

Clinical Characteristics of Adolescents Undergoing Psychotherapy.

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Abstract

Background: Adolescents with mental disorders often have difficulty engaging in ongoing treatment. Drop out from treatment is common.

Aim: This paper aims to explore the clinical characteristics of adolescents with mental disorders who were stably and actively undergoing psychotherapy over a long period of time.

Method: A single-centre cross-sectional cohort survey was conducted. A sample of fifty participants was recruited from the Child and Adolescent Psychiatry outpatient setting of a tertiary hospital of Thessaloniki, the second largest city in Greece. An intelligence test (Wechsler Intelligence Scale for Children, WISC III) and a self-report measure of depression (Beck Depression Inventory, BDI II) were used. All the participants underwent a rigorous clinical assessment of their mental health status in both initial and ongoing psychotherapy. The initial diagnosis was reconfirmed during the course of therapy. Mental disorders were defined and diagnosed using the ICD-10 (1992) (International Classification of Diseases).

Results: The largest percentage of adolescents (44,9%) were found to suffer from mood (affective) disorders, while 20,4% suffered from neurotic disorders. We also high prevalences of pessimism (32,7%), reduction of energy (28,6%) and difficulty in concentration (32,7%). A total of 22,4% of adolescents reported sleep disorders. A limited interest in sex was noted, which was in contrast with international and Greek data, where interest and experimentation around sex seems to preoccupy a high percentage of adolescents. Furthermore, sleep disorders, either as a symptom of an underlying disease or as an independent clinical condition, seem to preoccupy adolescents, and this may be a motive for them to seek treatment.

Conclusion: For the most part, the findings of this study were consistent with the findings of prior studies; however, previous studies did not exclusively include adolescents engaging in ongoing psychotherapy. As we identified some inconsistencies with prior studies related to interest in sex and sleep disorders, further research is recommended for the investigation of possible correlations between these findings and ongoing psychotherapy engagement rates.

Background

Adolescence is defined as the transitional phase between ages 10 and 19 [1]. However, adolescence is a culturally defined concept without a clear-cut starting (and ending) point [2]. Approximately 20% of adolescents experience a mental health problem, the most common of which are depression and anxiety [3]. Mental health problems increased in adolescents and young adults in Europe between 1950 and 1990, and the cause is largely unknown [4]. The literature on the prevalence of mental disorders among children and adolescents in the general population has significantly increased in recent years [5,6]. Most mental disorders start during childhood, adolescence and early adulthood [7]. Rates of diagnoses have increased substantially [8]. Adolescent mental health problems are an increasingly concerning public health issue. Globally, mental (and substance use) disorders are the leading cause of disability in young

people [9]. Laufer [10] states that it is difficult to define mental disorders in adolescence, and there is controversy regarding this topic.

The problem of attrition from mental health therapy (which reduces the success rate of psychotherapy) is pervasive throughout the mental health field. For more than 50 years, research has been concerned with a thorough understanding of the phenomenon of attrition from mental health therapy [11]. Several attempts have been made to explore the reasons for and the risk factors for psychotherapy attrition. Effective methods to engage clients in therapy are still under discussion. Creating an optimum collaborative working involvement between therapists and clients is crucial to achieve successful treatment engagement [12]. Treatment engagement is decisive in forming an effective therapeutic process and 'may be particularly relevant early in treatment' [13]. For instance, a strong therapeutic alliance and client satisfaction have a positive impact on dropout rates [14]. A meta-analysis conducted by Sharf, Primavera and Diener (2010) demonstrated "a moderately strong relationship between psychotherapy dropout and therapeutic alliance" in the context of adult individual psychotherapy [15]. Engaging clients in a discussion about the treatment option that best fits their values and preferences ("shared decision making") may lead to greater treatment satisfaction and hence may be one of the practical tips for ensuring ongoing therapy engagement. Shared decision-making 'is increasingly being suggested as an integral part of mental health provision' [16] and is particularly so in the context of children and adolescents psychiatry [17]. Shared decision making is at the core of the patient-centred care model in any area of medicine. Moreover, the use of a patient-centred care model in the mental health care context has promising outcomes for treatment engagement [18].

