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What is This?
Use of Colocated Multidisciplinary Services to Address Family Psychosocial Needs at an Urban Pediatric Primary Care Clinic

Aditi Vasan, BA¹, and Barry S. Solomon, MD, MPH¹,²

Abstract

Objective. To examine associations between use of on-site multidisciplinary services at a pediatric primary care clinic, perceptions of the clinic, and health care utilization. Study Design. Eighty caregivers were interviewed during clinic visits assessing on-site service use, satisfaction, and perception of the clinic as a medical home. Acute care, emergency department, and well-child visit data were abstracted from children’s medical records. Student’s t test and multivariate regression were used to examine associations between service use, satisfaction, and health care utilization. Results. Use of ≥3 clinic services was associated with improved satisfaction (Client Satisfaction Questionnaire–8 mean: 31.8 vs 31.0, P < .05), stronger perception of the clinic as a medical home (Parents’ Perception of Primary Care mean: 97.6 vs 93.4, P < .01), and increased missed well-child care visits (mean: 0.49 vs 0.20, P < .05). Conclusions. On-site service use was associated with improved caregiver satisfaction but decreased well-child visit adherence. Caregivers using support services may face barriers to accessing preventive care.

Keywords
patient-centered care, colocated services, urban populations, psychosocial needs

Introduction

The American Academy of Pediatrics’ preventive care guidelines emphasize the importance of understanding family and community influences on child health.¹,² Family psychosocial needs, such as poverty, food insecurity, and housing instability, have been shown to negatively affect children’s cognitive, academic, and psychosocial development and increase their risk of adverse physical and mental health outcomes.³,⁴ Food insecurity and housing instability have also been associated with reduced access to health care in the pediatric population.⁵ However, it is often challenging for pediatric primary care providers to identify and address families’ complex needs in the time-limited context of a well-child visit. In a 2009 survey at an academic urban clinic, 91% of pediatric residents felt it was important to screen for family psychosocial needs, but fewer than 20% routinely incorporated screening into their practice.⁶ Potential barriers include lack of time, training, and awareness of available community resources.

Some pediatric primary care clinics in high-need communities have responded to this challenge by adopting a medical home approach to care delivery and incorporating on-site programs and services targeted to the psychosocial needs of patients and their families.⁷,¹⁰ Colocation of these services at pediatric primary care clinics has the potential to benefit both families and providers by increasing appropriate use of services, improving caregiver satisfaction, enhancing provider knowledge of available resources, and improving coordination of care.¹¹,¹² The Harriet Lane Clinic (HLC) at the Johns Hopkins Children’s Center is an academic urban pediatric primary care clinic that has integrated several on-site multidisciplinary services based on the self-reported psychosocial needs of clinic patients and their families.¹³ These include a Health Leads family resource desk, a safety resource center, a dental clinic, a youth fitness program, nutrition counseling, a Women,
Infants, and Children Supplemental Nutrition Program (WIC) office, reproductive health care services for adolescents, social work services, and mental health services for both children and caregivers. This study aims to (a) assess the knowledge and use of on-site services at HLC; (b) examine associations between service utilization and caregiver satisfaction and perception of the clinic as a medical home; and (c) examine associations between service utilization and adherence to well-child care guidelines, use of acute care, and emergency department use.

Methods

Design and Setting

This study was conducted at the HLC, an urban academic pediatric primary care practice in East Baltimore. The clinic serves as the medical home for approximately 8500 children and adolescents who are predominantly African American and Medicaid insured. Caregivers of patients assigned to the pediatric resident continuity clinic were recruited. In the HLC, 64 pediatric residents provide well-child care one half-day per week under the supervision of pediatric faculty members. From July to September 2012, a convenience sample of English-speaking caregivers of pediatric patients (birth to 21 years) presenting to the HLC for either acute care or well-child care visits were invited to participate in a 20-minute structured face-to-face interview assessing their use of on-site clinic services, satisfaction with the clinic, and perception of the clinic as a medical home. Eligibility was restricted to English-speaking caregivers because the majority of children seen at HLC come from English-speaking households. Pediatric residents informed eligible caregivers about the survey and introduced interested caregivers to a member of the study team. Informed consent was obtained from participating caregivers. Eighty-nine percent of caregivers who were invited to participate agreed to be interviewed. Caregivers who took part in the study received a $10 gift card after completing the interview. This study was approved by the Johns Hopkins Medicine Institutional Review Board.

