

ORIGINAL ARTICLE

# The validation of the Western Canada Waiting List Children's Mental Health-Priority Criteria Score Instrument: 2002 – 2015 results

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## ABSTRACT

**Objective:** To assess the validity of the Western Canada Waiting List Children's Mental Health-Priority Criteria Score (WCWL-CMH-PCS) Instrument.

**Methods:** The WCWL-CMH-PCS Instrument was developed in order to prioritize the delivery of child and youth mental health (CYMH) services through standardized measures of urgency. We draw on two data sets describing the PCS scores among patients who have sought CYMH care. The first data set was collected during the first phase of pilot testing for the WCWL-CMH-PCS Instrument (from January – June 2000), during which trained intake workers applied the PCS items to 817 patients aged 5-18 years throughout the three western provinces. The second data set comprises the application of a refined version of the WCWL-CMH-PCS Instrument to 22,013 patients aged 0-19 throughout the Calgary Health Region from 2002 – 2015. For our analysis, we compare the two samples in order to determine the percentage of patients that correspond to specific risk categories for each priority score.

**Results:** For the overall pairwise correlation by item,  $r = 0.96$  and is statistically significant at the .05 level ( $p < .05$ ). We discovered that there are small differences in the assessments of urgency for access to specialized care, severity of symptoms, family and social factors, and the expected results of care between the two samples. The absolute difference per item is not greater than 12.0%.

**Conclusions:** Overall, our results support the empirical applicability and usefulness of the WCWL-CMH-PCS Instrument within CYMH clinical settings.

**Key Words:** Children's mental health services, Prioritization, Waiting times, Waiting list management

## 1. INTRODUCTION

A common finding in psychiatric research is that the incidence of mental illness among children and adolescents has reached epidemic proportions.<sup>[1-3]</sup> According to Waddell et

al.,<sup>[4]</sup> approximately 14% of children (or 800,000) aged 4 to 17 years within Canada are affected by mental disorders that undermine their functioning. Many of these disorders first emerge or have clear onset during early childhood and/or

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adolescence including anxiety and mood disorders, neurodevelopmental disorders, such as Autism Spectrum Disorder, as well as substance use disorders and disruptive, impulsive-control, and conduct disorders.<sup>[1]</sup> Kirby and Keon<sup>[5]</sup> also underlined the importance of considering comorbidities within mental health, as pure diagnoses are often the exception rather than the rule when working with children and adolescents. Research by Kandel et al.<sup>[6]</sup> demonstrates this point by revealing that a significant percentage (76%) of adolescents who presented as suffering from substance use disorder were also experiencing a co-occurring and potentially underlying anxiety, mood or behavioural disorder. Examinations of large data-bases (i.e., n = 10,438), such as the 1999 British Child and Adolescent Mental Health Survey<sup>[7]</sup> provide clear support that comorbidities are commonplace among children with depression, anxiety, and disruptive disorders. Due in part to increased awareness among the public regarding mental health, the success of anti-stigma campaigns, increased mental health training of helping professionals, and increased ease of access to services more young people with mental disorders are being identified earlier and provided with needed services. This trend can be seen in a longitudinal study of the Alberta Health Services Calgary Zone population.<sup>[8]</sup>

### 1.1 Literature review

Timely access to appropriate and necessary care for mental health is a construct that sits at the very core of Canadian values.<sup>[9-11]</sup> This principle was codified as a central tenet of policy and practice within Changing Directions, Changing Lives: The Mental Health Strategy for Canada.<sup>[12]</sup> Mounting research has demonstrated the importance of timely intervention for children and adolescents experiencing mental illness.<sup>[13-15]</sup> Long wait times have been shown to diminish the impetus to seek treatment,<sup>[16]</sup> which subsequently increases the likelihood of initial appointment non-attendance when psychiatric care becomes available.<sup>[17]</sup> Other research has shown that diminishing waiting times for child and youth mental health (CYMH) services will alleviate the stressors experienced by caregivers,<sup>[18]</sup> minimize the likelihood of social dysfunction,<sup>[19]</sup> and decrease the risk of decompensation and suicide.<sup>[20]</sup> Despite evidence that emphasizes the importance of early intervention, Waddell et al.<sup>[1]</sup> report that less than 25% of children and adolescents within Canada who are diagnosed with a mental disorder access specialized treatment services. Overall, lengthy wait times for CYMH services have been identified as an imperative system-level barrier to accessing care.<sup>[21]</sup>

