

A Descriptive Study of Pediatric Inpatients at an Academic Psychiatric Hospital

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Abstract

An understanding of characteristics of pediatric patients hospitalized in psychiatric hospitals is vital for researchers and practitioners to develop any intervention to improve services and reduce unnecessary readmissions. In this study, data of pediatric patients from an academic psychiatry hospital were used to describe the pediatric patients who received inpatient care for psychiatric related illness.

The objective of this paper was to conduct a descriptive study of pediatric patients hospitalized at an academic psychiatric hospital. For the methods, data for this retrospective cohort study were obtained from records of patients admitted for inpatient care from 1999 to 2010 at the University of Utah Neuropsychiatric Institute. Stata 12 was used to obtain the needed standard descriptive statistics.

In the results, patients ranged in age from 3 to 17 years old for N=7,265. The patients were evenly divided in sex with males equal to 3,629 (49.95%) and females equal to 3,636 (50.05%) of total patients. Of the patients readmitted, the males were slightly lower, 49.38% of total readmissions compared to females, 50.62%. Patients were predominantly white or Caucasian at 61.53% and the most common way to pay for their care was Utah Commercial Insurances accounting for 74.08% of the participants. The most common diagnoses were Major Depressive Disorders (ICD-9 296.2-296.3) affecting 2,571 of all patients.

In conclusion, the results revealed the average age for the patient population was 13.95 with 54.66% of them from the age group of 15-17 years. The results showed a significant difference across age categories in percentage of patients readmitted ($\chi^2=14.16$, $p=0.003$). Major Depressive Disorders (ICD-9 296.2-296.3) were the most common diagnoses, given to 35.39% of patients. Comparing different diagnoses, patients with PTSD and schizophrenia had the highest readmission percentage. The majority of the patients, 74.08% of all patients, had Utah commercial insurances as the payer for their care.

Keywords: Pediatric psychiatric patients; Readmission; Common psychiatric diagnoses

Introduction

Psychiatric illness, especially among children, is a major public health issue. The psychiatric disorders are generally chronic and may cause a lot of impairment that most of the time requires inpatient care either in general or psychiatry specialty hospitals [1]. The cost of inpatient treatment is high, and the number of children and adolescents hospitalized for inpatient care is reported to have increased in recent years [2]. Rehospitalization of those with mental illness is also high [3]. Sometimes, the children require a few events of rehospitalization [1-4], perhaps due to the chronic nature of the illnesses and other associated factors. One study reported 100,000 inpatient psychiatric visits among children and adolescents all in the year 2000 in the United States [4]. Reasons for hospitalization vary, but when the children's safety or public's safety are at risk, hospitalization becomes the best intervention. Safety takes several forms and some studies have reported that at times, the mental health problems are accompanied with aggressive behavior affecting 10% to 25% of the young people. This aggressive behavior leads to poor academic performance and subsequent dropping out of school or involvement in use and abuse of illegal substances [5-7].

Children with psychiatric illness are a high risk population and present with suicidal attempts or ideation. One study reported that 55% of those admitted to psychiatric hospitals in the United States have suicidal

problems. These youths, especially those with prior suicidal attempts, have a 14 times higher chance of attempting and completing suicide compared to the general population of adolescents [8-10].

The world health organization estimates that the prevalence of mental disorders in the world among children is 20%. [11] It is reported that up to 15 million children, which is one fifth of children in the United States, have a diagnosable mental disorder [11,12]. These psychiatric disorders affect a lot of the children's areas of functioning and performance, therefore expanding the earlier recognized public health concern. Researchers have noted that a failure to respond in a responsible way to address the problems of psychiatric illness among children will contribute to problems of disability, suffering, and reduced health goals. Many of these researchers have recommended a strong need to integrate evidence-based interventions to research-based settings, such as universities to community-based practices [11,13].

Noted earlier is that readmission of pediatric patients with psychiatric illness is a big public health concern. There is a need for practitioners and researchers to understand the pediatric population that uses the psychiatric inpatient services. Such understanding may lead to better treatment outcomes and prevention of unneeded readmissions. The objective of this study was to use observational data to describe the pediatric patient population seen for inpatient care at an academic psychiatry hospital. This description will likely guide interventions to deal with the observed problems.