Importantly, it is widely accepted that a large subset of adolescents generally have the capacity to engage in decisions about their treatment and to consent to medical treatments in specific contexts [19]. However, little is known about the capacity of adolescents with psychiatric mental disorders to consent to treatment [20]. It is crucial to consider that persons with mental disorders do not necessarily lack decision-making competence [21-23]. Values, preferences and emotions play an important role in the decision-making process [24]. However, it is impossible to define a cutoff point of consent for medical treatment based on neuroscience [25]. At any rate, adolescents should be involved in treatment decisions as much as possible [26, 27]. Their involvement in medical decisions has proven beneficial to them [27, 28].

Adolescents with mental disorders often have difficulty engaging in ongoing treatment. Drop out from treatment is common. It is arguably stated that 'attrition in youth outpatient mental health clinics ranges from 30 to 70% and often occurs early in treatment' [13]. Engaging adolescents is especially challenging "because of their developmental immaturity, the stigma many adolescents associate with psychotherapy, and adolescents feeling forced into psychotherapy" [29]. Roos and Werbart (2013) found that in the context of adult individual psychotherapy, dropout rates "varied widely with a weighted rate of 35%" [14].

In short, while a large subset of adolescents with mental disorders maintain their ability to be fully engaged in a shared clinical decision-making process in the context of their psychiatric treatment

engagement, a large subset of adolescents with mental disorders cannot engage in ongoing psychotherapy, thereby undermining an effective therapeutic process. We aimed to explore the clinical characteristics of adolescents with mental disorders who engage in ongoing psychotherapy and hence most effectively improve their treatment process.

We aim to contribute to identifying the clinical characteristics of adolescents engaging in their ongoing psychotherapy and hence to inform the design of future studies regarding the possible relationship between these characteristics and ongoing psychotherapy engagement rates.

The research question that defined the focus of this study was as follows:

“What are the clinical characteristics of adolescents with mental disorders who were able to keep themselves from dropping out from their ongoing psychotherapy engagement?”.

Methods

A single-centre cross-sectional cohort survey was conducted. This study, along with another (entitled: Self-perceived barriers and facilitators of health care treatment engagement among adolescent outpatients), was part of a broader research project exploring the reasons for and risk factors for psychotherapy attrition among adolescents with mental health disorders.

A face-to-face sample survey of 50 adolescents with mental disorders aged 13–18 years was conducted. A total of 50 adolescents (aged 13-18 years, mean=14,8, SDs= 1,616) with psychiatric disorders engaged in outpatient mental health settings (Child and Adolescents Psychiatry department, tertiary referral hospital Hippokratio of Thessaloniki, the second largest city in Greece) participated in the study. The study was conducted from June 2016 to December 2019.

Ethical considerations

The authors obtained adolescent consent and parental consent for adolescent participants. If adolescents and their parents were willing to participate, they were given adequate information about the design, purpose, nature and confidentiality of the study, and they were informed that participation was not involuntary and that consent could be withdrawn at any time during the course of the study. Verbal informed consent to participate was then obtained from each participant and his or her parent(s) prior to participating in this study and documented in recording at the time of the interviews. Anonymity and confidentiality were maintained throughout the study.

The participants' anonymity was preserved. Their data were stored in a strictly confidential fashion. The study and consent procedure was approved by the ethics committee affiliated with Aristotle University of Thessaloniki, Faculty of Health Sciences, Department of Medicine (No: 9302 12/7/17).

Statistical analysis method

The SPSS statistical package was used for the processing of data. Initially, the quantitative variables were examined for their normality and the existence of outliers. The normality of distribution was examined through the histogram and the Kolmogorov-Smirnov and Shapiro-Wilk tests for the variables of age, WISC and BDI. The boxplot was used to detect outliers. The Mann-Whitney test was applied with sex as an independent variable and age, WISC scores and BDI scores as dependent variables.

The binomial test was applied to check for a statistically significant deviation in the distribution regarding sex. To determine the correlations between the variables age, total WISC scores and total BDI scores, Spearman's rank correlation coefficient was used. To determine the frequency distribution of the BDI questions, the chi-square goodness-of-fit test was applied. The Kruskal-Wallis test was used to assess whether the median scores per adolescence period subcategory demonstrated statistically significant differences.

Results

Both the histogram picture and the test results refer to a nonnormal distribution for age (Kolmogorov-Smirnov: $p < 0,05$. Shapiro-Wilk: $p < 0,01$), WISC scores (Kolmogorov-Smirnov: $p < 0,01$. Shapiro-Wilk: $p < 0,01$) and BDI scores (Kolmogorov-Smirnov: $p < 0,05$. Shapiro-Wilk: $p < 0,01$). Boxplots revealed the existence of outliers for the WISC scores (case 21, score 41) and BDI scores (case 46, score 55). Although it is recommended in statistics to delete outliers, it was decided to maintain them in the present study due to their clinical value. Taking into consideration the above data about nonnormal distribution and the existence of outliers, nonparametric tests were applied.

