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RESEARCH ARTICLE

Associations Between Children's Depressive Symptoms, Life Events, and Family Factors Among School-Aged Children

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ABSTRACT

BACKGROUND: About 20-30% of children worldwide report depressive symptoms. This study examined associations between children's depressive symptoms, life events, and family factors.

METHODS: Nationally representative data (n = 95,725) were drawn from the 2017 School Health Promotion Study in Finland. The respondents were 4th and 5th grade pupils (aged 10-12) in primary schools and their parents/guardians (n = 33,726). Data were analyzed for child-parent dyads (n = 32,181). Associations were studied using cross tabulation and logistic regression models.

RESULTS: Children's reports of poor self-rated health, problems with family interactions, and the accumulation of life events were statistically significantly associated with depressive symptoms, also when controlling for sociodemographic factors. Financial situation and parent's depressed mood, both reported by parents, were associated with children's depressive symptoms when both were included in the regression model. However, this association disappeared when other predictors were added to the model.

CONCLUSION: The results make apparent the complex associations between children's depressive symptoms and family factors. Further research is needed on the discrepancies between parent and child experiences.

Keywords: children; parents; guardians; depressive symptoms; life events; family factors.

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Children's depressive symptoms are common in Western countries. Based on previous research, 10-15% of school-aged children suffer depressive symptoms.[1,2] The ongoing COVID-19 situation has increased the incidence of depressive symptoms from 20% to 30% among children and adolescents.[3,4] Home schooling, restrictions on social interaction and suspended leisure activities have contributed to increase loneliness and isolation. There are also indications that parents working from home may increase the risk of family conflicts. Fear of the disease and concerns about safety have driven up the incidence of mental disorders and decreased life satisfaction among children.[5,6] In the population-level School Health Promotion Study (SHPS) conducted by the Finnish Institute for Health and Welfare every other year, 12.8% of children aged 10 to 12 reported depressive symptoms in 2017, rising to 15.5% in 2019 and 22.2% in 2021.[7] It is clear that the pandemic has a very harmful effect on children's mental health therefore, school health-care services have an important role in the early identification of

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depressive symptoms and support for children and families who need it.

Children's depressive symptoms manifest in multiple ways, for example, sadness, loss of pleasure or interest, guilt or worthlessness, loss of self-esteem and self-confidence, or somatic symptoms such as abdominal pain, headache, or changes in appetite. Also experiences of fatigue, difficulty concentrating and pessimistic thoughts, and self-harming behavior are common symptoms.[8,9]

The onset of depression among children is the sum of several different factors. We know that genetic and neurophysiological susceptibility, family factors, and experienced life events are all associated with depression in children.[8-10] Based on the research evidence, low income or financial problems in the family or parental unemployment,[11-14] mothers' low education level, and low labor market participation in late childhood are associated with children's depressive symptoms.[15] Low parental socioeconomic status at childbirth is associated with depressive symptoms in later childhood and adolescence,[16] and in low-income families where divorce and separation rates are higher and where children more often live with one parent, access to parental support may be more limited than among children who live with both parents.[14] Furthermore, Cardemil et al found that immigrant children have more depressive symptoms and experience negative life events more often than children not from an immigrant background.[17]

Several previous studies have found that negative life events are one of the most significant predictors of depressive symptoms in childhood.[8,9,15,18-23] Life events such as parental separation or divorce, death of a family member or another close person,[19,23] family environment events such as frequent parental arguments, the arrival of a new sibling, or a stepparent moving in[19] are strongly associated with depressive symptoms. The risk of depressive symptoms is also increased by the child's serious illness[9,23-25] or the illness of a parent or relative, or by the loss of a parent or close relative.[11,13,19,23] Also, children whose parents have a history of depression report more depressive symptoms after stressful life events than children whose parents have no depressive history.[26] Jaschek et al found that depressed parents have more conflicts with their spouse and children,[19] show less warm feelings, are less involved in their children's lives, and communicate more poorly than non-depressed parents.[10,19] Stressful life events in childhood are associated with depressive symptoms in adolescents,[12] and depressed children have experienced more life events and losses than children without mood disorders.[22]

