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The benefits of family-centered care for parental self-efficacy and psychological well-being in parents of children with cancer

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Abstract:	<p>The purpose of this study was to examine the direct and indirect links between the perception of family-centered care (FCC) and psychological well-being via the perceived self-efficacy of parents of children with cancer. This study also sought to identify the potential moderators of these links (treatment status and patient age). This cross-sectional study was conducted at the pediatric oncology wards of two Portuguese public hospitals. The consecutive sample comprised 251 parents (87.6% mothers) of children/adolescents (8-20 years old) diagnosed with cancer. Participants completed self-report questionnaires measuring their perception of family-centered care (family-centered services and providing general information), perceived self-efficacy (regarding healthcare and parenting role) and psychological wellbeing. Results from the Structural Equation Modeling suggested that parents' perception of FCC was indirectly, but not directly, linked to psychological well-being via perceived self-efficacy. Multi-group analyses suggested that this mediation model was valid across treatment status (on vs. off-treatment) and patient age groups (children vs. adolescents). These findings highlighted that, through the implementation of FCC, healthcare professionals may promote parents' perceived self-efficacy and, consequently, their psychological well-being. Results also suggest that FCC may equally operate on parents' psychosocial functioning, regardless of treatment status or patient age. Overall, our findings reinforced the benefits of FCC practices in pediatric oncology wards.</p>	
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FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

The benefits of family-centered care for parental self-efficacy and psychological well-being in
parents of children with cancer

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FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Abstract

The purpose of this study was to examine the direct and indirect links between the perception of family-centered care (FCC) and psychological well-being via the perceived self-efficacy of parents of children with cancer. This study also sought to identify the potential moderators of these links (treatment status and patient age). This cross-sectional study was conducted at the pediatric oncology wards of two Portuguese public hospitals. The consecutive sample comprised 251 parents (87.6% mothers) of children/adolescents (8-20 years old) diagnosed with cancer. Participants completed self-report questionnaires measuring their perception of family-centered care (family-centered services and providing general information), perceived self-efficacy (regarding healthcare and parenting role) and psychological wellbeing. Results from the Structural Equation Modeling suggested that parents' perception of FCC was indirectly, but not directly, linked to psychological well-being via perceived self-efficacy. Multi-group analyses suggested that this mediation model was valid across treatment status (on vs. off-treatment) and patient age groups (children vs. adolescents). These findings highlighted that, through the implementation of FCC, healthcare professionals may promote parents' perceived self-efficacy and, consequently, their psychological well-being. Results also suggest that FCC may equally operate on parents' psychosocial functioning, regardless of treatment status or patient age. Overall, our findings reinforced the benefits of FCC practices in pediatric oncology wards.

Keywords: family-centered care; parents; pediatric cancer; psychological well-being; self-efficacy.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Introduction

Pediatric cancer is a life-threatening condition requiring intensive treatments with adverse side effects and long-term impairments for the child (Long & Marsland, 2011; Patterson, Holm, & Gurney, 2004). Unsurprisingly, cancer poses significant challenges for the ill child and also for his/her family (Patterson et al., 2004), especially for parents, who are responsible for providing ongoing care. Most parents cope well with this disruptive experience; however, a subset of them report psychological distress (e.g., anxiety and depressive symptoms; see Vrijmoet-Wiersma et al., 2008, for review) and poorer quality of life (Klassen et al., 2012).

The risk for parents' psychological distress arises from the experience of being simultaneously a parent and a caregiver of a child with a serious health condition (Raina et al., 2004). Immediately after the diagnosis, parents must learn to perform difficult tasks, such as administering medication, monitoring side effects, and planning medical appointments (Clarke, Fletcher, & Schneider, 2005; Klassen et al., 2012). Due to the technical and emotional requirements of these new obligations, parents may have doubts about whether they can successfully perform their new and unexpected role as a caregiver. Simultaneously, parents must carry on with the usual care requirements of their child (Clarke et al., 2005), adding in the challenges brought on by cancer, such as the child's intense emotional reactions (Patterson et al., 2004) and behavioral changes (Clarke et al., 2005). These changes in the parenting role may undermine parents' confidence to successfully handle their child's problems. In fact, mothers of children with cancer reported a less positive image of themselves as mothers compared to the mothers of healthy children (Caroli & Sagone, 2014). Similarly, parents of children with diabetes reported lower self-efficacy regarding their parenting role when compared to the parents of healthy children (Rodrigue, Geffken, Clark, Hunt, & Fishel, 1994).

