

Pediatric somatization in the emergency department: assessing missed opportunities for early management

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CLINICIAN'S CAPSULE

What is known about the topic?

Somatization is the expression of emotional distress as physical symptoms not fully explained by organic pathology and may lead to emergency department (ED) visits.

What did this study ask?

What is the prevalence of unidentified somatization in a Canadian pediatric ED?

What did this study find?

A considerable proportion of visits were classified as involving either a probable (3.33%) or possible (13.33%) somatizing component.

Why does this study matter to clinicians?

Higher clinical suspicion toward possible somatization in the ED may improve acute management of somatizing patients.

Results: Approximately 3.33% (n = 5) of youth displayed probable somatization, and an additional 13.33% (n = 20) possibly experienced a somatizing component but require additional psychosocial and visit documentation to be certain. Longer symptom duration and multiple negative diagnostic tests were associated with a higher likelihood of either probable or possible somatization.

Conclusions: A considerable proportion of non-mental health-related visits may involve a somatizing component, indicating the burden of mental health concerns on the ED may be underestimated. A higher index of suspicion for the possibility of somatization may support clinicians in managing somatizing patients.

RÉSUMÉ

Contexte: La somatisation est un phénomène courant, qui peut grandement perturber la santé et le fonctionnement des jeunes. Toutefois, on ne connaît pas très bien, à l'heure actuelle, le fardeau de la somatisation dans les milieux de soins actifs en pédiatrie; si on en avait une meilleure idée, cela pourrait aider les cliniciens à surmonter les difficultés que pose le traitement efficace des patients touchés. L'étude visait donc à estimer la prévalence de la somatisation dans un service des urgences (SU) pédiatriques.

Méthode: Il s'agit d'une étude transversale, rétrospective, portant sur des consultations pour des troubles ne nécessitant pas des soins de toute urgence et non en lien avec la santé mentale (n = 150), faites entre juillet 2016 et août 2017, dans un SU pédiatriques de soins quaternaires. Une collecte de données démographiques et de renseignements d'ordre clinique a été réalisée à l'aide d'un examen des dossiers médicaux, puis soumise au jugement de deux cliniciens afin qu'ils déterminent si, pour chacune des consultations, il y avait un élément «probable», «possible (incertain)» ou «peu probable» de somatisation.

Résultats: Dans environ 3,33 % des cas (n = 5), il y avait une somatisation probable et, dans 13,33 % de cas additionnels

ABSTRACT

Objective: Somatization is a common phenomenon that can severely complicate youths' functioning and health. The burden of somatization on pediatric acute care settings is currently unclear; better understanding it may address challenges clinicians experience in effectively caring for somatizing patients. In this study, we estimate the prevalence of somatization in a pediatric emergency department (ED).

Methods: We conducted a retrospective cross-sectional study of visits for non-critical, non-mental health-related concerns (n = 150) to a quaternary-level pediatric ED between July 2016 and August 2017. Demographic and clinical visit details were collected through chart review and used by two reviewing clinicians to classify whether each visit had a "probable," "unclear" (possible), or "unlikely" somatizing component.

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($n = 20$), il y avait une somatisation possible mais, pour s'en assurer, il faudrait consulter d'autres documents sur l'état psychosocial et les consultations ultérieures. La présence prolongée de symptômes et l'accumulation d'exams de diagnostic négatifs étaient associées à une probabilité accrue de somatisation probable ou possible.

Conclusion: Une proportion importante de consultations pour des troubles non en lien avec la santé mentale pourrait

comporter un élément de somatisation, ce qui autorise à penser que le fardeau des troubles mentaux au SU pourrait être sous-estimé. Ainsi, une vigilance accrue devant de possibles signes de somatisation pourrait aider les cliniciens à traiter les personnes affectées.

Keywords: Child and adolescent, emergency department, medically unexplained symptoms, somatization

INTRODUCTION

Somatization is the expression of psychological distress as unintentionally produced physical symptoms not fully explained by identifiable organic pathology.¹ Prevalent somatizing complaints include headaches, pain (e.g., abdominal, chest), and dizziness.^{2–4} Although common, somatization becomes clinically concerning when it interferes with health and functioning or presents challenges to either the patient or clinician's understanding of the condition.⁵ Somatization prevalence increases throughout adolescence,⁶ particularly among females, where it has been reported to increase 6% pre-puberty to 17% post-puberty.⁷ While only 1.1–2.7% of youth meet diagnostic criteria for a somatization disorder,^{8,9} population-level studies estimate that up to 50% of children have experienced some degree of somatization in their lifetime.^{8,10}

