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SOCIAL RELATIONSHIPS AND LEISURE TIME ACTIVITIES IN ADOLESCENCE AND THE RECURRENCE OF DEPRESSION AMONG FORMER ADOLESCENT PSYCHIATRIC INPATIENTS IN NORTHERN FINLAND

ABSTRACT

Background: *The recurrence of depression among adolescents is a common phenomenon, for which the risk factors are not fully understood. The role of social environment and depressive symptoms has been studied previously. More research is needed to explore the underlying mechanisms of recurrent depression in adolescents.* ***Objective:*** *The aim of this study was to identify whether social relationships and leisure time activities are associated with a recurrent course of depression among former adolescent psychiatric inpatients.* ***Method:*** *We examined interview data of former adolescent psychiatric inpatients (n=508) in Northern Finland hospitalized between 2001 and 2006, and analysed the course of depression with national Finnish Care Register for Health Care data on psychiatric diagnoses until year 2016, when the age of study participants ranged from 23 to 33 years. We compared the features of social relationships and leisure time activities between those study participants with a single episode of depression and those with a recurrent course of depression.* ***Results:****Among 508 study participants, 235 (46.2%) were diagnosed with depression, and of those 35.7% had a recurrent course of depression. Adolescent female patients who reported spending leisure time mostly alone had a higher likelihood of recurrent depression (OR 4.07, 95% CI 1.23-13.45) compared to non-recurrent depression. The likelihood was also higher among those adolescent female patients who reported dissatisfaction with leisure time (OR 3.02; 95% CI 1.38-6.58). Surprisingly, adolescent male patients who reported spending time mostly with friends had a higher likelihood of recurrent depression (OR 9.36; 95% CI 1.23-71.34).* ***Conclusions:*** *Dissatisfaction with leisure time and loneliness were associated with a higher likelihood of recurrent depression among adolescent female patients. This finding highlights the importance of considering adolescents' social environment and potential loneliness when treating depression in this group.*

KEYWORDS: ADOLESCENCE, RECURRENT DEPRESSION, SOCIAL RELATIONSHIPS, REGISTER-BASED INFORMATION

INTRODUCTION

Depression is a highly prevalent affective disorder among adolescents and has a complex impact on various aspects of individuals' lives. A recent systematic review concluded that there has been a rise of self-reported depressive symptoms among adolescents during the first two decades of the 21st century (1). The prescription of psychotropic drugs for adolescents has also continued to increase in recent years, which signals that psychiatric morbidity is increasing in this age group (2). The course of major depressive disorder (MDD) often includes recurrent episodes, which augments the burden for an individual as well as the wider society. Younger age at diagnosis of MDD has been associated with higher risk of recurrent episodes of MDD among adolescents (3).

There is growing evidence that low social support and its determinants, such as small social networks and low frequency of contacts, are associated with depression. In particular, the substantial role of the presence or absence of friends has been recognized in previous studies (4,5). The influence of close

relationships is not only limited to adolescence but can also impact on the development of MDD several years later (5).

The contribution of social environment and interpersonal relationships as potential risk factors for recurrence of MDD has been identified in numerous studies (6,9). It has been observed that challenges in interpersonal relationships, such as perceived chronic stress in close and romantic relationships, are independently associated with MDD recurrence (6). Low level of perceived social support in the adult population seems to predispose an individual to the progression of subthreshold depression into MDD (7), while higher levels of social support in adolescence prevents recurrent episodes (8). Among adolescent girls, poor peer relationships and introversion appear to be risk factors for a recurrent course of MDD (9).

The current study enables a comprehensive assessment of the social relationships and leisure time activities in adolescence and their association with a recurrent course of MDD. The primary aim of this study is to identify whether the social relationships and leisure time activities are associated with the recurrence of MDD, diagnosed by young adulthood, among the former adolescent psychiatric inpatients. To find these associations, this study examines the number of close friendships in adolescence, whether those friendships feel close and lasting, the most typical companion for leisure time in adolescence, satisfaction with leisure time in adolescence and the types of leisure time activities in adolescence, taking into account study participants' age at the index hospitalization period, social engagement in early childhood, repeated school years, special services at school, truancy, involvement in bullying, previous childhood psychiatric care and psychiatric disorders at index hospitalization period. The second aim is to explore whether the associations between social relationships and leisure time activities in adolescence and the recurrence of MDD in young adulthood differ between male and female study participants.