In terms of family dynamics, several previous studies have found that poor family function is associated with depressive symptoms. Conflicts between a parent and a child,[10] the absence of warmth and supportiveness, and high levels of hostility are associated with depressive symptoms.[20,27] Experiences of rejection or neglect and failure to care are strongly associated with depressive symptoms in children.[8,9,27] Interaction within the family shows a close association with the development of a child's emotional regulation skills.[27] Parental support and involvement in children's lives have been reported to serve as protective factors between experienced life events and depressive symptoms.[19] Closeness between the child and parents, especially with the mother, reduces depressive symptoms among children.[20] A close relationship between parents and a child increases the child's interpersonal skills such as problem-solving, and the close relationship also acts as a buffer against stressful life events and depressive symptoms.[20,28] Previous studies have thus identified several factors that contribute to depressive symptoms. However, there is less research exploring children's depressive symptoms by using child-parent dyads as respondents.

This study set out to examine how sociodemographic background factors, life events accumulation, children's self-rated health, interaction within the family, and parental depressed mood are associated with children's depressive symptoms. The knowledge obtained can be used in school health care for the early identification of depressive symptoms and for developing tools to support children with a higher risk of depression and their families.

METHODS

Participants

The national SHPS is conducted every other year by the Finnish Institute for Health and Welfare among 4th and 5th grade and 8th and 9th grade pupils in primary education and among 1st and 2nd year high school and vocational education students in Finland. The survey covers a wide range of issues related to health, well-being, and studies. Children in the 4th and 5th grades and their parents/guardians (later parents) were included for the first time in the 2017 study. Pupils completed the survey during school hours under the teacher's supervision. Parents answered an electronic survey. Participation was voluntary and anonymous.[29]

The data for this study consisted of SHPS 2017 responses from 4th and 5th grade primary school pupils who lived in Finland and who were at school on the day of the survey and responses from their parents.[29] The inclusion criteria for this study were that child had responded to the mood scale and that their parents had responded to the survey. The original data consisted of 95,725 children's and 33,726 parents' responses.[30] The data analyzed in this study comprised 32,181 child-parent dyads who participated in SHPS.

Instrumentation

Children's questions. Children's depressive symptoms were measured using the Finnish Short Mood and Feelings Questionnaire 6 (FsMFQ-6), an abridged version of the 13 Short Mood and Feelings Questionnaire (SMFQ)[31,32] Its six statements are as follows: In the last 2 weeks, (1) I was desperate or unhappy, (2) I was not enjoying anything, (3) I was so tired that I just sat there doing nothing, (4) It was difficult to think properly or to concentrate, (5) I thought that nobody likes me and (6) I thought I could never be as good as the other kids. The response options were ''True'' (1 point), ''Sometimes'' (0 points) and ''Not true'' (0 points).[33] Respondents were required to answer all six FsMFQ-6 statements. Respondents scoring one point or more were considered to have mood problems. Assessments of the validity and reliability of the FsMFQ-6 have established that the scale identifies depressive symptoms in children and is suitable for use as a screening tool in 4th and 5th grade pupils. Cronbach's alpha coefficient of the scale was 0.73.[34]

The sociodemographic factors studied were family structure, ethnicity, and family financial situation. Categories for family structure were intact family (the child lives with both parents), dual residence or co-parenting (the child lives alternately with the divorced parents), single-parent family (the child lives with one parent), and does not live with their parents (the child lives with grandparents, other relatives or in foster care, for example). Children's and their parents' ethnicity was inquired with the question: ''In which country were you and your parents born?'' Responses were classified into four categories: Finnish background; one parent has a foreign background; foreign background (both parents are foreigners), child born in Finland; and foreign background (both parents are foreigners), child born abroad.[33]

The life events studied were changing school, parents' divorce, forming a blended family, birth of a sibling, the child's serious illness or injury, and a family member's or other close person's serious illness or death.[33] These particular life events were selected from previous research in collaboration with group of multi-professional mental health specialists at the Finnish National Institute for Health and Welfare. The life event variable is designed to be used for a background variable when assessing children and adolescents well-being.[35] To examine the accumulation of life events, a sum variable was formed to represent the total number of life events. The variable describing the accumulation of life events was classified into five categories to ensure anonymity: no experienced life event, one experienced life event, two experienced life events, three experienced life events, and 4 or more experienced life events.

