Effectiveness of psychological interventions intended to promote adjustment of children with cancer and their parents: an overview

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Introduction

Childhood cancer is the second cause of death worldwide, after accidents only. According to data from the Spanish National Statistics Institute (2011), the incidence of cancer in the 0-19 years-old population in 2008 was 124 cases per million inhabitants, with 36,31 deaths per million. These rates are very similar to those of the European Union, where mortality rates are approximately 34.5 per million children (Eurostat, 2011).

The disease’s diagnosis involves a wearing process, generating high levels of stress, and causing changes in all areas, including health-related behavior (Valencia, Flores & Sanchez, 2006). Treatment is also a difficult process, since it includes invasive and painful medical procedures, some of which imply a life threat (Aldridge & Roesch, 2007). In spite of such evidence, survival rates for children between 0 and 14 years-old in Spain are good: 79% of cases 3 years after diagnosis and 77% of those within five years after diagnosis (National Institute of Statistics, 2011).

With regard to family’s adjustment, research shows higher vulnerability to anxiety, depression and physical illness. This is particularly significant for mothers, who are the main caregivers and have to handle with, in addition to daily demands, healthcare demands, fear of death and other family or financial issues (Sahler et al., 2005).

Abstract: This article aims at providing a general overview of psychological interventions intended to promote psychological adjustment of children with cancer and their parents. To achieve this goal, we reviewed published articles between 1998-2010, using a combination of the following keywords: psychosocial intervention, psychotherapy, trial, treatment, adjustment, well-being, adaptation, cancer, childhood cancer, pediatric cancer, anxiety and depression in the electronic databases: Psycinfo, Medline, Scielo, Lilacs, Psycodoc and Psyarticles. Fourteen articles were found and analyses show that some interventions had some efficacy in the psychological adjustment of children and their parents; nevertheless, there is a limited number of treatments that can in fact be considered effective. The convenience of psychological interventions is discussed and how they must comprehend strengths and the promotion of psychological health and should not be based solely on deficits and psychopathological models. Possibly, this re-orientation will help fostering significant clinic changes regarding the stress associated to cancer and its treatment.

Cancer and psychological adjustment

A large body of research on psychological adjustment of children with cancer (under treatment or survivors) indicates that this population is well adapted to the situation, suggesting that: i) they do not show higher levels of anxiety, depression, worse body image or lower self-esteem than same-aged “healthy” children; ii) they do not have fewer social peer relationships, are less popular, or have a worse quality of life than “healthy peers”. Both conclusions hold in the early stages of the disease and in the long-term, considering different ages (Barakat et al., 2003; Barakat, Kazak, Gallagher, Meeske & Stuber, 2000; Bragado, Hernández-Lloreda, Sanchez-Bernardos & Urban, 2008; Chao, Chen, Wang, Wu & Yeh, 2003; Fuemmeler, Brown, Williams & Potter, 2003; Langeveld, Stam, Grootenhuis & Last, 2002; Kazak, 2005; Meeske, Ruccione, Globe & Stuber, 2001; Newby, Brown, Pawletko, Gold & Whitt, 2000; Obuch, Parry, Chesler, Fritz & Repetto, 2005; Phipps, Jurberg & Long, 2009; Seitz, Besier & Golklick, 2007; Sorgen & Malen, 2002). These findings are usually interpreted through the prism of resilience, generally defined as the ability to cope and function normally in adverse contexts (Bragado, 2009).

However, some studies suggest that the good adjustment found in these children could be attributed to the use of a “repressive” coping style (which would lead them to report fewer symptoms than they have actually experienced). This way of coping with their condition implies that these children are not fully aware of their symptoms, or that scientific
approaches have used insensitive measures to their psychological problems (such as PTSD measures). In line with this argument, several papers report that children with cancer employ a repressive or a denial style at higher rates than healthy controls, and that this style is likely to remain until adulthood (Erickson & Steiner, 2001; Fuemmeler et al., 2003; Phipps, Larson, Long & Rai, 2006; Phipps et al., 2009). Nonetheless, this coping style should not always be considered as a negative feature, since data suggest that avoidant strategies may be very adaptive in certain situations, such as those included in cancer treatment (diagnosis, painful medical procedures) (Aldridge & Roesch, 2006; Phipps, 2007). Hence, as Kupst and Patenaude (2005) point out, it seems that there are not optimal coping strategies, but different ways of dealing with the situation, which may vary according to specific circumstances and individual characteristics.

In a similar vein, Maurice-Stam et al. (2009) suggest that this good adaptability may be due to a "response shift", meaning that the experience of having cancer may change the way children conceptualize problems, so that they see fewer problems than before. It is also possible that these children's adjustment is a consequence of using appropriate family coping strategies, as we can see on survivors of childhood cancer, who report an emotional growth after the disease, as well as feelings of happiness, well-being, hope, life satisfaction, greater proximity to family, greater appreciation of life, more future perspectives and higher quality of life (Chao et al., 2003, Erickson & Steiner, 2001; Meeske et al., 2001).

