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Formative Evaluation of Home Visitors' Role in Addressing Poor Mental Health, Domestic Violence, and Substance Abuse Among Low-Income Pregnant and Parenting Women

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Objectives: This research assessed home visitor effectiveness in communicating about and responding to poor mental health, domestic violence, and substance abuse among pregnant and parenting women home visited as part of a comprehensive family support strategy in seven urban communities. *Methods*: Cross-sectional studies were conducted with mothers ($n = 189$) actively engaged in home visitation programs and home visitors ($n = 45$). Maternal interviews assessed need for and receipt of mental health, domestic violence, and substance abuse services, and home visitor discussion of these risk areas. Home visitor surveys assessed perceived adequacy of training and personal effectiveness in addressing these risk areas. *Results*: Over half of mothers needed mental health, domestic violence, or substance abuse services; however, only 27% of mothers in need of service received services. Most mothers reported having communicated with their home visitor about the three risk areas, but there were no differences in communication frequency based on whether services were needed. Most home visitors perceived themselves as effective in communicating about and responding to these risk factors but rated the training they had received in these areas as less than adequate. *Conclusions*: Home visitors could benefit from more intensive training in the formal assessment of risks and the protocols for communication about those risks with their clients. Home visitors could also receive support from and work in collaboration with professionals in addressing client risks. Further research on home visit content is needed to determine which strategies facilitate home visitors' ability to effectively communicate about and address client risks.

KEY WORDS: home visitation; program implementation; maternal risk factors.

INTRODUCTION

In the last decade, there has been a steady increase in the number of home visiting programs for families with young children (1, 2). Such programs have varied goals, including improving pregnancy outcomes (3), preventing child abuse and neglect (4, 5), and enhancing children's readiness for school (6, 7). While home visiting goals vary, programs share a common focus on bringing services to parents rather than expecting families to seek out services (1).

As recent reviews have noted, many studies evaluating the effectiveness of home visiting programs have found no or only modest impact (1, 2). Despite the considerable public and private investment in home visiting, the growing body of research evaluating home visiting indicates that only some models produce desired outcomes for certain subsets of families (1, 8–10). Emanating from these outcome evaluations is research examining home visiting

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programs' implementation systems (i.e., policies, procedures, and mechanisms explaining how the program should work) and actual implementation (i.e., intensity and duration of visits, content of visits, and service quality) in addition to understanding their impact (2, 11).

Evaluation to inform better program implementation is typically referred to as formative evaluation (12). Formative evaluations differ from summative evaluations in that the latter are intended to provide an assessment on the merit or worth of a program. In terms of home visiting evaluations, Olds *et al.* argue that the rigorous summative evaluations of home visiting programs showing modest improvements on maternal and child health outcomes may, in fact, be premature (2). They argue that formative evaluations assessing the design and implementation of home visiting programs are needed to refine existing programs before summative evaluations are carried out to assess home visiting impact.

The Context for the Present Study: Baltimore's Comprehensive Family Support Strategy

The Safe and Sound Campaign, created in 1997, is a comprehensive initiative to improve the degree to which children grow up safe, nurtured, and healthy in Baltimore City. One of the Campaign's five strategies—Baltimore's Comprehensive Family Support Strategy (BCFSS)—aims to improve the health, functioning and self-reliance of families with children birth to six. An *ad hoc* Strategy Team on Family Support selected six health and well-being indicators to impact: a) low birth weight, b) preterm birth, c) infant mortality, d) child abuse and neglect, e) child accidents and injuries, and f) school readiness and specified four core components for the Strategy model: a) home-based services, b) center-based services, c) community-based activities, and d) service linkages.

In 1999, the Campaign identified 15 city neighborhoods that scored poorly on child health and well-being indicators and invited them to apply for planning grants. Seven of ten neighborhoods that applied for planning grants were funded. In 2000, all seven neighborhoods were funded to implement services in the core areas and to develop a neighborhood governance structure to guide implementation of their local family support strategy. Now known as Baltimore's Success By 6® Partnership, the effort continues to support neighborhood collaboratives and service delivery in six of the original seven neighborhoods.

