Natalija Visočnik[1,2], Martina Bürger Lazar[3], Gregor Žvelc[1,4,5]

Quality of life and psychosocial adjustment in siblings of children with cancer

Kvaliteta življenja in psihosocialna prilagojenost sorojencev otrok, obolelih za rakom

Abstract

The aim of our research was to investigate the quality of life and psychosocial adjustment of siblings of children with cancer (N=16), compared to the normative group of children and adolescents (N=128). We were also interested in how healthy siblings experience cancer-related changes in everyday life. Both groups completed self-assessment questionnaires on the quality of life (PedsQL) and psychosocial functioning (SDQ). The research group also answered a question about what has changed in their lives as a result of their sibling's illness. No statistically significant differences were found regarding quality of life and psychosocial functioning. However, the qualitative descriptions of siblings show that they experience unpleasant feelings, personal growth and changes in different areas of life (family and school environment, interpersonal relationships). We suggest different supportive interventions such as support and educational groups for children and individual psychotherapy in the case of emotional and behavioural problems.

Key words: cancer, oncology, paediatric oncology, siblings of children with cancer, quality of life, psychosocial adjustment

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[1] Department of psychology, Faculty of Arts, University of Ljubljana, Slovenia

[2] Community Health Centre Ljubljana, Slovenia

[3] Outpatient Rehabilitation Service, University Rehabilitation Institute, Republic of Slovenia, Slovenia

[4] Department of psychology, UP FAMNIT, University of Primorska, Slovenia

[5] Institute for Integrative psychotherapy and Counselling, Ljubljana, Slovenia
Corresponding author: Gregor Žvelc (*gregor.zvelc@guest.arnes.si*)

Povzetek

Namen naše raziskave je bil preučiti, kakšna je kvaliteta življenja in psihosocialna prilagojenost sorojencev otrok z rakom (*N*=16) v primerjavi z normativno skupino otrok in mladostnikov (*N*=128). Prav tako nas je zanimalo, kako spremembe v vsakdanjem življenju, povezane z boleznijo raka pri otroku, doživljajo njihovi sorojenci. Obe skupini udeležencev sta izpolnili samoocenjevalni obliki vprašalnikov PedsQL za ocenjevanje kvalitete življenja ter SDQ za ocenjevanje psihosocialnega funkcioniranja. Raziskovalna skupina je odgovorila tudi na vprašanje o spremembah v njihovem življenju, povezanih z boleznijo raka pri sorojencu. Rezultati raziskave so pokazali, da ni pomembnih razlik v kvaliteti življenja in psihosocialnem funkcioniranju. Kljub temu kvalitativni odgovori sorojencev kažejo na doživljanje neprijetnih čustev, osebnostno rast in spremembe na različnih področjih življenja (v družinskem in šolskem okolju, medosebnih odnosih). Predlagamo različne suportivne intervence kot so suportivne in edukativne skupine za otroke in individualno psihoterapijo v primeru čustvenih in vedenjskih problemov otrok.

Ključne besede: rak, onkologija, pediatrična onkologija, sorojenci otrok z rakom, kvaliteta življenja, psihosocialna prilagojenost

Introduction

In Slovenia, approximately 60 children per year develop cancer (Jereb & Anžič, 1996). With the advances in medicine, the methods of treatment are changing and with it the effect that the treatment has on the family. Although the number of survivors is growing from year to year, there are some consequences that can be fully somatic or even more frequently emotional (Korenjak, 1998). Oncological disease in a child is a strong stressor for the family and considerably changes the course of life and family integrity (Alderfer & Kazak, 2006; McGrath, 2001; Rolland, 2005).

