

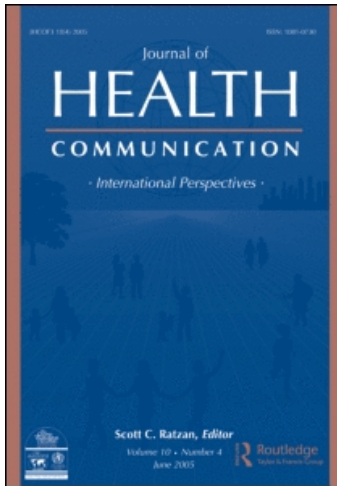
This article was downloaded by: [University of California, Los Angeles]

On: 23 March 2011

Access details: Access Details: [subscription number 918974530]

Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Health Communication

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713666566>

Empowering Low-Income Parents with Skills to Reduce Excess Pediatric Emergency Room and Clinic Visits through a Tailored Low Literacy Training Intervention

Ariella Herman^a; Portia Jackson^b

^a UCLA/Johnson & Johnson Health Care Institute, Los Angeles, California, USA ^b Department of Health Services, UCLA School of Public Health, Los Angeles, California, USA

Online publication date: 16 December 2010

To cite this Article Herman, Ariella and Jackson, Portia(2010) 'Empowering Low-Income Parents with Skills to Reduce Excess Pediatric Emergency Room and Clinic Visits through a Tailored Low Literacy Training Intervention', Journal of Health Communication, 15: 8, 895 – 910

To link to this Article: DOI: 10.1080/10810730.2010.522228

URL: <http://dx.doi.org/10.1080/10810730.2010.522228>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Empowering Low-Income Parents with Skills to Reduce Excess Pediatric Emergency Room and Clinic Visits through a Tailored Low Literacy Training Intervention

ARIELLA HERMAN

UCLA/Johnson & Johnson Health Care Institute, Los Angeles, California, USA

PORTIA JACKSON

Department of Health Services, UCLA School of Public Health, Los Angeles, California, USA

In this article, we evaluate the impact of a health literacy intervention to decrease emergency room and doctor's office visits for common childhood illness symptoms. Our education model trained low-income parents of young children (9,240 families) at 55 Head Start sites on the use of a low-literacy health book to respond to common childhood illnesses. The overall strategic framework required each Head Start site to create a Health Improvement Project to plan, successfully train, monitor, and keep the momentum through a strong follow-up with families regarding their health care decisions. The study was conducted from 2003 to 2006. Each family was tracked for 3 months prior to the training using self-report, and for 6 months afterward. The average number of emergency room and doctor visits among parents decreased 58% and 41% respectively ($p < .001$). Further, work days missed by the primary caretaker per year decreased 42%, and school days missed per year decreased 29% ($p < .001$). During the health literacy intervention, emergency room and doctor visits reported among parents decreased, as well as the number of work days and school days missed per year. Significant cost savings for the health care system can be anticipated through thoughtful broad dissemination of this training model.

According to the 2003 National Assessment of Adult Literacy, more than 90 million Americans lack the necessary health literacy skills to effectively utilize the health care system (Kutner, Greenberg, Jin, & Paulsen, 2006). Parents often are not sufficiently informed to decide when referral for urgent care is required (Doobinin, Heidt-Davis, Gross, & Isaacman, 2003). Low health knowledge and poor health literacy further contribute to parents' uncertainty about properly managing their child's acute health problems and can lead to high health care service utilization for common childhood illnesses (Sanders, Thompson, & Wilkinson, 2007).

This health literacy intervention is designed for a vulnerable population of parents and is delivered through the Head Start organization. The intervention

Address correspondence to Ariella Herman, Research Director, UCLA/Johnson & Johnson Health Care Institute, UCLA Anderson, Box 951481, D505 Cornell Hall, Los Angeles, CA 90095-1481, USA. E-mail: Aherman@anderson.ucla.edu

endeavors to empower Head Start parents by training them on the use of a low-literacy health book to respond appropriately to common childhood illnesses and symptoms, with the goal of reducing the likelihood that parents would go unnecessarily to the doctor or emergency room for routine ailments affecting their children. We aim to see if applying principles of adult learning, using a combination of verbal, written, and hands-on learning techniques delivered in an appropriate manner and reinforced, can produce meaningful changes in the patterns of health utilization for acute illness in children.

According to a study conducted by the Healthcare Cost and Utilization Project in 23 states, 12.4 million ER visits were made by children under the age of 18 during the year 2005, which represents one-quarter of all ER visits (55 million) for this data set. Of these ER visits, 97.1% resulted in discharges rather than admissions. Children between the ages of 0 and 4 were 2.5 times more likely to make an ER visit than those between ages 5 and 14, and they were 1.8 times more likely than those between ages 15 and 17. The rate of ER visits made by children was 86.1% higher in lower-income communities than the rates in wealthier communities. Within this data set, Medicaid was billed for a disproportionately high number of pediatric ER visits compared with private insurance plans (Merrill, Owens, & Stocks, 2009). These statistics underscore potential overuse of ER facilities by children from low socioeconomic status (SES) families in the United States and offer opportunity for intervention. Furthermore, in 2004, ER visit rates for Medicaid or State Children's Health Insurance Program patients (80.3 per 100) surpassed the rate for those with Medicare (47.1 per 100), no insurance (44.6 per 100), or private insurance (20.3 per 100; McCaig & Nawar, 2006). It appears that excess use of health services, the resulting burdens of decreased continuity of care, and high healthcare costs particularly impact low-income Americans and their children (Zimmer, Walker, & Minkovitz, 2006).

