Therapeutic intervention in children with attention deficit disorders in primary care

Intervención terapéutica en niños con trastornos por déficit de atención en atención primaria

Authors

Dr. Mercedes Isabel Guamán Guamán. Professor of Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: ua.mercedesguaman@uniandes.edu.ec
https://orcid.org/0000-0002-6133-5846

Dr. Jeanneth Elizabeth Jami Carrera. Professor of Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: ua.jeannethjami@uniandes.edu.ec
https://orcid.org/0000-0003-2217-9593

Dr. Carlos López Barrionuevo. Professorof Medicine at the Universidad Regional Autónoma de los Andes (UNIANDES Ambato).
Email: direccionhospital@uniandes.edu.ec
https://orcid.org/0000-0003-3027-0936

Abstract

Introduction: 16% and 20% of children and adolescents experience a mental health condition. New models of care are being examined.
Purpose: The study examined the management of attention-deficit/hyperactivity disorder during and after family involvement.
Methods: A community-based randomized controlled trial compared the effectiveness of two models for children with ADHD and their families.
Results: Participants in the Direct Service Model had significantly more visits for ADHD (M = 7.05 vs. M = 3.36; p < 0.0001).
Conclusions: The results of this pragmatic follow-up suggest a “side effect” for brief intensive treatment in the direct service model.

Keywords: hyperactivity disorders, attention deficit, children, primary care,mental health source: DeCS
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Resumen

Introducción: el 16% y el 20% de los niños y adolescentes experimentan una afección de salud mental .Se están examinando nuevos modelos de atención.
Objetivo: Examinamos el manejo del trastorno por déficit de atención/hiperactividad durante y después de la participación de las familias.
Método: Se realizó un ensayo controlado aleatorio basado en la comunidad que comparó la efectividad de dos modelos para niños con TDAH y sus familias
Resultados: Los participantes en el Modelo de Servicio Directo tuvieron significativamente más visitas por TDAH (M = 7.05 vs. M = 3.36; p < 0.0001).
Conclusiones: Los resultados de este seguimiento pragmático sugieren un

"efecto secundario" para el tratamiento intensivo breve en el modelo de servicio directo.

Palabras clave: trastornos de hiperactividad , déficit de atención , niños , atención primaria ,salud mental fuente: DeCS

Introduction

Numerous studies have documented that 16% to 20% of children and adolescents experience a mental or behavioral health condition. The chronic shortage and maldistribution of child and adolescent psychiatrists available to treat these youth have been exacerbated by the implementation of mental health parity laws that make more children eligible for services without creating new resources[(1)]. New models of care are being examined to address the need for more child psychiatric services and more equitable distribution. Many of these models emphasize support for primary care physicians (PCPs) to take a central role in children's mental health care. [(2)]

Attention deficit hyperactivity disorder (ADHD) provides an excellent clinical condition to address this problem. Clear care guidelines have been developed for managing ADHD within primary care, and treatment involves an important role in medication. However, previous work indicates that APMs vary in their management of ADHD[(3)]. Concerns cited include reluctance to prescribe stimulant medication, failure to adjust medication according to the child's response, variability in the timeliness of follow-up, and lack of access to psychosocial interventions and support[(4)]. Previous research indicates that follow-up within one month of initial prescription has been associated with continuity of treatment of MAPs, continuous medication delivery, and medication titration. Whether psychiatric support can affect these practices and possible models for such support is an important next step in developing models of care for managing ADHD by MAPs [(5,6)].

The current research compares two psychiatric service delivery models for their effect on the assertiveness of APMs in managing ADHD during and after family involvement. This analysis compared a brief, direct service delivery model with a consultation model. During the initial 22-week comparative effectiveness trial and the 10-week follow-up (22 to 32 weeks), the direct service model would be associated with more assertive ADHD management than the consultation model.

Method

We conducted a 5-year community-based randomized controlled trial comparing the effectiveness of two telehealth service delivery models in improving mental health care and outcomes for children with ADHD and their families. Informed parental consent and assent were obtained from youth participants, including for research and permission to publish. This study was approved by the Universidad Regional Autónoma de Los Andes (UNIANDES).

Participants included 223 boys and girls aged 5.5 to 12 years referred to the trial by 88 MAPs in seven communities in the city of Ambato. All participants met the criteria for ADHD and 75% (168/223) met the criteria for one or both comorbidities.

Participants were randomly assigned to either a direct service model of care or a consultative model. The Direct Service model consisted of six sessions spaced 3 to 4 weeks apart for 22 weeks. At the end of the 22 weeks of Direct Service or after the Consultation session, the children's treatment was returned to the care of their referring MAP with written recommendations for continued ADHD treatment.

