Trichotillomania in Children and the Different Approaches between Dermatological and Behavioral Health Professionals at an Urban Tertiary Care Center

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Keywords

Trichotillomania · Trichotillois · Hair pulling · Pediatric dermatology · Behavioral health

Abstract

Background: Trichotillomania (TTM) is a complex disease with varying clinical characteristics, and psychosocial impairment is noted in many TTM patients. Despite its prevalence in childhood, there is limited research on pediatric TTM. **Objective:** To analyze the clinical and epidemiologic features of TTM in children evaluated by dermatologists and behavioral health specialists. **Method:** We performed a retrospective chart review of 137 pediatric patients seen at the Children's Hospital of Philadelphia with initial presentation of TTM at age 17 or younger. Patients were treated by dermatology or behavioral health. **Results:** The majority of the patients were females, with an average diagnosis age around 8 years. Over half had a psychiatric comorbidity, and over a quarter had a skin disorder. Skin disorders were more commonly present in those evaluated by dermatology, and psychiatric comorbidities were more commonly present in those evaluated by behavioral health. The most common form of treatment was behavioral therapy, with medications

prescribed more often by dermatologists. **Conclusions:** TTM patients choose to present to behavioral health or dermatology; however, there are distinctive differences between the two cohorts. With behavioral and pharmacologic treatment options, a relationship between dermatologists and behavioral health specialists is necessary for multifactorial management of TTM.

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Introduction

The first case of trichotillomania (TTM), also known as trichotillois, was reported in 1889 by a French dermatologist, Hallopeau [1]. It falls under the obsessive-compulsive and related disorders in the *Diagnostic and Statistical Manual of Mental Disorders-V (DSM-V)*. It is assigned to individuals who recurrently pull out hair from any region of their body resulting in hair loss and other forms of impairment [2]. The most common sites of hair removal are the scalp, eyebrows, and eyelashes. Other regions include pubic hair, body hair, and facial hair [3]. Although it is a nonscarring type of hair loss, if hair is continuously pulled, it may no longer grow [4].

Since 1889, the etiology, epidemiology, natural history, psychosocial impact, and treatment options are still uncertain. TTM onset may occur across the lifespan, yet adolescent onset (ages 10–13) is most frequently reported, affecting more females than males [5, 6]. The lifetime prevalence is estimated to be around 1–3% [6]. Nonetheless, there are variations in these findings.

The distressing nature of this disease can lead to severe functional impairment and/or psychological comorbidity. Some patients may suffer from trichophagia, where they consume the pulled hair creating trichobezoars. The trichobezoars, or hairballs, can lead to gastrointestinal difficulties [7]. Psychological comorbidities commonly include mood disorders, anxiety disorders, substance use disorders, eating disorders, and disruptive behavior in youth [8]. There is no definitive cure for TTM in children, with treatment options varying from patient education and behavioral therapy to over-the-counter supplements and medications such as *N*-acetylcysteine (NAC) or topical therapies like steroids with variable potencies [9].

There has been limited text in pediatric TTM until recently. Studies have claimed that patients initially present at dermatology due to the associated hair loss [9]. Other studies have found patients seek help from a mental health clinician as TTM is considered a psychiatric diagnosis [10]. Both fields of medicine evaluate a noteworthy amount of TTM cases; however, diagnostic measures, management, and treatment of TTM may differ between the two.

Hence, we assessed the clinical and epidemiologic characteristics of this disease in a diverse patient population at our urban tertiary care center. We sought to add to the growing literature with the primary objective of providing families an improved understanding of TTM in children.

Materials and Methods

Participants and Procedures

After receiving IRB approval/exemption (Children's Hospital of Philadelphia; IRB 18-015808), the EPIC database was queried 1/1/18–12/31/19 for TTM using ICD-10-CM Code F63.3. Subjects were excluded if initial presentation was at age 18 or over. Age and gender of the subject, growth parameters (height, weight, and BMI), self-described race/ethnic background, past medical history, family history, age at first presentation of TTM, location of TTM, chief complaint, clinical characteristics for diagnosis, and treatment/management for TTM were abstracted.

Statistical Analysis

Baseline and demographic characteristics were summarized by standard descriptive methods (e.g., means and standard deviations for continuous variables such as age and numbers with percentages for categorical variables such as gender).

