

Evaluation of Hawaii's Healthy Start Program

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Abstract

Hawaii's Healthy Start Program (HSP) is designed to prevent child abuse and neglect and to promote child health and development in newborns of families at risk for poor child outcomes. The program operates statewide in Hawaii and has inspired national and international adaptations, including Healthy Families America. This article describes HSP, its ongoing evaluation study, and evaluation findings at the end of two of a planned three years of family program participation and follow-up.

After two years of service provision to families, HSP was successful in linking families with pediatric medical care, improving maternal parenting efficacy, decreasing maternal parenting stress, promoting the use of nonviolent discipline, and decreasing injuries resulting from partner violence in the home. No overall positive program impact emerged after two years of service in terms of the adequacy of well-child health care; maternal life skills, mental health, social support, or substance use; child development; the child's home learning environment or parent-child interaction; pediatric health care use for illness or injury; or child maltreatment (according to maternal reports and child protective services reports). However, there were agency-specific positive program effects on several outcomes, including parent-child interaction, child development, maternal confidence in adult relationships, and partner violence.

Significant differences were found in program implementation between the three administering agencies included in the evaluation. These differences had implications for family participation and involvement levels and, possibly, for outcomes achieved.

The authors conclude that home visiting programs and evaluations should monitor program implementation for faithfulness to the program model, and should employ comparison groups to determine program impact.

Hawaii's Healthy Start Program (HSP), a child abuse prevention program, uses home visitors to help families turn away from abusive and neglectful parenting behaviors and toward parenting that promotes healthy child development. Based on Henry Kempe's lay therapy program¹ and the work of Selma Fraiberg,² the goal of HSP is to identify vulnerable families before their day-to-day stresses, isolation, and lack of parenting knowledge and good role models give rise to abusive and neglect-

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ful parenting behaviors.¹ Home visitors, by earning a family's trust, focus on family strengths to reduce environmental risk and prevent child abuse and neglect.

HSP began with a single site on Oahu, Hawaii's most populous island, in 1975. In the following two decades, an evolving collaboration of child advocates and local, state, and national agencies and organizations supported program growth to 14 sites statewide, operated by seven community agencies with a combined budget of more than \$6 million in 1998. This article describes the evolution of HSP in Hawaii, uses findings from the ongoing evaluation of HSP to address program effectiveness after expansion, and discusses the implications of the findings for future home visiting program development and evaluation in Hawaii and elsewhere.

The Evolution of Hawaii's Healthy Start Program

In 1975, Dr. Calvin Sia established the Hawaii Family Stress Center (or HFSC, later renamed the Hawaii Family Support Center) with funding from the National Center on Child Abuse and Neglect. HFSC established several child abuse and neglect programs on Oahu, including a home visiting program based on Kempe's lay therapy model for families already known to child protective services (CPS).

The Early Identification Component

HFSC also initiated a child abuse prevention program focusing on vulnerable families without a history of CPS involvement. Like today's HSP, and as illustrated in Figure 1, the program was intended to improve parent and child outcomes in at-risk families by providing services directly and by promoting family use of preventive and early intervention services. Also like today's HSP, this early prototype had two components: (1) early identification (EID) of families with newborns at risk of child abuse and neglect, and (2) home visiting by trained paraprofessionals.

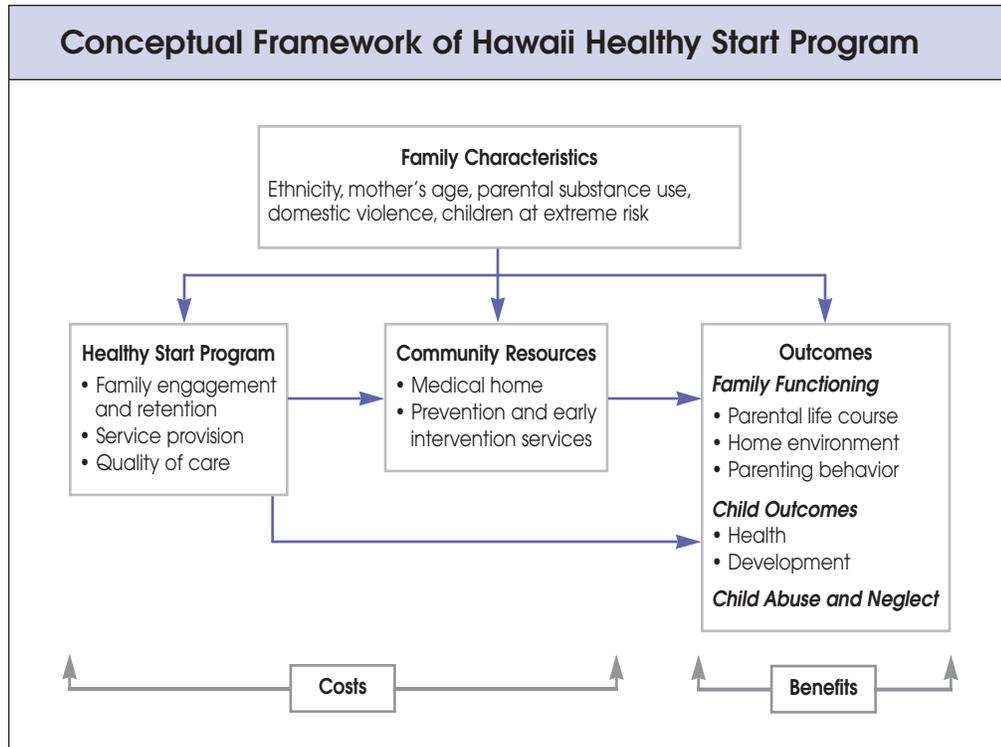
The EID component focused on families living in any one of four communities on

Oahu and delivering a child at Kapiolani Maternity Hospital. Screening was carried out daily at the obstetrical unit by reviewing mothers' medical records to measure family risk for abuse in 15 areas: parents not married; unemployed partner; inadequate income; unstable housing; lack of telephone; less than high school education; inadequate emergency contacts; marital or family problems; history of abortions; abortion unsuccessfully sought or attempted; adoption sought; history of substance abuse; history of psychiatric care; history of depression; and inadequate prenatal care. When a mother's record suggested risk or provided too little information to make a judgment, the EID worker interviewed the mother to determine risk more precisely using Kempe's Family Stress Checklist.³

The Home Visiting Component

The home visiting component focused on those families classified through the early identification as at risk of child abuse and neglect. Families so identified were invited by EID workers to participate in a home visiting program designed to help family members cope with the challenges of child rearing. If the mother agreed to participate, the EID worker contacted the home visiting component of the program to arrange a first visit. Home visitors were trained para-

Figure 1



professionals recruited from the community, with qualities essential for working with vulnerable families: warmth, self-assurance, cultural sensitivity, and good parenting skills.

Home visitors sought first to establish trusting relationships with parents, using an empathetic, nonjudgmental listening style and actively assisting parents to address existing crises. Once immediate crises were resolved, home visitors helped families identify and build on their strengths to improve family functioning. Home visitors role modeled problem-solving skills and helped link families with needed services, such as housing, income and nutritional assistance, child care, and educational and vocational training. At the same time, home visitors worked to promote child health and development by providing parenting education, modeling effective parent-child interaction, and ensuring that each child had a “medical home,” that is, a continuing source of pediatric primary care. HSP services were offered to families for the child’s first three to five years. No formal evaluation of this earliest HSP model was done, but anecdotal evidence suggested that the home visitors were able to build family trust and promote effective parenting.

Encouraged by the Oahu experience, the Statewide Council on Child Abuse, an Oahu-based child advocacy group, created a structure for program replication on the other Hawaiian islands (the “Neighbor Islands”). Community-based family support centers were developed with staff trained by HFSC, and six home visiting programs were launched. From 1977 to 1984, these six programs were financed by local fundraising events, foundation grants, and up to \$1 million in state government monies administered through the state health department’s Maternal and Child Health Branch.

The Healthy Start Pilot Program

HFSC coordinators felt that the early child abuse prevention programs on Oahu and the Neighbor Islands had several limitations: the 12-month programs were too brief to lead to lasting changes; caseloads were too high; and the parenting education curriculum needed a greater emphasis on child development, healthy parent-child interaction, and linking families with medical homes.

To address these issues and test the effectiveness of the revised model, the Hawaii state legislature in 1984 authorized a Healthy Start Pilot Program carried out by

HFSC in collaboration with the Hawaii Department of Health. The pilot program focused on a neighborhood in the Ewa community on Oahu, a community with relatively high rates of child abuse and neglect. The three-year pilot began in July 1985.

The pilot program had EID and home visiting components like the family support center programs, but it also sought to expand home visiting services to all at-risk families in a broad geographic area. In addition, home visiting services were to be more intensive, of longer duration, and more structured, with weekly home visits at first, gradually decreasing to quarterly visits as family functioning improved. Families were expected to remain in the program for at least three years.

