



## **PREDICTORS OF PSYCHOSOCIAL ADJUSTMENT IN ADOLESCENTS WITH CHRONICALLY ILL PARENTS: TESTING THE MODERATING ROLE OF FAMILY FUNCTIONING AND PERCEIVED SOCIAL SUPPORT**

**Mirela Ciudin** • **Maria Nicoleta Turliuc**  
*“Alexandru Ioan Cuza” University, Romania*

### *Abstract*

*Studying the impact of parental physical illness on adolescents is a key component of psychological interventions designed to increase resilience. Our study examined the relationship between stress induced by parental chronic illness, overall family functioning, perceived social support, and psychosocial adjustment in adolescents. It has been presumed that family functioning and perceived social support moderate the adverse impact of parental chronic illness on adolescents' psychosocial adjustment. One hundred and twenty six Romanian adolescents completed a set of standardized measures. Data were analyzed using multiple linear regression and moderation analysis with IBM SPSS. Compared to boys, girls reported a higher score on internalizing problems. The gender difference in externalizing problems was statistically marginal. Gender, stress associated with parental chronic illness, and perceived social support were predictors of internalizing problems, while general family functioning was a negative predictor of externalizing problems. Neither overall family functioning, nor perceived social support moderated the relationship between stress associated with parental chronic illness and psychosocial adjustment in our study sample. Stress induced by parental chronic illness is a risk factor for internalizing problems in adolescents, while healthy family functioning and availability of social support are protective factors. Moreover, the positive family functioning may be a protective factor against externalizing problems. Psychological interventions must pay attention to provide adolescents and their families with key abilities that contribute to resilient coping with stress.*

---

Correspondence concerning this paper should be addressed to:

• “Alexandru Ioan Cuza” University, Department of Psychology, Address: 3 Toma Cozma Street, 700554, Iasi, Romania. E-mail: [mirela.ciudin@gmail.com](mailto:mirela.ciudin@gmail.com)

Keywords: parents with chronic illness; adolescents; psychosocial adjustment; predictors; moderation

## **Introduction**

Chronic illnesses are a major source of concern for public health professionals, due to their social and economic costs. Chronic illnesses share the following features (Stein, Bauman, Westbrook, Coupey, & Ireys, 1993): a) have a biological or psychological basis; b) symptoms have a duration of at least one year; c) the illness course is associated with one or more of the following types of sequels: limitation in physical, cognitive, emotional and social functioning, as well as in the natural maturation and development processes; dependency on medication, special diets, assistive devices or personal assistance to compensate for or minimize limitation of daily functioning, activities and social role; continuous need for medical care, psychological and educational services, and the need for special treatments or interventions.

### *Chronic disease as a threat to family life course*

Chronic illness in a family member can be a serious threat to the functioning of the entire family system through its debilitating effects on the diagnosed child or parent. For example, the results of the studies suggest that although most families respond positively to the suffering of its members diagnosed with cancer and adapt in a resilient manner to the diagnosis and its consequences, the physical and emotional strains associated with the different stages of this chronic disease can adversely affect the family system functioning (Weihs & Politi, 2006). Other chronic medical conditions such as mental illnesses, dementia, rheumatoid arthritis, multiple sclerosis or diabetes may have a negative impact on emotional well-being and family health (Auslander, Bubb, Rogge, & Santiago, 1993; Bogosian, Moss-Morris, & Hadwin, 2010; das Chagas Medeiros, Ferraz, & Quaresma, 2000; Kiecolt-Glaser, Dura, Speicher, Trask, & Glaser, 1991; Song, Biegel, & Milligan, 1997). The family members diagnosed with a chronic illness can no longer fulfill their domestic tasks, being exposed to experiencing a wide variety of symptoms, such as anxiety, depression, self-image impairment, and sense of physical and emotional isolation or helplessness (Groves & Muskin, 2005).

Also, a chronic illness in a family member negatively impacts on the continuity of family goals and plans, as well as on the quality of relationship between parents and their children.

The pioneering work carried out by J. Rolland (1987) facilitated the efforts of researchers aimed at explaining how chronic illness in a family member leads to long-term changes in developmental trajectory and behaviors of the other healthy members, as well as in the new roles that they have to learn in order to cope with the stress associated with chronic medical conditions. According to Rolland, chronic illnesses vary in their core characteristics and in the way which they affect the family and the adjustment process. In the context of the Family Systems-Illness (FSI) model, Rolland categorized illnesses by four characteristics, namely onset, course, outcome, and incapacitation or the degree of impairment. These features are relevant to understanding the individual differences in the adjustment of patients and their families to a chronic medical condition. According to Rolland (1987), chronic illness can negatively affect the family instrumental functions in a variety of ways, depending on the illness type, convergence of the roles the ill person fulfills in the family (e.g., breadwinner, romantic partner, parent, etc. ) and the way by which the illness characteristics interact with the ability of family members to accomplish their preexisting roles. The healthy family members will have to adapt their roles significantly to accommodate the care giving demands imposed by an ill person.

