

Training in Social Determinants of Health in Primary Care: Does it Change Resident Behavior?

Melissa D. Klein, MD; Robert S. Kahn, MD, MPH; Raymond C. Baker, MD, MEd; Elaine E. Fink, JD; Donita S. Parrish, JD; Deanna C. White

From the Cincinnati Children's Hospital Medical Center, Division of General and Community Pediatrics, Cincinnati, OH (Dr Klein, Dr Kahn, and Dr Baker); Legal Aid Society of Greater Cincinnati, Cincinnati, OH (Mrs Fink, Mrs Parrish, and Ms White)
Presented at the Pediatric Academic Societies Annual Meeting, Vancouver, British Columbia, May 2010.
Address correspondence to Melissa D. Klein, MD, Cincinnati Children's Hospital Medical Center, Division of General and Community Pediatrics, 3333 Burnet Ave, Cincinnati, Ohio 45229-3039 (e-mail: melissa.klein@cchmc.org).
Received for publication October 13, 2010; accepted April 14, 2011.

ABSTRACT

OBJECTIVE: The aim of this study was to examine the effects of a new social determinants of health curriculum on pediatric interns' attitudes, knowledge, documentation, and clinical practice.

METHODS: A nonrandomized mixed-methods study of an educational intervention conducted over a 1-year period was performed. The 2008–2009 pediatric interns (intervention group) participated in a new social determinants of health curriculum; prior year interns were controls. An anonymous online survey at the end of internship to both groups (post-tests) and the beginning of internship to the intervention group (pretest) assessed attitudes and knowledge. Documentation from the electronic medical record of social history questions was audited during the same 3-month period in successive years. Medical-legal partnership (MLP) referrals from both groups were compared.

RESULTS: Intervention interns ($n = 20$) were more comfortable discussing issues (100% vs 71%; $P < .01$) and felt more knowledgeable regarding issues (100% vs 64%; $P = .005$), community resources (94% vs 29%; $P < .001$), and housing

(39% vs 6%; $P = .04$) than control group interns ($n = 18$). No differences regarding the importance of social hardships or screening for food security or education issues were found. Knowledge was greater in the intervention group post-test in all domains: benefits (72% vs 52%), housing (48% vs 21%), and education (52% vs 33%; $P < .001$ for all). Intervention interns were more likely to document each issue (benefits 98% vs 60%, housing 93% vs 57%, food 74% vs 56%; $P < .001$ for all). The intervention group had a slightly higher rate of referral to MLP, although the difference did not reach statistical significance.

CONCLUSION: The educational intervention increased interns' comfort and knowledge of social determinants of health and community resources. Documentation of social questions also increased.

KEYWORDS: electronic medical record; medical-legal partnership; pediatric resident education; social determinants of health

ACADEMIC PEDIATRICS 2011;11:387–393

WHAT'S NEW

After introduction of a social determinants of health curriculum, pediatric interns' comfort and knowledge of these issues and community resources improved. Their social history documentation and clinical practice of referral to the medical-legal partnership increased.

SOCIAL CONDITIONS POWERFULLY influence child health. In 2007, the number of families living below the poverty level increased to 7.1 million (9.5%), including 12.8 million children (17.6%).¹ Research suggests that conditions common among those in poverty, such as food insecurity, housing instability, inadequate parental education, and parental substance abuse, are associated with higher rates of behavioral, developmental, and learning problems.² Substandard housing and homelessness have

been linked to higher rates of diarrheal illness, ear infections, asthma, and health service utilization.^{3,4} The impact of poverty on child health is emerging as a new morbidity due to the recognition that socioeconomic and health status lead to poor health outcomes in adults.⁵

