

Child and Adolescent Telepsychiatry: Utilization And Satisfaction

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Abstract

Access to psychiatric care for children and adolescents is limited outside of urban areas. Telepsychiatry provides one mechanism to bring needed services to youth. This investigation examines whether telepsychiatry could be successful in providing needed services. Using interactive video conferencing at 384 kilobits per second, psychiatrists based at a regional children's hospital provided consultation and management services to patients at 4 sites across Washington State located 75–150 miles from the children's hospital. Twelve-month review of billing records provided utilization data. Surveys of parents' satisfaction over 12 months examined whether parents would accept and be satisfied with the care rendered to their children. Over the study year, 387 telepsychiatry visits were provided to 172 youth 2–21 years old with a mean of 2.25 visits per patient. The demographic and diagnostic profile of this sample was consistent with usual outpatient mental health samples. Parents endorsed high satisfaction with their children's telepsychiatric care, with an indication of increasing satisfaction upon return appointments. Parents demonstrated some differential satisfaction, tending to higher satisfaction with their school-aged children's care and lower satisfaction with their adolescents' care. Telepsychiatry offered through a regional children's hospital was well utilized and parents were highly satisfied with their children's care. The stage is now set for integrating telepsychiatry into a system of care that meets youths' overall needs and for controlled studies demonstrating the efficacy of telepsychiatry with youth.

Key words: telepsychiatry, children, adolescents, children's hospital, parent satisfaction

Introduction

The prevalence of psychiatric disorders among children and adolescents living in rural communities is comparable to that in urban areas,^{1,2} but the distribution of psychiatric services is not,^{3–6} because valuable psychiatric resources are reserved for chronically mentally ill adults,^{4,7} and evidence-based treatments for children are not widely disseminated outside of urban areas.^{8,9} Thus, most youth who have psychiatric disorders and who live in rural areas are underserved,^{1,3–5,7,10–12} and their impairments affect multiple domains of functioning.^{10,11,13,14}

In nonmetropolitan areas, primary care providers (PCPs) fill this gap.^{15–17} The American Academy of Pediatrics^{18–20} has developed evaluation and treatment guidelines for several disorders, especially those involving pharmacotherapy.^{15,19–23} However, PCPs lack the training and time to adequately manage the complicated psychiatric problems they encounter in practice, lack psychiatric backup for complicated patients,^{24,25} and have limited other referral resources, experience poor communication from local mental health providers, and experience frustration in navigating the complicated system of mental health carve-outs for which their time is not reimbursed.^{17,24,26} The result is poor coordination of services, suboptimal care, and inability of PCPs to develop their own skills. Although PCPs will continue to be an integral part of mental healthcare in underserved communities, new models of care are needed that support PCPs and provide needed care to youth and their families. The *President's New Freedom Commission on Mental Health* has recommended telecommunications as one of the most promising means of improving access to evidence-based mental health services in underserved areas.⁶

We have heeded this call and built a telepsychiatry service to deliver evidence-based care to children and adolescents living in 4 diverse nonmetropolitan communities across Washington State. Here we present findings regarding utilization and satisfaction with the care rendered through this service. Although the satisfaction of adults with their telepsychiatric care has been well reported, there are few reports of satisfaction with care rendered to children and adolescents. Therefore, this study fills an important need in describing parents'

satisfaction with their children's telepsychiatric care. The study protocol was approved by the Institutional Review Board of Children's Hospital and Regional Medical Center (CHRCM) in Seattle.

Materials and Methods

SETTING

CHRCM is the tertiary referral site for children living in a 4-state region of the Pacific Northwest (Washington, Alaska, Montana, and Idaho: WAMI) that covers 20% of the continental United States but contains only 5% of its population. CHRCM provides 5,000–6,000 on-site specialty outpatient visits annually at 20 WAMI sites, but many needs remain. In particular, mental health services have been poorly represented.

