficulties, Limited Access to ER Strategies and Lack of Emotional Clarity, play a significant role in predicting well-being, especially in the Emotional domain, which was most compromised in these patients.

Conclusions: These difficulties should be approached within psycho-oncological interventions as they are essential contributors to improving emotional and general well-being and fostering psychological adaptation to breast cancer.

Introduction

Emotions emerge in childhood and become more complex throughout the different stages of development. Knowing how to regulate them is therefore crucial. Although they play an essential role in one's daily life, emotion regulation (ER) is difficult to define as several different approaches exist. This study will focus on the functional

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perspective of ER and the specific difficulties proposed within the operational model of Gratz and Roemer (2004).

According to a functional perspective of ER, different ER strategies can be applied in different situations to achieve different goals (Gratz & Roemer, 2004). The authors proposed a multidimensional concept of ER that includes the following dimensions: (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals, and (d) access and use situationally appropriate ER strategies in a flexible manner to meet individual goals and demands.

In line with Gratz and Roemer (2004), Gross and Jazaieri (2014), and Hoemann et al. (2021) highlighted the importance of emotional awareness regardless of the context where these emotions may occur. In the systematic review of Hoemann et al. (2021), several connections were found between emotional awareness and emotional clarity, although they are distinct constructs. Emotional awareness refers to the individual's ability to recognize emotions, and emotional clarity refers to the individual's knowledge about the emotions they are experiencing (Gross & Jazaieri, 2014). If one is unaware of the emotions they are experiencing, the feelings that follow those particular emotions cannot be clearly understood, and to use ER strategies appropriately, both these skills are necessary.

Acceptance of the emotions one experiences is also critical (Gratz & Roemer, 2004), and according to Politi et al. (2007, p. 74), this involves 'a willingness to feel positive and negative emotions, allowing emotions to develop without attempts to control, modify or reject them.' So, if an emotion is avoided instead of being accepted, difficulties in ER may occur. Difficulties in ER may also be accentuated through impulsive behaviors (Gratz & Roemer, 2004), as subjects that experience intense emotions, especially negative ones, tend to have impulsive behaviors that interfere with their ability to regulate their emotions.

Another difficulty in ER is when a circumstance may lead the individual to consider several goals simultaneously, which may be incompatible with each other and lead to regulatory difficulties. Gross and Jazaieri (2014) emphasized the need for flexibility in pursuing these goals. Otherwise, ER would be difficult to attain. Not having access to diverse and flexible ER strategies or the lack of resources to be able to use these can compromise achieving individual goals and lead to regulatory difficulties (Gross & Jazaieri, 2014).

The functional perspective of Gratz and Roemer (2004) considers all these dimensions of ER mentioned above. It states that the absence of one or more of these may suggest the existence of difficulties associated with regulatory strategies. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) operationalized these dimensions to assess ER difficulties. It includes six difficulty groups: Limited Access to ER Strategies, Nonacceptance of Emotional Responses, Lack of Emotional Awareness, Impulse Control Difficulties, Difficulties Engaging in Goal-Directed Behaviour, and Lack of Emotional Clarity.

ER skills can be particularly challenging in the context of breast cancer, one of the most common cancers in women, considering the physical and psychological malaise that this oncological disease entails (Kenny, 2007; Ramani et al., 2017).

The breast represents femininity, which is usually compromised during the oncological process. As a result of treatment, the breast may become disfigured or ultimately be removed, leaving the woman with scars, which may impact the perception of body image (Sebri et al., 2022). Body image is a complex construct, and the several side effects of

breast cancer can impact body image over time (Hunter, 2015). There are side effects such as temporary hair loss or weight changes that may lead to feeling less attractive (Hunter, 2015; Knobf, 2015; Ramani et al., 2017; Rowland & Massie, 2010; Sebri et al., 2022; Towers, 2016), and which could be related with the non-acceptance of the post-treatment body and a sense of alienation towards the body in women with this condition (Sebri et al., 2022). Other frequent side effects include anemia, nausea, vomiting, cognitive weakness, fatigue, and pain, leading to dependency on others or feelings of inferiority (Adler et al., 2008; Kenny, 2007). During treatment, women also have to deal with uncertainty (about the future), lack of control, and fear (of suffering, dying, or recurrence) (Gorman, 2018; Towers, 2016), which can trigger feelings such as anger, sadness, despair, guilt, revolt, and hopelessness (Gorman, 2018; Sebri et al., 2022), causing, at times, a hypervigilant posture (Towers, 2016).