Children's self-rated health was inquired with the question: How is your health in general? The response options were ''very good,'' ''fairly good,'' ''average,'' and ''fairly bad or very bad.''[33]

Children were asked the following two questions about their interactions within the family: (1) ''Can you talk about things that concern you with your parents?'' The response options were ''often,'' ''fairly often,'' ''occasionally,'' and ''hardly ever''; (2) ''Our family spends enough time together.'' The response options were ''agree,'' ''neither agree nor disagree,'' and ''disagree.''[33]

Parents' questions. Parents' depressed mood was studied using a modified Patient Health Questionnaire-2 (PHQ-2),[36] which assessed anhedonia and low mood during the past 12 months.[37] Assessment of the validity and reliability of PHQ-2 have established depressive disorders in adult population.[38] Cronbach's alpha coefficient was .79 in the modified PHQ-2. Parents were asked: ''Over the past 12 months, have you ever had a period of two weeks or more when for most of the time you have felt down, melancholy or depressed'' and (2) ''when you have lost interest in most things that usually give you pleasure (leisure activities, work, and other things).'' The response options were ''yes'' or ''no.''[36] PHQ-2 was formed as a sum variable with a score range of 0-2 points. One point or more were interpreted as indicative of a depressed mood.[36]

To assess the family's financial situation the parents' questionnaire included the question: ''How would you rate your family's financial situation?'' The response options were on a five-point Likert scale ranging from ''very good'' to ''very poor.''[36]

Data Analysis

Frequencies and percentages were used to describe the data. Associations between children's depressive symptoms and independent variables were analyzed using cross tabulation, χ^2 test, and logistic regression models. Logistic regression models are used when the dependent variable is dichotomous and when the aim is to describe the relationship between the dependent variable and several independent variables.[39,40]

Associations between children's depressive symptoms and independent variables were first studied by entering one independent variable at a time in the model (unadjusted model). Different models were then formed to see how variables together were associated with children's depressive mood. Adjusted model 1 included all sociodemographic background factors (family structure, ethnicity, and financial situation). Next, all sociodemographic factors and one risk factor at a time were entered in the model, producing four different models. All models included all sociodemographic factors and adjusted model 2 included the accumulation of life events; adjusted model 3 included child's self-rated health; adjusted model 4 included

interaction within the family; and adjusted model 5 included parent's self-rated depressed mood. Finally, in adjusted model 6, all variables (sociodemographic background factors, accumulation of life events, interaction within the family, child's self-rated health, and parent's self-rated depressed mood) were added to the same model at the same time.

The results of logistic regression models were reported using odds ratio (OR), confidence interval (CI), and p values.[39,40] The data were analyzed with IBM SPSS Statistics for Windows, Version 27.0. Armonk NY: IBM Corp. Statistical significance was set at $p < .001$.[39,40]

RESULTS

Descriptive Statistics

Almost 78% (24,709) of the children lived in an intact family, 15% (4790) in a dual residence or co-parenting arrangement, nearly 7% (2076) in a single-parent family, and 0.5% (143) did not live with their parents. Close to 91% (28,730) of the children came from a Finnish background, 6.5% (2068) had one foreign parent and nearly 3% (909) had a foreign background. The family's financial situation was described as very good or fairly good by nearly 62% of the parents (19,797), moderate by nearly 31% (9811), and fairly or very poor by 7% (2375).