Service provision protocols for the pilot program were much more detailed, addressing parenting education; parent problem-solving skills; and links with community services such as housing, education, child and respite care, and substance-abuse and domestic violence services. Staff supervision was more structured than in the older programs, with set ratios of families to home visitors and of home visitors to supervisors. The program director was a public health nurse. Supervisors were professionals with formal training and experience in early childhood education, social work, or nursing. The supervisors met formally with each home visitor at least weekly to review the progress of each family.

Healthy Start Pilot Program Evaluation Results

Program reports show that 248 (15%) of 1,693 families with newborns were identified as at risk and that 234 (94%) of them enrolled in the program. Interviews with a small sample of participating families found that they thought highly of the program.

HSP effectiveness in reducing child abuse and neglect was measured by CPS reports and changes in risk of abuse in participating families. During the three-year pilot, there were no reports of physical abuse, and only four reports of neglect and four reports of imminent harm for program participants. Because evaluations of other home visiting programs⁴ had found much higher rates of reported abuse in compari-

son group families, these results were viewed as strong evidence of a positive program impact. However, as will be illustrated by the current study, the pilot study results might have been given too much weight, given the lack of a control group and the short period of follow-up for most families.

In a pretest/posttest design, EID staff readministered the Family Stress Checklist to families and compared the new scores with the scores obtained at the time of each child's birth. Most families were found to have significant decreases in their scores, which was taken as evidence of decreased family risk of child abuse and neglect.

However, this approach was flawed in at least two important ways. First, the follow-up assessments might have been biased by the EID workers' knowledge that all the families had been receiving home visiting. Second,

The pilot study results might have been given too much weight, given the lack of a control group and the short period of follow-up for most families.

because all the families had been selected for the program as a result of their high stress scores, a decline in scores would be expected with or without an intervention because of a phenomenon called "statistical regression." Simply put, individuals defined by extreme scores on a measure at one time will show a shift in scores over time toward the average for all individuals even without an intervention. Families with high Family Stress Checklist scores at the time of a child's birth would be expected to have scores that would drift lower over time because of statistical regression alone. Again, a control group would have provided a means of judging how much, if any, of the reduction in risk could be attributed to the program.

Nevertheless, the generally positive findings from the Healthy Start Pilot Program were sufficient to lead legislators to expand HSP and its model throughout Hawaii. State funding for HSP increased annually from 1989 until 1995, when a prolonged downturn in the state economy forced across-the-board cuts in state spending. Since then,

state support for HSP has continued, but at a level of about \$6 million annually, as compared with the \$8 million budget of 1995. Overall, 68% of families with newborns live in the HSP network's catchment communities. Funding is adequate to provide home visiting to about 40% of identified at-risk families.

Exporting the Healthy Start Model to the Mainland

National interest in home visiting in general and the HSP model in particular paralleled its expansion within Hawaii. Two years after the pilot program results became public, the General Accounting Office issued a report

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promoting home visitation as a means to prevent child abuse.⁵ The next year, the U.S. Advisory Board on Child Abuse and Neglect issued a report concluding that home visiting along the lines of Hawaii's model was the most promising strategy for child abuse prevention.⁶

In 1993, the the National Committee to Prevent Child Abuse (NCPA—since renamed Prevent Child Abuse America), with initial funding from the Ronald McDonald House Charities and technical assistance from the HFSC, established Healthy Families America (HFA), a training and technical assistance program to help localities develop home visiting programs of their own. Although HFA is not, strictly speaking, a replication of the Hawaii program, the more than 270 HFA sites nationally share common roots with Hawaii's Healthy Start. (See the article by Daro and Harding, and Appendix A in this journal issue, for discussions of the HFA program.)

Laying the Groundwork for the Current Study

Prior to establishing HFA, NCPA conducted a one-year randomized trial of HSP to supply more solid evidence of the HSP model's impact on parents and children, and to

support NCPA's program-development efforts. Although not intended as a preliminary study for the evaluation of HSP presented in this article, the NCPA trial did, in fact, provide important information that had implications for the current study.

In the NCPA study, 304 (82%) of the 372 consenting families completed baseline assessments; of these, fieldwork staff succeeded in following 212 (70%) at one year. The results of the study revealed fewer confirmed CPS reports of child maltreatment among HSP participants than among the control group (3.3% versus 6.8%, $p < .10$).⁷ However, execution of the NCPA study proved challenging, with less-than-ideal follow-up combined with differential dropouts in the home-visited and control groups, an inability to blind interviewers to family group status, and reliance on program rather than evaluation staff to measure some outcomes. These methodological limitations made interpretation of the study findings difficult and conclusions hard to draw.

Recognizing the methodological limitations of both the NCPA study and the Healthy Start Pilot Program, the Hawaii Department of Health planned for a more rigorous evaluation of HSP. The department first developed the Client Tracking System, a management information system for internal monitoring of service delivery, which has since become the department's chief tool for measuring program performance in relation to service contracts. Then, in 1994, in collaboration with the Hawaii Medical Association and The Johns Hopkins University, the Hawaii Department of Health initiated the evaluation study of HSP discussed in the rest of this article.⁸ The goal of the study is to assess Hawaii's success in expanding HSP to multiple sites as defined by adherence to the service model and effectiveness in achieving desired outcomes.

The evaluation is one of a few to use strong scientific methods to study a scaled-up home visiting model. In addition, the research is being carried out by investigators who are not involved in program development, operation, or replication, although the researchers do enjoy a close working relationship with the Hawaii Department of Health, which administers the program, and



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the Hawaii Medical Association, which works to integrate home visiting with primary health care services. This collaboration ensures meaningful interpretation and feedback of findings locally to improve the quality of home visiting services and their effective coordination with other community resources.

The HSP Evaluation Design

The study seeks to answer four questions: (1) How well does actual program performance conform to the HSP model? (2) How successful is the program in achieving desired outcomes for parents and children? (3) How does fidelity of program implementation influence outcomes? and (4) How do benefits compare with direct and indirect program costs? The framework for the study and the measures employed are based on the program's conceptual framework, which is illustrated in Figure 1.

The evaluation is a true experiment, with random assignment of at-risk families to the home-visited and control groups. There are three study groups: the HSP group, the main control group, and a testing control group. Families in the HSP and main control groups are followed and tested annually to measure outcomes. Testing control group families are evaluated only at three years to assess whether the study's intensive data collection has influenced outcomes.

The evaluation includes all HSP group families for three years, regardless of

whether they stay in the program or leave prematurely. Control group families are not eligible for HSP for three years following the index birth.

Study Sites and Participants

The evaluation focuses on the six HSP sites serving geographically defined communities on Oahu. The sites are operated by three community agencies—HFSC, Child and Family Service (CFS), and Parents and Children Together (PACT)—with each agency operating two sites. Sites on Oahu rather than the Neighbor Islands were selected to allow close monitoring of fieldwork while containing costs.

Families were recruited from November 1994 through December 1995. EID staff identified at-risk families following the usual protocol. An at-risk family was eligible for Healthy Start services if the family lived in the HSP target community and was not already known to CPS. A family was eligible for the evaluation if the mother understood English well enough to be interviewed without a translator and if the family's HSP site was open to accept new referrals. Overall, 897 at-risk families met HSP and study inclusion criteria.

When an eligible family was identified, the EID worker described HSP and the evaluation and obtained the mother's signed, informed consent to take part. By study protocol, EID workers called the evaluation office for group assignment of all HSP-eligible

families, not just those eligible for the evaluation. This served two purposes. First, it prevented the opportunity for HSP staff to bypass the random assignment procedure. Second, it gave both evaluation-eligible and ineligible families the same likelihood of enrollment in HSP. Using a table of random numbers, the evaluation staff informed the EID worker of the family's group assignment.

Of families eligible for the study, 730 (81%) gave initial consent to participate and were randomized into HSP and control groups. Mothers were to be interviewed by evaluation staff at the hospital before discharge or at home within a month of delivery if a hospital interview was not possible. Overall, 684 (94%) of those randomized

Two-thirds of families had household incomes below the poverty level.

were interviewed at baseline; the remainder declined participation. Thus, 76% of eligible families completed baseline interviews and became study participants; this is comparable to HSP participation rates on Oahu prior to the study. Study participants were slightly younger than eligible nonparticipants, and were more likely to be at extremely high risk, to have given birth prematurely, and to have completed their EID assessments in the hospital rather than by telephone.