In primary and specialty care settings, nearly 20% and 50% of pediatric visits involve some degree of somatization, respectively.¹¹ In the emergency department (ED), increasing mental health-related visits and evidence of physical complaints with unaddressed mental health issues,¹² suggests a number of visits may involve somatization. In the adult population, ED somatization prevalence has been estimated at approximately 13.4% of all visits.¹³ Similarly, a pediatric ED study of 713 visits for a complaint of pain found that 13.4% experienced functional pain, while 8.6% fulfilled diagnostic criteria for a somatization disorder.¹⁴ Further epidemiological studies are needed to consider a wider range of somatic symptoms and incorporate standardized approaches to assessing somatization. Quantifying and qualifying the ED's hidden somatic burden would support development of appropriate management protocols and clinician training, to facilitate early identification and intervention and avoid misattribution with organic conditions.¹⁵ The primary aim of this study is to estimate the potential

hidden burden of somatization in the pediatric ED. Secondly, we describe patient characteristics associated with clinicians' assessment of somatization status.

METHODS

Study design and population

We conducted a retrospective cross-sectional study of visit to the BC Children's Hospital (BCCH) ED, between July 2016 and August 2017. BCCH is a quaternary referral ED seeing over 50,000 visits yearly, with a wide range of clinical and sociodemographic presentations. We included ED visits by youth age 5–16 years. We excluded ED visits with (a) critical clinical intervention needs on arrival (e.g., airway/ventilation/hemodynamic support); (b) self-identified mental health issues (not physical symptoms); (c) somatization-specific mental health concerns, inconsistent with our aim to measure hidden burden; and (d) completely illegible charting or no documentation. The UBC Women's and Children's Research Ethics Board reviewed and approved this study.

Data sources and outcome measures

Based on our power analysis (Supplemental File 1), we proportionally sampled (for sex) 150 unique ED visits (one visit per patient), from a list of 300 randomly generated visits.

Existing somatization assessment instruments are typically geared toward prospectively ascertaining somatic symptoms and patient experience assessment and show variable diagnostic stringency.¹⁶ Given our retrospective design and holistic somatization definition,^{17,18} we developed a three-category approach for study clinicians to ascertain somatization status. Visits could be

categorized as involving a “probable,” “unclear,” or “unlikely” component of somatization (see Supplemental File 2). Our primary outcome was to estimate the proportion of ED visits with a probable somatizing component. Secondary outcomes included measuring clinician agreement on somatization assessment and identifying patient and visit characteristics associated with somatization category assignment.

Study procedures

Data abstraction and verification

We conducted a retrospective chart review for all sampled visits using established guidelines.¹⁹ A non-outcome assessing investigator trained on ED terminology, reviewed visits for exclusion criteria and extracted data onto a prespecified online data collection form. The study team reviewed 10% of charts for extraction accuracy. Details (e.g., history, complaint, investigations/tests) on any health care visits made before the sampled visit, but within the study period, were summarized as past medical history.

Outcome assessment

A pediatric psychiatry fellow and an adolescent medicine specialist (pediatrician) independently reviewed visit information and completed clinical guiding questions (Supplemental File 3) to assess the likelihood of a somatizing component. A third clinician (pediatric emergency physician) was consulted when assessors disagreed. Outcome assignment was based on at least two clinician’s agreement, or the most conservative (i.e., assigning “unlikely” over “unclear” or “unclear” over “probable” somatization) if all clinicians disagreed. Clinical reviewers were not involved in the data collection and covariable classification.

Analytic approach

We report categorical variables as proportions with 95% confidence intervals and continuous variables as means with standard deviations or medians with interquartile ranges. Gwet’s AC coefficient (AC_1) was used to measure outcome agreement between clinician assessors. We conducted Fisher’s exact tests and one-way analysis of variance for significance testing of patient and visit characteristic distributions by somatization status. Median household income quartile was derived from mapping

participants’ forward sortation area (first three postal code digits) with 2016 Statistics Canada Census Profile data.²⁰ Multivariable logistic regression was performed to identify factors significantly associated with visits classified as having probable or possible somatization (Supplemental File 4). McFadden’s pseudo-R squared coefficient was used to assess goodness-of-fit, values ranging from 0.2 to 0.4 suggest good model fit.²¹ Variance inflation factors were used to measure multicollinearity, values below 2.5 indicate low collinearity.²² Analyses were conducted using STATA 15.0 (StataCorp, College Station, TX).