Past studies have found that child and family characteristics, such as SES and social environment, are associated with utilization of the ER for routine care (Halfon, Newacheck, & Wood, 1996). Prior interventions in this area have tried to improve utilization of health services by enforcing gatekeepers or encouraging use of primary care practitioners (Chande & Kimes, 1999; Gadowski et al., 1995; Grossman et al., 1998; Piehl et al., 2000; Wang et al., 2005). In one study, an initial decrease was seen in ER use, but health care costs and utilization level had returned to their normal levels after 2 years, revealing a need for additional strategies to maintain effect over the longterm (Grossman et al., 1998). Other studies have used health promotion interventions to educate parents on pediatric health issues and the role of primary care practitioners. These short-term however, interventions have not had an impact on utilization habits over time, nor have they utilized empowerment as a tool for behavior modification of parents in regards to use of ER and doctor visits for common childhood illnesses (Chande & Kimes, 1999; Chande, Wyss, & Exum, 1996). The results of prior studies point toward the need for a carefully tailored intervention with intensive reinforcements and follow-up in order to address the underlying motivation for behavior regarding use and clinic visits and to maintain this change over time.

Head Start and Early Head Start are national programs that provide comprehensive services to economically disadvantaged children from birth to age 5. Head Start programs promote school readiness, while supporting the needs of the whole child, including physical, dental, and mental health, as well as nutrition services. Family involvement is critical to the success of the program and is encouraged at

each site (U.S. Department of Health and Human Services, 2008b). Head Start is responsive to the child's culture, ethnicity, and language. There are 1,604 Head Start grantees in the United States, serving, almost 910,000 children every day. The Head Start program has enrolled over 24 million children since its creation in 1965. Recent studies have highlighted the impact that programs like Head Start can have on families by creating learning opportunities in both the school and home environment (Reynolds et al., 2007). Because of the stability and support it provides to parents, Head Start is an ideal setting in which to study an intervention and provide continuity and reinforcement.

The emphasis of the study discussed in this article is on long-term behavior modification achieved by teaching parents appropriate response skills to address their child's symptoms and providing subsequent reinforcement. From a cost-savings perspective, this intervention may decrease utilization of ERs and acute clinic visits by equipping parents with the skills they need to care for their children at home when appropriate.

Pilot Study—Training Parents to Care for Their Children's Acute Health Care Needs

The conceptual framework for the pilot study and the intervention that followed are based on the concept that educational materials must be at an appropriate reading level to be effective, and that lack of such materials and practical training in their use is a significant contributor to excess rates of use of pediatric health services. The pilot study tested concepts and training methods in a population of 400 Head Start parents that would educate them on how to best manage the health care needs of their children, and to utilize a low literacy medical reference guide: *What To Do When Your Child Gets Sick* (hereafter referred to as "health book"), by Gloria G. Mayer, RN, and Ann Kuklierus, RN (2004). This was a randomized placebo control study, in which half of the participants received a one-time training on the use of the health book with structured home visits, while the control group received the health book after the intervention period.

This health book is part of a series of easy-to-read self-help books published by the Institute for Healthcare Advancement (IHA; Mayer & Kuklierus, 2004). Designed for readers with low health literacy (books in the series range from a third- to a fifth-grade reading level and are available in English as well as Spanish, Korean, Mandarin, and Vietnamese translations), the health book offers easy-to-understand information on more than 50 common childhood medical problems, from fevers, infections, and pinkeye to heat rash, broken bones, bites, and poisoning.

In brief, results of this placebo controlled pilot for families that received both the health book and the training compared with those who only received the book showed a 48% decrease in ER visits for care and a 38% decrease in doctor or clinic visits for care over a 6-month period (Herman & Mayer, 2004). The pilot results were published in June 2004, and they were the basis for the expanded study (Herman & Mayer, 2004).

Methods

The Health Care Institute (HCI) intervention, based on the aforementioned pilot, focused on implementation of the training within an expanded program format that

included a strategic planning element (Health Improvement Project) and program follow-up. The pilot and national study were sponsored by Johnson & Johnson and implemented by the UCLA/Johnson & Johnson (HCI), based in the UCLA Anderson School of Management. During the intervention, researchers visited agency sites and trained staff to deliver the program to parents.

Sample Description

Between 2003 and 2006, HCI trained 55 Head Start agencies in 35 states to implement low health literacy training programs on acute childhood illness. These Head Start and Early Head Start agencies span the continental United States, in locations as varied as California, Kansas, Texas, New York, and Florida. All Head Start agencies were invited to apply. The 55 sites that were selected had sufficient infrastructure to support the program, and they were ready to actively engage in the partnership. We did not differentiate between Head Start and Early Head Start sites in our selection process, as the information presented in the trainings was applicable for parents of children in both age groups (Head Start serves ages 3–5, Early Head Start serves children from birth through age 3). Informed consent was obtained through Head Start for each agency site.

