

Chronic Pain in Pediatric Patients and the Association of Suicidal Ideations and Suicidal Attempts

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Abstract

Objective: This retrospective study determined the rate of suicidal ideations and attempts and explored the correlations of chronic pain and suicidal ideations or attempts of adolescent patients who were between the ages of 10 and 17 years diagnosed with a chronic pain condition at an outpatient pediatric pain clinic. Contributing factors, such as age, gender, ethnicity, sleep issues, or any psychological stressors placing adolescents at higher risk of either suicidal ideations or attempts were examined.

Methods: A chart review was performed of 205 pediatric patients (163 females) aged 10 to 17 years who attended the outpatient pediatric pain clinic between 2013 and 2015. Data were collected and underwent statistical analysis to determine the strength of the correlations between the contributing factors and suicidal ideations and attempts.

Results: We compared the resulting data with data from the Centers for Disease Control regarding suicidal ideations and attempts in adolescents. The frequency of suicidal ideations in these patients was 59/205 (28.8%). History of being bullied, female gender, recent breakup, family conflict, prior psychological interventions, depression or anxiety, and history of substance abuse showed statistically significant associations with suicidal ideations. The frequency of suicidal attempts in these patients was 20/205 (9.8%). In patients aged 14 to 17 years, history of psychological intervention and anxiety or depression showed statistically significant associations with suicidal attempts.

Conclusions: This analysis of factors that influence risk of suicidal ideations and attempts in the adolescent population with chronic pain will help physicians identify these risk factors in their patients and emphasize the importance of preventive measures.

Keywords: Chronic pain; Fibromyalgia; Pediatric; Suicidal; Suicide

Introduction

In 2014, suicide was the third leading cause of death in children aged 10 to 13 years and the second leading cause of death in adolescents aged 14 to 17 years [1,2]. The significance of these statistics highlights the importance of determining the risk factors that are associated with suicide to provide appropriate treatment and intervention. In adults, suicide is the fourth leading cause of death. There have been many documented links showing a positive correlation between chronic pain syndromes and suicidal attempts (SA) and suicidal ideations (SI) [3]. The prevalence of suicide in adolescents and the already well-known link between chronic pain syndromes and SI or SA in adults lead to questioning if chronic pain syndromes in adolescents contribute to a higher prevalence of SI or SA. In this study, we aimed to determine if patients with clinically diagnosed chronic pain syndromes were at increased risk of SI or SA.

A necessary second step, after determining if these patients were at a higher risk for SI or SA, was to explore what factors increase the

likelihood of SI or SA. Madadi et al. [4] showed that patients who commit suicide are more likely to have chronic pain, previous suicide attempts, depression, or other psychiatric comorbidities. With this knowledge, determining if any comorbidities, such as anxiety or depression, are influencing the probability of SI and SA in a pediatric population is a worthwhile endeavor.

Another risk factor, thought to be one of greatest influences on suicidal behavior, is social isolation. Additionally, perceived burdensomeness, where the patients feel that they are a burden on their family, friends, or society, has an associated influence on SI or SA [5]. Adolescent patients may experience perceived burdensomeness because of the increased likelihood of dependence on their parents or relatives regarding their medical care and age. Sleep, gender, and specific family dynamics also influence the risk of suicidal behaviors [6].

Amplified musculoskeletal pain syndrome (AMPS) is a chronic pain syndrome seen in the pediatric population. This diagnosis is a spectrum of pain syndromes resulting in constant pain or intermittent attacks, and it is commonly associated with psychological stresses. Juvenile fibromyalgia is one of the syndromes on the spectrum [7].

There is currently little information about the link between chronic pain syndromes and SI or SA in the adolescent population. One study shows that SI and SA increase in adolescent patients who report chronic pain. However, this study used a survey to determine chronic pain versus clinically diagnosed patients [8]. Another study identified a higher frequency of SI in adolescents with migraine with aura [9].