*Impact of parental chronic illness on psychosocial functioning in adolescents*

The impact of parental chronic illness on the functioning and adjustment of children and adolescents began to receive increasing attention from researchers and professionals working in fields like psychological assistance, educational counseling and social care. Children and adolescents living with at least one parent diagnosed with a chronic illness are at higher risk of developing physical illnesses, emotional (e.g., internalizing), social (e.g., externalizing) and academic problems and of experiencing impaired well-being (Bauman, Camacho, Silver, Hudis, & Draimin, 2002; Faulkner & Davey, 2002; Pedersen & Revenson, 2005; Sieh, Dijkers, Visser-Meily, & Meijer, 2012; Sieh, Visser-Meily, & Meijer, 2013a; Sieh, Meijer, Oort, Visser-Meily, & van der Leij, 2010). Moreover, children and adolescents of a parent with a chronic medical condition tend to report higher levels of psychological stress (Pedersen

& Revenson, 2005; Sieh, Meijer, & Visser-Meily, 2010) and internalizing problems (Sieh, Visser-Meily, & Meijer, 2013a; Sieh et al., 2010).

The quality of adaptational processes and functioning among the children and adolescents of parents with chronic illnesses depends on a number of internal and external resources available to them and which they activate in their effort to deal with difficulties (Huizinga, Visser, Zelders-Steyn, Teule, Reijneveld, & Roodbol, 2011; Murphy, Marelich, Hoffman, & Schuster, 2006; Sieh, Oort, Visser-Meily, & Meijer, 2014). A number of variables, such as the age and mental health status of chronically ill parent, duration and unpredictable nature of the illness, socioeconomic status of the family, quality of social and emotional family climate, adolescents' age, their cognitive skills, evaluations of the demands they must face, self-valuing, orientation towards obtaining social support, coping style, etc. mediate or moderate the psychological responses of adolescents with chronically ill parents. With an adapted version of the transactional stress and coping model proposed by M. C. Hocking and J. E. Lochman it was found that family functioning, quality of life in the ill parent, daily care demands on adolescents, and stress level mediate the effect that parental chronic medical condition has on adolescents' emotional functioning (Sieh et al., 2014). According to the same study, adolescents' orientation towards active problem solving and seeking social support are protective factors against the risk of experiencing stress and lower self-esteem.

The results of empirical studies focused on highlighting the positive and negative aspects of adjustment among children and adolescents living with a chronically ill parent suggest that family variables, such as adaptability, quality of parent-child relationship and quality of relationship between parents, level of parent-child attachment, as well as social support from parents (especially from the healthy one) are protective factors against stress associated with parental chronic medical condition (Bauman et al., 2002; Kotchick, Summers, Forehand, & Steele, 1997; Jones, Foster, Zalot, Chester, & King, 2007; Sieh et al., 2012; Sieh, Meijer, & Visser-Meily, 2010).

Due to its implications for the individual health of family members and family system functioning, parental chronic illness began to attract the attention of both professionals and the researchers (Bauman et al., 2002; Faulkner & Davey, 2002; Sieh, Meijer, & Visser-Meily, 2010). Studies have sought to highlight the profile of optimal psychosocial adjustment among children and adolescents of a chronically ill parent and to identify the variables that

contribute to resilience or poor adjustment to parental medical condition (Bogosian, Moss-Morris, & Hadwin, 2010, Huizinga et al., 2011; Kotchick et al., 1997; Sieh et al., 2014). In Romania, no clear statistics on the number and profile of families in which a chronic medical condition was diagnosed in one or both parents have been published. Despite this, professionals working in the education system (e.g., physicians or school counselors) have reported numerous cases of children/adolescents living with at least one chronically ill parent. Children and adolescents of chronically ill parents require special attention, given the fact that parental medical condition may have a negative impact not only on psychosocial adjustment but also on academic functioning (Sieh, Visser-Meily, & Meijer, 2013 a,b).

### **Objectives**

In Romania, the impact that parental chronic illness has on child and adolescent functioning has not aroused much interest. This study aimed at covering the deficit in this research topic. The current study has two main objectives:

1. to investigate the predictors of psychosocial adjustment among adolescents with chronically ill parents;
2. to test the moderating role of overall family functioning and perceived social support on the relationship between quality of life and psychosocial adjustment among adolescents with chronically ill parents.