METHODS

STUDY POPULATION

The present study utilizes the patient data from a clinical follow-up project which aims to analyse associations of diverse adolescent psychosocial factors with long-term psychiatric outcomes. The data consists of 508 former adolescent inpatients, who received acute psychiatric treatment at Oulu University Hospital's Department of Adolescent Psychiatry between April 2001 and May 2006, from here onwards referred to as index hospitalization. All adolescent patients were aged between 13 and 17 years old during the index hospitalization period. The mean age at index hospitalization was 15.8 years among male and 15.6 years among female study participants. This study population covers the hospital districts of Northern Ostrobothnia and Lapland, which account for 43% of Finland's geographical area.

Consent for participation in the study was obtained from the adolescent patient and their guardians, with all providing signed written informed consent. Exclusion criteria included an adolescent patient's refusal to participate in the study, age under 13 or over 18, incomplete interviews due to short admittance in hospital, intellectual disability and organic brain disorders. After considering these criteria the participation rate was 83.7 %, including 508 adolescent patients from the original 637 eligible adolescent patients. The ethical aspects of the study protocol were discussed with the Ethical Committee of University of Oulu and their approval was given for the study.

RESEARCH INSTRUMENTS

The diagnostic interviews were conducted by the treating physicians and trained medical students, under the guidance of the treating physicians. The interviews were based on the Finnish version of the semi-structured Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime (K-SADS-PL) (10). Trained nurses also conducted interviews during the index hospitalization period, based on the Finnish version of the European Addiction Severity Index (EuropASI) (11). EuropASI gathers information on physical and mental health, family socio-economic status, substance abuse, criminal activity and social relationships.

VARIABLES GATHERED IN ADOLESCENCE

Information on background factors in adolescence was gathered primarily from the K-SADS-PL interviews. These background factors include adolescent patient's age at the index hospitalization period, previous psychiatric hospitalization during childhood, the diagnosed psychiatric disorders by the time of index hospitalization, social engagement in early childhood, involvement in bullying, truancy, repeating a year of school and use of special education services at school. Information on previous childhood psychiatric hospitalization was obtained from the Finnish Care Register for Health Care (CRHC). If single or multiple treatment periods in childhood psychiatric care were registered in the CRHC, a study participant's previous psychiatric hospitalization during childhood was defined as present.

All DSM-IV-based psychiatric disorders (12) for the adolescent patients in our study were based on the K-SADS-PL interview. Psychiatric disorders were categorized into internalizing disorders including anxiety disorders (300.00–300.02, 300.21–300.23, 300.29, 300.3, 308.3, 309.81), affective disorders (296.2–296.3, 300.4, 311) and psychotic disorders (295, 296.0, 296.4–299.0, 297.1–299.0, 301.13, 301.22), and externalizing disorders including substance-related disorders (DSM-IV 303.9, 304.0–304.6, 304.8–304.9, 305.0, 305.2–305.7, 305.9) and conduct or oppositional defiant disorders or ADHD (312.8–312.9, 313.81, 314.00–314.01, 314.9, 299.80).

The information on social engagement in early childhood was obtained from K-SADS-PL interview during the index hospitalization period. The guardian was asked whether the adolescent patient's social relatedness during infancy and early childhood was normal, on a dichotomous yes or no scale. Social engagement in early childhood was classified as normal if guardian gave a positive response.

The data for involvement in bullying was gathered from non-structured and structured sections of the K-SADS-PL interview. The study participants were divided into bullies, victims and bully-victims. In the non-structured section, participants were asked whether they had ever been the victim of bullying. Those study participants who reported that they had been a victim of bullying were classified as victims. The information on bullying others was gathered from the structured section of conduct disorder criteria in the K-SADS-PL interview. Study participants were asked the following questions: "What is the worst you ever laid into someone? Have you ever beat someone up real bad for no real reason, or just because they are a nerd?" The criterion of having bullied others was defined as three or more occasions of intimidating other people. However, K-SADS-PL questionnaire did not define involvement in bullying according to the established definition of bullying (13).