BCFSS Evaluation

The overall BCFSS evaluation examines development and implementation of each of the four core areas. It also assesses their impact on the six indicators of young child health and well-being selected by the *ad hoc* Strategy Team. This paper focuses on the core component of home-based services and, in particular, implementation of neighborhoods' home visiting programs in communicating about and responding to the malleable risk factors of poor mental health, domestic violence, and substance abuse among pregnant and parenting women. BCFSS is designed to reduce these risk factors and increase the chances of improved outcomes for pregnant and parenting women and their infants.

Despite recognition of the importance of communicating about and responding to these malleable risk factors, there is little empirical research that examines home visiting programs' efforts to identify and address these factors. Korfmacher *et al.* found that nurse home visitors spent the largest portion of home visits discussing personal health and parenting issues while paraprofessional home visitors spent the largest portion of home visits discussing environmental health and safety, social support, and maternal life course development (13). Duggan *et al.* found that paraprofessional home visitors often failed to recognize malleable risk factors of partner violence, substance abuse, or poor mental health (11). Moreover, home visitors seldom linked families with community resources to ameliorate these risk factors. These findings gave a partial explanation for the program's negligible impact in reducing child abuse and neglect.

This paper is an initial assessment of BCFSS home visitors' effectiveness in communicating about and responding to risk factors among pregnant and parenting clients. Our first goal was to determine the prevalence of mental health, domestic violence, and substance abuse risks among BCFSS home visited clients. Our second goal was to measure home visitor communication about and response to client risks. Our third goal was to examine home visitors' perceptions of the adequacy of their training and their personal effectiveness in working with clients to communicate about and address these risk factors.

METHODS

Home Visiting Program Models

After considerable debate, the *ad hoc* Strategy Team on Family Support recommended that each neighborhood select a home visiting model rather than impose a single model across neighborhoods. This decision was guided in large part by the *ad hoc* Strategy Team's desire to let the neighborhood governance structures in each community determine the home visiting model they felt would be most appropriate for their local context as well as to take advantage of pre-existing community resources and strengths.

Ultimately, four home visiting program models were implemented across the seven neighborhoods. At the onset of implementation, two neighborhoods already had federally funded Healthy Start home visiting programs (14) and were given additional funding to increase the number of families they served. Another neighborhood chose to create a home visiting program using the Healthy Start model. Two neighborhoods implemented the Healthy Families America model (4), one chose a locally developed model that used nursing students as home visitors, and the last developed its own model in collaboration with a community hospital.

With the exception of the nurse home visiting program, all BCFSS home visiting programs use paraprofessionals. The minimum education requirement for all paraprofessional home visitors is a high school degree or equivalent. Program managers supervising both the nurse and paraprofessional home visitors are required to have at least a master's degree in a health- or social service-related field plus 3 years of client service experience, or a bachelor's degree and 5 years of client service experience. Prior to direct work with families, home visitors receive training on the home visiting program's goals, services, and operating procedures; the program's relationship with other community resources; the history and philosophy of home visitation; issues of confidentiality; and, child abuse and neglect reporting requirements.

Each BCFSS home visiting program recruits pregnant women or women with a child under the age of 6 months who live in their geographical catchment area. An outreach worker typically makes the first contact with a prospective enrollee. Some women are recruited through community events while other women are referred by current home visiting clients. Once a prospective client is determined to be eligible for a home visiting program and has consented to join, an intake specialist conducts a strengths and needs assessment, which includes the areas of mental health, domestic violence, and substance abuse. Information from this assessment is given to a new client's assigned home visitor.