In the life of every family, a specific system is established, and everything that happens in this system affects an individual in a certain way. Every change in one family member is reflected one way or another in other family members (Korenjak, 1998; Rolland, 2005). A life-threatening disease has a significant impact on all the members of the family (Alderfer & Kazak, 2006; Chesler & Parry, 200; Friedrich & Bryne, 2002; Lapwood & Goldman, 2012; Long, Marsland, & Alderfer, 2013; McCubbin, Balling, Possin, Friedrich, & Bryne, 2002; Patterson, Holm, & Gurney, 2004; Rolland, 2005; Schuler et al., 1985). Within the family, the system of values, goals and expectations for the future usually changes (Alderfer & Kazak, 2006). Often, there are changes in family dynamics which can be stressful also for healthy siblings (Lapwood & Goldman, 2012). Family roles and responsibilities adapt to the treatment and needs of the sick child, which is especially true for the initial treatment phase (McGrath, 2001). Siblings of children with cancer often have to deal with additional responsibilities and greater physical and psychological absence of parents than their peers (McCubbin et al., 2002; Patterson et al., 2004; Havermans & Eiser, 1994). Siblings may feel overlooked, abandoned, confused, sad and anxious (Alderfer, Labay, & Kazak, 2003; Hamama, Ronen, & Feigin, 2000; Havermans & Eiser, 1994; Koch, 1985; Lapwood & Goldman, 2012; Murray, 1998; Nolbris, Enskär, & Hellström, 2007; Schuler et al., 1985; Sloper, 2000). They might even experience feelings of jealousy and envy because their parents, grandparents, and other members of the extended family are paying more attention to a sick child than to them (Alderfer & Kazak, 2006; Havermans & Eiser, 1994; Koch, 1985; Patterson et al., 2004; Schuler et al., 1985).

All this can affect the functioning of siblings in school and in the social sphere (Alderfer et al., 2010; Brown, 2012; French et al., 2013; Houtzager, Grootenhuis, Hoekstra-Weebers, & Last, 2005; Labay & Walco, 2004; Nolbris et al., 2007; Sloper, 2000). Researchers report that shortly after the diagnosis is made, siblings have more behavioural, learning, and psychosomatic problems, and they are more hyperactive compared to the normative group of children (Houtzager, Grootenhuis, Hoekstra-Weebers, & Last, 2003; Houtzager et al., 2005; Lähteenmäki, Sjöblom, Korhonen, & Salmi, 2004).While researchers of some studies claim that there are several negative outcomes among the siblings of children with cancer, such as the emergence of emotional and behavioural problems (Alderfer et al., 2003; Cohen, Friedrich, Jaworski, Copeland, & Pendergrass, 1994; Labay & Walco, 2004; Lähteenmäki et al., 2004; Schuler et al., 1985), the researchers of other studies argue that there are no significant differences in the psychological adjustment of siblings of children with cancer and siblings of children in the normative group (Horwitz & Kazak, 1990; VanDongen-Melman, De Groot, Hählen, & Verhulst, 1995). Some researchers emphasise that a diagnosis of cancer even brings some positive results in the family, such as closer family relationships and a higher level of empathy, maturity and independence in healthy siblings (Havermans & Eiser, 1994; Horwitz & Kazak, 1990; Lapwood & Goldman, 2012; Murray, 1998; Sloper, 2000). Siblings of paediatric cancer patients do not seem to suffer from severe psychopathology, but behaviour problems, emotional distress and positive effects of the illness are significant (Houtzager, Grootenhuis, & Last, 1999). Both the extent to which siblings suffer from emotional and behaviour problems and the constitution of healthy and problematic aspects remain unclear owing to contradictory findings (Houtzager et al., 1999).

The psychological health of siblings of children with cancer is still poorly researched, therefore we decided to investigate how cancer in children is experienced by their siblings. The aim of the research was to assess what is the quality of life and psychosocial functioning of siblings of children who are in the process of treatment because of cancer, compared to the normative group of children and adolescents. The aim was also to see whether the sociodemographic characteristics of the target group of children and adolescents correlate with their psychosocial functioning and quality of life. We also wanted to find out what kind of changes healthy siblings perceived in their daily functioning as a consequence of cancer in their ill sibling. Based on the theoretical background and the results of previous research, we formed the following research hypotheses:

1. The general quality of life of siblings of children with cancer is lower than for children in the normative group.
2. Siblings of children with cancer express more prosocial behaviour than their peers in the normative group.
3. Siblings of children with cancer have more problems than their peers in the normative group in all the four dimensions of psychosocial problems.
4. The age of siblings of children with cancer positively correlates with the presence of psychosocial problems.
5. Male siblings of children with cancer express more conduct problems while female siblings of children with cancer express more emotional symptoms and problems in peer relations.