Training physicians to identify and address these social determinants is currently lacking in medical education. Physicians need to develop the skill to assess for social and environmental risks and engage families from a variety of economic and cultural backgrounds.⁶ Traditional medical curricula do not specifically address families' social, economic, and environmental needs. Pediatric textbooks introduce social history as identifying family members and caregivers, high-risk patient behaviors (tobacco, alcohol, drugs), and child's activities (television watching). Basic needs for low-income families are rarely addressed.⁷ Resident continuity clinics are highly likely to serve children from underserved backgrounds with poverty related issues,⁸ but residents may not know how to address

these issues. Furthermore, residents may consciously avoid asking about social issues due to 1) lack of time, 2) lack of understanding of the importance of these issues, 3) discomfort exploring these issues, and 4) lack of knowledge of available community resources.⁹ Barriers to domestic violence screening have been previously documented,¹⁰ and training during residency has been shown to significantly improve resident knowledge, skills, and sense of competency in managing these cases.¹¹

Effective child advocacy training, including social determinants of health, is an important aspect of resident education and an Accreditation Council on Graduate Medical Education requirement.¹² Higher competency in community health has been demonstrated in residents who completed a 2-week advocacy rotation.¹³ Similarly, residents who completed a longitudinal curriculum in community-based advocacy with legislative experiences demonstrated improved knowledge, ability to identify community resources, self-reported advocacy skills, and perceived value of advocacy training.¹⁴

The incorporation of lawyers into the health care team facilitates the provision of legal services to vulnerable families.¹⁵ Although social workers assess family stability and refer to appropriate resources, lawyers identify rights violations and take legal actions to hold agencies, landlords, and schools accountable.¹⁵ In August 2008, the Pediatric Primary Care Center (PPCC) at Cincinnati Children's Hospital Medical Center (CCHMC) began Child HeLP,¹⁶ a colocated medical-legal partnership (MLP) with the Legal Aid Society of Greater Cincinnati, to incorporate an on-site attorney and paralegal into the medical home. Child HeLP is based on the MLP model developed in Boston and subsequently expanded to various centers across the country. Families referred to a MLP from their

pediatric provider increasingly accessed community food and income resources and had improved access to health care; two thirds of those families reported improved child health and well-being.¹⁷ Ensuring that residents are prepared to practice in socially complex environments and understand the negative effects of adverse social determinants on the health of low-income children is essential.¹⁸

The importance of formal training in the social determinants of health combined with the expertise of Child HeLP in the continuity clinic led to the initiation of this study. The purpose of the study was to develop a formal social determinants of health curriculum and examine its effects on pediatric residents' 1) comfort and knowledge of the social determinants, 2) knowledge of community resources, and 3) behavior changes, evidenced by documentation of screening, identification of patients with social needs, and referral patterns to Child HeLP.

METHODS

This was a nonrandomized mixed-methods study of an educational intervention. It was approved by the Institutional Review Board of the CCHMC. The study was conducted from June 2008 to June 2009 (Figure 1).

STUDY SETTING

The study was performed in the PPCC, a large urban academic outpatient clinic that serves as the continuity site for approximately 60 pediatric residents per year. The PPCC is the medical home for approximately 15 000 children (35 000 visits per year) from predominantly economically disadvantaged families.

