

EFFECT OF AN OUTDOOR DEVELOPMENTAL ADVENTURE PROGRAM ON THE PSYCHOSOCIAL ADJUSTMENT OF ADOLESCENTS JOURNEYING WITH CANCER

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Literature review

The number of adolescents and young adults with cancer who attain the 5 year survival rate has consistently increased over the last decades, reaching 85% (De et al, 2011). This rise in the survival rate justifies the implementation and scientific validation of innovative programs aiming at the psychosocial rehabilitation of young cancer survivors (SCC, 2009). Beyond the fact that cancer is a painful threat to life itself, the treatments impact physical appearance (loss of hair, acne, radical gain or loss of weight), as well as changes in hormonal development (alteration of puberty, reproduction issues) and reduction of energy levels, making it particularly challenging for adolescents (Eiser & Kuperberg, 2007). Compared to other age groups, adolescents journeying with cancer are subject to unique challenges because of their developmental needs (Abrams, Hazen & Penson, 2007). Being the age of risk-taking, socialization outside the family, appropriation of self, identity and personal values, autonomy and exploration of the first romances, adolescence does not travel easily with the multiple threats of cancer (Zebrack, 2011). Adolescent cancer survivors are often more dependent on their family and parents (Eiser & Kuperberg, 2007) and may have issues with self-esteem and psychological distress (von Essen, Enskär, Kreuger, Larsson, & Sjöden, 2000). The fact that they represent less than 2% of the cancer population also reduces the possibility of relating to similar ones, making it difficult to develop their social skills (Freyer, 2004). Among the psychosocial intervention programs available for adolescents with cancer, outdoor developmental adventure presents the advantage of meeting their developmental needs by engaging them in an experience outside of their family through a 10-day long experience where they can challenge themselves physically and socially in a natural setting. However, there has been very little validation of this intervention model with this population (Stevens et al., 2004). Grounded on the self-determination theory (Ryan & Deci, 2017), a study conducted among adolescents struggling with dysphasia indicates that psychosocial interventions based on nature and adventure could and should aim at fulfilling the psychological needs of participants, including relatedness, competence and autonomy, leading them to a better overall psychosocial adjustment (Bergeron, Lheureux, Bergeron, Fournier-Chouinard & Rojo, 2017). The aim of this study is to evaluate the impact of an outdoor developmental adventure program on the psychosocial adjustment of adolescent cancer survivors.

Method

The study was conducted with 52 cancer survivors (30 boys, 22 girls) aged from 14 to 20 years old (M = 16,56 years) and their parents (51 mothers, 44 fathers) from 7 different expedition cohorts who engaged in a 10-day expedition in one of the following outdoor activities: kayaking, snowmobiling, hiking, sailing, dogsledding, canoeing and snowshoeing. The data was collected

from 2011 to 2015 in Quebec, Canada. The program was developed by *The tip of the toes Foundation*. A mixed method design (Creswell, 2015) using qualitative interviews and quantitative validated questionnaires was conducted during a one year follow-up at 4 different measurement moments: T1) 2 weeks before the expedition, T2) 2 weeks after the expedition, to avoid the “return-euphoria” effect, T3) 4 months after the expedition and T4) one year after the expedition. It was not possible to gather a comparison group. Multiple respondents (adolescents and their parents) participated in the qualitative interviews. The adolescents were also asked to complete the following self-report validated questionnaires measuring: 1) Self-esteem (Rosenberg self-esteem questionnaire; Rosenberg, 1965), 2) Psychological distress (Psychiatric Symptoms Index; Ilfeld, 1976), 3) Quality of the relationship with parents and peers (Inventory of Parent and Peer attachment; Armsden & Greenberg, 1987) and 4) Social desirability (Crowne & Marlowe, 1960). Those questionnaires were chosen because of their good psychometric properties and the possibility of comparing the results to normative samples. Control variables were introduced in the analysis: 1) language of the interview (French or English), 2) sex, 3) expedition cohort and 3) social desirability. The study was approved by the Université du Québec à Chicoutimi ethical board.