In every phase of the oncological process, the diagnosis, treatment, and remission, intense emotions and painful feelings arise, and there is a constant need to regulate them as these can have an impact on several domains of the patient's perceived well-being (Durosini et al., 2022; Gorman, 2018; Gross & John, 2003; Knobf, 2015). Well-being is a multidimensional construct that commonly includes social/familiar, emotional, physical, and functional domains (Brucker et al., 2005; Durosini et al., 2022). Compared with healthy individuals, oncological patients generally show lower levels of well-being (Costanzo et al., 2009). Durosini et al. (2022) highlighted the role that emotional abilities play in the well-being of these patients. In addition, the flexible and adjusted use of ER strategies, adapted to the context of cancer, which is constantly changing, can lead to increased well-being in these patients (Bonanno & Burton, 2013; Durosini et al., 2022).

Stanton et al. (2000) concluded that considering the common feeling of lack of control that cancer patients experience, the use of regulatory strategies centered on emotional expression (which could improve emotional awareness and, eventually, emotional clarity) can function as a successful facilitator of the pursuit of goals.

In the studies of Politi et al. (2007) and Sebri et al. (2022), with a sample of women with breast cancer, the use of emotional acceptance as a strategy to deal with the breast cancer process and the impact it has on their body over time played an essential role in helping patients cope with cancer as well as in the relationship with their body, emotions, and thoughts. It highlighted the importance of using strategies and interventions based on acceptance when patients face a situation that cannot be changed due to medical issues. In addition, Gross and John (2003) revealed that using some maladaptive ER strategies, such as conscious inhibition of an ongoing expression of behavior, can negatively impact the patient's well-being.

A systematic review by Brandão (2017) about ER in women with breast cancer did not find any study that used the Gratz and Roemer (2004) DERS to assess difficulties in ER in breast cancer. Our literature review found limited studies that used the DERS with breast cancer patients. However, some included participants with other types of cancer, and others focused on the total DERS score rather than on each of the DERS specific difficulties (Ashkhaneh et al., 2015; Chen, 2021; Firouzi et al., 2020; Noori et al., 2016; Vaughan et al., 2019).

Not enough is known about which difficulties in ER most influence breast cancer patients' well-being. To our knowledge, no breast cancer studies have analyzed the six

specific difficulties assessed in the DERS and how they relate to well-being and its domains. This present study intends to contribute to this area of research by promoting a deeper understanding of the functional perspective of ER. It aims to explore which of the six difficulties in ER outlined by Gratz and Roemer's model are most referred to by women with breast cancer. It also analyzes how these difficulties contribute to predicting general well-being and its specific domains.

Method

Participants

For the sample in the present study, the inclusion criteria were the diagnosis of breast cancer (with or without initiated treatment), age of majority, and the ability to answer the questionnaires. A total of 95 women participated in the study.

Measures

Three instruments were used:

A sociodemographic and clinical questionnaire (including age, years of schooling, marital status, stage of disease, presence of metastasis, duration of illness, and psychological support).

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Portuguese version Coutinho et al., 2010), to assess difficulties in ER experienced by adults. This scale consists of 36 items ($\alpha = .90$), divided into six subscales (with the corresponding alpha coefficients in this study): Limited Access to ER Strategies (Strategies, $\alpha = .82$), Nonacceptance of Emotional Responses (Nonacceptance, $\alpha = .86$), Lack of Emotional Awareness (Awareness, $\alpha = .75$), Impulse Control Difficulties (Impulse, $\alpha = .84$), Difficulties Engaging in Goal-Directed Behaviour (Goals, $\alpha = .77$), and Lack of Emotional Clarity (Clarity, $\alpha = .61$). Items were rated in a 5-point Likert scale, from 1 (*almost never*) to 5 (*almost always*). Subscales and total scale scores were obtained through the sum of the items.