Home visiting is provided for 1–3 years, depending on the program. All models call for visits at least every 2 weeks for new families and less frequent visits as families achieve milestones in healthy family functioning. Each program's visit content is guided by individualized family support plans that specify family goals and ways to achieve them. The home visitor and mother update these goals on a regular basis, typically every 6 months, until a client exits the home visiting program. The home visiting program provides a range of services, either directly or through referrals to community resources. Services include care coordination, parenting support, income and nutritional assistance, job training, as well as services to address malleable risks of mental health, domestic violence, and substance abuse.

Maternal Interviews

Sample

Home visiting managers in each neighborhood were asked to nominate families who: a) had been active in their program for at least 3 months, and b) had the "best/strongest" relationship with the program of all families enrolled. Among clients who met those criteria, we requested that managers nominate at least one family from each home visitor's caseload.

This decision to limit our sample to the most actively engaged clients was in accordance with Jacobs' five-tiered approach to evaluation (15), in which the third tier involves reviewing programs' performance data and determining the degree to which services are delivered as intended. Given that the final tiers assess whether programs have achieved their goals for all families served, we felt that determining whether goals had been attained under ideal circumstances was appropriate before conducting a comparative study of program impact.

Procedures

Three African American women who currently or previously lived in BCFSS neighborhoods were

trained to conduct the interviews. A 1-week training acquainted the interviewers with the interview instrument, protocol, and anticipated challenges. Each interviewer conducted pilot interviews that were reviewed as a group to discuss necessary modifications to the interview instrument and protocol.

Interviewers contacted mothers by phone or in-person (if no phone was available) and gave the mothers their choice of location to conduct the interview. Prior to their participation in the interview, home visited mothers completed informed consent procedures approved by the Johns Hopkins University Institutional Review Board. Interviewers read each question to mothers and recorded mothers' responses on paper. On average, interviews lasted 100 min. Upon completion, mothers were given either $40 cash or a gift certificate. Interviews were conducted between May and November 2002.

Measures

Need for Mental Health Services

Depressive symptoms were measured by the Center for Epidemiological Studies Depression Scale (CES-D) using a cutoff of ≥24 as a positive score, which defines "probable" cases of depression (16, 17). General mental health was measured by the five-item version of the Mental Health Index (MHI-5), which yields an overall measure of anxiety and depressive symptoms (18). A cutoff of <67 was used to define poor mental health (19). Among mothers who had children at the time of the interview, we used the short form of Abidin's Parenting Stress Index (PSI/SF) to measure severe parenting stress (20). A score of 90 or greater was used to define a clinically significant level of parenting stress (21).

Mothers were considered in need of mental health services if they scored positive on either the CES-D, MHI-5, or PSI/SF, or if they responded affirmatively to either of two interview items: "Have you ever had/received mental health services since joining [home visiting program]?" or, among those who did not receive service, "Did you ever want or need mental health services since joining [home visiting program]?"

Need for Domestic Violence Services

The need for domestic violence services was measured using two items from a tool developed by The Project for Research on Welfare, Work, and Domestic Violence at the University of Michigan (22). Mothers were considered in need of domestic violence services if they answered affirmatively to either of two items: "Are you experiencing a physical domestic abuse problem with your current partner?" or, "Are you now experiencing a verbal or emotional abuse problem with your current partner?" Those mothers not in a relationship at the time of the interview ($n = 61$) were not asked these items. Mothers were also considered in need of domestic violence services if they answered affirmatively to either of two interview items: "Have you ever had/received domestic violence services since joining [home visiting program]?," or, among those who did not receive service, "Did you ever want or need domestic violence services since joining [home visiting program]?"

Need for Substance Abuse Services

The CAGE Inventory (23) was used to measure problem alcohol use among mothers who consumed alcohol within the past year, as measured by ≥2 positive responses to its four questions. The Diagnostic Interview Schedule (DIS) (24) was used to measure DSM-III defined drug abuse and dependence among mothers who ever used any illicit drug more than five times and used any drug in the past year. A diagnosis of drug abuse was given when a mother reported pathological use of a substance and impairment in social role functioning; a diagnosis of drug dependence was given when there was evidence of tolerance or withdrawal.