Despite this overall good performance, there is a small subgroup (10% - 30%), generally comprehending children who have suffered some damage in the CNS (as a result from the tumor or the treatment), who have a wide range of clinical significant psychological problems, such as: depressive symptoms, somatic, anxiety and low self-esteem, ineffective coping, school, family, social or work problems (Barakat et al., 2003; Grootenhuis & Last, 1997; Kazak, 2005; Kazak et al., 2003, Maurice-Stam, Oort, Last & Grootenhuis, 2008; Newby et al., 2000; Patenaude & Kupst, 2005; Robinson, Gerhardt, Vannata & Noll, 2009; Seitz et al., 2009).

**Parents´ psychological adjustment.**

Having a child diagnosed with cancer is one of the most severe stressors parents may experience during parenting process (Jurbergs, Long, Ticona & Phipps, 2009). Some studies have found high rates of PTSD symptoms in parents of children with cancer, ranging up to 60% when assessing the overall stress (Kazak et al., 2004, Robinson et al., 2009). In general, according to several studies, it could be stated that parents have more adjustment problems than their children (Phipps et al., 2006), as they present elevated levels of PTSD. These symptoms tend to remain stable up to two years after diagnosis, even though they usually decline after this period, reaching levels of stress comparable to the ones of the general population (Phipps, Long, Hudson & Rai, 2005).

On the other hand, other publications present a better scenario, indicating that parents are optimistic and that the experience of having a child with cancer made them become emotionally stronger, selecting new priorities in life and giving them a greater sense of personal force, an improvement in relationships and a better management of other stressors (Barakat et al., 2003, Barakat et al., 2000, Fernandez et al., 2009; Grootenhuis & Last, 1997; Jurbergs et al. 2009, Maurice-Stam et al., 2008). Kazak et al. (2007) believe that parents´ stress can be adaptive, since it alerts their social environment that they are in need of emotional support. Denial or avoidance can be also adaptive, helping these parents to tolerate stress and to fulfill their parental responsibilities, coping with emotional and treatment demands.

Therefore, childhood cancer affects physically and psychologically not only the child, but his/her entire family. This is the reason why it is necessary to develop effective interventions that promote health and help mitigating the psychological consequences of the disease, as well as reducing associated healthcare costs. Research in this field has experienced a remarkable, though slow, growth, probably due to the increase of survival rates in addition to higher scientific and government interest in improving health care for these children and their families.

**Research goal**

This paper aims at providing an overview of the effectiveness of psychological interventions designed to promote children with cancer or survivors’ adjustment and their parents’. To fulfill this purpose, we reviewed all published articles on this particular field within the 1998-2010 period.

**Method**

**Materials**

In order to achieve the proposed goal, our search focused on the following databases: PsychINFO, Medline, Scielo, LILACS, Psycarticles and Psicodoc. This particular choice is supported by the relevance and impact of publications contained in these repositories, thus representing sources for the most significant literature related to our assessment.

Key-word used to detect specific publications were: psychosocial intervention, psychotherapy, trial, treatment, adjustment, well-being, adaptation, cancer, childhood cancer, pediatric cancer, anxiety, and depression. These terms were combined in different ways, in order to provide our search with more robust results. These descriptors were chosen according to the thesaurus of different databases, restricting the search to articles published in scientific journals, including literature in both English and Spanish.
Procedure

Out of the articles found with the above mentioned keywords, we excluded those related to interventions with siblings, teachers, doctors or parents with cancer, qualitative or descriptive studies, the ones exploring non-psychological aspects of the disease, as well as theoretical reviews or meta-analytical ones.

Articles’ inclusion considered the following aspects: that the intervention would promote psychological adjustment of children with cancer (patients or survivors) or their parents’, that the article had been published within the time range mentioned above and that it contained any of the selected keywords. Therefore, we included randomized and non-randomized controlled trials (longitudinal or cross-section) and pre-post studies (those that compare results obtained before and after the intervention).

Regarding participants, we considered only studies who used parents of children affected by cancer, survivors of cancer, or patients themselves (children or adolescents) aged below 18 years-old, in the case of patients, and not exceeding 21 in the case of survivors (defined as patients who remained in remission, without treatment, for at least one year).


Results

Characteristics of selected articles

Fourteen articles met the criteria and involved a total of 509 children and adolescents, aged 6 months to 20 years-old (mean: 12 years-old), and 958 adults (parents or caregivers) aging 38 years-old on average. The most common children’s diagnoses were hematologic malignancies (leukemia, lymphomas), followed by sarcomas and brain tumors. Most participants were from the United States (9 studies), while the remaining studies (5 assessments) were distributed among different countries: Canada, Netherlands, Australia, Iceland and Mexico.

Eight articles were RCTs, in which interventions’ effects (present in the experimental group) were compared to control groups’ changes. This latter group received either standard care (Hoeckstra-Weebers, Heuvel, Jaspers, Kamps & Slip, 1998; Kazak et al., 2005; Sahler et al., 2005; Streisand, Rodriguez, Houch, Graham-Pole & Berlant, 2000), a psychological placebo (Hinds et al., 2000, Schwartz & Drotar, 2004), or remained on the waiting list without treatment (Butler et al, 2008; Kazak et al., 2004). Six studies used a pre-post design without control groups (Barakat et al., 2003; Barrera, Rokv & Doyle, 2002; McCaffrey, 2006; Svardottir & Sigurdardottir, 2005; Thygeson, Hooke, Claspaddle, Robbins & Moquist, 2010; Valencia et al., 2006).