Functional Assessment of Cancer Therapy – General (FACT-G; Cella et al., 1993; Portuguese version translated and provided by the Functional Assessment of Chronic Illness Therapy group) to assess well-being perception in oncological patients based on the last seven days. This instrument consists of 27 items ($\alpha = .91$), divided into four domains: Physical Well-Being ($\alpha = .83$), Social/Familial Well-Being ($\alpha = .77$), Emotional Well-Being ($\alpha = .76$), and Functional Well-Being ($\alpha = .88$). A 5-point Likert scale was used for each item rating, ranging from 1 (*not at all*) to 5 (*very much*). Scores for each domain were obtained through the sum of the items. General Well-Being was also measured by summing the items from all the subscales.

Procedure

This study was approved by the Ethics Committee for Health of the Portuguese Oncology Institute of Porto – IPO Porto (Reference 357/018), where the data was collected through a non-probability convenience sampling process with the collaboration of the Hospital's

Psycho-oncology service that identified possible participants. Data collection took place between January and May of 2019. The patients were first approached in the waiting room of the Breast Clinic, where the study's theme and objectives were briefly explained. The purpose of the study was further explained to the patient, and in some cases also to their companion, in the privacy of an office at the clinic to safeguard the understanding of its objectives and clarify any doubts. A flyer containing general information about the survey was also given to the participants. Afterwards, the participants were asked to read and sign the informed consent, confirming their knowledge of the study and its procedure and authorizing their participation. The data collection thus began with the delivery and completion of the paper and pencil questionnaires.

Data Analysis

Data was introduced and analyzed using the IBM SPSS Statistics 26 statistical package. Initially, the sample consisted of 102 patients. After identifying the missing values and outliers, 7 participants were excluded, resulting in a final sample of 95 women.

Descriptive analyses were performed for the DERS and the FACT-G. An independent samples t-test was conducted to compare the mean scores of the DERS and the FACT-G with reference values. The DERS reference values were extracted from the Machado Vaz (2018) study with a sample of Portuguese healthy women (as there are no studies of Portuguese patients with breast cancer reporting the descriptive statistics of the DERS factors), and the FACT-G normative data was extracted from the Brucker et al. (2005) study with a sample of women with cancer. We used Cohen's d (1988) to measure the effect size, where $d = 0.2$ is considered a small effect, 0.5 is a moderate effect, and 0.8 is a large effect.

Pearson correlation coefficients were calculated between the DERS and the FACT-G total scale and subscale scores. Multiple Regression Analyses were conducted to analyze the predictive value of specific difficulties in ER on well-being. As recommended by Pallant (2016), difficulties in ER with significant correlation values with the FACT-G, equal to or greater than .30, were eligible as independent variables, and the assumptions inherent to the multiple regression analyses were verified.

A significance level of $p < .05$ was considered in the analyses performed.

Results and discussion

The 95 women who participated in the study were aged between 32 and 75 years ($M = 53.11$ years, $SD = 9.48$) with a mean of 10.83 years of formal education ($SD = 5.14$, Min = 3, Max = 22), and the majority were married (73.68%). Table 1 presents the sociodemographic characteristics of the sample.

Regarding the cancer stage, the majority were in stage II ($n = 20$, 21.05%) or stage III ($n = 20$, 21.05%), and almost half of the participants ($n = 43$, 45.26%) did not know the stage of their disease. Most did not possess known metastasis ($n = 71$, 83.53%). When filling out the questionnaires, on average, participants had received the diagnosis about 37 months ago and started the treatments about 35 months ago. Most participants did not receive psychological support during the oncological process ($n = 73$, 76.84%).

Table 1. Sociodemographic Characteristics of the Sample (*N* = 95).