Methods

Participants

Research sample

The survey involved siblings of children who developed cancer in 2014 and 2015 and who were being treated at the Department of Oncology and Haematology in the Paediatric Division in Ljubljana. The research sample came from 14 families.

The number of participants covered almost all of the Slovenian families with children diagnosed with cancer in 2014 and 2015 and having a sibling aged between 10 and 18. Participation was rejected by only two of the families with children who were treated for cancer at that time. The total number of participants in the group was 16 children and adolescents, of whom 8 were female (50%) and 8 male (50%). The average age of participants in the research sample was 13 years, ranging from 10 to 17 years.

The sick children and adolescents whose siblings participated in the research had different diagnoses of cancer (ALL, Ewing sarcoma, rhabdomyosarcoma, Hodgkin's lymphoma, non-Hodgkin lymphoma). The average time since diagnosis was 6.3 months (SD=4,64). The average age of sick children and adolescents was 11 years, ranging from 2.5 to 19.0 years. Among them, there were 8 girls (50%) and 8 boys (50%). Of the 14 participating families, there were 9 families with two children (64%), 3 families with three children (21%) and 2 families with 4 children (14%). In 9 families, mothers had reached a higher level of education (at least 6th level or more) (64%), while mothers in the other families had reached a secondary level of education (from 3rd to 5th level) (36%). In 11 families, mothers were employed (79%), only in 3 families were they unemployed (21%). In 8 families, father's education was at highschool level (from 3rdto 5th level) (64%), fathers in 5 families had reached higher education (at least 6th level); in one family, no information on the education and employment of the father was obtained. All 13 fathers whose data was obtained were employed at that time.

Normative sample

The comparison group of research participants was composed of normative children and adolescents who have at least one sibling and whose age and gender are comparable to the research group. At first, the normative group consisted of 145 healthy children and adolescents, from which we eliminated 17 participants whose siblings have a chronic disease. The final number of participants in the comparison group was 128 children and adolescents, of whom 60 were male (47%) and 68 female (53%). Their average age was 14 years, ranging from 10 to 18 years.

Instruments

In our research, quantitative and qualitative approaches to research were combined.

Within the quantitative approach, self-report questionnaires were used to assess the quality of life and psychological adjustment of healthy siblings. To evaluate quality of life, we used two different age forms of the *Paediatric Quality of Life Inventory* (PedsQL) (for children and adolescents aged 8-12 and 13-18 years) (Varni, Seid, & Kurtin, 2001; Varni, Burkwinkle, & Lane, 2005; Varni, Seid, Knight, Uzark, & Szer, 2002). Both forms of the questionnaire contain a form of self-report for children and adolescents. The questionnaire consists of 23 items divided into four scales: physical functioning, emotional functioning, social functioning, and school functioning. PedsQL is considered highly reliable because the estimated Cronbach alpha coefficient of internal consistency for both versions of the questionnaire (self-report form and the form for assessment by parents or guardians) is approaching 0.90 (Varni et al., 2001). In our research we assessed the internal reliability of the Slovene versions of self-report forms of PedsQL questionnaire to be $\alpha = 0.84$. For the assessment of psychosocial functioning, the *Strengths and Difficulties Questionnaire* (SDQ) was used, designed to identify psychosocial problems in children and adolescents (Goodman, Meltzer, & Bailey, 1998; Goodman, 1999; Goodman & Scott, 1999). We used the longer version of the self-report form for children and adolescents aged between 11 and 17. The questionnaire consists of 25 items divided into five scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour. The estimated internal-consistency reliability of the self-report form of SDQ for the total scale is 0.82, while the values of the subscales range from 0.61 to 0.75 (Goodman et al., 1998). In our research we estimated the Cronbach alpha for the total difficulties scale in the Slovene version of the SDQ questionnaire to be barely satisfactory ($\alpha = 0.68$).