Mothers were considered in need of substance abuse services if they scored positive on either the CAGE or DIS, or if they responded affirmatively to either of two interview items: "Have you ever had/received substance abuse services since joining [home visiting program]?," or, among those who did not receive service, "Did you ever want or need substance abuse services since joining [home visiting program]?"

Home Visitor Communication about Client Risks

Home visitors' communication about risks was based on the mothers' reports of the frequencies with which their home visitors communicated with them about mental health, domestic violence, and

substance abuse. We asked home visited mothers to indicate how often their home visitor talked to them about each risk area with the interview question, "Tell me how often you think your home visitor does these things when s/he meets with you. Your home visitor talks to you about [risk area]. . ." Home visited mothers rated home visitor communication frequency on a five-point Likert scale: *Almost Always*, *Usually*, *Half the Time*, *Sometimes*, or *Almost Never*.

Client Use of Services

Home visitors' response to client risks was based on whether home visited mothers in need of service received the appropriate service. Mothers who responded affirmatively to the interview question, "Have you ever had/received [service type] since joining [home visiting program]?" were determined to have received service. In addition, for each service reported as received, mothers were asked: "How were you referred to [service]?" Mothers were given three response choices: Self/Family/Friends, Home Visitor/Agency, or Other Agency.

Analysis

Prevalence of specific risks was calculated as the percent of mothers positive on our mental health, domestic violence, and substance abuse measures. To assess home visitor communication about client risks, we used the Mann–Whitney *U*-test to compare the frequency of discussion of each risk area in mothers identified as needing each service to those not needing each service. A two-tailed alpha level of 0.05 was used to define statistical significance. To examine client's use of services, we calculated the proportion of mothers in need of each service who received the appropriate service and the proportion referred by their home visitor.

Home Visitor Surveys

Sample

All home visitors from BCFSS-funded home visiting programs ($n = 50$) were asked to complete a survey that included an assessment of their perceptions of job-related training and effectiveness.

Procedures

Home visitors completed surveys at their program office. We worked with home visiting managers to determine appropriate administration times and survey content. Home visitors completed informed consent procedures approved by the Johns Hopkins University Institutional Review Board prior to their participation in data collection. Surveys were administered between November and December 2001.

Measures

Home Visitors' Perceptions of Training Adequacy and Personal Effectiveness

We asked home visitors to rate the adequacy of the training they had received in each of the three risk areas with the question, "I feel I am adequately trained to work with families on/in [risk area]." To assess their perceptions of personal effectiveness, home visitors were asked to respond to the following statements: "I feel I am effective in helping families recognize and address domestic violence," "I feel I am effective in helping families recognize and deal with drug/alcohol problems," and "I feel I am effective in helping families address mental health concerns." Home visitors rated both training adequacy and effectiveness on a five-point Likert scale: *Strongly Agree*, *Agree*, *Neither Agree Nor Disagree*, *Disagree*, or *Strongly Disagree*.

Analysis

We estimated home visitors' perceived training adequacy and personal effectiveness as the proportion of home visitors who agreed or strongly agreed with the statement to the effect that they were adequately trained or personally effective for each risk. We used the McNemar test to test for differences in proportions and logistic regression to measure strength of association between training adequacy and personal effectiveness. A two-tailed alpha level of 0.05 was used to define statistical significance.

RESULTS

Maternal Interviews

Our goal was to interview 30 actively engaged mothers from each neighborhood. Across all

Table I. Sociodemographics of BCFSS Home Visited Mothers ($n = 189$)

Characteristic	Percentage[a]
Race/ethnicity	
African American	100
Level of education	
1st to 12th Grade (no high school degree)	63
High school graduate/GED	25
Some college (no degree)	11
Technical/vocational school	1
Marital status	
Single (has current partner)	59
Single (no current partner)	32
Married	7
Divorced	1
Other	2
Type of housing	
Single house with just client's family	60
Single house shared by more than one family	15
Apartment building	23
Other	2
Length of time at current residence	
Less than 1 year	29
Between 1 and 3 years	37
More than 3 years	35
Worked in past year	50
Pregnant at interview	5
First-time mother	42
Age in years: mean (standard deviation)	24.6 (6.8)

[a]Percentages do not total 100 for some characteristics due to rounding.

neighborhoods, home visiting managers nominated a total of 245 mothers. We attempted to contact mothers in each neighborhood until we interviewed 30 mothers or exhausted our list. This process reduced the number of mothers to be contacted to 225.

