

Analysis of Dual Diagnoses in the Practice of the Children's and Adolescents' Outpatient Addiction Service. The Study Design

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BACKGROUND: The World Health Organization defined psychiatric comorbidity as the co-occurrence of multiple symptoms or mental disorders in an individual. The prevalence of mental disorders among adolescents with addiction-related conditions ranges from 35% to 83%.

AIMS: We are going to present a systematic literature review covering dual diagnoses among children and adolescents. We want to identify the prevalence of comorbidities involving substance use disorders or pathological gambling and other mental disorders among the patients of the Outpatient Addiction Treatment Service for Children and Adolescents and identify the pattern of use. **METHODS:** A systematic review of dual diagnoses among children and adolescents will be produced first. The study will follow the PRISMA guidelines and protocol. For an article to be found eligible it must have been published within the last ten years. Our assumption is that several categories of data will arise – prevalence data, data describing the nature of

disorders other than those related to addiction, and data describing a pattern of use. Then in the proper research we analysed data of all the patients who have sought the services of the Outpatient Addiction Treatment Service for Children and Adolescents. The data will be extracted from the FONS system which is implemented at the outpatient service. This data has not been collected since the beginning and thus provides additional input on the participants for the period 2017–2021. The data will be used for descriptive statistics which will make it possible for us to present the prevalence of dual diagnoses in the population under scrutiny. Non-parametric statistical methods were chosen for further analysis describing the nature of disorders other than those related to addiction, and data describing a pattern of use. **DISCUSSION:** The result of the systematic review is testifying high prevalence of dual diagnoses in the target group. We expect that our own research will testify high prevalence in patients in outpatient service.

Keywords | Dual Diagnosis – Substance Use Disorders – Alcohol Use Disorders – Children – Adolescents

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● 1 THEORETICAL BACKGROUND

In this paper we present the design of the study we plan to execute in 2021–2022. The study will consist of a systematic literature review and a retrospective quantitative analysis of clinical records from a single outpatient service in the years 2015–2021. The Outpatient Addiction Treatment Service for Children and Adolescents (“Ambulance dětské a dorostové adiktologie”, ADDA) came into existence as the fifth independent specialised outpatient service provided by the Department of Addictology of the First Faculty of Medicine of Charles University. The idea behind its establishment was supported by the needs assessment of the catchment areas of Prague and the Central Bohemia region. The clinic was hailed as an appropriate way of adding to the existing network of services by both the patients and practitioners from related facilities. The operational configuration of the clinic builds upon the long tradition built by the specialised facility for children and adolescents founded by Professor Mečíř in 1957 (Miovský & Popov, 2016).

The target group of ADDA patients as affirmed by pilot testing was generally determined in line with the relevant guidelines, with the predominant indication involving substance-related problems (F.10–F.19) or conditions associated with behavioural addiction. The patients’ age range of 15–18 was extended to include children aged 12 and above (Miovský & Popov, 2016).

As tested during the pilot operation, the ADDA model features a two-stage structure. The first stage involves intake assessment/diagnosis, screening, and motivational work, while the second consists of the treatment and rehabilitation services provided by the outpatient facility. The intake assessment and screening make it possible for every patient to be thoroughly examined for any psychiatric, psychological, and addiction-specific conditions (Miovský et al., 2016).

The World Health Organization (2004) defined psychiatric comorbidity as the co-occurrence of multiple symptoms or mental disorders in an individual. The term “dual diagnosis”, on the other hand, refers to a closer relationship between conditions, as well as implying etiology (Miovská, 2006).

The prevalence of mental disorders among adolescents with addiction-related conditions ranges from 35% to 83%, with the median and mean values being 48% and 56.2%, respectively, as documented by a review summarising papers written in English and published in the last 10 years (Jandáč & Štastná, 2020). The sample sizes ranged from 55 (Marshall et al., 2012) to 271 participants (Essau, 2015).

While males are represented among adolescents with dual diagnoses to a greater degree, this difference is not major; Matali (2016) reports a ratio of 50.9% vs. 49.1% and Hollen and Ortiz (2015) 55% vs. 45%. The studies suggest that older adolescents are more likely than younger adolescents to experience dual diagnoses.

In addition to addiction-related disorders, conduct disorders are reported as the most common diagnoses across studies. Matali (2016) reported conduct disorders in 43.8% of cases and both psychotic disorders and anxiety disorders showing the same percentage, 10.3%, and adjustment disorders accounting for 2.7% of the cases. A UK study (Marshall, 2012) reported 45.5% of conduct disorders, with ADHD accounting for 31.5% of the cases. On the other hand, US researchers argued that attention disorders and affective and anxiety disorders presented no risk for the development of dual diagnoses among adolescents (Hollen & Ortiz, 2015). Adolescents with conduct disorders showed a five-times-greater risk of amphetamine use and a three-times-greater risk of THC use in comparison to those without a mental health disorder (Hollen & Ortiz, 2015). The above studies used the ICD and the DSM to determine mental disorders; some studies did not specify the tools applied.