The data on truancy was obtained from the screening section of behavioural disorders within K-SADS-PL interview. The adolescent patients were asked whether they had ever been out of school for the entire school day without permission ("none": no absences, "sub-threshold": one absence, "threshold": two absences or more). The study participant was defined as having a history of truancy if there had been two absences or more. The data for repeating a year(s) at school was obtained from the K-SADS-PL interview and it was classified as present if an adolescent patient had repeated one or more school years. Information on special education services at school was gathered in K-SADS-PL interview during the index hospitalization period. Special services at school was defined as present if adolescent patient had history of receiving individual special support in a special class or in student's own class.

The related social relationship and leisure time activity factors in adolescence were gathered from the EuropASI interviews. Information was assessed on the total number of perceived close friendships and the most typical companion in leisure time (alone, friends or parents) reported by adolescent patient. Study participants reported the exact number of friends in EuropASI interview. Study participants were asked in EuropASI interview whether they spent leisure time mostly with family, friends or alone. The qualitative features, such as the sense of close and lasting friendships and the perceived satisfaction with leisure time, were assessed on a dichotomous yes or no scale in EuropASI interview. Sense of close and lasting friendships was defined to be present if adolescent patient gave a positive response to question in EuropASI interview. Perceived satisfaction with leisure time was defined to be present if adolescent patient gave a positive response to question in EuropASI interview.

The leisure time variables were gathered by utilizing data on hobbies previously collected from the non-structured part of K-SADS-PL (14). Hobby data was reclassified into subgroups based on the level of social activity of each hobby (14). The first subgroup includes the hobbies which are typically practiced inside the home and do not require social interaction. The following hobbies were classified into the first subgroup: listening to music, playing an instrument, singing, arts, reading, television and movies. The second subgroup consists of hobbies which are typically practiced outside the home and require only a limited amount of social interaction. The following hobbies were classified into the second subgroup: riding, animals, shooting, fishing, hunting, vehicles and individual sports. The third subgroup is composed of hobbies that contain complex interpersonal activities. The following hobbies were classified into the third subgroup: team sports, clubs, scouting, church and friends. The fourth subgroup is composed of those who reported drinking alcohol or using drugs as hobbies. The fifth subgroup is composed of those who reported having no hobbies at all.

Register-based information on recurrent depression

In this study, the main interest was in those 235 study participants who were diagnosed with depression before, after or during their index hospitalization. Of these study participants, 71 (30.2%) were male and 164 (69.8%) were female. The information on whether the study participants had a non-recurrent or recurrent course of depression was obtained utilizing data previously collected in this clinical

follow-up project (15). Recurrent depression was classified as present if a study participant had had two or more inpatient treatment periods for diagnosed depression in specialized medical care, separated by 8 weeks without any inpatient treatment periods for diagnosed depression in specialized medical care (16,15). The information on diagnosed depression (ICD-10: F32.0–F32.9, F33.0–F33.9, F34.1) was gathered from the national Finnish Care Register for Health Care (CRHC) register provided by the Finnish National Institute of Health and Welfare. Study participants diagnosed with schizophrenia spectrum disorder (ICD-10: F20, F21, F25) or bipolar disorder (ICD-10: F30.0-F30.9, F31.0-F31.9, F34.0) were excluded from the study. Information on inpatient and outpatient treatment periods of the study participants was collected until the year 2016. Since the hospitalization period during the research project occurred between 2001 and 2006, 10 to 15 years of register-based follow-up data was accumulated.

Those study participants with a single diagnosed episode of depression were classified as non-recurrent depression patients, irrespective of whether the depression was diagnosed prior to, during, or after the index hospitalization period until the end of year 2016. Those with two or more diagnosed episodes of depression were classified as recurrent depression patients. Childhood psychiatric inpatient care prior to adolescent psychiatric admission was defined as being present if a treatment episode in specialized child psychiatric care was registered in the CRHC.