During the exploratory analysis, it was examined whether the answers of the participants differed based on sex. For this purpose, the Mann-Whitney test was applied with sex as an independent variable and age, WISC scores and BDI scores as dependent variables [see Table 1, Additional File 1].

The results showed that for all three variables, there were no statistically significant differences between boys and girls in their answers (age $U = 273,00$, exact $p = 0,67$; WISC $U = 183,50$, exact $p = 0,15$; BDI $U = 214,00$, exact $p = 0,23$).

Research of diagnosis

In total, 50 children and adolescents with a mean age of 15 years participated in the study. A total of 42,9% of participants were boys, and 57,1% were girls. The application of the binomial test demonstrated that the distributions were not significantly different (exact $p = 0,39$). The mean WISC score of the participants was 95 points, and the mean BDI score was 17,7 [see Table 1, Additional File 1]. In Table 2 [Additional File 1], we present in detail the mean scores and standard deviations of each BDI question. The highest mean scores were observed for the questions "Change of sleep" and "Difficulty of concentration", while the lowest mean scores were observed for the questions "Loss of interest in sex" and "Suicidal ideas".

In regard to the total BDI score, we considered a score of 17 as the differentiating point of depressive mood, taking into consideration the proposal of Giannakou et al (2013) [32]. In the present research, 23 out of 47 BDI participants had a total score of 17 and above.

Distribution of diagnosis (diagnosis-related groups):

A total of 44,9% of participants were in the F30-F39 category [manic episode, bipolar affective disorder, depressive episode, recurrent depressive disorder, persistent mood disorders (cyclothymia, dysthymia), other mood disorders (ICD-10)] [see distribution of diagnosis, Diagram 1, Additional File 2].

A total of 20,4% of participants were in the F40-F48 category [neurotic and somatoform disorders, such as phobic anxiety disorder, anxiety disorders, obsessive-compulsive disorder, adjustment disorders, dissociative disorders].

A total of 10,2% of participants were in the F50-F59 category [eating disorders, sleep disorders, sexual dysfunction, substance abuse. Importantly, this category includes anorexia nervosa].

A total of 2% of participants were in the F60-F69 and F70-F79 categories [personality disorders and mental retardation, respectively].

A total of 10,2% of participants were in the F80-F89 category [developmental disorders of speech and language, disorders of scholastic skills and pervasive developmental disorders].

A total of 4,1% of participants were in the F90-F99 category [hyperkinetic disorders, conduct disorders, emotional disorders with onset specific to childhood, tic disorders, disorders of social functioning with onset specific to childhood].

A total of 6,1% of participants were in the Double Diagnosis category.

Sleep disorders were also commonly reported on the BDI (22,4%).

Frequency distribution of BDI questions

The chi-square goodness-of-fit test was used to investigate whether the participants chose a score with the same frequency in each BDI question or whether they differed [see Table 3, Additional File 1]¹. As Table 2 [Additional File 1] portrays, the participants reported different answers except for on the questions regarding “Reduction of energy, Change of sleep, Difficulty of concentration”, where answers were distributed with more uniformity. In general, participants tended to select the first two scores, which refer to a lack of symptoms or less severe symptoms. The selection of higher scores, referring to more severe symptoms, was observed for the question regarding “Pessimism, Reduction of energy, Difficulty of concentration”.

In the last question referring to loss of interest in sex, the percentage of participants who did not answer the question reached 22,4%, and it is the highest compared to the rest of the questions (38 people versus

45 or 46). Thirty adolescents (61,2%) selected the answer “I have not noticed any recent change in my interest in sex”, 3 adolescents (6,1%) were less interested in sex than they used to be, 2 adolescents (4,1%) had almost no interest in sex, and 3 adolescents (6,1%) had lost interest in sex completely.

The vast majority of answers sums to the first score selection referring to answer “I have not noticed any recent change in my interest in sex”, which corresponds to a score of 0. Many of the participants had no history of sexual intercourse.

Among the BDI questions, only on question 12 (loss of interest) was there a statistically significant difference (early: 18,36, middle: 22,83, late: 31,32, $\chi^2(2) = 6,99, p < 0,05$).

