Research Article

The Effect of Group-Based Family Orientation to Community Mental Health Services

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Introduction

The effects of an initial family orientation session (IGS) were examined in terms of readmission rates and cumulative lengths of stay.

Methods

We examine readmission rates and cumulative lengths of stay both within and between these groups over comparable time periods before and after November 2016.

Results

IGS-exposed group had a greater reduction in admissions and cumulative length stay compared to the unexposed group, with the greatest reduction in IGS-exposed emergency admissions.

Conclusions

The findings support the hypothesis that changes in admission rates and overall days in service was potentially a direct effect of the IGS.

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Introduction

In this paper we describe the effect on readmission rates of two groups comprised of those exposed and those un-exposed to a post-referral, pre-admission initial family orientation session (IGS) implemented in November 2016. Based on this naturalistic design we examine two outcomes, readmission rates and cumulative lengths of stay both within and between these groups over comparable time periods. We tested the hypothesis that IGS would have an impact on patients' readmission rates and their cumulative lengths of stay that was in alignment with service optimization (lower readmission rates and cumulative length of stay).

Recovery-focused treatment

The Mental Health Commission of Canada (MHCC) defines the basis of recovery-focused treatment in their recently published guidelines:

> "Recovery approaches stand on two pillars. First, they recognize that each person is a unique individual with the right to determine his or her own path towards mental health and well-being. Second, they also understand that we all live our lives in complex societies where many intersecting factors (biological, psychological, social, economic, cultural and spiritual) have an impact on mental health and well-being." (MHCC, 2015)

Recovery-oriented mental health services have become a focus of development and reform for several nations including Canada. (MHCC, 2015) The recent provincial implementation of Alberta Health Services SMART goals (Specific, Measurable, Attainable, Rewarding, and Timely) aligns with recovery-oriented mental health services in respect to patient participation in goal planning and execution. (Davidson et al., 2007)

Recovery-oriented services consist of services in which consumers actively participate in selecting services and developing treatment plans in the process of recovering (Davidson et al., 2007; Green et al., 2019; Kidd et al., 2011; Parker et al., 2018). Recovery-oriented mental health services is a philosophy and evidence-informed approach to practice that requires staff orientation in addition to patients and their families (Parker et al., 2018). Evidence suggests that recovery-oriented mental health services are more effective and efficient than traditional psychiatric medical models (Lynda, Tammy & Dennis, 2013).

One key to success is related to measurement of the processes and effects of program implementation (Higgins et al., 2012; Keogh et al., 2014). Those who reported receiving higher levels of recovery-oriented services also reported better recovery outcomes. Specifically three domains of recovery-oriented services, i.e., life goal vs. symptom management, tailored to the individual, and diversity of treatment options, are associated with better overall recovery and specifically three aspects of recovery, namely willingness to ask for help, goal and success orientation, as well as reliance on others (Kamp-Becker et al., 2017).

Patient education is a necessary cornerstone of recovery-oriented mental health services. However, patient education has been shown to have effects of relatively short duration (Mak, Chan, & Yau, 2019). Some services focus on pre-admission information sessions for those seeking treatment. Where studied in areas other than mental health, such as cancer care, orientation sessions are associated with high levels of satisfaction and help participants deal more effectively with their first visit *via* increasing their feelings of relaxation and comfort and reducing their feelings of fear and anxiety. These results support the use of informational support interventions as an effective means of improving care (Gallant & Coutts, 2003). When measured in respect to children's mental health (Cunningham, Bremner, & Boyle, 1995; Cunningham et al., 2013, 2015), evidence supports the use of parent and family orientation and education groups, and even in the context of longer term multi-family therapy (Cunningham & Matthews, 1982).