The social-ecological model of adaptation and challenge provides a broad framework for understanding why some parents cope well with the pediatric cancer experience while others report psychosocial difficulties (Kazak, Rourke, & Navsaria, 2009). In pediatric oncology settings, due to the nature of a cancer diagnosis, the interactions between parents and the multidisciplinary healthcare team (e.g., doctors, nurses, social workers, and psychologists) are frequent and intense, both during treatment and in the follow-up phase. Therefore, the healthcare context becomes a significant system in the ecology of the child and the family. Specifically, the quality of the interactions between the family and the healthcare team may shape parental adaptation (Kazak et al., 2009). As such, this study's aim was to

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

clarify the association between family-centered care (FCC) and the psychological well-being of parents of children/adolescents with cancer.

Family-Centered Care: Parental Benefits

During the past few decades, changes have occurred in the way healthcare is delivered in the pediatric oncology setting (Watt et al., 2013). A significant part of the treatment is now implemented at home, and parents have become more actively involved in their child's care (Holm, Patterson, & Gurney, 2003; Klassen et al., 2009; Watt et al., 2013), collaborating with the healthcare team. The partnership between parents and professionals is consistent with a model of healthcare delivery known as FCC (Kuo et al., 2012; Rosenbaum, King, Law, King, & Evans, 1998). Based on a family systems framework, the main tenet underlying this model is that family plays a pivotal role in the child's life (King, Teplicky, King, & Rosenbaum, 2004). As such, the FCC approach is grounded on the following general principles: (1) sharing of appropriate and unbiased information; (2) accepting family diversity and respecting the preferences, skills, and expertise of its members; (3) encouraging and supporting parents' participation in their child's care and decision-making, accepting their preferred level of involvement; (4) negotiating the roles, responsibilities, and desired care outcomes; and (5) tailoring practices to the child's and family's needs and strengths (Kuo et al., 2012).

The growing recognition of FCC as the standard of care in pediatric units (Kuo et al., 2012) is supported by its potential benefits for the child and his/her family. Research in the field of pediatric conditions has provided evidence for the association between FCC and the child's adaptation (Russel, Beckmeyer, & Su-Russel, 2018), parents' psychological adjustment (e.g., reduced anxiety, depression, and higher levels of well-being), and their satisfaction with care (see King et al., 2004 for a review). Despite the growing body of empirical evidence on FCC and its correlates, there is a lack of research specifically addressing the potential benefits of this approach for parents of children with cancer (Dix et al., 2009; Holm et al., 2003). So far, the few available studies have suggested that the provision of FCC was associated with parents' psychosocial health (Dix et al., 2009), quality of life (Crespo, Santos, Tavares, & Salvador, 2016; Klassen et al., 2009), and life satisfaction (Crespo et al., 2016).

Parents' Perceived Self-Efficacy

Given the emphasis on the family's needs and strengths, the provision of FCC is frequently recognized as having empowering consequences for parents (Mikkelsen & Frederiksen, 2011). Thus, the concept of the parents' perceived self-efficacy can be especially useful to understand how FCC operates

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

in relation to adaptation. Perceived self-efficacy, pertaining to the confidence in one's ability to successfully perform an action required to produce the desired outcome (Bandura, 1997), has been consistently identified as a critical construct for individual adaptation. In fact, theoretical models for pediatric conditions have highlighted the importance of parental self-perception for parents' psychosocial health (e.g., Raina et al., 2004). In the context of pediatric cancer, research has shown that those parents who were more self-efficacious regarding their ability to successfully address the illness' challenges reported lower levels of distress (Best, Streisand, Catania, & Kazak, 2001; Harper et al., 2013; Sloper, 2000).

Previous studies have supported that the FCC approach is associated with parental self-perception, namely, increased self-efficacy (see King et al., 2004 for review). A qualitative study provided insight into this association, suggesting that FCC practices may enhance parents' knowledge about their child's condition and reduce caregiving strains, thus fostering the parents' sense of competency regarding their caregiving responsibilities (Washington & Schwartz, 1996). When health professionals implement FCC principles, they show that they value the parents' expertise (Smith, Swallow, & Coyne, 2015) and recognize them as providers of critical information about their child and the family's needs and strengths (Rosenbaum et al., 1998).

Concerning the specific context of pediatric cancer, to our knowledge, there is only a quantitative study exploring the link between FCC and parental self-perception; this study suggested that FCC was associated with higher self-esteem (Dix et al., 2009). Qualitative research on the topic has suggested that FCC practices may enhance the parents' sense of their ability to perform tasks related to their roles as caregivers and parents of children with cancer (e.g., monitoring symptoms and advocating for the child; Holm et al., 2003). Studies have also found that FCC practices provided parents with reduced caregiving strains (Watt et al., 2013) and a better sense of control (Holm et al., 2003; Watt et al., 2013), possibly enabling higher levels of perceived self-efficacy.