In regard to sleep disorders in our sample, in the analytical form, the answers to BDI question 16 (Change of sleep) were distributed as follows:

I sleep as well as usual (0): 11 (22,4%)

I sleep a little more than usual (1a): 9 (18,4%)

I sleep a little less than usual (1b): 10 (20,4%)

I sleep much more than usual (2a): 5 (10,2%)

I sleep much less than usual (2b): 5 (10,2%)

I sleep most hours of the day (3a): 1 (2,0%)

I wake up 1-2 hours early and can't go back to sleep (3b): 5 (10,2%)

Adolescence categories

For the investigation of a potential correlation between the adolescence period and the intelligence level and the BDI score, participants were divided into three categories: early adolescence (10-13 years), middle adolescence (14-17 years) and late adolescence (17-21 years). Fourteen of the participants belonged to the first category, 24 belonged to the second category, and 12 belonged to the third category. See distribution of diagnosis in boys and girls in Diagrams (Pie Charts) 2 and 3, respectively [Additional File 2].

Afterwards, the nonparametric Kruskal-Wallis test was applied with adolescence stage as the independent variable and WISC and BDI scores as the dependent variables.

WISC and BDI scores

The Kruskal-Wallis test showed that the median scores in each subcategory did not differ to a statistically significant degree in regard to the scoring of the participants in the WISC test (early: 20,68, middle: 21,89, late: 29,33, $\chi^2(2) = 2,70, p = 0,26$) and in the BDI (early: 23,92, middle: 23,46, late: 25,23, $\chi^2(2) = 0,13, p =$

0,94). Among the sub-questions of the BDI, a statistically significant difference was observed only in question 12 (loss of interest) (early: 18,36, middle: 22,83, late: 31,32, $\chi^2(2) = 6,99, p < 0,05$).

In conclusion, the participants did not differentiate as to their WISC and BDI scores in regard to the adolescence stage they were going through (early, middle, late). There is, however, the exception of the subquestion "Loss of interest", where the highest scores were observed in late adolescence, while the lowest scores were observed in early adolescence.

Summary of results

The diagnosis distribution was as follows: 44,9% in the F30-F39 category, 20,4% in the F40-F48 category, 10,2% in the F50-F59 category, 2% in the F60-F69 and F70-F79 categories, 10,2% in the F80-F89 category, 4,1% in the F90-F99 category, and 6,1% in the double diagnosis category. No sex differences were observed. We found similar mean WISC scores (95 points) and BDI scores (17,7) between boys and girls. Higher BDI mean scores were noted for the questions "Changes in sleep" and "Difficulty in concentration", while lower BDI mean scores were noted for the questions "Loss of interest in sex" and "Suicidal thoughts". Twenty-three out of 47 BDI participants had a total score of 17 or more. In the questions assessing Pessimism, Reduction of energy and Difficulty in concentration, we observed higher scores that indicated more severe symptoms. In the question assessing a loss of interest in sex, the prevalence of missing answers was 22,4%, which is the highest in comparison to the other questions (38 people versus 45 or 46). The vast majority of participants selected the first score choice. No correlations were observed among age, WISC scores and BDI scores. WISC and BDI scores did not differ based on adolescence stage (early, middle, late). The only exception was the sub-question assessing loss of interest, where the highest scores were observed in late adolescence and the lowest scores were observed in early adolescence.

Discussion

The sample of our study consisted of fifty adolescents with mental disorders who were undergoing psychotherapy. The most prevalent diagnosis (44,9%) was mood disorders (F30-F39). In this category, changes in mood are dominant and move towards depression or towards euphoria. Changes in mood are usually accompanied by a change in the level of general activity, and it seems that in our sample, the changes in everyday life (sleep, concentration, pessimism) may be have motivated individuals to seek assistance, as indicated by the high scores on the BDI. Recent evidence suggests an association between urbanization and mood disorders [33]. The high prevalence of mood disorders among adolescents may be partly explained by the urbanization model that has been developed in Greece over the last decades. Furthermore, over recent years, Greece has adopted extreme austerity measures that have led to changes in the social landscape. "The economic crisis that hit Italy has posed threats to Italians' mental health and wellbeing" [34]. "Regarding financial distress, it was found to bear a statistically significant association with major depression but not with generalized anxiety disorder" [35]. The fact that mood disorders among adolescents were found in high prevalence may be partly explained by the recent Greek

economic crisis, which may be an underlying driving factor. At any rate, it is crucial to bear in mind that “social and cultural factors may influence emergence of mental health problems” [36].