Data were obtained from the University of Utah Neuropsychiatric Institute. The University of Utah has the sole academic psychiatry hospital in Utah and the region. Due to its specialty nature, this university hospital receives pediatric psychiatric patient referrals from around the state and region. Our goal is to assess the distribution of patient demographics, common psychiatric diagnoses, insurance payers, and discharge dispositions after inpatient care.

Methods

A retrospective cohort study was performed where data were collected from 7,265 patients between age 3 and 17 who were seen for inpatient care at the University of Utah Neuropsychiatric Institute, generally known as UNI. These patients were admitted between the years 1999 and 2010. The study protocol was reviewed and approved by the University of Utah Institutional Review Board. We used STATA 12 to prepare and analyze data. This included cross tabulations to obtain the standard descriptive statistics, including chi square and measures of central tendency needed for the study.

The interest was in describing patients admitted for inpatient care at an academic psychiatric hospital. The exclusion criteria allowed for at least 12 months follow up for all participants after their initial discharge. The 12 month follow up allowed for the description of patients who received readmission within 12 months of discharge. To be included in the study, patients must have been younger than 18 years of age at the time of their inpatient admission or readmission. These were all participants who were admitted for inpatient psychiatric treatment. Any participants who had inpatient days of stay longer than 365 were excluded.

We divided the participants in four age groups as follows: 3-6, 7-11, 12-14, and 15-17 years old. This age categorization follows a similar pattern used in a number of psychological studies. For example in a pain perspectives study of children 4 to 14 years old, the age categorizations were: 4-6, 7-11, and 12-14 years old. This children's study emphasized that there are differences in the way children understand and describe pain and that such an understanding of pain follows the pattern of the stages of cognitive development that were first described by Jean Piaget [14]. Research recognizes that children act or behave differently at different age groups, and behaviors such as conduct problems in early years before age

10 predict other behaviors such as substance use in early adulthood [15]. In our case, because the youngest participants were 3 years old, we added the age 3 to the youngest age group, and added another age group of older adolescents of 15-17 years old.

Results

Patients ranged in age from 3 to 17 years old for N=7,265 and were evenly divided in sex with males equal to 3,629 (49.95%) and females 3,636 (50.05%) of total patients (Table 1.1). Table 1.2 shows a summary of the different diagnoses. A significant difference was observed in the percent of patients readmitted across age categories with $\chi^2 = 14.16$ and $p = 0.003$ (Table 1.3). Of the patients readmitted, the number of females was slightly higher than males. There were 800 males, which was 49.38% of total readmissions compared to females at 820 (50.62%) of total readmissions. The results demonstrated that 22.55% of females compared to 22.04% of males were readmitted within the first 12 months of discharge (Table 1.1). There was no significant difference across sex in the percent of patients readmitted where the obtained chi square and p-value results were $\chi^2 = 0.27$ and $p = 0.603$ (Table 1.4). The participants were predominantly white or Caucasian at 61.53% and only 2.23% of the participants were Black or African American. Table 1.1 shows a summary of the participants' demographics and their insurance payer break down.

The majority of the patients, 74.08%, had Utah commercial insurances as the primary means of paying for their care. The second largest form of payment was Utah Medicaid, which covered 23.73% of the patients. Other forms of payment included use of Utah miscellaneous government, Utah nongovernment miscellaneous, and other categories all together paying for only 2.16% of the total patients (Table 1.1).