42.85% of the reviewed articles focused on interventions only for parents or caregivers (Hoeckstra-Weebers et al., 1998; Kazak et al., 2005; Sahler et al., 2005, Schwartz & Drotar, 2004; Streisand et al., 2000; Svardottir & Sigurdardottir, 2005), while 35.71% were intended only for children / adolescents (Barakat et al., 2003; Barrera et al., 2002, Butler et al, 2008; Hinds et al, 2000, McCaffrey, 2006). The remaining 21.43% approached both cohorts (parents and children), with joint or separate sessions (Kazak et al., 2004; Thygeson et al., 2010, Valencia et al., 2006). A summary of the most relevant outcomes of these studies is offered in Appendix 1.

Evaluation

Regarding the assessment instruments (outcomes) one aspect that deserves attention concerns its diversity. Few researchers used the same instruments to assess similar psychological variables (stress, self-esteem, quality of life and negative affect). Only four instruments were used in more than one study: the State-Trait Anxiety Inventory-STAI (4 studies), Impact of Events Scale - Revised - IESR (3 studies), the Revised Children’s Manifest Anxiety Scale - RCMAS (2 studies) and the Profile of Mood States - POMS (2 studies).

Intervention

In the same vein of assessments, intervention procedures were also diverse. Most (77.7%) interventions undertaken with parents focused on reducing stress and emotional distress caused by cancer diagnosis (4 studies) or children’s hospitalization (3 studies). Treatments included teaching a myriad of coping skills: problem solving, communication skills, stress inoculation, writing about the experience and cognitive restructuring. The latter item represented the most widespread technique within our sample of articles (4 studies).

Cognitive restructuring strategy was also the most used technique with children (3 studies), followed by social skills training, teaching coping strategies and / or self-care and relaxation, where each approach was applied in two studies. Interactive music therapy and cognitive rehabilitation could be identified in one approach each.

The number and duration of sessions, in both cases (children and parents), was highly variable, ranging from a single 40-minute session (Hinds et al., 2000) up to twenty 2-hour sessions (Butler et al. 2008), hampering the extraction of an overall pattern in this regard. Sessions were mostly individual (83.3% of the reviewed articles - see Appendix 1).
Interventions’ effectiveness

To assess interventions’ effectiveness, the total or partial achievement of therapeutic goals was taken as a benchmark. With this concept in mind, our results suggest that the majority (75.21%) of the proposed treatments had some effect on the participant’s psychological adjustment. Specifically, 35.71% of the interventions were effective, since they produced significant changes in all outcome measures and therefore objectives were achieved. A similar percentage (37.5%) had partial or mixed effects, meaning that they produced changes only in some measures but not in others. The remaining interventions (28.57%) had no effect on adjustment measures, hence classified as ineffective. However, this scenario becomes rather blurry if the analysis of results focuses exclusively on randomized controlled studies: 50% of these interventions were ineffective, against 25% of fully-effective ones and another 25% of partially-effective ones.

Concerning children’s interventions (patients or cancer survivors), most of them (62.5%) produced mixed results (Barrera et al., 2002, Butler et al., 2008; Kazak et al., 2004; McCaffrey 2006; Thygeson et al., 2010). The best results were obtained through the interventions proposed by Barakat et al. (2003) and Valencia et al. (2006), which could be classified as effective (25.5%). The worst attainments were related to the work of Hinds et al. (2000), which had no significant effects on the outcome measures (12.5%).

Regarding the "effective" interventions, Barakat et al. (2003) improved functioning and social skills of 13 survivors, mean age 10.7 years-old, who had been treated for a brain tumor. The authors used a social skills training program (communication, giving and receiving compliments, conflict resolution, empathy and cooperation), reinforced with a parental component. Valencia et al. (2006) were able to increase adherence, self-care behaviors, assertive skills and optimism in a group of 6 children (5-15 years-old). They used a cognitive-behavioral program, that consisted on cognitive restructuring, skills training and assertive and de-catastrophizing training and also problem solving, reinforced with teaching parents the basics of behavioral analysis. However, it must be highlighted that evidence on the effectiveness of these interventions is mainly for post-studies, which may raise some concerns about the practical contribution of these findings.

None of the treatments offered to children included in the three randomized controlled studies can be considered effective, since two had mixed results (Butler et al., 2008; Kazak et al., 2004) and the other (as previously mentioned) provided no improvements (Hinds et al., 2000). In the latter case, the authors did not find statistically significant differences between the experimental treatment (information on self-care coping teaching coping strategies using filmed modeling and behavioral rehearsal) and control group (placebo care), in any of the adjustment measures, or any of the post-intervention measurements (3 time points).