### **Variables**

The main independent variables were the quality of life in adolescents whose parents have a chronic medical condition, family functioning and availability and adequacy of social support (i.e., perceived social support). The dependent variables were internalizing (i.e., anxiety, depression, social withdrawal, and somatic complaints) and externalizing problems (i.e., breaking social norms and aggressive behaviors). The study started from the assumption that impaired quality of life (as a result of the burden of parental chronic illness) is associated with higher levels of internalizing and externalizing problems among adolescents. Figure 1 depicts the conceptual model hypothesizing family functioning and perceived social support as moderators of the impact the

quality of life in adolescents with chronically ill parents has on psychosocial adjustment.

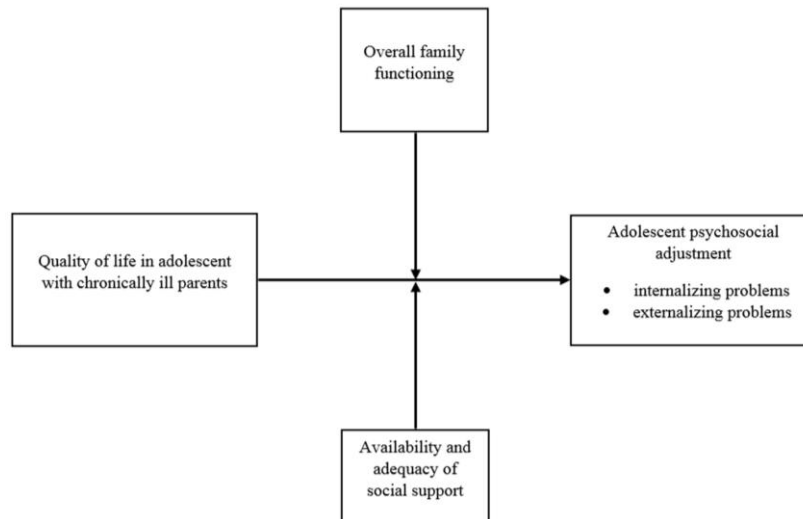


Figure 1. Conceptual model of the study

## Method

### *Participants*

The participants were 126 Romanian teenagers aged 15 to 19 ( $M=16.53$ ;  $SD=1.15$ ). There were 91 girls and 35 boys. The majority (96.8%) lived with both natural parents. In a single participant both parents were adoptive parents and the remaining participants lived with a natural and a step parent. The set of questionnaires included questions on the people the adolescents lived with at home, if one of the parents had gone to work abroad or was deceased, and if the parents were divorced. By combining responses to these questions, the family status was derived. Thus, 82.5% ( $N=104$ ) of participants lived in intact families, and the remaining in temporarily or permanently disintegrated families. Participants had either one chronically ill parent ( $N=112$ ) or both parents were diagnosed with a chronic medical condition ( $N=14$ ). On average, parents were diagnosed with a chronic illness

for 7.98 years ( $SD=7.28$ ; range: 0.42-38). In nine of the analyzed cases, one of the parents was diagnosed with two chronic diseases. Parents were most commonly diagnosed with: cardiovascular diseases ( $N=60$ ) and type 2 diabetes ( $N=25$ ). Also, eight cases of hepatitis B or C, nine cancer cases and eight cases of endocrine diseases were recorded.

### *Measures*

The quality of life in adolescents with chronically ill parents was measured with 37 items adapted from the revised *Parental Illness Impact Scale* (PIIS-R; Morley, Selai, Schrag, Thompson, & Jahanshahi, 2010). The items were designed to capture eight dimensions of quality of life, as follows: burden of daily help (8 items), emotional impact (4 items), social impact (6 items), communication and understanding of meanings of chronic illness (7 items), impact on personal future (3 items), friends' reactions (3 items), parent-child relationship (3 items), and overall well-being (3 items). Response categories varied from 1 (never/very poor) to 5 (always/excellent). To avoid overestimation of common variance with measures for overall family functioning and internalizing problems, only the items for the burden of daily help, social impact, impact on personal future, and friends reactions were taken into account to estimate the overall quality of life. These items were summed to obtain the quality of life score for each participant (possible range: 20-100). Higher scores indicated lower levels of perceived quality of life. Cronbach's alpha for all 20 items showed a high internal consistency ( $\alpha=.90$ ).