STATISTICAL METHODS

The statistical significance of group differences in categorical variables was analysed with Pearson Chi-square or Fisher's Exact text and in continuous variables with Student's t-test or Mann-Whitney U-test. A binary logistic regression analysis (method=enter) was used to examine the association of background (adolescent patient's age at the index hospitalization period, previous psychiatric hospitalization during childhood, the diagnosed psychiatric disorders by the time of index hospitalization, social engagement in early childhood, involvement in bullying, truancy, repeating a year of school and use of special education services at school), social and leisure time variables (the total number of perceived close friendships, the sense of close and lasting friendships, the most typical companion in leisure time, the perceived satisfaction with leisure time and participation in different types of hobbies) in adolescence to the outcome variable of recurrent depression (yes vs. non-recurrent depression). The limit for statistical significance was set at $p \leq 0.05$ and all significance tests were two-tailed. The statistical analyses were performed with IBM SPSS Statistics, version 29.

RESULTS

Among our 508 study participants, 235 (46.2%) were diagnosed with depression before, during or after their index hospitalization. Based on the register-based follow-up information, 84 (35.7%) study participants had a recurrent course of depression diagnosed by young adulthood: 22 (31.0%) among male and 62 (37.8%) among female study participants.

Table 1 shows the distribution of psychiatric characteristics, school-related factors and psychiatric diagnoses measured in adolescence among study participants with non-recurrent and recurrent courses of depression. Those with recurrent and non-recurrent depression did not have any significant differences in background factors in adolescence in either sex.

Table 1. Psychiatric characteristics, school-related factors and psychiatric diagnoses at the time of the index hospitalization for study participants with recurrent and non-recurrent depression, categorized by sex.

	Males (n=71)			Females (n=164)		
	Non-recurrent depression (n=49)	Recurrent depression (n=22)	p-value	Non-recurrent depression (n=102)	Recurrent depression (n=62)	p-value
Age at index hospitalization, mean (sd)	15.2 (1.5)	15.8 (1.2)	0.113	15.4 (1.3)	15.6 (1.3)	0.375
Social engagement in early childhood reported by parent or guardian, n (%)						
Normal social engagement	36 (73.5%)	16 (72.7%)	0.948	71 (69.6%)	48 (77.4%)	0.277
School-related factors, n (%)						
Repeated a year at school	10 (20.4%)	6 (27.3%)	0.550	11 (10.8%)	3 (4.8%)	0.186
Special services at school	28 (57.1%)	16 (72.7%)	0.211	38 (37.3%)	31 (50.0%)	0.109
Truancy	21 (42.9%)	8 (36.4%)	0.607	30 (29.4%)	20 (32.3%)	0.701
Involvement in bullying, n (%)			0.542			0.830
No bullying	27 (55.1%)	9 (40.9%)		51 (50.0%)	28 (45.2%)	
Victim	12 (24.5%)	7 (31.8%)		38 (37.3%)	25 (40.3%)	
Bully or bully-victim	10 (20.4%)	6 (27.3%)		13 (12.7%)	9 (14.5%)	
Childhood psychiatric care, n (%)						
Before admission to index hospitalization	14 (28.6%)	9 (40.9%)	0.304	9 (8.8%)	9 (14.5%)	0.258
Psychiatric disorders at index hospitalization, n (%)						
Internalizing disorders	39 (79.6%)	17 (77.3%)	0.527	90 (88.2%)	59 (95.2%)	0.136
Externalizing disorders	33 (67.3%)	15 (68.2%)	0.945	50 (49.0%)	29 (46.8%)	0.780

Note: The answers indicate positive response (yes), if not otherwise stated.

