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Prevalence of mental disorders and psychoactive substance use in metropolitan 17-year old youth population

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Summary

Purpose. To determine the extent to which mental disorders (depressive disorders, anxiety disorders, eating disorders) and psychoactive substance use are prevalent among Krakow secondary school adolescents in late adolescent phase.

Method: A representative sample of the population of Krakow secondary school pupils was tested. A two-stage draw method identified a group of 1933 2nd form pupils of all types of secondary schools: grammar schools, technical schools and vocational schools (17-year olds). They were tested using the following screening questionnaires: Beck depression scale, EAT-26 eating disorders scale, Obsessive-compulsive disorder (Leyton) scale and author's drug questionnaire.

Results. Girls declared the occurrence of symptoms of mental disorders twice as often than boys (41.2% vs. 22.7%). Among girls, the most common disorders were: depressive symptoms (33.6%), eating disorder symptoms (18.7%) and obsessive-compulsive disorder symptoms (5.4%). And in the boys group: depressive symptoms (22.7%), eating disorder (7.3%) and obsessive-compulsive symptoms (3.4%). Findings were obtained concerning the prevalence of substance use in the boys and girls group (73% vs. 68%), mainly alcohol, as well as alcohol and cigarettes and alcohol, cigarettes and drugs.

Conclusions. The prevalence of mental disorders in the population of 17-year-olds is significant, it concerns especially depressive symptoms and eating disorder symptoms. A significant prevalence of psychoactive substance use was found in this age group, mainly alcohol and mixed type substance use: alcohol and cigarettes and alcohol, cigarettes and drugs.

Keywords: prevalence of mental disorders: depressive symptoms, eating disorder symptoms, obsessive-compulsive symptoms and symptoms of psychoactive substance use, epidemiological studies.

In the first Isle of Wight study, the incidence of various mental disorders was established at 7%, which seems to be a low rate. In most subsequent studies, it was found that mental disorders occur in 10-15% of children and, in some studies, this percentage was estimated at as much as 50%. These alarming rates are probably too high and reflect the inadequacy of the DSM-III and DSM-III-R criteria. Until the last edition was issued, the DSM criteria were met if the child presented a specific "set" of symptoms, regardless of whether these symptoms had a significant impact on the functioning (in

terms of impaired social functioning, mental discomfort or disturbance in other areas). Therefore, many of the children who completed the DSM-III and DSM-III-R criteria as a list of symptoms did not require treatment, and the image of their disorder did not correspond to what the doctors referred to as a “clinical case.” Thus, in DSM-III and DSM-III-R based epidemiological studies, children often referred to as mentally disturbed were not in any sense “true sickness cases.” As the existing classifications of DSM-IV and ICD-10 have introduced the functional impact criterion in addition to symptomatic criteria, in the future, the prevalence rates of mental disorders in children may fall to the real values (provided that problems are solved, associated with reliable and relevant definition of the functional impact of the symptoms) [1].

Research into the prevalence of depressive disorders in children and adolescents is scarce and gives very different results.

When making a list of the results of epidemiological studies into depression in the developmental period, Angold (1988) pointed to two main reasons for the large discrepancy. First of all, a therapeutic approach is important that implies the choice of a research tool, and secondly, a source of information that the researchers have used [2].

An overview of early research makes it possible to define the prevalence of depressive symptoms among adolescents at less than 1% to 6% [3]. Recent research confirms these indicators: from 1% in studies by Simonoff and colleagues in 1997 through 3% in the studies by Cohen (1993) and Lewinsohn (1998) to 6% in 1999 studies by Olsson and von Knorring for major depression combined with impaired functioning [4, 5, 6, 7]. If all types of depressive disorders are taken into account, the prevalence rates are higher: from 10% in studies by Angold (1998) and in the range between 10% - 20% in the studies by Lewinsohn (1998), Oldehinkel (1999) and Olsson and von Knorring in 1999 [8, 6, 9, 7].