The purpose of this evaluative study was to examine the effect of a family orientation to community child, adolescent, and family mental health services, locally titled the 'Initial Group Session' (IGS). This orientation session has been offered weekly since November 2016 as standard of care and is an expected step for families who, post-referral, have elected to enroll in community-based mental health services to address the mental health concerns within their families. In a one-hour session once per week, attending families were oriented in simple terms to what to expect from assessment and treatment. Families were also oriented to the CAAMHPP continuum of care and additional resources available within the community. The weekly groups were led by two of the community clinics' staff who were familiar with the CAAMHPP continuum of care. Naturally, services were also provided to those who were unable to attend the IGS group sessions (eg, unexposed group). The IGS intervention was very basic in terms of how families were oriented to what they might expect in terms of assessment and treatment. There was no specialized training involved. The staff assigned to lead the group were generally experienced mental health workers practitioners with master-level social work or nursing education who were familiar with the system of care.

Local Context

Recovery-oriented services consist of services in which consumers actively participate in selecting services and developing treatment plans in the process of recovery. The recent provincial implementation of Alberta Health Services SMART goals (Specific, Measurable, Attainable, Rewarding, and Timely) aligns with recovery-oriented mental health services in respect to patient participation in goal planning and execution (Davidson et al., 2007) and importantly how clinical treatment goals and their related outcomes have been measured over the past 18 years (Novick, Cawthorpe, & McLuckie, 2016) in the Calgary Health Zone's Child and Adolescent, Addiction, Mental Health, and Psychiatry Program (CAAMHPP).

Methods

Setting

Data for this paper was collected under ethics ID-REB15-1057. The community clinics (CC) in the Northwest, Northeast, and South of Calgary have operated serving the mental health needs of families and children originally under the auspices of the Alberta Mental Health Board and more recently within the administration of the Alberta Health Services (AHS) serving that Calgary Health Zone and attendant rural areas. Since 2008, the community clinics (formerly of the Alberta Mental Health Board) have fallen under the AHS administrative auspices within the regional division of the CAAMHPP. The community clinics offer a wide range of psychosocial assessment and treatment services to children 5 to 18 years with moderate to severe mental health issues, together with their families. Services include individual, family, and group therapy in an outpatient community clinic setting. The service is accessed via three referral streams from any individual or community source to centralized access mental health (e.g., self, family, schools, social services, community agencies, physicians, nurses, etc.) or directly from any individual, health, or allied health professional or organization or an internal referral from within CAAMHPP. On contact with the family an estimated wait time is provided at the time of appointment booking. If required interpretation and translation services are available, in addition to individuals′ access requirements. The key services providers include family counsellors, psychiatrists, psychologists, registered nurses, mental health and addiction counsellors and social workers. The Community Clinics were formerly named Family, Adolescent, and Child Services, then Child and Adolescent Addiction and

Mental Health Community Services, have served the Calgary community for over 40 years under various provincial and regional administrative umbrellas.

Participants

The sample consisted of two parts. Families of patients exposed to IGS and patients' families not exposed to IGS, who were enrolled in CAAMHPP services.

Data

All patients in CAAMHPP are registered in the regional access and information system (RAIS). The RAIS served as the data repository from which anonymous service information was extracted (Melathopolous & Cawthorpe, 2019). Variables included de-identified, encrypted system-assigned patient and registration identifiers, age, sex, clinic, admission date, discharge date, Western Canada Waitlist Children's Mental Health Priority Criteria Score Survey items and total score (Cawthorpe et al., 2007; Novick, Cawthorpe, & McLuckie, 2016). Adverse Childhood Experience Survey items and total score (Cawthorpe, Marriott, Paget, Moulai, & Cheung, 2018; Rahman, Perri, Deegan, Kuntz, & Cawthorpe, 2018) and the Measurable Treatment Plan (MTP) problem severity and global function scale scores (Novick Cawthorpe, & McLuckie, 2016).