Given the pervasiveness of mental illness among children and adolescents and concerns about protracted timelines to access psychiatric care, the Canadian Psychiatric Association (CPA)<sup>[22]</sup> formally delineated wait time benchmarks. Despite

the CPA's guidelines for minimum acceptable wait times, Kowalewski et al.<sup>[23]</sup> found that 71.9% of Canadian CYMH agencies are unable to meet the benchmarks for urgent and scheduled care. Clearly, the necessity for CYMH services exceeds the existing capacity.<sup>[9]</sup> The current situation calls attention to making CYMH a social priority by enhancing current services to address issues, such as improved coordination of care,<sup>[24]</sup> developing new initiatives to overcome barriers to service, such as mental health stigma,<sup>[25]</sup> and implementing strategies to reduce wait times to create needed access to service for young people and families affected by mental disorders and mental health difficulties.<sup>[26]</sup>

### 1.2 Overview of the Western Canada Waiting List (WCWL) project

One eminent policy objective of Canadian federal and provincial governments has involved optimizing the delivery of CYMH services through maximizing the potential for equitable access to health care.<sup>[27]</sup> The WCWL partnership was initiated in November 1998 in order to enhance the fairness of the Canadian health care system and develop standardized techniques and conditions that could be universally applied for the effective administration of waiting lists for specialized care.<sup>[28]</sup> The WCWL partnership established host centres for clinical panels within five jurisdictions that experienced long waiting times within specific areas of elective health care: Vancouver (children's mental health [CMH]), Calgary (Magnetic Resource Imaging scanning), Edmonton (hip and knee replacement), Saskatoon (cataract surgery), and Winnipeg (general surgery).<sup>[29]</sup> The waiting list intervention for CMH services (for patients aged 0-18) will be examined within this paper. The WCWL project can be broadly categorized into two phases – WCWL 1 (1999 – 2001) involving the development of the Western Canada Waiting List Children's Mental Health-Priority Criteria Score (WCWL-CMH-PCS) Instrument, and WCWL 2 (2002 – 2004) involving the implementation of this instrument by primary care providers within clinical settings.<sup>[30]</sup>

During WCWL 1, an expert clinical panel (Smith et al.)<sup>[31]</sup> developed 21 PCS items for utilization as a point-count measure in order to gauge patients' clinical urgency for access to specialized CYMH care from primary care, along with the severity of their symptoms. Panelists also developed a visual analog scale of overall urgency ranging from 0 (not urgent) to 100 (extremely urgent) and instructed clinicians to provide a maximum acceptable waiting time for each patient.<sup>[32]</sup> The WCWL-CMH-PCS Instrument is intended to be completed for children after primary care clinicians have determined from an intake interview that they are eligible for treatment.<sup>[33]</sup>

Subsequently, revisions were undertaken to PCS items to account for a broader range of severity and to enhance the wording of the questions and response categories.<sup>[28]</sup> There were also revisions to the PCS weights to augment face validity and clinical sensibility.<sup>[28]</sup> Accordingly, the PCS items now comprise 17 standardized criteria that integrate the severity of mental illness, family and social factors, and the expected results of CYMH care.<sup>[31]</sup> The standardized criteria that resulted from the instrument refinement are explained in the *Child Mental Health-PCS Instrument User Manual*.<sup>[33]</sup>

Subsequently, WCWL 2 was initiated in April 2002 in order to implement and evaluate the WCWL-CMH-PCS Instrument within the Winnipeg Regional Health Authority and the Calgary Health Region.<sup>[30]</sup> Given that the implementation of the PCS instrument was in its early stages at the conclusion of WCWL 2, the panel recommended that this process be continually monitored in order to provide an evaluation of its reliability and validity and an overall assessment of its impact within clinical settings.<sup>[30]</sup> This is exemplified by the WCWL panel's demonstration of the PCS instrument's reliability in measuring urgency.<sup>[33]</sup>

The primary objective of this paper is to investigate the validity of the refined version of the WCWL-CMH-PCS Instrument. On the basis of this literature review, the following research objective will be considered: How did the application of the refined WCWL-CMH-PCS Instrument impact the PCS scores among children and adolescents awaiting mental health care within the Calgary Health Region, in comparison with the application of the original instrument to patients throughout the three western provinces? We hypothesize that there is a high level of agreement with regard to the percentage of patients who correspond to specific risk categories for each priority score.