There are 373 families in the HSP group, 270 in the main control group, and 41 in the testing control group. Baseline characteristics of the HSP and main control groups (those followed at years one and two) are described in Table 1. HSP and control group mothers were comparable at baseline in most respects. Twelve percent of mothers had no relationship with their children's fathers, 36% were friends with the fathers or going together, 29% lived with the fathers, and 24% were married. Two-thirds of mothers in both groups were high school graduates, but HSP group mothers were more likely to have worked in the year prior to the index child's birth (52% versus 44%, $p=.05$). HSP group mothers were slightly less likely to have poor general mental health at baseline (43% versus 50%, $p=.05$) and to have reported partner violence in the year prior

to the index birth (43% versus 52%, $p=.02$). Two-thirds of families had household incomes below the poverty level ($p=.34$). From data not presented in the table, 71% of HSP and control group fathers had graduated from high school and 67% were working, and 42% of families had problems with substance abuse (all $p\geq.40$).

Family Follow-Up in the Study

Follow-up data are collected through structured parent interviews; developmental testing of the child; observation of the home environment and parent-child interaction; and review of HSP records, pediatric records, CPS reports, and health care insurer files. Precautions to minimize the threat of biased measurement include the independence of evaluation staff from HSP itself, the prevention of interviewers from knowing families' group status, the use of objective measures, and the use of multiple data sources to supplement participants' memories.

Eighty-eight percent of participating families were followed at one year, 88% at two years, and 83% at both points. Families lost to follow-up did not differ significantly from those followed at one year. At two years, follow-up rates were slightly higher for native Hawaiian families and lower for families from other Pacific islands.

HSP Evaluation Results

The next section presents HSP evaluation findings for families after two of the planned three years of participation in the evaluation. First, process findings are presented that examine program attrition patterns, the extent to which program service delivery and quality adhere to the HSP model, participants' satisfaction with their home visitors, variations in HSP service delivery and quality by program site, and family characteristics associated with program participation. Second, program outcome results are presented, which show the effectiveness of HSP in achieving its goals for at-risk families.

Process Findings

The process assessment focuses on family engagement and retention, service delivery, and quality of care as described in HSP training manuals and in state contracts with HSP sites. As noted previously, the model calls for

Table 1

Baseline Characteristics of Hawaii Healthy Start Program (HSP) Evaluation Participants and Main Control Group			
Characteristics	HSP (n=373)	Main Control Group (n=270)	p value
Mother’s Average Age	24	24	.34
Mother Graduated from High School	69%	64%	.24
Mother Worked in Year Prior to Enrollment	52%	44%	.05
Household Income Below Poverty Level	63%	68%	.34
Index Child Was First Birth	43%	47%	.29
Mother’s Ethnicity^a			.36
Native Hawaiian	21%	19%	
Pacific Islander	13%	14%	
Asian	10%	7%	
Filipino	18%	20%	
Caucasian	11%	13%	
Multiracial or unknown	28%	26%	
Parents’ Relationship^a			.43
None	10%	13%	
Friends/going together	35%	37%	
Living together	30%	29%	
Married	26%	21%	
Poor Maternal General Mental Health	43%	50%	.05
Partner Violence	43%	52%	.02
Very High Risk^b			
Mother	23%	25%	.35
Father	35%	40%	.20

^a Percentages may not total 100% due to rounding.

^b Kempe’s Family Stress Checklist (see Kempe, H. *Child abuse and neglect: The family and the community*. Cambridge, MA: Ballinger Publishing Company, 1976) is the screening tool used to determine eligibility for Healthy Start services. Families are referred to Healthy Start if either parent scores 25 or higher on the checklist. A score of 45 or higher is considered by the program to be “very high risk.”

three to five years of home visiting of decreasing intensity as families achieve milestones in healthy functioning. New families are expected to need weekly visits for most, if not all, of the first year. Home visitors aim to develop individualized service plans with each family at least every six months. Home visit content is individualized to help the family achieve six-month goals, such as graduating from high school and getting infant immunizations. Child developmental screenings and mother-child interaction assessments are to be carried out at four months and periodically thereafter. Quality of care is defined in two ways: (1) maternal satisfaction with the home visitor, and (2) home visitor

success in identifying and responding to problems that require intervention.

Family Engagement and Retention

Despite early and frequent attempts to contact referred families, home visitors found it challenging to do so. For 29% of referred families, the home visitors first tried to contact the family within a day of receiving the referral; for 78% of families, the first contact attempt was made within a week. Even so, home visitors never directly contacted 3% of mothers and never visited another 9%. For the 88% with at least one visit, the time from birth to the first visit was 23 days on average.

Table 2

Status of Participants in Hawaii Healthy Start Program (HSP) at One Year and Reasons for Early Departure (n=373)	
Active in Services According to the HSP Record	49%
Refused Service	
Before first visit	8%
After first visit, before completing individual service plan	12%
After completing individual service plan	11%
Total Refusing Service	31%
Moved	
Within Hawaii, HSP services unavailable	6%
Outside Hawaii	5%
Total Moving	11%
Unable to Contact	4%
Returned to Work or School	3%
Became Ineligible	2%

It was also challenging to keep families in the program. A program site considered a family active as long as staff were visiting the family or felt it was reasonable to continue to try to establish or maintain family involvement. Attrition rates were higher than anticipated, with 10% of referred families considered inactive by their program sites by the time the child was three months old, 30% by six months, 44% by nine months, and 51% by 12 months.

Attrition is a common problem in family support programs.⁹ It is possible that Healthy Start attrition rates may be somewhat higher than rates in other programs because HSP uses universal screening to identify at-risk families and outreach to bring them into home visiting. For programs in which universal screening is used, higher attrition can probably be expected than in programs in which families request service.

Understanding the reasons for attrition is important for developing better ways to identify, engage, and retain families in service. Reasons for families leaving Healthy Start prematurely are listed in Table 2. Family refusal was by far the most common reason for attrition. Most families refusing service did so early on, either before the first visit or before developing an individual ser-

vice plan. Still, 11% of families refused service after completing such a plan.

Fully 9% of families dropped out of the program because of problems of accessibility—6% moved to parts of the state outside of the HSP catchment areas or moved to catchment areas where intake was closed, and 3% had work or school schedules that conflicted with the home visitors' work hours. Attrition might be reduced if HSP service availability were expanded.

Service Delivery

Few families were visited weekly, as expected in the HSP model. Table 3 illustrates that for all referred families, there were an average of 13 home visits in the infant's first year. Considering only the time from the home visiting referral to either program discharge or the child's first birthday, 29% of families were visited at least every two weeks and 51% at least every three weeks. Families still active at one year had an average of 22 visits, with nearly half visited at least every two weeks.

Home visitors developed individual service plans with 71% of families, screened 55% of the index children, and assessed parent-child interactions in 47% of all referred families. Among families active at one year, 97% had individual service plans, 92% had infant developmental screenings,

Table 3

Hawaii Healthy Start Program (HSP) Home Visit Frequency in the First Year		
Frequency	All Families (n=373)	Active Families[□] (n=184)
Mean Number of Visits	13	22
12 or More Visits	45%	76%
Frequency of Visits[▫]		
At least weekly	1%	1%
Every 8 to 14 days	28%	44%
Every 15 to 21 days	22%	27%
Every 22 to 31 days	11%	10%
Less than monthly	25%	18%
No visits	12%	—

[□] Active families are defined as those considered active by their respective program sites, regardless of the time since their last home visits.
[▫] Percentages may not total 100% due to rounding.

and 84% had assessments of parent-child interactions.

Service Quality: Establishing Trust

A trusting relationship is key in helping vulnerable families accept supportive and educational services. Mothers rated home visitors using a self-administered questionnaire completed at the conclusion of the annual data collection. The overall rating was derived from the mother’s level of agreement with 25 statements describing the home visitor’s empathy, understanding, respect for the family, trustworthiness, and ability to motivate and guide the family toward independence and effective parenting.¹⁰

At the one-year follow-up, 76% of the mothers in the HSP group recalled having had a home visitor. Recall was related to the frequency of visits and current status; 96% of those considered active by their program sites at one year recalled having had a home visitor, as compared with 65% of inactive families with 12 or more visits and 47% of inactive families with fewer than 12 visits.

At one year, 28% of control group mothers also reported having had a home visitor, although none of these families had HSP home visitors. Other programs in Hawaii provide home-based services, and data col-

lection in the ongoing third-year follow-up will investigate which programs provided such services to control group families.