Study Design

A naturalistic quasi-experimental design was employed to analyze the data (Campbell, Stanley, Gage, 1966). To minimize threats to validity (Flannelly, Flannelly, & Jankowski, 2018), the analysis required set time frames so that the within-group rates of re-admission were comparable before and after IGS exposure. Additionally, the exposed groups were compared to similarly constructed unexposed pre and post groups forming the basis of comparing between-groups differences in respect to the admission rates. The IGS exposed groups formed two natural pre and post IGS exposure groups based on November 1, 2016. The unexposed comparison group also formed two arbitrary groups based on the before and after the IGS November 1, 2016 start date. The pre-post IGS exposure groups did not include those enrolled only prior to or only after the IGS commencement date. Exposed and unexposed groups were further divided where noted into scheduled representing referrals booked with wait times ideally no more than the provincial benchmark of one month, and emergent representing presentation to regional hospital-based emergency departments or admitted to inpatient units, or both. The data collection was truncated to include similar time intervals pre- and post-IGS implementation and did not include data after 2019

(eg, COVID-19) so as to improve the isolation of the IGS effects on readmission rates and cumulative lengths of stay comparing exposed and unexposed groups before and after ISG implementation.

Analysis

Descriptive statistics of the variables were reported for each group. Within-group and between-group comparisons were based on bivariate comparison of means and standard error (Table 4). Comparisons permitted whether there were any systematic differences between the groups based on clinical variables. The IGS effect was evaluated based on comparing the within and between-group readmission rates for those with readmissions in each of the pre and post, exposed, and unexposed groups.

Results

Sample description

There were 1352 individuals (mean age 13.1; Std. Dev. 2.9 years) in the unexposed group and 1368 individuals (mean age 14.4; Std. Dev. 2.6 years) in the exposed group before November 2016. Before and after November 2016, 67% of the admissions were female, 31% were male, and 2% were self-defined sex. Similarly, family composition was 59% biological, 13% blended, 22% single parent, and 6% other (adoptive, ward, foster, blood relative).

Admissions

Admission Year	Group				
	0	1	2	3	Total
2013	54	0	89	0	143
2014	402	0	648	0	1050
2015	630	0	944	0	1574
2016	858	212	1009	231	2310
2017	0	885	0	1159	2044
2018	0	539	0	744	1283
2019	0	270	0	436	706
Total	1944	1906	2690	2570	9110

Table 1. Registrations by year and total per group.

Table 2 shows the reduction in the registrations per group, with the greatest reductions post-exposure in the IGS exposed scheduled and emergent groups.

Group	Admission Reductions %	Difference in number of admissions
Unexposed Scheduled	2	38
Exposed Scheduled	4.5	120
Unexposed Emergent	7	75
Exposed Emergent	24.1	324

Table 2. Reduction in the registrations per group.

Table 3 shows the reduction in total (summed) length of stay by each group comparing post to pre-exposed and unexposed groups. Both IGS exposed and unexposed groups showed reductions in total

(summed) LOS after November 2016. The percent reduction was greater for the exposed scheduled and emergent groups compared to the post-pre differences of the corresponding unexposed groups.

Group	Reduction Admission LOS %	Difference (days)
Unexposed Scheduled	36	110586
Exposed Scheduled	33	152908*
Unexposed Emergent	43	9414
Exposed Emergent	53	12091

Table 3. Length of stay (LOS: days) by group comparing post to pre-November 2016 periods.

**Note that the length of stay is significantly reduced ($p < 0.05$) in the post intervention exposed group.*

The reduction on the summed total days comparing post-pre groups for both exposed and unexposed groups was greater for the IGS exposed scheduled and emergent groups.

Clinical Profile of Groups

Table 4 shows the descriptive clinical variables related to scheduled admissions for the four groups. Note in Table 4 that the clinical variables were similar across all groups. This indicated that overall, the clinical severity of those with repeated admissions before and after November 2016 within exposed and unexposed groups were similar.

