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Identifying mental health symptoms in children and youth in residential and in-patient care settings

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Abstract

This study demonstrates the use of the interRAI assessment instruments to examine mental health symptoms in children and adults within residential and in-patient care settings. Regardless of service setting, children exhibited more harm to self and others than adults. Children in adult in-patient beds were more likely to exhibit suicide and self-harm and less likely to exhibit harm to others compared to children in child-specific service settings. Implications related to service system improvements are discussed.

Introduction

About 20% of children and youth (hereafter referred to as children) experience mental health issues such as depression, anxiety, and attention-deficit hyperactivity disorder,[1,3-5] but only about 25% receive the treatment needed for these disorders. The stability, persistence, and adverse long-term outcomes of childhood mental illness are evident across the lifespan[6] with at least half of the adult mental health problems originating in childhood or early adolescence.[7-10] A small percentage of these children account for a sizable amount of mental healthcare spending as they require episodic, chronic, and ongoing care (G. J. Reid et al., unpublished data, 2014), including costly in-patient and residential services. These services are often received from multiple service sectors that may create barriers to integrated, care coordination if information sharing and communication are ineffective among service providers.

There is a clear need for a uniform assessment system that promotes evidence-informed clinical practice through the collection and application of comparable, high-quality data across the lifespan. Unfortunately, agency-specific assessments have been unstandardized across service settings making it difficult to compare patients from different service settings or to track longitudinal changes as an individual transition from one organization to another. In order to enhance the capacity of Canada's mental health system to provide effective children's mental health services, an integrated system of standardized mental health assessments linking hospitals, agencies, youth justice facilities, community agencies, and educational settings should be established.

The interRAI suite of assessment instruments provide scientifically sound clinical assessments for vulnerable populations of different ages receiving services in diverse care settings.[11,12] This system provides a systematic, integrated approach to early identification through standardized assessment, enhanced triaged, and access to appropriate mental health treatment.[13] InterRAI conducts extensive research to produce valid and reliable assessments suitable for international use.[12,14-18] Further, these assessments are designed to enhance communication amongst clinicians by establishing a common approach to assessment and care planning based on rigorously tested, standardized items, scales, and decision support algorithms. This approach promotes continuity of care for individuals receiving services across sectors as they grow older.[12]

This article aims to demonstrate the potential use of interRAI assessments to understand different patient populations and service sectors. Data from two of the interRAI's instruments are used to compare children and adults receiving mental health services in different settings. Although the data for children are obtained from study sample data, they provide insights into the common and divergent issues affecting children in different care settings as well age differences between children and adults with mental health needs.

Methods

Participants

This study involved samples of children from two different care settings. The first sample included children admitted to adult mental health beds in Ontario, Canada, and were compared to adults. Data from this sample were obtained from the Ontario Mental Health Reporting System (OMHRS), which was collected under the auspices of the Canadian Institute for Health Information using the interRAI Mental Health Resident Assessment Instrument–Mental Health (RAI-MH) from October 2005 to the end of May 2014. This sample included 3,947 children (1,874 males) between the ages of 10 and 17 (M = 16.13; standard deviation [SD] = 1.92) and 157,384 adults (79,967 males) older than the age of 18 years (M = 44.39; SD = 17.48).

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Both the child and the adult samples represent the full population of psychiatric hospital in-patients in the time period from which the data were extracted. A detailed description of the child sample has been reported elsewhere.[19-22]

The second sample was obtained from a pilot study of 137 clients (88 males) between 10 and 17 years of age (M = 13.04; SD = 2.06) assessed using the interRAI Child and Youth Mental Health (ChYMH) assessment[23] in selected sites providing child inpatient mental health services across Ontario, Canada, between November 2012 and November 2014. Unlike the above-mentioned sample, these are not population-level data. Nonetheless, a sample of this size is adequately large to allow statistical tests of associations. The primary constraint is that the smaller sample size may lead to under-detection of true differences between groups. The organizations participating in the pilot would generally be considered to be typical of the sector providing children's residential mental health services.