Overall, empirical findings, so far, have provided evidence for the association between FCC and parental positive outcomes. Nonetheless, studies that identify the mechanisms through which FCC is associated with positive changes in parents' psychosocial functioning are still scarce. Dunst and Trivette (2009) found evidence for an indirect association between FCC and parents' psychological health via self-efficacy beliefs in the generic field of pediatric conditions. The test of this specific mechanism in parents of children with cancer is yet to be addressed. Given that the parents' and child's psychological

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

adaptation are significantly related (e.g., Okado, Long, & Phipps, 2014), identifying potential factors that promote parents' psychological well-being may be an important way of indirectly promoting the child's adaption to this disruptive experience.

The Present Study

This study tested the direct and indirect links between parents' perception of FCC and psychological well-being via perceived self-efficacy in the context of pediatric cancer. As parents encounter different challenges at different points of the illness course (Alderfer & Kazak, 2006) and of their child's development (Kupst & Bingen, 2006), we further examined the moderating role of treatment status (on- vs. off-treatment) and the patient age groups (children vs. adolescents) on the referred links. Accordingly, four theory-driven hypotheses were formulated. Parents' perception of FCC was hypothesized to be positively associated with perceived self-efficacy (hypothesis 1) and psychological well-being (hypothesis 2). Perceived self-efficacy was hypothesized to be positively associated with psychological well-being (hypothesis 3). Additionally, we predicted that perceived self-efficacy would mediate the link between parents' perception of FCC and their psychological well-being (hypothesis 4). Regarding the possible moderating role of treatment status and patient age group, given the scarcity of previous data on the role of these variables, no specific predictions were made.

Methods

Procedure

This cross-sectional study was approved by the ethical committees of the Portuguese Institutes of Oncology in both Lisbon and Porto. Parents were approached at the pediatric wards between August 2015 and February 2017. Eligible participants were the primary caregivers (mother or father) of a child/adolescent who: (1) had been diagnosed with malignant cancer for at least 3 months; (2) was aged between 8 and 20 years; (3) and receiving antineoplastic treatment (on-treatment) or had finished treatment within the last 5 years (off-treatment). Exclusion criteria included comorbidity with another chronic health condition, major developmental delay, or end-of-life care. All eligible parents were invited to participate. Those willing to participate filled out a written consent after detailed information was provided about the study. Of the 253 eligible participants approached, only two refused to participate due to time constraints and an unwillingness to revisit the cancer. Participants completed self-report questionnaires while waiting for medical appointments or procedures, with the support of a researcher

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

whenever needed. It must be noted that children off-treatment regularly visit the hospital for follow-up medical appointments and exams.

Measures

Perception of FCC

The parents' perception of FCC was measured as a latent variable comprising the two subscales—family-centered services and providing general information—from the modified version of the Measure of Process of Care (MPOC-20) for the pediatric oncology setting (Klassen et al., 2009). The first subscale (15 items) measures the extent to which care is comprehensive, reflects a partnership with parents, treats them with respect, and provides adequate information about the child (e.g., “In the past year, to what extent do the people who work with your child provide opportunities for you to make decisions about treatment?”). The providing general information subscale (5 items) refers to activities focused on general information needs (e.g., “In the past year, to what extent does the organization where you receive services give you information about the types of services offered at the organization or in your community?”). Items were scored on a 7-point Likert scale ranging from 7 (*To a very great extent*) to 1 (*Not at all*), with higher scores indicating more frequent FCC practices. In our sample, the Cronbach's alpha was .89 for family-centered services and .78 for the providing general information indicators. Additionally, the composite reliability coefficient for the latent variable was .81.

Perceived Self-efficacy

Perceived self-efficacy was assessed as a latent variable consisting of two observed indicators: self-efficacy regarding the parenting role and self-efficacy regarding healthcare. The first was measured using the efficacy dimension from the Parenting Sense of Competence scale (PSOC; Johnston & Mash, 1989), which measures parents' beliefs in their own ability to address parenting challenges (e.g., “I honestly believe I have all the skills necessary to be a good mother/father to my child.”). In this study, participants were asked to answer items regarding their ill child. The seven items were rated on a 5-point Likert scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*), with higher scores suggesting a greater perceived self-efficacy. Parents' perceived self-efficacy regarding healthcare was measured with a 12-item version of the Children's Hospital of Philadelphia Self-Efficacy Scale (CHOP-SES; Best et al., 2001). Parents were asked to rate their level of confidence in successfully accomplishing tasks or situations related to their child's care and treatment (e.g., “Working with the healthcare team to make sure your child's need are met”). Answers were provided on a 5-point Likert scale ranging from 1 (*Not at all*

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

confident in this situation) to 5 (*Extremely confident in this situation*), with higher scores indicating higher levels of perceived self-efficacy. The Cronbach's alpha in this study was .74 for self-efficacy regarding the parenting role indicator and .84 for self-efficacy regarding the healthcare indicator. The composite reliability coefficient for the latent variable was .61.