Within the qualitative approach, we designed a Questionnaire for Siblings which consisted of one open question asking the siblings what has changed for them since their brother or sister fell ill. Furthermore, we used the Demographic Questionnaire for Parents that we designed to collect general information on family structure, sick child, and his/her healthy siblings.

Procedure

The research was approved by the National Medical Ethics Committee of the Republic of Slovenia and carried out at the Department of Oncology and Haematology in the Paediatric Division in Ljubliana. We informed the parents of the purpose and course of the research and invited them to participate. Parents confirmed their willingness and the willingness of their healthy children to participate in the survey by signing informed consent forms. After that, we personally handed over to each of them an envelope with a description of the research, Demographic Questionnaire for Parents, Questionnaire for Siblings, SDQ and a version of the PedsQL suitable for the participant's age. Siblings who agreed to participate completed the questionnaires at home. Parents returned the research materials packaged in an envelope at their next visit to the clinic.

Data for the comparison group of children and adolescents was collected at a primary school and a grammar school. After obtaining the informed consent of parents, we distributed SDQ's and PedsQL to pupils and students at the schools, which they filled in and returned immediately.

Data analysis

The quantitative data was analysed using IBM SPSS Statistics 22 software (IBM Corp., Armonk, NY, USA). We used the Shapiro-Wilk test to investigate if our distributions are normal. To compare the research and normative samples in the quality of life and psychosocial functioning measures we used the non-parametrical Man-Whitney test. We also compared both groups of sociodemographic variables using the Spearman correlation coefficient.

The qualitative data obtained from the siblings of children with cancer was categorised according to the grounded theory approach. We analysed the answers that they gave to an open question about the changes they have experienced since their sibling became ill. Then we combined the answers into wider categories by the content until we had five meaningful categories related to the research question.

Results

Comparison of the research and normative groups of children and adolescents

Table 1 shows that the normative and the research group of children and adolescents do not differ statistically significantly in any of the scales of the PedsQL ($p > 0.05$). Furthermore, the results suggest that the research and the normative groups of children and adolescents do not differ significantly on any of the SDQ scales ($p > 0.05$). On the scale of prosocial behaviour, siblings of children with cancer scored higher on average than the children in the normative group, which may indicate more prosocial behaviour, but the differences were not statistically significant.

Table 1

Comparison of research and normative group of children and adolescents in SDQ and PedsQL

SDQ scales	Group	*N*	*M*	*SD*	*U*	*p*
Emotional symptoms	normative	128	3.05	2.15	896.50	0.41
	clinical	16	2.69	2.39		
Conduct problems	normative	128	1.63	1.35	919.00	0.49
	clinical	16	1.81	1.33		
Hyperactivity/inattention	normative	128	3.17	1.63	848.00	0.26
	clinical	16	3.75	2.05		
Peer relationship problems	normative	128	2.21	1.54	765.00	0.09
	clinical	16	1.69	1.89		
Prosocial behaviour	normative	128	7.57	1.82	808.50	0.16
	clinical	16	8.19	1.76		
Total difficulties score	normative	128	10.06	4.28	1020.00	0.98
	clinical	16	9.94	4.73		
PedsQL scales	**Group**	***N***	***M***	***SD***	***U***	***p***
Physical functioning	normative	128	87.13	9.91	937.50	0.58
	clinical	16	88.28	10.30		
Emotional functioning	normative	128	68.91	17.39	862.50	0.30
	clinical	16	73.75	16.68		
Social functioning	normative	128	87.15	12.43	774.00	0.11
	clinical	16	90.31	14.66		
School functioning	normative	128	76.09	14.36	833.50	0.22
	clinical	16	80.00	17.42		
Total scale score	normative	128	80.77	9.75	805.00	0.16
	clinical	16	83.76	12.33		

Notes: *N* = number of participants, *M* = arithmetic mean, *SD* = standard deviation, *U* = Mann-Whitney test value, *p* = statistical significance.