Measures

Trained assessors in the child-specific in-patient service settings administered the ChYMH, a multisource clinical assessment of mental health issues in children between 4 and 18 years of age. Assessments in adult facilities were conducted with the RAI-MH (J. P. Hirdes et al., unpublished data, 2005) as part of standard clinical practice. Both assessments are based on a semi-structured interview format to address a broad range of common mental health problems to assess key domains of functioning, physical health, social support, and service utilization. These instruments take approximately an hour to complete when conducted by trained clinical staff using all sources of information available to identify individuals' strengths, needs, preferences, and areas of risk to inform care planning. Rigorous studies have confirmed the reliability and validity of these instruments for adults,[24-28] children, and youth.[13,29,30]

Results

Bivariate analyses using chi-square test statistics were conducted to examine selected variables available in both interRAI databases for children and adults in different care settings. Data reported in Table 1 were obtained from psychiatric hospitals/units submitting data to the OMHRS. In hospitals, children had fewer admissions and were more likely to be experiencing their first admission compared to adults. Children were more likely to be admitted due to threat to self or others and less likely to be admitted for substance use problems compared to adult counterparts. Adults were less likely to engage in violent ideation, threats, and violence toward others compared to children. Children were more socially inappropriate, physically and verbally abusive, and more likely to experience a variety of traumatic life events, including emotional, sexual, and physical abuse than adults.

Table 2 shows that children receiving in-patient and residential services assessed with the ChYMH were more likely to be male and younger compared to child hospital in-patients assessed with the RAI-MH. Children assessed with the ChYMH were more likely to be admitted due to threat toward others, more likely to engage in violent ideation, threats, and violence toward others but less likely to be admitted due to substance use compared to children in hospitals. Higher levels of socially inappropriate, physically, and verbally abusive behaviour were noted in child-based facilities than in hospitals.

Despite younger age, children in child-based facilities were more likely to have multiple admissions than those in adult hospital beds. Conversely, children in adult in-patient beds were more likely to engage in a self-injurious attempt, were more likely to exhibit suicidal ideation, and were rated at higher risk of self-injury compared to children in child-specific settings.

Discussion

There is a growing realization that many childhood problems have lifelong consequences and costs for children, their family, and society. Although there has been much interest in the natural progression of psychopathology in childhood, there is limited research examining mental health symptoms and differential diagnoses across the lifespan.[7] Studies have shown that although the overall rates of disorders may be similar, the patterns of specific disorders vary with age.[31,32]

In this study, we examined the prevalence of specific mental health symptoms across samples of children and adults within residential and in-patient care settings using interRAI instruments. Child samples were at higher risk of self-injury, suicidal ideation, and recent self-harm and were rated as more violent with respect to ideation, threats, and attempts compared to the adult sample. Further, children were more physically and verbally abusive than their adult counterparts. Aggressive, defiant, and out-of-control behaviour tend to be the major reasons for referrals to children's mental health facilities and emergency departments for younger children. In child-oriented facilities, children were more likely to be admitted due to danger of hurting others than children in adult in-patient facilities. This is consistent with previous research indicating higher levels of aggression, self-harm, and interpersonal conflict are exhibited by children compared to adults.[33,34]

Children in adult in-patient beds were more likely to exhibit suicide and self-harm than children presenting in child-oriented in-patient and residential facilities. Concern over potential suicide risk likely resulted in emergent placement of children in adult beds due to issues related to personal safety. Self-harm places considerable burden on the health service system,[35] especially since 10% to 20% of children who engage in self-harm will repeat it.[36] Placing children in adult beds is likely due to a lack of availability of beds tailored to the specialized needs of children suggests that more intensive child-specific crisis services specifically designed to the developmental needs of children and their families are needed. The present results also suggest that additional child-specific beds may be required to support the unique care needs of children at risk of harm to self.[36]

Table 1. A comparison of children and adults receiving services in adult in-patient beds