Results

The participation rate was 74.3 % and the attrition rate was 26.9 % after one year. These rates are better than those occurring in other studies conducted with pediatric populations affected by a chronic disease (Karlson & Rapoff, 2009). A univariate analysis of variance (ANOVA) indicates that the participants who removed themselves from the study had a significantly lower self-esteem at T1 $F(1,50) = 7,394$ $p = 0.009$, $\eta^2 = 0.13$ (observed power = 76%). No other difference was noted at T1 in relation to attrition. Since the participants who dropped out during the study could have done so because of issues linked to cancer reoccurrence, making them very different from those who stayed in the study, only the participants with complete data were considered for further analysis. No effect was measured in relation to the language of the interview or the expedition cohort. For adolescent self-reports, ANCOVAs for repeated measures indicate a significant improvement of self-esteem $F(3,34) = 6,675$ $p = 0.001$, $\eta^2 = 0.37$ (observed power = 84.8%) at T2, maintained after 1 year post-program. A significant interaction effect between social desirability and time was measured for psychological distress $F(3,34) = 3,106$ $p = 0.039$, $\eta^2 = 0.22$ (observed power = 62.7%), indicating a better improvement among adolescents with low social desirability, who had higher psychological distress scores at T1. For the quality of the relationship with parents, the results indicate a significant improvement concerning trust with the mother $F(3,33) = 4,204$ $p = 0.013$, $\eta^2 = 0.28$ (observed power = 81.2%), maintained after 1 year, and of the overall quality of the relationship with the father $F(3,34) = 3,878$ $p = 0.018$, $\eta^2 = 0.25$ (observed power = 77.6%), maintained after 4 months but not after 1 year. A significant interaction effect was measured between social desirability and time regarding trust with the father $F(3,34) = 3,671$ $p = 0.005$, $\eta^2 = 0.25$ (observed power = 75.2%), indicating a better improvement for adolescents with low social desirability who have a lower score regarding trust at T1 than those with high social desirability. This effect is not maintained after 4 months or 1 year. For the quality of the relationship with peers, the results indicate an interaction effect between gender and time for the overall quality of the relationship with peers $F(3,32) = 4,888$ $p = 0.007$, $\eta^2 = 0.31$ (observed power = 66.8%) and the communication with peers $F(3,32) = 5,860$ $p = 0.003$, $\eta^2 = 0.36$ (observed power = 92.7%) indicating an improvement only for girls, maintained after 1 year. A significant improvement was also measured for the feeling of isolation from peers (alienation) $F(3,32) = 4,603$ $p = 0.009$, $\eta^2 = 0.30$ (observed power = 84.7%), maintained after 1 year. Principal thematic content analysis

was realized on the verbatim transcription of interviews, using NVivo 10. The results indicate 4 principal categories of impacts reported by the adolescents and their parents and an evaluation dimension: 1) Ludic, pleasure and amazement linked to the contact with nature, 2) Personal growth linked to an improvement of self-confidence, autonomy and a feeling of achievement, 3) Relational, social growth linked to a lesser feeling of isolation, a better capacity to express emotions and connect with others, 4) Physical, corporal challenges and growth linked to physical activity, weather conditions (discomfort) and a motivation to engage in further activities and 5) Program evaluation, linked to a generally positive appreciation, with anecdotic comments about the presence of media (1 cohort) and the language understanding for Anglophone participants only.

Discussion

Quantitative analysis conducted on the adolescent self-reported measures shows a significant improvement of self-esteem and perceived quality of the relationship with parents and peers with small to moderate effects, indicating that the program improved psychosocial adjustment of adolescent cancer survivors. Improvement was maintained after a one year follow-up for self-esteem and quality of the relationship with peers for girls only, but not for the quality of the relationship with the mother and father, which came back to the initial level after one year. However, initial scores on all the quantitative scales, except for the quality of the relationship with peers among girls, indicate that the psychosocial adjustment of participants was already similar and even better than general populations of adolescents before program participation (Bagley et al., 1997; Picard, Claes, Melançon et Miranda, 2007; Pace, Martini et Zavattini, 2011). There was also a possible social desirability bias for the psychological distress scale, the participants with lower social desirability showing a better improvement on this dimension. The same social desirability bias was observed for the trust with the father. The quality of the relationship with peers shows a better improvement for girls, who had a lower initial level compared to a general population of girls, suggesting that cancer might be a bigger threat to friendship for girls than for boys. The qualitative results based on the adolescents' and parents' interviews indicate that the participation to an outdoor developmental adventure is favorable to the development of self-determination, with principal categories of impact similar to the psychological needs of relatedness, competence and autonomy, possibly linked to the contact with nature, the "awe" and the positive group dynamics. Based on the comments about the language issues and the media presence, recommendations include the addition of translation facilitation during the expeditions, as well as a very cautious inclusion of mass media. Despite generalizability issues due to the absence of a comparison group and a possible social desirability bias for the self-reported measures, this study shows promising results for this program who is significantly improving the psychosocial adjustment of adolescents journeying with cancer.

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