Psychological Well-being

Parents' psychological well-being was measured with the 18-item version of Ryff's Psychological Well-being scales (PWB; Ryff & Keyes, 1995). The six subscales cover the components of psychological well-being: self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, and autonomy. Participants rated items from 1 (*Strongly disagree*) to 6 (*Strongly agree*), with higher scores indicating higher levels of psychological well-being. In our sample, the indicators of PWB (each comprising only 3 items) showed low values of internal consistency ($\alpha \leq .60$). Thus, for preliminary analysis, we used the global score of PWB, which yielded a Cronbach's alpha of .83. Additionally, the composite reliability coefficient for the latent variable, comprising the six observed indicators, was .81.

Sociodemographic and clinical characteristics

Participants provided sociodemographic (e.g., age, sex) and clinical information (e.g., diagnosis, treatment status). The family's socioeconomic status (SES) was classified into three levels (low, medium, or high) based on the education levels and current jobs of the child's caregivers (Simões, 1994).

Data Analysis

Preliminary analyses were conducted using SPSS v.22. (IBM SPSS Inc., Chicago, IL). Descriptive statistics were performed for sociodemographic, clinical, and study variables. Differences between treatment status (on- vs. off-treatment) and the patient age groups (children vs. adolescents) on parents' perception of FCC and perceived self-efficacy indicators were examined through multivariate analyses of variance (MANOVAs). When multivariate effects were significant, univariate analyses were performed to examine which indicators differed between groups. One-way analysis of variance (ANOVA) was performed to explore differences between groups on reported global psychological well-being. Finally, the pattern of correlations between study variables was examined.

To test the mediation model, structural equation modeling (SEM) with latent variables was performed using Analysis of Moment Structures v.22 (AMOS Development Corporation, Meadville, PA) with maximum likelihood estimation. The model's goodness-of-fit was examined based on the threshold

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

values for main fit indexes: nonsignificant χ^2 ($p > .05$), CFI $\geq .95$, RMSEA $\leq .06$ ($p > .05$), and SRMR $\leq .08$ for a good fit (Hu & Bentler, 1999). Following a two-step approach (Kline, 2011), we first examined the measurement model through a confirmatory factor analysis (CFA) to test the adequacy of multidimensional constructs. A composite reliability value was also determined to examine construct reliability of the latent variables: values above .50 were acceptable (Hair, Anderson, Tatham, & Black, 1998). Second, we examined the structural model, testing the hypothesized mediation model. Following Preacher and Hayes' (2008) recommendations, the significance of the indirect effect was estimated using a bootstrap resampling procedure with 2,000 samples and a 95% bias-corrected confidence interval (BC 95% CI). Finally, through a multigroup approach, we tested whether the mediation model varied as a function of treatment status (on- vs. off-treatment) and patient age (children vs. adolescents). As suggested by Byrne (2010), we first tested if the measurement model was equivalent across groups; once measurement equality was established, structural invariance was examined. The chi-square difference method ($\Delta\chi^2$) was used to compare the unconstrained model with the models in which equality constraints were imposed to factor loadings (i.e., measurement invariance) and to factor loadings, variance, and covariance (i.e., structural invariance; Byrne, 2010). A statistically significant $\Delta\chi^2$ was considered as evidence of model invariance.

Results

Participants

The sample comprised 251 parents of children/adolescents with cancer, mainly mothers ($n = 220$, 87.6%), aged between 27 and 62 years old ($M = 42.28$, $SD = 6.05$). Most of the families had a low socioeconomic status ($n = 110$, 43.8%). Patients were mainly boys ($n = 159$, 63.3%), aged between 8 and 20 years old ($M = 12.96$; $SD = 3.15$). Most of them were diagnosed with leukaemia ($n = 110$, 43.8%) or lymphoma ($n = 77$, 30.7%) and were off-treatment ($n = 136$, 54.2%). Table 1 shows the sample's sociodemographic and clinical characteristics.