The most common diagnoses were Major Depressive Disorders (ICD-9 296.2-296.3) affecting 2,571 (35.23%) of all patients and with 21.94% of them readmitted. Major depressive disorders accounted for 34.81% of all readmissions. The least represented diagnoses were Eating Disorders (ICD-9 783-783.9, 307.5-307.52, and 307.1). Only 59 patients presented with eating disorders as primary diagnoses at admission which was 0.81% of total patients and 23.73% of them were readmitted contributing to 0.86% of all readmissions (Table 1.2).

| Variable | Number of Patients N=7,265 | Percent of Total Patients | Mean (SD) | Med | Min | Max | Number Readmitted | (%) of Patients | Percent of total Readmissions |
|---|-------------------------------|------------------------------|---------------|------|-----|-------|----------------------|--------------------|----------------------------------|
| Age at Admit | | | 13.95 (2.91) | 15.0 | 3.0 | 17.0 | 1,620 | 22.30 | 100.00 |
| Sex | | | | | | | | | |
| Females | 3,636 | 50.05 | | | | | 820 | 22.55 | 50.62 |
| Males | 3,629 | 49.95 | | | | | 800 | 22.04 | 49.38 |
| Race | | | | | | | | | |
| White | 4,470 | 61.53 | | | | | 1,148 | 25.68 | 70.86 |
| Black | 162 | 2.23 | | | | | 42 | 25.93 | 2.59 |
| Indian - Alaskan Native | 50 | 0.69 | | | | | 10 | 20.00 | 0.62 |
| Asian | 36 | 0.50 | | | | | 10 | 27.78 | 0.62 |
| Hawaiian – acific Islander | 14 | 0.19 | | | | | 2 | 14.29 | 0.12 |
| Other | 383 | 5.27 | | | | | 100 | 26.11 | 6.17 |
| Other Undefined | 2,150 | 29.59 | | | | | 308 | 14.33 | 19.01 |
| Clinical length of stay (days) | | | 8.65 (8.5) | 6.9 | 1.0 | 297.0 | | | |
| If readmitted Length in days after discharge | | | 91.07 (103.3) | 42.0 | 0.0 | 365.0 | | | |
| Insurance | | | | | | | | | |
| UT Commercial | 5,382 | 74.08 | | | | | 1,152 | 21.40 | 71.11 |
| UT Medicaid | 1,724 | 23.73 | | | | | 437 | 25.35 | 26.98 |
| Other – Category | 103 | 1.42 | | | | | 16 | 15.53 | 0.99 |
| UT Misc Government | 54 | 0.74 | | | | | 15 | 27.78 | 0.93 |
| UT Non Government Misc | 2 | 0.03 | | | | | 0 | 0.00 | 0.00 |

Table 1.1: Summary description of child and adolescent inpatients (1999-2010).

| Psychiatric Disorder | ICD-9 Codes | Number Discharged | % of Total Cases | Number Readmitted | % Readmitted | % of all Readmits |
|---|--------------------------------|-------------------|------------------|-------------------|--------------|-------------------|
| Major Depressive Disorder | 296.2-296.3 | 2,571 | 35.39 | 564 | 21.94 | 34.81 |
| Mood Disorders | 296.9-296.99, 293.83, 309 | 1,265 | 17.41 | 309 | 24.43 | 19.07 |
| Depressive Disorders Not Elsewhere Classified | 311 | 960 | 13.21 | 146 | 15.21 | 9.01 |
| Bipolar Disorders | 296.4-296.89 | 774 | 10.65 | 232 | 29.97 | 14.32 |
| Anxiety Disorders | 300-300.5, 293.84 | 339 | 4.67 | 66 | 19.47 | 4.07 |
| Unspecified Psychosis | 298.9 | 213 | 2.93 | 59 | 27.70 | 3.64 |
| Substance Abuse/Dependence | 304-305.99 | 193 | 2.66 | 15 | 7.77 | 0.93 |
| Posttraumatic Stress Disorder | 309.81 | 177 | 2.44 | 47 | 26.55 | 2.90 |
| ADD | 314-314.05 | 187 | 2.57 | 39 | 20.86 | 2.41 |
| Schizophrenia Disorders | 295-295.9 | 129 | 1.78 | 51 | 39.53 | 3.15 |
| Neurodevelopmental Disorders | 299-299.9, 315.9, 317, 307.23 | 97 | 1.34 | 25 | 25.77 | 1.54 |
| Conduct, Oppositional Defiant Disorders | 312-313.8 | 81 | 1.11 | 15 | 18.52 | 0.93 |
| Eating Disorders | 783-783.9, 307.5-307.52, 307.1 | 59 | 0.81 | 14 | 23.73 | 0.86 |
| Other Disorders | | 220 | 3.03 | 38 | 17.27 | 2.35 |
| Total | | 7,265 | 100.00 | 1,620 | 22.30 | 100.00 |