Data analysis within the research group of children and adolescents

None of the sociodemographic characteristics (age, number of children in the family, time since diagnosis, mother's education, father's education) correlated statistically significantly with any of the SDQ scales ($p >$ 0.05; Table 2). The highest negative correlation was observed between the father's education and the scale of conduct problems, but it was not statistically significant. Moreover, none of the sociodemographic characteristics is statistically significantly linked to any of the PedsQL scales ($p >$ 0.05). The highest correlation was observed between the father's education and school functioning scale, but it was not statistically significant.

Table 2

Correlation between sociodemographic variables and SDQ and PedsQL scales of research group

SDQ scales	Age	Number of children	Time since diagnosis	Mother's education	Father's education
Emotional symptoms	0.35	-0.08	0.28	-0.13	0.03
Conduct problems	-0.26	-0.01	-0.03	0.31	-0.48
Hyperactivity/ inattention	0.18	-0.26	0.05	0.01	0.03
Peer relationship problems	0.34	0.24	-0.21	0.27	-0.16
Prosocial behaviour	-0.28	0.02	-0.14	-0.37	-0.08
Total difficulties score	0.22	-0.04	0.07	0.28	-0.25
PedsQL scales	**Age**	**Number of children**	**Time since diagnosis**	**Mother's education**	**Father's education**
Physical functioning	-0.24	0.14	-0.12	-0.10	0.18
Emotional functioning	-0.12	0.33	-0.18	-0.02	0.21
Social functioning	-0.21	0.18	-0.25	-0.28	0.05
School functioning	-0.23	0.32	-0.14	-0.25	0.43
Total scale score	-0.23	0.29	-0.20	-0.13	0.19

Notes: Correlations were calculated using Spearman's correlation coefficient *(p)*.

As shown in Table 3, there are no statistically significant gender-related differences in siblings of children with cancer on any of the SDQ and PedsQL scales ($p >$ 0.05). Nevertheless, it should be noted that males on average scored higher on all the PedsQL scales in comparison to females. On all the SDQ scales, females scored higher on average (which represents a higher level of psychosocial problems, with the exception of the prosocial behaviour scale), except for the scale of conduct problems, where males had a higher average score. However, none of the aforementioned differences between the genders was statistically significant. In addition, on all the PedsQL scales, we noticed a possible trend of higher scores (reflecting a higher quality of life) in male siblings compared to female siblings, even though gender differences were not statistically significant.

Table 3

Gender-related differences in SDQ and PedsQL (N = 16) of research group

SDQ scales	**Gender**	***N***	***M***	***SD***	***U***	***p***
Emotional symptoms	male	8	2.50	2.51	28.00	0.67
	female	8	2.88	2.42		
Conduct problems	male	8	1.88	1.46	30.00	0.83
	female	8	1.75	1.28		
Hyperactivity/inattention	male	8	3.63	2.26	31.00	0.92
	female	8	3.88	1.96		
Peer relationship problems	male	8	1.38	2.00	24.50	0.42
	female	8	2.00	1.85		
Prosocial behaviour	male	8	7.63	2.20	23.00	0.33
	female	8	8.75	1.04		
Total difficulties score	male	8	9.38	3.93	28.00	0.67
	female	8	10.50	5.63		
PedsQL scales	**Gender**	***N***	***M***	***SD***	***U***	***p***
Physical functioning	male	8	92.58	7.46	18.50	0.15
	female	8	83.98	11.38		
Emotional functioning	male	8	76.25	12.46	28.00	0.67
	female	8	68.75	23.87		
Social functioning	male	8	94.38	4.96	29.00	0.74
	female	8	86.25	19.96		
School functioning	male	8	85.63	12.66	20.50	0.22
	female	8	71.88	22.19		
Total scale score	male	8	87.91	7.01	23.50	0.37
	female	8	78.53	16.20		

Notes: *N* = number of participants, *M* = arithmetic mean, *SD* = standard deviation, *U* = Mann-Whitney test value, *p* = statistical significance.