These 55 agencies trained 9,240 parents or primary caregivers (referred to collectively in this article as parents) who had at least one child enrolled in Head Start. The program was advertised to all parents at participating sites. Informed consent was obtained from parents prior to training. The enrolled families were predominately uninsured or Medicaid insured. The parents completed the program during a calendar school year. Parents underwent preintervention tracking for the first 3 months, were trained during the fourth month, received follow-up for 6 subsequent months, and were formally recognized at a graduation ceremony in the final month (Figure 1). A total of 7,281 participants completed the training and postassessment.

Program Description

Sessions were delivered using a train-the-trainer model, wherein Head Start staff were trained in the materials by HCI, and then they returned to their sites to teach

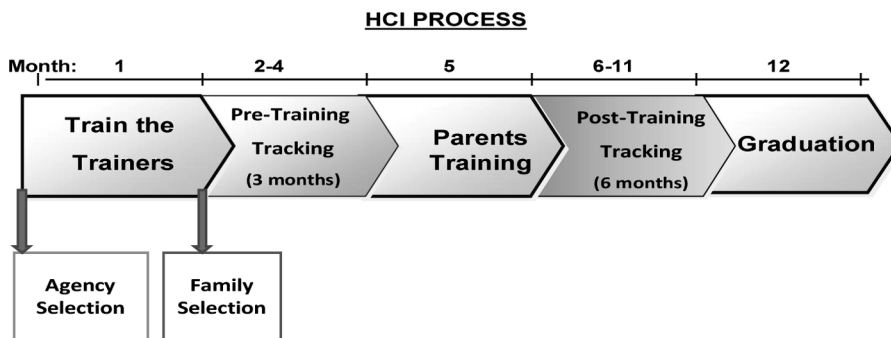


Figure 1. Health care literacy health intervention model.

the curriculum to parents. The comprehensive train-the-trainer curriculum included instruction on program strategy and implementation, project management, parent and staff motivation, marketing, and community relations, along with a mock parent training session on the health content that allowed participants to experience the training as a Head Start parent. Each project team was composed of site staff, including a Head Start/Early Head Start Director, Health Care Coordinator, and a Family Services Advocate. Two additional members were chosen for each team, including the Parent Involvement Coordinator, the Family Literacy Specialist, or the Community Partnership Specialist.

Each participating agency also developed a Health Improvement Project (HIP). This tool allowed the agencies to initiate the planning process 6 months before the train-the-trainers session, as well as to implement the parents' training and tracking of results during the 6 months after the session. The HIP is the backbone of the training, completed by every agency before and after training in order to ensure consistency. Through HIP, the local teams identified goals and objectives for the program, developed marketing strategies, and planned their parent training event. In addition, teams developed specific progress indicators and identified who was responsible for each task.

Trainings, conducted at a third-grade reading level, also were offered in several languages, including English, Spanish, Hmong, and Somalian. Participants were ethnically diverse: 25% were African American, 37% were Caucasian, and 30% were Hispanic/Latino. These proportions are representative of the national Head Start population in 2004 (31% were African American, 27% were Caucasian, and 27% were Latino; U.S. Department of Health and Human Services, 2008a).

The parent training on health content and follow-up content were uniform across all sites. The training was based on use of the health book, and accompanying slides were developed by the research team and distributed to all sites. The one-time sessions focused on skill development and literacy, and it lasted for 2 hours. Occasionally, sites offered fairs and booklets on health issues unrelated to the program content as a further incentive to engage parents. Attendance was tracked at the beginning and end of the session. Content was delivered by site staff who participated in the train-the-trainer sessions conducted by the research team, and translators, physicians, and nurses provided assistance where needed. The local agencies were responsible for coordination of door prizes, scheduling, food, and language translation needs. The research team conducted visits at each site as well as regular phone calls to provide guidance in carrying out each activity. Follow-up consisted of a tracking sheet filled out during in-home visits with Family Service Advocates: once per month for 3 months before the training, and once per month for 6 months following the training (nine meetings total).

We utilized two tools to assess parental use of health care services and parental beliefs about their abilities to care for their children's health care needs before and after the intervention. Two surveys were developed by the research team from the concepts elicited by a 2000 HCI Survey on health care completed by Head Start directors. The tools were validated during the pilot phase by Head Start staff and parents (Herman, 2000). One tool was a survey completed by parent self-report, which was translated into the parent's native language. The second survey tool was completed by Family Service Advocates, who asked questions of families during in-home follow-up visits.

Parental Assessment

A 16-item survey was designed with two objectives: (1) to identify Head Start parents' confidence or anxiety in taking care of their children when they are sick, and (2) to measure the parents' actual knowledge and behavior. The design process included a thorough literature search of topics such as pediatric health care interventions, parent satisfaction measures, and survey study designs. This was followed by physician review and pretesting to validate tools during the pilot study. Parental assessment surveys were conducted before the training and 6 months after the training. Family respondents did not change between data points.