Table 2 shows the characteristics of adolescent-related social relationships and leisure time activities among the male and female study participants with recurrent and non-recurrent depression diagnosed by young adulthood. Among adolescent female patients, the most typical companion in leisure time and the perceived satisfaction with leisure time are associated with a recurrent course of depression. Adolescent female patients with a recurrent course of depression were more likely to spend their leisure time alone rather than with family or friends compared to those with non-recurrent depression (25.8% vs. 9.8%, p=0.024). Adolescent female patients with a recurrent course of depression were more likely to report dissatisfaction with leisure time than those with non-recurrent depression (59.7% vs. 34.3%, p=0.002). Among the adolescent male patients, there were no statistically significant differences in association between leisure time variables and recurrence of depression.

Table 2. Characteristics of adolescent-related social and leisure time activities of the male and female study participants with recurrent and non-recurrent courses of depression diagnosed by young adulthood.

	Males (n=71)			Females (n=164)		
	Non-recurrent depression (n=49)	Recurrent depression (n=22)	p-value	Non-recurrent depression (n=102)	Recurrent depression (n=62)	p-value
How many close friendships, n (%)			0.837			0.216
None / Not known	6 (12.2%)	3 (13.6%)	0.948	10 (9.8%)	8 (12.9%)	0.277
1-3	17 (34.7%)	9 (40.9%)		45 (44.1%)	34 (54.8%)	
4 or more	26 (53.1%	10 (45.5%)		47(46.1%)	20 (32.3%)	
Whether the friendships feel close and lasting, n (%)						
No / Not known	6 (12.2%)	6 (27.3%)	0.170	16 (15.7%)	9 (14.5%)	0.840
The most typical companion in leisure time, n (%)			0.116			0.024
Family	14 (28.6%)	2 (9.1%)		21 (20.6%)	11 (17.7%)	
Friends	28 (57.1%)	18 (81.8%)		71 (69.6%)	35 (56.5%)	
Alone / Not known	7 (14.3%)	2 (9.1%)		10 (9.8%)	16 (25.8%)	
Hobbies, n (%)						
a. Individual hobbies practised at home	23 (46.9%)	11 (50.0%)	0.811	64 (62.7%)	37 (59.7%)	0.695
b. Individual hobbies practised outside home	26 (53.1%)	12 (54.5%)	0.908	55 (53.9%)	38 (61.3%)	0.356
c. Group activities	24 (49.0%)	10 (45.5%)	0.783	43 (42.2%)	24 (38.7%)	0.663
d. Drugs or alcohol	1 (2.0%)	1 (4.5%)	0.527	1 (1.0%)	4 (6.5%)	0.068
e. Staying alone	1 (2.0%)	0 (0.0%)	1.000	0 (0.0%)	1 (1.6%)	0.378

Note: The answers indicate positive response (yes), if not otherwise stated.

Table 3 shows associations of background factors in adolescence to the likelihood of having a follow-up diagnosis of recurrent depression by young adulthood, separately, among male and female study participants. No significant associations were found between background factors in adolescence, such as psychiatric morbidity, school-related factors or involvement in bullying, for a recurrent course of depression either in adolescent male or female patients.

Table 4 shows the association of adolescent-related social and leisure time activities to the likelihood of having a follow-up diagnosis for recurrent depression by young adulthood, separately, among male and female study participants. Those adolescent male patients, who reported spending leisure time mostly with friends, were more likely to have a recurrent course of depression than those who spent time mostly with their family (OR 9.36; 95% CI 1.23-71.34). Adolescent female patients who spent leisure time mostly alone, were more likely to have a recurrent course of depression, compared to those adolescent female patients who spent leisure time mostly with their family (OR 4.07; 95% CI 1.23-13.45). The likelihood for recurrent depression was also higher among those adolescent female patients who did not experience satisfaction with their leisure time (OR 3.02; 95% CI 1.38-6.58).

Table 3. Association of background factors in adolescence to the likelihood of recurrent depression (yes vs. non-recurrent depression), diagnosed by young adulthood, among male and female study participants.