Variables	*n*	(%)	Min–Max	*M*	(*SD*)
Gender	95	(100%)			
Men	0	(0%)			
Women	95	(100%)			
Age			32–75	53.11	(9.48)
Marital status	95	(100%)			
Single	6	(6.32%)			
Married	70	(73.68%)			
Partnered	5	(5.26%)			
Divorced/Separated	10	(10.53%)			
Widowed	4	(4.21%)			
Years of schooling			3–22	10.83	(5.14)
Education level	95	(100%)			
Less than Grade 4	5	(5.26%)			
Grade 4	13	(13.68%)			
Grade 6	14	(14.74%)			
Grade 9	11	(11.58%)			
High School	23	(24.21%)			
College – Bachelor's degree	24	(25.26%)			
College – Master's degree	5	(5.26%)			

The characterization of the difficulties in ER of women with breast cancer participating in this study is presented in Table 2. The DERS difficulty most often referred to by the participants was Engaging in Goal-Directed Behaviour (*M* = 2.60, *SD* = 0.97), which refers to difficulty concentrating and completing tasks when overwhelmed by emotions. Conversely, the subscales of Lack of Emotional Clarity (*M* = 1.90, *SD* = 0.71) and Limited Access to ER Strategies (*M* = 1.93, *SD* = 0.77) were the least referred by the sample. Considering all the difficulties in the DERS, the 95 patients showed a total score mean below 3 – the scale midpoint (*M* = 2.21, *SD* = 0.57).

Due to the lack of descriptive statistics on the DERS in Portuguese patients with breast cancer or other oncological problems, we used the reference values of the DERS Portuguese version (Machado Vaz, 2018), which was applied to a healthy sample and presented

Table 2. Results of the DERS (Minimum, Maximum, Mean, and Standard Deviation), t Values for the Comparison to the Reference Values of the Sample of Healthy Women (Machado Vaz, 2018), and Statistical Significance (*N* = 95).

Instrument	Min –	Max	*M* (*SD*)		*M* (*SD*) reference values		Comparison to the reference values			
							t	df	p	d
DERS										
Strategies (8-40)	8 –	35	15.47	(6.13)	15.73	(5.64)	−0.41	94	.684	−0.04
Nonacceptance (6-30)	6 –	30	13.97	(6.12)	13.91	(5.35)	0.09	94	.926	0.01
Awareness (6-30)	6 –	26	14.37	(4.91)	16.54	(4.52)	−4.31	94	< .001	−0.44
Impulse (6-30)	6 –	29	12.73	(5.65)	15.12	(5.09)	−4.13	94	< .001	−0.42
Goals (5-25)	5 –	23	12.99	(4.86)	13.43	(3.61)	−0.88	94	.380	−0.09
Clarity (5-25)	5 –	23	9.49	(3.55)	11.44	(3.36)	−5.34	94	< .001	−0.55
Total (36-180)	41 –	130	79.02	(20.84)	86.01	(19.32)	−3.27	94	.002	−0.34
Strategies mean (1-5)	1 –	4.38	1.93	(0.77)						
Nonacceptance mean (1-5)	1 –	5	2.33	(1.02)						
Awareness mean (1-5)	1 –	4.33	2.39	(0.82)						
Impulse mean (1-5)	1 –	4.83	2.12	(0.94)						
Goals mean (1-5)	1 –	4.60	2.60	(0.97)						
Clarity mean (1-5)	1 –	4.60	1.90	(0.71)						
Total mean (1-5)	1.15 –	3.57	2.21	(0.57)						

distinct sociodemographic characteristics including the majority of individuals being male, single, and having high school education and where the average age was less than the average age of this study.

Compared to that Portuguese reference healthy sample (Machado Vaz, 2018), the Lack of Emotional Awareness ($M = 14.37$, $SD = 4.91$) and the Lack of Emotional Clarity subscales ($M = 9.49$, $SD = 3.55$) presented statistically significant differences, $t(94) = -4.31$, $p < .001$; $t(94) = 7.92$, $p < .001$, respectively, revealing that the participants in this study seem to present fewer difficulties in recognizing and understanding the emotions felt. A possible interpretation of this result may be that the loss of control the patients have been exposed to, several times throughout the oncological process, may have caused a fearful or even a hypervigilant posture (Towers, 2016). Additionally, Gross and Jazaieri (2014) emphasized that, sometimes, patients may show high levels of emotional awareness following periods of fear or hypervigilance. Therefore, it can be suggested that differences previously found in emotional awareness may be related to the alertness state often shown in cancer patients, considering the inherent uncertainty of the oncological process. Lack of Emotional Awareness and Lack of Emotional Clarity were difficulties in ER with a strong correlation, $r(95) = .51$, $p < .001$, as emotional awareness consists in identifying an emotion and emotional clarity in the description of the emotions experienced.