TELEMEDICINE PROGRAM

The Children's Health Access Regional Telemedicine (CHART) program was initially funded as a pilot project in 2000 through the Office for Advancement of Telehealth (OAT) of the Health Resources Services Administration. CHART links CHRCM with 12 communities throughout WAMI, 4 of which included telepsychiatry. Olympia is a city of 207,000 in Thurston County (442,000 population) located 75 miles south of Seattle. Its economy is based on government, real estate, insurance, and the local college. The population is more than 85% white. The CHART program was sited at a satellite clinic of CHRCM in Olympia. Wenatchee is a town of 29,000 located in Chelan county (66,000 population) located about 150 miles northeast of Seattle over 2 mountain passes. Agriculture, forestry, and ranching form the major economy. Hispanics comprise the largest ethnic minority (>16%). Central Washington Hospital participates in CHRCM's regional network for subspecialty services and hosted CHART. Longview is a town of 36,000 in Cowlitz county (94,000 population) located >150 miles southwest of Seattle. This community has struggled with failing fishing and timber industries, and recreational activities now drive the economy. Longview has a small population of ethnic minorities (11%), predominantly African-American and Hispanic. Longview's Child and Adolescent Clinic (CAC) hosted CHART telepsychiatry. Longview had the particular advantage of having the telepsychiatry service embedded within the CAC. Therefore, there was a discrete number of referring pediatricians with optimal opportunities for collaboration. Yakima is a city of 73,000 in Yakima County (110,000 population) lying 150 miles southeast of Seattle across a mountain pass. Agriculture and ranching form the major economy. Approximately 40% of the population is Hispanic. The CHART program was sited at Children's Village, a unique tertiary specialty referral clinic that has a longstanding collaboration with CHRCM.

Telepsychiatry sites are linked to CHRCM using Polycom MP or FX videoconferencing equipment. Connectivity is achieved via dial-up connections through Integrated Services Digital Network lines at 384 kilobits per second (Kbps) or a fractional T1 line providing similar bandwidth that meets the Health Information Portability and Accountability Act standards for confidentiality.

Telepsychiatry services were initially provided free through the OAT grant (2000–2005), and subsequently through fee-for-service according to specific agreements negotiated with Washington State Medicaid and the major commercial payers in the region. A review of benefits and a pre-authorization process were undertaken at the time of referral and prior to delivery of any telepsychiatry services.

SERVICE MODEL

Referring PCPs included pediatricians, family physicians, and mid-level practitioners such as nurse practitioners. PCPs could refer any patient. There was no screening or triage. There was no specific model of care. Three telepsychiatrists provided care consistent with their own on-site practice. One telepsychiatrist provided limited 1–3-session consultation, with all treatment recommendations implemented by the referring PCP. A second telepsychiatrist provided a limited treatment model with initial treatment followed by occasional checkups and interim care provided by the PCP. The third telepsychiatrist provided direct care, ranging from 1 to 20 sessions per youth. The caseload included a range of patients, diagnoses, and severity, although generally patients tended to be complex, with multiple diagnoses, prior complications, and multiple interventions, including polypharmacy and coordination with schools. All patients were referred back to their PCP at the end of telepsychiatric consultation or care. Over the 4 sites, 125 PCPs referred patients for telepsychiatric consultation. In a prior survey from July 1, 2003 to October 31, 2004, these PCPs endorsed high satisfaction with the care rendered their patients as evidenced by their referral of multiple patients and their quantitative survey scores.²⁷

UTILIZATION AND CLINICAL PROFILES

Profiles for patient demographics, services utilization, and diagnoses were developed for a 1-year period beginning January 1, 2004 and ending December 31, 2004. This is a representative year because all aspects of CHART were fully implemented.