RESULTS

To meet our sample size of 150 cases, we reviewed and applied inclusion/exclusion criteria to 193 charts, details on the 43 excluded charts are offered in [Figure 1](#). Included youth were on average 10.0 years old ($SD = 3.4$ years) with 73.7% coming from middle income residential communities. During the ED visit, 22% of patients had at least one diagnostic test with no abnormalities (e.g., bloodwork, radiograph), 20% had symptoms lasting 1 week or longer. Nearly one-third of patients made a prior health care visit for the same or similar complaint, and 3.3% were referred to mental health services upon disposition from the ED (independent from somatization categorization). Patient and visit characteristics distributions are reported in [Table 1](#).

There was high agreement in assessing somatization ($AC_1 = 0.8$, 95% confidence interval [CI], 0.8–0.9). A third assessor was consulted on 14% ($n = 21$) of cases where primary assessors disagreed. Clinicians assessed 3.3% (95% CI, 0.5, 6.2) as probably having a somatization component to their presentation; 13.3% as possible but unclear (95% CI, 8.0–18.8), requiring additional psychosocial or other visit documentation to be certain; and 83.3% (95% CI, 77.4–89.3) of visits as unlikely involving somatization ([Table 1](#)).

Experiencing symptoms longer than 1 month ($OR = 10.5$; 95% CI, 2.4–46.5) or receiving multiple negative diagnostic tests ($OR = 20.9$; 95% CI, 5.1–86.4) significantly increases the odds of “probable” or “possible” somatization case categorization, adjusting for age, sex, and number of previous health visits (Supplemental File 4). Our regression model displays no lack-of-fit evidence with a McFadden pseudo-R squared of 0.23 and minimal multicollinearity, with variance inflation factors all below 1.5.

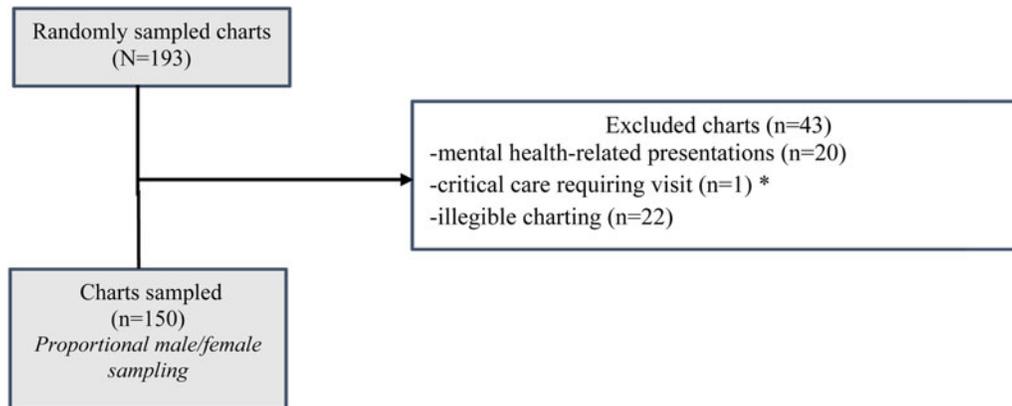


Figure 1. Flow chart applying inclusion/exclusion criteria to our random sample of ED chart sample. *We only had one critical care-requiring exclusion as this criterion had already been applied to our randomly generated health record list, from which charts were pulled.

Table 1. Patient and visit characteristics summarized by somatization status (unlikely, unclear, probable)

Characteristics	Total (n = 150) (%)	Somatization categorization			p-Value ^a
		Unlikely n = 125 (83.3%)	Unclear n = 20 (13.3%)	Probable n = 5 (3.3%)	
Age, average (SD)	10.0 (3.4)	9.9 (3.4)	10.8 (3.4)	11.0 (3.8)	
Sex, female	50.0	50.4	50.0	40.0	
CTAS					
2	13.3	14.4	10.0	–	
3	35.3	32.0	45.0	80.0	
4	48.0	50.4	40.0	20.0	
5	3.3	3.2	5.0	–	
Length of stay (hours), median (IQR)	3.3 (2.6)	3.1 (2.6)	3.6 (2.1)	2.4 (2.7)	
Median household income (\$)					
≤ \$39,999	0.7	0.8	–	–	
40,000 - \$69,999	73.7	74.4	60.0	80.0	
70,000–99,999	26.7	24.8	40.0	20.0	
Chief complaint					
Injury	25.3	30.4	–	–	*
Medical	74.7	69.6	100.0	100.0	
Number of diagnostic tests					
0	78.0	84.0	50.0	40.0	*
1	13.3	12.0	20.0	20.0	
>1	8.7	4.0	30.0	40.0	
Symptom duration					
< 1-week	80.0	84.0	70.0	20.0	*
≥ 1-week & ≤ 1-month	11.3	10.4	15.0	20.0	
> 1-month	8.7	5.6	15.0	60.0	
Disposition outcome (admitted)	8.7	8.8	–	20.0	
Prior health care visit (yes)	30.0	20.0	85.0	60.0	
Mental health referral (yes)	3.3	1.6	–	60.0	*

^a p-Value computed from a Fisher's exact test and one-way analysis of variance for categorical and numeric variables respectively. p-Value > 0.05 (not shown); <0.05 (*). CTAS = Canadian Triage Acuity Scale; IQR = interquartile range.