## 2. METHODS

### 2.1 Subjects

For our analysis, we draw on two data sets describing the PCS scores among patients who sought CYMH care. For both phases of data collection, written informed consent was obtained from all patients. The first data set pertains to the work conducted by Smith et al.<sup>[31]</sup> for WCWL 1, during which PCS items for CMH care were developed. During the first phase of pilot testing (January – June 2000), trained intake workers (n = 92) applied Smith et al.'s PCS items for CYMH care to 817 patients aged 5-18 years who were considered eligible for treatment throughout British Columbia, Alberta, and Saskatchewan. Out of the 817 criteria forms which were submitted to the WCWL panel, 774 (94.74%) comprised useable data.<sup>[31]</sup> While revisions were

subsequently undertaken to the PCS items and associated weights, Smith et al.'s first phase of pilot testing provides valuable insight into the PCS scores that were assigned to children and adolescents awaiting mental health care within the three western provinces.

**Table 1.** Demographic characteristics of the Calgary health region sample

	Variable	n (%)
Gender	Male	11,422 (51.89%)
	Female	10,591 (48.11%)
	Total	22,013 (100%)
Age	< 1	72 (0.33%)
	1–6	2,130 (9.68%)
	7–12	7,480 (33.98%)
	13–18	12,331 (56.02%)
	Total	22,013 (100%)
Family composition	Biological	10,708 (64.20%)
	Single Parent	3,089 (18.52%)
	Adopted/foster home	2,883 (17.28%)
	Total	16,880 (100%)
Primary diagnosis	Adjustment disorder	5,717 (28.19%)
	ADHD*	2,754 (13.56%)
	CD/ODD#	8,481 (41.81%)
	PDD <sup>§</sup> /autism	356 (1.75%)
	Anxiety/depression	1,860 (9.17%)
	Social anxiety	628 (3.10%)
	Psychosis	487 (2.40%)
	Total	20,283 (100%)
Urgency level <sup>§</sup>	Scheduled	14,636 (66.49%)
	Urgent/emergent	7,377 (33.51%)
	Total	22,013 (100%)

\* Attention Deficit Hyperactivity Disorder; # Conduct Disorder/Oppositional Defiant Disorder; § Pervasive Developmental Disorder; § In accordance with the Canadian Psychiatric Association's<sup>[22]</sup> urgency levels for access to psychiatric care

The second data set is representative of an initiative to implement the refined WCWL-CMH-PCS Instrument within the Alberta Health Services Calgary Health Zone. Commencing in December 2001, clinicians filled out paper PCS forms for patients (aged 0-19) who were admitted to the central intake service and for whom they considered treatment to be necessary. From April 2002 onward, the PCS items have been implemented in electronic form for incoming patients. Importantly, all of the participating staff were blind to the results of this initiative until 2006, at which time the WCWL-CMH-PCS Instrument was implemented for direct use in setting priority for CMH care within clinical areas. Given that no differences have been found between the results of each point analysis, this paper pools all collected electronic data. In total, PCS forms were completed for 22,013 patients who were admitted to the central intake service between 2002 – 2015. Out of these 22,013 patients, 19,294 (87.65%) were subsequently accepted for treatment and 2,719 (12.35%) were referred elsewhere. For our analysis, we will draw on

data from this sample. The demographic characteristics of the Calgary Health Region sample are presented in Table 1.

## 2.2 Analyses

In order to investigate the implementation of the refined PCS items upon the PCS scores for children and adolescents awaiting mental health care within the Calgary Health Region, we conducted a pairwise correlation for the two samples and a frequency distribution to show the percentage of patients that correspond to each PCS item within the Calgary Health Region sample. The frequency distribution also shows the absolute difference per item between the two samples. Because the frequency distribution follows the revised PCS items, we do not report psychotic symptoms (item #3), the CGAF Scores (item #5), significant biological family history of mental illness (item #11), and prognosis without further intervention (item #16) for Smith et al.'s sample. For the WCWL 1 implementation, a frequency distribution for the percentage of patients that correspond to each PCS item can be found in Table 2 (Summary of the Criteria and Score Development for the WCWL-CMH Priority Criteria Form) within Smith et al.'s<sup>[31]</sup> paper.