Groups	N	mean	Std. Dev.	min	max
All Previous Admissions					
Admission CGAS	35634	50.81	10.61	5	95
Admission Problem Severity	19350	3.56	1.72	1	20
WCWL-CMH-PCS	15407	31.6	12.14	3	87
ACE score	13850	2.78	2.47	0	10
Pre-Unexposed					
Admission CGAS	1202	47.11	10.58	5	85
Admission Problem Severity	789	3.66	1.74	1	13
WCWL-CMH-PCS	390	34.61	10.83	4	65
ACE score	1383	3.47	2.71	0	10
Post-Unexposed					
Admission CGAS	1025	47.56	10.49	5	85
Admission Problem Severity	594	3.9	1.84	1	15
WCWL-CMH-PCS	214	34.2	10.01	9	62
ACE score	1453	3.57	2.65	0	10
Pre-Exposed					
Admission CGAS	2067	47.75	8.67	5	85
Admission Problem Severity	1577	3.36	1.48	1	15
WCWL-CMH-PCS	539	33.2	10.35	3	75
ACE score	2092	3.53	2.61	0	10
Post-Exposed					
Admission CGAS	1553	47.99	9.04	5	95
Admission Problem Severity	1182	3.47	1.59	1	20
WCWL-CMH-PCS	342	34.35	8.56	14	58
ACE score	2167	3.65	2.64	0	10

Table 4. Clinical Profile of scheduled admissions by exposed and unexposed groups

Summary and conclusions of length of stay differences

Given the similarity of the clinical profiles of each of the unexposed and exposed groups for scheduled and emergent services, the findings support the hypothesis that changes in admission rates and length of stay (overall days in service) was potentially a direct effect of the IGS.

Discussion

Family education and orientation is a measurable component of recovery-focused family treatment. Recent examination of the 2002-2017 impact of the CAAMHPP's centralized regional access and intake system (RAIS) has formed the evidence-base for evaluating not only clinical outcomes (Novick et al., 2016; Melathopolous & Cawthorpe, 2019), but also providing key information related to system-wide initiatives directed towards becoming trauma-informed, -competent and -focused (Cawthorpe et al., 2018; Rahman et al., 2018). In addition, the RAIS's clinical and system-level data provided the basis for successfully evaluating community-level education of physicians in terms of referral quality and capacity (McCaffrey, Chang, Farrelly, Rahman, & Cawthorpe, 2017), winning the team the 2019 President's Award for Research and Innovation. The CC-IGS has provided similar evidence in support of both its continuation and system-wide expansion.

In alignment with the 'Shaping Demand' concept introduced in the RAIS development paper (Melathopolous & Cawthorpe, 2019) was to provide education to families appears to help orient them to the expectations and tasks required by engaging services. The next step is to develop a means to provide such orientation services on a system-wide basis. To this end, CAAMHPP has developed a group to examine how best to achieve this priority goal. This goal is a priority because it may turn out, as noted in the RAIS development paper (Melathopolous & Cawthorpe, 2019), educating and orienting families to their mental health issues, system-navigation, what to expect in treatment, etc. may via IGS orientation further assist to shape demand and create more clinical space for families in greater need of direct mental health services. Families attending IGS or an advanced online orientation may not need to wait for service, rather they may be better equipped to self-help and/or access alternative resources. A system-wide online orientation model has been developed and piloted, the result being unfortunately in the

format of a 20-minute voice over power-point, rather than the presentation of information tuned to more contemporary social media platforms and viewer expectations (eg, shorter information segments). Preliminary examination of the video analytics indicate that most viewers do not view more than a few minutes of the online presentation.

Were this automated online orientation approach to be improved to better match viewer behaviors and attention spans, it might prove more fruitful and be presented more ubiquitously. Such an improvement might necessarily raise the competence bar on both sides of the service. For example, more educated consumers equipped with the lexicon of assessment and treatment would necessary have matching expectations of the quality of the service delivered. Providing families with relevant *a priori* information may, in fact, satisfy their needs, thereby creating space for those who may require tertiary services, more as a function of their urgency and severity. For example, implementing the WCWL-CMH-PCS (Cawthorpe et al., 2007; Novick et al., 2016) in April 2002 served the purpose of fairly rationing limited service resources to those most in need, rather than families waiting on the hitherto, traditional and arbitrary, first-come-first-serve basis. Together with the MTP (Novick et al., 2016), a reliable and valid basis for case evaluation and prioritization was established and has subsequently proven robust in several areas, especially in relation to community-level education (McCaffrey et al., 2017).