Preliminary Analyses

Descriptive statistics and comparisons between groups are presented in Table 2. First, the results for parents' perception of FCC showed a statistically significant multivariate effect according to treatment status [Wilks' $\lambda = .97$, $F(2, 248) = 3.41$, $p = .04$, $\eta_p^2 = .027$]. Specifically, univariate analyses showed that parents of children on-treatment reported lower scores on providing general information compared to parents of children off-treatment. Additionally, no multivariate effects were found according to patient

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

age group [Wilks' $\lambda = .99$, $F(2, 248) = .54$, $p = .58$, $\eta_p^2 = .004$]. Concerning perceived self-efficacy, no multivariate effects were found according to treatment status [Wilks' $\lambda = .97$, $F(2, 248) = .91$, $p = .41$, $\eta_p^2 = .007$] or patient age group [Wilks' $\lambda = .98$, $F(2, 248) = 2.39$, $p = .09$, $\eta_p^2 = .019$]. Nevertheless, univariate analyses showed a statistically significant difference between parents of children and parents of adolescents, with the latter group reporting lower perceived self-efficacy regarding healthcare. Similarly, no differences were found in global psychological well-being across treatment status [$F(1, 249) = 1.54$, $p = .22$, $\eta_p^2 = .006$] and patient age groups [$F(1, 249) = .82$, $p = .37$, $\eta_p^2 = .003$].

As shown in Table 3, correlation analyses showed that parents' perception of FCC dimensions (family-centered services and providing general information) were positively associated with both indicators of perceived self-efficacy (regarding parenting role and healthcare), thus supporting hypothesis 1. Positive correlations were found between both indicators of parents' perception of FCC and global psychological well-being, thus supporting hypothesis 2. Additionally, as predicted in hypothesis 3, both dimensions of perceived self-efficacy were positively associated with global psychological well-being.

Measurement Model

Prior to testing the mediation model, a confirmatory factor analysis (CFA) was performed to test the measurement model. Three latent variables (parents' perception of FCC, perceived self-efficacy, and psychological well-being) were specified and allowed to correlate. The results showed a good fit: $\chi^2_{(33)} = 58.41$ ($p = .004$); CFI = .96; RMSEA = .06 ($p = .33$; 90% CI = .03, .08); SRMR = .04. As presented in Table 3, all observed indicators had significant loadings on their latent variables. The squared multiple correlations (R^2_{sme}) between each observed indicator and the remaining variables were lower than .90, and the tolerance values ($1 - R^2_{\text{sme}}$) were above .10, suggesting that the variables measured distinct constructs (Kline, 2011). Except for the dimensions of psychological well-being, all the observed indicators and latent variables showed acceptable internal consistency coefficients, as aforementioned. Regarding the correlations among latent variables, all the constructs were positively correlated with each other (Table 3).

Structural Model

Next, a structural model was built to test the hypothesized mediation model. Following the procedures described by Kline (2011), we removed the only nonsignificant path, the direct link between parents' perception of FCC and psychological well-being. The trimmed model (Figure 1) had a good fit: $\chi^2_{(34)} = 59.39$ ($p = .01$); CFI = .96; RMSEA = .06 ($p = .35$; 90% CI = .03, .08); SRMR = .04. Results

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

showed that parents' perception of FCC had a significant effect on perceived self-efficacy ($\beta = .45, p \leq .001$), which was, in turn, linked with psychological well-being ($\beta = .55, p \leq .001$). The indirect effect of parents' perception of FCC on psychological well-being via perceived self-efficacy was statistically significant ($\beta = .24, p \leq .001$; BC 95% CI = .17, .34), supporting hypothesis 4. Results from multigroup analyses (Table 4) confirmed the invariance of the mediation model for the two treatment status groups (on-treatment vs. off-treatment: $\Delta\chi^2_{(2)} = 1.91, p = .39$; $\Delta\text{CFI} = .01$) and the patients' age groups (children vs. adolescents: $\Delta\chi^2_{(2)} = 1.17, p = .56$; $\Delta\text{CFI} = .00$).

Discussion

Three main findings emerged from this study. First, providing general information practices were perceived as less frequent among parents of children on-treatment compared with parents of children off-treatment. Moreover, parents of adolescents reported lower perceived self-efficacy regarding healthcare compared to parents of children. Second, mediation analyses showed that parents' perception of FCC was associated with greater perceived self-efficacy, which, in turn, was linked with increased psychological well-being. Finally, multigroup analyses confirmed the invariance of these links across treatment status and patient age groups.

Regarding group differences, parents of children on-treatment reported less frequent providing general information practices compared to parents of children off-treatment. Research has acknowledged that during treatment, parents experience greater distress (e.g., Boman, Lindahl, Björk, 2003), which can result in difficulties in retaining a great amount of information (Eden, Black, MacKinlay, & Emery, 1994). This implies that professionals may center much of their effort on providing critical information for the adequate implementation of the child's treatment. Hence, general information may not be perceived as critical as the information specific and directly related to the child's health status. In turn, when children successfully complete their treatment, professionals may be particularly cognizant of a shift in the family's focus from the child's survival to getting their lives "back to normal" (e.g., re-establishing contact with family and friends, returning to school; Wakefield et al., 2011). Thus, professionals may then reinforce general information practices, such as providing information to other family members or providing advice about contacting parents' organizations.