	OMHRS (10-17), N = 3,947		OMHRS (18+), N = 157,384				
Variable	%	N	%	N	*df*	Chi-sq value	p value
Gender							
Female	52.5	2,072	49.2	77,374	2	17.11	.0002
Male	47.5	1,874	50.8	79,967			
Other	0	1	0	43			
Reason for admission							
Threat to self	74.8	2,953	48.4	76,131	1	1077.4	<.0001
Threat to others	21.4	843	17.9	28,142	1	31.58	<.0001
Problem with addiction/dependency	20.3	802	27.3	42,880	1	93.55	<.0001
Number of lifetime admissions							
0	71.6	2,826	52.7	82,946	2	597.88	<.0001
(1-5)	26.6	1,048	39.7	62,515			
(6+)	1.9	73	7.6	11,923			
Self-injury							
Self-injury attempt							
Never	45.8	1,808	65.6	103,167	3	1484.63	<.0001
More than 1 year ago	6.7	264	12.5	19,659			
Less than 1 year ago	14.1	555	5.6	8,727			
Past week	33.4	1,320	16.4	25,831			
Self-injury ideation past 30 days	62.3	2,459	37.5	59,038	1	1003.02	<.0001
Others express concern that person is at risk of self-injury	68	2,683	38	59,749	1	1461.95	<.0001
Violence							
Violent ideation							
Never	79	3,116	85.4	134,368	3	242.2	<.0001
More than 1 year ago	2.4	96	3.7	5,770			
Less than 1 year ago	4.4	173	2.9	4,531			
Past week	14.2	562	8.1	12,715			
Violent threats							
Never	69.7	2,750	75.2	118,364	3	146.41	<.0001
More than 1 year ago	4	156	5.8	9,080			
Less than 1 year ago	7.2	285	5.3	8,336			
Past week	19.2	756	13.7	21,604			
Violent to others							
Never	78	3,077	82	128,984	3	181.13	<.0001
More than 1 year ago	4.5	176	6.9	10,828			
Less than 1 year ago	6.7	265	4.4	6,890			
Past week	10.9	429	6.8	10,682			
Behaviours							
Verbal abuse							
Not exhibited	83.1	3,279	86.3	135,869	2	43.36	<.0001
Exhibited, not daily	13.6	538	10.4	16,352			
Exhibited, daily	3.3	130	3.3	5,163			
Physical abuse							
Not exhibited	91.6	3,616	93.6	147,260	2	26.24	<.0001
Exhibited, not daily	7.1	280	5.3	8,293			
Exhibited, daily	1.3	51	1.2	1,831			
Socially inappropriate							
Not exhibited	86.6	3,418	88.4	139,075	2	11.8	.0027
Exhibited, not daily	9.7	382	8.3	13,106			
Exhibited, daily	3.7	147	3.3	5,203			
Trauma							
Sexual abuse/assault							
Never	82.9	3,273	83.5	131,362	3	301.71	<.0001
More than 1 year ago	12.7	502	15.3	24,032			
Less than 1 year ago	3.8	149	1	1,612			
Past week	0.6	23	0.2	378			

(continued)

Table 1. (continued)

Variable	OMHRS (10-17), N = 3,947 %	N	OMHRS (18+), N = 157,384 %	N	*df*	Chi-sq value	p value
Physical abuse/assault							
Never	77.7	3,067	78.8	123,995	3	238.93	<.0001
More than 1 year ago	14.7	581	17.9	28,237			
Less than 1 year ago	5.8	230	2.4	3,755			
Past week	1.8	69	0.9	1,397			
Emotional abuse							
Never	73.5	2,901	75.5	118,747	3	275.29	<.0001
More than 1 year ago	15.7	620	19.4	30,570			
Less than 1 year ago	7.4	292	3.2	5,077			
Past week	3.4	134	1.9	2,990			
Diagnoses							
Substance abuse disorder	21.9	866	27.2	42,838	1	54.31	<.0001
Schizophrenia	19.5	768	27.2	42,789	1	116.73	<.0001
Mood disorder	56.4	2,225	54.3	85,400	1	6.91	.0086
Anxiety disorder	13.7	541	13.3	20,912	1	0.59	.4434
Eating disorder	3.3	132	1.5	2,366	1	85.61	<.0001
Intellectual disability	6.6	260	3.3	5,232	1	124.67	<.0001