Qualitative analysis

Table 4 shows that, through the categorization of responses from the siblings of children with cancer to the open question, 57 *coded quotations* (CQ) were obtained and semantically merged into 5 broad categories: changes in the family environment, experiencing unpleasant feelings, changes in interpersonal relationships, changes in school, and personal growth. *Coded transcripts* (CT) represent the number of participants that mentioned each individual category.

Siblings of children with cancer reported experiencing many changes in different areas of life. Changes in the family environment appeared in the responses of the majority of the participants (75%) and relate primarily to the experiences of physical separation from family members, lack of attention from parents, more frequent help with housework, and greater concern for health and hygiene; 44% of siblings reported changes in interpersonal relationships and 38% reported experiencing unpleasant feelings (sadness, fear, anger and anxiety). Changes in school and aspects of personal growth were mentioned by a lower percentage of participants (19%).

Table 4

Taxonomy of changes in life of healthy siblings after establishing a diagnosis of a sick child

	CQ	**CT**
Changes in family environment	18	12
Separation from the family - connectedness with the family		
Lack of attention		
Care of hygiene and health		
Helping parents at home		
Experiencing unpleasant feelings	17	16
Sadness		
Fear		
Anxiety		
Anger		
Changes in interpersonal relationships	15	7
Closer and more protective relationship to the sick sibling		
Fewer opportunities for playing and socializing with the sick sibling		
Prosociality in relation to other people		

Notes: CQ = number of coded quotations, CT = number of coded transcripts (number of participants)

	CQ	CT
Personal growth	4	3
Changes in school	3	3

Notes: CQ = number of coded quotations, CT = number of coded transcripts (number of participants)

Discussion

The psychosocial functioning of siblings of children with cancer who were included in the research sample is comparable to the psychosocial functioning of normative children and adolescents. The quality of life of siblings of children with cancer cannot be statistically distinguished from the quality of life of normative children in adolescents in any area. These results partly match those of Dutch researchers (Houtzager et al., 2003) who found that six months after established diagnosis, the quality of life of siblings of children with cancer normalises and is comparable to the quality of life of normative children and adolescents. The results of our research also correspond to the findings of Belgian researchers (Havermans, Croock, Vercruysse, & Goethals, 2015) who discovered that the quality of life of siblings of children with a chronic illness is comparable with the quality of life of normative children and adolescents.

Although the siblings of children with cancer do not differ statistically significantly from the normative children and adolescents in their quality of life and psychosocial characteristics, the qualitative descriptions of siblings show that they experience changes in their daily functioning which are not part of their normative development. The most common changes that siblings perceive are changes in the family environment. They relate mainly to the experience of physical separation from family members, lack of attention from parents, more frequent help with housework, and greater concern for health and hygiene. Siblings of children with cancer also undergo changes in interpersonal relationships. After established diagnosis, healthy siblings perceive their relationship to a sick brother or sister as closer and more protective. They especially miss the activities they used to do with a sick sibling but are made impossible in the process of treatment. In addition, in the period after the established diagnosis and during the process of treatment of the sick brother or sister, siblings experience more unpleasant feelings than before the established diagnosis. Above all, healthy siblings experience feelings of sadness, anxiety, fear, and anger, which corresponds to the findings of numerous researchers (Hamama, Ronen, &Feigin, 2000; Murray, 1998; Koch, 1985; Nolbris et al., 2007; Sloper, 2000).

From the responses of siblings, it is clear that some do not express the unpleasant feelings they experience, but prefer to repress them. Although the reasons for this were not examined, it is likely that they do not want to burden the already burdened family members. It is possible that for this reason, the siblings answered in a socially desirable manner or were biased towards minimizing or denying any problems. However, it is also possible that psychosocial problems of siblings of children with cancer are not expressed to the extent that they could be detected by the application of general psychological questionnaires designed for the detection of psychosocial disorders. In addition, some researchers (Alderfer et al., 2010) indicate that siblings of children with cancer do not usually reach clinically significant levels of emotional and behavioural disorders. However, there are individual differences between the siblings of children with cancer in psychosocial functioning, quality of life, and experiencing cancer.