In the F30-F39 category, girls outmatch in the appearance of mood disorders. In international studies, it was found that between 1987 and 1999, adolescent girls presented an increase in psychological stress [37]. Females are more likely to develop mood disorders, a fact confirmed by both our results in this study group and international studies [38, 39]. A systematic review published in 2014 found that the majority of studies report an increase in internalizing problems in adolescent girls [36].

A total of 20,4% of participants had an F40-F48 diagnosis (neurotic disorders). In this category, 14,3% of girls, compared to 6,1% of boys, develop these specific disorders in a higher percentage, specifically phobic disorders and panic disorders with a 2:1 to 3:1 ratio. For some unspecified reasons, girls appear to be more vulnerable to the development of neurotic disorders. “The symptoms of neurotic disorders were more strongly expressed and more common in girls” [40].

The forms of nonmanageable stress during adolescence are the same as those appearing in the other stages of life: stress attack (panic) and generalized anxiety (diffuse feeling of anxiety) with mental disorders characterized by a condition of tension and fear, often accompanied by sleep disorders. Anxiety (agoraphobia, social phobia, school phobia) is accompanied by an undefined sense of restlessness. Anxiety attacks usually start during adolescence and may be accompanied by difficulty in decision making or by somatization [41]. Overall, anxiety disorders and depressive disorders are strongly related; they likely share common aetiological determinants, and they have distinct temporal associations [42]. Comorbid depression and anxiety disorders occur in up to 25% of general practice patients [43]. Anxious depression (comorbid anxiety and depression) is a relatively common syndrome [44].

A total of 10,2% (8,2% girls, 2% boys) of participants belonged to the F50-F59 category, which includes eating disorders, sleep disorders, sexual dysfunction, and substance abuse. Anorexia nervosa is a life-threatening disorder if not treated in time. Modern beauty models, the search for a “perfect” body image, and dysfunctional family relations usually entrap young girls into restricting their diet, and without timely intervention, the clinical and physical condition rapidly deteriorates. It is calculated that 40% of anorexia nervosa cases will develop between 15 and 19 years of age. At a much lower frequency, it appears for the first time in women in their late youth or in middle age [45,46]. A study regarding the period 2013-2014 reported that 31.6% of Australian adolescents experienced disordered eating [47]. A meta-analysis of 41 studies showed an increase in the prevalence of eating disorders (3.7% vs. 1.8%) [48]. Eating disorders are some of the most prevalent disorders in adolescence, and their prevalence continues to increase [49].

Sleep disorders, which were common in the study group, according to the BDI (22,4%), can be attributed to an underlying mental disorder if they are not caused by physical factors. Bad sleep quality affects next-day functioning and may particularly bother adolescents, which is why seeking help may usually be a personal request by the adolescent and not just by the family. Chronic sleep disorders are considered a common condition among adolescents. There has been awareness in recent years concerning the quality of sleep and mental health. Research shows that girls present with more frequent insomnia than boys

[41], [50]. Sleep problems refer to the quantity and quality of sleep in adolescents, difficulties in coming sleep, day drowsiness, and sleep that does not bring rest [51]. Bad sleep quality has been found to be related to mental health problems.

There may be co-occurrence and association between mental health symptoms and sleep problems. It has been estimated that in approximately 67% of adolescents with sleep concerns, there is co-occurrence of mental health problems in almost similar rates in preschool and school age groups [52]. Furthermore, Hysing et al. (2016) state that sleep problems may be associated with poor academic performance [53]. Moreover, Zhang et al. (2018) found that “sleep disturbance had significant mediating effects on the relationship between intrafamily conflict and mental health problems in Chinese adolescents” [54].

Regarding sexuality, while the vast majority of the participants in our study were very interesting in improving their social and communicative skills and acceptance by peers, they did not show any interest in sex and sexuality. It is argued that “conscious sexual identities, motivations and desires” are present during early and middle adolescence [55]. Low and moderate levels of compulsive sexual behaviour are considered part of the normal development of sexuality among adolescents [56]. However, adolescent sexuality is considered “tentative, experimental, confused, inept, and innately dangerous” [57] and cleanly demarcated from adult sexuality [58]. “Adolescence is a crucial period for emerging sexual orientation and gender identity...” [59].