Depressive symptoms were reported nearly 11% (3473) of the children, slightly less than the incidence in the entire pediatric population. Mood problems during the past 2 weeks were reported by nearly 13% (11,685 pupils).[7] Nearly 35% (10,882) of the children had one or more experienced life events during the past school year, while 9% (2749) reported two or more life events. Approximately 94% (29,441) of the children described their self-rated health as fairly or very good. Nearly 15% (4661) felt they were unable or only sometimes able to discuss personal concerns with their parents and over 33% (10,409) felt that the family had not spent enough time together. Among parents, 16% (5123) reported depressed mood. Descriptive statistics are presented in Table 1.

Table 1. **Description and Frequency of Variables**

Variable	% (n)
Gender (n = 32,126)	
Girl	52.3 (16,820)
Boy	47.6 (15,306)
Family structure (n = 31,718)	
Intact family	77.9 (24,709)
Dual residence or co-parenting	15.1 (4790)
Single parent family	6.5 (2076)
Does not live with parents	0.5 (143)
Ethnicity (n = 31,707)	
Finnish background	90.6 (28,730)
One foreign parent	6.5 (2068)
Foreign background, child born in Finland	1.3 (425)
Foreign background, child born abroad	1.6 (484)
Family financial situation (n = 31,983)	
Very good	17.1 (5484)
Fairly good	44.8 (14,313)
Moderate	30.7 (9811)
Fairly poor	6.2 (1992)
Very poor	1.2 (383)
Child's self-rated health (n = 31,353)	
Very good	48.2 (15,099)
Fairly good	45.7 (14,342)
Average	5.5 (1735)
Fairly bad or very bad	0.6 (177)
Child's self-rated depressive symptoms/2 weeks (n = 32,181)	
No symptoms	89.2 (28,708)
FsMFQ-6 at least 1 p	10.8 (3473)
Accumulation of life events (n = 31,134)	
No experienced life events	65.0 (20,252)
1 experienced life event	26.1 (8133)
2 experienced life events	6.2 (1936)
3 experienced life events	1.8 (556)
4 or more experienced life events	0.8 (257)
Discussions with parents (n = 31,640)	
Often	60.7 (19,191)
Fairly often	24.6 (7788)
Occasionally	12.9 (4066)
Hardly ever	1.9 (595)
Enough family time (n = 31,422)	
Agree	66.9 (21,013)
Neither agree nor disagree	27.9 (8752)
Disagree	5.3 (1657)
Parent's depressed mood (n = 31,969)	
No depressed mood	84.0 (26,846)
PHQ-2 at least 1 point	16.0 (5123)

Associations Between Children's Depressive Symptoms and Independent Variables

The results from cross tabulation and the unadjusted logistic regression models show that all variables were statistically significantly associated with children's depressive symptoms (Tables 2-4). Family structure (compared to intact family), foreign background, and moderate or poor financial situation were associated with children's depressive symptoms in adjusted model 1 (Table 3).

After controlling for sociodemographic background factors, adjusted models 2-5 showed that experiencing one or more life events (model 2) and child's lower self-rated health (model 3) were associated with children's depressive symptoms. Poor interaction within the family, for example if children were able only occasionally (OR 2.95 $p < .001$) or hardly ever (OR 7.88, $p < .001$) to talk with parents or if the family had not had enough time to spend together (OR 3.71 $p < .001$) (model 4), were associated with children's depressive symptoms. Parents' depressed mood (model 5) was also associated with children's depressive symptoms (Table 4).

In adjusted model 6, when all variables were entered in the same model, family structure, financial situation, and parents' self-rated depressed mood

Table 2. **Associations Between Children's Depressive Symptom and Independent Variables, Cross Tabulation**