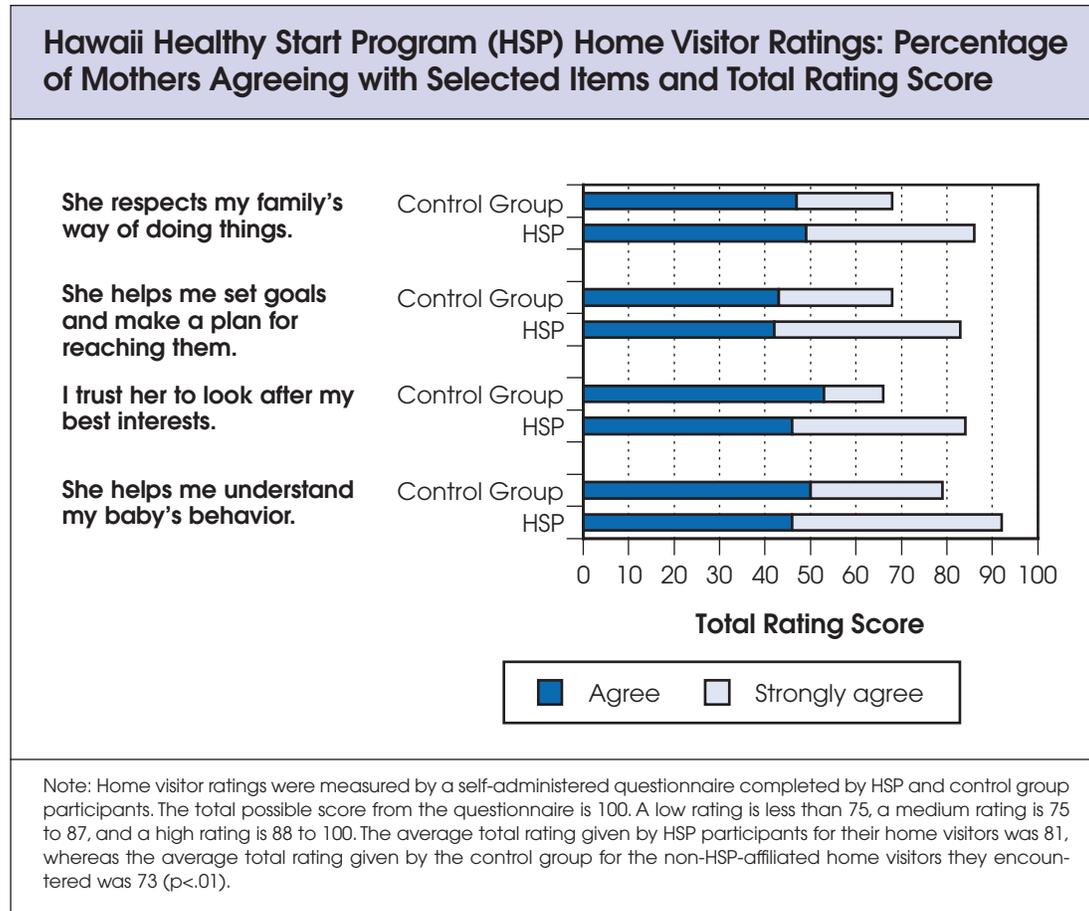
In the interim, study results presented in Figure 2 show that mothers in the HSP group rated their home visitors much more favorably than did control group mothers. Thus, although HSP home visitors found it difficult to engage and retain families, they did convey to most mothers their sensitivity to family issues and their commitment to helping them be good parents.

Agency Differences in Family Engagement

As illustrated in Figure 3, the three agencies taking part in the evaluation varied greatly in family retention rates, home visit frequency, and home visitor ratings. HFSC had the highest family retention rate, the lowest refusal rate, and the highest number of visits among all families. PACT had the highest number of visits among families still active at one year. CFS had the highest home visitor ratings, although all three agencies had high ratings.

HSP network members believe that the agency differences in refusal rates and visit frequency reflect differences in philosophy. All three agencies aim to provide the same level of service, but PACT views the entire family, more than the index child, as its primary client. Thus, its home visitors are likely

Figure 2



to honor a family's change of heart about whether to accept home visiting, and they focus their efforts on providing services to more receptive families.

The other two agencies expect that many at-risk families will be reluctant to engage in home visiting, but they believe this underscores the need for aggressive outreach. They regard the engagement of an isolated family as more important than honoring a family's inclination to be left alone. Thus, home visitors in these two agencies are encouraged to continue to engage families by telephone and in person in instances in which home visitors at PACT would be advised to send a letter offering a final chance to accept services.

Why CFS home visitors are rated most highly is harder to explain. HSP network agencies have suggested that this difference might relate to agency differences in the content of home visits, supervision, and the matching of home visitors and families. Subsequent reports will address this issue

more thoroughly and determine which aspects of the process are the most important determinants of visitor ratings.

Family Characteristics as Predictors of Engagement

Program administrators can guide outreach and training efforts better if they understand how program engagement varies among family subgroups. Multivariable logistic regression was used to examine HSP's success in engaging families in at least 12 home visits in the first year. The results indicated that families were more likely to have had at least 12 visits if the father was violent, substance abusing, and at extremely high risk; if the mother had substance use problems; if the mother did not use violence unilaterally as a means of dealing with conflict with her partner; and if the mother was not at extremely high risk. These findings suggest that it is not simply "difficult" families that drop out or lower-risk families that self-select out of service. The three administering agencies did not differ significantly in the types of families retained.

Outcome Findings

Keeping in mind that actual HSP service delivery departs from the model, the evaluation next examined program effectiveness, that is, the program's impact on all families enrolled in home visiting, not just on those staying in service and receiving frequent visits. Program effectiveness was measured using an intention-to-treat model of analysis. Intention-to-treat analysis involves measuring outcomes for all families assigned to the HSP group, even if they drop out of the program, and comparing their outcomes to those of the control group. This maintains the comparability of the treatment and control groups so that observed differences in outcomes can be attributed to the intervention.

In the analyses reported below, results are reported for the HSP and main control groups, the groups followed at year one and year two.

Measurement and Analysis of Outcomes

The outcomes chosen were based on HSP's conceptual framework, and relate to the linkage of families with community resources, parental life course, home environment, parenting behavior and attitudes, child health and development, and child maltreatment. Whenever possible, measures were used that had established validity and reliability in a variety of populations, and for which norms were available. (Descriptions of selected outcome measures used in this evaluation are presented in the article by Gomby on pages 27–43 in this journal issue.) For the analyses reported here, data were collected through maternal interviews, observation of the home environment, observation of mother-child interactions, child developmental testing, and CPS reports in Hawaii.¹¹

In a few instances, results are presented of more detailed analyses focusing on differential program effects among agencies and among population subgroups. These analyses are intended to illustrate the importance of delving further into program effects. As shown in the conceptual framework, it is expected that program effects will vary among population subgroups, as illustrated, for example, by the differences in HSP effects on fathers'

involvement in child care discussed later. Future reports about this evaluation of HSP will focus on these types of differences in program effectiveness.

Linkage with a Medical Home and Other Community Resources

Healthy Start aims to improve child and family outcomes, in part by linking families with needed community resources. Chief among these is the child's medical home or

HSP families were more likely to describe themselves as having a specific pediatric primary care provider who handled most of their child's health care needs. Even so, HSP and control group families reported similar patterns of well-child care and immunization.

primary care provider. The home visitor seeks to make sure that the family establishes a close relationship with a primary care provider and obtains needed well-child care.

Hawaii's system of health care coverage assures nearly universal financial access to care. Interviews with families showed that 95% had health care coverage and that 99% had a regular source of health care for the index child. By the year-two follow-up, as shown in Table 4, HSP families were more likely to describe themselves as having a specific pediatric primary care provider who handled most of their child's health care needs and understood their concerns about their child's health. Even so, HSP and control group families reported similar patterns of well-child care and immunization.

HSP has identified 14 other areas in which at-risk families often need services: adult health care, child care, respite care, transportation, adult education, housing, nutrition, counseling, substance-abuse treatment, support groups, women's shelter, legal assistance, material assistance, and financial assistance. For each area, the mother's perceived need for services and her experience in obtaining them were measured.