Results

All Study Participants

A total of 137 eligible subjects were evaluated. Forty-eight (35.0%) were males, and 89 (65.0%) were females. The most common self-reported race and ethnicity were white ($n = 90$, 65.7%) and non-Hispanic/Latino ($n = 124$, 90.5%), respectively. Average age at diagnosis was 7.93 ± 4.08 years. For initial presentation, 50 (36.5%) were treated by dermatology and 97 (63.5%) were treated by behavioral health/child development. Eighty-six (62.8%) had a psychiatric comorbidity, and 32 (23.4%) had a skin disorder. Sixty-five (57.4%) had a family history of a psychiatric comorbidity, and 37 (27.0%) had a family history of a skin disorder (shown in Table 1). Subject psychiatric comorbidities included attention deficit hyperactivity disorder (ADHD) ($n = 38$), general anxiety disorder ($n = 50$), tic disorder ($n = 11$), learning/language delays ($n = 21$), depression ($n = 4$), Asperger's ($n = 1$), autism spectrum disorder ($n = 10$), obsessive-compulsive disorder ($n = 8$), behavioral concerns ($n = 9$), suicidal ideation ($n = 3$), sensory stimulation-seeking impulsive disorder ($n = 1$), and psychiatric condition ($n = 1$). Examples of skin disorders the subjects had include eczema ($n = 16$), alopecia areata ($n = 6$), dermatitis ($n = 3$), warts ($n = 1$), neurofibromatosis-1 (NF1) ($n = 1$), vascular malformation ($n = 1$), telogen effluvium ($n = 1$), keratosis pilaris ($n = 1$), psoriasis ($n = 1$), and hemangioma ($n = 4$). Some subjects had more than one psychiatric disorder and/or skin disorder.

Chief complaints included pulling hair ($n = 77$, 56.6%); hair loss ($n = 18$, 13.2%); eating hair ($n = 1$, 0.7%); pulling hair and hair loss ($n = 24$, 17.6%); pulling hair and eating hair ($n = 13$, 9.6%); pulling hair, hair loss, and eating hair ($n = 3$, 2.2%); and not specified ($n = 1$, 0.7%) (shown in Table 1). Three female patients had trichobezoars found, of which 2 were treated by dermatology for initial presentation and 1 was treated by behavioral health/child development for initial presentation.

Location of TTM included scalp ($n = 96$, 70.6%); eyebrows ($n = 5$, 3.7%); eyelashes ($n = 5$, 3.7%); body hair ($n = 1$, 0.7%); scalp and eyelashes ($n = 4$, 2.9%); eyebrows and eyelashes ($n = 12$, 8.8%); scalp, eyebrows, and eye-

Table 1. Demographics, past medical history, family history, clinical characteristics of TTM, and treatment in all study participants

Descriptor	Total sample (<i>n</i> = 137)	Descriptor	Total sample (<i>n</i> = 137)
Gender		Telogen effluvium	1
Male	48 (35.0%)	Keratosis pilaris	1
Female	89 (65.0%)	Psoriasis	1
Self-reported race		Hemangioma	4
American Indian or Alaska Native	0 (0%)	% with family history of psychiatric comorbidity	65 (47.4%)
Asian	2 (1.5%)	% with family history of skin disorder	37 (27.0%)
Black or African American	21 (15.3%)	Age at diagnosis (mean±SD)	7.93±4.08
Indian	1 (0.7%)	Initial presentation specialty	
Native Hawaiian or other Pacific Islander	0 (0%)	Dermatology	50 (36.5%)
White	90 (65.7%)	Behavioral health/child development	87 (63.5%)
Others	21 (15.3%)	Chief complaint	
Refused	2 (1.5%)	Pulling hair	77 (56.6%)
Self-reported ethnicity		Hair loss	18 (13.2%)
Hispanic or Latino	11 (8.0%)	Eating hair	1 (0.7%)
Non-Hispanic or Latino	124 (90.5%)	Pulling hair and hair loss	24 (17.6%)
Refused	2 (1.5%)	Pulling hair and eating hair	13 (9.6%)
% with psychiatric comorbidity	86 (62.8%)	Pulling hair, hair loss, and eating hair	3 (2.2%)
ADHD	38	Not specified	1 (0.7%)
General anxiety disorder	50	Location of TTM	
Tic disorder	11	Scalp	96 (70.6%)
Learning/language delays	21	Eyebrows	5 (3.7%)
Depression	4	Eyelashes	5 (3.7%)
Asperger's	1	Body hair	1 (0.7%)
Autism spectrum disorder	10	Scalp and eyelashes	4 (2.9%)
Obsessive-compulsive disorder	8	Eyebrows and eyelashes	12 (8.8%)
Behavioral concerns	9	Scalp, eyebrows, and eyelashes	3 (2.2%)
Suicidal ideation	3	Eyebrows and body hair	2 (1.5%)
Sensory stimulation-seeking impulsive disorder	1	Treatment	
Psychiatric condition	1	Education	42 (30.7%)
% with skin disorder	32 (23.4%)	Medication	21 (15.3%)
Eczema	16	Behavioral therapy/counseling	66 (48.2%)
Alopecia areata	6	Others	1 (0.7%)
Dermatitis	3	None	7 (5.1%)
Warts	1		
NF1	1		
Vascular malformation	1		

