

BRIEF COMMUNICATION

Relationship Between Physical Activity, Tic Severity and Quality of Life in Children with Tourette Syndrome

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Abstract

Objective: To examine the relationship between physical activity, tic severity and quality of life (QoL) in children and adolescents with persistent tic disorder and Tourette Syndrome. **Method:** Baseline data was examined from a larger randomized controlled trial (Clinicaltrials.gov NCT02153463). Physical activity was assessed via pedometers with daily step count recorded. Tic severity (assessed via Yale Global Tic Severity Scale or YGTSS) and QoL (assessed via PEDs QL 4.0) were compared between those more physically active ($\geq 12,000$ steps/day) and less physically active ($< 12,000$ steps/day). **Results:** Thirteen children participated; four had $\geq 12,000$ steps/day and nine had $< 12,000$ steps/day. The active group had a lower total tic severity ($p = 0.02$), and total YGTSS score ($p = 0.01$). The vocal tic severity score was lower in the active group ($p = 0.02$). Motor tic severity was not different amongst the two groups. For Peds QL scores, the active group performed better in physical functioning ($p = 0.01$), social functioning ($p = 0.03$), school functioning ($p = 0.02$), psychosocial functioning ($p = 0.03$) and total PEDs QL score ($p = 0.01$). **Conclusions:** Higher physical activity levels are associated with lower vocal tic severity and improved aspects of quality of life. Further research is needed to determine the utility of physical activity as therapy for tics.

Key Words: tics, Tourette Syndrome, physical activity, quality of life

Résumé

Objectif: Examiner la relation entre l'activité physique, la gravité des tics et la qualité de vie (QdV) des enfants et adolescents souffrant d'un trouble de tics persistants et du syndrome de Tourette. **Méthode:** Les données de base ont été examinées d'après un essai randomisé contrôlé plus vaste (Clinicaltrials.gov NCT02153463). L'activité physique a été évaluée par des podomètres enregistrant le compte de pas quotidien. La gravité des tics (évaluée par l'échelle globale de gravité des tics de Yale ou la YGTSS) et la QdV (évaluée par l'inventaire de la qualité de vie des jeunes adultes, PEDs QL 4.0) ont été comparées entre les enfants plus actifs physiquement ($\geq 12\ 000$ pas/jour) et les enfants moins actifs physiquement ($< 12\ 000$ pas/jour). **Résultats:** Treize enfants ont participé; 4 avaient $\geq 12\ 000$ pas/jour et 9 avaient $< 12\ 000$ pas/jour. Le groupe actif avait un total plus faible de gravité des tics ($p = 0,02$), et un score total moindre à la YGTSS ($p = 0,01$). Le score à la gravité des tics sonores était plus faible dans le groupe actif ($p = 0,02$). La gravité des tics moteurs n'était pas différente chez les 2 groupes. Pour les scores à la Peds QL, le groupe actif a eu un meilleur rendement au fonctionnement physique ($p = 0,01$), au fonctionnement social ($p = 0,03$), au fonctionnement scolaire ($p = 0,02$), au fonctionnement psychosocial ($p = 0,03$) et au score total de la PEDs QL ($p = 0,01$). **Conclusions:** Des niveaux supérieurs d'activité physique sont associés à une gravité plus faible des tics sonores et à des aspects améliorés de la qualité de vie. Il faut plus de recherche pour déterminer l'utilité de l'activité physique comme thérapie pour les tics.

Mots clés: tics, syndrome de Tourette, activité physique, qualité de vie

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Introduction

Gilles de la Tourette's syndrome (TS) is characterized by recurrent motor and vocal tics for at least one year (American Psychiatric Association, 2013) with a prevalence of 0.77% in children aged five to 18 years (Knight et al., 2012). Persistent (chronic) tic disorder (PTD) is classified as having either motor or vocal tics for over one year (American Psychiatric Association, 2013). Tics fluctuate in type, anatomical location, complexity, frequency and intensity, with peak severity occurring between ages 8-12. As such, it is during childhood and adolescence that the most significant impacts from the disease occur. Quality of life (QoL) of young people with tics is lower than that of healthy controls and tic severity predicts lower quality of life (Storch et al., 2007). Studies have shown a negative social perception toward patients with tics (Boudjouk, Woods, Miltenberger, & Long, 2000) and that tic severity is inversely related to social acceptability (Boudjouk et al., 2000). It is increasingly recognized that tic variability can be attributed to contextual factors, whether environmental or intrinsic, which can act as antecedents or consequences to tics (Conelea & Woods, 2008).

There is conflicting evidence regarding the relationship between physical activity and tics. O'Connor et al (O'Connor, Brisebois, Brault, Robillard, & Loiselle, 2003) had adults with TS keep a daily diary and found that engagement in physical activity was identified as a situation where these patients were less likely to have tics emerge. Jacome (Jacome, 1987) published a case of a patient whose tics worsened with medium distance jogging. Nixon et al (Nixon, Glazebrook, Hollis, & Jackson, 2014) showed a reduced rate of tics following an exercise session, suggesting that acute exercise may have an attenuating effect on tics. Additionally, case reports (Chang, Liu, Yu, & Lee, 2012; Wang, Kuo, & Stern, n.d.) have demonstrated improvements in TS symptomology after exercise or after a period of sustained practice of activities requiring reflexive responses. Thus, there is reason to believe that physical activity may have effects on patients with TS; the purpose of this study was to examine the relationship between physical activity level, tic severity and quality of life.