Figure 3

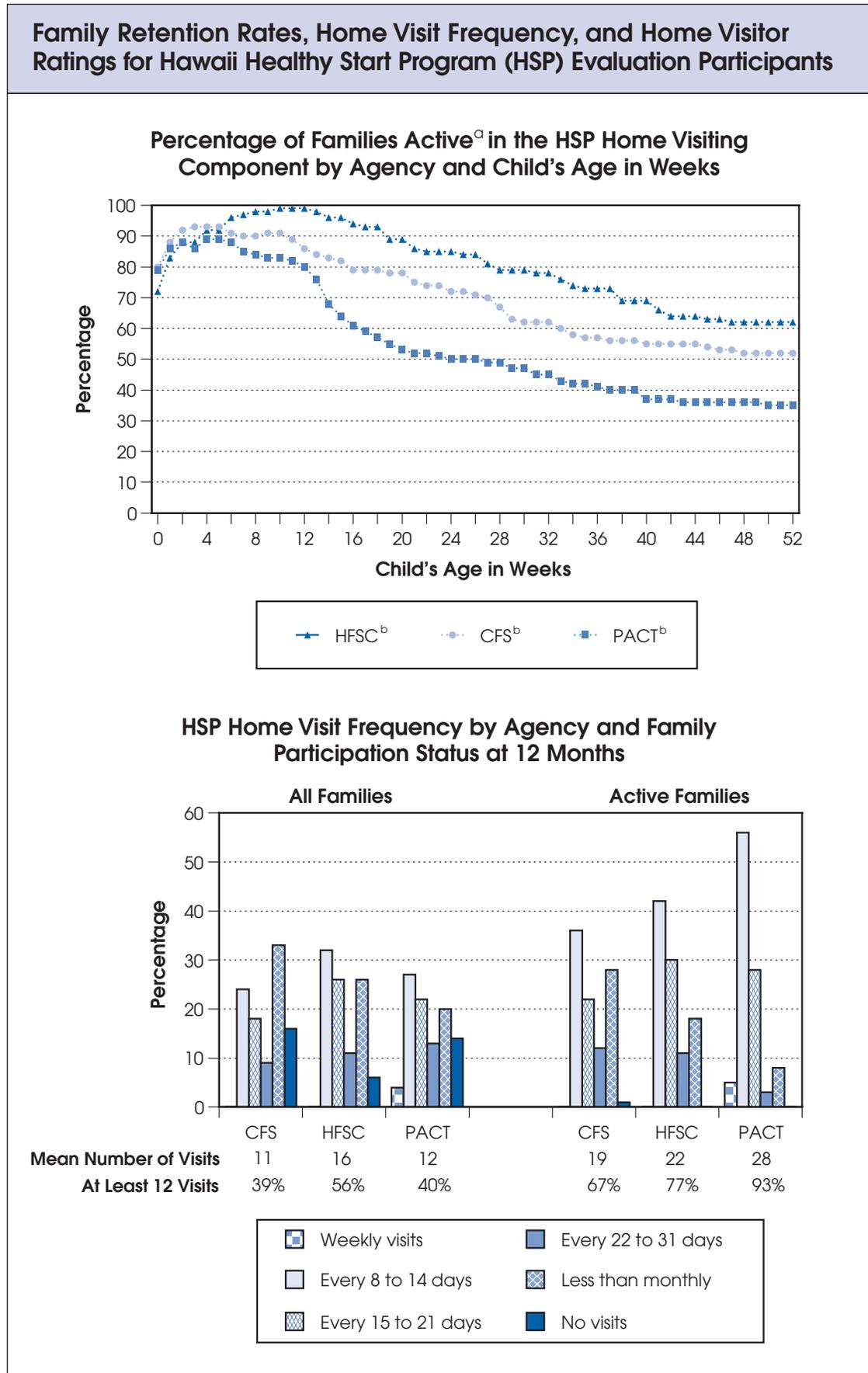
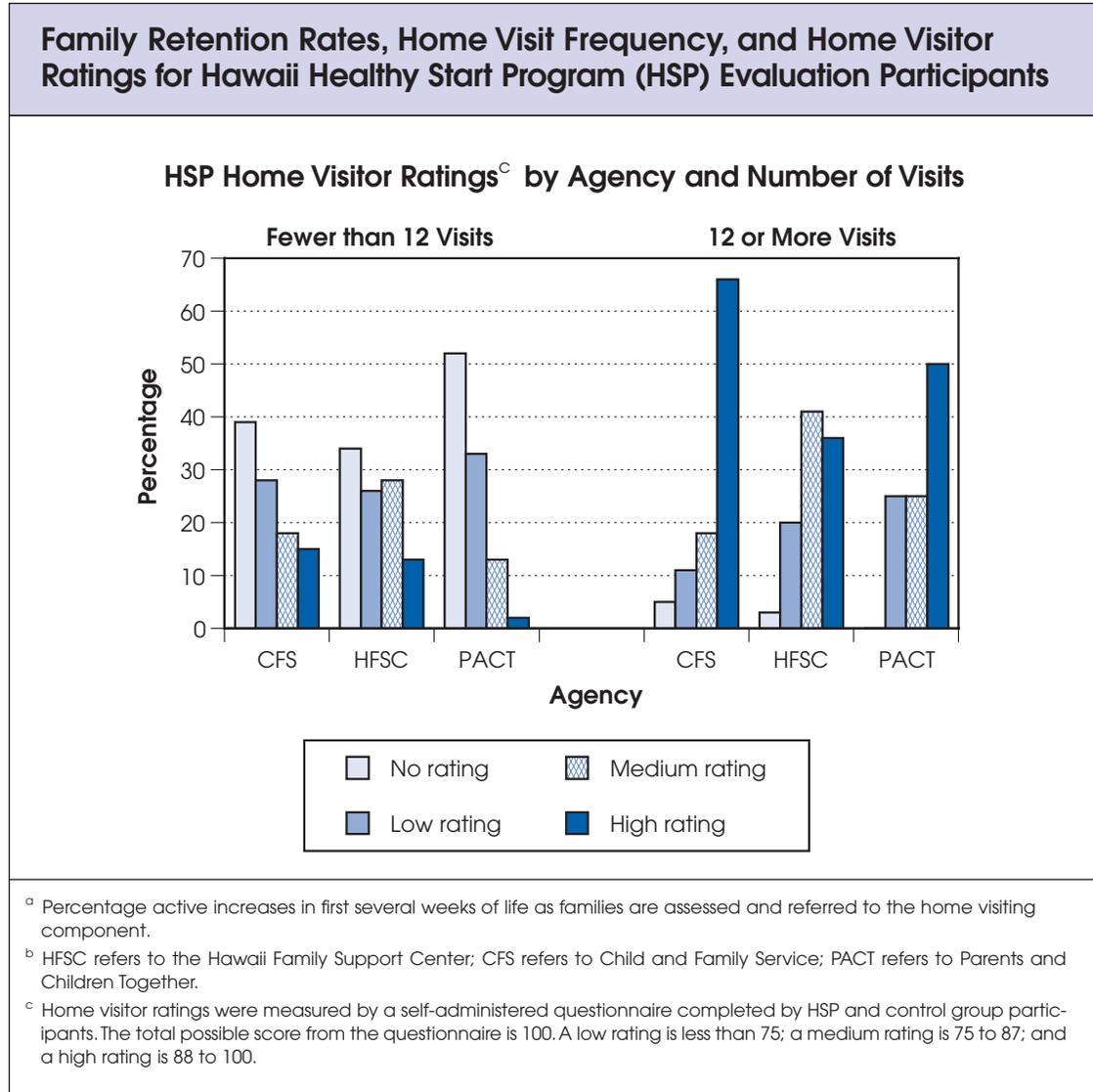


Figure 3 (continued)



At both the one- and two-year follow-ups, the HSP and control groups were similar in maternal reports of service need and access. In both groups, most families succeeded in obtaining the most commonly needed services—such as the Special Supplemental Food Program for Women, Infants, and Children (WIC); food stamps; and income assistance—but often failed to obtain less commonly needed services. For example, about three-fourths of families in both groups reported needing income assistance, and 86% of all families that needed that assistance succeeded in obtaining it. In contrast, only about one-fourth of mothers in each group reported needing education or job training, and only about half of those mothers reported success in obtaining it. Thus, parent reports do not provide evi-

dence that HSP influences family access to community services other than the medical home.

Maternal Life Course

Early indicators of maternal life course include success in attaining personal educational and work goals. HSP and control group mothers did not differ in these indicators, as illustrated in Table 5.

Home Environment

Several aspects of the home environment likely to affect the child were measured, including the mother’s general life skills, social support, confidence in adult relationships, substance use, involvement in partner violence, and mental health.

Table 4

Maternal Report of Family Access to a Medical Home for Hawaii Healthy Start Program (HSP) Participant and Control Groups at Year-One and Year-Two Follow-Ups						
Characteristics	Year-One Follow-Up			Year-Two Follow-Up		
	HSP (n=332)	Control Group (n=232)	p value	HSP (n=329)	Control Group (n=238)	p value
Has a Primary Care Provider^a	94%	90%	.09	91%	86%	.09
Who handles most health care needs	93%	90%	.21	89%	84%	.09
Who knows all aspects of child's care ^b	84%	79%	.18	80%	75%	.16
Who knows family's concerns about child ^b	45%	48%	.44	50%	39%	.01
Adequate Number of Well-Child Visits^c	53%	49%	.36	60%	59%	.95
Immunizations Up to Date^d	82%	82%	.99	87%	85%	.45

^a Not only a regular source of health care but a specific person.
^b Mother rates provider's level of knowledge as very good or excellent.
^c Defined as four or more visits in the first year of life and three or more visits in the second year of life. Analysis limited to mothers who were able to recall the number of visits (n=471 at year one, and n=511 at year two).
^d The appropriate immunizations for the child's age.