Variable	Depressive Symptoms in 2 weeks % (n)	p
Gender (n = 32,126)		**<.001**
Girl	11.4 (1918)	
Boy	10.1 (1549)	
Family structure (n = 31,718)		**<.001**
Intact family	9.8 (2413)	
Dual residence or co-parenting	13.2 (634)	
Single parent family	15.2 (316)	
Does not live with parents	21.7 (31)	
Ethnicity (n = 31,707)		**<.001**
Finnish background	10.3 (2952)	
One foreign parent	13.3 (276)	
Foreign background, child born in Finland	18.1 (77)	
Foreign background, child born abroad	16.5 (80)	
Family financial situation (n = 31,983)		.001
Very good	9.1 (497)	
Fairly good	10.1 (1452)	
Moderate	11.7 (1147)	
Fairly poor	14.7 (292)	
Very poor	17.2 (66)	
Child's self-rated health (n = 31,353)		.001
Very good	6.0 (911)	
Fairly good	12.4 (1776)	
Average	33.0 (573)	
Fairly bad or very bad	60.5 (107)	
Accumulation of life events (n = 31,134)		.001
No experienced life events	8.7 (1760)	
1 experienced life event	13.0 (1059)	
2 experienced life events	16.2 (313)	
3 experienced life events	20.9 (116)	
4 or more experienced life events	25.3 (65)	
Discussions with parents (n = 31,640)		**<.001**
Often	6.8 (1314)	
Fairly often	12.0 (932)	
Occasionally	22.1 (897)	
Hardly ever	43.0 (256)	
Enough family time (n = 31,422)		**<.001**
Agree	7.3 (1539)	
Neither agree nor disagree	15.3 (1335)	
Disagree	29.5 (489)	
Parent's depressed mood (n = 31,969)		**<.001**
No depressed mood	10.2 (2744)	
PHQ-2 at least 1 point	13.8 (706)	

Note: significance *p* values are in bold.

showed no statistically significant associations with children's depressive symptoms. Associations between children's depressive symptoms and the child's self-rated health, lacking or poor interaction within the family, and accumulation of life events were still statistically significant. Also, foreign background for children born in Finland was associated with children's depressive symptoms (Table 5).

DISCUSSION

We found that poor family interaction, insufficient time spent with the family, life events experienced by the child, and other than very good child's self-rated health were associated with children's depressive symptoms. These findings are consistent with earlier results.[9,23-25]

Children's experience that they did not have enough opportunity to talk with their parents and the experience that the family did not spend enough time together were associated with children's depressive symptoms. Previous studies have found that poor family function is associated with children's depressive symptoms. The key seems to lie in interaction and discussions between family members. A close relationship between parents and child acts as a buffer against stressful life events and depressive symptoms.[20,28] There is a strong indication that absence of warmth and supportiveness is associated with children's depressive symptoms.[10,20,27] The child's experience that their parents have the time to listen, that parents give them positive feedback and that parents are involved in their lives, all seem to provide protection against depressive symptoms.[20,27,28]

Life events, especially if the child had experienced two or more life events during the past year, were associated with depressive symptoms. The frequency of depressive symptoms increased in direct proportion to the number of life events experienced by the child. Negative life events have previously been identified as one of the major contributing factors to depression in children.[8,9,15,18-23] The accumulation of life events exposes children to various harmful and stressful events, and the link between depressive symptoms and the accumulation in life events is clear.

In all our models, children's self-rated health was associated with depressive symptoms. These results are consistent with previous findings on the associations between a child's serious illness and depressive symptoms.[9,23,24] Ferro and Boyle (2015) have also reported associations between a child's chronic physical illness and depressive symptoms and a child's chronic physical illness and family dysfunction.[24] Poor self-rated health has been found to be associated with unhealthy behaviors such as smoking, alcohol use, and reduced physical activity,[41] as well as with social exclusion[2] and lower quality of life.[42] Several studies have illustrated that poor self-rated health predicts later morbidity, mortality, and higher health service use.[43-45]

Many previous studies have found that both family structure and family's low financial situation are associated with children's depressive symptoms.[11-15] In our study, these associations were significant when we examined the links between depressive symptoms and sociodemographic background factors. However, when other variables were added to the model, neither family structure nor low financial situation were statistically significant. The family's poor financial

Table 3. **Associations Between Children's Depressive Symptoms and Sociodemographic Background Factors, Unadjusted and Adjusted Logistic Regression Models**