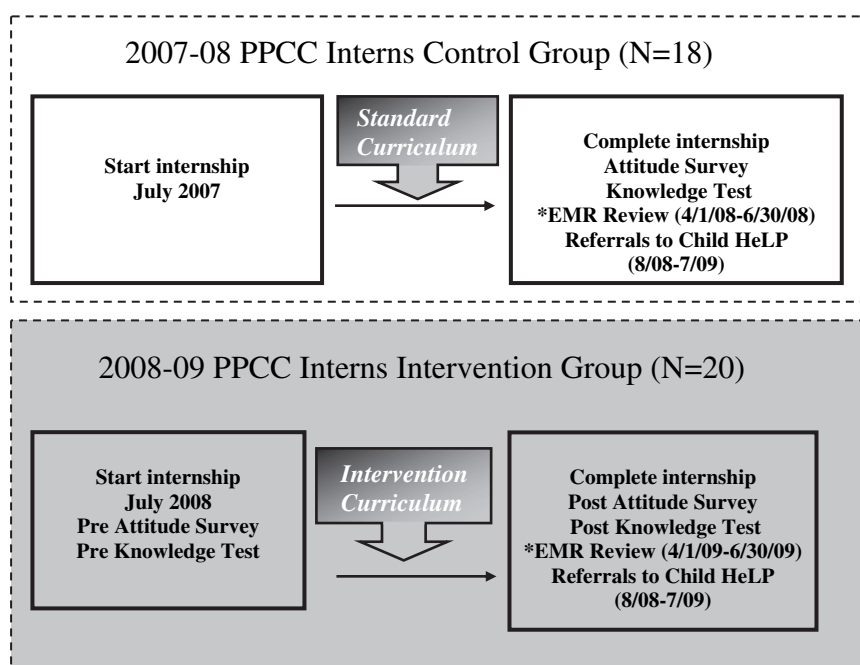


Figure 1. Study design. PPCC indicates Pediatric Primary Care Center; and *EMR, electronic medical record.

STUDY SUBJECTS

There are approximately 50 pediatric interns at CCHMC each year; about 40% of them have their continuity clinic at the PPCC. The intervention group was composed of the 20 pediatric interns who began their internship in July 2008 and who spent their continuity clinic experience in the PPCC. The control group was composed of the 18 second-year PPCC continuity clinic residents in July 2008. The control group had completed their continuity clinic in PPCC during their intern year; they had participated in the previous version of the intern advocacy course (2007–2008), which reviewed topics such as obesity, street drugs, poisoning, child abuse, and injury prevention, but did not contain the social determinants of health curriculum. Demographic data was obtained from both the intervention and control groups as part of their surveys.

SOCIAL DETERMINANTS OF HEALTH CURRICULUM DEVELOPMENT

A formal social determinants of health curriculum was developed based on a needs assessment of the current curriculum. A focus group of second- and third-year pediatric residents was conducted in August 2007 to determine their perceived knowledge deficits and identify methods of incorporating new curricular content. The Residency Program Directors and chief residents reviewed the results of the focus group and facilitated incorporation of identified deficiencies into the curriculum. A mandatory 2-week intern advocacy rotation that combined hands-on learning and didactic lectures on a variety of injury prevention topics was already present. The social determinants of health curriculum was incorporated into the advocacy rotation. This newly developed curriculum was the educational intervention for this study.

The experiential portion of the social determinants of health curriculum involved the interns shadowing PPCC social workers as they obtained social histories; the following month the interns asked the social history questions while being observed by the same social workers and received feedback. In addition, a half-day guided immersion activity was instituted that took the residents to 1) Hamilton County Jobs and Family Services (the local public benefits agency), where the interns observed a family apply for public benefits and 2) the Freestore Foodbank, where many PPCC families receive emergency food supplies. The following day, the residents attended a 3.5-hour, interactive didactic program that was cotaught by members of the Child HeLP team. Lectures included an overview of the social determinants of health, the rationale behind MLPs, and technical aspects of public benefits, housing, and educational rights and laws; residents also participated in an interactive exercise of budgeting in poverty and concluded with a reflective exercise.

During the course of the study year, all pediatric residents (including both intervention and control residents) were offered several conferences on these issues, taught by members of the Child HeLP team. Also, during their PPCC experience they were exposed to the bedside,

patient-centered teaching of the on-site lawyer and paralegal. When a resident identified a social legal issue during a patient visit, the legal partner was immediately consulted and the resident could observe the legal interview, discuss the case with the legal partner, and learn about legal issues and management strategies.