In relation to results obtained with parents, evidence seems more consistent. 44.44% of psychological treatments produced positive and statistically significant effects on outcomes, compared with those found in control groups (Kazak et al., 2005; Sahler et al., 2005) or with previous levels of the participants at baseline (Thygeson et al., 2010, Valencia et al., 2006). 22.22% obtained mixed results (significant changes in some adjustment measures, but not in others) (Kazak et al., 2004; Svavardottir & Sigurdardottti, 2005) and 33.33% produced no effects (Hoekstra-Webers et al. 1998; Drotar & Schwartz, 2004; Streisand et al., 2000).

Unlike the results with children’s interventions, 33.33% of parents’ RCTs (6 studies) showed that these treatments were effective in achieving their objectives (Kazak et al., 2005; Sahler et al., 2005), while 16.7% produced mixed results (Kazak et al. 2004) and 50% did not yield any therapeutic benefits (Hoekstra-Webers et al., 1998, Schwartz & Drotar, 2004; Streisand et al., 2000).

The two “effective” treatments had the intention of reducing posttraumatic stress and emotional symptoms on parents of newly diagnosed children. Kazak et al. (2005) used a modification of Surviving Cancer Competently Intervention Program, developed by the authors, mainly composed of a cognitive restructuring strategy and discussion of personal growth and future. Sahler et al. (2005) used problem solving training, which consisted on discussing the problems that really disturbed parents during this phase of disease.

Discussion

As previously outlined, the underlying goal of our assessment is to review the effectiveness of psychological interventions designed to improve the adjustment of children suffering from cancer and their parents’. We have identified a total of 14 articles that met the inclusion criteria. Considering the results as a whole, they are promising but inconclusive and difficult to interpret, due to the high variability regarding the objectives between studies, the interventions used to achieve them, the measures chosen to measure the effects and the selected samples. Therefore, it is not surprising that, although most interventions showed some therapeutic effect, the ones that can be defined as effective are few. Only one quarter of interventions targeting children produced statistically significant changes in all measures of adjustment, compared to almost twice of those offered to parents. However, this general pattern can be misleading: if we take into account only randomized trials, we can verify that none of the treatments applied to children was fully effective, but mostly they produced mixed results. For parents, data seemed more consistent, suggesting that they benefit more from psychological interventions than their offspring.

In general, our results are consistent with those reported in other published works (Davey & Neff, 2001; Pai, Drotar, Zebracki, Moore & Youngstrom, 2006; Robinson et al., 2009; Seitz et al., 2009). Specifically, the meta-analysis per-
formado por Pai et al. (2006), utilizando 12 artículos publicados entre 1983 y 2005, indicó que las intervenciones dirigidas a niños que no trataron con efecto en la vida o en el ajuste de la vida, mientras que aquellos que contuvieron con pedidos al tiempo que mostraron un modesto, pero estadísticamente significativo efecto. Mientras que, Seitz et al. (2009) revisaron las interacciones psicológicas de efectividad para reducir las psicopatologías de vida o/ o mejorar la psicosocial de la vida de los adolescentes con cáncer. De los cuatro artículos, solo uno presentó cambios estadísticamente significativos cuando se comparaba el tratamiento experimental con una lista de control.

Es posible que el número pequeño de efectos eficaces para niños y adolescentes se relacione con el estado psicológico de la vida que ocurrió antes de la intervención. Como se mencionó anteriormente, el estudio reciente mostró que los niños con cáncer son psicológicamente mejor adaptados a la enfermedad y sus tratamientos, con más padres que sufrieron de problemas de ajuste para al menos dos años después de la intervención. Esto sugiere que los tratamientos psicológicos usados con niños no fueron efectivos para crear un cielo efectivo, es decir, que la intervención se presentó una buena ajuste antes de comenzar el tratamiento y, consecuentemente, a tener pocos cambios significativos, ya que no había nada de lo mejor para mejorar. En cambio, el número de otros cambios significativos fue mayor con padres porque probablemente tuvieron algunos problemas psicológicos antes de la intervención.

En el otro lado, considerando el número elevado de resultados mixtos con niños, se puede decir que esto es también posible que los objetivos terapéuticos no estuvieron bien definidos, y que no se cumplieron con el tratamiento real y los problemas de los niños y su propósito de la intervención. Hay varios autores que han hecho hincapié en el manejo de adaptaciones a los efectos específicos de esta población específica, así como a ofrecer una mejor definición de la concentración de terapia (Butler et al., 2008, Hastings & Beck, 2004; Patenaude & Kupst, 2005).

Un aspecto que se debe considerar relativo a la terapia de foco es si la involucración de padres en la intervención de los niños fue el tratamiento o el manejo de problemas psicológicos de ambos en el tiempo - que mejorar la eficacia de las intervenciones. Esto se establece mejor en la literatura científica que los problemas emocionales de los niños (ansiedad, depresión y PTSD) y están altamente asociados con los padres' sufrimiento (Phipps et al., 2005; Robinson, Gerhardt, Vannatta & Noll, 2007; Robinson et al., 2009). Como resultado, es predecible que la intervención de ambos padres y los niños producirían un mayor beneficio terapéutico efec- to. Aunque los datos de nuestro estudio no clarifican si se cumple con estas proporciones, se pueden determinar por este camino, una parte de los estudios con resultados positivos (eficaz o mixto) intervenido con padres y niños en el mismo tiempo, mientras que sobre lo que no tuvieron éxito. Desafortunadamente, es incierto si los tratamientos eficaces dirigidos a padres o niños que tuvieron efecto sobre el bienestar psicológico del otro lado, ya que esta característica no se consideró en el objetivo de estudios y, por lo tanto, las medidas apropiadas no se incluyeron.