ADHD, attention deficit hyperactivity disorder; NF1, neurofibromatosis-1; TTM, trichotillomania; SD, standard deviation.

lashes (*n* = 3, 2.2%); and eyebrows and body hair (*n* = 2, 1.5%) (shown in Table 1).

Treatment options included education (*n* = 42, 30.7%), medication (*n* = 21, 15.3%), behavioral therapy/counseling (*n* = 66, 48.2%), others (*n* = 1, 0.7%), and none (*n* = 7, 5.1%) (shown in Table 1). Other treatments included cutting off hair (*n* = 1).

Participants Initially Evaluated by Dermatology

Of the 137 eligible subjects evaluated, 50 were treated by dermatology at initial presentation. Sixteen (32.0%) were males, and 34 (68.0%) were females. The most common self-reported race was white (*n* = 32, 64.0%), and the

most common self-reported ethnicity was non-Hispanic/Latino (*n* = 45, 90.0%). Average age at diagnosis was 8.29 ± 4.30 years. Of the 50 subjects, 23 (46.0%) had a psychiatric comorbidity and 19 (38.0%) had a skin disorder. Psychiatric comorbidities of subjects that presented to dermatology included ADHD (*n* = 10), general anxiety disorder (*n* = 13), learning/language delays (*n* = 5), suicidal ideation (*n* = 1), autism spectrum disorder (*n* = 1), behavioral concerns (*n* = 4), obsessive-compulsive disorder (*n* = 3), sensory stimulation-seeking impulsive disorder (*n* = 1), and psychiatric condition (*n* = 1). Skin disorders of subjects treated by dermatology included alopecia areata (*n* = 5), eczema (*n* = 12), hemangioma (*n* = 2), der-

Table 2. Demographics, past medical history, family history, clinical characteristics of TTM, and treatment in study participants seen by dermatology

Descriptor	Total sample (<i>n</i> = 50)
Gender	
Male	16 (32.0%)
Female	34 (68.0%)
Self-reported race	
American Indian or Alaska native	0 (0%)
Asian	2 (4.0%)
Black or African American	10 (20.0%)
Indian	0 (0%)
Native Hawaiian or other Pacific Islander	0 (0%)
White	32 (64.0%)
Others	5 (10.0%)
Refused	1 (2.0%)
Self-reported ethnicity	
Hispanic or Latino	4 (8.0%)
Non-Hispanic or Latino	45 (90.0%)
Refused	1 (2.0%)
% with psychiatric comorbidity	23 (46.0%)
ADHD	10
General anxiety disorder	14
Learning/language delays	5
Suicidal ideation	1
Autism spectrum disorder	1
Behavioral concerns	4
Obsessive-compulsive disorder	3
Sensory stimulation-seeking impulsive disorder	1
Psychiatric condition	1
% with skin disorder	19 (38.0%)
Alopecia areata	5
Eczema	12
Hemangioma	2
Dermatitis	1
Acne	3
Vascular malformation	1
Telogen effluvium	10
Keratosis pilaris	1
Psoriasis	1
% with family history of psychiatric comorbidity	15 (30.0%)
% with family history of skin disorder	21 (42.0%)
Age at diagnosis (mean ± SD)	8.29±4.30
Chief complaint	
Pulling hair	15 (30.0%)
Hair loss	16 (32.0%)
Eating hair	1 (2.0%)
Pulling hair and hair loss	13 (26.0%)
Pulling hair and eating hair	3 (6.0%)
Pulling hair, hair loss, and eating hair	2 (4.0%)
Location of TTM	
Scalp	41 (82.0%)
Eyelashes	2 (4.0%)
Scalp and eyelashes	2 (4.0%)
Eyebrows and eyelashes	4 (8.0%)
Scalp, eyebrows, and eyelashes	1 (2.0%)
Treatment	
Education	17 (34.0%)
Medication	17 (34.0%)
Behavioral therapy/counseling	14 (28.0%)
Others	0 (0%)
None	2 (4.0%)