SURVEY DEVELOPMENT

Two evaluations were developed de novo for this study by an interdisciplinary group from the Child HeLP team, social work, and the General Pediatrics Education Section. The first was a survey that used a 5-point Likert scale to obtain information concerning residents' attitudes about and comfort with screening families for issues impacted by social determinants. The second evaluation was a knowledge test of the issues (public benefits, food insecurity, housing, and education) and community resources by using multiple choice and true-false questions. Both surveys were developed on an Internet survey platform (<http://www.surveymonkey.com>) and distributed via an e-mail containing a link to the survey. The surveys were reviewed by experts from the Medical Education Research Group of the CCHMC for content validity and were amended according to their recommendations. The surveys were then piloted for content, clarity, and timing on 2 consecutive years of pediatric chief residents.

STUDY DESIGN

In June 2008, at the end of their intern year, the control residents completed the knowledge test and survey of attitudes and comfort; these were the control post-test and survey. The control residents did not take a pretest or survey.

In July 2008, the intervention group received the same test of knowledge and survey of attitudes and comfort (the intervention pretest and survey) to determine their baseline at the beginning of their internship. In June 2009, at the end of their internship and after having participated in the educational intervention, they completed the same knowledge assessment and survey of attitudes and comfort (intervention post-test and survey).

An electronic medical record (EMR) system is used for documentation in the PPCC (Centricity, GE Medical Systems Information Technologies, 2003, Waukesha, WI). The social history section of the EMR includes questions on public benefits, food security, housing, domestic violence, and maternal depression (Figure 2). Both the control and intervention groups had their EMR well-child visit charts from April through June of their intern year reviewed to evaluate their EMR documentation of the social history questions. Both the number of social questions documented and the positive responses (cases detected) for each resident were obtained. Although the social questions were modified in July 2008 to make the click boxes easier to use, the number of questions and question topics were not changed between the 2 evaluation periods.

Both intervention and control group referrals to Child HeLP from August 15, 2008, through June 30, 2009, were

Every parent faces different stresses that can affect their child's health. I ask every family about these issues because we may be able to help:

Child lives with:

Attends: Preschool/HeadStart/Daycare Home/Family Daycare Cared for by Parent/relative

Comment:

Are you having problems receiving WIC, food stamps, daycare vouchers, medical card, or SSI? Yes No

Housing problems (overcrowding, roaches, rodents, utilities, mold, lead)? Yes No

Threatened with eviction or losing your home? Yes No

Do you worry that your food will run out before you get money or food stamps to get more? Yes No

Over the past 2 weeks, have you felt down, depressed, or hopeless? Yes No

Over the past 2 weeks, have you felt little interest or pleasure in doing things? Yes No

Do you feel that you and/or your children are unsafe in your relationships? Yes No

Would you like to speak with a social worker or legal advocate in the clinic about these issues? Yes No

Figure 2. Social legal screening questions in PPCC electronic medical record. PPCC indicates pediatric primary care center; WIC, Women, Infants, and Children; SSI, Supplemental Security Income.

evaluated. Unlike other outcome measures, the control group referrals were assessed during their second year of training after Child HeLP had been integrated into the clinic. The total number of referrals and the number that were made directly to Child HeLP (without involving the social worker) were documented for each subject.

STATISTICAL ANALYSIS

Chi-square tests were performed to compare the demographic information from the intervention and control groups. Paired *t* tests were used to compare presurvey and postsurvey and knowledge test differences in the intervention group; independent *t* tests were used to compare the intervention and control groups' postsurveys and knowledge tests. Fischer exact tests were used to compare EMR documentation, case detection rates, and Child HeLP referrals between the 2 groups.

RESULTS

PARTICIPANT DEMOGRAPHICS

A comparison of the intervention and control groups demonstrated no significant differences in gender, age, or prior work/volunteer experience in a legal aid or social work office.

ATTITUDE SURVEY QUESTIONS

The postsurvey was completed by 17 of 18 (94%) control subjects. The preintervention and postintervention surveys were completed by 18 of 20 (90%) intervention subjects.