PARENT SATISFACTION: SURVEY INSTRUMENT AND PROCEDURES

Parents of patients aged 2–21 years old participating in CHART were asked to voluntarily and anonymously complete the 12-item Parent Satisfaction Survey after each visit. The items in the Parent

Satisfaction Survey reflect 3 domains of satisfaction reported to be highly correlated with global satisfaction for pediatric telemedicine patients²⁸: 1) technical functioning (items 2, 3, 5, 10); 2) comfort of

patient and provider with the technology and perceived privacy (items 1, 4, 6); and 3) timely and geographic access to care (items 7, 8, 9). Items 11 and 12 assess global satisfaction with the telemedicine visit. Each item is rated by the parent on a 5-point Likert scale representing how strongly he or she agrees or disagrees with the statement, with 1 representing very low satisfaction and 5 representing very high satisfaction. The Parent Satisfaction Survey instrument demonstrated strong internal consistency, as indicated by significant inter-correlations for all 12 items ($r = 0.262-0.712$, Spearman's rho) and strong correlations (>0.50) of each item with global satisfaction.

Table 1. Demographic and Clinical Characteristics of Children and Adolescents Receiving Telepsychiatry Services

SUMMARY STATISTICS

Number of visits	387
Number of patients	172
Average # visits per patient	2.25
Mean patient age	8.6
Patient age range	2–21 years
Patient characteristics	%
Patient age groups	
2–5	5.9%
6–13	75.5%
14–21	18.6%
Patient gender	
Male	68.9%
Female	31.1%
Diagnoses	
ADHD	45.2%
Disruptive behavior disorders	8.0%
Depressive disorders	8.4%
Bipolar disorders	7.7%
Anxiety disorders	6.2%
Adjustment disorders	4.7%
Pervasive developmental disorders	9.9%
Other developmental disorders	4.4%
Tic disorders	1.1%
Other disorders	4.4%
Procedures	
Diagnostic evaluation	31.9%
Medication management	47.6%
Evaluation & management	11.6%
Individual therapy	7.3%
Prolonged service—outpatient	1.3%
Unlisted psychiatric service	0.3%

DATA ANALYSIS

All telepsychiatry visits were identified from retrospective review of the hospital clinic scheduling system. Payer mix was determined using hospital and faculty practice billing systems. Geographic origin was determined from patient residence zip codes that were classified into small town/rural, large town, or urban/suburban using the 4-tiered Rural Urban Commuting Area (RUCA) system for Washington.²⁹

Differences in parents' satisfaction by overall mean rating, patient age, and visit type were analyzed with the Kruskal-Wallis Nonparametric Rank Test and the Mann-Whitney Rank Sum Test. All computations were carried out with Statistical Package for Social Sciences (SPSS, Inc., Chicago, IL) software version 12.1.1.

Results

TELEMEDICINE ENCOUNTERS

Table 1 summarizes demographic, clinical, and utilization data. During the study year, 387 telepsychiatry encounters were provided for 172 patients across the 4 sites, averaging 2.25 encounters per patient. Patients ranged in age from 2 to 21 years old, with a mean age of 8.6 years old, predominantly boys. These demographics are consistent with our own prior experience as well as with those described in usual outpatient mental health clinics.^{10,30}

CLINICAL CARE

Previously, we demonstrated that youth receiving telepsychiatry care demonstrate the same diagnostic profile as youth receiving usual in-person care, including multiple comorbid diagnoses.^{10,30} Therefore, here we simply present their principal diagnoses in order to show the case mix and its consistency in our service over time. As noted in *Table 1*, a wide spectrum of diagnoses was made. As expected, the most common diagnosis was attention-deficit/hyperactivity disorder, followed by mood disorders (depressive disorders and bipolar disorders). The 14.3% of youth with developmental disorders (pervasive

developmental disorders, mental retardation, and other developmental disorders) attests to the versatility of telepsychiatry to reach these most underserved of youth. Review of the diagnostic codes shows that diagnostic evaluations and medication management were the most frequently provided services, consistent with referral requests and our telepsychiatry staff expertise.