## 3. RESULTS

For the overall pairwise correlation by item,  $r = 0.96$  and is statistically significant at the .05 level ( $p < .05$ ). Table 2 presents the frequency distribution of PCS scores for the Calgary Health Region sample, along with the absolute difference per item between the two samples. First, through the utilization of the refined PCS items in clinical settings throughout the Calgary Health Region the percentage of patients within moderate and severe risk categories increased for item #1 (danger to self), item #6 (internalized symptoms), item #7 (externalized/disruptive behavior), and item #10 (harmful substance use/misuse). Second, the percentage of patients within moderate and severe risk categories decreased for item #4 (global age-appropriate developmental progress), item #8 (co-morbid medical conditions), item #9 (co-morbid psychiatric conditions), item #13 (social/friendships/community functioning), item #14 (the extent of problems in the context of the home environment), and item #15 (family functioning or factors affecting the child). Third, for item #2 (danger to others) the percentage of patients within the moderate risk category decreased by 4.19%, but increased by 0.62% for the severe risk category. Fourth, for item #12 (school and/or work), the percentage of patients within the moderate risk category increased by 1.49%, but decreased by 5.31% for the severe risk category. Finally, for item #17 (degree of likely benefit with further intervention), the percentage of patients within the low, moderate, and high categories respectively increased by 4.37%, 5.28%, and 2.14%; while the percentage

of patients who were predicted by clinicians to have a very high degree of benefit decreased by 11.78%. Overall, the absolute difference per item in the frequency distribution is not greater than 12.0%, thereby demonstrating a high level of agreement.

## 4. DISCUSSION

The purpose of this research has been to examine the influence of the refined WCWL-CMH-PCS Instrument upon the PCS scores of children and adolescents awaiting mental health care within the Calgary Health Region, in comparison with the application of the original instrument to patients throughout the three western provinces. This investigation reveals that there is a high level of agreement with regard to the percentage of patients who correspond to specific risk categories for each priority score. Furthermore, through this investigation we discover that there are small differences in the assessments of patients' clinical urgency for access to specialized CYMH care from primary care, severity of mental illness, family and social factors, and the expected results of CYMH care between the two samples. Overall, we found that the implementation of the refined PCS items in clinical settings throughout the Calgary Health Region is very acceptable, in a similar manner to the initial implementation of the original WCWL-CMH-PCS Instrument throughout the three western provinces.

Notably, there are several other cases involving the implementation of the WCWL-CMH-PCS Instrument that demonstrate its validity and continued empirical applicability within CYMH clinical settings. Given the pervasiveness of mental illness among children and adolescents and the established importance of timely intervention, Alberta Health and Wellness<sup>[34]</sup> instigated the three-year CMH Plan for Alberta in April 2008. The primary purposes of this initiative were to diminish wait times, improve accessibility for CYMH care, and promote targeted interventions in order to optimize the mental health outcomes of vulnerable children. In order to assist with the objective of meeting the CPA's<sup>[22]</sup> wait time benchmarks, Alberta Health and Wellness<sup>[34]</sup> recommended that the WCWL-CMH-PCS Instrument be implemented throughout the province at the outset of this initiative (from 2008 – 2009). Additionally, the CMH Plan for Alberta<sup>[34]</sup> has offered mental health first aid training to elementary and high school teachers since 2009, with the objectives of enhancing mental health literacy and providing guidance for the referral of students to mental health professionals. As the implementation of the CMH Plan for Alberta approached its culmination, Alberta Health and Wellness<sup>[35]</sup> reported that 78% of children and adolescents who were classified in accordance with the scheduled need for care were provided

with specialized psychiatric care within the CPA’s guideline of four weeks after requesting assistance. In addition to the CMH Plan for Alberta, the WCWL-CMH-PCS Instrument was implemented within clinical settings throughout London,

Ontario in 2014. While the London, Ontario implementation is still ongoing, this study<sup>[36]</sup> is representative of the continued interest of clinicians in utilizing the PCS items for the administration of waiting lists for CMH care.