Methods

Study Design

We examined baseline data of children with TS and Persistent Tic Disorders collected from a larger pilot randomized controlled trial (Clinicaltrials.gov NCT02153463). Baseline physical activity was assessed via pedometers worn for seven days with daily step count recorded. Each participant was given a Yamax Digi-Walker SW-200 pedometer; a small, lightweight (16 grams), device that counts the number of steps taken. Daily total step count, wear times

and reasons for pedometer removal were recorded on a log sheet.

Participants

Eligible participants for the study were identified by AD, the neurologist responsible for caring for the majority of patients with tic disorders and TS at the Children's Hospital of Eastern Ontario (CHEO) in Ottawa, Canada. Inclusion criteria for participants were: a) age 8-16; b) diagnosis of TS or PTD as per DSM V (American Psychiatric Association, 2013); c) ambulatory; d) able to understand English or French; e) function at minimum Grade three level; f) able complete questionnaires; and, g) no changes to tic/psychotropic medications for four weeks prior to and for the duration of the study. Exclusion criteria were participants who: a) cannot ambulate independently; and, b) are not permitted to participate in physical education class.

Measures

A patient questionnaire was used to collect demographic information (including age, gender and family structure). Participants were assessed on baseline tic severity via the Yale Global Tic Severity Scale (YGTSS) and on quality of life via the PEDs QL 4.0. The Yale Global Tic Severity Scale (YGTSS) is a clinician rated measure that begins with the completion of a checklist of all tics present in the past week. Current motor and vocal tics are then rated on five dimensions (number, frequency, intensity, complexity, and interference; range, 0-5 each), which are summed to yield separate motor and vocal tic scores (range, 0-25) and a combined total tic score (range, 0-50). An associated impairment scale (range 0-50) assesses tic related disability during the past week. The Pediatric Quality of Life Inventory (PedsQL 4.0) is a 20-item measure that assesses QoL and also provides domain scores for physical, emotional, social and school functioning. The PedsQL has established validity and reliability for youths with and without chronic health conditions (Varni, Seid, & Rode, 1999).

Analyses

Tic severity and quality of life was compared between those more physically active (mean of $\geq 12,000$ steps/day) and less physically active ($< 12,000$ steps/day) via the Mann-Whitney U-Test. 12,000 steps per day was chosen as this number has been shown to be equivalent to 60 minutes per day of moderate to vigorous physical activity. Sixty minutes of moderate-to-vigorous physical activity is the Canadian (and international) guideline for the amount of physical activity children need to perform in order to optimize health outcomes related to physical activity (Colley, Janssen, & Tremblay, 2012).

Fisher's exact tests were performed to analyze categorical variables; linear by linear associations were performed for ordinal variables; and the Mann-Whitney U test was

performed for continuous variables. For Peds QL scores, Psychosocial Functioning Scales were generated from the average of the Emotional, Social, and School Functioning Scales; and the Total PEDs QL Scales were generated from the average of the Physical, Emotional, Social and School Functioning Scales.

The Children's Hospital of Eastern Ontario Research Ethics Board approved this research.

Results

Thirteen children (five female) participated in this study (Table 1). Participants were divided into a higher activity group (HAG) ($\geq 12,000$ steps, $N = 4$) and lower activity group (LAG) ($< 12,000$ steps, $N = 9$). Of note, the four participants in the HAG were all male. There were no significant differences amongst both groups across all demographic variables.

Table 2 details the baseline tic scores. The mean global tic severity score was 31.5 (SD: 13.1, range = 10 – 58) indicating moderate tic severity in the group as a whole. Mann-Whitney U test results showed that the vocal tic severity score was lower in the HAG (M: 1.5, SD: 2.4 in $> 12,000$ steps group vs. M: 9.2, SD: 4.3 in $< 12,000$ steps group; $p = 0.02$). Additionally, total tic severity (M: 11.8, SD: 1.7 vs. M: 21.4, SD: 6.9; $p = 0.02$), and total YGTSS score (M: 19.3, SD: 6.3 vs. M: 37.0, SD: 11.5; $p=0.01$) were lower in the HAG. Motor tic severity was not significantly different amongst the groups. Since the LAG had more students in Grade nine and higher, the analyses were repeated with high school students excluded and the association between motor tic severity score and physical activity level remained non-significant ($p=0.91$). For vocal tic severity, the association remained statistically significant ($p=0.02$), while for total tic severity score, the association was no longer significant ($p=0.06$).