Tracking Survey

Head Start parents were tracked monthly with home visits by a Family Resource Advocate for 3 months prior to training and for 6 months post training. The goal of tracking families was to reinforce training, to impact behavior change, and to collect data from parents. Data were collected on six variables that related to the child's illnesses in the previous month: days the child was absent from school; days the primary caretaker was absent from work due to their child's illness; number of times the child was treated at home, at a doctor's office a clinic, or in the ER; and, last, the number of times the parent or primary caretaker referred to the health book and did not need to seek treatment for a child's illness. In order to confirm the data collected from the Tracking Survey, school records were retrieved and analyzed for participating parents and their children.

To verify the lasting impact of the health literacy training program, agencies were asked to track parents who had participated in the intervention. A subsample of 581 parents volunteered to be tracked annually for 2 years following the intervention. Annual assessments tracking ER and doctor visits were performed via in-home visits and phone calls at three time points: once before the training, again the following year, and then one last time 3 years after the training. They also were asked to continue to self-report use of the health book through the established survey tools. Specifically, they were asked what their first source of help was for common childhood illnesses in the previous 3 months.

Data Analysis

For the full study, the quantitative data analysis for the parental assessment will focus on comparing two sets of results: preassessments, taken before the training, and the postassessments, taken 6 months after the training. First, we will perform a descriptive analysis summarizing the distribution of the results, representing the percentages (or proportions). Next, we will compute the difference in percentage and set a level of confidence of 95% in order to obtain the confidence intervals. To confirm these statistical comparisons, we will use the hypothesis tests for the difference of two population proportions. Statistical significance will be determined by calculating a z value for the difference of proportions, using an alpha level of 0.05.

The first step of the analysis for tracking will be the creation of a unified database containing all the data relevant to the analysis. For each agency and for each of the nine tracking periods, four variables were selected:

- The number of school days missed (per child per month),
- The number of work days missed (per parent per month),

- The number of clinic visits (per child per month),
- The number of ER visits (per child per month).

Once we build the database, the first analysis will focus on the distribution of the four key metrics and their main characteristics, such as the means and standard deviation. The confidence interval then will be obtained for postintervention results, based on a 95% confidence level.

Using the statistical results, we will try to estimate the financial impact of the program. As previously discussed, the use of confidence interval allows us to understand whether the effect of the program is statistically relevant, and, at the same time, provides us with a lower and an upper bound for the “improvement” of the analyzed variable. Some of these variables can be immediately associated with economic values: in this case, by building the necessary assumptions, it is possible to estimate the financial impact of the program.

The two main variables that can be associated with an economical value follow:

- Average number of doctors visits: we assumed that the average cost of a doctor visit is \$80.
- Average number of ER visits: we assumed that the average cost of a doctor visit is \$320.

Also, we will assume an average program cost of \$60 per family, and 2.1 children per family.

Results

Parental Assessment

In total, 9,240 parents completed the preassessment, while 7,281 completed the 6 months of follow-up, for a loss of 21.2% to attrition. The results of our descriptive analysis of the pre- and postassessments are presented as percentages (or proportions) in Table 1. For example, the proportion of parents who answered using the ER as a FIRST source of help was 4% (369 out of 9,240) before the training and 1% (73 out of 7,281) after the training. Confidence intervals and the results of the hypothesis test for the difference of proportions are presented in Tables 1 and 2.

While 85% of parents reported in the preassessment that they always can take care of their child, 90% reported getting worried to some degree when their child was sick, and 57% reported they were sometimes unsure of what to do when their child was sick. After participating in the intervention and receiving training in the use of a health book, the percentage of parents who reported being “very worried” when their child is sick decreased by one-third.

Results from the Parental Assessment showed a significant change in behavior across all measures. When asked, “When your child is sick, where do you first go for help,” responses that listed doctor visits as the first source for treatment decreased from 69% to 33%, while seeking treatment at an ER decreased from 8% to 2% (Table 1).

Parents also were asked how they would respond to specific common childhood illnesses, such as a fever of 99.5° (Table 2). Possible responses ranged from using the health book provided in the training to taking the child to the doctor or the ER. After the training, the percent of parents who stated that they would

Table 1. Change in parental response to acute childhood illness (pre and post). Query: “When your child is sick, where do you FIRST go for help?”

Question	Pre-intervention (<i>n</i> = 9,240) %	Post-intervention (<i>n</i> = 7,281) %	Change		95% Confidence(**)		Pooled <i>p</i> hat	Test statistics <i>z</i>	<i>p</i> value
			%	Sd(*)	Lower	Upper			
When your child is sick, where do you FIRST go to get help									
Look in a health book	5%	48%	43%	0.6%	42%	44%	0.265	(66.208)	<.0001
Call doctor or health phone line	69%	33%	-36%	0.7%	-37%	-35%	0.510	48.922	<.0001
Call 911 or go to the ER	4%	1%	-3%	0.2%	-3.4%	-2.6%	0.025	13.050	<.0001

*SD of the difference before/after intervention was calculated as $\sqrt{SD_{\text{before}} + SD_{\text{after}}}$.**95% confidence interval was calculated based on the value of $z_{0.25} = 1.96$ obtained from a table of normal distribution values.

Table 2. change in parental response to acute childhood illness (pre and post). Query: "What would you do FIRST if...?"