Overall family functioning was measured with 12 items (*General Functioning/GF scale*) taken from the McMaster Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). The items were formulated to assess the family members' perception of the overall health of their own family. Each participant rated his or her agreement or disagreement with how well an item describes his or her family by selecting among the four alternative responses: from 1 (strongly disagree) to 4 (strongly agree). For each participant, a total score was derived by averaging all items (possible range: 1-4). Higher scores indicated healthier overall functioning of the family-of-origin. The Romanian version of GF was standardized with 434 Romanian adolescents (Ciudin, 2016, *in press*). For the current sample,  $\alpha=.83$ .

Perceived social support was captured with the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988).

The MSPSS measures the perceived availability and adequacy of social support received from three sources: family (4 items), close friends (4 items), and significant others (4 items). Participants reported their agreement with the 12 items on a six-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). For each participant, a total score was computed by averaging all items (possible range: 1-7). Higher score reflects high perceived availability and adequacy of support from family, friends and significant others. A psychometric study assessing the factor structure, construct validity, criterion-related validity, and reliability of the Romanian version of MSPSS was published (Marian, 2007). High internal consistency reliability estimate of .88 was found for the current sample.

Internalizing and externalizing problems in adolescents who participated in our study were measured using the *Youth Self Report* (YSR; Achenbach, 1991). Participants rated their emotional and behavioral problems on a three-point scale ranging from 0 (not true for me) to 2 (very/often true for me). Items were summed to obtain a total score for internalizing symptoms (31 items; possible range: 0-62) and externalizing problems (32 items; possible range: 0-64). Cronbach's alphas for the internalizing and externalizing problems were .90, respectively .88.

#### *Procedure*

Participants were recruited through non-probability sampling plan from five public high schools in one of the largest towns in Romania. The participants completed a set of seven questionnaires as part of an ongoing study on the impact of parental chronic illness on adolescents' emotional, behavioral and social functioning. Participants gave their verbal consent to answering the questionnaire. Responses were anonymous.

#### *Statistical analyses*

The data were analyzed using SPSS 20.00. For all variables, means and standard deviations were computed and Student's t-test for two-independent samples was used in order to perform comparisons by gender, family status, and parents' health status. As reference to test statistical significance,  $p < .05$  (two-tailed) was taken into consideration. For each comparison, effect size was estimated using the Cohen's  $d$  coefficient. According to Cohen (1992), values around .20 indicate a small effect size, values around .50 indicate a moderate



effect size, while values as high as .80 indicate a large effect size. Linear associations between variables were estimated using Pearson product-moment correlation coefficient. The hypothetical moderating effects of overall family functioning and perceived social support were tested using the hierarchical multiple linear regression and recommendations in the literature focused on quantitative data analysis in behavioral sciences (Baron & Kenny, 1986; Frazier, Tix, & Barron, 2004). The moderating relationship can be inferred when three conditions are met: a) the independent variable has a significant effect on the dependent variable; b) the moderating variable has a significant effect on the dependent variable; c) the interaction of the effects of the independent and moderating variables is significant and accounts for significantly more (compared to the regression models in the previous steps) of the variance of the dependent variable. Based on the recommendations of Frazier, Tix and Barron (2004), the variables related to quality of life in adolescents with chronically ill parents, family functioning and perceived social support were standardized (*z*-score) to prevent multicollinearity.

## Results

### *Preliminary analyses*

In the current sample of adolescents with chronically ill parents, the PIIS-R score indicated high perceived levels of quality of life, while scores on YSR scales indicated low levels of internalizing and externalizing problems (see Table 1). Scores on overall family functioning and perceived social support felt in the moderate-to-high range. Compared to boys ( $M=14.54$ ;  $SD=9.10$ ), girls reported higher levels of internalizing problems ( $M=19.70$ ;  $SD=10.61$ ;  $t=2.53$ ;  $p<.05$ ), with a moderate effect size ( $d=0.51$ ). Conversely, boys tended to report more externalizing problems (boys –  $M=15.71$  and  $SD=9.32$ ; girls -  $M=12.84$  and  $SD=7.97$ ), but the difference was statistically marginal ( $t=1.72$ ;  $p=.088$ ). There was no difference between girls and boys in PIIS-R score (girls -  $M=33.69$  and  $SD=12.76$ ; boys -  $M=30.77$  and  $SD=8.42$ ;  $t=1.25$ ;  $p=.213$ ). Neither family status (intact vs. disintegrated), nor parents' health status (only one parent vs. both parents chronically ill) had no significant effects on quality of life, internalizing problems, and externalizing problems.