Similarly, there were statistically significant differences in Impulse Control Difficulties between the present oncological sample ($M = 12.73$, $SD = 5.65$) and the values obtained by Machado Vaz (2018) in healthy women ($M = 15.12$, $SD = 5.09$), suggesting that cancer patients show less difficulty in controlling behavior when they are upset, compared to the reference sample, $t(94) = -4.13$, $p < .001$. This finding aligns with the study by Servaes et al. (1999) that cancer patients, compared to a healthy population, presented a greater control of emotional impulses. According to these authors, cancer patients may have more impulse control due to a higher sense of responsibility towards their significant others, wanting to protect them from suffering.

Finally, our sample showed a lower DERS total score ($M = 79.02$, $SD = 20.84$) relative to the reference sample ($M = 86.01$, $SD = 19.32$), $t(94) = -3.27$, $p = .002$. These findings align with the conclusions drawn in the study conducted by Guil et al. (2020), which observed that women who have undergone the traumatic experience of breast cancer tend to perceive themselves as more competent in regulating their moods and emotions. Previously, other authors had mentioned that after experiencing an adverse situation such as cancer, individuals undergo personal growth and an increase in resilience, leading to an increased perception of their ability to discriminate and regulate negative affective states (Gallagher et al., 2019). However, to better understand the factors that may influence this variable, it will be important to examine in future studies whether the perception of emotional regulation competence tends to increase over time from diagnosis and throughout the course of treatments. In this study, women had already faced their diagnosis and initiated treatments, considered the two most stressful and complicated moments (e.g. Knobf, 2015; Rowland & Massie, 2010; Towers, 2016), and may have already had to regulate countless emotions of different intensities. According to the findings, we could suggest a turning point in the oncological process, at which the difficulties in ER become more subtle and may guide the patients' learning and personal growth to overcome the difficulties in ER that they face due to the disease.

Table 3. Results of the FACT-G (Minimum, Maximum, Mean, and Standard Deviation), t Values for the Comparison to Reference Values of the Sample of Women With Cancer (Brucker et al., 2005), and Statistical Significance (N = 95).

Instrument	Min -	Max	M (SD)		M (SD) reference values		t	df	p	d
FACT-G										
Physical Well-Being (0-28)	0 –	28	19.62	(6.15)	21.6	(5.8)	−3.14	94	.002	−0.23
Social Well-Being (0-28)	10 –	28	23.06	(4.40)	22.3	(5.3)	1.69	94	.094	0.02
Emotional Well-Being (0-24)	3 –	24	17.09	(4.57)	18.7	(4.5)	−3.43	94	.001	−0.35
Functional Well-Being (0-28)	5 –	28	19.22	(5.53)	19.5	(6.6)	−0.49	94	.622	−0.05
Total (0-108)	32 –	108	78.99	(16.29)	82.1	(16.3)	−1.86	94	.066	−0.19

The perceived well-being of these oncological patients is presented in Table 3.

Compared to other well-being domains, the Emotional Well-Being domain revealed the lowest value ($M = 17.09$, $SD = 4.57$), which could be due to the high level of uncertainty, fear of the future, and lack of control they face during the oncological process and the high level of ER they must engage in during this period. The domain that revealed the highest value ($M = 23.06$, $SD = 4.40$) was the Social/Familiar domain, which may indicate a good perception of social support during the oncological process.