Table 1.2: Diagnoses at admission for inpatient children and adolescents (1999-2010). Pearson χ^2 (13)=115.15, $p=0.000$

There were 339 patients with Anxiety Disorders with the ICD-9 codes (300-300.5, 293.84) which was 4.67% of all participants or patients. However, a total of 66 or 19.47% of those with Anxiety Disorders were readmitted contributing to 4.07% of total readmissions. Mood disorders identified by ICD-9 codes (296.9-296.99, 293.83, and 309) had the second largest contribution to the total participants with a contribution of 1,265 patients, or 17.41% of the total cases. Of those with mood disorders, 24.43% or 309 patients were readmitted making up 19.07% of the total readmissions. Even though mood disorders contributed to 17.41% of the total participants, the contribution to readmissions was 1.66 percentage points higher. There were 193 participants with substance use or dependence disorders identified by the ICD-9 codes (304–305.99) which was only 2.66% of the total participants. Only 7.77% of those with substance use disorders were readmitted to the hospital contributing to 0.93% of all readmissions (Table 1.2).

Posttraumatic stress disorders (PTSD) and schizophrenia disorders had the highest percentages of their initial admissions readmitted. Participants with PTSD with (ICD-9 codes 309.81) were 177 in number but 26.55% of them were readmitted. Schizophrenia disorders (ICD-9 codes 295–295.9) had only 129 patients for a total of 1.78% of the total participants. However, an extremely high percentage of them, 39.53% were readmitted, which accounted for 3.15% of the total readmissions (Table 1.2). The results show that there was a significant difference in readmission by diagnoses, as seen in table 1.2 (Pearson χ^2 (13)=115.15, $p=0.000$).

For all races except Black, the age group 15-17 year olds had the highest contribution to the number of patients admitted, compared to age groups 3-6, 7-11, and 12-14 year olds. The age group 15-17 contributed to over 50% of total patients for all races except for Black. For Black patients, there were 32.1% from the age group 7-11 and 35.19 from age group 15-17. The most readmissions from Blacks or African Americans of 32.69% came from the age group 7-11. Over all, the results (Pearson χ^2 (6)=114.16, $p=0.000$) show that there is a difference in the percent of patients admitted or readmitted across the different racial or ethnic categories (Table 1.3).

Over all, the results (Pearson χ^2 (1)=0.27, $p=0.603$) indicate no statistical difference in readmission across sex. However, there was a pattern of patients admitted by sex and age group. Among the young patients of age groups 3-6 and 7-11, the percent of patients admitted was higher for males ranging from 73.28% to 80.24% compared to females. The percent of females admitted overtook that of males in age groups 12-

14 and 15-17 where the females were over 50% of total patients (Table 1.4). The patients were by a very large percent of 82.08%, discharged to home or self-care and a difference was observed in readmission where the obtained $\chi^2=18.62$ with $p<0.001$ among those discharged to home or self-care (Table 1.5).

Discussion

Intensity and duration of treatment

Psychiatric disorders present with different characteristics, and different disorders may require unique treatment intensity. In many ways, the number of inpatient days is a potential indicator of treatment intensity. In a study published in 2004 which investigated readmission of adolescents with Anorexia Nervosa, the researchers stated that about only 15 years ago, the average number of days as inpatients for Anorexia Nervosa was between 140 and 150 days. The average number of inpatient days at the time of the research in 2004 was 24 to 40 days. [3,16,17].