*Correlational analysis*

All independent variables (i.e., quality of life, overall family functioning, and perceived social support) had significant correlations with levels of internalizing and externalizing problems (Table 1). Correlations with internalizing problems were higher than those with externalizing problems. Quality of life showed positive correlations with both internalizing (moderate association) and externalizing problems (mild association). Overall family functioning showed negative mild correlations with both internalizing and externalizing problems. Perceived social support also showed negative correlations (moderate association with internalizing problems and mild association with externalizing problems). The size of the correlations among quality of life, family functioning, and perceived social support was mild or moderate, thus the problem of multicollinearity being avoided. Duration of chronic illness and adolescents' age showed no significant correlations with scores in quality of life, internalizing symptoms, and externalizing problems.

Table 1. Means, standard deviations and correlations among quality of life in adolescents, overall family functioning, perceived social support, internalizing problems, and externalizing problems

Variables	M	SD	1	2	3	4	5	6
1. Quality of life	32.88	11.76	-					
2. Family functioning	3.14	0.49	-.32***	-				
3. Perceived social support	5.53	1.00	-.36***	.50***	-			
4. Internalizing problems	18.25	10.43	.48***	-.38***	-.49***	-		
5. Externalizing problems	13.64	8.43	.24**	-.36***	-.29**	.50***	-	
6. Duration of illness	7.98	7.28	-.02	.14	-.03	.03	-.06	-
7. Adolescents' age	16.53	1.15	-.04	.03	.07	-.07	.11	.15

Note: \*\* p<.01; \*\*\* p<.001

*Analysis based on multiple linear regression*

When the dependent variable was the level of internalizing problems, adolescents' gender, quality of life, overall family functioning, and perceived social support together accounted for 39.4% of the variance in the corresponding YSR scales (Table 2). Gender ( $\beta=0.22$ ;  $p<.01$ ), quality of life ( $\beta=0.29$ ;  $p<.001$ ) and perceived social support ( $\beta=-0.35$ ;  $p<.001$ ) were significant predictors of the level of internalizing problems. Gender accounted for 5.0% of the variance in the internalizing problems score, quality of life

6.9%, and social support 8.8%. Thus, female gender, lower levels of quality of life, and social support were associated with more internalizing problems.

Table 2. Multiple linear regression results of internalizing and externalizing problems by adolescents' gender, quality of life, overall family functioning, and perceived social support

Independent variables	Internalizing problems				Externalizing problems			
	B	SE	$\beta$	$r_{sp}^2$	B	SE	$\beta$	$r_{sp}^2$
Gender <sup>1</sup>	5.27	1.04	0.22**	0.050	-	-	-	-
Quality of life	0.25	0.06	0.29***	0.069	0.08	0.06	0.11	-
Family functioning	-2.43	1.71	-0.11	-	-4.58	1.65	-0.27**	0.053
Perceived social support	-3.70	0.87	-0.35***	0.088	-0.96	0.83	-0.11	-
R	0.64				0.40			
F <sub>R</sub>	21.15***				7.70***			
R <sup>2</sup> <sub>adjusted</sub>	0.394				0.140			

Note: <sup>1</sup> Gender was coded as a dummy-type variable (1 = girls, 0 = boys/reference category); \*\* p<.01; \*\*\* p<.001

Also, together, the quality of life, family functioning, and perceived social support accounted for 14% of variance in the externalizing problems score. However, only overall family functioning was a significant predictor ( $\beta=-0.27$ ;  $p<.01$ ). The amount of variance in externalizing problems accounted for solely by family functioning was equal to 5.3%. Thus, the healthier family functioning was associated with lower levels of externalizing problems.

#### *Analysis of moderation effects*

As overall family functioning has not contributed significantly in predicting internalizing problems, and the level of perceived quality of life and perceived social support were not significant predictors of externalizing problems, the models in which family functioning and perceived social support were presumed to be variables that moderate the relationships between quality of life and internalizing and externalizing problems, respectively, were not eligible for testing. The only tested model included quality of life as independent variable, perceived social support as moderator, and internalizing problems as dependent variable. Hierarchical multiple linear regression analysis data did not support the hypothesis of the moderating effect of social support. Thus, quality of life was a positive predictor ( $\beta=0.34$ ;  $p<.001$ ) for internalizing problems, while perceived social support was a negative predictor ( $\beta=0.37$ ;  $p<.001$ ). However, the interaction between these two variables was not a

predictor of internalizing problems ( $\beta=-0.01$ ;  $p=.878$ ). Thus, the third condition of moderating effect was not met.

### **Conclusions**

Chronic illness is a real challenge for patients and their families. Often, the onset and diagnosis elicit a state of crisis, which the patient and the other healthy family members try to handle by using the available individual and family resources. As the illness progresses, the family members are forced to adapt their roles and responsibilities to meet the special needs of the patients, particularly of those diagnosed with chronic illnesses (e.g., stroke, Alzheimer's disease, cancer or chronic kidney disease) which are associated with a rapid deterioration in physical functioning and a gradual inability to perform the family, social and professional roles. When the illness symptoms become complicated and the demands exceed patient and family resources, the risk of chronic stress increases.