The General Well-Being of the cancer participants in the present study ($M = 78.99$, $SD = 16.29$) did not reveal statistically significant differences when compared with the normative values from the FACT-G obtained by Brucker et al. (2005) in a sample of women with cancer ($M = 82.1$, $SD = 16.3$). There were also no statistically significant differences between the Social/ Familiar and Functional Well-Being subscale means. However, women in this sample revealed a level of Physical ($M = 19.62$, $SD = 6.15$) and Emotional Well-Being ($M = 17.09$, $SD = 4.57$) below the reference values ($M = 21.6$, $SD = 5.8$, and $M = 18.7$, $SD = 4.5$, respectively), with statistically significant differences, t (94) = −3.14, $p = .002$; t (94) = −3.43, $p = .001$. Important to note is that the results in this study were compared to the results from the sample of the Brucker et al. (2005) study, which was made up of women with cancers in different parts of the body and not with breast cancer in specific, not taking into consideration the specificities of this particular type of cancer such as treatments and side effects that may interfere with Physical Well-being.

Regarding relations between difficulties in ER and well-being (Table 4), as expected, the global difficulties in ER correlated inversely and significantly with General Well-Being and all its domains, with Emotional Well-Being presenting the highest value, r

Table 4. Pearson correlations between difficulties in emotion regulation and well-being.

	Physical Well-Being	Social/ Familiar Well-Being	Emotional Well-Being	Functional Well-Being	General Well-Being
Strategies	−.29**	−.31**	−.50**	−.33**	−.45**
Nonacceptance	−.31**	−.12	−.24*	−.08	−.24*
Awareness	−.06	−.01	−.10	−.06	−.03
Impulse	−.22*	−.07	−.29**	−.13	−.23*
Goals	−.29**	−.19	−.29**	−.19	−.30**
Clarity	−.11	−.17	−.45**	−.34**	−.33**
Global difficulties in emotion regulation	−.30**	−.22*	−.46**	−.27**	−.40**

*$p < .05$. **$p < .01$.

(95) = −.46, $p < .001$, followed by General Well-Being, r (95) = −.40, $p < .001$. The relationship found in our study between global difficulties in ER and General Well-Being, $r = −.40$, $p < .001$, is similar in direction and intensity to the relationship presented in the meta-analysis by Kraiss et al. (2020) between global difficulties in ER and Well-being, $r = −.48$, $p < .001$, with a population of patients with mental disorders. We will, therefore, comment specifically on Emotional and General Well-Being.

Other than Lack of Emotional Awareness, every difficulty in the ER analyses revealed a negative correlation with Emotional and General Well-Being. Surprisingly, the Lack of Emotional Awareness was not correlated with General Well-Being or any of the well-being subscales. A possible explanation may be related to the results obtained for internal consistency of this subscale ($\alpha = .61$) similar to the ones obtained in the validation study of the Portuguese version of the DERS (Coutinho et al., 2010), in which the psychometric properties of the awareness subscale proved to be less satisfactory, with lower, although acceptable, reliability and internal consistency values than the other subscales.

Considering the Emotional Well-Being subscale, the highest correlations were with Limited Access to ER Strategies, r (95) = −.50, $p < .001$, and Lack of Emotional Clarity, r (95) = −.45, $p < .001$. Similarly, in General Well-Being, the highest correlations were with Limited Access to ER Strategies, r (95) = −.45, $p < .001$, and Lack of Emotional Clarity, r (95) = −.33, $p < .001$.

Bonanno and Burton (2013) suggested that more access and flexible use of ER strategies lead to better psychological adjustment, supporting the statistical significance of the negative correlation values obtained between Limited Access to ER Strategies and Emotional Well-Being and General Well-Being. On the other hand, according to the authors, a component of the flexible use of emotional strategies is the responsiveness to environmental feedback. This allows the patient to evaluate the strategies' effectiveness and, consequently, change or maintain their use. Additionally, as stated by Schlatter and Cameron (2010) and Stanton et al. (2000), the use of different ER strategies may interfere with the symptoms experienced, which may cause the patient to forget, momentarily, the symptoms, fears, or concerns experienced, and thus contribute to minimizing their impact.