ADHD, attention deficit hyperactivity disorder; TTM, trichotillomania; SD, standard deviation.

matitis (*n* = 1), acne (*n* = 3), vascular malformation (*n* = 1), telogen effluvium (*n* = 10), keratosis pilaris (*n* = 1), and psoriasis (*n* = 1). Some subjects had more than one psychiatric disorder and/or skin disorder. Fifteen (30.0%) had a family history of a psychiatric comorbidity, and 21

(42.0%) had a family history of a skin disorder (shown in Table 2).

Chief complaints in the 50 subjects included pulling hair (*n* = 15, 30.0%); hair loss (*n* = 16, 32.0%); eating hair (*n* = 1, 2.0%); pulling hair and hair loss (*n* = 13, 26.0%); pulling hair and eating hair (*n* = 3, 6.0%); and pulling hair, hair loss, and eating hair (*n* = 2, 4.0%) (shown in Table 2).

Location of TTM in the 50 subjects included scalp (*n* = 41, 82.0%); eyelashes (*n* = 2, 4.0%); scalp and eyelashes (*n* = 2, 4.0%); eyebrows and eyelashes (*n* = 4, 8.0%); and scalp, eyebrows, and eyelashes (*n* = 1, 2.0%) (shown in Table 2).

Treatment options in the 50 subjects included education (*n* = 17, 34.0%), medication (*n* = 17, 34.0%), behavioral therapy/counseling (*n* = 14, 28.0%), others (*n* = 0, 0%), and none (*n* = 2, 4.0%) (shown in Table 2). Medications that dermatologists prescribed included selenium sulfide shampoo (*n* = 1), minoxidil (*n* = 3), topical tofacitinib (*n* = 1), fluocinonide ointment (*n* = 2), clobetasol propionate (*n* = 3), NAC (*n* = 1), pimecrolimus (*n* = 1), hydrocortisone lotion (*n* = 1), fluocinolone solution (*n* = 3), and triamcinolone (*n* = 1).

Participants Initially Evaluated by Behavioral Health/Child Development

Of the 137 eligible subjects evaluated, 87 were treated by behavioral health/child development at initial presentation. Thirty-two (36.8%) were males, and 55 (63.2%) were females. The most common self-reported race and ethnicity were white (*n* = 58, 66.7%) and non-Hispanic/Latino (*n* = 79, 90.8%), respectively. Average age at diagnosis was 7.72 ± 3.97 years. Of the 87 subjects, 63 (72.4%) had a psychiatric comorbidity and 13 (14.9%) had a skin disorder. Psychiatric disorders of subjects treated by behavioral health included ADHD (*n* = 28), general anxiety disorder (*n* = 37), tic disorder (*n* = 11), learning/language delays (*n* = 16), depression (*n* = 4), Asperger's (*n* = 1), suicidal ideation (*n* = 2), autism spectrum disorder (*n* = 9), behavioral concerns (*n* = 5), and obsessive-compulsive disorder (*n* = 5). Skin disorders of subjects that presented to behavioral health included alopecia areata (*n* = 1), eczema (*n* = 4), hemangioma (*n* = 2), dermatitis (*n* = 2), warts (*n* = 1), acne (*n* = 2), and NF1 (*n* = 1). Some subjects had more than one psychiatric disorder and/or skin disorder. Fifty (57.5%) had a family history of a psychiatric comorbidity, and 16 (18.4%) had a family history of a skin disorder (shown in Table 3).