Table 3 outlines the PEDs QL scores. When comparing the HAG ($> 12,000$ steps) versus the LAG ($< 12,000$ steps), the active group performed better in the physical functioning, social, school, psychosocial and total QL scores. Emotional functioning in both groups did not vary based on baseline physical activity.

Discussion

Our results show that total tic severity and total YGTSS was lower in the HAG; this finding was mainly driven by the lower vocal tic severity score. Although motor tic scores were also lower in the HAG, this result was not statistically significant. It is possible that children with vocal tics may participate less in physical activity due to the stigma associated with vocal tics, combined with the fact that physical activity often involves social interaction (i.e. team sports). Studies with medications such as aripiprazole and

guanfacine (Pringsheim et al., 2012) have shown specific improvement in vocal tics and not motor tics; however the reasons for this remain unclear. It is also possible that an insufficient sample size in our study contributed to the lack of a significant difference in motor scores.

Because causation cannot be determined in a cross-sectional study such as ours, it is unclear if patients who engage in more physical activity are those who have fewer tics, or if the physical activity itself directly causes a reduction in tics. Nixon et al have theorized three possible explanations for why tics may show improvement with exercise (Nixon et al., 2014). First, it is possible that tic reduction may occur via a transient activation of executive control circuits through exercise. Second, exercise functions as a distraction task, taking attention away from the tics, leading to tic reduction due to the execution of an alternative purposeful movement. Third, exercise may act as a competing motor response to tics.

With respect to QoL, our trends indicate that students who are physically active at baseline have better physical performance and are better able to get along with their peers. Additionally, these students also tend to perform better at school, with higher psychosocial function. Emotional functioning scores were greater in the HAG, but this result was not statistically significant. Similar to our study, previous research has shown improvements in QoL with physical activity (Bailey, 2006). It is theorized that this improvement may be due to a number of factors, including the process of actually engaging in physical activity (e.g. increased social interaction from group sports participation or time spent outdoors), improved self-esteem (e.g. positive perceptions of self) or biologic factors (increased endorphin levels as a result of the activity) (Anokye, Trueman, Green, Pavey, & Taylor, 2012).

As mentioned, limitations of our study include its cross-sectional nature, as well its small sample size, the latter of which may have contributed to the lack of a significant difference in motor tic severity between the two groups. The high proportion of female participants may make generalization of results more difficult, considering the fact that Tourette Syndrome and tics are seen more commonly in males. Our study also did not examine co-morbidities (i.e. ADHD, anxiety) and their relationship to tics and activity; examination of these relationships would be important in future studies. Despite these limitations, our results suggest the possibility of future longitudinal studies for patients with tics and Tourette Syndrome, where amounts of physical activity could be adjusted in a controlled fashion, to determine if exercise may be a viable intervention for tics.

Table 1. Demographics of study participants.

Demographic Variables	< 12,000 steps (N=9) n (%)	$\geq 12,000$ steps (N=4) n (%)	p-value*
Gender			
a) Male	4 (44.4)	4 (100.0)	0.11 ¹
b) Female	5 (55.6)	0 (0.0)	
Number of siblings [Median (min, max)]	1 (0, 4)	2 (1, 5)	0.20 ³
Number of persons in household [Median (min, max)]	4 (2, 7)	5 (4, 6)	0.24 ³
Current grade in school			0.80 ²
c) Grade 2	2 (22.2)	0 (0.0)	
d) Grade 3	2 (22.2)	1 (25.0)	
e) Grade 5	1 (11.1)	1 (25.0)	
f) Grade 6	0 (0.0)	1 (25.0)	
g) Grade 8	0 (0.0)	1 (25.0)	
h) Grade 9	2 (22.2)	0 (0.0)	
i) Grade 10	1 (11.1)	0 (0.0)	
j) Grade 11	1 (11.1)	0 (0.0)	
Does your child attend:			0.16 ²
k) All regular classes	5 (55.6)	4 (100.0)	
l) Regular classes with special help	3 (33.3)	0 (0.0)	
m) All special classes	1 (11.1)	0 (0.0)	
Primary Language spoken by primary caregiver at home			0.37 ¹
n) English	7 (77.8)	3 (75.0)	
o) French	2 (22.2)	0 (0.0)	
p) Other	0 (0.0)	1 (25.0)	
Relationship to child			0.31 ¹
q) Mother	9 (100.0)	3 (75.0)	
r) Father	0 (0.0)	1 (25.0)	
Took part in sports outside of physical education classes that involve adult coaching in the past year			0.50 ¹
s) No	3 (33.3)	0 (0.0)	
t) Yes	6 (66.7)	4 (100.0)	

*Fisher's Exact Tests were performed for the categorical variables; Linear by Linear Associations were performed for the ordinal variables; Mann-Whitney U tests were performed for continuous variables.