The findings of our survey were inconsistent with those of a Greek study (Adolescent Health Unit, 2007), which found that in the entire metropolitan area of Athens, 20% of adolescents had already initiated sexual activity before the age of 16 years [60]. This may partly explain why the participants in our study did not drop out (or attempt to drop out) from their psychotherapy. Note, however, that 10,2% of the participants in our study were adolescents with autism spectrum disorders where there are difficulties in approaching the opposite gender [61]. Furthermore, it is noteworthy that “due to the core symptoms of the disorder spectrum”...some autism spectrum disorder individuals might “develop quantitatively above-average or nonnormative sexual behaviours and interests” [62]. Moreover, the fact that 44,9% of the participants in our study were adolescents with mood disorders and the high prevalence of pessimism/negativity (36.7%), reduced activity (30.6%) and concentration deficit (28.6%) may partly provide some explanation for the lack of interest in sex and sexuality among the participants in our study.

Two percent (2% girls, 0% boys) of participants belonged to the F60-F69 category (personality disorders, gender identity disorders). The specific disorders and especially borderline personality disorders (F60.3) are characterized by extreme behavioural models with serious deviations from average in relating and interacting with others. In our study group, girls presented with personality disorders, specifically borderline personality disorder, where instability and fluidity in interpersonal relations are characteristic and accompanied by emotional instability, discomfort and compulsive suicide attempts. This may partly explain the low prevalence of adolescents with (borderline) personality disorder among members of a sample consisting of adolescents who were fully engaging in their ongoing psychotherapy.

The low percentage in diagnosing personality disorders (PD) in our group complies with international data, as personality disorders are usually set as diagnoses in adult life because of the constantly evolving and changing personality in adolescence. According to the ICD-10, the diagnosis of personality disorders is rather improbable in children younger than 16-17 years, while according to the DSM-IV, the diagnosis may be valid in children and adolescents when specific dysfunctional patterns are pervasive, last for at least one year and are not explained by another psychiatric disorder. Although dysfunctional behavioural models are acknowledged in adolescents, these are described as peculiar developmental patterns and not as disorders [63] [37]. Feenstra and Hutsebaut (2014) state: "Clinicians seem hesitant about diagnosing personality disorders in adolescents. Furthermore, little is known about the assessment and treatment of adolescents with personality disorders" and "There appear to be more similarities than differences between personality disorders in adolescents and adults" [64]. Moreover, we found a higher prevalence of personality disorders in boys. However, regarding borderline personality disorders, there is still no clear difference between men and women. Schulte Holthausen and Habel (2018) state: "Hence, despite the number of studies in borderline PD, sex-specific aspects have not been addressed sufficiently and it is still inconclusive to what extent prevalence differences as well differences in symptoms occur between the sexes" [65].

Two percent of participants presented with mental retardation, F70-F79 (10,2% boys, 0% girls). Mental retardation is a condition of retarded development of intellect with incomplete development of both social skills and linguistic and motor skills, and it is distinguished as mild, moderate, severe and profound, depending on the gravity of difficulties. This may partly explain the low prevalence of adolescents with (mild) mental retardation among members of a sample consisting of adolescents with mental disorders who were fully engaging in their psychotherapy. Relatedly, people with mental retardation are at an increased risk of developing emotional disorders [66]. Higher prevalences of mild mental retardation are reported in boys, whereas the ratio differences are less obvious in people with severe and profound mental retardation. The results in our study are in accordance with the results of international studies, where boys prevail in the appearance of mental retardation for the abovementioned reasons [67, 68].

A total of 10,2% of adolescents (10,2% boys, 0% girls) belonged to the F80-F89 category. In our study group, adolescents with a developmental disorder were in a therapeutic relationship with a specialist in the outpatient clinic. They themselves feel their peculiarity and are usually open to the family's urging towards psychotherapy to improve their social and communicative skills and acceptance by peers. The fact that in our study group all the adolescents presenting with developmental disorder were boys is in agreement with international epidemiological data, where pervasive developmental disorders are more often observed in boys, with a sex ratio of boys to girls from 3,5-4 to 1 [69] [38].

A total of 4,1% (0% girls, 4,1% boys) belonged to the F90-F99 category. Conduct disorder is usual in childhood and adolescence, and it is more common in boys than girls, with a ratio varying from 4:1 to 12:1; this was similar to the findings of the current study, since only boys were in therapy for conduct disorder [70, 71].

Limitations and strengths

Other studies conducted large-scale surveys of child and adolescent psychiatric disorders using random and population representative samples of adolescents (i.e., school-based or nonschool studies), we focused on adolescents with mental disorders who were already engaged in ongoing treatment. For that reason, our study participant number was limited. Another limitation of our study is the fact that our cross-sectional study was carried out in one only child and adolescent mental health care setting. However, this setting is one of the few tertiary child and adolescent mental health care settings in northern Greece.