Sin embargo, el mayor freno para dar más conclusiones sobre los resultados depende de los estudios que limitaron en este campo de estudio y que limitaron la comparación entre estudios. El primer problema se relaciona con la creación de estudios. Muchas de las mejoras (total o parcial) no vienen de los estudios de postest, que dificultan saber si los cambios en el ajuste son debido al efecto terapéutico o a otras circunstancias, ya que no existía un grupo de control para comparar. En general, las intervenciones que mostraron no significativas en los cambios en el ajuste fueron analizados como un estudio. El tipo de control utilizado en estos estudios es otro punto a considerar: aunque de los estudios revisados mencionó este diseño, sólo utilizó un grupo de placebo de atención a tratamiento para el grupo experimental; otros tuvieron una lista de espera o carencias de atención. Como señalado por otros autores (Pai et al., 2006; Scott Harmsen, Sowden & Watt, 2008), una lista de espera no puede controlar efectos específicos derivados de la intervención, por lo que no se puede juzgar si el simple hecho de beneficiarse de una intervención serían suficientes para mejorar el cumplimiento de la participación. Este aspecto desempeña un papel en el extremo de la extensión de este estudio. En general, solo dos estudios dirigidos por el equipo de placebo para determinar si los tratamientos experimentales de efectividad encontraron diferencias significativas entre grupos (Hinds et al., 2000, Schwartz & Drotar, 2004), reforzando la necesidad de más robustos métodos de estudio.

El segundo problema que limita nuestra comparación y generalización de los resultados es que estos abundan en el campo de la heterogeneidad, tanto en relación a la edad de los niños (dispersa ampliamente), como en el tamaño en el que fueron en el estudio de los supervivientes, el nuevo diagnóstico, hospitalización para varios motivos, etc., con significativos diferencias entre ellos, incluso con los que están en la misma situación. Para el ejemplo, el tiempo que supervivientes no fueron tratados discurrió desde uno a doce años, mientras que los motivos para hospitalización eran muy irregulares: diagnóstico, quimioterapia, efectos de enfermedad, transplante de médula ósea, remisión, etc. En este aspecto, junto con las intervenciones de diversidad (tratamientos, número y duración de sesiones, etc.), podría ser imposible determinar si el tratamiento es el más efectivo y para quién es beneficioso.

Además, es un trabajo fácil de establecer si los resultados de las intervenciones que mostraron algún efecto terapéutico son mantenidos en el largo plazo. Salvo de los estudios que reportaron posibles cambios pre-positivos (total o parcial), solo uno evaluó el tratamiento efectivo de nueve meses más tarde. Y mientras que evaluaron los resultados que obtuvieron resultados positivos (4 estudios) condujo a un seguimiento, el tiempo de duración de eso fue menos de cuatro meses (intervalo 3-6 meses).

Es probable que en estos casos metodológicos de limitaciones son determinados por la inherencia de los límites de la intervención, en particular en el campo de la psicología. Ambos son programas de entrada para el periodo de tiempo como su mantenimiento a largo plazo representan tareas de poca ardua, tomando en cuenta las condiciones
situation of the affected individuals (parents and children), and its expensiveness, personally and economically. These difficulties may increase if we try to randomize participants for treatment or control groups. The moderate acceptance rate found in most of the reviewed articles, which tends to be below 60% of contacted individuals, supports this idea. The most common reasons given for not cooperating were: lack of time to meet the research's demands, feeling overwhelmed and lack of interest. To ensure participants' collaboration, some researchers (Sahler et al., 2005) resorted to financial compensation, delivering $100 to each participant at the end of the evaluation, making the rate of acceptance rise (75%). A debatable, but considerable solution, in order to encourage participation in future researches.

Also considering future studies, efforts should be made in order to improve the offer and effectiveness of interventions for both children and parents. For this purpose, it is necessary to first identify what are their needs and demands, and then develop a treatment plan designed to meet them, analyzing its effects in the short and long terms. According to this perspective, some authors (Hinds et al., 2000; Hoekstra-Weebers et al., 1998; Kazak et al., 2005, Pai et al., 2006, Robinson et al., 2009) suggest that psychological treatments should be more flexible and responsive to participants' concerns, their specific set of coping styles, taking in consideration the relevance of interventions, and to embrace a long-term perspective. Some authors (Hinds et al., 2000; Hoekstra-Weebers et al., 1998; Kazak, 2005; Hobbie et al., 2000) suggest that psychological interventions should avoid relying solely on treatment models based on deficits or psychopathologies, as the posttraumatic stress model. Although this model has been influential in this field of study, it has also been questioned by several researchers (Erickson and Steiner, 2001; Jurbergs et al., 2009; Phipps et al., 2009) who propose focusing on strengths and psychological health promotion, in order to achieve clinically relevant changes in stress derived from cancer and its treatment. In this sense, Kazak et al. (2007) discussed the need for a general therapeutic model that should offer preventive and innovative treatments that are also targeted to the real needs of the child and his family. This model should include psychosocial interventions addressed on promoting family's competence and identifying families who are at psychological risk. As pointed out by these authors, the ultimate goal of psychological care and cure of childhood cancer is that children and adolescents suffering from the disease could reach adulthood in the best possible conditions; with resilience, autonomy, quality of life and accepted by the society at the same level as their peers.