¹Fisher's Exact Test

²Linear by Linear Association

³Mann-Whitney U Test

Table 2. YGTSS scores and physical activity level

Variables	Mean (SD)	Median (25%, 75%)	p-value*
Total Motor Severity Score			
>12,000 steps	10.3 (3.0)	10.0 (0.5, 11.0)	0.33
< 12,000 steps	12.2 (5.9)	14.0 (8.5, 17.5)	
Total Vocal Tic Severity Score			
>12,000 steps	1.5 (2.4)	0.5 (0.0, 4.0)	0.02
< 12,000 steps	9.2 (4.3)	10.0 (7.5, 11.0)	
Total Tic Severity Score			
>12,000 steps	11.8 (1.7)	11.5 (10.3, 13.5)	0.02
< 12,000 steps	21.4 (6.9)	22.0 (15.5, 26.5)	
Total YGTSS Score			
>12,000 steps	19.3 (6.3)	21.5 (12.8, 33.5)	0.01
< 12,000 steps	37.0 (11.5)	33.0 (29.0, 47.0)	

Table 3. Peds QL scores and physical activity level

Variables	Mean (SD)	Median (25%, 75%)	p-value*
Physical Functioning Scales			
>12,000 steps	94.5 (5.3)	95.3 (89.1, 99.2)	0.01
< 12,000 steps	65.3 (14.9)	59.4 (53.1, 79.7)	
Emotional Functioning Scales			
>12,000 steps	63.8 (21.0)	67.5 (42.5, 81.3)	0.09
< 12,000 steps	43.9 (19.0)	50.0 (35.0, 57.5)	
Social Functioning Scales			
>12,000 steps	90.0 (8.2)	90.0 (82.5, 97.5)	0.03
< 12,000 steps	64.4 (18.8)	60.0 (47.5, 82.5)	
School Functioning Scales			
>12,000 steps	70.0 (12.2)	72.5 (57.5, 80)	0.02
< 12,000 steps	43.3 (22.9)	50.0 (27.5, 55.0)	
Psychosocial Functioning Scales¹			
>12,000 steps	74.6 (10.7)	77.5 (63.3, 82.9)	0.03
< 12,000 steps	50.6 (18.5)	55.0 (35.8, 65.0)	
Total PEDs QL Scales²			
>12,000 steps	81.5 (6.5)	82.6 (75.0, 87.0)	0.01
< 12,000 steps	55.7 (13.3)	55.4 (48.4, 65.2)	

*All p-values were generated from the Mann-Whitney U test. Psychosocial Functioning Scales were generated from the average of the Emotional, Social, and School Functioning Scales. Total PEDs QL Scales were generated from the average of the Physical, Emotional, Social and School Functioning Scales.

Acknowledgements/Conflicts of Interest

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BRIEF COMMUNICATION

Facilitating Effective Transitions from Hospital to Community for Children and Adolescent Mental Health Services: Overview of the Transition Support Worker Role and Function

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Abstract

Transitions between hospital and community services and from child and adolescent to adult services have been identified as a priority for improvement in the child and adolescent mental health and addictions sector across Canada and internationally. Despite widespread recognition of the issue, there is very little in the way of evidence to guide policy and programming to improve transitions. Transition support workers have been identified as a promising intervention to facilitate successful transitions, and innovative programs involving transition workers are currently operating in the Canadian mental health sector. This commentary presents two case studies of existing transition worker programs in the Greater Toronto Area that link hospital and community mental health sectors for youth ages 12-18. We discuss program characteristics, the transition worker role, recommendations to organizations considering creating a similar service, and areas for future research. The goal of this commentary is to contribute to knowledge exchange and ultimately strengthen the evidence base for the transition worker role in child and adolescent mental health services.

Key Words: transitional care, child psychiatry, adolescent psychiatry, patient transfer, mental health services

Résumé

Les transitions des services hospitaliers aux services communautaires, et des services pour enfants et adolescents aux services pour adultes ont été désignées comme étant une priorité pour améliorer le secteur de la santé mentale et des toxicomanies des enfants et des adolescents dans tout le Canada et sur la scène internationale. Malgré que cet enjeu soit largement reconnu, il y a très peu de données probantes pour guider les politiques et les programmes aptes à améliorer les transitions. Les travailleurs de soutien des transitions sont estimés constituer une intervention prometteuse pour faciliter

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des transitions réussies, et des programmes innovateurs qui emploient ces travailleurs de transition sont actuellement en activité dans le secteur canadien de la santé mentale. Ce commentaire présente deux études de cas de programmes de travailleurs de transition existants dans la région du Grand Toronto qui relient les secteurs hospitaliers et communautaires de la santé mentale pour les adolescents de 12 à 18 ans. Nous présentons les caractéristiques des programmes, le rôle des travailleurs de transition, les recommandations aux organisations qui envisagent de créer un service semblable, et les domaines de la future recherche. Ce commentaire vise à contribuer à l'échange de connaissances et finalement, à étoffer les données probantes concernant le rôle du travailleur de transition dans les services de santé mentale pour enfants et adolescents.