In Poland, the first studies on the prevalence of depression in children and adolescents were conducted in Krakow since 1982 by Bomba and colleagues in 1984, 1985, 1986, 1988. The results of epidemiological studies of a representative untreated population of children and adolescents between 5 and 17 years of age made it possible to establish the prevalence rates of depression: In the 5-year-olds group – 6.66%, in the 10-year-olds group – 11.34%, among 13-year-olds – 28.15% and among 17-year-olds – 19.35%. In the study summary, the authors point out the possibility of an incorrect assessment of the prevalence of depression among 17-year-olds, resulting from non-school adolescents not being included in the research [10].

A second major epidemiological survey of the untreated population of 13-year-olds is the 1995 study by Witkowska-Ulatowska. The screening study of a representative population of Warsaw schoolchildren using the Krakow Depression Inventory as defined by Bomba covered 1,689 people. Psychiatric disorders with a depressive syndrome image were found in 326 students (19.3%) [11, 12].

It is believed that anorexia affects 0.5% to 1% of girls during adolescence. It occurs 20 to 40 times more frequently in girls than it does in boys. However, the prevalence among young women who do not meet all diagnostic criteria is defined as close to 5%. The prevalence of bulimia nervosa is defined at 1-3% among young women and it occurs about 10 times more frequently in this group than does anorexia. Isolated episodes of eating binges

and purging are described in up to 40% among college students [13]. In epidemiological studies, the incidence of anorexia nervosa was determined at between 0.1% to 1% depending on the age of the respondents, the methods of screening and diagnostic criteria selected. Survey-based bulimia studies define the incidence at between 1% and 3% in the general population. Thus, in a study conducted among Italian adolescents, anorexia occurred in 0.2% and bulimia in 2.3%. In addition, 3.8% of the respondents presented partial symptoms while 10.7% displayed the subclinical form of eating disorders [14].

In Switzerland, a study was conducted among 14 - to 17-year-old adolescents, and the incidence of anorexia and bulimia nervosa was defined at the level 0.7% with bulimia at 0.5% among girls [15].

Research conducted recently in Spain has confirmed the indicators defined previously. Thus, Morande and colleagues identified the incidence of anorexia in a group of girls in Madrid at the level of 0.7% and that of bulimia nervosa at 1.2% [16]. In the town of Navarra, Perez-Gaspar and colleagues defined the indicators, respectively, 0.3% for anorexia and 0.8% for bulimia nervosa in girls aged from 12 to 21. However, in Zaragoza, they amounted to 0.14% for anorexia, with 0.55% for bulimia and 3.83% for other eating disorders [17].

In 1988, Berg and colleagues conducted a two-stage survey of U.S. high school students, to determine the prevalence of eating disorders, depression and obsessive-compulsive disorders [18]. In the first stage of the examination, The Leyton Obsessional Inventory - Child Version (LOI-CV) [19] was used as a screening tool, among others, in its version adapted to epidemiological studies. The diagnosis was verified in the second stage by Flament and colleagues [20]. Finally, 0.35% of the population researched met the diagnostic criteria for obsessive-compulsive disorders according to DSM III-R. In 1990, Esser and colleagues studied a group of German children aged 8 and found 4.6% to exhibit moderate intensity of obsessive-compulsive features or symptoms, with 2.8% exhibiting rich symptomatology or severe course of disease [21]. The disorder diagnosis did not include the DSM III-R diagnostic criteria. In 1993, using the LOI-CV questionnaire, Thomsen demonstrated the occurrence of a subclinical or clinical form of the obsessive-compulsive disorder in 4% of Danish adolescents [22]. The results have not been verified by clinical examination, though. 1992 research by Zohar and colleagues of a 16 - and 17-year-old Israeli adolescent population conscripted for military service revealed that the frequency of disturbances in this group was 3.6% [23]. At the same time, 1.25% of the respondents reported that the obsessive-compulsive disorder symptoms did not impair their proper functioning. In 1996 studies by Apter and colleagues aimed to determine the severity of symptoms in sufferers, conducted again in an adolescent population admitted for military service, similar values were obtained (2.3% of patients with obsessive-compulsive disorder, 3.9% with a subclinical disorder form) [24].