The primary outcome measure was the Vanderbilt ADHD Parent Rating Scale (VADPRS) (7). This set of analyses compares the assertiveness of service delivery of the two models during the trial (baseline at 22 weeks) and short-term follow-up (22 to 32 weeks). Assessments include (1) the number of visits for ADHD management; (2) the likelihood of taking psychiatric medication, particularly stimulant medication; (3) stimulant dosage; and (4) whether two or more psychiatric

medications were prescribed (co-prescribing), including a sleep medication.

We extracted data from MAP medical records relevant to ADHD visits and medication management from baseline through 32 weeks after randomization in the original trial. Medications were categorized into four groups: any ADHD-related medication, ADHD-related stimulant only; ADHD-related nonstimulant only; and two or more psychiatric medications.

We performed an intention-to-treat analysis and all patients who had been randomized in the original randomized controlled trial were included in this analysis. First, baseline sociodemographic and clinical characteristics were summarized in the Direct Service Model and the Consultation Model with frequencies, means, and standard deviations. Then, missing datawere identified.

The primary objective was to examine differences between the two service models in the number of ADHD-related visits, medication class and dosage, and co-prescribing a second medication with the primary ADHD medication. To this end, Poisson regression models were fit and used rate ratios to compare the mean number of ADHD-related visits between the two service delivery models in each period separately (period 1: randomization to 22 weeks and period 2: 22 to 32 weeks, and the entire period from baseline to 32 weeks). Because count data often exhibit characteristics of overdispersion in practice, quasi-Poisson models were also fit for this outcome but found that the data were under-dispersed. To be conservative, the results from the Poisson modelsweresaved. A significance level of 0.05 and bilateral tests were applied throughout. Database and statistical processing of the data were performed and analyzed in the statistical program SPSS 26 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used for the results collection, presentation and interpretation.

Results

Participants in the Direct Service Model had a higher incidence of any comorbidity at baseline than those in the Consultation Model (82% vs. 69%). Baseline VADPRS scores were slightly higher for youth in the Direct Service Model (2.0 vs. 1.9). Doses of stimulant medication and co-prescribing a second medication with a stimulant were similar for the two service models. VADPRS scores completed after the 22-week intervention were significantly lower in the Direct Service Model (1.1 vs. 1.4), demonstrating greater efficacy in child outcomes in this model.

Participants in the Direct Service Model had significantly more ADHD visits than those in the Consultation Model across the full 32 weeks (M = 7.05 vs. M = 3.36; adjusted rate ratio = 2.10 [1.85-2.38]; $p < 0.0001$). This included more visits during the initial trial at 22 weeks (M = 6.11 vs. M = 2.94, adjusted rate ratio = 2.08 [1.82-2.38]; $p < 0.0001$) and during follow-up from 22 to 32 weeks (M = 0.94 vs. M = 0.42, adjusted rate ratio = 2.20 [1.52-3.19], $p < 0.0001$).

As shown in Table 1, participants in the direct service model were not significantly more likely than those in the consultation model to take any ADHD-related medication from randomization to 22 weeks (0.77 vs. 0.72; adjusted odds ratio [OR] = 1.43 [0.76-2.69], $p = 0.27$). This included no difference in a single stimulant, a nonstimulant, and two or more psychiatric medications.

Table 1. Medication regimens are comparing delivery models in the initial randomized trial and follow-up.

	Direct Service	Consultation		
	Ratio (n/N)	Ratio (n/N)	O (95% CI)	p-value
Any medication related to ADHD				
Period 1: baseline at 22	0,77 (79/103)	0,72 (76/105)	1,43 (0,76-2,69)	0.27

weeks				
Period 2: 22-32 weeks	0,82 (84/103)	0,61 (65/106)	2,44 (1,24-4,81)	0.01
ADHD-relatedstimulantonly.				
Period 1: baseline at 22 weeks	0,70 (72/103)	0,64 (67/105)	1,53 (0,85-2,77)	0.16
Period 2: 22-32 weeks	0,76 (78/103)	0,54 (57/106)	2,52 (1,33-4,76)	0.005
Nonstimulantrelatedto ADHD				
Period 1: baseline at 22 weeks	0,29 (30/103)	0,21 (22/105)	1,40 (0,74-2,68)	0.30
Period 2: 22-32 weeks	0,30 (31/103)	0,17 (18/106)	2,21 (1,08-4,55)	0.03
Two or more psychiatric medications				
Period 1: baseline at 22 weeks	0,29 (30/103)	0,21 (22/105)	1,23 (0,64-2,38)	0,53
Period 2: 22-32 weeks	0,33 (34/103)	0,17 (18/106)	2,56 (1,25-5,27)	0.01

Source: statistical analysis, p≤ 0.05, OR adjusted for baseline comorbidity and baseline and 22-week VADPRS summary score, ADHD Attention Deficit Hyperactivity Disorder; CI: confidence interval; OR, odds ratio; VADPRS, Vanderbilt ADHD Parent Rating Scale.