	Recurrent depression (yes vs. non-recurrent depression as reference category) by young adulthood					
Background factors in adolescence	**Males (n=71)**			**Females (n=164)**		
	OR	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**
Psychiatric morbidity (yes vs. no as reference category)						
History of childhood psychiatric care, yes	2.22	0.56-8.72	0.254	2.32	0.76-7.13	0.142
Normal social engagement in early childhood reported by parent or guardian, yes	1.25	0.35-4.46	0.730	1.56	0.72-3.38	0.256
Psychiatric disorders (yes vs. no as reference category)						
Internalizing disorders, yes	0.69	0.14-3.33	0.645	3.37	0.76-14.98	0.110
Externalizing disorders, yes	0.74	0.18-2.99	0.669	0.80	0.39-1.66	0.548
School-related factors (yes vs. no as reference category)						
Repeated a year at school, yes	1.05	0.25-4.32	0.950	0.33	0.08-1.39	0.132
Special services at school, yes	2.38	0.63-9.06	0.203	1.52	0.77-2.97	0.225
Truancy, yes	0.57	0.15-2.15	0.402	0.57	0.59-2.64	0.571
Involvement in bullying						
No-bullying involvement	ref.			ref.		
Victim	3.25	0.79-13.33	0.102	1.11	0.54-2.30	0.773
Bully or bully-victim	1.97	0.43-8.72	0.382	1.88	0.58-6.10	0.291

Note: Odds ratios (ORs) and 95% confidence intervals (95% Cis) for ORs are based on the results of a binary logistic regression model (method=enter) in which likelihood for outcome variable (recurrent depression vs. non-recurrent depression) diagnosed by young adulthood was predicted with background variables in adolescence.

Table 4. Association of social and leisure time activities in adolescence with the likelihood of recurrent depression (yes vs. non-recurrent depression) diagnosed by young adulthood, among male and female study participants.

	Recurrent depression (yes vs. non-recurrent depression as reference category) by young adulthood					
Social and leisure time activities in adolescence	**Males (n=71)**			**Females (n=164)**		
	OR	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**
The number of close friendships						
None	1.56	0.12-19.44	0.732	2.30	0.58-9.10	0.237
1 to 3	2.89	0.68-12.29	0.151	1.47	0.68-3.18	0.324
4 or more	ref.			ref.		
Whether the friendships feel close and lasting						
Yes	ref.					
No	5.35	0.74-38.93	0.098	0.55	0.16-1.86	0.337
The most typical companion in leisure time						
Own Family	ref.			ref.		
Friends	9.36	1.23-71.34	0.031	1.42	0.52-3.91	0.492
Alone	2.44	0.21-28.68	0.478	4.07	1.23-13.45	0.022
Satisfaction with leisure time						
Yes	ref.			ref.		
No	0.39	0.09-1.73	0.215	3.02	1.38-6.58	0.005
Hobbies (yes vs. no as reference category)						
Hobbies practised alone, yes	0.68	0.20-2.31	0.539	1.36	0.66-2.79	0.409
Hobbies practised outside home, yes	0.86	0.28-2.67	0.796	0.52	0.25-1.071	0.076
Hobbies requiring social interaction, yes	0.86	0.25-3.01	0.816	0.81	0.38-1.72	0.585
Drugs or alcohol, yes	1.88	0.08-42.15	0.690	6.03	0.53-68.76	0.148

Note: Odds ratios (ORs) and 95% confidence intervals (95% CIs) for ORs are based on the results of a binary logistic regression model (method=enter), in which likelihood for outcome variable (recurrent depression vs. non-recurrent depression) diagnosed by young adulthood was predicted with variables for social and leisure time activities in adolescence.

DISCUSSION

This study provides an important approach to understanding the factors that affect the course of depression. We analysed associations between social relationships and leisure time activities and the recurrent course of depression diagnosed by young adulthood among former adolescent psychiatric inpatients separately, among male and female study participants. Our findings revealed that the factors associated with recurrent depression differed between male and female study participants. For adolescent female patients, dissatisfaction with leisure time and loneliness during adolescence were linked to a higher likelihood of recurrent depression. In contrast, among adolescent male patients, spending leisure time mostly with friends during adolescence was associated with a higher likelihood of recurrent depression.