Mots clés: soins de transition, psychiatrie de l'enfant, psychiatrie de l'adolescent, transfert des patients, services de santé mentale

Transitions have been identified as a priority for improvement in the child and adolescent mental health and addictions sector in Ontario, across Canada and internationally (Office of the Auditor General of Ontario, 2016; Mental Health Commission of Canada, 2017; Lamb, Hall, Kelvin, & Van Beinum, 2008; Royal College of Nursing, 2013). Transitions refer to the purposeful, planned process of movement from one service to another, whether it is from child and adolescent mental health services (CAMHS) to adult mental health services (AMHS), between mental health services and other sectors or between hospital and community services (Blum et al., 1993, p. 570). Recently, the Auditor General of Ontario expressed concern over the lack of coordinated and effective transitions between mental health programs funded by the Ministry of Child and Youth Services and recommended the development of clear pathways into, within and out of mental health services for children and youth (Office of the Auditor General of Ontario, 2016). In a 2016 meeting between provincial and territorial health ministers across Canada, improving transitions of youth to adult mental health services was identified as a key area of work (Cision, 2016). The Mental Health Commission of Canada convened a nation-wide consensus conference in 2015 on the mental health of emerging adults, the result of which was a consensus statement that called for the removal of barriers to inter-agency and inter-sectoral collaboration to promote continuity of care for young adults as they transition (Mental Health Commission of Canada, 2017).

Transitions between different mental health care services and sectors are notoriously challenging owing to long wait lists, varied eligibility criteria and siloed approaches to working that don't permit for planned coordination of transitions (Hoffman, Heflinger, Athay & Davis, 2009; Singh et al., 2010; Cappelli et al., 2016). This can lead to service fragmentation and discontinuity of care, which result in deterioration of mental health and functioning (Vasiliadis, Ngamini-Ngui & Lesage, 2015; Islam et al., 2016). Although there is widespread recognition of the critical nature of this issue and calls to action by leaders in government and the non-profit sector, there is very little in the way of evidence to guide policy and programming to improve transitions. A variety of transition service models exist, however very few

have been rigorously researched or evaluated. One model that has been identified as promising in the Canadian context is the shared management model, which involves formalized collaboration between the two services, often with a transitions team and/or a specialized transition worker to guide the transition process (Vloet, Davidson & Cappelli, 2011; Davidson & Cappelli, 2011). In fact transition workers, also known as transition coordinators, key workers and link workers, are frequently recommended as a best practice in the mental health transitions literature, despite a paucity of research on the impact of this role (Care Quality Commission, 2014; Health and Social Care Advisory Service, 2006; Lamont, Harland, Atkinson, & White, 2009; Royal College of Nursing, 2013; Queensland Government Department of Health, 2015; National Institute for Health and Care Excellence, 2016; ANHS, 2015; McNamara et al., 2014; Singh et al., 2010; Voluntary Sector Support NCB, 2010). Innovative programs involving transition workers are currently operating in the Canadian mental health sector.

This brief report presents descriptions of two existing transition worker programs in the Greater Toronto Area that link hospital and community mental health sectors for youth ages 12-18, with the understanding that these programs offer an opportunity for frontline practice to inform and enrich evidence about transition workers. Although we use each program's unique title for transition workers, it is important to note that the roles are similar across programs. For a summary of program characteristics please see Table 1. The goal of this report is to describe the two programs, with the intent of contributing to knowledge exchange and ultimately strengthen the evidence base for the transition worker role in child and adolescent mental health services.

Program 1: East Metro Youth Services and Scarborough and Rouge Hospital Partnership

This transition program is a collaboration between East Metro Youth Services (EMYS) and Scarborough and Rouge Hospital – Centenary Site. The primary purpose of the program is to improve continuity of care between hospital and community services for children and youth aged 12-18 with

	EMYS & Scarborough and Rouge	Griffin Centre & NYGH	Griffin Centre & HRH
Program goals	Connect underserved youth to community services and prevent hospital readmissions	Assist youth with mental health and/or developmental challenges to transition between hospital and community	
Client profile	Multiple mental health diagnoses First hospitalization Not connected to community services	12-18yrs, Dual diagnosis and/or mental health concerns, Griffin Centre referral, high risk behaviours (self-harm, suicidality), minimal connection to community supports/services, behavioural and learning challenges	12-18yrs with some latency aged clients, Dual diagnosis and/or mental health concerns, minimal connection to community supports/services, behavioral and learning challenges, first hospitalization
Average length of time in transition program	6 months: transition to EMYS and/or other community supports	2 months: transition to Griffin centre 3-6 months: transition to adult sector	1-2 months: transition to external community mental agency, Griffin Centre or HRH Outpatient team
Transition worker Qualifications	MSW/MA in Counselling psychology with 3-5 years' experience	MSW or BSW with 2 years' experience; background in Child and Youth Work	
Transition pathways	Transition from Scarborough and Rouge inpatient unit to EMYS and/or other community services.	Transition from NYGH inpatient unit, outpatient unit, or day hospital to Griffin Centre and vice versa. Transition from NYGH to adult mental health services for youth ages 17+ years.	Transition from HRH inpatient unit, outpatient unit, or day program to Griffin Centre and vice versa. Transition from HRH and/or other mental health services, to adult mental health services, schools and other community services.
Transition worker key functions	Individual and family therapy Case management System navigation Client advocacy; psychological/ psychiatric/ trauma consult	Individual and family therapy; Case management; System navigation; Client advocacy; psychological/ psychiatric/ trauma consult	Individual and family therapy Case management System navigation Client advocacy; psychological/ psychiatric/ trauma consult