A group of American researchers headed by Valleni-Basile [25, 26] in a two-stage study, whose principal purpose was to determine the incidence of depression in the adolescent population, obtained different results, namely the prevalence of obsessive-compulsive disorders in this group was 3%, while the subclinical disease form was as much as 19%. It is worth noting that this study also made an attempt to evaluate comorbidity.

In a 1995 study by Douglas and colleagues, which analyzed the health records of children in New Zealand from birth to 18 years of age, the prevalence of obsessive-compulsive disorder was identified at 4%, and most of the cases met the comorbid disorder criteria [27]. In 62%, it was depression, while in 38% - social phobia and substance dependence (alcohol 24%, marijuana 19%).

In a study of a population of 7th and 8th form students of primary schools in the Warsaw municipality conducted by Bryńska in 1999, the obsessive-compulsive disorder is a condition occurring in at least 0.38% of respondents [28, 29]. Most likely, however, the prevalence value specified in the study is understated.

Goal

To determine the extent to which mental disorders (depressive disorders, anxiety disorders, eating disorders) and psychoactive substance use are prevalent among Krakow secondary school adolescents.

Material

The size of the population of 2nd form full-time secondary school students researched was 16,598. When performing the draw, the estimated incidence of the phenomenon was 0.5, the estimate error was 0.03. Based on these assumptions, it was calculated that the minimum sample size is 1,003 students.

A sample of young people aged 17 years was randomly selected: 2nd form secondary schools - 2,034 students. A group so large was chosen because of the ability to track developments in the longitudinal study. Random draw was used, stratified sampling - cluster sampling in the proportional variant which can be considered incomplete multistage draw (essentially single-stage but separate for each layer) [30].

The draw included all full-time secondary schools. For secondary schools, the following were drawn: 8 state secondary schools of 34, 9 private secondary schools of 17; 9 technical colleges and vocational secondary schools of 47; 7 vocational schools of 35. All 2nd form students in the schools drawn were included in the study. The randomness was then tested using Wald-Wolfowitz runs test, finding all cases to be random. The percentage of students absent during the test was 5%. The proportions of boys and girls in all the analyses were maintained and corresponded to the gender proportions in the population of 17-year-olds in Krakow – 55% of girls and 45% of boys.

An analysis of student absences was attempted, based on type of school and class. The percentage of students absent was similar in all types of schools. No significant differences were found in the proportion of those absent during the test based on gender

Method

The students were tested using the following screening questionnaires: Beck depression scale, EAT-26 eating disorders scale, Obsessive-compulsive disorder (Leyton) scale and author's drug questionnaire. The study was carried out anonymously, with

questionnaires distributed all stapled together in a single notebook. Questionnaires were excluded that failed to answer more than 20% questions.

The Beck Depression Scale (Inventory) (BDI) is from 1961. It consists of 21 questions. Is mainly used in clinical depression studies and when assessing antidepressants. The respondent completes it (self-esteem scale), by choosing one of four affirmative sentences, describing mood [31, 32]. The criterion for inclusion in the group is obtaining more than 15 points, in accordance with Kendall's recommendation for research in the untreated population [33, 34, 35]. The Cronbach α index is 0.87 [36]. The test specificity is 73%, higher in girls than in boys [37, 7].

EAT-26 is a scale developed in 1982. It was created by D. Garner and P. Garfinkel. It is a 26-item version of the scale for testing attitudes and behaviours towards nutrition. It is applied to both researching subjects with a clinical diagnosis and as the most popular tool in screening. The author of the tool's Polish standardization is K. Włodarczyk-Bisaga. The criterion for inclusion in the group is getting 20 points or more. The Cronbach α reliability for the total scale is 0.84 [38, 39].