● 2 RESEARCH PROBLEM

A systematic approach to children’s and adolescents’ addictology is currently under development in the Czech Republic. The new approach also addresses the issue of dual diagnoses among children and adolescents with addiction-related disorders. In comparison to those addressing the adult population, epidemiological studies dealing with dual diagnoses in relation to children’s and adolescents’ addictology are scarce, as noted (Thurstone, 2010), for example, in the practice standards for work with young people experiencing substance use problems (Gilvarry et al., 2016), a key document addressing the topic under consideration. The results may improve the hitherto limited understanding of the target group of children and adolescents facing addiction-related disorders. Our study may thus contribute to the development of national children’s addictology guidelines. Patients with dual diagnoses have distinctive needs and require specific approaches to addictological care (Kalina, 2015). Our study can further highlight the need for the component of paediatric psychiatry in addiction services.

● 3 AIMS

First of all, we are going to present a systematic literature review covering dual diagnoses among children and adolescents who struggle with addictive disorders. The aim of outpatient service’s data analysis is to identify the prevalence of comorbidities involving substance use disorders or pathological gambling and other mental disorders among the patients of the Outpatient Addiction Treatment Clinic for Children and Adolescents. The other aim of the data analysis is to identify whether the selected sample of patients shows any relationships between the type of substance use disorder (the type of drug used, the pattern of use) and the type of another and any other psychiatric disorders. The last aim of the study is to look for any relationship between the demographic data provided by the children’s parents and the dual diagnosis, i.e. the type of addiction-related disorder and another and any other psychiatric disorders.

● 4 RESEARCH SAMPLE

4.1 Study sample

Study sample is equal to the study population. All the patients who have sought the services of the Outpatient Addiction Treatment Clinic for Children and Adolescents (ADDA). In terms of age, the sample falls within the 18-and-under category. It consists of children who engage in regular substance use, at least to the extent of harmful use (F.10–F.18), or poly-drug use (F.19). In addition, it concerns children with diagnosable (or diagnosed) effects of substance use (excluding harmful use), i.e. with dependence, withdrawal state, etc. Last but not least, the sample includes children with uncontrolled gambling and behavioural addiction problems (Miovský, 2016).

The study sample was recruited from the study population by means of institutional sampling. The total number of ADDA patients from 2015 to 2018 was 427. Alcohol use disorders represented less than 10% of the cases, disorders caused by other psychoactive substances accounted for 53%, and pathological gambling for 19% of the cases. The remaining 18% of the patients had disorders other than those associated with addiction. It is estimated that by 2021, inclusive, the sample will have comprised some 750 participants.

● 5 METHODS

5.1 Review

A systematic review of dual diagnoses among children and adolescents will be produced first. The study will follow the PRISMA guidelines and protocol (Moher et al., 2009). The analysis will include papers exploring dual diagnoses, dual disorders, and psychiatric comorbidities among individuals with addiction-related disorders. Papers where these issues constitute a secondary focus may also be included. For an article to be found eligible it must have been published within the last ten years, i.e. from 1 January 2010 until the present (autumn 2020), and written in either English or Czech. Eligible items may include journal articles, book chapters, and original manuscripts. Full-text articles from indexed journals will be selected. The EBSCO, PubMed, Web Of Science databases will be searched for relevant texts using the following terms – juvenile*, adolescen*, teenager*, teen*, youth, child*, dual diagnos?s, psychiatric comorbidity, psychopathology, substance use, substance abuse, drug use, drug abuse, drug addiction, alcohol use, alcohol abuse, gaming disorder*, gambling disorder*, and addictive disorder*. After the removal of duplicates and the exclusion of the articles which do not match the thematic study criteria (it is particularly important to adhere to the children and adolescent age category), the body of texts will be systematically sorted and analysed. Our assumption is that several categories of data will arise – prevalence data, data describing the nature of disorders other than those related to addiction, and data describing a pattern of use (individuals

with certain non-addiction-related disorders may be inclined to certain addiction-related disorders). A different diversification of data may indicate a tool determining a non-addiction-related disorder. The results of the review study will be published separately in a journal.

5.2 Analysis of the study sample

The data will be extracted from the FONS system which is implemented at the Outpatient Addiction Treatment Clinic for Children and Adolescents. The system has been fed with the data since 2015, and the data collection for the purposes of the study will be carried out until 2021. The system is accessed on the occasion of every patient's visit to the facility, with the relevant data being entered into the system by the clinical staff. The data collection was conducted under the supervision of Dr. Lenka Šťastná as the head of the facility.