DISCUSSION

We estimated that 3.3% of non-critical or mental health-related visits made to a Canadian quaternary-level pediatric ED probably involved a component of somatization, and an additional 13.33% may possibly involve somatization but require more comprehensive documentation to be certain. Longer symptom duration and multiple negative diagnostic tests were significantly associated with study clinicians' categorization of a visit as involving probable or possible (but unclear) somatization.

Current estimates of mental health-related ED visits range up to 3.4%.²³ While EDs often lack sufficient resources and training to manage these complaints, we found that a similar proportion of youth may present with unidentified mental health-related conditions in the form of somatization (3.3%). This potential hidden mental health burden presents with its own challenges in the ED, including relatively higher rates of health service usage and iatrogenic harm to patients from unnecessary diagnostic testing or inappropriate treatment plans.²⁴

In their study, Cozzi et al. found 8.6% of pain-related pediatric ED visits satisfied diagnostic criteria for somatic symptom disorder, and 13.4% were classified as functional pain.¹⁴ Pain is a common somatic symptom, thus ascertaining somatization exclusively from youth with pain-specific complaints may explain why the estimates of Cozzi et al. appear considerably larger than our study's estimates. In the adult population, ED somatization burden has been estimated at 13.4% and 18.6% after excluding patients requiring critical care.¹³ This latter estimate aligns with our combined probable or possible somatization prevalence and suggests that our similar exclusion of critical care visits may be inflating our estimate.

Our estimates of somatization are lower than those seen among pediatric primary (17%) and specialty (47%) care settings.¹¹ The continuity of care and relatively longer patient-clinician interaction in primary care may allow for greater clinician attentiveness toward potential somatic symptoms compared to emergency settings where these symptoms may be overly medicalized.¹⁵ The higher proportion in primary care could also reflect visits that families did not perceive as warranting emergency care. Contextualizing our findings within existing somatization literature is limited by the paucity of research on somatization in acute care and prevalence variability across existing epidemiological studies of community and clinical pediatric samples.

Differing assessment methodologies (e.g., self- and proxy-reporting, clinical interviews), case definitions, and symptoms of interest (e.g., reoccurring abdominal pain, headaches) may partly account for prevalence estimate variability across studies.

We found prolonged symptom duration was significantly associated with "probable" or "possible" somatization classification. It is possible that somatic symptoms may persist as a consequence of chronic exposure to psychosocial stressors, or treatment plans that fail to recognize underlying somatization; however, longitudinal investigations with larger sample sizes are necessary to elucidate this relationship. Multiple negative diagnostic tests were also associated with "probable" or "possible" categorization. Diagnosing somatization by exclusion is a common medical practice, which may arise from clinicians' uncertainty managing etiologically ambiguous symptoms and their fear of missing serious organic conditions.^{25,26} However, exclusion diagnosis and the need for excessive and sometimes invasive diagnostic testing to rule-out organic pathology can result in iatrogenic complications that exacerbates somatization.²⁷ Rule-out approaches can also delay diagnosis and treatment and leave patients feeling dismissed of their symptom experience, promoting further medical test/procedure seeking behaviour.^{15,28} Recent diagnostic criteria (DSM-V, ICD-11) operationalizes somatization as a positive diagnosis.²⁹ Guidelines suggest collaborative and simultaneous medical and psychiatric assessment, with thorough history-taking, physical examination, and prudent testing to inform early somatization diagnosis (or differential diagnosis) and discussions with families.³⁰

Limitations of this study included its data source; ED records may be incomplete and psychosocial and visit documentation can be inadequate,³¹ potentially underestimating the prevalence of somatization identified in this retrospective review. Addressing these challenges, a prospective study is under way to elaborate further on our understanding of pediatric somatization burden and evaluate the acceptability of introducing somatizing youth and families to psychoeducational interventions in the ED.

CONCLUSION

The pediatric burden of somatization in physical acute care presentations may be comparable to the proportion

of identified mental health-related visits. Given these patients' complex multidisciplinary care needs, showing a higher index of suspicion toward the possibility of somatization, particularly in visits with longstanding symptomatology or a series of negative investigations, would support ED clinicians with acute management and disposition planning, and allow earlier intervention.

Supplemental material: The supplemental material for this article can be found at <https://doi.org/10.1017/cem.2019.477>.

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