Survey Instrument

The survey instrument used in this study included questions assessing caregivers’ knowledge, use of, and satisfaction with 12 on-site services at the HLC as well as two previously validated questionnaires to assess caregiver perception of the clinic as a medical home (Parents’ Perception of Primary Care [P3C]), and overall caregiver satisfaction (Client Satisfaction Questionnaire–8 [CSQ8]). The P3C has previously been validated in a racially and socioeconomically diverse cohort that included a subpopulation of caregivers who were similar to the HLC population in terms of race, educational attainment, and children’s insurance status. Caregivers who agreed to participate in the study were first asked whether they had known about and ever used each of the 12 services, and then asked to rate their satisfaction with each service they had used. Caregivers responded to the 23 questions that comprise the P3C, focusing on provider continuity, access, communication, contextual knowledge, comprehensiveness, and ability to coordinate care. This was followed by 8 questions that comprise the CSQ8, focusing on overall satisfaction with their clinic experience. At the end of the interview, caregivers were invited to provide open-ended feedback regarding their overall experience at the clinic. Demographic information was collected about participants and up to 3 of their children who were patients at the clinic. The survey consisted of 38 total questions and took approximately 15 to 20 minutes to complete. All survey data were recorded in a password-protected electronic project database.

Data Collection

In addition to the interview data, health care utilization data was collected from the children’s electronic medical records. A study team member abstracted and recorded the number of acute care (AC) clinic visits, emergency department (ED) visits, and well-child (WC) visits made by each participating child in the 2 years prior to the interview date. The number of missed WC visits was calculated for each child by comparing the number of WC visits they had made over the previous 2 years to the number of expected visits based on AAP Bright Futures guidelines. Health care utilization data were recorded in the electronic project database.

Data Analysis

The primary outcome measures in this study were (a) the number of on-site services used by HLC caregivers; (b) caregivers’ self-reported perception of the clinic, as measured through the CSQ8 and P3C; and (c) children’s patterns of health care utilization, as measured by the number of missed WC visits, AC visits, and ED visits for each child in the preceding 2 years. Descriptive statistics were used to characterize participating caregivers and their children. Student’s t tests were used to compare caregiver satisfaction and health care utilization for groups of caregivers stratified by the number of services
they had used and by their age. Multivariate logistic regression was used to examine associations between caregiver demographic characteristics and clinic service utilization with caregiver satisfaction, as well as the association between caregiver demographics, clinic service utilization, and caregiver satisfaction with children’s health care utilization. Covariates included caregiver age, as a continuous variable, and insurance status, dichotomized as either Medicaid or private insurance. All statistical tests were 2-tailed and were considered significant at \( P < .05 \). All analyses were performed using STATA 11.0.16

### Results

#### Sample Characteristics

Demographic characteristics of the 80 participating caregivers and their children are summarized in Table 1. The majority of participating caregivers were female (90%) and African American (89%), with a mean age of 31.7 ± 10.1 years, and about half (51%) had 2 or more children seen at the clinic. A total of 144 children of participating caregivers were seen at the clinic for primary care; the mean age of these children was 6.1 ± 4.8 years, and they were predominantly Medicaid insured (84%). There were no significant demographic differences between caregivers who used \( \geq 3 \) services compared with those who used <3 services. However, caregivers who used \( \geq 3 \) services were more likely to have multiple children seen at the clinic (odds ratio [OR] = 2.60, 95% confidence interval [CI] = 1.04-6.51).