Chief complaints in the 87 subjects included pulling hair (*n* = 62, 72.1%); hair loss (*n* = 2, 2.3%); pulling hair

Table 3. Demographics, past medical history, family history, clinical characteristics of TTM, and treatment in study participants seen by behavioral health/child development

Descriptor	Total sample (<i>n</i> = 87)
Gender	
Male	32 (36.8%)
Female	55 (63.2%)
Self-reported race	
American Indian or Alaska Native	0 (0%)
Asian	0 (0%)
Black or African American	11 (12.6%)
Indian	1 (1.1%)
Native Hawaiian or other Pacific Islander	0 (0%)
White	58 (66.7%)
Others	16 (18.4%)
Refused	1 (1.1%)
Self-reported ethnicity	
Hispanic or Latino	7 (8.0%)
Non-Hispanic or Latino	79 (90.8%)
Refused	1 (1.1%)
% with psychiatric comorbidity	63 (72.4%)
ADHD	28
General anxiety disorder	37
Tic disorder	11
Learning/language delays	16
Depression	4
Asperger's	1
Suicidal ideation	2
Autism spectrum disorder	9
Behavioral concerns	5
Obsessive-compulsive disorder	5
% with skin disorder	13 (14.9%)
Alopecia areata	1
Eczema	4
Hemangioma	2
Dermatitis	2
Warts	1
Acne	2
NF1	1
% with family history of psychiatric comorbidity	50 (57.5%)
% with family history of skin disorder	16 (18.4%)
Age at diagnosis (mean $\pm$ SD)	7.72 $\pm$ 3.97
Chief complaint	
Pulling hair	62 (72.1%)
Hair loss	2 (2.3%)
Pulling hair and hair loss	11 (12.8%)
Pulling hair and eating hair	10 (11.6%)
Pulling hair, hair loss, and eating hair	1 (1.2%)
Location of TTM	
Scalp	55 (64.0%)
Eyebrows	5 (5.8%)
Eyelashes	11 (12.8%)
Body hair	1 (1.2%)
Scalp and eyelashes	2 (2.3%)
Eyebrows and eyelashes	8 (9.3%)
Scalp, eyebrows, and eyelashes	2 (2.3%)
Eyebrows and body hair	2 (2.3%)
Treatment	
Education	25 (28.7%)
Medication	4 (4.6%)
Behavioral therapy/counseling	52 (59.8%)
Others	1 (1.2%)
None	5 (5.7%)

ADHD, attention deficit hyperactivity disorder; NF1, neurofibromatosis-1; TTM, trichotillomania; SD, standard deviation.

and hair loss (*n* = 11, 12.8%); pulling hair and eating hair (*n* = 10, 11.6%); and pulling hair, hair loss, and eating hair (*n* = 1, 1.2%) (shown in Table 3).

Location of TTM in the 87 subjects included scalp (*n* = 55, 64.0%); eyebrows (*n* = 5, 5.8%); eyelashes (*n* = 11,

12.8%); body hair (*n* = 1, 1.2%); scalp and eyelashes (*n* = 2, 2.3%); eyebrows and eyelashes (*n* = 8, 9.3%); scalp, eyebrows, and eyelashes (*n* = 2, 2.3%); and eyebrows and body hair (*n* = 2, 2.3%) (shown in Table 3).

Treatment options in the 87 subjects included education (*n* = 25, 28.7%), medication (*n* = 4, 4.6%), behavioral therapy/counseling (*n* = 52, 59.8%), others (*n* = 1, 1.2%), and none (*n* = 5, 5.7%) (shown in Table 3). Medications that were prescribed by behavioral health specialists include atomoxetine (*n* = 1), guanfacine (*n* = 1), lisdexamfetamine (*n* = 1), and fluoxetine (*n* = 1).

Discussion/Conclusion

In this study, we present data on the clinical and epidemiologic features of TTM in a sample of children at an urban tertiary care center. Most subjects in our cohort were females (65%), keeping with the existing literature [5,6]. The average age at initial diagnosis was 7.93. This is contrary to current studies which have reported ages of 10–13 years at initial TTM diagnosis [5]. Our conflicting finding could be due to the fact that parents/guardians were seeking care at a children's hospital rather than a general practice or hospital.

Previous text has suggested that patients initially present for hair loss at dermatology [9]. However, most of our patients were treated by behavioral health at initial presentation (63.5%). Since patients had more psychiatric comorbidities (62.8%) than skin disorders (23.4%), seeking care from behavioral health might have been the most timely and cost-efficient route. Almost half had a family history of psychiatric comorbidities (47.4%), with only about a quarter with a family history of skin comorbidities (27.0%). With over half of our patients having psychiatric comorbidities themselves, it speaks to the possible interplay and effects of this disease on other psychological disorders [8].