The Lack of Emotional Clarity was also negatively correlated with the subscales of Emotional, r (95) = −.34, $p < .001$, and General Well-Being, r (95) = −.33, $p < .001$. Patients with less difficulty understanding or describing their feelings report higher Emotional and General Well-Being levels. These latest results align with the aim of Hoemann et al. (2021) and corroborate those obtained by Brandão (2017) with an oncological population in which those difficulties were related to emotional expression and which may compromise adaptation to cancer. So, suppose women cannot understand what they feel. In that case, they will have difficulties expressing their needs and feelings at several levels, which may subsequently be reflected in constraints on their satisfaction, which may compromise their well-being. On a psychological level, the fact that patients do not understand their feelings will make it difficult to ask for support or help (Butler et al., 2003).

To further the understanding of the relationship between well-being and difficulties in ER, two predictive models were analyzed, one for Emotional Well-being and another for General Well-Being, as these were the well-being scales that presented the highest significant correlation coefficients with difficulties in ER.

Table 5. Prediction model of emotional well-being.

Variables	B	β	t	p	Part Correlations	Part Correlations[2]
Strategies		−.40	−4.54	.023	−.382	.146
Clarity		−.32	−3.66	.025	−.309	.095
R	.59					
R^2	.35					

Table 6. Prediction model of general well-being.

Variables	B	β	t	p	Part Correlations	Part Correlations[2]
Strategies		−.32	−2.31	.023	−.210	.044
Goals		−.08	−0.60	.552	−.055	.003
Clarity		−.23	−2.28	.025	−.208	.043
R	.49					
R^2	.24					

Regarding the predictive model of Emotional Well-Being, Limited Access to ER Strategies and Lack of Emotional Clarity were considered independent variables. The results (Table 5) confirmed the significance of the tested linear regression model, and the variables related to the Limited Access to ER Strategies, $\beta = -.40$, $p < .001$, and the Lack of Emotional Clarity, $\beta = -.32$, $p < .001$, were significant predictors of Emotional Well-Being, explaining 35% of the variance, $R^2 = .35$, $F(2, 92) = 24.42$, $p < .001$. The greatest influence of the Limited Access to ER Strategies stands out in the square of the part correlations, which explains 14.6% of the variance in Emotional Well-Being, compared to 9.5% explained by the Lack of Emotional Clarity.

In the predictive model of General Well-Being, the difficulties considered independent variables were Limited Access to ER Strategies, Lack of Emotional Clarity, and Difficulties Engaging in Goal-Directed Behaviour. The results (Table 6) confirmed the significance of the tested linear regression model, explaining 24% of the General Well-Being variance, $R^2 = .24$, $F(3, 91) = 9.71$, $p < .001$. Variables related to the Limited Access to ER Strategies, $\beta = -.32$, $p = .023$, and the Lack of Emotional Clarity, $\beta = -.23$, $p = .025$ were significant predictors of General Well-Being. The Limited Access to ER Strategies and Lack of Emotional Clarity showed similar unique contributions, respectively, 4.4% and 4.3% (Part Correlations[2]) from the 24% (R^2) of the General Well-Being variance explained by the model.

Thus, it is concluded that patients who reveal fewer difficulties in Access to ER Strategies and in Emotional Clarity, where one believes in their ability to regulate emotions and have a clearer understanding of the emotions experienced, presented higher levels of Emotional and General Well-Being. It is noteworthy to mention that the ability to engage in goal-directed behavior was not a significant predictor of well-being. One possible explanation might be that breast cancer patients, during the course of illness, have prioritized other strategies to maintain their well-being or have found other strategies to be more helpful in developing emotional resilience.

Conclusion

Breast cancer affects and disrupts the lives of many women, bringing forth multiple changes to deal with and intense emotions that need to be regulated (Sebri et al., 2022). As the intensity of the emotions rises, so does the need to try more and different ER strategies.

Difficulties engaging in Goal-Directed Behaviour were the most referred difficulty in ER by women with breast cancer, reflecting difficulties in concentrating and accomplishing tasks due to the experience of many unpleasant emotions. On the other hand, the difficulties in ER less commonly referred to are the Limited Access to ER Strategies, which refers to the disbelief of one's ability to regulate emotions while upset, and the Lack of Emotional Clarity, which refers to the extent to which one feels confused about what emotions are being experienced.