### Use of Clinic On-Site Services

The 12 on-site services included in this study are listed in Table 2. Caregivers reported having knowledge of a mean of 6.3 of the 12 on-site services and using a mean of 2.4 services. Ninety percent of caregivers had used at least one service, and 42% had used 3 or more. The three most frequently used services were the on-site safety resource center (which provides families with individualized education and subsidized safety equipment such as car seats and bike helmets), the Health Leads family resource desk (where undergraduate student volunteers provide families with referrals to a variety of community services, including programs for housing and job placement), and family support services (which caters to the mental health needs of caregivers, particularly new mothers with postpartum depression). Caregivers reported being highly satisfied with the services they had used; the mean satisfaction rating for all clinic services was 3.75 out of 4. Ninety percent of caregivers felt the services at the clinic had met all or almost all of their perceived needs.

### Caregiver Satisfaction

In general, caregivers reported very high satisfaction with the HLC, with 92% rating their overall experience at the clinic as excellent. The mean CSQ8 score for participating caregivers was 31.3 out of 32, and the mean P3C score was 95.2 out of 100. When caregivers were stratified based on the number of clinic services they had used, use of \( \geq 3 \) more services was associated with greater satisfaction with the clinic (CSQ8 mean: 31.8 vs 31.0, \( P < .05 \)) and a stronger perception of the clinic as...
a medical home (P3C mean: 97.6 vs 93.4, P < .01) (Figure 1). Using multivariate logistic regression (Table 3, panels A and B), use of ≥ 3 services was independently associated with increased CSQ8 score (OR = 4.85, CI = 1.38-17.0) and P3C score (OR = 3.15, CI = 1.13-8.78), after adjusting for insurance status and caregiver age. Medicaid insurance status was also significantly associated with an increased P3C score (OR = 6.54, CI = 1.46-29.2) but not with an increased CSQ8 score (OR = 2.49, CI = 0.60-10.4). Caregiver age was not significantly associated with P3C or CSQ8 score.

Health Care Utilization

The 144 children in this study population made an average of 2.73 AC visits, 1.15 ED visits, and 3.5 WC visits in the previous 2 years. Seventy-six percent of children had no missed WC visits during this 2-year period, while the remaining 24% had missed an average of 1.36 WC visits. Increased utilization of on-site services was found to be associated with lower WC visit adherence. Children of caregivers who had used ≥ 3 services had a significantly increased mean number of missed WC visits (0.49 vs 0.20, P < .05). These children also had a higher mean number of AC visits (3.0 vs 2.6) and ED visits (1.3 vs 1.1), although these differences did not reach statistical significance (Figure 2). Increased caregiver age was found to be associated with a decrease in ED visits and in missed WC visits. Children of caregivers who were 31 years or older had a significantly lower mean number of missed WC visits (0.22 vs 0.49, P < .05) and ED visits (0.82 vs 1.65, P < .05), as well as a lower number of AC visits (2.53 vs 3.16), although this difference was not statistically significant (Figure 2). In multivariate logistic regression (Table 4), adjusted for insurance status and P3C and CSQ8 scores, the associations between use of ≥ 3 services and number of missed WC visits OR = 2.00, CI = 0.84-4.76) and increased caregiver age and number of missed WC visits (OR = 0.79, CI = 0.35-1.76) did not reach statistical significance. Insurance status, P3C score, and CSQ8 score were also not significantly associated with missed WC visits.

Discussion

This study examined the utilization and impact of 12 colocated multidisciplinary services targeting family psychosocial needs at a pediatric primary care clinic in an urban low-income, high-need community. The majority of caregivers in our study sample had children who were Medicaid-insured, and 90% had used at least one of the on-site services. Use of 3 or more services was associated with greater caregiver satisfaction, but not with improved adherence with well-child care guidelines.