The next step in achieving the goal of system-wide family orientation and education, a legitimate cornerstone of shaping demand (Melathopolous & Cawthorpe, 2019), will be to develop, in addition to traditional referral pathways, a fully automated system for family orientation and problem definition that incorporates guided access to vetted educational resources. If direct access to traditional services is subsequently required, when self-service proves insufficient, families may be better equipped to communicate, navigate services, and engage with service providers. The foregoing results demonstrate that there is a basis on which to formally evaluate the achievement of such goals as a standard of care.

Establishing automated orientation, navigation and access to automated self-assessment and resources, will help systems may better service families in the next pandemic or time of crisis or natural disaster (Alevizopoulos, Kritikos, & Alevizopoulos 2021; Anonymous; 2022). In fact, who knows if the system of care would have responded differently to the last pandemic were the administration to have acted on the first opportunities presented for such developments and linked into technology advancements when offered over the subsequent years. For example, the computerized diagnostic inventory for children (CDISC) was shown over 23 years ago to diagnose depression more accurately in children and adolescents compared to psychiatrists (Cawthorpe, 2001).

An ultimate next step will be the ability for services to provide access to comprehensive assessment and treatment via virtual reality and artificial intelligence (Eckert, Volmerg, & Friedrich, 2019; Zhu, Hadadgar, Masiello, & Zary, 2014;). Assessment and treatment assisted by virtual reality and artificial intelligence (VRAI) is rapidly emerging as a potential standard of care (Cawthorpe, 2022; Hirschtritt & Insel, 2018).

Limitations

Quasi-experimental designs (Campbell, Stanley, & Gage, 1966) in real-world study cannot isolate all the variables that might influence outcomes over time. The benefits of the present study is that the design consisted of data from an embedded clinical measurement system (Melathopolous & Cawthorpe, 2019) and the ability to measure lead-in time for both exposed and unexposed groups, together with a large sample size, permitted a relative isolation of the IGS effect, the main variable of interest, wherein other potential influences are assumed to be random effects (eg, access to additional resources or supports), or effects evenly distributed between the IGS exposed and unexposed dependent groups. The clinical profile analysis in Table 4 appears to support this assumption. The groups were similar in terms of the clinical variables measured at the time of admission, yet compared to the un-exposed group, the IGS exposed group had substantial reductions in both readmissions (Table 2) and cumulative length of stay (Table 3).
While access to additional resources or supports are considered random effects for the purpose of analysis, in the IGS staff would explicitly direct families to additional information about community resources. Families referred to the community clinics via the regional central intake services also receive information about community resources with their confirmation of referral and assessment (traditional mail, email, etc.), whereas those referred from emergency services or on discharge from inpatient services may not receive such information as part of their discharge care planning. Hence, the explicit components of IGS causing the observed effects in readmission rates and cumulative length of stay may reside in the face-to-face aspect of the IGS (eg, paralinguistic or relational factors), rather than the informational content of the sessions. Further research is required to sort out the mechanistic details of the IGS effect. The IGS effect is apparent and compared to other innovations is the most economical (McCaffrey & Cawthorpe, 2023).

Conclusions

The initial group session (IGS) has proven to be an excellent evidence-based innovation for shaping service demand. IGS was a ground-up, locally developed innovation led by front line staff as a quality

improvement initiative. The IGS created more clinical space through reduced readmissions and lengths of stay at substantially less investment cost and equal benefit compared to other innovations (McCaffery & Cawthorpe, 2023).

While future VRAI developments must necessarily be led and developed largely by technology-competent capital-based organizations with close industry connections, the IGS in the format described in this paper is very suitable for poorly resourced, human-based, publicly funded services in rural or urban settings that tend to remain static and advance slowly in terms of the standards of care they provide to families, children, and youth affected by mental problems.

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All authors contributed to the design, implementation of the study, collection of data and reviewed the manuscript. Dr. Cawthorpe extracted and analyzed the data.

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