The most common locations of TTM were consistent with previous studies, the scalp (70.6%) followed by the eyebrows and eyelashes in conjunction (8.8%) [3]. The most common chief complaint was pulling hair alone (56.6%), emphasizing the compulsive hair pulling nature of TTM. There were 17 total trichophagia cases (*n* = 1 just eating hair; *n* = 16 combination of trichophagia in conjunction with another chief complaint). This is far greater than the 2 trichophagia cases found in a study done in Croatia [11]. Of the 17 trichophagia cases, 3 female patients had trichobezoars found. Cases of trichobezoars are most commonly reported in females [12]. Those families

that note trichophagia in their children should be aware of the accompanying complications such as abdominal and epigastric pain, ulcerations, gastric mucosal erosion, and, in severe cases, death [13].

Most families/patients proceeded with cognitive behavioral therapy (CBTI)/counseling (48.2%). This could be because most presented to behavioral health for evaluation. The next common treatment options were education (30.7%) and then medication (15.3%). There are no pharmacologic cures for TTM; thus, the prescribing rate of medications for TTM is fairly low [14]. Currently, the first-line therapeutic option is habit reversal therapy, suggesting CBTI as a safe and effective therapy [15]. However, large clinical studies must be conducted to determine definitive outcomes in treatment for children with TTM.

Characteristics between patients evaluated by dermatology and behavioral health varied. In dermatology, over a third had a skin disorder (38.0%), which is more than the total group percentage that had a skin disorder (23.4%). In behavioral health, only 14.9% had a skin disorder, while almost three-quarters (72.4%) had a psychiatric comorbidity. Thus, patients may be more likely to present to a specialist that is familiar with their additional health conditions. Hair loss (32.0%) was the most common chief complaint in dermatology, while pulling hair (72.1%) was the common chief complaint in behavioral health. Only 2% of those presenting to behavioral health complained about hair loss alone. This is expected as hair loss is a common disorder treated by pediatric dermatologists [16]. Many families that present to dermatology may be unaware of the compulsive hair pulling and seek treatment for the apparent hair loss instead [17]. On the other hand, families that present to behavioral health are more likely aware of the compulsive hair pulling and seek treatment to decrease this repetitive behavior [18]. In terms of treatment, education (34.0%) and medication (34.0%) were most common in dermatology, while behavioral therapy (59.8%) was the most common in behavioral health. Only 4.6% of those evaluated by behavioral health were recommended medications. Perhaps practicing dermatologists are more likely to address hair loss concerns by prescribing medications for TTM.

This is the first study to look at TTM in those assessed by different fields of medicine, dermatology, and behavioral health. Our results highlight the complex and multifactorial nature of TTM. There were clear differences between the total group findings and findings from those

evaluated by dermatology or behavioral health. Young patients are severely affected by TTM, both physically and emotionally; thus, early diagnosis and intervention is key to prevent further exacerbation. The field of psychodermatology is already receiving attention and growing due to the challenges of treating psychological diseases in dermatology [19]. In fact, 12 patients treated in a psychodermatology service for various skin disorders noted improvement in their conditions [20]. Since habit reversal therapy is the most effective therapeutic option to date, dermatologists are recommended to create partnerships with experienced community mental health providers [9].

Although TTM is a psychiatric diagnosis, our study confirms that many see it as a dermatological issue as well because of associated hair loss. With over half of our patients affected by other psychiatric disorders, an interconnection between dermatology and behavioral therapy experts is highly encouraged. Both professionals can offer varying expertise to create a multidisciplinary management plan that is personalized to the individual affected by TTM. These important clinical findings increase the need for supplementary research on the pathology and management of TTM in children.

Limitations

Our study limitations include its retrospective design and small sample size. To better identify characteristics of the disease and effect and severity of comorbidities, prospective longitudinal cross-sectional studies with a larger sample are needed.

Statement of Ethics

This study was approved and granted exemption by the Children's Hospital of Philadelphia Institutional Review Board (IRB 18-015808).

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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The authors did not receive any funding.

Author Contributions

Dr. Castelo and Ms. Rangu had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Dr. Castelo was responsible for study concept and design, critical revision of the manuscript for

important intellectual content, and study supervision. Rangu performed statistical/data analysis. Rangu and Castelo were involved in acquisition, analysis, and interpretation of data and drafting of the manuscript and provided administrative, technical, or material support.