Abbreviations: chi-sq, chi-square; OMHRS, Ontario Mental Health Reporting System

Table 2. A comparison of children receiving care in child-specific residential and in-patient beds compared to children in adult in-patient beds

Variable	ChYMH in-patient (10 +), N = 137 %	N	OMHRS (10-17), N = 3,947 %	N	*df*	Chi-sq value	p value
Age							
(10-12)	40.9	56	2.1	83	2	717.82	<.0001
(13-15)	44.5	61	16.7	657			
(16-17)	14.6	20	81.3	3,207			
(18+)							
Gender							
Female	35.8	49	52.5	2,072	1	14.87	.0001
Male	64.2	88	47.5	1,874			
Reason for admission							
Threat to self	74.8	101	74.8	2,953	1	0	.9997
Threat to others	81.5	110	21.4	843	1	263.67	<.0001
Problem with addiction/dependency	1.5	2	20.3	802	1	29.29	<.0001
Number of lifetime admissions							
0	45.2	61	71.6	2,826	2	44.51	<.0001
(1-5)	50.4	68	26.6	1,048			
(6+)	4.4	6	1.9	73			
Self-injury							
Self-injury attempt							
Never	51.8	71	45.8	1,808	3	56.27	<.0001
More than 1 year ago	5.8	8	6.7	264			
Less than 1 year ago	32.9	45	14.1	555			
Past week	9.5	13	33.4	1,320			
Self-injury ideation past 30 days	27.7	38	62.3	2,459	1	66.57	<.0001
Others express concern that person is at risk for self-injury	41.6	57	68	2,683	1	41.7	<.0001
Violence							
Violent ideation							
Never	67.9	93	79	3,116	3	95.75	<.0001
More than 1 year ago	0	0	2.4	96			

(continued)

Table 2. (continued)

Variable	ChYMH in-patient (10 +), N = 137		OMHRS (10-17), N = 3,947		*df*	Chi-sq value	p value
	%	N	%	N			
Less than 1 year ago	22.6	31	4.4	173			
Past week	9.5	13	14.2	562			
Violent threats							
Never	32.1	44	69.7	2,750	3	178.18	<.0001
More than 1 year ago	0.7	1	4	156			
Less than 1 year ago	36.5	50	7.2	285			
Past week	30.7	42	19.2	756			
Violent to others							
Never	51.1	70	78	3,077	3	132.01	<.0001
More than 1 year ago	3.7	5	4.5	176			
Less than 1 year ago	32.9	45	6.7	265			
Past week	12.4	17	10.9	429			
Behaviours							
Verbal abuse							
Not exhibited	13.9	19	83.1	3,279	2	653.29	<.0001
Exhibited, not daily	40.2	55	13.6	538			
Exhibited, daily	46	63	3.3	130			
Physical abuse							
Not exhibited	26.3	36	91.6	3,616	2	603.56	<.0001
Exhibited, not daily	59.1	81	7.1	280			
Exhibited, daily	14.6	20	1.3	51			
Socially inappropriate							
Not exhibited	39.4	54	86.6	3,418	2	240.17	<.0001
Exhibited, not daily	38.7	53	9.7	382			
Exhibited, daily	21.9	30	3.7	147			
Trauma							
Sexual abuse/assault							
Never	83.2	114	82.9	3,273	3	2.06	.5601
More than 1 year ago	14.6	20	12.7	502			
Less than 1 year ago	2.2	3	3.8	149			
Past week	0	0	0.6	23			
Physical abuse/assault							
Never	74.5	102	77.7	3,067	3	6.74	.0806
More than 1 year ago	21.2	29	14.7	581			
Less than 1 year ago	4.4	6	5.8	230			
Past week	0	0	1.8	69			
Emotional abuse							
Never	56.9	78	73.5	2,901	3	29.17	<.0001
More than 1 year ago	32.1	44	15.7	620			
Less than 1 year ago	9.5	13	7.4	292			
Past week	1.5	2	3.4	134			
Diagnoses							
Substance abuse disorder	7.3	10	21.9	866	1	16.85	<.0001
Schizophrenia	2.9	4	19.5	768	1	23.62	<.0001
Mood disorder	27.7	38	56.4	2,225	1	43.94	<.0001
Anxiety disorder	47.4	64	13.7	541	1	117.43	<.0001
Eating disorder	0.7	1	3.3	132			.1338[a]