There are specific chronic pain conditions that have a significant association with SI and SA in pediatrics. The current study attempted to determine the incidence rate of SI or SA or both in adolescents who were diagnosed with chronic pain conditions. In addition, there are certain factors that increase the risk of SI and SA for adolescent patients diagnosed with pain conditions. These factors include the relationship of gender, age, previous SA, history of psychological stressors, treatment received for these stressors, sleep abnormalities, and ethnicity on the incidence rate of SI and SA.

Methods

This study was an Institutional Review Board-approved case-control retrospective chart review study on data collected from electronic medical records (EMR) of patients who presented to the outpatient pediatric pain clinic at our hospital. We randomly selected 205 patients between the ages of 10 and 17 years who were diagnosed with chronic pain in 2013 to 2015. We eliminate any patient who did not have the complete variables that we were looking during the chart review. Data involving age, gender, ethnicity, comorbidities, and any notes from behavioral health specialists containing psychological stressors and history of psychological intervention were extracted from the EMRs and entered into the statistical program SPSS 23.0 (IBM, Armonk, NY). A correlation coefficient was generated to quantify the relationship between each of these factors and SA or SI. These data were compared with data gathered from the Centers for Disease Control (CDC) website on SA and SI in the adolescent population who were in grades 9 through 12 [1,2]. Participants were separated into two age groups, 10 to 13 years and 14 to 17 years, for convenience of statistical analysis. Of the 205 patients, 94 (45.9%) were diagnosed with AMPS, 26 (12.7%) with back pain, 12 (5.9%) with joint pain, 21 (10.2%) with headache, 17 (8.3%) with abdominal pain, and 133 (64.9%) with other types of chronic pain. Patients may have more than one pain condition. There were 163 (79.5%) females and 42 (20.5%) males. Forty-four (21.5%) patients were between the ages of 10 and 13 years, while 161 (78.5%) were between the ages of 14 and 17 years.

Data were analyzed using SPSS 23.0. All variables were presented as categorically. These variables included gender (male or female), age (10-13 or 14-17 years), ethnicity (Caucasian or non-Caucasian), history of depression or anxiety (yes or no), sleep issues (poor or adequate), family and social stressors (yes or no), history of psychological intervention (yes or no), and history of substance abuse (yes or no). The family and social stressors included bullying history, death of a relative, parent divorce, family conflict, social conflict, breakup, financial issues, and substance abuse by a relative. These factors were collected from each patient's EMR and entered into the statistical software. These variables were analyzed using a Fischer's exact test for univariate analysis because of the small sample size. The variables were compared against SI and SA. A p value<0.05 was considered statistically significant.

Results

Sensitivity analysis showed that the association of pain and SI and SA was independent of the type of pain.

Suicidal ideations

Overall, the frequency of SI in all of the patients was 59/205, or 28.8%. Several factors did have a statistically significant association with SI according to Fisher's exact test. These factors were having a history of being bullied [χ^2 (1,n=205)=5.082, p=0.024], being of female gender [χ^2 (1,n=205)=5.414, p=0.02], having a recent breakup [χ^2 (1,n=205)=11.025, p=0.001], having a family conflict [χ^2 (1,n=205)=4.728, p=0.03], having a history of psychological interventions [χ^2 (1,n=205)=10.477, p=0.001], having depression or anxiety [χ^2 (1,n=205)=9.389, p=0.002], and having a history of substance abuse [χ^2 (1,n=205)=5.279, p=0.022]. Statistically significant associations are presented in Table 1.

	χ^2	df	p value
History of being bullied	5.082	1	0.024
Female gender	5.414	1	0.02
Recent breakup	11.025	1	0.001
Family conflict	4.728	1	0.03
Psychological interventions	10.477	1	0.001
Anxiety or depression	9.389	1	0.002
Substance abuse	5.279	1	0.022
df: Degrees of Freedom, χ^2 : Chi Square.			

Table 1: Statistically Significant Associations with Suicidal Ideations.