PARENT SATISFACTION

Of the 387 psychiatric encounters, 248 surveys were completed for an overall response rate of 64%. Responses on each survey item for all patients, patient age, and type of clinic visit are shown in Table 2. As shown, 11 of the 12 items show mean overall scores above 4.0 on a 5-point scale across patient age. Item 8, “My child would not have received services of a specialist without telemedicine,” showed the lowest rating, suggesting that parents perceived that telepsychiatry was not their only option and that they would have sought care elsewhere. However, most of these youth had been severely symptomatic

for a long time and had not sought such alternative services. Overall, across the 3 developmental groups, several items reached statistical significance (items 6, 7, 8, 10, 11, 12) or a trend to significance (items 1, 5, 9). Parents of adolescents generally endorsed lower satisfaction with their children’s care (items 6, 7, 9, 10, 11), whereas parents of school-aged children generally endorsed greater satisfaction with their children’s care (items 6, 8, 9, 11, 12).

A comparison of new versus follow-up visits showed that parents were highly satisfied with both types of appointments. There were significant differences on 4 items (1, 7, 8, 9), in each case indicating higher ratings for follow-up visits. These significant items suggest greater comfort with this medium at return appointment (item #1), appreciation of seeing a psychiatrist sooner (item #7), recognition that without telepsychiatry the child may not have seen a specialist (item #8), and parents’ optimism that their children would receive the services they need due to telepsychiatry (item #9). On no item did parents indicate significantly lower satisfaction at return appointment.

Table 2. Parent-Reported Satisfaction with Telepsychiatry by Patient Age Groups and Visit Type (n = 248)

ITEM	OVERALL MEAN	PATIENT AGE GROUP				VISIT TYPE		
		0–5	6–13	14+	p VALUE ^a	NEW	RET	p VALUE ^b
1. I could talk comfortably with the specialist	4.61	4.42	4.66	4.44	0.056	4.56	4.69	0.026*
2. I could see the specialist very well	4.65	4.78	4.67	4.47	0.202	4.64	4.69	0.361
3. I could hear the specialist very well	4.68	4.64	4.71	4.53	0.297	4.69	4.71	0.751
4. I felt confident that my child's information was not being overheard by others in the room	4.51	4.71	4.60	4.41	0.186	4.63	4.58	0.860
5. I could understand the specialist's recommendations	4.74	4.57	4.78	4.56	0.084	4.78	4.76	0.782
6. I felt the specialist was comfortable with seeing my child over the television	4.66	4.58	4.72	4.3	0.015*	4.68	4.69	0.285
7. Telemedicine allowed my child to see a specialist sooner	4.46	4.50	4.50	4.21	0.045*	4.37	4.56	0.034*
8. My child would not have received services of a specialist without telemedicine	3.86	3.14	4.01	3.29	0.001**	3.50	4.13	0.000***
9. My child will receive the help he/she needs because of our telemedicine visit with the specialist	4.50	4.43	4.55	4.24	0.056	4.40	4.60	0.016*
10. The telemedicine visit was as good as a regular in-person visit	4.41	4.50	4.47	4.02	0.005**	4.39	4.45	0.235
11. I would be willing to have my child see a specialist using telemedicine again in the future	4.71	4.64	4.76	4.47	0.009**	4.70	4.76	0.254
12. Overall, I am satisfied with the quality of services provided by telemedicine	4.66	4.50	4.70	4.50	0.046*	4.67	4.70	0.255

^aMann-Whitney rank sum test; ^bKruskal-Wallis rank sum test.

^bMann-Whitney test.

*p < 0.05. **p < 0.01. ***p < 0.001.