Attitude and comfort assessing families, evaluated by preintervention and postintervention surveys, changed positively on multiple issues: comfort discussing poverty issues (22% vs 56%; $P = .04$), knowledge of issues (61% vs 94%; $P = .003$), and knowledge of community resources (39% vs 94%; $P = .004$). The intervention group's perception of their own practice significantly changed between

the presurveys and postsurveys; the frequency with which they reported asking about social determinants of health issues increased significantly: difficulty with obtaining benefits (17% vs 100%; $P < .001$), safe and stable housing (44% vs 94%, $P < .001$), housing conditions (50% vs 100%; $P < .001$), familiarity with subsidized housing (6% vs 39%; $P = .04$), and food security (11% vs 94%; $P < .001$). There were no significant changes identified regarding the intervention group's perceptions of how often families face social hardships or the importance of those hardships to health and educational issues.

The postintervention surveys showed that, compared with the control group, the intervention group had significantly increased comfort asking about issues (100% vs 71%; $P = .01$), perceived knowledge of issues (100% vs 64%; $P = .005$) and community resources (94% vs 29%; $P < .001$), and familiarity with subsidized housing (39% vs 6%; $P = .04$). Responses to questions about frequency of social hardships, their impact on health, and the residents' perception of how frequently they ask families about benefits, housing, food, and education did not differ significantly between the 2 groups (Table 1). When asked what they felt were barriers to screening for social issues, the intervention group (Figure 3) was less likely to report lack of knowledge as a barrier to screening (70% vs 11%; $P = .02$).

KNOWLEDGE TEST CHANGES

Knowledge questions were divided into benefits, housing, and education categories for statistical analysis. The intervention group's knowledge significantly improved from pretest to post-test survey in each area: benefits (31% vs 72% correct; $P < .001$), housing (30% vs 48% correct; $P = .02$), and education (20% vs 58% correct; $P < .001$). The intervention group also had significantly better knowledge than the control group in all 3 domains: benefits (72% vs 52% correct; $P < .001$), housing (48% vs 21% correct; $P < .001$), and education (52% vs 33% correct; $P < .001$).

Table 1. Resident Attitudes and Comfort in Discussing Social Issues

| | Intervention (n = 18) | Control (n = 17) | P Value |
|---|-----------------------|------------------|---------|
| How often think families face social hardships? | | | |
| Very often/often | 18 | 14 | .21 |
| Sometimes | 0 | 3 | |
| Rarely/never | 0 | 0 | |
| How important hardships to health? | | | |
| Very important | 18 | 16 | .49 |
| Somewhat | 0 | 1 | |
| Not | 0 | 0 | |
| Comfort discussing issues? | | | |
| Very comfortable | 10 | 4 | .01* |
| Somewhat | 8 | 8 | |
| Uncomfortable | 0 | 5 | |
| Knowledgeable of issues? | | | |
| Very | 1 | 0 | .005* |
| Somewhat | 17 | 11 | |
| Not at all | 0 | 6 | |
| Knowledgeable of community resources? | | | |
| Very | 0 | 0 | <.001* |
| Somewhat | 17 | 5 | |
| Not at all | 1 | 12 | |
| Familiar with subsidized housing in Cincinnati | | | |
| Very/somewhat familiar | 7 | 1 | .04* |
| Unfamiliar/very unfamiliar | 11 | 15 | |

*Denotes statistical significance.

EMR DOCUMENTATION OF SOCIAL HISTORY QUESTIONS

An audit of the residents’ documentation of social history questions in the EMR was performed on 100% of control residents and 95% (19/20) of intervention residents, due to leave of absence of 1 intervention resident.

Compared with the control group, the intervention group had significantly increased documentation of issues taught during the advocacy course (benefits 98% vs 60%, $P < .001$; housing 93% vs 57%, $P < .001$; food 74% vs 56%, $P < .001$). The intervention group’s documentation of other social issues not specifically addressed in the curriculum, such as maternal depression (little interest 68% vs 50%, $P < .001$; feeling down 68% vs 51%, $P < .001$) and domestic violence (70% vs 50%; $P < .001$), also increased significantly. However, the number of positive responses to social determinants of health questions (case detection) that the intervention group received did not differ significantly from that of the control group (Table 2).