	Unadjusted Model			Adjusted Model 1*		
Variables	**OR**	**95% CI**	**p**	**OR**	**95% CI**	**p**
Family structure						
Intact family	1.00			1.00		
Dual residence or co-parenting	1.41	1.28-1.55	**<.001**	1.35	1.22-1.48	**<.001**
Single parent family	1.66	1.46-1.88	**<.001**	1.46	1.28-1.66	**<.001**
Does not live with parents	2.56	1.71-3.82	**<.001**	2.88	1.92-4.33	**<.001**
Ethnicity						
Finnish background	1.00			1.00		
One foreign parent	1.35	1.18-1.54	**<.001**	1.26	1.10-1.45	.001
Foreign background, child born in Finland	1.93	1.51-2.48	**<.001**	2.01	1.55-2.59	**<.001**
Foreign background, child born abroad	1.73	1.36-2.21	**<.001**	1.72	1.34-2.21	**<.001**
Family financial situation						
Very good	1.00			1.00		
Fairly good	1.13	1.01-1.26	.022	1.10	0.99-1.23	.085
Moderate	1.33	1.19-1.48	**<.001**	1.23	1.10-1.38	**<.001**
Fairly poor	1.72	1.48-2.01	**<.001**	1.52	1.30-1.79	**<.001**
Very poor	2.09	1.58-2.77	**<.001**	1.77	1.32-2.37	**<.001**

OR, Odds Ratio; CI, Confidence Interval.
*Adjusted model 1: model included sociodemographic background factors: family structure, ethnicity and financial situation.
Note: significance *p* values are in bold.

Table 4. **Associations Between Children's Depressive Symptoms and Accumulation of Life Events, Child's Self-Rated Health, Interaction Within Family and Parent's Depressed Mood, Unadjusted Logistic Regression Models and Models Adjusted With Sociodemographic Variables (Adjusted Models 2-5)**

	Unadjusted Model			Adjusted Models		
Variables	**OR**	**95% CI**	**p**	**OR**	**95% CI**	**p**
Accumulation of life events				Adjusted model 2*		
No experienced life events	1.00			1.00		
1 experienced life event	1.57	1.45-1.71	**<.001**	1.52	1.40-1.65	**<.001**
2 experienced life events	2.03	1.78-2.31	**<.001**	1.85	1.62-2.12	**<.001**
3 experienced life events	2.77	2.25-3.42	**<.001**	2.42	1.94-3.01	**<.001**
4 or more experienced life events	3.56	2.67-4.73	**<.001**	2.81	2.07-3.81	**<.001**
Child self-rated health				Adjusted model 3†		
Very good	1.00			1.00		
Fairly good	2.20	2.03-2.39	**<.001**	2.19	2.01-2.39	**<.001**
Average	7.68	6.81-8.66	**<.001**	7.55	6.67-8.55	**<.001**
Fairly bad or very bad	23.81	17.48-32.41	**<.001**	22.10	16.07-30.38	**<.001**
Discussions with parents				Adjusted model 4‡		
Often	1.00			1.00		
Fairly often	1.85	1.69-2.02	**<.001**	1.65	1.50-1.81	**<.001**
Occasionally	3.85	3.51-4.23	**<.001**	2.95	2.67-3.27	**<.001**
Hardly ever	10.27	8.65-12.20	**<.001**	7.88	6.53-9.51	**<.001**
Enough family time						
Agree	1.00			1.00		
Neither agree nor disagree	4.91	4.41-5.47	**<.001**	1.79	1.65-1.95	**<.001**
Disagree	15.22	11.23-20.63	**<.001**	3.71	3.27-4.22	**<.001**
Parent's depressed mood				Adjusted model 5§		
No depressed mood	1.00			1.00		
PHQ-2 at least 1 point	1.40	1.29-1.53	**<.001**	1.26	1.15-1.39	**<.001**

OR, Odds Ratio; CI, Confidence Interval.
*Adjusted model 2: model included sociodemographic background factors, accumulation of life events.
†Adjusted model 3: model included sociodemographic background factors, child self-rated health.
‡Adjusted model 4: model included sociodemographic background factors, discussions with parents and family time.
§Adjusted model 5: model included sociodemographic background factors and parents' depressed mood.
Note: significance *p* values are in bold.