Abbreviations: chi-sq, chi-square; ChYMH, Child and Youth Mental Health; OMHRS, Ontario Mental Health Reporting System
[a]Fisher's exact test was used because of chi-square is not a valid test when 25% of cells have expected counts of less than five.[2]

Regardless of service setting, these results indicate that children exhibited more extreme behaviours such as harm to self and others compared to adults. Children's mental health has been labeled the ''orphan's orphan'' of Canada's healthcare system.[4] The need for increased services across the continuum of care including early intervention services to circumvent the requirement for more intensive services later in life is clear. Substantial numbers of children require ongoing care over extended periods of time, so the development of more appropriate ways to transition youth into adult care is essential.

This has important implications for system coordination and integration, especially since 70% of adult mental health disorders begin in childhood. Educators, school personnel, and clinicians play crucial roles in the early identification of children with mental health issues. Early intervention in childhood can reduce the likelihood of future social and emotional impairment, poor academic achievement resulting in adult unemployment,[37] and increased service utilization later in life.[38,39]

The present analyses highlight insights gained from having a consistent, standardized, and psychometrically sound assessment system to identify and respond to the mental health needs of children and adults across care settings. As the use of the interRAI ChYMH grows over time, it will be possible to create large, longitudinal databases that will allow for examination of the progression of child psychopathology into adulthood. This can lead to innovative intervention strategies for children with mental health needs as well as for specific sub-populations who are unresponsive to intensive services. Such information can inform service planning and resource allocation that takes a life course perspective rather than a sector-specific, age-limited approach to mental health service provision.

Limitations

There are some limitations to this study. Only a limited number of diagnoses were examined because any child-specific diagnoses in the RAI-MH were collapsed under disorders of childhood (eg, conduct disorder and reactive attachment disorder). Additionally, unique domains that are highly impactful to children (available on the ChYMH) could not be compared with the RAI-MH (eg, school disengagement and parental psychopathology).

This is a cross-sectional study preventing conclusions about causality or longitudinal inferences about changes within individuals. Additionally, although the OMHRS data for children and adults provided population-level information, the sample for the ChYMH may not fully represent all children in child-specific settings. Additionally, the small sample size for the ChYMH may have led to some underdetection of true differences in the two child populations. With uptake of the interRAI instruments growing nationally and internationally, future research will focus on longitudinal analyses of children transitioning into adulthood, thereby utilizing the full interRAI suite and their related applications.

Conclusion and implications

Effective mental health information systems provide a comprehensive, scientifically rigorous approach to mental health assessment across the lifespan to facilitate integration between service settings.[40,41] InterRAI supports a responsive, coordinated approach to care that allows for early identification of mental health problems, improved service planning, resource allocation,[11] and application of best practice initiatives from childhood into adulthood. Its screening, triaging, and comprehensive assessment approaches function as integrated systems to support individualized care.[11] This integrated approach facilitates information sharing among clinicians, service providers, agencies, and hospitals[25] and can prevent unnecessary duplication of assessments to reduce the frustration of families navigating the mental health system.[13] It also contributes to continuity of care into adult services by assisting with transitions across service sectors over the life course.

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