At one year, HSP and control group home environments were similar in several respects, as shown in Table 5. Mothers in both groups had comparable, moderately low scores on the Community Life Skills Scale,¹² a measure of the mother's ability to plan, budget, access services, and organize her day-to-day activities. Mothers in both groups had comparable, moderately low scores on measures of social support. The prevalence of maternal substance abuse, depressive symptoms, and partner violence were similar in the two groups.

One aspect of the home environment differed at one year: HSP group mothers were less likely to have poor general mental health, as indicated by a measure of general psychological well-being.

At two years, the HSP and control groups did not differ in maternal life skills, social support, substance use, or depressive symptoms. The prevalence of poor mental health among control group mothers declined to a level closer to that of the HSP mothers.

The impact of HSP on overall partner violence at year two differed significantly among

agencies ($p < .05$). There was a substantial decrease in physical assaults in the programs administered by HFSC, but not in those administered by the other two agencies. Although the reduction in physical assaults in general was limited to HFSC, there was an overall decrease in the likelihood of injuries resulting from physical assaults.

Parenting Behavior and Attitudes

As shown in Table 5, HSP and control group families did not differ in their homes' learning environments, in mother-child interactions, in parenting stress levels, or in the perceived competence of parents at the end of the first year. HSP mothers reported greater use of nonviolent approaches to discipline.

At the second-year follow-up, the groups were again similar in overall home learning environments and parent-child interactions, but differences in other parenting measures emerged or became more pronounced. HSP mothers increased their use of nonviolent strategies to discipline their children, while control group mothers did not. HSP mothers experienced less stress related to parenting and felt more competent in

Table 5

Family Functioning Outcomes for Hawaii Healthy Start Program (HSP) Participant and Control Groups at Year-One and Year-Two Follow-Ups						
Outcomes	Year-One Follow-Up			Year-Two Follow-Up		
	HSP (n=332)	Control Group (n=232)	p value	HSP (n=329)	Control Group (n=238)	p value
Maternal Life Course						
Attended school ^a	36%	38%	.68	37%	44%	.12
High school degree or in school	81%	80%	.68	82%	81%	.81
Mother worked ^a	49%	55%	.23	65%	59%	.27
Someone in household worked	68%	70%	.59	77%	75%	.76
Home Environment^b						
Life skills	24.2	24.3	.72	23.9	23.9	.84
Maternal social support	21.5	21.9	.40	21.4	21.7	.48
Confidence in adult relations	34.3	33.8	.21	34.4	33.7	.14
Maternal substance abuse	16%	18%	.54	18%	20%	.55
Maternal mental health						
Depressive symptoms	29%	31%	.71	23%	26%	.49
Poor general mental health	36%	45%	.02	36%	39%	.43
Partner violence ^c						
Any incident of physical assault	57%	62%	.31	d	d	d
Any incident resulting in injury	29%	31%	.55	16%	24%	.03
Parenting^e						
Learning environment ^f	35.2	35.2	.79	34.6	34.1	.47
Mother-child interaction						
Caregiver total	12.8	12.7	.56	15.0	14.6	.28
Child total	6.8	6.5	.25	7.2	7.2	.83
Use of nonviolent discipline ^g						
None/infrequent	30%	37%	Ref. ^h	27%	36%	Ref. ^h
Moderate	37%	30%	.01	34%	31%	.08
Frequent	33%	32%	.16	39%	34%	.03
Parenting stress	80.0	80.5	.78	77.7	80.7	.08
Parenting efficacy	75.2	74.4	.29	76.1	74.1	.03

^a Denominator limited to those who wanted to do so.

^b Home environment measures: **Life skills:** Barnard, K. *Community Life Skills Scale (CLSS): A resource manual for professionals using the Community Life Skills Scale*. Seattle: University of Washington, 1991; **Maternal social support:** Pascoe, J.M., Ialongo, N., Horn, W., and Reinhardt, M.A. The reliability and validity of the Maternal Social Support Index. *Family Medicine* (1990) 20:228–30; **Confidence in adult relations:** Feeney, J.A., Noller, P., and Hanrahan, M. Assessing adult attachment. In *Attachment in adults: Clinical and developmental perspectives*. M.B. Sperling and W.H. Berman, eds. New York: Guilford Press, 1994; **Maternal substance abuse:** Alcohol use in the past year using Mayfield, D., McLeod, G., and Hall, T. The CAGE Questionnaire: Validation of a new alcoholism instrument. *American Journal of Psychiatry* (1974) 131:1121–23, and positive lifetime history or any illicit drug use in past year; **Depressive symptoms:** A score of less than or equal to 20 on Radloff, L. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* (1977) 1:385–401; **General mental health:** Straus, M.A. *Manual for the Conflict Tactics Scales (CTS) and test forms for the Revised Conflict Tactics Scales (CTS2)*. Durham, NH: Family Research Laboratory, University of New Hampshire, 1995, and a score of less than 67 on the Rand Mental Health Index, see McHorney, C., and Ware, J. Construction and validation of an alternate form of the general mental health scale for the Medical Outcomes Study short-form 36-item health survey. *Medical Care* (1995) 33: 15–28.

^c Denominator limited to those with a partner at follow-up.

^d Program effects differed significantly among agencies. Physical assault was significantly less likely among HSP families than among control group families at the Hawaii Family Support Center (HFSC) (adjusted odds ratio=0.4, p<.01), but did not differ by group at Child and Family Service (CFS) (adjusted odds ratio=1.3, p=.42) nor at Parents and Children Together (PACT) (adjusted odds ratio 0.7, p=.37).

^e Parenting measures: **Learning environment:** Total Home Observation for Measurement of the Environment (HOME) Scale score, see Caldwell, B., and Snyder, C. *Nursing Child Assessment Satellite Training/Home Observation for Measurement of the Environment*. Seattle, WA: NCAST; **Mother-child interaction:** Contingency scores of NCAST scales, see Barnard, K. *Nursing Child Assessment Satellite Training learning resource manual*. Seattle: University of Washington, 1978; **Use of nonviolent discipline:** The Conflict Tactics Scale (see note b above); **Parenting stress:** Total Parenting Stress Index Short Form Score, see Abidin, R.R. *Parenting Stress Index professional manual*. Third ed. Odessa, FL: Psychological Assessment Resources, 1983; **Parenting efficacy:** Gibaud-Wallston, J., and Wandersman, L.P. Development and utility of the Parenting Sense of Competence Scale. Unpublished manuscript, Peabody College, 1976.

^f Denominator excludes families interviewed by telephone (n=40 at year one, and n=44 at year two).

^g p value based on separate comparison of moderate and frequent categories with reference category.

^h Reference category.

Table 6

Maternal Report of Indicators of Child Health of Hawaii Healthy Start Program (HSP) Participant and Control Groups at Year-One and Year-Two Follow-Ups						
Indicators	First Year of Life			First Two Years of Life		
	HSP (n=332)	Control Group (n=232)	p value	HSP (n=309)	Control Group (n=225)	p value
Ever used emergency department	40%	44%	.27	58%	60%	.69
Ever hospitalized for any reason	17%	18%	.69	19%	22%	.44
Ever had injury needing medical care	9%	11%	.58	22%	24%	.51

their parenting skills (as shown in their higher parenting efficacy scores).

The HSP mothers' higher parenting efficacy scores are congruent with their lower levels of parenting stress. The parenting stress measure reflects maternal distress arising from personal factors that affect parenting, difficulty in managing the child's behavior, and perceptions of how well the child meets the mother's expectations. The efficacy measure reflects the mother's perception of her parenting skills, how much she values motherhood, and her comfort in that role.

Child Health and Development

Because the review of pediatric medical records and claims files is still in progress, assessments of child health are limited to maternal reports. Table 6 shows that, overall, HSP and control group children are comparable in the percentages that have been seen in an emergency department, hospitalized, or injured in the first two years of life.

At one year, there was no difference in the developmental status of HSP and control group children as measured by the Bayley Scales of Infant Development.¹³ Their mean Mental Development Index scores were 102.3 and 102.6, respectively ($p=.92$), and their mean Psychomotor Development Index scores were 106.5 and 106.8, respectively ($p=.81$). At two years, Mental Development Index scores were 90.0 and 89.2 for HSP and control group children, respectively ($p=.60$), and Psychomotor Development Index scores were 92.1 and 90.4,

respectively ($p=.12$). Agency-specific analyses indicated positive program effects on child development. This is described in more detail later, in discussing agency-specific outcomes of HSP.