Our findings also suggest that parents of adolescents perceived themselves as less self-efficacious regarding healthcare compared to the parents of children. Because adolescence is a time of an increased pursuit of autonomy, parents may experience greater difficulty in closely supervising and

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

monitoring their adolescent's healthcare issues. Adding to this challenge, studies with chronically ill pediatric patients found that nonadherence to medical recommendations is frequent among adolescents (Fiese & Everhart, 2006). As a result, parents of adolescents may feel less confident in their ability to perform their role as caregivers of pediatric cancer patients.

Regarding mediation analyses, findings showed that parents' perception of FCC was indirectly, but not directly, linked with parents' psychological well-being via their perceived self-efficacy, as previously suggested in pediatric conditions literature (Dunst & Trivette, 2009). First, consistent with previous studies (e.g., Dix et al., 2009; King et al., 2004), when parents perceived FCC practices as more frequent, they reported higher self-efficacy. This finding suggests that FCC practices may contribute to reinforce parents' beliefs about their ability to accomplish the challenges of parenting and caring for the ill child. For example, the provision of adequate and relevant information may foster parents' knowledge and skills that they perceive as critical to cope with caregiving and parenting challenges. Additionally, encouraging parents to take an active role in healthcare may convey the underlying message that professionals trust parents' abilities. Furthermore, respecting parents' preferences regarding the nature of their involvement in their child's care may prevent engagement in situations perceived as exceeding the parents' abilities and, as such, may provide opportunities for successful experiences, leading to increased self-efficacy.

Consistent with previous research in pediatric oncology (e.g., Best et al., 2001; Harper et al., 2013), our findings showed that parents' perceived self-efficacy was linked with increased psychological well-being. Based on Bandura's social cognitive theory (1997), we may hypothesize that parents who judged themselves as less capable of handling challenges may focus on their lack of skills to accomplish the caregiving demands, thus, experiencing higher levels of anxiety and feelings of hopelessness. Additionally, it is possible that parents with higher self-efficacy tend to approach challenges with an optimistic attitude, thereby experiencing increased psychological well-being. Indeed, psychological well-being goes beyond the simple absence of psychopathological symptoms, encompassing positive feelings and attitudes toward life (Ryff, 1989). Another possible explanation is that when a child is diagnosed with cancer, a parent's life is "engulfed" by his/her role as a protector of the ill child (Young, Dixon-Woods, Findlay, & Heney, 2002), who is particularly dependent because of his/her serious health condition. Given the critical importance of their dual roles as parent and caregiver, parents' reports of psychological well-being may be particularly shaped by their appraisals of their ability to perform these roles.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Finally, the results from mediation analyses were reinforced by the evidence of the model's invariance across treatment status and patient age groups. Although parents of children and parents of adolescents may encounter different challenges arising from their child's developmental stage, our results suggest that, regardless of the patient's developmental stage, parents' perception of FCC may be equally linked to their self-efficacy, which, in turn, seems to be an important resource for their psychological well-being. Similarly, the perception of FCC and self-efficacy seemed to be equally important when children were on- and off-treatment, even though different phases of the illness comprise different psychosocial challenges (Rolland, 1987). It is noteworthy that the model's invariance may reflect the FCC guideline that healthcare practices must fit the specific needs and strengths of each family (Kuo et al., 2012). It is possible that healthcare practices, when adequately addressing the specific challenges and needs of the parents, may relate to their adaptation outcomes, regardless of the different treatment status and the children's developmental stage. This result may further suggest that FCC is important in addressing the needs of parents whose children are on-treatment, as well as those off-treatment, which tend to be less valued. These findings support the general applicability and relevance of FCC practices in the context of pediatric oncology.

Limitations and Strengths

Our findings should be discussed considering several limitations. First, the cross-sectional study design does not allow to infer the direction of the relationship between the study variables. It is possible that, for instance, parents reporting higher levels psychological well-being view themselves as more self-efficacious and hold a more positive perception of FCC practices. Second, data were collected at two of the four existing pediatric oncology wards in Portugal. Therefore, caution is needed when generalizing our results to other contexts. Moreover, despite the fact that both wards follow the same standards of care, this does not guarantee that FCC principles are equally implemented. Another shortcoming concerns the high percentage of mothers among the participants, precluding the examination of sex differences. Moreover, future studies could assess the experience of other family members (e.g., patients, siblings, grandparents), and the perception of healthcare professionals (e.g., nurses). Future research also ought to explore similarities and differences regarding FCC in specific groups based on clinical and sociodemographic variables (e.g., type of diagnosis, relapse, prognosis, single parents).