In general, when comparing the sample in this study with a healthy sample (Machado Vaz, 2018), we found that the patients in this study presented fewer difficulties in ER. They showed fewer difficulties in Impulse control, which refers to difficulties in controlling one's behavior when experiencing unpleasant emotions, in Lack of Emotional Awareness, which refers to the lack of attention and acknowledgment of emotions, and in Lack of Emotional Clarity, which refers to the confusion about the emotions they are feeling. This finding is interesting as it does not support the idea that cancer is associated with increased regulatory difficulties.

The levels of well-being were within the expected, based on the levels obtained in the reference study with an oncological sample. However, in our study, Physical and Emotional Well-Being presented significantly lower levels. Compared to other well-being domains, the Emotional Well-Being domain presented the lowest values, possibly due to the uncertainty, lack of control, and diversity of emotions experienced by these women during the oncological process (Durosini et al., 2022). It was also the domain that reported the strongest correlation with difficulties in ER.

Two models for predicting Emotional and General Well-Being were constructed based on the difficulties in ER. Limited Access to ER Strategies and Lack of Emotional Clarity were the most significant contributors to Emotional and General Well-Being, pointing to the importance of promoting these ER competencies. This conclusion reinforces the importance of some of the constructs emphasized by Hoemann et al. (2021). It complements the results of Durosini et al. (2022), clarifying the impact of some emotional abilities on well-being.

This study contains some limitations. Our sample showed a large dispersion in terms of age. However, all participants were retained in order not to reduce the sample size. Most participants were approached after daily treatments or consultations, having spent, in many cases, a long time in the hospital. They revealed fatigue and other side effects promoting malaise, which could imply less thoughtful answers to the issues in the different scales. Some patients considered the DERS extensive and repetitive, which may have raised difficulties in comprehending several questions. Moreover, some participants presented low education levels, which sometimes required the researcher's help to read and write the responses. Due to the lack of descriptive statistics on the DERS in studies with Portuguese breast cancer patients, we used the reference values of the DERS Portuguese version (Machado Vaz, 2018), which was applied to a healthy sample. In addition to this specific difference, the sample also differs in terms of age, marital status, and education. This constitutes a limitation in this study. Also, the values from Brucker et al. (2005) were used as reference values because they were obtained in the validation study of the FACT-G Portuguese version for women with breast cancer. However, there is no information regarding the moment of diagnosis of the reference sample by Brucker et al. (2005). Therefore, a hypothesis is raised that the

participants in this study may have differed at the time of diagnosis from the current sample, which requires caution in interpreting the results.

In conclusion, according to the Grass and Roemer functional assessment, this study showed that the women in this sample perceive low difficulties in ER. These findings are encouraging because they do not support the clinician's and researchers' concern that women might associate their decreased well-being with personal inadequacies. The participants refrained from characterizing themselves as having below-average emotional regulation capacity, even though they experienced reduced Emotional and General Well-Being. This suggests their acceptance of compromised well-being without self-blame. Moreover, this surprising result emphasizes the need to conduct more studies involving the analysis of difficulties in ER with oncological patients, specifically in patients with breast cancer. On the other hand, the women in this study presented low levels of Emotional Well-Being, which seems to be related to the Limited Access to ER Strategies and the Lack of Emotional Clarity, highlighting the importance of the acquisition of these two competencies throughout the disease process to promote emotional and general well-being. The identification of these two difficulties in ER can contribute to the improvement of psycho-oncological interventions given to patients during the breast cancer disease process and facilitate the belief these patients have in their ability to effectively regulate their emotions despite how upset they are by accessing and flexibly using a diverse range of ER strategies and increasing the knowledge and understanding of the emotions they are experiencing.

Declarations

Informed consent

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

Disclosure statement

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Author's contributions

IG collected the data. IG and LC performed the statistical analyses and drafted the manuscript. AIV, ST, and MPG reviewed and edited the manuscript. All authors interpreted the results, provided critical input to the different manuscript versions, and agreed to be responsible for the final manuscript version.

Ethics statement

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and was approved by an Institutional Review Board/Ethics committee. See details under Methods.

Data availability

Data from the current study are available from the corresponding author upon reasonable request.

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