**Table 2.** Frequency Distribution of CMH-PCS

Children’s Mental Health (CMH) Priority Criteria Score (PCS) Items	Calgary Health Region n (%)	Difference <sup>ε</sup>	
Danger to self	None	10,484 (44.55%)	-9.74%
	Minor	6,578 (27.95%)	-1.79%
	Moderate	4,613 (19.60%)	6.87%
	Severe	1,856 (7.89%)	4.64%
	Total	23,531 (100%)	–
Danger to others	None	15,148 (64.37%)	7.15%
	Minor	4,756 (20.21%)	-3.59%
	Moderate	2,992 (12.71%)	-4.19%
	Severe	635 (2.70%)	0.62%
	Total	23,531 (100%)	–
Psychotic symptoms	None	21,089 (89.62%)	–
	Minor	1,502 (6.38%)	–
	Moderate	696 (2.96%)	–
	Severe	244 (1.04%)	–
	Total	23,531 (100%)	–
Global age-appropriate developmental progress	No delay and/or no risk of delay	14,827 (63.01%)	10.24%
	Minor delay and/or minor risk of delay	5,382 (22.87%)	-0.08%
	Moderate delay and/or moderate risk of delay	2,698 (11.47%)	-8.45%
	Severe delay and/or high risk of delay	624 (2.65%)	-1.70%
	Total	23,531 (100%)	–
Children’s Global Assessment of Functioning (CGAF) score	> 60	3,678 (15.63%)	–
	51–60	7,991 (33.96%)	–
	41–50	7,742 (32.90%)	–
	≤ 40	4,120 (17.51%)	–
	Total	23,531 (100%)	–
Internalized symptoms (e.g. depression, anxiety)	None	2,778 (11.81%)	-6.78%
	Minor	5,318 (22.60%)	-5.28%
	Moderate	11,544 (49.06%)	8.48%
	Severe	3,891 (16.54%)	3.58%
	Total	23,531 (100%)	–
Externalized/disruptive behavior	No problems	6,313 (26.83%)	-6.33%
	Minor problems	6,197 (26.33%)	1.79%
	Moderate problems	8,136 (34.58%)	2.60%
	Severe problems	2,885 (12.26%)	1.95%
	Total	23,531 (100%)	–
Co-morbid medical conditions	None	18,910 (80.36%)	1.52%
	Minor	2,479 (10.53%)	-1.30%
	Moderate	1,649 (7.01%)	-0.08%
	Severe	493 (2.09%)	-0.14%
	Total	23,531 (100%)	–
Co-morbid psychiatric conditions	None	14,974 (63.63%)	4.90%
	Minor	3,414 (14.51%)	6.39%
	Moderate	4,409 (18.74%)	-10.08%
	Severe	734 (3.12%)	-1.21%
	Total	23,531 (100%)	–

<sup>ε</sup> The frequency distribution shows the absolute difference per item between the WCWL 1 implementation sample and the Calgary Health Region sample. For the WCWL 1 implementation, a frequency distribution for the percentage of patients that correspond to each PCS item can be found in Table 1 (Summary of the Criteria and Score Development for the WCWL Children’s Mental Health Priority Criteria Form) within Smith *et al.*’s<sup>[31]</sup> paper

Table continued on page 6

Table 2. (continued.)