mental health and addictions challenges. It connects children and youth who have had an inpatient stay on the Child and Adolescent Psychiatric Unit with appropriate community supports upon discharge, with the objective of preventing hospital readmission and ensuring timely access to community services. The program began in 2001 following the creation of Pediatric Mental Health beds in 2001 by the Ontario Ministry of Health of Health and Long Term Care (MHLTC). It was based on the recognition that following an inpatient stay, children and youth who were not attached to community services would need timely access to these resources. The transition program is funded directly through Scarborough and Rouge Hospital and is staffed by one 0.5 FTE Transitional Support Services Therapist (TSST) who is based at EMYS. The collaboration between EMYS and Scarborough and Rouge Hospital is formalized through a

Memorandum of Agreement, which outlines the program's goals, principles of the partnership, and shared values.

Care Pathways

This program is aimed at children on the inpatient mental health unit who will need to be connected to East Metro Youth Service or other community services upon discharge. A child or youth's involvement with the transition program begins when they are still in hospital. If clinicians believe the client would benefit from the program, the inpatient social worker discusses a referral with the client and their family and then faxes it to EMYS. The initial service coordination meeting takes place in hospital between the TSST, client, family members, and inpatient team. Once the client and family members have agreed to participate and signed a release and exchange of information consent form, the

TSST conducts an initial biopsychosocial needs assessment with them, followed by goal-setting and co-creation of a treatment plan. Over the course of the service, the TSST maintains daily to weekly contact with the client and family members, providing case management, mental health interventions, and system navigation support. Once longer-term community services have been established, the TSST engages in discharge planning with the clients and family member and, when possible, ensures a warm handover to these services. A warm handover involves the TSST contacting the community agency, advocating on behalf of the client to be seen, attending the initial meeting with the client and new service provider, and remaining involved during the initial stages of the referral if necessary. Community supports for the client may include residential treatment, day treatment programs, intensive community-based counselling and walk-in services. The services that clients are connected to vary based on their needs and geographic location. While clients living within EMYS' catchment area may be connected to long-term mental health services within EMYS, the transition program also connects clients to community services across the Greater Toronto Area.

Client Profile

Scarborough and Rouge Hospital prioritizes referrals to the transition program for children and youth between the ages of 12 and 18 who are not attached to or face challenges engaging with community mental health services. Often it is their first episode of mental illness and hospitalization. The transition program accepts all incoming referrals and aims to be flexible to accommodate their clients' needs. Generally, clients on the inpatient unit have multiple diagnoses and complex mental health needs. Diagnoses vary widely, ranging from mood disorders, adjustment disorder, to parent/child related issues. Participation in the transition program, however, is not dependent on diagnosis. Referral to the transition program by inpatient clinicians are generally made for high complexity clients; for example, clients involved with multiple systems (educational, legal, etc.), those who face imminent transition to adult mental health services, and those at risk of self-harm or suicide.

Transition Support Services Worker Role

The TSST forms the core of the transition program. Following intake and assessment, the TSST provides interim mental health interventions such as individual and/or family therapy, psycho-educational interventions, crisis planning and life-skills training. The TSST supports the client and family members to gain knowledge and skills that enable them to navigate mental health systems and services. Another key aspect of the program is case management; the TSST works to identify and coordinate long-term community services and advocates for clients and their families to

get the support they need. The TSST needs to be flexible and comfortable supporting their clients' mental health needs within their daily environment including school, home and other community domains. Educational hiring requirements for the TSST role include a Masters in Social Work or a Master of Arts in Counselling Psychology, complemented by 3-5 years of experience working with youth that have moderate to severe persistent mental health issues. The role requires strong case management and advocacy skills, with extensive knowledge of community mental health resources. It also requires strong clinical skills with children, youth and families, with particular expertise in short-term therapies such as cognitive behavioural therapy, solutions focused brief therapy and motivation interviewing. Perhaps most critical is the therapist's ability to balance the diverse roles that this position demands, while quickly engaging clients and family members and supporting them to transition to other services.

Program Evaluation

Monitoring of outcomes for the program takes place through follow-up by the TSST post-intervention to identify if there has been a reduction in hospitalizations, as well as satisfaction surveys with clients and referring resources. The program is also evaluated internally by EMYS on an annual basis and the reports are sent to Scarborough and Rouge Hospital. Moving forward, EMYS would like to develop a longitudinal research or evaluation plan to assess outcomes of the program, at six months, one year and two years post-discharge.