	Preintervention (n = 9,240) %	Postintervention (n = 7,281) %	Change		95% Confidence(**)		Pooled p hat	Test statistic z	p value
			%	Sd(*)	Lower	Upper			
Q1. Your child had a temperture of 99.5°F?									
Take child to the doctor	38%	14%	-24%	0.6%	-25%	-23%	0.260	37.164	<.0001
Take child to the ER	4%	1%	-3%	0.2%	-3%	-3%	0.025	13.050	<.0001
Q2. Your child had been vomiting for 1 day?									
Take child to the doctor	58%	31%	-27%	0.7%	-26%	-26%	0.445	36.907	<.0001
Take child to the ER	5%	1%	-4%	0.2%	-4%	-4%	0.030	15.924	<.0001
Q3. Your child had an earache?									
Take child to the doctor	81%	53%	-28%	0.7%	-29%	-27%	0.695	41.319	<.0001
Take child to the ER	3%	1%	-2%	0.2%	-2%	-2%	0.020	9.702	<.0001
Q4. Your child had a cough?									
Take child to the doctor	41%	14%	-27%	0.6%	-28%	-26%	0.275	41.072	<.0001
Take child to the ER	2%	0%	-2%	0.1%	-2%	-2%	0.010	13.648	<.0001

refer to a health book increased from 5% to 48%. The four illnesses featured in Table 2 reflect the child ailments most commonly reported by parents.

Tracking Survey

The tracking analysis looks at the distribution of the four key metrics discussed in the methods section. The pretraining mean for the number of clinic visits per child is 3.69 per year (0.3072 per child per month). The post training mean is equal to 2.22 per year (0.1851 per child per month), showing a reduction of 1.47 visits per child per year. Figure 2 shows the histogram of distributions for the pre- and post-training values for this variable. Figure 3 shows the histogram of distributions for the pre-and post-training values for ER visits.

The same methodology was applied to all of the four variables under examination. Using the characteristics for each variable and defining the confidence level (95%), we then computed the confidence interval for the post results. For example, the 95% confidence interval for the reduction in doctor visits is (1.14, 1.79). If the mean of the pre results is not included in the interval, we can state with 95% confidence that the post-training mean is different from the pretraining mean, and that the program affected the variable (Table 3).

Notably, the Tracking Survey results mirror the results seen from the Parental Assessment, and thereby reinforce the effectiveness of the intervention on health service utilization by Head Start parents. Tracking survey data show that the number of ER visits decreased by 58% (95% CI = 51%–66%), and doctor or clinic visits decreased 42% (95% CI = 33%–46%). Further, workdays missed by the primary caretaker per year decreased 42% (95% CI = 35%–50%), and schooldays missed per year decreased 29% (95% CI = 23%–35%; see Table 3). Changes in schooldays missed were confirmed through examination of school records.

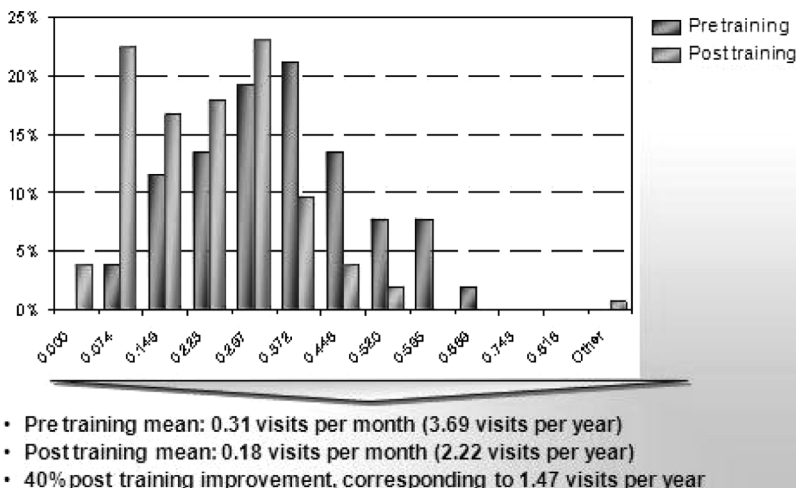


Figure 2. Doctor's visits: average number of doctor's visits per child per month.

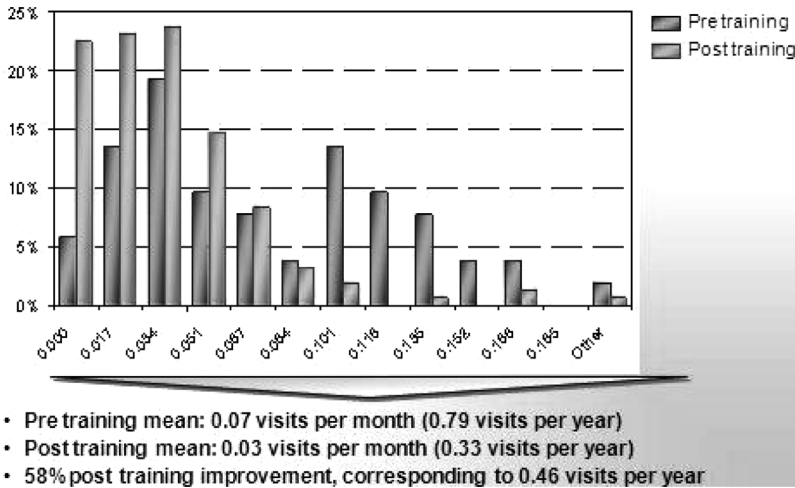


Figure 3. Emergency room visits: number of emergency room visits per child per month.