The Leyton Questionnaire (LOI-CV) is a screening tool for detecting the presence of obsessive-compulsive symptoms. It also gives the opportunity to assess the impact of symptoms on the patient's functioning and its quality. It consists of 20 questions related to the presence of obsessive-compulsive symptoms. The author of the Polish version is A. Bryńska [28, 29]. The results obtained in the LOI-CV were established on the basis of Berg and colleagues. The authors point out that the questionnaire is useful primarily for large populations to identify "vulnerable groups" of obsessive-compulsive disorder, rather than to diagnose the disease [19]. In determining the criteria, disorder psychopathology was included, while assuming that the "vulnerable groups" include a large number of individuals with subclinical disorder forms. The criterion for inclusion in the group is the selection of 15 or more "yes" answers and obtaining below 10 points in the scale of functional impact or getting 25 or more points in the scale of impact of behaviour on the functioning of a person, regardless of the number of "yes" answers selected. The Cronbach α reliability for the total scale is 0.81 [40].

Survey of medicines and substances used. Authors' tool for assessing the prevalence of psychoactive substance use (stimulants, drugs, substances, narcotics).

Statistical methods used for data analysis

χ^2 tests for multi-field tables.

Study group

1933 copies of anonymous questionnaires were distributed among 2nd form students of all types of schools. After rejecting surveys, in which respondents did not mark gender (42 people i.e. 2.2%) further statistical analysis included the following number of questionnaires: Beck's scale 1,798 surveys (93.0%), EAT-26 scale, 1,793 (92.8%), for Leyton scale 1,738 copies (89.9%) and 1,869 medicine and substance use surveys, which accounted for 96.7% of the total number. The proportion of boys and girls in

all the analyses was maintained and roughly corresponded to the gender proportions in the population of 17-year-olds – 55% of girls and 45% of boys.

Table 1. Population sample and number of details collected

| Questionnaire type | Initial sample size | Number of completed sheets returned | % |
|-----------------------|---------------------|-------------------------------------|------|
| Beck's scale | 1933 | 1798 | 93.0 |
| EAT 26 | 1933 | 1793 | 92.8 |
| Leyton | 1933 | 1738 | 89.9 |
| Surveys on substances | 1933 | 1869 | 96.7 |

1933 surveys were collected with data on the prevalence of depressive symptoms, obsessive-compulsive symptoms and eating disorders. Due to the incomplete data, 292 questionnaires were excluded from further analysis (15.1%).

In the study group, the above-mentioned symptoms were exhibited by 22.7% of boys and 41.2% of girls. This difference is statistically significant and is $\chi^2=63.33$, $df=1$, $p<0.0005$.

In the group of adolescents exhibiting symptoms in a percentage distribution of one type of symptoms and comorbidity of depressive symptoms, eating disorders and obsessive-compulsive disorders, a difference between girls and boys was found on the border of statistical significance ($\chi^2=12.29$, $DF=6$, $p=0.056$).

Table 2. Prevalence of symptoms in population studied

| Sex | Without symptoms | | Presenting symptoms | | Altogether | |
|------------|------------------|------|---------------------|------|------------|-------|
| | N | % | N | % | N | % |
| Boys | 575 | 77.3 | 169 | 22.7 | 744 | 100.0 |
| Girls | 527 | 58.8 | 370 | 41.2 | 897 | 100.0 |
| Altogether | 1102 | 67.2 | 539 | 32.8 | 1641 | 100.0 |

The prevalence of depressive symptoms measured using Beck's scale in the group of 17-year-old girls was statistically significantly higher than in boys ($\chi^2=54.16$, $df=1$, $p<0.0005$) and was respectively 33.6% for girls and 18.2% for boys in the sample surveyed.

The prevalence of eating disorder symptoms as measured using the EAT-26 scale in the group of 17-year-old girls was 18.7% and 7.3% in boys (statistically significant difference: $\chi^2=49.61$, $df=1$, $p<0.0005$).

The prevalence of obsessive-compulsive symptoms as measured using the Leyton scale in the same group was: 5.4% in girls, while it was 3.4% in boys (difference on the border of statistical significance: $\chi^2=1.11$, $df=1$, $p=0.052$).