Program 2: Griffin Centre and North York General Hospital/Humber River Hospital Partnership

Griffin Centre's transition program works in partnership with both North York General Hospital (NYGH) and Humber River Hospital (HRH). The goal of the service is to assist children and youth up to 18 years of age with developmental disabilities and/or mental health challenges to transition from the hospital to the community. The transition program links youth participating in hospital day programs, outpatient and inpatient mental health services with a wide range of community services including but not limited to Griffin Centre programs. It also facilitates referrals of Griffin Centre clients to mental health programs in these hospitals. The transition program began in 2001. Originally the partnership was between Griffin Centre and North York General Hospital, and then expanded to include Humber River Hospital. The partnerships are formalized in Memorandums of Understanding with both hospitals, and the program is funded by the hospital budget at both sites. Resources allocated to the transition program involve two 0.5 FTE TSWs, each dedicated to one hospital site. The program is operationalized slightly differently at NYGH and HRH reflecting the unique structures and processes of each.

Care Pathways

At both hospitals, TSWs become involved in the transition planning of children and youth from the time of admission to the inpatient unit. The TSWs participate in patient rounds or the hospital intake meeting with the family and client, providing clinical input as well as information about external resources and services. As a group, the team decides on next steps for that client, whether it is transitioning to the hospital day program, outpatient services, or community services such as Griffin Centre. If it is determined that the individual is an appropriate fit for Griffin Centre's services, the TSW attends family meetings prior to discharge and introduces them to the transition program. If clients and families decide to participate in the program, they sign a consent form that enables the exchange of information between the hospital, transition program, and community agencies. The TSW facilitates intake to Griffin Centre by bringing the client's information to Griffin Centre's weekly centralized intake meeting and matching the client to a therapist. Until service can be initiated with the new Griffin Centre therapist, the TSW acts as an interim case manager, system navigator and counsellor for the client and their family members. At HRH, the TSW also provides temporary system navigation and counselling support to clients and families that are not referred to Griffin Centre upon discharge. Over the course of the transitional program, the HRH connects the client and family to external supports within the community. Prior to discharge from the transitional program, the TSW also brings together all relevant stakeholders (e.g. client and family, external community partners, Toronto District School Board) for a case conference to facilitate communication and ensure there are no gaps in services.

Client Profile

Clients in the transition program mirror the population engaging with the hospital programs at each site. At both sites, clients have a combination of mental health challenges and/or developmental disabilities, often with a dual diagnosis. Common diagnoses include depression, anxiety, substance use, autism spectrum disorder, mild intellectual disability, first episode psychosis, select mutism, and eating disorders. The TSWs work with high-needs, complex clients that could benefit from a range of community supports and services. In the NYGH transition program, clients are primarily youth between the ages of 12 and 18 and are often high-risk cases who presented with serious suicidal ideation or self-harm. Clients are prioritized according to their level of risk, but the TSW attempts to accommodate all clients referred to the program. The TSW works with clients referred to Griffin Centre for an average of two months. For youth who require support transitioning to the adult mental health sector the TSW remains involved for three to six months.

At HRH, clients are also primarily youth between the ages of 12-18 but with flexibility to accommodate younger

clients as well. Clients with minimal school supports in place, school avoidant/ refusal behaviours, complex mental health/ dually diagnosed and latency aged children with behavioural struggles and learning challenges are prioritized for the TSW program. Clients typically receive support from the TSW program for four to six weeks, however this support may extend to several months for cases that are more complex or when clients are waitlisted for community services.

Transition Worker Role

The TSWs at both NYGH and HRH have diverse roles and functions. At both sites, they support the hospital teams with their clinical expertise of developmental disabilities, knowledge of community resources, and facilitate intake of discharged clients to Griffin Centre. They also support their colleagues in the community by educating them about available hospital programs and facilitate the intake of Griffin clients to hospital programs. At NYGH, the TSW works in an involved way with clients discharged from the inpatient unit that are on a waitlist for services from Griffin Centre; providing intensive case management, system navigation support, and individual and family therapy. Interventions are varied and tailored to individual needs; ranging from trauma assessments to ODSP application support to advocacy with the school system to helping youth transition to the adult mental health sector. At HRH, the TSW provides case management and counselling support to families that are referred both to Griffin Centre and to other external agencies. The TSW also supports the inpatient group program and assists the hospital team with intake to inpatient and day programs. For children and youth discharged from the transition day program at HRH, the TSW assists the client to re-integrate into the regular school system through community exposure and desensitization training. Hiring qualifications for this TSW role include a Master of Social Work or a Bachelor of Social Work, and/or a similar degree in the field with relevant additional years of experience. A background in Child and Youth work with knowledge of dual diagnosis is preferred. Strong individual and family assessment skills, counselling skills, awareness of community resources and ability to navigate complex systems such as children's aid, school boards, and youth justice systems are essential. The TSW must be accessible and flexible to effectively respond to the individuals and families with complex needs and advocate on their behalf.

Program evaluation

Evaluation for this program poses a challenge in part due to the fluid nature of the program and the TSW role; the TSW consults on and is involved in many more clients' cases than are formally referred to the program. It is also difficult to track long-term outcomes because the TSW is only involved in an interim capacity and ceases service when the

client is connected to a long-term mental health provider. Program statistics that provide insight into the program's effectiveness are in the process of being compiled.