The record in the FONS system currently contains the following variables: health insurer, gender, year of birth, municipality, borough (neighbourhood), date of visit, principal diagnosis, diagnosis 1; visits to the ADDA will have to be matched with individual patients to prevent the multiplication of the sample. The advantage of this data is that throughout the data collection all the patients are diagnosed by the same physician/paediatric psychiatrist. This enhances the validity of the data being collected. Diagnoses are determined on the basis of the International Classification of Diseases, 10th Revision (ICD-10).

Another data set is derived from a structured history sheet, SAL, completed by the parents on the occasion of their child's first visit to the clinic. This questionnaire covers general demographic data and information about social relationships, psychological condition, legal status, school, and family and addiction history. The data obtained from the SAL questionnaire will be paired with the data from the FONS system. This data has not been collected since the beginning and thus provides additional input on the participants for the period 2017–2021.

The data will be used for descriptive statistics which will make it possible for us to present the prevalence of dual diagnoses in the population under scrutiny.

Non-parametric statistical methods were chosen for further analysis, cluster analysis and factor analysis specifically. Clustering will be used to look for relationships between different types of addictive disorders (patterns of use and types of substances or gaming and the use of smart devices as regards non-chemical addiction-related disorders) and another and any other psychiatric conditions. Addiction-related disorder elements will be matched with the clusters with elements coming under other psychiatric diagnoses. The objects will be clustered according to the type of substance use disorder, i.e. according to the type of substance used (e.g. alcohol, amphetamine, THC, etc.) and the pattern of substance use (such as harmful use or dependence). These clusters will then be matched with the clusters of the

objects of psychiatric diagnoses other than those related to addiction. A hierarchical arrangement is assumed to exist in the relationships between the objects and the clusters they constitute. We have therefore chosen a hierarchical clustering method, specifically the farthest neighbour method, where the criterion is set as the maximum distance of elements within both clusters. It is the complete linkage method, as all the objects within the cluster are interlinked at maximum distance, i.e. minimum similarity. The strength of hierarchical cluster analysis is a graphic representation in the form of a dendrogram providing a clearer classification of clusters (Hendl, 2015).

Furthermore, we will analyse the relationships between the elements pertaining to addiction-related disorders, other psychiatric disorders, and factors extracted from the data filled in by the patients' parents in the history sheets (SAL), as these provide additional information about the paediatric patients. The categories of data it provides include general information (demographic data, whether a social worker has been appointed for a child, how a patient got to know about the clinic, etc.), the child's social relationships, psychological status/history as reported by a parent, and the child's legal status, school, family history, and addiction history. As a large number of manifest variables are involved and the objective is to analyse correlations in order to identify groups of variables and their underlying common factor (latent variable; variables are statistically related), the method of exploratory factor analysis was chosen (Hendl, 2015).

● 6 DISCUSSION

We expect sparse literature of studies with the topic of dual diagnoses in children and adolescents struggling with addictive disorders involved in our systematic review. The result of the systematic review is testifying high prevalence of dual diagnoses in this target group. We expect that our own research will testify high prevalence in patients in Outpatient Addiction Treatment Clinic for Children and Adolescents. We are going to publish our results in international journals and we are convinced it helps to strength of Czech children and adolescent addictology in the international area. We want to publish our studies with foreign co-authors. We expect the results of data analyses can help in the field of cost effectiveness and cost analysis of the treatment in children and adolescent addictology and psychiatry. Our results can highlight the need for the component of paediatric psychiatry in outpatient services where professionals help the children and adolescents with addictive disorders.

The limitations of the work may include the statistical methods used. The limitation of the study may involve the quality of the questionnaires returned by the parents. The data is collected by the clinical staff of the outpatient facility and their motivation to perform the systematic collection required for research work may thus be a limitation. The ICD-10 was selected as the diagnostic tool, but it will be outdated at the time of the publication of the study, as the 11th revision will become effective on 1 January 2022.

● 7 ETHICS

This dissertation project was approved by the Ethics Board of the General University Hospital in Prague. The data on the basis of which patients might be identified will be blinded by the facility staff at the initial stage by means of anonymous coding. The coding will thus allow the researcher (a doctoral student) to access only blinded data which does not make it possible to identify a specific individual. The participants and their statutory representatives have been informed about the use of the data and signed a consent form.

Authors' contributions: Tomáš Jandáč is main author and corresponding author. Lenka Šťastná is the supervisor of the study, she will participate in the data analysis. Tomáš Jandáč and Lenka Šťastná proposed the study design.

Declaration of interest: There is no conflict of interest involved in this research.

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