Estimating Financial Applications

From our first analysis we have the 95% confidence intervals for the annualized improvement in these variables caused by the program:

- Average reduction in doctor’s visits per child per year is 1.47, with a 95% confidence interval for the reduction of (1.14, 1.79).
- Average reduction in ER visits per child per year is .45, with a 95% confidence interval for the reduction of (.38, .54).

Using the estimated costs and the confidence intervals, we computed estimated savings due to fewer doctor’s visits and ER visits, to give us the total potential savings per child per year. Assuming a family has an average of 2.1 children, we obtained the potential yearly savings per family per year (Table 4). The overall estimated savings from this conservative model is \$554 per family per year, given an average training cost of \$60 per family. With 9,240 families trained in the study,

Table 3. Tracking survey results—Impact of Health Care Institute intervention

Average values (per year—data annualized)	Pre-intervention (n = 9,240)	Post-intervention (n = 7,281)	Reduction	% reduction (95% CI)	p value
Schooldays missed by child	13.37	9.52	3.85	29% (23–35)	<.001
Workdays missed by parent	6.71	3.86	2.85	42% (35–50)	<.001
Visits to doctor or clinic	3.69	2.19	1.5	42% (33–46)	<.001
Visits to ER	0.79	0.33	0.46	58% (51–66)	<.001

Table 4. Projected cost savings based on reduced health care utilization (Assumed 2006 Costs: Doctor Visit, \$80, ER visit, \$320)

	Lower bound	Base case	Upper bound
Annualized data (per child per year)			
Reduction in # doctor visits	1.1407	1.4657	1.7908
Reduction in # ER visits	0.3808	0.4591	0.5373
Economic savings (per child per year)			
Reduction in cost of doctor visits	\$91.25	\$117.26	\$143.26
Reduction in cost of ER visits	\$121.85	\$146.90	\$171.95
Total Savings per Child per Year	\$213.10	\$264.15	\$315.21
Total savings per family per year (using an average of 2.1 children/Head Start Family)	\$447.51	\$554.72	\$661.94

Sources: Machlin, 2008; USC Center for Health Financing, Policy, & Management, 2008; Williams, 1996, 2005.

this projection yields \$5,125,798 in net savings from improved health literacy of low-income Head Start parents.

Long-Term Tracking

The informal assessment of the effects of the intervention showed persistent use of the health book over the 3-year follow-up period for this subset of participants (Figure 4). Self-reported responses regarding their first source of help in the past 3 months for common childhood illnesses showed that the change in behavior was consistent over time. The reduction in ER and doctor/clinic visits remained stable, while at-home treatment for minor childhood illnesses increased from the pilot study through the 2003 and 2005 program years (UCLA/Johnson & Johnson, 2006).

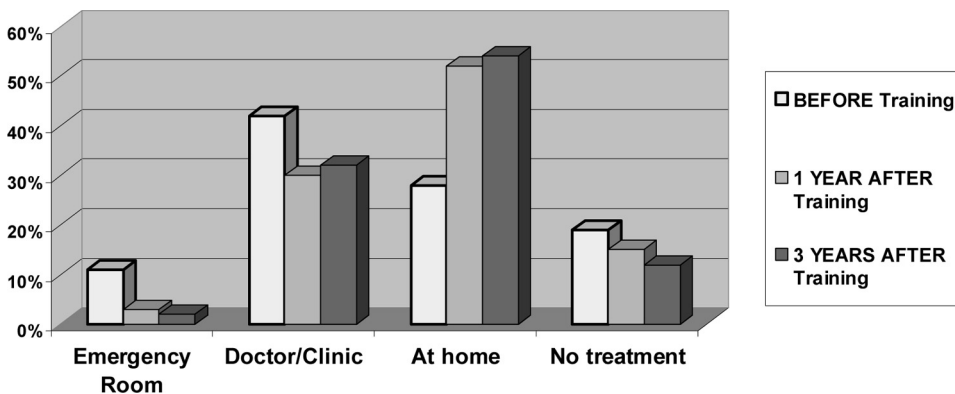


Figure 4. Impact of training on utilization of health care services over time. Query: "What was your FIRST source of help for common childhood illnesses in the past 3 months?"

Discussion

This intervention to enhance health literacy of low-income parents was found to have a statistically significant impact on several dimensions of parental care for their children's health care needs. Parental Assessment and Tracking Survey results mirror each other and confirm the overall findings of this intervention.

The increased use of a simplified health resource book for common acute illness in children reduced the strain on the health care system during the study period by changing the pattern of doctor or ER visits as the first source of help. It is possible that some of the effect noticed may be due to the support Head Start provides in connecting families with social services and resources. The cost savings estimate is particularly conservative because it does not include cost savings from decreased absences from work, improved school readiness, or savings on prescription drugs versus over-the-counter medication, which often result from ER or doctor/clinic visits.