Discussion

Although the transition programs at Scarborough and Rouge Hospital, North York General Hospital and Humber River Hospital structure the transition worker role in unique ways, they also share notable commonalities. For all programs, service pathways are formalized between the hospital and community agency, with the transition worker providing short-term intensive support to bridge the two sectors. The transition worker also acts as a bridge between CAMHS and AMHS for transition-aged youth that are discharged from the hospital program. At each site, the transition worker role requires a similar blend of qualifications, knowledge and clinical skills, although hiring qualifications vary based on each program's structure, client population, and current staffing complement of the agency and the hospital programs. All transition workers provide a combination of therapeutic clinical interventions, case management, and system navigation support to the client and family. Their shared characteristic of flexibility is what enables them to individualize their services to clients and families with unique diagnoses and needs. Commonalities also arose when reflecting on lessons learned; all programs have received positive feedback from clients, and have found that the caseload merits a full-time rather than a part-time FTE for the transition worker role. Adequate resources to meet client needs remain a challenge, and all sites recommend increasing staffing for their program in the future.

Another challenge unique to these programs include ensuring the safety of both clients and transition workers. As a large amount of work takes place once youth are discharged from hospital prior to receiving ongoing care in a community mental health service, the transition worker must work quickly to ensure that adequate supports are in place to maximize safety of clients at high risk of self-harm or suicide. Poor availability of community services that youth transition to can pose difficulties for transition workers, particularly when the wait time for the service extends beyond the transition worker's mandate, or if geographic boundaries imposed by local health authorities limit choices for community resources that are the most suitable to the needs and goals of the youth and family.

An area highlighted by both Griffin Centre and EMYS was program evaluation. Due to the individualized support transition workers provide, the fact that they may be involved with clients both directly and indirectly, and the short-term nature of the program, evaluation that truly captures the impact of this role is challenging. Information on the impact of these transition programs on outcomes such as emergency room visits, days spent in hospital and estimated saved mental health costs, although important, are simply not

available. This highlights the need for robust research and program evaluation that quantifies the contribution of transition support programs in child and youth mental health services.

To date, there is very little research that has rigorously evaluated the role of transition workers in promoting continuity of care among adolescents with mental health issues (Naert, Roose, Rapp, & Vanderplasschen, 2017). The majority of literature on this topic rests in the adult mental health sector examining transitions from the hospital to the community. While several studies report reduced hospital readmissions (Reynolds et al., 2004; Vigod et al., 2013), earlier discharge (Forchuk, Martin, Chan, & Jensen, 2005), increased connections to community services (Dixon et al., 2009), and high patient satisfaction with the program (Armitage, Mackintosh, & Ward, 2004), other studies show mixed results (Bonsack et al., 2016; Hengartner et al., 2016). One program described in the literature, called the Bridge Program, uses a transition worker role to help adolescent mental health patients make a successful transition from the hospital to a residential community setting in Calgary, Alberta (Cameron, Birnie, Dharma-Wardene, Raivio, & Marriott, 2007). An internal evaluation of the program found that it contributed to a reduction in the average length of stay in hospital, led to low subsequent readmission rates and emergency room visits, and both staff and parents felt that the transitional program was key to the adolescent's successful transition back into the community. In the CAMHS to AMHS transition literature, the only study that has examined the outcomes of the shared management model involving a transition worker in a Canadian context is Cappelli et al.'s (2016) evaluation of the Youth Transition Project in Ottawa. This research was promising as it found that the majority of clients transitioned to adult services and wait times for services significantly decreased over the course of the program.

Incorporating transition workers into transitional programs for youth moving from hospital to community or from CAMHS to AMHS is clearly a promising intervention, with areas for growth and future learnings. Each program made specific recommendations to other organizations considering creating a similar role. EMYS stressed the importance of transition protocols that include the core components of: warm handovers into and out of the transition program, individualized treatment planning, and a primary contact at the hospital end who oversees all inpatient transitions to the program. Griffin Centre recommended that community and hospital partners find ways to take full advantage of each other's knowledge, expertise and programming. They also recommended that careful thought be given to the scope of the transition worker's counselling role, considering that clients and families may require intensive therapy for complex issues which are challenging to tackle with short-term counselling. More robust research on transition programs and the transition worker role is needed to form a strong

evidence based for this intervention and guide future implementation of the role. Areas for future research might include clients' and families' experience with transition workers, co-design of protocols to support the core components of transitions, aspects of the TSW role that contribute to or detract from its effectiveness, long-term client outcomes, and configurations for this role outside of large urban centres. Hopefully this commentary can act as a springboard for further information-sharing, collaboration, research and evaluation of transition workers in the Canadian context.

Acknowledgments / Conflicts of Interest:

Kristin Cleverly held the CAMH Chair in Mental Health Nursing Research at the University of Toronto during the completion of this commentary. The authors have no financial relationships to disclose.

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