References

- 1 Hallopeau M. Alopecie par grattage (trichomanie ou trichotillomanie). *Ann Dermatol Syphil.* 1889;10:440–1.
- 2 Substance Abuse and Mental Health Services Administration. Impact of the DSM-IV to DSM-5 changes on the National Survey on Drug Use and Health [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration (US) [cited 2016 June]. Table 3.27, DSM-IV to DSM-5 Trichotillomania (Hair-Pulling Disorder) Comparison. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK519704/table/ch3.t27/>
- 3 O'Sullivan RL, Keuthen NJ, Christenson GA. Trichotillomania: behavioral symptom or clinical syndrome? *Am J Psychiatry.* 1997; 154:1442–9.
- 4 Sperling LC, Mezebish DS. Hair diseases. *Med Clin North Am.* 1998;82(5):1155–69.
- 5 Ricketts EJ, Snorrason I, Kircanski K, Alexander JR, Stiede JT, Thamrin H, et al. A latent profile analysis of age of onset in trichotillomania. *Ann Clin Psychiatry.* 2019 Aug;31(3): 169–78.
- 6 Christenson GA, Pyle RL, Mitchell JE. Estimated lifetime prevalence of trichotillomania in college students. *J Clin Psychiatry.* 1991; 52(10):415–7.
- 7 Bouwer C, Stein DJ. Trichobezoars in trichotillomania: case report and literature overview. *Psychosom Med.* 1998;60(5):658–60.
- 8 Harrison JP, Franklin ME. Pediatric trichotillomania. *Curr Psychiatry Rep.* 2012;14(3): 188–96.
- 9 Henkel ED, Jaquez SD, Diaz LZ. Pediatric trichotillomania: review of management. *Pediatr Dermatol.* 2019 Nov;36(6):803–7.
- 10 Woods DW, Flessner CA, Franklin ME, Keuthen NJ, Goodwin RD, Stein DJ, et al. The trichotillomania impact project (TIP): exploring phenomenology, functional impairment, and treatment utilization. *J Clin Psychiatry.* 2006;67(12):1877–88.
- 11 Klobucar A, Folnegovic-Smalc V, Folnegovic-Smalc V, Kocijan-Hercigonja D, Sovic S, Gulic L. Clinical characteristics and comorbidity of pediatric trichotillomania: the study of 38 cases in Croatia. *Psychiat Danub.* 2018; 30(1):79–84.
- 12 Antunes H, Barroso C, Faria C, Correia-Pinto J. Images in paediatrics: Rapunzel syndrome: the pathway for a prompt diagnosis. *Arch Dis Child.* 2020 Mar;105(3):298.
- 13 Kinoo SM, Singh B. Gastric trichobezoar: an enduring intrigue. *Case Rep Gastrointest Med.* 2012;2012:136963.
- 14 Farhat LC, Olfson E, Levine JLS, Li F, Franklin ME, Lee HJ, et al. Measuring treatment response in pediatric trichotillomania: a meta-analysis of clinical trials. *J Child Adolesc Psychopharmacol.* 2019 Dec 2;30(5):306–15.
- 15 Association for Behavioral and Cognitive Therapies [Internet]. ABCT Trichotillomania Fact Sheet [cited 2020]. Available from <http://www.abct.org/docs/factsheets/TRICHOTILLOMANIA.pdf>.
- 16 Castelo-Soccio L, McMahon P. Pediatric dermatology. *J Clin Aesthet Dermatol.* 2017 Mar; 10(3):S8–15.
- 17 Chandran NS, Novak J, Iorizzo M, Grimalt R, Oranje AP. Trichotillomania in children. *Skin Appendage Disord.* 2015;1(1):18–24.
- 18 Flessner CA. Cognitive-behavioral therapy for childhood repetitive behavior disorders: tic disorders and trichotillomania. *Child Adolesc Psychiatr Clin N Am.* 2011;20(2):319–28.
- 19 Tracey EH. Challenges of treating primary psychiatric disease in dermatology. *Cutis.* 2019 Aug;104(2):E12–14.
- 20 Carr JM, Mortimer H, Martin K, Kaur M, Goulding JMR. A retrospective review of 12 patients with trichotillomania treated in a psychodermatology service. *Clin Exp Dermatol.* 2019 Aug;44(6):658–60.