Children’s Mental Health (CMH) Priority Criteria Score (PCS) Items	Calgary Health Region n (%)	Difference †	
Harmful substance use/misuse	No problems	18,330 (77.90%)	-5.87%
	Minor problems	2,468 (10.49%)	1.92%
	Moderate problems	1,824 (7.75%)	2.08%
	Severe problems	909 (3.86%)	1.88%
	Total	23,531 (100%)	–
Significant biological family history of mental illness	Unknown	12 551 (53.34%)	–
	No	4462 (18.96%)	–
	Yes	6518 (27.70%)	–
	Total	23,531 (100%)	–
School and/or work	No problems	3,328 (14.14%)	2.93%
	Minor problems	5,364 (22.79%)	0.89%
	Moderate problems	10,322 (43.86%)	1.49%
	Severe problems	4,517 (19.20%)	-5.31%
	Total	23,531 (100%)	–
Social/friendships/community functioning	No problems	4,154 (17.65%)	6.41%
	Minor problems	6,392 (27.16%)	0.36%
	Moderate problems	9,777 (41.55%)	-4.46%
	Severe problems	3,208 (13.63%)	-2.32%
	Total	23,531 (100%)	–
Does patient have problems in the context of home?	No problems	3,404 (14.47%)	6.81%
	Minor problems	5,693 (24.19%)	0.81%
	Moderate problems	9,949 (42.28%)	-5.90%
	Severe problems	4,485 (19.06%)	-1.72%
	Total	23,531 (100%)	–
Family functioning or factors affecting child	No problems	5,073 (21.56%)	9.68%
	Minor problems	5,261 (22.36%)	-5.19%
	Moderate problems	8,392 (35.67%)	-2.84%
	Severe problems	4,805 (20.42%)	-1.64%
	Total	23,531 (100%)	–
Prognosis without further intervention	Good	640 (2.72%)	–
	Moderate	4,604 (19.57%)	–
	Guarded	9,899 (42.07%)	–
	Poor	8,388 (35.65%)	–
	Total	23,531 (100%)	–
Degree of likely benefit with further intervention	Low	2,228 (9.47%)	4.37%
	Moderate	11,124 (47.29%)	5.28%
	High	9,627 (40.93%)	2.14%
	Very high	543 (2.31%)	-11.78%
	Total	23,531 (100%)	–

† The frequency distribution shows the absolute difference per item between the WCWL 1 implementation sample and the Calgary Health Region sample. For the WCWL 1 implementation, a frequency distribution for the percentage of patients that correspond to each PCS item can be found in Table 1 (Summary of the Criteria and Score Development for the WCWL Children’s Mental Health Priority Criteria Form) within Smith et al.’s<sup>[31]</sup> paper

Despite the numerous successes of the WCWL-CMH-PCS Instrument within clinical settings, there are several implementation limitations that have been recognized within the Alberta Health Services Calgary Health Zone. First, while PCS item #1 (danger to self) was originally intended to measure the propensity of suicidal ideation among patients,<sup>[30]</sup> some children were considered by clinicians to demonstrate moderate and severe danger to themselves in the absence of suicidal ideation. This phenomenon is exemplified by children who exhibited behavioral problems and poor impulse

control (such as running out into traffic), without any intention of self-harm. Second, implementation limitations were encountered for young children with eating disorders, which represented a false positive for patients who corresponded to moderate and severe risk categories for the PCS items. A final implementation limitation involved patients who received high scores from the WCWL-CMH-PCS Instrument and who chose not to receive specialized psychiatric care once it became available.

## 5. CONCLUSION

Overall, the utilization of the WCWL-CMH-PCS Instrument has been successful within several clinical settings, as demonstrated by the current study. Given the importance of the WCWL-CMH-PCS Instrument in optimizing the delivery of CYMH care and standardizing measures of urgency for CYMH care within clinical settings, it is our recommendation that a study of its predictive outcomes for patients be conducted. Accordingly, such a study would provide the context for using the WCWL-CMH-PCS Instrument as a covariate for mental health outcomes. Second, we endorse the recommendation of the WCWL project to compare patient outcomes in accordance with treatment provided under prioritized and non-prioritized circumstances. In this manner, the WCWL project's mandate of assessing the validity and reliability of the WCWL-CMH-PCS Instrument within

clinical settings would be continued. Third, we support the development of an instrument for adult mental health care for utilization by primary care providers within clinical settings. Accordingly, it is anticipated that such an instrument would prioritize the delivery of adult mental health services through standardized measures of urgency. Finally, we recommend the continuation of longitudinal studies aimed at evaluating the implementation of the WCWL-CMH-PCS Instrument within geographical areas that have not yet assessed incoming patients' urgency for care under prioritized conditions. Overall, we anticipate that the undertaking of these research suggestions would benefit the provision of CYMH services as a whole.

## CONFLICTS OF INTEREST DISCLOSURE

The authors have no potential conflicts of interest to report.

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