Sociodemographic characteristics did not prove to be an important factor that would correlate with the psychosocial functioning and the quality of life of siblings of children with cancer. Statistically significant differences regarding gender were also not observed. Although the average scores indicate that girls reported slightly more psychosocial problems and poorer quality of life than boys on average, which was also ascertained by some researchers (Alderfer et al., 2003; Houtzager et al., 2005; Houtzager, Grootenhuis, Caron, & Last, 2004; Zebrack et al., 2002), we cannot state this with sufficient certainty because the differences were not statistically significant.

Implications

In cases where healthy siblings experience unpleasant feelings for a long time, and the marginal position of siblings of children with cancer in the family structure continues, there is a risk of developing psychological problems. Therefore, it is important that parents as well as professionals identify their psychosocial needs and meet them accordingly. Since parents are often unable to fully address the needs of healthy siblings because of taking care for a sick child, it is important that members of the extended family, health workers and school staff, and other community members are involved. In our opinion, even minimal interventions, such as asking healthy siblings how they feel or paying them individual attention in terms of asking them about their interests, may have a positive effect on their psychological health. Health workers could involve healthy siblings in the process of treatment of the sick child by showing them the hospital environment and by informing them about the medical examinations and the treatment process. School staff can help siblings by listening to them and giving them opportunities to express their feelings through writing, artistic expression, physical education, music, or drama activity. Teachers can pay attention to changes in school performance and changes in their emotional state or behaviour and, if appropriate, refer siblings to school counsellors. Members of the community (e.g., neighbours and friends) can contribute to the normalisation of routines of healthy siblings for instance by offering transport to leisure activities if needed. One of the possible interventions by professionals is the formation of support groups for siblings of children with cancer where they have the opportunity to share their experiences and feelings. In addition to support groups, educational groups can be offered, which focus on providing basic information regarding disease and treatment. Individual psychotherapy treatment may be indicated in the case of emotional or behavioural problems related to the disease of a sibling. Help to siblings of children with cancer may also be offered indirectly through the support of their parents, who may develop more understanding and support for their healthy child.

The adjustment of healthy siblings to cancer in a child within the family is a complex and multidimensional process. It would be interesting to observe also other factors which may affect the psychosocial functioning and the quality of life of siblings of children with cancer. It would be interesting to investigate the correlation between how the family functions, the quality of the relationship between siblings and siblings' strategies of coping with their psychological adjustment. In the future, it would be useful to investigate the characteristics of siblings who are at higher risk of developing psychosocial problems. Such a study would facilitate the development of specific interventions for siblings with less adaptive psychosocial functioning.

Limitations of the research

One of the limitations of the research is a small research sample, which makes the statistical power of the findings of the quantitative research lower. Another limitation of the research is that the questionnaires used may not be specific enough to detect changes in psychosocial functioning in siblings as a result of cancer in children. For a better understanding of the correlation between the time since diagnosis, the psychosocial functioning, and the quality of life of siblings of children with cancer, it would be important to address the research longitudinally. Although the results of the study indicate that healthy siblings have no significant problems in psychosocial functioning during the treatment of a sick child, it is possible that the effects of cancer occur later in the family's life. In some families, inconsistent discipline and differential treatment of children continues to shape family dynamics during the off-treatment phase of childhood cancer. Despite the above-mentioned limitations, the findings of the research contribute to better awareness among parents, teachers and the general public about the siblings' psychological well-being.

Conflicts of Interest

The authors declare that no conflicts of interest exist.

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Ethical Approval

The research includes human data, which has been performed in accordance with the Declaration of Helsinki and has been approved by the Republic of Slovenia National Medical Ethics Committee. Participants were informed about their right not to participate in the study and gave their consent before the study.

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