Table 5. **Associations Between Children's Depressive Symptoms and Sociodemographic Background Factors, Accumulation of Life Events, Child's Self-Rated Health, Interaction Within Family and Parent's Depressed Mood, Logistic Regression Model**

	Adjusted Model 6*		
Variables	**OR**	**95% CI**	**p**
Family structure			
Intact family	1.00		
Dual residence or co-parenting	1.08	0.96-1.20	.207
Single parent family	1.16	1.00-1.39	.113
Does not live with parents	1.92	1.19-3.09	.008
Ethnicity			
Finnish background	1.00		
One foreign parent	1.17	1.01-1.36	.041
Foreign background, child born in Finland	1.99	1.47-2.68	**<.001**
Foreign background, child born abroad	1.63	1.63-2.18	.001
Family financial situation			
Very good	1.00		
Fairly good	0.99	0.87-1.11	.808
Moderate	1.01	0.89-1.15	.833
Fairly poor	1.16	0.97-1.39	.113
Very poor	1.32	0.95-1.84	.099
Accumulation of life events			
No experienced life events	1.00		
1 experienced life event	1.35	1.23-1.48	**<.001**
2 experienced life events	1.56	1.34-1.81	**<.001**
3 experienced life events	1.97	1.54-2.52	**<.001**
4 or more experienced life events	1.64	1.12-2.38	.011
Child self-rated health			
Very good	1.00		
Fairly good	1.80	1.64-1.98	**<.001**
Average	4.80	4.18-5.51	**<.001**
Fairly bad or very bad	12.05	8.43-17.23	**<.001**
Discussions with parents			
Often	1.00		
Fairly often	1.47	1.33-1.62	**<.001**
Occasionally	2.35	2.11-2.62	**<.001**
Hardly ever	5.61	4.56-6.90	**<.001**
Enough family time			
Agree	1.00		
Neither agree nor disagree	1.50	1.37-1.64	**<.001**
Disagree	3.01	2.63-3.46	**<.001**
Parent's depressed mood			
No depressed mood	1.00		
PHQ-2 at least 1 point	1.13	1.02-1.25	.023

OR, Odds Ratio; CI, Confidence Interval.
Adjusted model 6: model included sociodemographic background factors, accumulation of life events, child's self-rated health, interaction within the family and parent's depressed mood.
Note: significance *p* values are in bold.

situation may be due to several reasons such as illness in the family, unemployment, or parental separation, and all these factors have an impact on interaction within the family. As reported previously,[17,23] we found that foreign background was associated with children's depressive symptoms in all models.

Earlier studies have found that parents' depressed mood is associated with children's depressive symptoms.[11,13,19,23,26] In this study, parents' depressed mood was associated with children's depressive symptoms after controlling for sociodemographic background factors, but the association was no longer statistically significant when other variables were added to the model. These findings contribute to the literature in child mental health research. The ways in which different factors are associated with children's depressive symptoms are thus highly complex. For instance, severely depressed parents may be in hospital, preventing the family from spending enough time together. Likewise, parental depressed mood may have an effect on family interaction, potentially causing increased conflicts,[10] lack of emotional warmth in the family, or poor communication between family members.[19,20,27] A warm and confidential parent-child relationship and parental support help children develop their emotional regulation skills and protect them from depressive symptoms.[20,27,28]

As family financial situation and parental depressed mood were assessed on the basis of parents' responses and other variables on children's responses, the finding that family financial situation and parental depressed mood were no longer statistically significant in the final model may have been due to the intensity of children's experiences of their own health and interactions within the family, causing other factors to lose their meaning. It is also important to recognize that a child and a parent may experience the same situation differently and give them different meanings.

School health nurses have an important role to play in identifying children who are at higher risk of depression and families who need special support in their daily lives. Interaction within the family would appear to be a key factor in the development of children's depressive symptoms. In addition to the fact that interaction itself is associated with children's depressive symptoms, several other factors also affect interaction within the family.