Of the 225, our interviewers were able to contact 191 mothers (85%). Despite home visiting managers' nominations of currently active and engaged mothers, six mothers were unable to be contacted due to incomplete or incorrect phone numbers and addresses. Twenty-eight mothers were unable to be contacted after 10 attempts by our interviewers to schedule an appointment through phone or field contact.

Among the 191 mothers we contacted, only two refused to participate; therefore, a total of 189 mothers were interviewed for this study. Table I provides sociodemographic information on these women. All mothers were African American, 63% had not finished high school, and 42% were first-time mothers.

Interviews were conducted at a location chosen by the mother. The majority (70%) of interviews were conducted in mothers' homes, 25% were conducted at the office of the home visiting program in which mothers were enrolled, and 5% were conducted at a predetermined location in each neighborhood that was easier for mothers to reach via public transportation.

Prevalence of Risks

Overall, 57% of home visited mothers scored positive on our measures of mental health, domestic violence, or substance abuse service need (Table II). Specifically, 46% of mothers scored positive for poor mental health, 14% for domestic violence, and 15% for substance abuse.

Home Visitor Communication About Client Risks

The majority of home visited mothers, regardless of whether they scored positive for service need, reported that their home visitor talked to them about each risk area at least "sometimes" (Fig. 1). We found no differences, however, in the frequency with which home visitors talked to mothers about mental health issues, based on whether mothers scored positive for poor mental health ($U = 4160$, $Z = -0.66$, $p = 0.51$). We also found no differences in communication frequency for domestic violence ($U = 2030$, $Z = -0.32$, $p = 0.75$) and substance abuse ($U = 2105$, $Z = -0.80$, $p = 0.43$), based on whether mothers scored positive for those risks.

Table II. Use of Mental Health, Domestic Violence, and Substance Abuse Services Among Home Visited Mothers

	Mothers scoring positive for service need ($n = 189$)		Services received by mothers scoring positive		Mothers receiving service, those referred by home visitor	
Risk area	*n*	(%)	*n*	(%)	*n*	(%)
Mental health	87	46	22	25	9	41
Domestic violence	26	14	5	19	1	20
Substance abuse	29	15	6	21	1	17
Any of above	108	57	29	27	11	38