Conclusion

The first remarkable conclusion from our review is that most of the psychological interventions offered to children and parents produced some therapeutic benefit, although the number of really effective treatments is limited, especially the ones offered to children. This result raises some questions about the objectives' appropriateness, the techniques employed and the selected measurement instruments. Determining therapy focus or its convenience are two pending issues in pediatric psycho-oncology field that have caused some debate among experts, including some believing that it is unnecessary to improve psychological adjustment of children, as they are particularly well adapted to cancer circumstances. About this issue, our review suggests that the effectiveness of children interventions could be improved if we involve parents in the process, something which there is little consensus about. Some researchers argue that parents care would be sufficient to improve the children's adjustment (Hastings & Beck, 2004), while others seem to be favorable to a joint intervention (Barakat, Lutz, Nicolau & Lash, 2005; Fuemmeler et al., 2003; Klassen et al., 2011, Landolt, Vollrath, Niggli, Gnehm & Sennhauser, 2006) and a third group claims that there is no relationship between improvement of children and parents (Grootenhuis & Last, 1997; Lutz, Barakat, Smith-Whitley & Ohene-Frempong, 2004; Robinson et al., 2007).

The small number of articles found in our approach, as well as the great variability regarding treatment techniques, number of sessions, outcome measures and samples, hinders drawing specific conclusions and highlights the importance of continuous investigation in this area. Future research should clarify the concept of psychological adjustment and the relevance of interventions, and to embrace a long-term approach of interventions' effectiveness, thus overcoming the methodological difficulties mentioned in the discussion.

References


Aslett, H., Levitt, G., Richardson & Gibson, 2007; Kazak, 2005; Hobbie et al., 2000) suggest that psychological interventions should avoid relying solely on treatment models based on deficits or psychopathologies, as the posttraumatic stress model. Although this model has been influential in this field of study, it has also been questioned by several researchers (Erickson and Steiner, 2001; Jurbergs et al., 2009; Phipps et al., 2009) who propose focusing on strengths and psychological health promotion, in order to achieve clinically relevant changes in stress derived from cancer and its treatment. In this sense, Kazak et al. (2007) discussed the need for a general therapeutic model that should offer preventive and innovative treatments that are also targeted to the real needs of the child and his family. This model should include psychosocial interventions addressed on promoting family's competence and identifying families who are at psychological risk. As pointed out by these authors, the ultimate goal of psychological care and cure of childhood cancer is that children and adolescents suffering from the disease could reach adulthood in the best possible conditions; with resilience, autonomy, quality of life and accepted by the society at the same level as their peers.


Víctimas de intervenciones psicológicas dirigidas a promover el ajuste de niños con cáncer y de sus padres: una revisión


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### Appendix I. Psychological treatments addressed to children with cancer and their parent. General summary of all reviewed articles.