Suicidal attempts

Overall, the frequency of SA in all of the patients was 20/205, or 9.8%. The following factors did have a statistically significant association with SA according to Fisher's exact test: being in the age range of 14 to 17 years [χ^2 (1, n=205)=6.057, p=0.014], having a history of psychological intervention [χ^2 (1,n=205)=7.178, p=0.007], and having anxiety or depression [χ^2 (1,n=205)=6.634, p=0.017]. Statistically significant associations are presented in Table 2.

	χ^2	df	p value
Age range of 14-17 years	6.057	1	0.014
Psychological intervention	7.178	1	0.007
Anxiety or depression	6.634	1	0.017
df: Degrees of Freedom, χ^2 : Chi Square.			

Table 2: Statistically Significant Associations with Suicidal Attempts.

Discussion

Although there have been studies showing that adolescent patients who have self-reported recurrent idiopathic pain are more likely to report incidents of SI and SA, when separated into specific pain conditions, there does not seem to be a specific pain syndrome that

shows a strong correlation to SI or SA. The prevalence of SI and SA in adolescents varies among research papers. A study performed nationwide on adolescents in grades 9 through 12 shows that 15.8% of students had SI, and 7.8% had an SA [1]. Two German studies found recurrent self-reported pain in a school-based sample to be associated with SA (10). In the last study published in 2015 by Koenig et al., they found abdominal pain to have the greatest relative risk for both SI and SA. Compared with the prevalence found from the analysis, with SI being 28.8% and SA being 9.8%, chronic pain does seem to increase the prevalence of both SI and SA compared with the general pediatric population. Although the correlation of chronic pain and SI or SA is significant, the analysis of specific chronic pain conditions found that there were none that had statistically significant associations with SI or SA when compared with other chronic pain conditions.

When comparing the various stressors with SI and SA, there were specific associations that were statistically significant. Factors of statistical significance for SI include having a history of being bullied, being of female gender, experiencing a recent breakup, having family conflict, having psychological interventions, having a comorbidity, or having a substance abuse issue. Moreover, in ages 14 to 17 years, having psychological intervention, having been involuntarily committed, or having a comorbidity were statistically significant. Previous research shows that some of these stressors are associated with SI and SA, including being bullied [10,11], having poor sleep patterns [12], having a comorbidity such as depression or anxiety [13], being of female gender [14], family factors, the presence of psychiatric illness, and substance abuse [15]. With all of these factors already linked to SI and SA, it is important to note that the associations hold true in the chronic pain population as well. It is important for pediatricians to be aware of the risk factors and to provide the necessary interventions [16].

Beyond awareness of the increased risk factors for SI and SA among adolescents with chronic pain highlighted by the current study, it is important to consider specific and strategic prevention and response efforts to address the presenting risk. Depression is the most important risk factor for suicide, and it increases in patients with chronic pain [7]. This finding suggests that screening for depression in all pediatric patients with chronic pain would be a first step in prevention given the likelihood of this comorbidity. Health care providers have the opportunity to assist in decreasing the stigma associated with suicide by improving the message of the importance related to mental health treatment [5]. The health care provider has direct influence on a patient's understanding of the importance of mental health intervention. A study on universal suicide-prevention programs documented that increasing help-seeking attitudes in patients is a critical factor in these patients actually accessing and following through with use of behavioral health services [16]. Youth who commit suicide may not have had contact with mental health providers but typically have interacted with educators, coaches, and medical providers. Therefore, cross-sector collaborations are important to reduce suicide [16]. Through an interdisciplinary approach incorporating behavioral health professionals into the regular assessment and management of pediatric pain patients, efforts to eliminate suicide will be maximized [17-21].

There were several limitations to this study. We have an opportunistic sample collection due to rare of the disease and sample, chronic pain adolescence with suicidal ideation and or attempts. Ideally, we will like to collect a bigger sample with control subjection group without chronic pain. The sample size was small. There is room

for possible memory bias from the authors due to the retrospective collection of data, however the collection was based on a medical record progress note from the initial visit. This was a retrospective analysis instead of a prospective control randomized analysis.

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