Children and adolescents living with at least one chronically ill parent display a wide range of vulnerabilities. In addition to the age-specific developmental tasks, they have to deal with the stress of chronic illness in one or both parents. The results of the studies suggest that a diagnosis of chronic illness in one or both parents increases the risk for the occurrence of adverse factors in the developmental processes of children and adolescents, as well as in their emotional, social and academic functioning (Bauman et al., 2002; Bogosian, Moss-Morris, & Hadwin, 2010, Faulkner & Davey, 2002; Korneluk & Lee, 1998; Sieh, Visser-Meily, & Meijer, 2013a; Sieh et al., 2010; Stein et al., 1993). Compared with adolescents whose parents are healthy, those with chronically ill parents tend to report more internalizing problems, as they are burdened with many household chores and responsibilities involved in caring for the ill parents (Sieh, Visser-Meily, & Meijer, 2013a). These adverse factors are involved in the restriction of personal and social activities and contribute to an increased risk for psychological stress. Another risk factor for stress and impaired well-being among adolescents is the stigma associated with chronic diseases such as HIV/AIDS (Jones et al., 2007).

The main goal of this study was to determine the individual, family and social factors that contribute to the prediction of the level of psychosocial

adjustment of adolescents living with at least one chronically ill parent. A notable result was that girls reported more internalizing problems than boys. Moreover, gender was a positive predictor for the level of internalizing problems. Our data are consistent with those reported in previous studies on adolescents with chronically ill parents (Sieh, Visser-Meily, & Meijer, 2013b) and in general population of adolescents (Rudolph, 2002). The studies have yielded convergent results showing that girls tend to be at higher risk for poor emotional functioning due to parental chronic illness (Korneluk & Lee, 1998; Sieh et al., 2012; Sieh, Meijer, & Visser-Meily, 2010). A possible explanation for this difference could be the coping strategies that girls and boys use to meet stressful demands (Hampel & Petermann, 2005). Thus, both in early and middle adolescence, girls tend to score lower on adaptive and higher on maladaptive coping strategies when faced with stressful and difficult life events.

Another significant predictor of internalizing problems among the adolescents with chronically ill parents was the level of perceived quality of life. This variable was operationalized through four dimensions: burden of daily help, impact on social activities and personal future, and friends' reactions. In the current sample of adolescents with chronically ill parents, low levels of quality of life were associated with more internalizing problems. Our finding is consistent with data reported in other studies aimed at estimating the relationship between the quality of life and well-being among adolescents of parents diagnosed with Parkinson's disease (Schrag, Morley, Quinn, & Jahanshahi, 2004) or internalizing problems among adolescents with mentally ill parents (Wiegand-Grefe, Halverscheid, Petermann, & Plass, 2012). Especially in the advanced stages of parental chronic illness adolescents can be burdened with caring for their ill parent and other household responsibilities besides the usual tasks (e.g., attending school and preparing homeworks). This can contribute to a decrease in the frequency and quality of relationships with peers and thereby to dissatisfaction. Perceived social support was the third significant predictor of internalizing problems in the current sample of adolescents with chronically ill parents. High levels of social support were associated with fewer internalizing problems. This result confirms the data reported by previous studies (Kotchik et al., 1997). Social support is an important resource for the process of coping with life demands, positive functioning of adolescents, youth and adults, and preservation of physical and

mental health (Colarossi & Eccles, 2003; Thoits, 2010; Wethington & Kessler, 1986).

The only significant predictor of externalizing problems was the overall family functioning. High scores on family functioning were associated with fewer externalizing problems. This result is in line with previous studies (Diareme, Tsiantis, Kolaitis, Ferentinos, Tsalamaniotis, & Paliokosta, 2006). Data of the studies examining the relationship between family functioning and adjustment of children and adolescents to parental illness suggest that such variables as family cohesion, level of family conflict, coping styles used by the family, level of helpfulness and quality of parent-child relationship are important predictors (Bauman et al., 2002; Jones et al., 2007; Korneluk & Lee, 1998; Sieh et al., 2012).