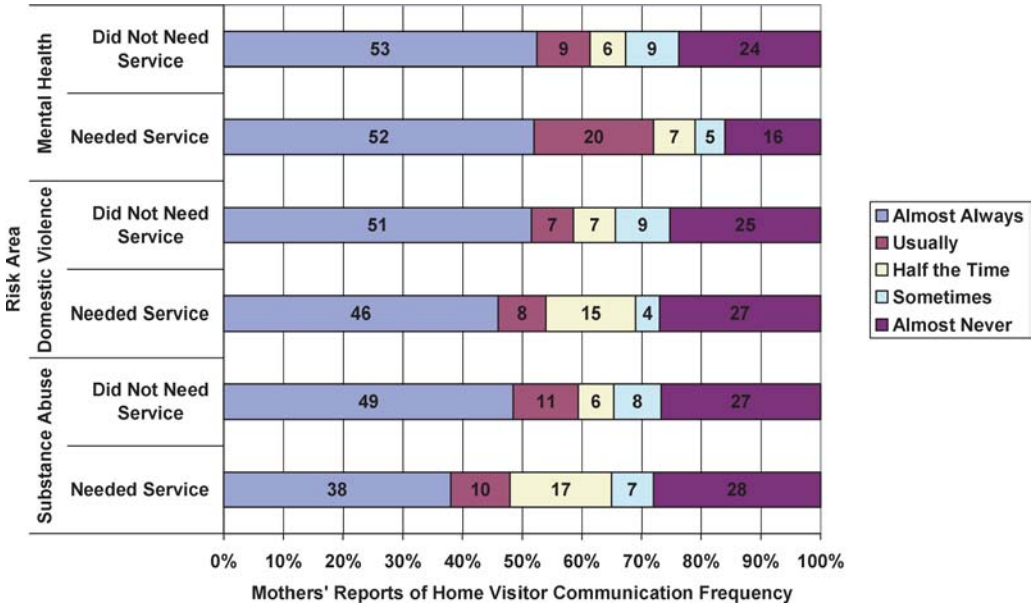

Fig. 1. Home visitor communication about mothers' risks, based on mothers' service need (Mann–Whitney *U*-tests found no significant differences in home visitor communication frequency based on service need for any of the three risk areas).

Client Use of Services

One-quarter or fewer of risk-positive mothers reported receiving service in each risk area since enrolling in their home visiting program (Table II). Among mothers receiving services, 38% indicated that their home visitor referred them to service.

Home Visitor Surveys

Of the 50 home visitors asked to complete a survey, 45 (90%) did so. Forty-three of these home visitors were paraprofessionals, and two were nursing students. All home visitors were female.

Home Visitor Perceptions of Training Adequacy and Personal Effectiveness

As shown in Table III, 56% of home visitors reported that they were adequately trained to help families with mental health concerns; the percentages of home visitors who felt adequately trained in domestic violence and substance abuse issues were moderately higher: 66 and 76%, respectively. Fewer than half of home visitors reported being well-trained in all three risk areas.

Over 80% of home visitors reported being effective in addressing each risk area. Sixty-nine percent of home visitors reported that they were effective in helping families in all three risk areas.

We found a significant difference between the proportion of home visitors who felt adequately trained and the proportion who felt personally effective in mental health ($p < 0.01$), as well as in all three risk areas combined ($p < 0.01$). We also found that home visitors who rated their training as adequate were more likely to rate themselves as personally effective in addressing mental health ($p < 0.05$), domestic violence ($p < 0.05$), and all three risks combined ($p < 0.05$).

DISCUSSION

This study found no differences in the frequency with which home visitors talked to mothers about mental health issues, domestic violence, or substance abuse, based on whether mothers scored positive for these risks. Furthermore, few clients used services to address their risks, given that no more than 25% of mothers in need of a given service actually received the service since joining their program. Among mothers who received services, only 38%

Table III. BCFSS Home Visitors' ($n = 45$) Ratings of Training Adequacy and Personal Effectiveness in Dealing with Mental Health, Domestic Violence, and Substance Abuse Issues

	Adequately trained		Personally effective			Association between training adequacy and personal effectiveness	
Risk area	*n*	(%)	*n*	(%)	*p*	OR	*p*
Mental health	25	56	37	82	0.00	12.9	0.02
Domestic violence	29	66	36	82	0.09	5.2	0.04
Substance abuse	31	76	40	89	0.06	1.7	0.59
All three risks	20	44	31	69	0.01	4.4	0.05

were referred by their home visitor. Home visitors felt that they were inadequately trained in these three areas, suggesting that their training in addressing these risks needs to be augmented.

This study's findings are similar to those found in the evaluation of Hawaii's Healthy Start home visiting program (11), suggesting generalizability of these findings beyond BCFSS programs. In Baltimore and Hawaii, paraprofessional home visitors showed limited communication about and response to the risk factors of poor mental health, domestic violence, and substance abuse. In the Hawaii study, home visitor response to risk factors was measured through record abstraction as home visitor's interactions with the client or linking the client with a community resource. The findings from Baltimore and Hawaii are notable, given the increasing number of paraprofessional home visiting programs being implemented nationally.