Caregivers in this study reported using a mean of 2.4 of the 12 available on-site services, with the most commonly used being the safety resource center, the Health Leads family resource desk, and the family support counselor, who assists caregivers with their mental health needs. In a 2009 survey done to assess family needs at our study site, caregivers reported a median of 2 basic social needs, and some of the most commonly reported needs included assistance with employment (52%), parental education (34%), child care (19%), food insecurity (16%), and housing placement (10%).6 The Health Leads program specifically targets several of these needs by training volunteer college undergraduates to serve as advocates and connect caregivers with existing community-based resources and programs. An assessment of the HLC Health Leads program conducted between 2008 and 2011 showed that 10% of families at the clinic had used the family resource desk and 50% of these families had been successfully connected with a community resource within 6 months.17 In the current study, 42% of participating HLC caregivers reported having used the family resource desk, suggesting that use of the Health Leads program has increased substantially, allowing a growing number of caregivers to be successfully connected to community programs.

It is important to note that some of the other most commonly accessed services at our study site, including the safety resource center and the mental health programs for caregivers and for children, cater to needs that were not frequently mentioned by caregivers in the 2009 needs assessment. Primary care clinics determining which on-site programs might be most beneficial to integrate should therefore rely not only on self-reported...
family needs at their clinic site but also on published descriptions of program utilization and impact at clinics with similar patient populations. Specifically, some caregiver needs, such as the need for mental health support, may be systematically underrecognized and underreported. Additionally, caregivers at our study site reported knowledge of only 6.2 of the 12 on-site clinic services prior to their interview, suggesting that clinic staff and providers may not be informing caregivers about the full range of services available and that a lack of awareness of these resources may be limiting their use. Clinics in high-need communities should therefore recognize the importance of not only integrating colocated psychosocial services but also effectively communicating the availability of these services to patients, families, and providers, in order to maximize their utilization and impact.

This study also assessed caregiver satisfaction and found that overall, caregivers reported high levels of satisfaction with the clinic and a strong perception of the clinic as a medical home, as measured by mean scores on the CSQ8 and P3C questionnaires. Previous studies of caregiver satisfaction at pediatric primary care clinics have defined a “high” CSQ8 score as 27 to 32 and reported a mean of 28.5; the caregivers in our study had a mean CSQ8 score of 31.3 with a range of 24 to 32.15,18 Similarly, previously reported means on the P3C at pediatric primary care clinics serving a subpopulation of caregivers similar to the HLC population have ranged from 62.1 to 75.4, while the mean P3C score in our study was 95.2.14,19 The availability of colocated services at HLC may have contributed to these high overall satisfaction scores; caregivers may have viewed the clinic more favorably because of the variety of programs and resources available. Future studies could more definitively assess the impact of service availability on caregiver satisfaction by comparing satisfaction scores for groups of caregivers with similar self-identified psychosocial needs at clinics with and without available on-site services.

When caregivers in our study were stratified based on utilization of on-site services, those who had used three or more had significantly higher CSQ8 and P3C scores, suggesting that caregivers who had multiple psychosocial needs and who were successfully connected with services targeted to these needs may have viewed the clinic more favorably. Caregivers whose children were

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<th>Table 3. Multivariate Logistic Regression: Caregiver Satisfaction.</th>
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Abbreviations: CSQ8, Client Satisfaction Questionnaire–8; P3C, Parents’ Perception of Primary Care; SE, standard error; CI, confidence interval.

\(^a\)Number of observations = 80, \(R^2 = .11\).

\(^b\)Number of observations = 80, \(R^2 = .10\).

\(^*\) \(P < .05\).
Medicaid-insured had significantly higher P3C scores than caregivers whose children were privately insured, suggesting that low-income caregivers, who are likely to have a greater number of psychosocial needs, may have been more likely to perceive the clinic as a medical home. Collectively, our results suggest that pediatric primary care clinics that serve predominantly Medicaid insured children or children whose caregivers have many basic social needs may be able to improve their caregiver and patient satisfaction scores by incorporating on-site services and maximizing their appropriate utilization.