REFERRALS TO CHILD HELP

The intervention group referral rate (59/1427 [4%]) to Child HeLP was greater than that of the control group (42/1427 [2.9%]), although this was not statistically significant ($P = .13$). The number of residents who directly referred a patient to Child HeLP without an initial social work screen also trended toward an increase in the intervention group (68% vs 33%; $P = .26$), although, likely due to the small number of subjects, did not reach statistical significance.

DISCUSSION

Pediatric residents in continuity clinic often treat children from underserved populations with unmet basic needs that may impact their health, yet traditional medical education does not address these issues. The new interdisciplinary social determinants of health curriculum developed for this study successfully improved resident comfort and knowledge of social determinants of health and community resources, and increased their EMR documentation of social questions and referrals to Child HeLP.

The increased resident comfort with and knowledge of social issues are consistent with results from curricular changes addressing other “new morbidities.” Both domestic violence and child maltreatment training during residency have been shown to significantly improve residents’ knowledge, skills, and sense of competence.^{11,13}

Families seen in a pediatric urban teaching hospital have reported a median of 2 unmet basic needs at their pediatric visits,¹⁹ which emphasizes the importance of training residents to address these issues. Our educational intervention facilitated the residents addressing these issues by substantially diminishing knowledge barriers to screening. Control

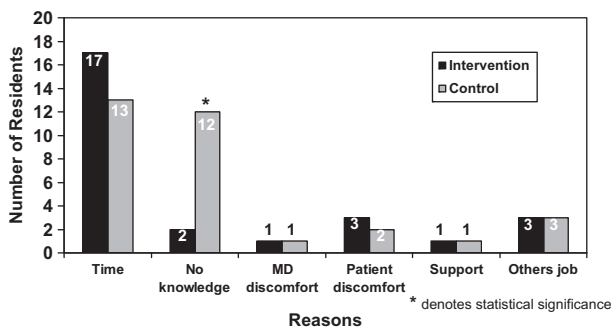


Figure 3. Barriers to screening. *Denotes statistical significance.

Table 2. Electronic Medical Record Documentation of Social History Screening*

| Topics in Advocacy | WCC With Screening Documented† | | | WCC With Positive Screen (Need Detected) | | |
|--------------------|--------------------------------|----------------------|---------|--|----------------------|---------|
| | Control n = 807 | Intervention n = 687 | P Value | Control n = 807 | Intervention n = 687 | P Value |
| Benefits | 483 (60) | 671 (98) | <.001‡ | 40 (5.0) | 42 (6.1) | .36 |
| Housing | 456 (57) | 642 (93) | <.001‡ | 19 (2.4) | 25 (3.6) | .17 |
| Food | 456 (56) | 511 (74) | <.001‡ | 14 (1.7) | 10 (1.5) | .84 |

*Values are No. (%) unless otherwise indicated.

†WCC = well-child checks.

‡Denotes statistical significance.

group interns were almost 7 times more likely to report knowledge as a barrier. Most of the intervention group thought time was a barrier to social screening, similar to Schor's findings that only 16% of physicians thought there was enough time to address family psychosocial issues during well-child care.²⁰

Intervention residents' EMR documentation of social history questions was greater than that of the control residents. We believe the increased documentation was at least partially attributable to the new curriculum, which raised their awareness of the issues and influenced their screening practices. The importance of this finding is supported by the study of Garg and colleagues,¹⁹ which found that, although the majority of resident physicians (91%) believed that addressing social needs was important, few (11%–19%) reported regularly screening. Unfortunately, the increased screening did not lead to a significant increase in detection rate. Compared with the prevalence of families with social needs, as documented via an anonymous survey in the PPCC waiting room in July 2009,²¹ neither the intervention nor control group detected near the number of families in need. The finding that the percentage of identified families was not markedly different between the 2 groups suggests that the intervention group was screening more frequently, but perhaps not more effectively.