These findings raise the question of whether paraprofessional home visitors are the human service providers best suited to communicate about and respond to mental health, domestic violence, and substance use problems among home visiting clients. Fundamental to paraprofessional home visiting programs is the establishment of trusting relationships between home visitors and clients. Hebbeler and Gerlach-Downies' interviews with home visitors and home visited families from the Parents as Teachers home visiting program provide considerable insight into the home visitor–client relationship (25). The authors speculated that modest program impact on child outcomes might have been due, in part, to home visitors' bond with mothers. Specifically, Hebbeler and Gerlach-Downie proposed that home visitors' strong belief in forging relationships with families and focusing on families' strengths might have conflicted with their ability to address family challenges, such as children's developmental delays.

In a similar vein, BCFSS home visitors may place more emphasis on building trusting relationships and enhancing families' strengths than on communicating about and addressing risk factors in families' lives. It is now ubiquitous in prevention research to focus on identifying and enhancing protective factors found within an individual's social environment (26, 27). However, a strengths-based approach does not imply that home visitors should neglect recognizing vulnerabilities in their clients in the process; home visitors do have a responsibility to identify problems that disrupt family functioning. In terms of response to client risks, a strengths-based approach directs home visitors to help clients utilize existing strengths and resources to cope with problems (28).

This integration of strengths-building and risk reduction is a sophisticated technique that requires skills developed initially in training and continued through ongoing monitoring and supervision. Paraprofessional home visitors may need more targeted and/or intensive training around identifying and addressing malleable risk factors (11, 29). The results of the present study suggest that training in mental health, domestic violence, and substance abuse may be inadequate for BCFSS home visitors. Thus, training that enhances home visitors' skills in effectively communicating about and addressing client risk factors, using a strengths-based approach, could be augmented. Providing home visitors opportunities during trainings to practice applying knowledge to real-life situations would be important as well.

Another option is to provide support from other service providers to home visitors. Home visiting programs might benefit from collaborating with professionals who are more skilled and experienced in dealing with mental health, domestic violence, and substance abuse issues. For example, master's-level social workers could assist paraprofessional home visitors by providing training around assessment and helping to develop case plans to address mental

health concerns. Pregnant women's prenatal care providers could also be valuable resources for home visitors, as prenatal care providers may detect a risk factor prior to or during a client's enrollment in a home visiting program that could be shared with the home visitor.

Linking paraprofessional home visitors with a multi-disciplinary group of professionals, has been presented as a viable approach for addressing families' needs (30). Barnes-Boyd, Norr, and Nacion, for example, evaluated a home visiting program in Chicago aimed at reducing infant mortality; in this model a nurse and community member conducted home visits as a team, with the nurse accompanying the community member on designated visits to complete physical assessments and consult with the community member on identified problems (31). The authors attributed the successful outcomes of the program to the model's integration of nurses' expertise with community members' intimate knowledge of the challenges of urban life. Given the sensitive nature of the risk factors examined in the current study, however, use of a home visiting team approach would demand even greater consideration to the building of trust and rapport between clients and the "professional" team member.

Other factors may have played a role in our finding that BCFSS home visitors often failed to address client risks. Many of the home visited mothers in our sample live in impoverished conditions, with limited resources. Home visitors, therefore, might have chosen to address families' more pressing, immediate needs during home visits, such as assistance with getting food, clothing, baby supplies, and even help with housing issues. Another possibility is that home visitors may have tried to link mothers with a needed service, but the mothers chose not to pursue the service. For example, a home visitor could have identified a drug problem and provided the client a referral to substance abuse treatment; however, the client may not have followed through on the referral because she did not perceive such services as beneficial. Client failure to follow through on a referral might have contributed to our findings that home visitors communicated with mothers about the risk areas, but few mothers actually received needed services.