Conclusions

The largest proportion of adolescents (44,9%) were found to suffer from mood (affective) disorders, while 20,4% suffered from neurotic disorders. Pessimism (32,7%), reduction of energy (28,6%) and difficulty in concentration (32,7%) were common. A total of 22,4% of adolescents complained of sleep disorders. However, limited interest in sex was noted, which was in contrast with international and Greek data, where interest and experimentation around sex seem to preoccupy a high percentage of adolescents. Furthermore, sleep disorders, either as a symptom of an underlying disease or as an independent clinical condition, seem to preoccupy adolescents, and this may be the motive for them to seek treatment. For the most part, the findings of this study were consistent with the findings of prior studies; however, previous studies did not exclusively include adolescents engaging in ongoing psychotherapy. As we identified some inconsistencies with prior studies related to interest in sex and sleep disorders, further research is recommended for the investigation of possible correlations between these findings and ongoing psychotherapy engagement rates. It might be interesting to investigate whether these findings strongly motivate adolescents with mental disorders to engage in psychotherapy.

Abbreviations

BDI=Beck Depression Inventory

DMC= Decision making capacity

ICD= International Classification of Diseases

PD= Personality disorders

SDs= Standard deviation score

SDM = Shared decision-making

WISC=Wechsler Intelligence Scale for Children

Declarations

Availability of data and materials

The datasets used and analysed for this study are available from the corresponding author on reasonable request.

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Authors' contributions

ET and PV developed the study concept and design. All interviews were conducted by ET. ET and PV analysed and interpreted the data. The other co-authors (AE, GA and D.E.) were involved in data analysis discussions and monitored the process of this study. D.E. conducted statistical data analysis. PV drafted the manuscript, and all authors provided critical revisions for important intellectual content. The study was supervised by PV. All authors read and approved the final manuscript. ET and PV (corresponding author) equally contributed to this paper.

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Ethics approval and consent to participate

We confirm that all methods were carried out in accordance with relevant guidelines and regulations. As participants were under 18, written informed consent was obtained from a parent and/or legal guardian. In addition, verbal informed consent was obtained from adolescent participants. Both parents/legal guardians and adolescents were told at the start of the study that they have the right to withdraw from research at any time and without giving any reason and without reprisal. Before each interview, each participant and his or her parent(s) were given information on the study and informed that his or her participation was voluntary while placing great weight on the importance of maintaining confidentiality. This study and consent procedure was approved and monitored by the Research Ethics Review Board of the School of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece (Decision Number: 9.302/12-07-2017). This ethics committee approved the verbal informed consent procedure for this study.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests. This edit was made to conform to the format of the journal guidelines.

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Tables

Table 1 *Mean Scores, Standard Deviations, Maximum and Minimum Values of the Age of the Participants, Total Score of WISC and BDI.*

| | <i>M.S.</i> | <i>S.D.</i> | <i>Min.V.</i> | <i>Max.V.</i> | <i>n</i> |
|------|-------------|-------------|---------------|---------------|----------|
| Age | 14,85 | 1,67 | 12,0 | 18,0 | 50 |
| Boy | 14,97 | 1,67 | 13,0 | 17,5 | 22 |
| Girl | 14,75 | 1,70 | 12,0 | 18,0 | 28 |
| WISC | 94,93 | 14,39 | 41 | 133 | 45 |
| Boy | 95,95 | 16,76 | 41 | 116 | 19 |
| Girl | 94,19 | 12,69 | 77 | 133 | 26 |
| BDI | 17,72 | 10,78 | 1 | 55 | 47 |
| Boy | 14,95 | 8,19 | 3 | 34 | 20 |
| Girl | 19,78 | 12,09 | 1 | 55 | 27 |

M.S.=Mean Scores, S.D.=Standard Deviation, Min.V. = Minimum Value, Max.V. = Maximum Value.