Persistent and Generalizable

This training program was implemented in Head Start and Early Head Start agencies across the United States, representing a wide range of rural and urban settings.

Results from this study can be generalized across Early Head Start/Head Start programs in these diverse locations. The persistence of these trends over time suggests the potential for this program to be replicated successfully in a variety of settings.

Study Limitations

As in any study without random assignment or a contemporaneous control group, secular trends or selection bias may have produced observed outcomes. Head Start provides a supportive framework to families that may have impacted their use of medical resources, including, but not limited to, preschool education, health and nutrition services, parent involvement, and social services. Also, we relied on self-reported data for ER and doctor visits in our study. As mentioned, Early Head Start/Head Start programs maintain regular communication with the parents of enrolled children. This source of support and encouragement appears to be crucial to the success of this program, but it does not exist in the public preschool environment, which may make the results less generalizable. This important connection with parents may be necessary to reproduce similar results and should be monitored and studied for its impact on resulting health service utilization. A limitation of this study is the lack of a non-Head Start control group; future implementation should consider other child care settings with sufficient infrastructure to implement training programs and capacity to conduct follow-up home visits.

This intervention employed a volunteer sample of parents, who may have been more motivated than the general Head Start population to make changes. Barriers to implementation included not having sufficient community in-kind support (thermometers, health professionals, publicity, logistics), and parents who committed to attending the training but ultimately did not show. Finally, high usage of ER and doctor visits for childhood ailments also may be influenced by the nature of the

health care system itself, including barriers to usage of primary care (e.g., hours and location) and a lack of guidance on the appropriate usage of available resources.

Conclusion and Implications

Health care expenditures continue to rise in the United States. Low health literacy contributes to this trend and inefficient use of the healthcare system (Baker, Parker, & Clark, 1998; Baker, Parker, Williams, Clark, & Nurss, 1997; Doobinin et al., 2003; Jolly, Scott, Fried, & Sanford, 1993; Moon et al., 1998; Weiss, Hart, McGee, & D'Estelle, 1992). It presents an opportunity for improvement. This 4-year study demonstrated that when low-income families receive properly directed health education on the treatment of common childhood illnesses, they become more knowledgeable and efficient in providing for their children's health care needs. The UCLA/Johnson & Johnson Health Care Institute intervention was successful in decreasing utilization of the pediatric ER, doctor, and clinic visits for routine childhood ailments, helping to maximize the number of days that children are in school and parents are at work. For the 9,240 Head Start families trained, the potential net annual savings to the healthcare system is estimated at \$5.1 million. These positive findings have enormous implications for children, parents, practitioners, and policymakers.

Training programs created a connection with families through the multilingual trainings, as well as consistent follow-up and reinforcement by a Family Resource Advocate. Head Start teams have seen families who participated in the health literacy trainings become more empowered in their daily lives. Following the intervention, parents were able to exercise a multitude of options for care including, but not limited to: the health book, thermometers, and over-the-counter medications. They did not feel compelled to automatically go to the ER, and they could better decide when not to send their children to school if sick. These changes on the part of parents have the potential to positively impact their children's behaviors as they move into adulthood. The program received hundreds of letters from parents asserting that it not only helped them manage the basic healthcare needs of their children, but that it has changed their lives.

Implementation of programs like this one should be expanded in the United States, and the financial impact of the program should be verified through Medicaid claims data analysis. Future work in this area should focus on translation to public preschools and other settings outside of the Head Start environment. It would be necessary to develop an infrastructure that would enable a high level of parent-staff interaction; this support was vital to producing the results seen in this intervention. School and child care settings across the nation and the families they serve stand to benefit from such an effort.

References

- Baker, D. W., Parker, R. M., Williams, M. V., & Clark, W. S. (1998). Health literacy and the risk of hospital admission. *Journal of General Internal Medicine, 13*(12), 791-798.
- Baker, D. W., Parker, R. M., Williams, M. V., Clark, W. S., & Nurss, J. (1997). The relationship of patient reading ability to self-reported health and use of health services. *American Journal of Public Health, 87*(6), 1027-1030.