Notwithstanding the aforementioned limitations, this study addressed important gaps in the pediatric oncology literature, broadening the empirical knowledge on the benefits of FCC, as previously

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

recommended (e.g., Klassen et al., 2007). Specifically, this study accounted for both direct and indirect relationships among parents' perception of FCC and their psychosocial functioning, adding knowledge on whether FCC benefits parents and on the mechanisms through which this may operate. Moreover, focusing on parents' self-efficacy, this study extends research on a surprisingly understudied topic in pediatric oncology (Klassen et al., 2007). Finally, the use of SEM with latent constructs allowed us to explore complex relationships among different factors, offering a comprehensive understanding of the experiences of parents of children with cancer.

Implications for Practice and Conclusions

Relevant implications for healthcare professionals in the field of pediatric oncology emerged from this study. First, our findings reinforce the need for implementing practices directed to parents' general information needs, especially when the child is on-treatment. For instance, sharing information in different formats or supporting contacts with other parents experiencing the same situation could be helpful to optimize this specific dimension of healthcare delivery. Moreover, practices that foster parents' perceived self-efficacy could be particularly meaningful for parents of adolescents who hold more negative perceptions regarding their ability to adequately perform the healthcare tasks. Second, our findings also suggested that the provision of FCC may promote parents' positive beliefs in their ability to deal not only with healthcare demands but also with parenting challenges. Open communication, sharing information and enabling a partnership are among the FCC components previously described as promoting parents' perception of competency (Washington & Schwartz, 1996). Future research could clarify which specific FCC practices strongly carry the potential to enhance self-efficacy, ultimately helping healthcare professionals to optimize the quality of the provided care.

Furthermore, our findings suggested that perceived self-efficacy may play an important role in parents' psychological well-being, suggesting that interventions directed to empowering parents could be one of the targets of the multidisciplinary healthcare team. In line with self-efficacy literature (Bandura, 1997), parents' self-efficacy may have a powerful effect not only on their psychological well-being but also on their effort and perseverance when facing challenges regarding healthcare and parenting roles. Given that parents play a crucial role in implementing treatment and monitoring their child's health status, helping parents to feel confident when performing their role might ultimately be beneficial for the child's successful treatment and development.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

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Compliance with Ethical Standards

Disclosure of potential conflicts of interest: The authors declare that they have no conflict of interest.

Research involving Human Participants and/or -Animals: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

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FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Table 1. Sociodemographic and clinical characteristics of the sample.

	<i>n (%) / M (SD)</i>
<i>Caregivers</i>	
Family caregiver	
Mothers	220 (87.6%)
Fathers	31 (12.4%)
Age	42.28 (6.05)
Marital Status	
Married / Cohabiting	190 (78.4%)
Single / Divorced	61 (21.6%)
Education level (completed)	
Primary	22 (8.8%)
Basic/Secondary	167 (66.5%)
Graduate/Post-graduate	62 (24.7%)
Socioeconomic status	
Low	110 (43.8%)
Medium	97 (38.6%)
High	44 (17.5%)
Employment status	
Employed	153 (61.0%)
Sick leave, unemployed, retired	98 (39.0%)
Other children at home	
Yes	161 (64.1%)
No	90 (35.9%)
<i>Pediatric patients</i>	
Sex	
Male	159 (63.3%)
Female	92 (35.9%)
Age group	
Children (8–12y)	121 (48.2%)
Adolescents (13–20y)	130 (51.8%)
Cancer diagnosis	
Leukaemia	110 (43.8%)
Lymphoma	77 (30.7%)
Solid tumour (extra CNS tumour)	47 (18.7%)
Central Nervous System (CNS) tumour	13 (5.2%)
Langerhans's cell Histiocytosis	4 (1.6%)
Treatment status	
On-Treatment	115 (45.8%)

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Off-Treatment	136 (54.2%)
Relapse	
No	232 (92.4%)
Yes	19 (7.6%)
Time since diagnosis (months)	30.06 (26.60)

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Table 2. Descriptive statistics and between-groups comparisons among study variables.