School health-care services are organized differently depending on the country. It can vary from child development assessment conducted by physician to comprehensive health examinations where child's health is evaluated holistically including mental health and well-being. In Finland, every child meets the school nurse at an individual appointment.[46] Finland introduced statutory health examinations for all 1st, 5th, and 8th grade pupils in 2011. These comprehensive examinations address children's and their families' health and overall well-being from different perspectives. They are conducted jointly by the school nurse and school doctor, and at least one of the child's parents is present. The aim is to form an understanding of the health and well-being of the child, parents, and the family unit as a whole.[47] Finnish Health Care Act 1326/2010 specifies, that the duty of school health-care services is to support parents with parenting and interaction within the family[48] The comprehensive health examination provides the child

and family informational, emotional, and/or social support according to their individual needs and family situation.[47]

IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY

The incidence of children's depressive symptoms has been increasing worldwide, especially in the wake of the COVID-19 pandemic.[3,4] School nurses have a crucial role to play in the early identification of children who are at risk of depression, as they get to see both children and their parents in the context of health examinations.[47] Early identification and support can be paramount to preventing illness in children.

The insights from this study will help practitioners identify factors that predispose to depression and to increase their understanding of the associations between children's depressive symptoms, life events, and family factors. Based on these results, we propose the following recommendations:

1. School health services should work more closely with families and parents should be given the opportunity to participate in children's health examinations and other meetings with school health services.
2. Closer attention should be given to interaction within the family because the family's way of communicating can either protect the child from depressive symptoms or be a risk factor.[8-10,19,20,27,28]
3. Children should be given the opportunity to discuss the life events they have experienced with a professional in school health care and to get psychosocial support if needed.

Limitations

This study has some limitations. We used a cross-sectional design and therefore cannot demonstrate any causal links. Pupils completed the questionnaire during school hours under the teacher's supervision, but they may have had difficulties during the day that affected their responses, resulting in the false interpretation that they were suffering from depressive symptoms. Depressed children may also have failed to respond to the questionnaire because of their symptoms, such as difficulty concentrating.[8,9] In the SHPS, which covered all pupils (n = 95,725), the incidence of depressive symptoms was 12.6%. In the responses from pupil-parent dyads, 10.8% suffered from depressive symptoms, so the subsample of this study included fewer symptomatic children. The total number of responses from children was 95,725, compared to 32,181 responses from child-parent dyads. We were unable to establish who were the parents that did not respond to the survey. It is possible, for example, that parents with mental health or financial problems have more often decided not to respond.[49] However, the descriptive statistics were almost identical between the pupils' responses (covered 80% of the age group) and the responses of child-parent dyads which supports generalization of the results to Finnish population.

Conclusions

School health-care services should pay closer attention to assessing family interaction in different situations. School nurses have limited influence over the family's internal affairs or financial situation. However, they can provide support for improved communication and interaction within the family and encourage family members to consider how they can develop their skills. It seems that family interaction problems, insufficient time spent with the family, life events experienced by the child, and problems with the child's health increase children's depressive symptoms. It is important for school nurses to discuss family issues with parents and to ask children what kind of things they talk about with their parents, what kind of things the family do together, and whether there have been any life changes in the family in the past year. In addition, children should be asked about their own experiences of their health. Early identification of risk factors will allow targeting the necessary support to the children in need. The results of our study make clear the complex associations between children's depressive symptoms and family factors. Further research is needed on the discrepancies between parents' and children's reports.

Human Subjects Approval Statement

All procedures were performed in accordance with good scientific practice, the ethical standards of the institutional and/or national research committee, and in compliance with the 1964 Helsinki Declaration. SHPS has been evaluated by the Finnish Institute for Health and Welfare research ethics working group in 2012, 2014, 2016, 2017, 2018, and 2020.[29] Preparation of this paper did not involve primary research or data collection involving human subjects, and therefore no institutional review board examination or approval was required.

Conflict of Interest

The authors declare no conflict of interest.

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