Child Abuse and Neglect

CPS reports are used widely to measure child maltreatment, but they suffer at least two important limitations as a measure of program impact: (1) because reporting is a rare event, extremely large sample sizes are needed to identify meaningful reductions in reporting rates, with smaller sample sizes lacking the power to detect small, yet meaningful, reductions; and (2) there is a strong potential for reporting bias, which can operate to either inflate or deflate estimates of abuse and neglect. For example, families in an intervention group might be reported more often simply because they are under greater surveillance. On the other hand, an overworked CPS agency might be less willing to accept reports for families active in an intervention, reasoning that its own limited resources would be better directed toward more isolated families. As CPS funding waxes and wanes, its ability to accept reports does so also. Thus, CPS report rate differences or changes over time can be difficult to interpret. (See also the article by Daro and Harding in this journal issue for a discussion of the difficulty of assessing child abuse and neglect.)

Because CPS reports are a traditional measure of program impact and were used in the Ewa pilot program, they were also used in this study. Because of the limitations

Table 7

Indicators of Child Maltreatment Among Hawaii Healthy Start Program (HSP) Participant and Control Groups at Year-One and Year-Two Follow-Ups						
Indicators	Year-One Follow-Up			Year-Two Follow-Up		
	HSP (n=332)	Control Group (n=232)	p value	HSP (n=329)	Control Group (n=238)	p value
Confirmed Hawaii CPS Report^a	1%	2%	.55	2%	3%	.40
Maternal Behaviors^b						
Any neglect	24%	32%	.05	26%	29%	.46
Psychological aggression ^c						
None/infrequent	31%	25%	Ref. ^d	30%	26%	Ref. ^d
Moderate	38%	44%	.06	32%	35%	.59
Frequent	31%	31%	.52	39%	39%	.76
Minor physical assault ^c						
None/infrequent	33%	30%	Ref. ^d	31%	31%	Ref. ^d
Moderate	38%	41%	.26	31%	36%	.53
Frequent	29%	29%	.75	38%	33%	.21
Severe physical assault	11%	8%	.37	17%	18%	.85

^a Reports to Hawaii child protective services. For year-one follow-up, percentage of families reported between one month and one year of age. For year-two follow-up, cumulative percentage of families reported between one month and two years of age. The denominator includes all families initially randomized (HSP n=395; control group n=335).

^b Measured by maternal report using the Conflict Tactics Scale (see Straus, M.A. *Manual for the Conflict Tactics Scales (CTS) and test forms for the Revised Conflict Tactics Scales (CTS2)*. Durham, NH: Family Research Laboratory, University of New Hampshire, 1995). Examples of behavior: neglect (being too caught up in own problems to convey love, unable to provide food, or having to leave child alone); psychological aggression (shouting, threatening to spank, swearing at, or calling child dumb or lazy); minor physical assault (spanking with hand or belt, pinching, or slapping child on hand or leg); severe physical assault (shaking, hitting with fist, kicking, choking, burning, knocking down, or slapping child on face or ears).

^c p value based on separate comparison of moderate and frequent categories with reference category.

^d Reference category.

of these reports, the Conflict Tactics Scale,¹⁴ a self-report measure of neglectful, psychologically aggressive, and physically abusive behaviors directed at the child, was also used.

As shown in Table 7, very few families in either group were reported to CPS in Hawaii in the first two years. In this context, the pilot program’s finding of no reports of physical abuse in a smaller sample, with nearly all families followed for less than two years, is understandable. Yet in contrast to report rates for control families in other studies in other settings,^{4,15} the same finding could be seen as impressive.

According to maternal reports, control group mothers were more likely to engage in neglectful behavior in the child’s first year of life. This group difference, however, was diminished by year two. There was a shift

from moderate to less frequent use of psychological aggression among HSP mothers, at least in the first year of life. HSP and control group mothers were comparable in their use of physical assaults during the first two years of the study.

Differences in Outcomes Among Agencies

Thus far, overall HSP effects have been discussed considering all three agencies as a group, with the exception of physical assault at year two, for which a significant interaction of study group and agency was found. Positive effects at one or both follow-up points included increased family access to a medical home, improved maternal mental health, decreased injuries resulting from partner violence in the home, decreased parenting stress, increased parenting efficacy, greater use of nonviolent discipline,

and decreased neglect. HSP effects were not detected for adequacy of well-child care; maternal life skills, social support, or substance use; the learning environment of the home and parent-child interaction; health care use for illness and injury; or CPS reports and physical assaults.

The process findings revealed that the community agencies differed in program implementation: HFSC was most successful in keeping families active, PACT had the highest visit frequency among families still

Some HSP agencies succeeded in promoting certain aspects of family functioning and child development while others did not.

active at one year, and CFS had the highest home visitor ratings. Because the agencies differed in program implementation, differences in the outcomes they achieved were explored. Differential agency effects were found for several outcomes.

For example, while there was no overall HSP effect on mother-child interaction or child development, there were positive effects in the programs administered by CFS. Healthy Start families in CFS communities tended to have higher caregiver scores than control group families on the measure of parent-child interaction (mean scores were 15.3 and 14.4 for HSP and control group families, respectively; $p=.08$). HSP children had significantly higher psychomotor development scores at two years (with mean scores of 93.0 and 89.5 for HSP and control group children, respectively; $p=.04$).

HSP's overall prevention of poor maternal mental health at one year was largely attributable to the effects of HFSC programs. HSP mothers in HFSC communities had the strongest reduction in the number of mothers experiencing poor general mental health at one year; this reduction persisted through year two (34% of HSP mothers and 46% of control group mothers had poor mental health; $p=.06$). Consistent with this trend was a group difference in partner violence at two years (28% of HSP families versus 56% of control group families; $p<.01$).

While there was not an overall program effect on maternal confidence in adult relationships, HSP mothers at CFS and HFSC program sites had significantly higher scores than their control group counterparts at year two (group differences of 1.3 and 1.4 points, respectively; both $p<.05$).

In summary, some HSP agencies succeeded in promoting certain aspects of family functioning and child development while others did not, even though home visitors in all programs complete the same initial six-week training and agencies are subject to the same contract stipulations. Agencies implement the model differently and, in some respects, have different effects on families. Evaluating only one agency's application of the HSP model would give an inaccurate picture of systemwide performance.

Differences in Outcomes Among Population Subgroups

The issue of program effectiveness is further complicated by differences among population subgroups. Although all eligible families are overburdened, they differ in their patterns of risk for poor parenting, and they differ in their engagement in the program. Focusing on at-risk families as a group may disguise differences among particular subgroups.

A case in point involves program effects on fathers' involvement in parenting. Focusing on both married and unmarried parents who lived together at baseline ($n=299$ couples), the influence of HSP on fathers' contact with their children and their involvement in child care was examined. HSP fathers showed a trend toward greater accessibility at one year (85% of HSP fathers and 76% of control group fathers saw their children daily, $p=.09$), but there was little difference between groups in fathers' involvement in child rearing (2.7 versus 2.5 on a five-point scale reflecting how often fathers, on average, took part in six child care tasks such as feeding, comforting, and teaching the index child, from 0=not at all to 4=very often; $p=.15$).

However, when fathers who were violent at baseline ($n=112$) and those who were not ($n=187$) were looked at separately, different program effects emerged. Among nonviolent

fathers, those in the HSP group were significantly more likely to see their children daily and had significantly higher child care scores at one year. These effects were not apparent for violent fathers. For both violent and non-violent fathers, actual parenting came closer to the mothers' expectations in HSP families than in control group families. HSP mothers were more satisfied with the father's role in parenting than were control group mothers (87% versus 75%, $p=.08$). Future analyses will explore whether these effects persist after the first year. In addition, direct data collection from the fathers will permit comparisons of fathers' and mothers' reports of paternal involvement in child rearing.

This example is only an illustration. In-depth analyses also suggest differences for teenage versus older mothers, for those with and without poor mental health at baseline, and for those with high versus low levels of social support at baseline. Moreover, agencies differ in how well they achieve positive outcomes with one subgroup or another. Future reports will delve into the specifics of differential program impact and their implications.

Using Evaluation Findings to Inform Program Development

Findings from this evaluation of HSP are shared with the HSP network to the benefit of both the program and the evaluation. In response to process findings, the network launched a formal quality-improvement program in 1997. Focus groups of the most highly regarded home visitors were convened to share insights about the personal qualities, work style, and supervision that promote family engagement. A new curriculum for continuing education of supervisors was implemented. HSP sites have begun to use the Client Tracking System to monitor their own performance.

At the same time, ongoing evaluation analysis has been guided by feedback from the HSP network. Confronted with differences among agencies in family outcomes, members of the network have suggested aspects of home visit content and supervision that might explain such differences. These lines of inquiry are now being explored.

In short, evaluators and program providers help inform each other's work.

Together, they are developing a system for ongoing evaluation that will allow the program to self-monitor the process of care and its effects. This is especially important as programs are implemented in multiple sites.

Implications for Future Program Development and Evaluation

These findings have important implications for those considering adopting paraprofessional home visiting for at-risk families.