The decrease in inpatient days is generally the trend for the different psychiatric disorders among children and adolescents [2,16] and may reflect a decrease in intensity of treatment. In a population-based study, some researchers examined changes in inpatient treatment for children and adolescents seen between 1990 and 2000 using a nationally representative sample of discharges from the US community hospitals where the sponsor is the Agency for Healthcare Research and Quality. The sample included children and adolescents younger than 18 years with a primary diagnosis of a mental health disorder and 21,450 seen in 1990 compared with 29,590 seen in 2000. The researchers found that there was no significant change in number of discharges, but the median length of hospital stay for children with mental disorders changed from 12.2 days to 4.5 days between 1990 and 2000 [18]. From our data, the average number of hospital days was observed to be 9 days with approximately a minimum of 1 and maximum of 297 days. The standard deviation was 8.5.

Minimum number of inpatient days

Is there a minimum number of inpatient days as a standard for pediatric patients with psychiatric illness? It does not seem like there is a definite answer to this question; however, asking it is good to show what trend is happening to number of days that pediatric patients spend as inpatients. One study reported a 63% decline of inpatient days over a decade between

| | Age Group (Years) | | | | Total | χ^2 | P |
|-----------------------------------|-------------------|---------------|----------------|----------------|----------------|----------|-------|
| Race | 3-6 n (%) | 7-11 n (%) | 12-14 n (%) | 15-17 n (%) | n (%) | | |
| White | 100 (2.24) | 730 (16.33) | 1,222 (27.34) | 2,418 (54.09) | 4,470 (100.00) | 11.27 | 0.010 |
| Readmitted | 21 (21.00) | 216 (29.59) | 329 (26.92) | 582 (24.07) | 1,148 (25.68) | | |
| Black | 11 (6.79) | 52 (32.10) | 42 (25.93) | 57 (35.19) | 162 (100.00) | 2.56 | 0.465 |
| Readmitted | 3 (27.27) | 17 (32.69) | 11 (26.19) | 11 (19.30) | 42 (25.93) | | |
| Indian/ Alaska Native | 0 | 6 (12.00) | 16 (32.00) | 28 (56.00) | 50 (100.00) | 0.09 | 0.955 |
| Readmitted | 0 (0.00) | 1 (16.67) | 3 (18.75) | 6 (21.43) | 10 (20.00) | | |
| Asian | 2 (5.56) | 1 (2.78) | 6 (16.67) | 27 (75.00) | 36 (100.00) | 1.29 | 0.731 |
| Readmitted | 0 (0.00) | 0 (0.00) | 2 (33.33) | 8 (29.63) | 10 (27.78) | | |
| Hawaiian/ Pacific Islander | 0 | 3 (21.43) | 2 (14.29) | 9 (64.29) | 14 (100.00) | 8.56 | 0.014 |
| Readmitted | 0 (0.00) | 2 (66.67) | 0 (0.00) | 0 (0.00) | 2 (14.29) | | |
| Other | 3 (0.78) | 62 (16.19) | 115 (30.03) | 203 (53.00) | 383 (100.00) | 4.91 | 0.179 |
| Readmitted | 0 (0.00) | 20 (32.26) | 23 (20.00) | 57 (28.08) | 100 (26.11) | | |
| Other Undefined | 51 (2.37) | 295 (13.72) | 575 (26.74) | 1229 (57.16) | 2,150 (100.00) | 3.48 | 0.324 |
| Readmitted | 2 (21.57) | 5 (14.24) | 8 (15.48) | 16 (13.51) | 308 (14.33) | | |
| Total | 167 (2.30) | 1,149 (15.81) | 1,978 (27.23) | 3,971 (54.66) | 7,265 (100.00) | 14.16 | 0.003 |
| Readmitted | 35 (2.16) | 298 (25.94) | 457 (23.10) | 830 (20.90) | 1,620 (22.30) | | |