#### *Limitations*

One of the limitations of the present study is the heterogeneity of parental chronic illnesses in our adolescent sample. We believe that the implications of sudden-onset, rapidly progressing and potentially fatal chronic illnesses (e.g., cancer or stroke) on family life and children/adolescents' adjustment process are not similar with the implications of some less severe illnesses, such as diabetes, peptic ulcer or chronic bronchitis. Another limitation is the disproportion between the number of adolescents living in single-parent and two-parent families. This characteristic of our adolescent sample did not allow us to estimate the differential impact of family type and parental medical condition. Family type can have a significant effect on adolescent psychosocial adjustment. In a study on the relationships between parental depressive symptoms, family type, and adolescent functioning, Sieh, Visser-Meily and Meijer (2013b) concluded that growing up with a chronically ill parent in an intact family with two parents may have less negative impact on adolescent behavioral functioning than growing up in a single-parent family.

In sum, our study suggests that in adolescents who live with chronically ill parents female gender is a risk factor for emotional maladjustment (i.e., internalizing problems), while perceived quality of life (related to parental chronic medical condition) and perceived social support are protective factors. Further research is needed to better understand the mechanisms underlying psychosocial adjustment in adolescents with chronically ill parents.

### References

- Achenbach, T. (1991). *Manual for the Youth Self Report and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Auslander, W. F., Bubb, J., Rogge, M., & Santiago, J. V. (1993). Family stress and resources: potential areas of intervention in children recently diagnosed with diabetes. *Health & Social Work, 18*, 101-113.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bauman, L. J., Camacho, S., Silver, E. J., Hudis, J., & Draimin, B. (2002). Behavioral problems in school-aged children of mothers with HIV/AIDS. *Clinical Child Psychology and Psychiatry, 7*, 39-54.
- Bogosian, A., Moss-Morris, R., & Hadwin, J. (2010). Psychosocial adjustment in children and adolescents with a parent with multiple sclerosis: a systematic review. *Clinical Rehabilitation, 24*, 789-801.
- Ciudin, M. (2016, *in press*). Proprietăți psihometrice ale scalei "Funcționare Generală" din McMaster Family Assessment Device [Psychometric properties of the General Functioning scale of the McMaster Family Assessment Device]. *Revista de Psihologie* (original in Romanian).
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.
- Colarossi, L. G., & Eccles, J. S. (2003). Differential effects of support providers on adolescents' mental health. *Social Work Research, 27*, 19-30.
- Das Chagas Medeiros, M. M., Ferraz, M. B., & Quaresma, M. R. (2000). The effect of rheumatoid arthritis on the quality of life of primary caregivers. *The Journal of Rheumatology, 27*, 76-83.
- Diareme, S., Tsiantis, J., Kolaitis, G., Ferentinos, S., Tsalamaniotis, E., & Paliokosta, E. (2006). Emotional and behavioural difficulties in children of parents with multiple sclerosis: a controlled study in Greece. *European Child and Adolescent Psychiatry, 15*, 309-318.
- Epstein, N. B., Baldwin, L. M., & Bishop, D. S. (1983). The McMaster Family Assessment Device. *Journal of Marital and Family Therapy, 9*, 171-180.

- Faulkner, R. A., & Davey, M. (2002). Children and adolescents of cancer patients: the impact of cancer on the family. *The American Journal of Family Therapy, 30*, 63-72.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134.
- Groves, M. S., & Muskin, P. R. (2005). Psychological responses to illness. In J. L. Levenson (Ed.), *The American psychiatric publishing textbook of psychosomatic medicine* (pp. 67-88). Washington DC: American Psychiatric Association.
- Hampel, P., & Petermann, F. (2005). Age and gender effects on coping in children and adolescents. *Journal of Youth and Adolescence, 34*, 73-83.
- Huizinga, G. A., Visser, A., Zelders-Steyn, Y. E., Teule, J. A., Reijneveld, S. A., & Roodbol, P. F. (2011). Psychological impact of having a parent with cancer. *European Journal of Cancer, 47* (Suppl. 3), S239-S246.
- Jones, D. J., Foster, S. E., Zalot, A. A., Chester, C., & King, A. (2007). Knowledge of maternal HIV/AIDS and child adjustment: the moderating role of children's relationships with their mothers. *AIDS and Behavior, 11*, 409-420.
- Kiecolt-Glaser, J. K., Dura, J. R., Speicher, C. E., Trask, O. J., & Glaser, R. (1991). Spousal caregivers of dementia victims: longitudinal changes in immunity and health. *Psychosomatic Medicine, 53*, 345-362.
- Korneluk, Y. G., & Lee, C. M. (1998). Children's adjustment of parental physical illness. *Clinical Child and Family Psychology Review, 1*, 179-193.
- Kotchick, B. A., Summers, P., Forehand, R., & Steele, R. G. (1997). The role of parental and extrafamilial social support in the psychosocial adjustment of children with a chronically ill father. *Behavior Modification, 21*, 409-432.
- Marian, M. (2006). Validarea Scalei Multidimensionale a Suportului Social Perceput (SMSSP). Caracteristici psihometrice [Validation of Multidimensional Scale of Perceived Social Support (MSPSS). Psychometric characteristics]. *Analele Universității din Oradea. Fascicula Psihologie, X*, 21-35.