- Chande, V. T., & Kimes, D. (1999). A health promotion intervention for families in a medicaid managed care plan. *Academic Emergency Medicine*, 6(8), 823–827.
- Chande, V. T., Wyss, N., & Exum, R. N. (1996). Educational interventions to alter pediatric Emergency Department utilization patterns. *Archives of Pediatric Adolescent Medicine*, 150(5), 525–528.
- Doobinin, K. A., Heidt-Davis, P. E., Gross, T. K., & Isaacman, D. J. (2003). Nonurgent pediatric emergency department visits: Care-seeking behavior and parental knowledge of insurance. *Pediatric Emergency Care*, 19(1), 10–14.
- Gadomski, A. M., Perkis, V., Horton, L., Cross, S., & Stanton, B. (1995). Diverting Managed Care Medicaid Patients from Pediatric Emergency Department Use. *Pediatrics*, 95(2), 170–178.
- Grossman, L. K., Rich, L. N., & Johnson, C. (1998). Decreasing Nonurgent Emergency Department utilization by Medicaid children. *Pediatrics*, 102(1 Pt 1), 20–204.
- Halfon, N., Newacheck, P. W., Wood, D. L., & St. Peter, R. F. (1996). Routine Emergency Department use for sick care by children in the United States. *Pediatrics*, 98(1), 28–34.
- Herman, A. (2000). *The status of health care in Head Start: A descriptive study*. Los Angeles: Johnson & Johnson and The Head Start Bureau.
- Herman, A. (2006). *Empowering parents, benefiting children: A study of the impact of health literacy training on Head Start parents and the health care system*. (Summary Report, 2002–2006). Los Angeles: UCLA/Johnson & Johnson Health Care Institute.
- Herman, A., & Mayer, G. G. (2004). Reducing the use of emergency medical resources among Head Start families: A pilot study. *Journal of Community Health*, 29(3), 197–208.
- Jolly, B. T., Scott, J. L., Feied, C. F., & Sanford, S. M. (1993). Functional illiteracy among emergency Department patients: A preliminary study. *Annals of Emergency Medicine*, 22(3), 573–578.
- Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy*. Washington, DC: National Center for Health Statistics. Retrieved February 2, 2010 from <http://nces.ed.gov/pubsub/2006/2006483.pdf>
- Machlin, S. (2008). *Expenses for a hospital emergency room visit, 2003*. MEPS Statistical Brief 111. January 2006. Rockville, MD: Agency for Healthcare Research and Quality. Retrieved September, 2008, from http://www.meps.ahrq.gov/mepsweb/data_files/publications/st111/stat111.pdf
- Mayer, G. G., & Kuklierus, A. (2004). *What to do when your child gets sick*. La Habra, CA: Institute for Healthcare Advancement.
- McCaig, L. F., & Nawar, E. W. (2006). National Hospital Ambulatory Medical Care Survey: 2004 Emergency Department summary. Advance Data from Vital and Health Statistics, 372, 1–30. Hyattsville, MD: National Center for Health Statistics.
- Merrill, C. T. (Thomson Healthcare), Owens, P. L. (AHRQ), & Stocks, C. (AHRQ). (2009). Pediatric Emergency Department Visits in Community Hospitals from Selected States, 2005. HCUP Statistical Brief #52. May 2008. Rockville, MD: Agency for Healthcare Research and Quality. Retrieve June 1, 2009, from <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb52.pdf>
- Moon, R. Y., Cheng, T. L., Patel, K. M., Baumhaft, K., & Scheidt, P. C. (1998). Parental literacy level and understanding of medical information. *Pediatrics*, 102(2), e25.
- Piehl, M. D., Clemens, C. J., & Joines, J. D. (2000). Narrowing the gap: Decreasing Emergency Department use by children enrolled in the Medicaid program by improving access to primary care. *Archives of Pediatric and Adolescent Medicine*, 154(8), 791–5.
- Reynolds, A. J., Temple, J. A., Ou, S., Robertson, D. L., Mersky, J. P., Topitzes, J. W., et al. (2007). Effects of a school-based, early childhood intervention on adult health and well-being: A 19-year follow-up of low-income families. *Archives of Pediatric and Adolescent Medicine*, 161(8), 730–739.

- Sanders, L. M., Thompson, V. T., & Wilkinson, J. D. (2007). Caregiver health literacy and the use of child health services. *Pediatrics, 119*, e86–e92.
- U.S. Department of Health and Human Services. Agency for Children and Families. Office of Head Start (2008a). Head Start program fact sheet: Statistical Fact Sheet Fiscal Year 2004. Retrieved September 9, 2008, from <http://www.acf.hhs.gov/programs/ohs/about/fy2004.html>
- U.S. Department of Health and Human Services. Agency for Children and Families, Office of Head Start (2008b). About Head Start. Retrieved September 8, 2008, from <http://www.acf.hhs.gov/programs/hsb/about/index.htm>
- USC Center for Health Financing, Policy & Management. (2008). Marginal cost of Emergency Department outpatient visits: An update using California data. Retrieved September 8, 2008, from http://www.usc.edu/schools/sppd/research/healthresearch/images/pdf_reportpapers/multivariate_cost_paper_v5.pdf
- Wang, C., Villar, M. E., Mulligan, D. A., & Hansen, T. (2005). Cost and utilization analysis of a Pediatric Emergency Department diversion project. *Pediatrics, 116*(5), 1075–9.
- Weiss, B. D., Hart, G., McGee, D. L., & D'Estelle, S. (1992). Health status of illiterate adults: Relation between literacy and health status among persons with low literacy skills. *Journal of the American Board of Family Practice, 5*(3):257–264.
- Williams, R. M. (1996). The costs of visits to Emergency Departments. *New England Journal of Medicine, 334*(10), 642–646.
- Williams, R. M. (2005). The costs of visits to Emergency Departments—Revisited. *Annals of Emergency Medicine, 46*(5), 471–472.
- Zimmer, K. P., Walker, A. R., & Minkovitz, C. S. (2006). Maternal and child factors affecting high-volume Pediatric Emergency Department use. *Pediatric Emergency Care, 22*(5), 301–308.