Table 3. 17-year-olds population – prevalence of depressive symptoms, eating disorders and obsessive-compulsive disorders

| Sex | Beck's scale | | | | EAT 26 scale | | | | Leyton scale | | | |
|-------|--------------|------|----------------|------|--------------------|------|-----------------------|------|--------------------|-----|-----------------------|------|
| | Depressive | | Non-depressive | | Symptoms exhibited | | No symptoms exhibited | | Symptoms exhibited | | No symptoms exhibited | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Boys | 146 | 18.2 | 658 | 81.8 | 59 | 7.3 | 754 | 92.7 | 27 | 3.4 | 761 | 96.6 |
| Girls | 334 | 33.6 | 660 | 66.4 | 183 | 18.7 | 797 | 81.3 | 51 | 5.4 | 899 | 94.6 |
| Total | 480 | 26.7 | 1318 | 73.3 | 242 | 13.5 | 1551 | 86.5 | 78 | 4.5 | 1660 | 95.5 |

Complete data were collected on alcohol use from 1,674 students (86.6%), on cigarette smoking from 1,832 students (94.8%) and drug use from 1,809 students (93.6%). Substance use in the whole group researched, depending on substance type, was declared respectively by 62.8% of students (alcohol), 35.5% (cigarettes) and 16.2% (narcotics). Statistically significant differences between boys and girls were found in the consumption of alcohol (67.3% in boys versus 59.3% in girls, $\chi^2=11.31$, $df=1$, $p=0.001$) and narcotics (20.0% of boys versus 13.2% in girls, $\chi^2=14.95$, $df=1$, $p<0.0005$). By contrast, smoking was declared by 34.2% of boys and 36.6% of girls (statistically significant difference).

Table 4. 17-year-olds population – prevalence of psychoactive substance use

| Sex | Survey of medicines and substances used – alcohol | | | | Survey of medicines and substances used – cigarettes. | | | | Survey of medicines and substances used – drugs | | | |
|-------|---|------|--------------|------|---|------|-------------|------|---|------|-----------|------|
| | drinking | | non-drinking | | smoking | | non-smoking | | users | | non-users | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Boys | 497 | 67.3 | 242 | 32.7 | 281 | 34.2 | 540 | 65.8 | 159 | 20.0 | 637 | 80.0 |
| Girls | 554 | 59.3 | 381 | 40.7 | 370 | 36.6 | 641 | 63.4 | 134 | 13.2 | 879 | 86.8 |
| Total | 1051 | 62.8 | 623 | 37.2 | 651 | 35.5 | 1181 | 64.5 | 293 | 16.2 | 1516 | 83.8 |

Further analysis took into account those respondents who answered the question about the frequency of drug use. The total was 1,743 students (90.2% of questionnaires returned), including 777 boys (44.6%) and 966 girls (55.4%). Substance use was declared by 569 boys representing 73.2% of the sample of boys and 656 girls, representing 67.9% of the girl group surveyed. The difference between boys and girls is statistically significant ($\chi^2=5.838$ $df=1$ $p=0.016$). [Tbl.5 next page].

The following analysis includes surveys in which the respondents answered yes to one of three questions relating to substance use (drinking alcohol, smoking, narcotic use). Overall, it was 1,058 students. Girls accounted for 54.2% and boys did for 45.8% of the group in question, which corresponds to a percentage-based gender share in the group of young people who responded the question about taking drugs. The largest

Table.5. Prevalence of substance use

| Sex | No substances used | | Substances used | | Altogether | |
|-------|--------------------|----------|-----------------|----------|------------|----------|
| | N | % of sex | N | % of sex | N | % of sex |
| Boys | 208 | 26.8 | 569 | 73.2 | 777 | 100.0 |
| Girls | 310 | 32.1 | 656 | 67.9 | 966 | 100.0 |

$$\chi^2=5.838 \text{ df}=1 \text{ p}=0.016$$

group among adolescents using stimulants were students drinking alcohol only (45.9% of boys and 41.5% of girls). The next group in terms of numerical strength is young people drinking alcohol and smoking cigarettes (23.6% of boys and 32.1% of girls). The third group in terms of numerical strength consists of students drinking alcohol, smoking and taking drugs (18.0% of boys and 13.9% of girls). Other groups are clearly less numerous and it therefore seems pointless to analyse them. The distribution of numerical strength in the various subgroups is significantly different in terms of statistics for both sexes ($\chi^2=28.705$, $\text{df}=6$, $p < 0.0005$).