- Morley, D., Selai, C., Schrag, A., Thompson, A. J., & Jahanshahi, M. (2010). Refinement and validation of the Parental Illness Impact Scale. *Parkinsonism and Related Disorders*, *16*, 181-185.
- Murphy, D. A., Marelich, W. D., Hoffman, D., & Schuster, M. A. (2006). Parental HIV/AIDS: an empirical model of the impact on children in the United States. In D. Russell Crane & E. S. Marshall (Eds.), *Handbook of families & health. Interdisciplinary perspectives* (pp. 178-194). Thousand Oaks, CA: Sage Publication, Inc.
- Pedersen, S., & Revenson, T. A. (2005). Parental illness, family functioning, and adolescent well-being: a family ecology framework to guide research. *Journal of Family Psychology*, *19*, 404-409
- Rolland, J. S. (1987). Chronic illness and the life cycle: a conceptual framework. *Family Processes*, *26*, 203-221.
- Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health*, *30*, 3-13.
- Schrag, A., Morley, D., Quinn, N., & Jahanshahi, M. (2004). Development of a measure of the impact of chronic parental illness on adolescent and adult children. The Parental Illness Impact Scale (Parkinson's disease). *Parkinsonism & Related Disorders*, *10*, 399-405.
- Sieh, D. S., Dikkers, A. L. C., Visser-Meily, J. M. A., & Meijer, A. M. (2012). Stress in adolescents with a chronically ill parent: inspiration from Rolland's family systems-illness model. *Journal of Developmental and Physical Disabilities*, *24*, 591-606.
- Sieh, D. S., Meijer, A. M., & Visser-Meily, J. M. A. (2010). Risk factors for stress in children after parental stroke. *Rehabilitation Psychology*, *55*, 391-397.
- Sieh, D. S., Meijer, A. M., Oort, F. J., Visser-Meily, J. M. A., & Van der Leij, D. A. V. (2010). Problem behavior in children of chronically ill parents: a meta-analysis. *Clinical Child and Family Psychology Review*, *13*, 384-397
- Sieh, D. S., Oort, F. J., Visser-Meily, J. M. A., & Meijer, A. M. (2014). Mediators for internalizing problems in adolescents of parents with chronic medical condition. *Journal of Developmental and Physical Disabilities*, *26*, 67-82.

- Sieh, D. S., Visser-Meily, J. M. A., & Meijer, A. M. (2013a). Differential outcomes of adolescents with chronically ill and healthy parents. *Journal of Child and Family Studies*, 22, 209-218.
- Sieh, D. S., Visser-Meily, J. M. A., & Meijer, A. M. (2013b). The relationship between parental depressive symptoms, family type, and adolescent functioning. *PLoS ONE*, 8 (11). doi:10.1371/journal.pone.0080699.
- Song, L. Y., Biegel, D. E., & Milligan, S. E. (1997). Predictors of depressive symptomatology among lower social class caregivers of persons with chronic mental illness. *Community Mental Health Journal*, 33, 269-286.
- Stein, R. E. K, Bauman, L. J, Westbrook, L. E, Coupey, S. M., & Ireys, H. T. (1993). Framework for identifying children who have chronic conditions: the case for a new definition. *Journal of Pediatrics*, 122, 342-347.
- Thoits, P. A. (2010). Stress and health: major findings and policy implications. *Journal of Health and Social Behavior*, 51 (Special Issue), S41-S53.
- Weih, K., & Politi, M. (2006). Family development in the face of cancer. In D. Russell Crane & E. S. Marshall (Eds.), *Handbook of families & health. Interdisciplinary perspectives* (pp. 3-18). Thousand Oaks, CA: Sage Publication, Inc.
- Wethington, E., & Kessler, R. C. (1986). Perceived support, received support, and adjustment to stressful life events. *Journal of Health and Social Behavior*, 27, 78-89.
- Wiegand-Grefe, S., Halverscheid, S., Petermann, F., & Plass, A. (2012). Psychopathology and quality of life in children of mentally ill parents. In L. L'Abate (Ed.), *Mental illnesses: evaluation, treatments and implications*. Rijeka: In Tech. Available from: <http://www.intechopen.com/books>.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52, 30-41.

Received May 01, 2016

Revision received May 16, 2016

Accepted July 07, 2016