Discussion

This study provides the largest and most systematic assessment of parents' satisfaction with their children's telepsychiatric care. The limited prior reports for youth date to early experience with child and adolescent telepsychiatry,³¹ small samples,³¹⁻³⁴ international samples,³²⁻³⁵ nonsystematically collected data,³⁵ and/or lower bandwidth.^{31,33}

Our experience demonstrates robust utilization of the service. The demographic and diagnostic profiles of these youth replicate earlier findings in our telepsychiatry service and are consistent with in-person outpatient psychiatric care,^{10,30} suggesting that telepsychiatry reaches youth who are representative of the clinical population. It is not a service that families or providers perceive as relevant only to a select population.

With the paucity of systematic outcome studies of telepsychiatry with adults^{36,37} and even more so with youth,^{38,39} satisfaction data provide preliminary evidence for the effectiveness of telepsychiatry. In this investigation, parents' satisfaction was high across patients' ages and increased with return appointments. Perhaps these results simply suggest that parents became more comfortable with this novel medium over time, but it might also indicate that they saw improvement in their children, suggesting efficacy. It is not clear why parents tended to lower satisfaction for adolescents and higher satisfaction for school-aged children. Perhaps this represented their perception that their teenagers needed a larger range of services than offered through our telepsychiatry service. Developmental issues will be important to investigate further, including assessment of teens' own satisfaction.

These data highlight other issues. On a clinical level, services were weighted toward diagnosis and pharmacotherapy. In part, this reflected the services that PCPs most requested during our needs assessment; in part it reflected families' access to some counseling services in their home communities; and in part it reflected the clinical practices of the individual telepsychiatrists. However, in large part it reflected third-party payer status. We had a large proportion of Medicaid patients, and in Washington State Medicaid will reimburse only for selected psychiatric services, weighted toward diagnostic assessment and pharmacotherapy. Thus, psychiatric services were utilized predominantly for diagnosis and medication management. It would be interesting to see how services might be utilized if all patients had flexible access to needed services.

Anecdotally, there were several expressed advantages of telepsychiatry for families that likely contributed meaningfully to the success of our telepsychiatry service. First, services were delivered at community medical facilities. Several families informed us that they would not have sought services at the local mental health center due to the stigma, the lack of faith in the facility's services, or the inability

to obtain the psychiatric services they needed. Second, an advantage to referring PCPs was their ready access to the telepsychiatrist, rather than struggling with the communication difficulties experienced with local mental health facilities.¹⁶ The one requirement of our telepsychiatry service was that families sign a release allowing the telepsychiatrist to readily communicate with the referring physician, and to forward the report to them. This was important because the PCP might have to cover care when the telepsychiatrist was unavailable and would have to resume care after completion of telepsychiatry care. Finally, advantages expressed by the telepsychiatrists included the opportunity to practice community psychiatry without taking time away from their families and their university commitments.

Our experience also highlighted some directions for future work. Our service only provided psychiatric care, augmented by limited coordination with the schools. Yet, many of these youth needed an array of services including psychotherapy, behavioral therapies, case management, and more intensive collaboration with the schools. Such services require an array of clinicians either at the patient site or at the provider site.⁴⁰ Now that telepsychiatry has been shown to increase access to care for needy youth, telepsychiatry must focus on integrating into youths' existing systems of care or building such systems. The goal is to use telepsychiatry to comprehensively address youths' mental health needs.⁴⁰ Further controlled studies are also needed to demonstrate the efficacy of telepsychiatry, including its superiority to care as usual in primary care, and its comparability to in-person psychiatric care. Finally, in the future, adolescents' satisfaction with their care should be assessed. In a prior study of incarcerated youth, adolescents endorsed high satisfaction with their care.⁴¹ Similar assessment with outpatients is now needed.

In conclusion, telepsychiatry can increase access to services for underserved youth, and the youth who come to telepsychiatry are representative of the clinical population. Parents' satisfaction with their children's initial and follow-up care suggests efficacy that now warrants further controlled studies. Future models of telepsychiatry with youth should focus integrating telepsychiatry within a youth's system of care that addresses the spectrum of youth's needs.

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