Table 1.3: Patient Race and Age Group Contribution (1999-2010).
Race * Readmission; Pearson χ^2 (6)=114.16, p=0.000

| Age group (years) | Males n (%) | Females n (%) | Total n (%) | χ^2 | P |
|-------------------|----------------|------------------|----------------|----------|-------|
| 3-6 | 134 (80.24) | 33 (19.76) | 167 (100.00) | 0.84 | 0.360 |
| Readmitted | 30 (22.39) | 5 (15.15) | 35 (20.96) | | |
| 7-11 | 842 (73.28) | 307 (26.72) | 1,149 (100.00) | 4.78 | 0.029 |
| Readmitted | 204 (24.23) | 94 (30.62) | 298 (25.94) | | |
| 12-14 | 854 (43.17) | 1,124 (56.83) | 1,978 (100.00) | 0.33 | 0.567 |
| Readmitted | 192 (22.48) | 265 (23.58) | 457 (23.10) | | |
| 15-17 | 1,799 (45.30) | 2,172 (54.70) | 3,971 (100.00) | 0.03 | 0.874 |
| Readmitted | 374 (20.79) | 456 (20.99) | 830 (20.90) | | |
| Total | 3,629 (49.95) | 3,636 (50.05) | 7,265 (100.00) | 0.27 | 0.603 |
| Readmitted | 800 (22.04) | 820 (22.55) | 1,620 (22.30) | | |

Table 1.4: Patient's Age Group and Sex Contribution (1999-2010).

| | Age Group (Years) | | | | Total | % of All Discharges | χ^2 | P |
|------------------------------------|-------------------|---------------|----------------|----------------|---------------|---------------------|----------|-------|
| Discharge Disposition | 3-6 n (%) | 7-11 n (%) | 12-14 n (%) | 15-17 n (%) | n (%) | | | |
| Home or Self Care | 155 (2.6) | 997 (16.7) | 1,663 (27.9) | 3,148 (52.8) | 5,963 (100.0) | 82.08 | 18.62 | 0.000 |
| Readmitted | 31 (20.0) | 254 (25.5) | 382 (23.0) | 616 (19.6) | 1,283 (21.5) | | | |
| Other Facility | 11 (0.9) | 149 (11.8) | 305 (24.1) | 803 (63.3) | 1,268 (100.0) | 17.45 | 1.92 | 0.588 |
| Readmitted | 4 (36.4) | 43 (28.9) | 73 (23.9) | 209 (26.0) | 329 (26.0) | | | |
| Left Against Medical Advice | 1 (3.7) | 3 (11.1) | 8 (29.6) | 15 (55.6) | 27 (100.0) | 0.37 | 3.86 | 0.277 |
| Readmitted | 0 (0.0) | 1 (33.3) | 0 (0.0) | 5 (33.3) | 6 (22.2) | | | |
| Other Not Defined | 0 (0.0) | 0 (0.0) | 2 (28.6) | 5 (71.4) | 7 (100.0) | 0.10 | 7.00 | 0.008 |
| Readmitted | 0 (0.0) | 0 (0.0) | 2 (100.0) | 0 (0.0) | 2 (28.6) | | | |

Table 1.5: Patient Discharge Disposition by Age Group (1999-2010).
Discharge Disposition*Readmission; Pearson χ^2 (3)=12.01, p=0.007

1990 and 2000 [18]. There is difficulty to come up with a minimum number of days, but it is clear that some illness, especially in psychiatry, requires a longer time of close observation and intense treatment. Different psychiatric disorders call for different treatment methods. For example, Anorexia Nervosa requires that a patient show signs of gaining weight before they are discharged and gaining weight for such patients may take a long time [16] with close observation. For some disorders such as: depression, anxiety, and bipolar disorders, the patients may need stabilization before they are referred for additional treatments where stabilization may take shorter time than weight gain. Some researchers suggested that the shortening of inpatient days and frequent readmissions may be a reason to suspect a failure in the psychiatry treatment systems [3].

Diagnosis and classification

Classification of psychiatric illness by ICD-9 codes is not an easy task for researchers, and diagnosis, even for clinicians, is difficult and controversial at times. Clinical decision-making and research are faced with difficult issues of reliability and validity in diagnosis in psychiatry [19]. The struggle to classify and diagnose can be revealed through several studies, including one which reported that diagnosis of pediatric bipolar disorder on the basis of irritability without elation is controversial. Irritability was reported as a marker for the risk of bipolar disorder in pediatric patients; however, in a different study, while irritability predicted major depressive disorder, generalized anxiety disorder, and dysthymia in both adolescents and adults, it failed to predict bipolar disorder in adults

[20]. Differences in Diagnostic and Statistical Manual criteria present their own difficulty to research. An example can be seen with eating disorders. In DSM-IV, some disorders such as anorexia nervosa and bulimia nervosa are clearly categorized while there is no mention of binge eating disorder (BED). DSM-5, however, recognizes BED as one of the eating disorders and has criteria for its diagnosis [21].