Adolescence is an important period for developing self-identity and acquiring vocational and social skills while transitioning into adulthood. This process largely occurs through social interaction with peers. Existing psychological theories underline the importance of a feeling of belonging and closeness to our family and friends, and it is widely thought that a lack of these experiences leads to an increased risk of depression (17).

However, the role of adults remains significant during adolescence. One systematic review (18) noted that social support from parents, teachers and family were significant protective factors against adolescent depression in over 80% of the studies reviewed, but social support from friends was a significant protective factor in only 56% of the studies. A meta-analysis on the subject also revealed that the effect size of peer social support was generally small to moderate and that classmate support (or other general support) was more impactful in younger adolescents, while support from close friends remained significant throughout adolescence (19).

Interestingly, among adolescent male patients the likelihood of a recurrent course of depression diagnosed by young adulthood was higher with those who reported spending time mostly with friends. Furthermore, 27% of adolescent male patients with recurrent depression in our study felt that their friendships were neither close nor lasting. This finding raises the question of whether the quality of friendship differs significantly between depressed adolescent male and female patients. There is evidence that boys tend to have larger groups of friends with less emotional intimacy and support-seeking behaviour than girls in the general population (20). While the growing emphasis on friendships is an important part of adolescent development, its effect may differ in the case of a depressed adolescent. In this study, it was not possible to specify whether the self-reported friendships were beneficial or harmful to the adolescents' psychological development.

Among adolescent female patients, isolation from family and peers and dissatisfaction with leisure time associated with a higher likelihood of a recurrent course of depression. The association between the absence of social support and depressive symptoms has previously been observed in adolescent girls (21), and social anxiety and a pronounced fear of rejection are predictors of recurrent depression (22). These pathways may lead to spending time mostly alone and this may later increase the risk of recurrent depression in the absence of social support. In our study, no statistically significant associations between background factors in adolescence and the recurrence of depression were found for male and female study participants.

In previous studies involvement in bullying among adolescents has been associated with higher rates of self-reported depressive symptoms (23,24). However, this study did not find a similar association between involvement in bullying and recurrent depression. Our study focused on a clinical sample of patients who received inpatient psychiatric care during adolescence, so the results may differ from those without a history of inpatient psychiatric care during adolescence. Future studies could examine the relationship between involvement in bullying and recurrent depression in a larger sample of adolescent psychiatric patients. However, the predictors of recurrent depression among adolescents are only partially understood, so more research is needed to identify these predictors and clarify the underlying mechanisms.

Increased physical activity has previously been recognized as a protective factor for depressive symptoms among adolescents (25). Interestingly, in our study, the type of leisure time activity in adolescence was not associated with a later recurrent course of depression for either male or female study participants. It is likely that these other risk factors for recurrent depression outweigh the influence of different leisure activities.

The strengths of this study include professional diagnostics of adolescent psychiatric disorders, face-to-face interviews with the study population conducted by trained interviewers and a long follow-up period of 10–15 years. This study also has some important limitations. The study population consists of former adolescent inpatients who have been admitted to inpatient psychiatric care during adolescence. Therefore, the results cannot be generalized to the general adolescent or adult population. This study did not measure the quality of self-reported friendships, and thus could not distinguish whether those friendships had a positive or negative effect on the adolescents' psychological development. In this study, we were unable to assess involvement in bullying according

to the established definition (13). Furthermore, at the time of the adolescents' index hospitalization, no data were collected on problematic smartphone usage, which is now known to be associated with an increased likelihood of adolescent depression (26).

CLINICAL SIGNIFICANCE

Early detection of adolescents who are at higher risk for developing recurrent depression can enable more targeted and effective preventive interventions and treatments. This study provides a thorough evaluation of social and leisure time factors in adolescence, establishing that feelings of dissatisfaction with leisure time and spending most of their time alone are linked to an increased likelihood of recurrent depression by young adulthood among female study participants. These findings highlight the importance of considering an adolescent's social environment when assessing their risk of recurrent depression later in life.

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Conflict of Interest

AHH has received travel fees for a Finnish symposium (Lundbeck). The remaining authors have no disclosures. No potential conflict of interest has been reported by the authors.

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