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<th>Design</th>
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<tr>
<td>Barakat et al. (2003)</td>
<td>65 hospitalized children</td>
<td>Reducing negative mood (6-17 years-old)</td>
<td>Pre-post</td>
<td>- Faces Pain Scale.</td>
<td>Interactive multimedia; variable number of individual sessions (1 to 3); 15-45 min; similar to patient’s needs.</td>
<td>Significant improvement of positive mood; Significant increase of adolescent cancer.</td>
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<tr>
<td></td>
<td>13 survivors (8-14 years-old)</td>
<td>Improving social Pre-post functioning and SS (X: 10)</td>
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<td>- Social Skills Rating System.</td>
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<td>Significant improvement of positive mood; Significant increase of adolescent cancer.</td>
</tr>
<tr>
<td></td>
<td>10.7 months-17 years-old, X: 7 years-old</td>
<td>Increasing wellbeing and play activities on hospitalized children.</td>
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<td>- Teacher Report Form.</td>
<td>- Parents: Information and encouragement of their children’s SS; discussion about the disease.</td>
<td>Significant improvement of positive mood; Significant increase of adolescent cancer.</td>
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<td></td>
<td>8 (X: 10) years-old</td>
<td>Reducing behavior problems (children)</td>
<td></td>
<td>- Miami Pediatric Quality of Life Q. WISC-III.</td>
<td></td>
<td>Significant improvement of positive mood; Significant increase of adolescent cancer.</td>
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<tr>
<td></td>
<td>30 (X: 11) years-old</td>
<td>Reducing emotion (6-17 years-old)</td>
<td></td>
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<td>Significant improvement of positive mood; Significant increase of adolescent cancer.</td>
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<td></td>
<td>161 survivors (6-17 years-old)</td>
<td>Improving cognitive (especially attention deficit and academic functioning)</td>
<td>Multicenter RCT</td>
<td>Battery of neurological tests to assess cognitive functioning and academic achievement.</td>
<td>Cognitive Remediation Program (CRP), that includes: hierarchically graded massed practice, strategy acquisition and cognitive-behavioral intervention;</td>
<td>Significant improvement of EG’s academic achievement; No significant differences between ES and attention, memory, vigilance, learning strategies and self-esteem.</td>
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<tr>
<td></td>
<td>108 (X: 10) years-old</td>
<td>Conners’ Parent and Teacher Scales.</td>
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<td></td>
<td>53 (X: 11) years-old</td>
<td>Culture-Free Self-Esteem Inventory.</td>
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(Revised: 03.03.2013; accepted: 03.03.2013)
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</table>
| Hinds et al. (2000) | 82 adolescents - newly diagnosed (12-21 years-old).  
EG: 40 (F: 16, 14 years-old).  
CG: 38 (F: 15.6 years-old). | - Facilitating coping and self-care.  
- Determining their effects on hopelessness, optimism, hopelessness, self-esteem, self-efficacy, symptom distress and treatment's toxicity. | RCT  
CG: placebo care  
T1: pre-intervention  
T2: PI (5 weeks post D)  
T3: 3 ms post-D  
T4: 6 ms post-D  
- Nowicki-Strickland locus of Control Scale.  
- Hopelessness Scale for Adolescents.  
- Rosenberg Self-Esteem Scale.  
- Self-Efficacy Scale.  
- Symptom Distress Scale.  
The NCI Common Toxicity Criteria Scale. | - One 40-min. individual session.  
- Information about self-care coping.  
- Filmed modeling (useful strategies to cope with cancer).  
- Rehearsal of those strategies observed and selected by the patients.  
- CG: discussion about several topics selected by the patients. | No differences between Gs in any variable at any measurement point. |
| Hoekstra-Webers et al. (1998) | 81 parents (24.53 years-old, F: 36.6) of newly diagnosed children.  
EG: 39.  
CG: 42. | - Reducing psychological distress.  
- Regulating the intensity of emotions.  
- Helping them to obtain social support. | RCT  
CG: standard intervention.  
T1: 14 days post-consenting  
T2: PI  
T3: 6 ms PI  
- Goldberg General Health Q.  
- Symptom Check List.  
- State-Trait Anxiety Inventory (STAI).  
- Social Support List.  
- Discrepancies.  
- Self-designed intensity of emotions list. | - Eight 90-min. individual sessions, each 3 weeks.  
- Expression of emotions.  
- CR strategy.  
- Encouragement of problem-focused coping skills.  
- Communication and assertiveness skills.  
- Information about treatment’s sequelae. | No differences between Gs in all outcome measures (neither in post-treatment nor in follow-up).  
- Significant distress decrease in both G with the passage of time. |
| Kazak et al. (2004) | 150 survivors (10-20 years-old) and their PP: 140 mothers (F: 42.9 years-old) and 106 fathers (F: 42.3 years-old).  
EG: 76 (F: 14.62 years-old).  
CG: 74 (F: 14.6 years-old). | - Reducing PTSS (arousal, intrusive thoughts and avoidance) in adolescents and parents.  
- Exploring its effect over anxiety. | RCT  
CG: waiting list  
T1: BI  
T2: 3.5 ms PI  
- Impact of Events Scale – Revised (IESR).  
- Post-Traumatic Stress Disorder Reaction Index.  
- STAI.  
- Revised Children's Manifest Anxiety Scale (RCMAS). | - SCCIP. Four 1-day sessions: 2 in the morning (children, fathers and mothers separately) and 2 in the afternoon with each family.  
- Discussion about traumatic events that are associated to cancer and identification of stressful memories.  
- CR strategy: adversity-belief–consequences (ABC-model); accepting the uncontrollable; focusing on the controllable; using positive thinking.  