■ *Even in a well-established program, it is difficult to engage and retain families in home visiting.* With attention so focused on home visiting outcomes, the process of care has often received short shrift. In published reports of 21 randomized trials of home visiting for at-risk families in the past 20

In response to findings, the network launched a formal quality-improvement program in 1997.

years,^{1,4,16-34} the number of visits actually made relative to the number called for in the home visiting protocol was reported for only eight.^{4,16-23} Among those eight, the number of visits completed ranged from 40% to 95% of the totals called for in the program models. In most cases, the percentage of completed home visits decreased as the planned duration and frequency of visiting increased.

In the scaled-up HSP on Oahu, attrition rates averaged 50% at one year. Even among families still active at one year, home visits were made about every two to three weeks rather than weekly. Those considering adopting home visiting need to be aware that it is extremely challenging to engage and retain at-risk families.

Informed decisions about whether and how to implement home visiting require knowledge of the likely attrition rates, home visit rates, and reasons for family departure. Those who report their experience, whether in a formal study of a demonstration project or in monitoring an ongoing program, do their audience a disservice if they fail to

describe actual service delivery relative to the model.

■ *Traditional approaches to monitoring program output can give a false sense of security and mask deviations from the model.* Program monitoring should focus on the process from the family's perspective, as well as the provider's. In the planning of the current study, discussions with HSP network members revealed that they did not know their exact family retention rates but believed that about 80% of families were still active at one year. It was sobering to learn that, despite intense effort, many more families left the program prematurely than had been thought. One reason for the directors' overestimate of family retention was the form of monthly

Programs must continually monitor their process relative to standards, and it is invalid to claim causation without a control group; multiple uncontrolled studies are no better than a single one in this regard.

reporting of service output (for example, the number of families enrolled and the total number of visits made). An approach that reported service delivery from the family's perspective (for example, the percentage of families still enrolled at six months and the number of visits per family in the first six months) would have identified departures from the model more clearly.

■ *Different agencies apply the same model differently, with varying success in family engagement.* Agencies differed substantially in retention rates, home visit frequency, and maternal ratings of home visitors. Differences in process reflect differences in agency philosophy and operations. It is tempting to believe that the success of demonstration projects can be duplicated. However, programs must continually monitor their process relative to standards and must consider how local values and needs influence program implementation. Caution should be used in adopting a home visiting model, regardless of its success in other settings or as implemented by other agencies.

■ *Outcome assessment that focuses only on program participants is likely to be misleading; control*

groups are needed to estimate the value added by home visiting. There are several reasons for this. First, programs that target at-risk families will see some improvement in them over time simply because of statistical regression, the movement of those with extreme scores toward more average scores over time. Second, those who choose to stay in a program are unlikely to be representative of the target population. On Oahu, mothers continuing in the program differed from those leaving in important ways. Focusing only on their experience would give a biased picture of program accomplishments.

The Healthy Start Pilot Program illustrates this problem. Without a control group, the finding of no CPS reports of physical abuse among program enrollees was seen as strong evidence of success in preventing child maltreatment. But as shown in the ongoing study, CPS reports seriously underestimate abusive and neglectful behavior, and report rates for a small sample in the first two years of life are likely to be extremely low. Nevertheless, the finding of no abuse has been cited frequently as evidence supporting home visitation.

The evaluation of home visiting today should be held to a higher standard than that of a decade ago because research has clearly revealed the implications of these important methodological considerations. For example, CPS reports are now recognized as inadequate outcome measures; differences between program participants and those who leave prematurely are clearly seen as sources of bias in the interpretation of outcomes; and families selected because they were at extreme risk at one point in time should be expected, as a group, to show improvement in measures over time without intervention. Finally, it is invalid to claim causation without a control group, and multiple uncontrolled studies are no better than a single one in this regard.

Because resources devoted to home visiting are not available for other interventions, it is important to make sure that those services are effective, and evaluations should employ control groups to establish that point. Program planners and policymakers should require strong evidence of benefits in considering particular approaches and



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should plan their own evaluations of whatever models they adopt. Most localities will not be able to launch large-scale randomized trials, but they should consider evaluation an integral part of the programs and aim to incorporate the strongest internal evaluation methods feasible to ensure that their programs remain faithful to their chosen models.

■ *Although home visiting in Hawaii's scaled-up program is less intense than that in the HSP model, there are positive effects for at-risk families.* Program effects were modest at one year, but many became more pronounced after two years. While some effects are common to all HSP agencies, others are limited to one or two agencies. It is likely that differences in outcomes relate to differences in how the agencies implement the model. Future analyses will explore this more carefully. It is too early to determine the cost-benefit balance of the program overall or as implemented by specific agencies, or to determine whether emphasizing outreach to keep families active is a more advantageous strategy than intense home visiting focused on the most receptive families. The preliminary results of this study, however, show that families regard their paraprofessional visitors highly and that the scaled-up program has some positive effects in the short run.

■ *Having a home visiting program does not ensure effective linkage with community resources.* Home visiting has been described as a nec-

essary but not sufficient strategy to improve outcomes in families dealing with multiple stresses.¹⁵ Other community supports are needed for home visiting to have a significant impact. The scaled-up HSP linked families to medical homes but did not improve access to other community resources. The reasons for this are likely to relate both to declines in service availability and to home visitors' motivation and skill in promoting linkage.

Even when home visitors help isolated families access needed services, this may be insufficient. Families that must negotiate with an array of health, early childhood education, child care, and family support providers can find themselves pulled in many conflicting and confusing directions. What is needed is effective linkage or service integration. Home visitors can and should help families negotiate services that are consistent and compatible in building on family strengths to achieve family-centered goals for healthy functioning and effective parenting.

In Hawaii and elsewhere, systems-change efforts address this problem through service integration. Service integration requires commitment at every level—policy, program administration, and operations. For policymakers, this means creating incentives for home visiting programs to work with other community resources in developing common individualized family service plans. For program administrators, it means

establishing clear working relationships with other community-based programs. For program supervisors, it means ensuring that home visitors provide the support and education services that they are best equipped to provide, and that they are encouraged to collaborate with other providers as needed to help families achieve their goals.

■ *The evaluation of scaled-up programs should incorporate quality-of-care assessments.* This article has reported on program quality only as measured by maternal ratings of the home visitors, but the ongoing evaluation of HSP also assesses the home visitors' ability to recognize and respond to problems in family functioning, parenting, and child development.

The importance of this aspect of quality is illustrated by considering child abuse and neglect. Maternal reports in this study suggest that severe physical assault and frequent psychological aggression occur within families more commonly than CPS reports would suggest. HSP network directors report that home visitors are often frustrated by their inability to convince CPS to accept reports of imminent harm. Still, how well home visitors are able to identify and respond to maltreatment, and how effective they are in addressing the problems they identify, remain to be determined. This is also true for other aspects of family dysfunction, ineffective parent-child interaction, and child developmental delay.

This aspect of service quality is being assessed through content analysis of HSP records. Future reports will relate problem recognition and response to characteristics of the paraprofessional home visitors and their supervision. Those studying or adopting home visiting should consider similar approaches to evaluating service quality.

■ *The development of new evaluation strategies for communitywide intervention continues to require the accompaniment of strong scientific program evaluation.* Service integration and other communitywide interventions are rarely amenable to experimental study. Even so, such initiatives can only be as successful as their weakest components. In Hawaii, as elsewhere, service integration is challenging all involved to develop new approaches to learning what does and does not work at the community level. At the same time, decisions about whether and how to integrate services are based on what is known about the strengths and limitations of discrete programs such as HSP.

Conclusion

During the past 20 years, Hawaii has been a national leader in developing and scaling up a model of paraprofessional home visitation targeted to at-risk families. Seven years ago, Hawaii set a standard by choosing to evaluate program strengths and limitations experimentally. This article and future reports, including year-three follow-up findings and cost-benefit analysis, aim to carry on in that tradition by sharing lessons learned from identified program limitations as well as accomplishments. It is hoped that doing so will inspire others to consider home visiting a strategy well worth pursuing for at-risk families, but one whose effectiveness across communities and over time must be tested.

The authors would like to thank the leadership and staff of the network of Hawaii Healthy Start Programs for their commitment to careful collaborative evaluation of accomplishments and challenges. Development of strong home visiting interventions depends on the willingness to study one's experience carefully and to share observations and lessons learned with others.

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11. For binary outcomes, logistic regression analysis was used to test for group effects; for continuous outcomes, the generalized linear model was used. In both cases, evaluators began with a model that controlled for the three baseline variables on which the study groups differed (maternal mental health, maternal work status, and partner violence) and included group, agency, and interaction between group and agency. If there was evidence of interaction ($p < .05$), only agency-specific group effects were reported. If there was no evidence of an interaction, a second model was derived by omitting the interaction term, and the estimated overall group effect was reported.
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