Variable	Treatment status		Patient's age					
	On	Off			Children	Adolescents		
	(<i>n</i> = 115)	(<i>n</i> = 136)			(<i>n</i> = 121)	(<i>n</i> = 130)		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>F</i> (_{1,249})	η_p^2	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>F</i> (_{1,249})	η_p^2
1. Family-Centered Services ^a	5.15 (1.25)	5.43 (1.06)	3.54	.014	5.25 (1.24)	5.35 (1.07)	0.54	.002
2. Providing General Information ^a	4.31 (1.53)	4.80 (1.45)	6.76**	.026	4.59 (1.58)	4.57 (1.44)	0.01	.000
3. Self-efficacy regarding Parenting Role ^a	3.82 (.56)	3.86 (.60)	0.26	.001	3.87 (.54)	3.82 (.61)	0.52	.002
4. Self-efficacy regarding Healthcare ^a	4.10 (.51)	4.04 (.48)	0.80	.003	4.14 (.48)	4.00 (.50)	4.73*	.019
5. Psychological Well-being ^b	4.47 (.71)	4.57 (.64)	1.54	.006	4.57 (.68)	4.48 (.68)	1.17	.005

^a Multivariate analysis of variance (MANOVA). ^b Univariate Analysis of Variance (ANOVA) with psychological well-being global score as dependent variable.

* $p \leq .05$. ** $p \leq .01$.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Table 3. Intercorrelations, factor loadings, and reliability for psychosocial variables.

<i>Variable</i>	1	2	B	3	4	C	5	6	7	8	9	Factor loadings	R^2_{smc}	1- R^2_{smc}	α
A. Family-Centered Care			.47**			.20**									.81
1. Family-Centered Services												.93	.87	.13	.89
2. Providing General Information	.64**											.70	.49	.51	.78
B. Perceived Self-Efficacy						.57**									.61
3. Self-efficacy regarding parenting role	.31**	.15*										.68	.46	.54	.75
4. Self-efficacy regarding healthcare	.30**	.17**		.44**								.64	.42	.59	.84
C. Psychological Well-being	.24**	.29**		.39**	.35**										<i>.83 / .81</i>
5. Self-Acceptance	.16*	.09		.36**	.32**							.74	.54	.36	.54
6. Personal Growth	.10	.14*		.19**	.24*		.37**					.53	.28	.42	.16
7. Purpose in Life	.19	.12*		.26**	.27*		.60**	.43**				.78	.61	.40	.57
8. Positive Relations with Others	.13*	.08		.20**	.08		.46**	.34**	.53**			.65	.43	.53	.48
9. Environmental Mastery	.16*	.16*		.31**	.32**		.49**	.33**	.49**	.48**		.68	.46	.62	.60
10. Autonomy	.05	.09		.22**	.19**		.25**	.27**	.31**	.29**	.40**	.44	.19	.81	.48

Note. Intercorrelations and Cronbach's alphas for psychological well-being global score are presented in italic, and intercorrelations and composite reliability values for the latent variables are shown in bold.

* $p \leq .05$. ** $p \leq .01$.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Table 4. Fit indices and multigroup analyses testing model invariance across patient's age groups and treatment status.

	χ^2	<i>df</i>	CFI	RMSEA [90% CI]	SRMR	$\Delta\chi^2$	Δdf	ΔCFI
Treatment status								
<i>Summary of fit statistics</i>								
On-treatment	49.67*	34	.95	.06 [.01, .10]	.06			
Off-treatment	56.18*	34	.94	.07 [.03, .10]	.06			
<i>Multi-group analyses</i>								
Unconstrained model	105.85**	68	.95	.05 [.03, .06]	.06	-	-	-
Measurement weights	118.02***	74	.93	.05 [.03, .07]	.06	12.17	6	< .01
Structural weights	119.93***	76	.94	.05 [.03, .06]	.06	1.91	2	< .01
Patient's age								
<i>Summary of fit statistics</i>								
Children	62.94**	34	.93	.08 [.05, .12]	.07			
Adolescents	70.74***	34	.89	.09 [.22, .27]	.07			
<i>Multigroup analyses</i>								
Unconstrained model	133.68***	68	.91	.06 [.05, .08]	.07	-	-	-
Measurement weights	139.89***	74	.91	.06 [.04, .08]	.08	6.21	6	< .01
Structural weights	141.06***	76	.91	.06 [.04, .07]	.07	1.17	2	< .01

Note. FCC = Family-Centered Care; PSE = Perceived Self-Efficacy; PWB = Psychological Well-being.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

FAMILY-CENTERED CARE, SELF-EFFICACY AND WELL-BEING

Figure 1. Structural equation model testing the direct and indirect effects of parents' perception FCC on psychological well-being, via perceived self-efficacy. Solid lines represent hypothesized direct effects. Dash line represents hypothesized indirect effect. Nonsignificant paths are not represented (trimmed model). Bold figures represent the standardized regression weights for the direct paths; nonbold figure represent the standardized regression weight for the indirect path. For simplicity, measurement error terms are not shown.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.