- Discussion about cancer’s effect on the family, health and future. | Significant decrease of arousal symptoms in the survivors, and intrusive thoughts among fathers; no changes in mothers.  
- No effects on avoidance symptoms in any of the participants.  
- No significant changes in anxiety on survivors and mothers; marginal significantly effect in fathers. |
| Kazak et al. (2005) | 19 couples of PP/caregivers (20 F and 18 M) of newly diagnosed.  
PP: 45, 28 years-old.  
F: 25, 18 years-old.  
M: 23, 19 years-old. | - Reducing or prevent PTSS.  
- Decreasing anxiety-state in EG. | RCT  
CG: standard care  
- Acute Stress Disorder Scale.  
- SCCIP ND (Newly Diagnosed). Three individual 45-min | - Significant decrease of PTSS and anxiety-state in EG. | |
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<td>McCaffrey (2006)</td>
<td>20 children (6-17 years-old; (\overline{X} = 12.9) under treatment (n = 7) or without it (n = 13).</td>
<td>Reducing anxiety and improving self-concept.</td>
<td>Pre-post</td>
<td>Self-records of positive life events.</td>
<td>Modified Feeling Great Program (MFGP). Number of sessions: not clear.</td>
<td>Significant effects on 5 from 11 dependent variables: anxiety's reduction (worry/ hypersensibility, social concerns/ concentration), increasing frequency of positive events, heart rate's normalization and relaxation.</td>
</tr>
<tr>
<td>Schwartz and Drotar (2004)</td>
<td>54 caregivers of children chronic who were hospitalized (42 with cancer). EG: 29 ((\overline{X} = 35.16) years-old). GC: 25 ((\overline{X} = 38.32) years-old).</td>
<td>Improving perceived QV and reducing distress and anxious-depressive symptoms in the long term.</td>
<td>RCT CG: placebo care. T1: preintervention. T2: PI. T3: 3 ms PI.</td>
<td>The Essay Evaluation Measure. Mood and Anxiety Symptom Q. (MASQ). POMS-Short Form. Short Form Health Status Q. (SF-36). Caregiver Appraisal Scale (CAS). Pennebaker’s Physical Scale. Brief Mood Rating Scale.</td>
<td>3 days in a row (20 min. each day). EG: write about the most traumatic and upsetting experiences of their entire life and about emotional thoughts associated to them (emotional disclosure). CG: write about neutral experiences (activities from the previous summer).</td>
<td>Significant more physical symptoms in EG tan in CG (both at T2 and T3). No significant differences between G on distress and anxious-depressive symptoms. No significant differences between G on positive or negative affect. No significant differences between G on perceived; more vitality for the CG than the EG. No significant differences between G on stress appraaisal.</td>
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<p>| Streisand et al. (2000) | 22 mothers of hospitalized children.                                      | Reducing stress, through the teaching process. | RCT CG: standard | Daily Stress Inventory. | One 90-min. individual session. | No significant differences between G, although EG |</p>
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<td>Sveavardsdottir and Sigurardottir (2005)</td>
<td>10 mothers and 9 fathers (X: 38.45 years-old) of newly diagnosed adolescents.</td>
<td>Improving psychological well-being, coping behavior, hardiness and adaptation.</td>
<td>Pre-post</td>
<td>- Cancer Factor Index. - General Well-Being Schedule. - Family Hardiness Index. - Coping Health Inventory for Parents. - Family Adaptation Scale.</td>
<td>- Adaptation of “Calgary Family Intervention Model”; interactive intervention through internet (duration: 6 months). - Education-information. - Interactive support (sharing the experience with other PP and the therapist). - 1 or 2 emotional support interviews with the therapist, ranging from 60 to 90 min. (according to PP’s needs).</td>
<td>Significant improvement of psychological well-being of both fathers and mothers.</td>
</tr>
<tr>
<td>Thygeson et al. (2010)</td>
<td>14 hospitalized patients: 11 children (6-12 years-old), 5 adolescents (13-18 years-old) and 33 PP (X: 37.42 years-old).</td>
<td>Reducing anxiety of children, adolescents and parents.</td>
<td>Pre-post</td>
<td>- STAL. - STAIC.</td>
<td>One 45-min session; children and PP separately. - Yoga (relaxation imagery)</td>
<td>Significant decrease of anxiety in parents and adolescents, but not in children.</td>
</tr>
<tr>
<td>Valencia et al. (2006)</td>
<td>6 patients (5-15 years-old, and their families: 4 fathers (30-50 years-old), 5 mothers (29-39 years-old) and 4 siblings (7-21 years-old). It is not clear if children are under treatment or not.</td>
<td>Establishing self-care behavior, adherence and SS in the children.</td>
<td>Pre-post</td>
<td>- Self-records of adherence behaviors. - Social Satisfaction Questionnaire Treatment Outcome. - Behavioral interview. - General evaluation of the treatment’s components; - Content Analysis of Verbatim Explanations Technique. - Pediatric Quality of Life Inventory.</td>
<td>“The Optimism Game”; Six 60 min. Individual sessions with the children and 7 with the PP (separately). - Informative session. - CR strategy (identifying negative thoughts and replacing them for positive ones). - Decatastrophizing skills. - Problem-solution. - Assertive skills. - Teaching basic concepts of behavior analysis (only PP).</td>
<td>Children: significant improvement of adherence behaviors, perceived QV, pro-treatment and self-care behaviors, optimism and assertive skills. Parents: significant improvement of perceived QV and optimism. No information about siblings.</td>
</tr>
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</table>

Key: PP: parents; PI: post-intervention; T: evaluation time; CBCL: Child Behavior Checklist; Q: Questionnaire; SS: social skills; EG: experimental group; CG: control group; RCT: randomized controlled trial; BL: baseline; D: diagnosis; G: groups; CRS: cognitive restructuring strategy; PTSS: posttraumatic stress symptoms; SCCIP: Surviving Cancer Competently Intervention Program; QL2: quality of life.