Table 2 *Mean Scores and Standard Deviations for every question of BDI*

| Symptom | <i>M.S.</i> | <i>S.D.</i> | <i>N</i> |
|------------------------------|-------------|-------------|----------|
| 1. Sadness | 0,87 | 0,93 | 46 |
| 2. Pessimism | 1,13 | 1,05 | 46 |
| 3.Past failure | 0,70 | 0,96 | 46 |
| 4. Loss of pleasure | 0,91 | 0,94 | 46 |
| 5. Guilty feelings | 0,78 | 0,89 | 46 |
| 6. Punishment feelings | 0,82 | 0,96 | 45 |
| 7. Self-dislike | 0,91 | 1,03 | 46 |
| 8. Self-criticainess | 1,02 | 0,93 | 46 |
| 9. Suicidal thoughts | 0,56 | 0,84 | 45 |
| 10. Crying | 0,78 | 1,05 | 46 |
| 11. Agitation | 0,74 | 0,80 | 46 |
| 12. Loss of interest | 0,74 | 0,91 | 46 |
| 13. Indecisiveness | 1,07 | 1,06 | 46 |
| 14. Worthlessness | 0,83 | 1,04 | 46 |
| 15. Loss of energy | 1,15 | 0,99 | 46 |
| 16. Changes in sleeping | 1,24 | 0,97 | 46 |
| 17. Irritability | 1,00 | 0,93 | 45 |
| 18. Changes in appetite | 0,91 | 0,99 | 46 |
| 19. Concentration difficulty | 1,22 | 0,99 | 46 |
| 20. Tiredness | 0,96 | 0,97 | 46 |
| 21. Loss of interest in sex | 0,42 | 0,92 | 38 |

Table 3 *Frequency of answers in each BDI question*

| Symptom | Score (%) | | | | χ^2 (3) | N |
|-----------------------------|-----------|-----------|-----------|----------|--------------|----|
| | 1 | 2 | 3 | 4 | | |
| Sadness | 19 (38,8) | 18 (36,7) | 5 (10,2) | 4 (8,2) | 17,13** | 46 |
| Pessimism | 18 (36,7) | 8 (16,3) | 16 (32,7) | 4 (8,2) | 11,39** | 46 |
| Feeling of failure | 28 (57,1) | 6 (12,2) | 10 (20,4) | 2 (4,1) | 34,35*** | 46 |
| Decreased enjoyment | 19 (38,8) | 15 (30,6) | 9 (18,4) | 3 (6,1) | 12,78** | 46 |
| Guilt | 21 (42,9) | 17 (34,7) | 5 (10,2) | 3 (6,1) | 20,44*** | 46 |
| Punishment | 21 (42,9) | 15 (30,6) | 5 (10,2) | 4 (8,2) | 17,84*** | 45 |
| Self-dislike | 20 (40,8) | 16 (32,7) | 4 (8,2) | 6 (12,2) | 15,57*** | 46 |
| Self-criticism | 15 (30,6) | 19 (38,8) | 8 (16,3) | 4 (8,2) | 11,91** | 46 |
| Suicidal ideas | 27 (55,1) | 14 (28,6) | 1 (2,0) | 3 (6,1) | 38,11*** | 45 |
| Cry | 26 (53,1) | 9 (18,4) | 6 (12,2) | 5 (10,2) | 25,13*** | 46 |
| Worry | 21 (42,9) | 17 (34,7) | 7 (14,3) | 1 (2,0) | 21,83*** | 46 |
| Loss of interest | 24 (49,0) | 12 (24,5) | 8 (16,3) | 2 (4,1) | 22,52*** | 46 |
| Indecision | 17 (34,7) | 16 (32,7) | 6 (12,2) | 7 (14,3) | 8,78* | 46 |
| Unworthiness | 25 (51,0) | 8 (16,3) | 9 (18,4) | 4 (8,2) | 22,35*** | 46 |
| Reduction of energy | 15 (30,6) | 13 (26,5) | 14 (28,6) | 4 (8,2) | 6,70 | 46 |
| Changes of sleep | 11 (22,4) | 19 (38,8) | 10 (20,4) | 6 (12,2) | 7,74 | 46 |
| Irritation | 15 (30,6) | 19 (38,8) | 7 (14,3) | 4 (8,2) | 12,87** | 45 |
| Changes of appetite | 20 (40,8) | 14 (28,6) | 8 (16,3) | 4 (8,2) | 12,78** | 46 |
| Difficulty of concentration | 14 (28,6) | 12 (24,5) | 16 (32,7) | 4 (8,2) | 7,22 | 46 |
| Fatigue | 17 (34,7) | 19 (38,8) | 5 (10,2) | 5 (10,2) | 14,87** | 46 |
| Loss of interest in sex | 30 (61,2) | 3 (6,1) | 2 (4,1) | 3 (6,1) | 59,05*** | 38 |

* $p < 0,05$. ** $p < 0,01$. *** $p < 0,001$.

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