However, during the 22- to 32-week follow-up, participants in the direct-service model were significantly more likely to take any ADHD-related medication (0.82 vs. 0.61; adjusted OR = 2.44 [1.24-4.81], *p* = 0.01). This included a higher proportion of children in the direct service model taking only one stimulant, taking a nonstimulant, and taking two or more medications. This difference appeared to be related, at least partly, to a greater proportion of children in the four medication groups in the Direct Service Model who continued to take medication than children in the Consultation Model who were more likely to discontinue the medication.

Over the full course of the study, from randomization to 32 weeks, participants in both models who were prescribed stimulants increased their dose. Those in the Direct Service Model increased their dose from an average of 23.76 (±26.41) mg at baseline to 38.06 (±22.27) mg at 32 weeks (change of 14.30 mg) and those in the Consultation Model increased their dose from an average of 21.17 (±27.72) mg at baseline to 28.95 (±23.45) mg at 32 weeks (change of 7.78 mg). Adjusted analyses indicated that these changes represented a significant difference in stimulant dose between the two models at 32 weeks after adjusting for baseline values (difference in dose at 32 weeks in the adjusted analysis = 5.64 [0.12-11.15] mg; *p* = 0.046).

Discussion

The current pragmatic follow-up of ADHD management in primary care following a randomized clinical trial was conducted to contribute to the emerging evidence base regarding models of care to support APMs in the increasing expectation that they manage the treatment of children diagnosed with ADHD. Compared with a single-session consultation model, a brief direct-service model of care would be

associated with more assertive ADHD management during the trial and demonstrate an "aftereffect" evidenced by more assertive ongoing management by APMs. Some support for this hypothesis during the trial regardingthe increased number of visits for ADHD treatment but not for medication use.

These findings are consistent with the recommendation for a more frequent and timely follow-up to ADHD treatment. However, the findings' directionality of follow-up outcomes is unclear[8,9]. On the one hand, leveraging psychiatrists through telepsychiatry to work with community therapists provided families with knowledge of the neurobiological model of ADHD and the central role of medication, as well as training in evidence-based interventions to address behavioral deficits in ADHD. This knowledge and greater reductions in ADHD symptoms and improved functional outcomes during the trial may have motivated parents in the Direct Service model to continue treatment[10,11]. On the other hand, written updates from the psychiatrist after each session may have provided primary care physicians education and a basis for prescribing more assertive medication regimens during follow-up.

In the 22-week intervention trial, the number of sessions was expected to double for children randomized to the Direct Service Model, as the six-session series was scheduled at the time of study enrollment. In the Consultation Model, MAPs visited the clinic with patients approximately once every two months (2.97 sessions over 22 weeks) after the single psychiatric consultation. While less frequent than the 3- to 4-week interval between sessions in the direct service model, it is more assertive than simply providing a 3-month supply of medication or not scheduling timely follow-up to adjust care according to the child's response[12,13]. The lower frequency of visits in the Consultation Model was also observed at the 22- to 32-week follow-up, partly related to the decrease in the proportion of children who continued to take medication during the follow-up period[14,15].

Finally, it is worth noting that APMs and psychiatrists were equally likely to prescribe stimulant and non-stimulant ADHD medications during the trial, suggesting greater primary care expertise in treating ADHD, even with stimulants[16,17]. However, it was during follow-up that the models diverged. The current research supports a "spillover effect" of a brief expert direct service model compared to a single-session consultation model in facilitating primary care physician assertiveness in the short-term follow-up management of ADHD[18-20].

Conclusions

The results of this pragmatic follow-up of a randomized trial suggest a "side effect" for brief intensive treatment in the Direct Service Model in the short-term (10-week) assertive follow-up of ADHD in primary care. APMs who resumed care after the Direct Service Model had more ADHD visits, prescribed more ADHD-related medications, and prescribed higher doses of stimulant medications than those who resumed care after the Consultation Model.

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