Due to the difficulty in classification and diagnosis, it is almost impossible for researchers to look at every psychiatric diagnosis without taking categories. This difficulty provides the opportunity to categorize major common disorders such as anxiety disorders, depression disorders, or eating disorders and others, rather than take on the impossible task of looking at every single ICD-9 within each category of disorders. Given the difficulty as explained, it is hard for research purposes to list the different ICD-9 codes within different categories of disorders. In this study, we identified the different diagnoses and their ICD-9 codes using the primary diagnosis of the participants as coded in DSM IV.

It is possible that the difficulty in diagnosis, classification, and treatment is due to the fact that each Diagnostic and Statistical Manual (DSM) has a different objective. For DSM-III, the major focus was to improve reliability so physicians could agree on the diagnostic assessment and for DSM-V, the focus is on the standard error on any kappa statistic [19], while DSM-IV has the focus of encouraging comorbidity and greater use for clinical and research use [22]. Continuing with the difficulty to classify and diagnose, one study reported in 2013 that in recent epidemiological surveys, anxiety disorders were the common psychological disorders among children and adolescents [23]. In our study, we found that major depressive disorders were the most common type affecting 35.39% of the population studied.

Information on comorbid disorders was not included in our data but could be part of the problem of diagnosis and classification. For an example, research shows that both depression and disruptive behavior problems are common among children and adolescents because the children meet the diagnostic criteria for depression as well as disruptive behavior [24]. In such cases of comorbidity, it would be difficult to suggest a standard length of stay for treatment unless providers go by the presenting problem, yet in psychiatry, the presenting problem may not be the major issue of hospitalization. Additional studies are needed to investigate the effect of comorbid disorders.

Limitations

Although we can count on the strength of a large data set covering 11 years, we have a few limitations associated with its use. The data were secondary and were most likely not collected for research purposes. The data analysis was correct, but because these were secondary data, there is a possibility of getting underestimated or overestimated results. The data we used had primary diagnosis information and our descriptions and conclusions are based on such primary diagnosis. It is a common thing to have comorbid disorders in psychiatric illnesses and having comorbid illnesses might have led to different findings. The biggest weakness for the study is that the institution where we obtained data is a regional hospital and because patients are referred from a distance and different hospitals, it is possible that those who receive readmission may do so in their home state or region and could be counted as non-readmits at the regional hospital.

Conclusion

The average age for the patient population was 13.95 with 54.66% of them from the age group of 15-17 years. Since the majority of the patients are from this age group, providers and researchers may get better results,

and improve services if they target interventions and research around this age group. Patients were evenly distributed in sex and were predominantly white. The even distribution in sex may suggest that resource use in research or interventions may be beneficial targeting other factors than sex. Major Depressive Disorders (ICD-9 296.2-296.3) were the most common diagnoses where 35.39% of patients were with these disorders. While comparing readmissions from the different diagnoses, patients with PTSD and Schizophrenia had the largest percent of readmissions. Utah commercial insurances were the major payers for the patients' care covering 74.08% of the total patients. Utah Medicaid was the second largest payer for care. Only a very small percentage of patients of 2.19% had their care paid for by other miscellaneous forms.

Our conclusions are based on primary diagnoses because data were not obtained on comorbid disorders or illnesses. Additional research is needed to explore how comorbid disorders or illnesses affect patients' inpatient stay and readmission. From the results, any effort to understand psychiatric illness, hospitalization, and hospital readmission among pediatric patients may be better served by focusing on diagnoses such as major depressive disorders, and mood disorders, which affect the majority of pediatric patients. Research focusing on diagnoses such as schizophrenia, bipolar disorders, and PTSD, which contribute to the majority of readmissions is needed to assist in designing public health interventions.

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