Table. 6. Structure of psychoactive substance use

| Sex | Substances used (A – alcohol, P – cigarettes, N – drugs) | | | | | | | | | | | | | | Altogether | |
|-------|---|------|-----|------|-------|------|-----|-----|----|-----|-----|-----|---|-----|------------|-------|
| | A | | A+P | | A+P+N | | A+N | | P | | P+N | | N | | | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Boys | 222 | 45.9 | 114 | 23.6 | 87 | 18.0 | 38 | 7.9 | 10 | 2.1 | 9 | 1.9 | 4 | 0.8 | 484 | 100.0 |
| Girls | 238 | 41.5 | 184 | 32.1 | 80 | 13.9 | 21 | 3.7 | 34 | 5.9 | 10 | 1.7 | 7 | 1.2 | 574 | 100.0 |

$$\chi^2=28.705 \text{ df}=6 \text{ p}<0.0005$$

Discussion

The study defined successfully the prevalence rates of certain mental disorder symptoms declared occurring among young people in late adolescence. Girls reported mental disorders covered by the study twice as often (41.2%) as boys (22.7%). As expected, the most common disorders in the girl group that have emerged using the screening methods used are depressive symptoms (33.6%), eating disorder symptoms (18.7%) and obsessive-compulsive symptoms (5.4%). In the boys' group, the following indicators were achieved: 22.7% for depressive symptoms, 7.3% for eating disorder symptoms, and 3.4% for obsessive-compulsive disorder symptoms. Differences between girls and boys in the structure of disturbances are clearly marked in with respect to eating disorders declared (relative incidence twice as high in girls) and isolated depressive symptoms (about 10% more frequently in girls). The results of depressive symptom prevalence rates obtained in the girls and boys group using the Beck questionnaire coincide with those obtained using the version IO "C1" Krakow Depression Inventory in 2001. Among girls, the prevalence rate was 34.9%, while in boys it was 19.1% [41].

These are similar to the rates obtained in epidemiological studies, covering all types of depressive disorders [6, 9, 7].

The prevalence rates of declared eating disorder symptoms obtained using the screening method (for girls – 18.7% and 7.3% for boys) are largely subclinical forms of bulimia or anorexia with bulimic type; similar results were obtained by Pilecki [42].

Prevalence indicators for obsessive-compulsive symptoms reported are similar to results obtained by Israeli researchers.

The declared prevalence of substance use is similar in both groups (boys – about 73%, girls - 68%). Our results are worrying and point to extensive consumption of psychoactive substances among secondary school students. The studies conducted previously have shown that in this group a large proportion of students drink alcohol (17%), smoke cigarettes (3.9%), and take drugs (1.5%) on a daily basis, which is tantamount to this percentage of drug addicts [43]. A worrying phenomenon is the relatively high number of girls admitting to drinking alcohol and smoking.

The structure of substance use declared is as follows: alcohol, about 42–46%, alcohol in combination with cigarettes, about 24 - 32%, alcohol in combination with cigarettes and drugs, about 14 - 18% and alcohol in combination with drugs, between 4% and 8%. Other categories in the substance use structure are marginal. The differences between boys and girls in terms of the substance use structure are limited but statistically significant (with the largest at approx. 9% for drinking alcohol combined with smoking cigarettes, relatively more frequent in girls).

Conclusions

The prevalence of declared mental disorders in the population of 17-year-olds is significant; it concerns especially depressive symptoms and eating disorder symptoms.

A significant extent of psychoactive substance use was found to be declared in this age group, concerning mainly alcohol and mixed type substance use: Alcohol and cigarettes and alcohol, cigarettes and drugs.

Limitations of the study conducted

All the research methods used are self-report methods, and thus rely solely on material submitted by those tested. The study was planned to continue previous work on an untreated population in different age groups. At this stage, conducting clinical research was not planned, as it implies a restriction on further verification of disorders among adolescents screening-tested to be in the risk group. However, the data obtained allow comparisons with results obtained previously, which allows the dynamics of the phenomena to be tracked under changing social political and economic circumstances.

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