The number of families referred to Child HeLP is evidence of physicians' practice and behavior change. Because Child HeLP was established after the control group had completed their internship, their referral pattern was monitored during their second year and compared with the intervention group's pattern during their intern year. Although not statistically significant, the intervention group did trend toward referring a greater percentage of families seen during well-child care. They also trended toward an increase in the number of families referred directly to Child HeLP, suggesting that they may have had a greater awareness of the social legal system. It is possible that the difference in referral patterns did not reach statistical significance because the intervention and control groups were both being exposed to Child HeLP presence and instruction in the PPCC during the evaluation year, or because of the small number of subjects, the study did not have enough power to detect statistically significant changes.

LIMITATIONS

The study was limited to improving screening and referral for social needs in an outpatient primary care setting. Although the ability to ask a complete social history is important on all clinical services (inpatient, emergency

department, and subspecialty clinics) and knowledge of resources should be transferable, we did not study potential outcomes in these other settings.

Although the interns involved in the new social determinants of health curriculum demonstrated improved comfort and knowledge of these issues and increased documentation, other factors may have influenced these changes. The presence of legal consultants interacting with and teaching residents during continuity clinic may have influenced their attitudes and increased their knowledge. Additionally, as the attending physicians became more comfortable with Child HeLP, they may have changed their teaching, influencing resident behavior.

Documentation of social screening questions was used as a measure of resident behavior, assuming that if the item in the EMR was checked, the question was asked. However, the possibility of discrepancies between what was asked and what was documented cannot be excluded. The EMR makes documentation easier with multiple click boxes, and capturing data is more efficient than paper chart review. However, it may lead to incorrect data; outpatient EMRs have been shown to contain significant amounts of inaccurate information.²² Direct observation of patient encounters would be a more accurate determinant of practice and behaviors but was beyond the scope of this study. In addition, between the time of the control group EMR audit and the intervention group EMR audit, the wording of the questions was modified to make completion of the EMR easier (so that all negative answers could be answered as "no"). Although we wouldn't expect that this would have increased the frequency with which residents asked about and documented the social issues, the possibility cannot be excluded.

This study occurred in 1 outpatient urban primary care site, with a limited number of interns over a 1-year period. The PPCC has excellent social resources with on-site social work and legal advocates, which may influence physicians to be more aware of social determinants of health and more likely to ask related questions. Therefore, the findings of this study may not be generalizable to clinical settings with different resources.

FUTURE DIRECTIONS

As resident comfort, knowledge, and documentation of social screening improve, we hope that the culture of the pediatrician's office will change, and it will be viewed as more than an office for ill-child care or shots. It will be a comprehensive medical home that effectively links families with community resources. Although the intervention

residents became more comfortable with and knowledgeable about issues related to social determinants and improved their documentation regarding these issues, they did not identify a greater percentage of patients with unmet social needs than the control group; this leads to concerns about the quality of their screening. An important next step is to develop a curriculum that focuses on teaching effective social history-taking skills by using a variety of educational techniques, including role play, patient/family participation, simulation videos, and case-based teaching. Additionally, further investigation into the quality and quantity of social screening in other clinical areas (inpatient units, emergency department, subspecialty clinics) is needed.

CONCLUSION

Continuity clinic patients are frequently from underserved backgrounds and may have a variety of unmet social and legal needs that can impact health, yet traditional medical training does not address these issues. Our new social determinants of health curriculum focuses on these issues and the community resources available to help resolve them. This curriculum improved pediatric residents' comfort with screening and both knowledge of issues and community resources, and increased their documentation of social screening questions.

ACKNOWLEDGMENTS

We would like to thank the PCC continuity clinic residents for their interest in learning and in improving patient care.

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