This study also examined missed well-child visits, emergency department visits, and acute care visits among children of participating caregivers, in order to evaluate the impact of the clinic’s colocated services on children’s health care utilization. Children from low-income families who are up to date on well-child visits have been shown to have improved health outcomes and fewer avoidable hospitalizations, suggesting that efforts to improve children’s health in low-income communities should focus at least in part on improving adherence with well-child visit guidelines.20 Previous studies analyzing data over the past 2 decades from the National Maternal and Infant Health Survey and the National Medical Expenditure Panel Survey have obtained estimates of well-child visit adherence ranging from 46.3% in 1996-1998 to 58.9% in 2007-2008.21-23 These studies identified several caregiver risk factors for inadequate adherence with well-child care, including African American race, public insurance, low levels of maternal education, and family income below the federal poverty level.23 Despite the high prevalence of several of these risk factors in our study population, the overall rate of well-child visit adherence in this study was 76%, much greater than the national average. The availability of colocated services at HLC may have played a role in improving adherence with well-child care; low-income families may have been more likely to bring their children to well-child care visits because of the other available on-site services. Future studies could assess this further by comparing the adherence rate observed in our study with rates at similar clinics with and without colocated services.

Our results also showed that caregivers who had used 3 or more services had a significantly increased mean number of missed well-child visits, as compared with those who had used 2 or fewer services. This suggests that caregivers who use many clinic services may face more significant barriers to accessing routine health care for their children. Potential barriers identified in surveys of low-income parents at other pediatric primary care practices include lack of reliable and affordable transportation to the clinic and inability to take time off from work for their children’s appointments.24 Caregivers who face these and other barriers to accessing care may choose to wait until their children are ill and then seek care for them in the acute care or emergency department setting, rather than prioritizing routine well-child visits. Compared with older caregivers, those who were 30 years old or younger also had a significantly increased mean number of missed well-child visits and an increased mean number of emergency department visits. Collectively, our data suggest that young caregivers and caregivers with many psychosocial needs may benefit from more comprehensive interventions designed to improve adherence with well-child care, including education regarding the importance of regular well-child care visits to their children’s long-term health and assistance with appointment scheduling and transportation. Our results also suggest a need for increased integration of the on-site services with the delivery of well-child care. For example, when a caregiver accesses any of the on-site services available at the clinic, they could be provided with information about overdue well-child care appointments for their children and receive assistance with scheduling and transportation.

It is important to acknowledge several limitations of our current study. First, because this study was conducted at one pediatric primary care clinic, the observed results may not be generalizable to other clinic sites and different patient populations. This study was unable
to definitively examine the impact of on-site service availability on caregiver satisfaction or health care utilization, as all caregivers who presented to HLC had the full range of services available to them. Additionally, because this study did not include any objective measures of caregiver need, we could not account for the fact that caregivers who used a greater number of services may have done so because they had a greater need for these services, and this increased need may have independently influenced their satisfaction and health care utilization. Future studies could overcome both of these limitations by comparing caregiver satisfaction and patterns of health care utilization among populations of caregivers with similar self-identified needs at clinics with and without programs targeted to these needs. This study was also unable to account for patients who may have had visits at other hospital or clinic sites, as our data included only visits made to the clinic and emergency department within the affiliate health system. In addition, we were unable to examine the association of individual services at the HLC with overall caregiver satisfaction or health care utilization, as the number of caregivers utilizing each individual service was too small. There may have also been some selection bias and social desirability bias associated with the design of this study as a survey with in-person interviews.

The medical home approach to health care delivery, in which clinics incorporate colocated services targeted to the basic social needs of patients and their caregivers, represents a novel way to address families’ psychosocial needs in the pediatric primary care setting.12 By incorporating multidisciplinary services, primary care clinics in similar low-income, high-need communities could enhance providers’ ability to adequately address families’ needs while also improving caregiver satisfaction. Our results suggest that the incorporation of on-site services may not be sufficient to improve well-child care adherence or reduce avoidable emergency department utilization, particularly for the vulnerable population of caregivers with multiple psychosocial needs. There is a need for greater integration of colocated services in primary care settings and for more intensive interventions targeting caregivers with multiple psychosocial needs. Future studies should examine strategies to maximize appropriate use of on-site services, integrate these services with the delivery of efficient and effective well-child care, and better identify and overcome high-need caregivers’ barriers to accessing care.

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Declaration of Conflicting Interests

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