Study Limitations

Several study limitations must be acknowledged. First, because we did not use a random sample, our results cannot be generalized to all families enrolled in these programs. Given that the sample was limited to families considered to be most active and engaged, the findings are likely to be biased toward more positive measures of home visitor communication about and response to risks.

Second, we may have underestimated the prevalence of domestic violence. Items in our measure to detect the presence of domestic violence contained the terms "physical domestic abuse problem" and "verbal or emotional abuse problem" rather than operational definitions of these constructs. Without operational definitions providing more behavioral descriptions of these constructs, we may have obtained an underestimation of domestic violence problems. In addition, our domestic violence measure excluded women who were not in a relationship at the time of the interview. Thus, unless clients reported having received domestic violence services since joining their program, those women who may have experienced domestic violence since their involvement in their program but discontinued their relationship with the abusive partner prior to their interview would not be included in our domestic violence rate.

Third, the timing of our maternal interviews may have affected our study findings. In some instances, the onset of a risk factor may have occurred between the last home visit received by the mother and our maternal interview. In this event, a home visitor would not have needed to refer a client to the appropriate service, since the risk factor would not have been present during any home visits conducted prior to the client's interview. Also, there may have been a lag time between a home visitor providing a referral and the client following through on the referral. Thus, if the home visitor had only recently given a mother referral information to address a risk factor, the mother may not have attempted to receive the service prior to her interview.

Fourth, it is important to point out that our measures of home visitors' communication about and response to risks are based upon maternal self-report. Data on the frequency with which home visitors talked to clients about each of the three risk areas come from clients' assessments of their home visits, not from the home visitors themselves. Moreover, our definition of home visitor "response" is based on whether at-risk clients used services to address their problem, and if so, whether the home visitor was a referral source. Because we did not ask mothers whether their home visitor had ever referred them to a given service, regardless of whether the service was

actually received, it is possible that home visitors responded to a client's risk, but the client did not follow through with the referral. Therefore, we may have underestimated home visitors' ability to respond to client risks.

Lastly, there may have been variation in how home visitors interpreted the constructs of effectiveness and training adequacy on our home visitor survey. For example, some home visitors may have defined effectiveness as being able to communicate with clients about a risk area, whereas other home visitors may have defined effectiveness as making sure a client received needed services or successfully reduced a risk.

Implications for Future Research

We see three important directions for future research on home visitors' communication about and response to malleable risks. First, attention must be placed on measuring the content of home visits. Missing in our assessment of home visitor communication related to malleable risk factors is the nature of the discussion between home visitor and client. Are home visitors asking probing questions about these risk factors or are they asking more general questions? Who initiates discussion of these risk factors? Have home visitors found effective ways to engage families in conversation about these risk factors? These questions could be answered through program record reviews, provided that records are a reliable source of data on home visitors' interactions with clients. In-depth interviews and focus groups with home visitors and/or home visiting clients may also be useful in understanding the content of home visits. Observational studies that audiotape or videotape home visits provide another approach for assessing the content of home visits. Hebbeler and Gerlach-Downies' videotaping of home visits conducted as part of the Parents as Teachers home visiting program provides one example of an observational technique used to understand home visit content (25).

Second, training and supervision of home visitors need to be examined, as they relate to addressing malleable risk factors. Home visitors' perceptions of training adequacy varied across the three risk areas, with 56–76% feeling adequately trained in a given risk area. Fewer than half the home visitors felt adequately trained in all three areas, however. Future research needs to examine how training and supervision influence home visitors' attention to malleable risk factors. In particular, this research should examine the extent to which training and supervision enhance home visitors' skills and willingness to discuss sensitive issues with clients.

Third, future research should examine whether and how home visiting programs move clients through stages of behavior change. Because home visiting programs attempt to build relationships with clients and provide services for extended periods of time, Prochaska and DiClemente's Transtheoretical Model (34) may be one approach for this future research. Specifically, it may be useful to examine how home visiting programs help clients progress from a "precontemplation" stage, where a client has no intention to seek help for a mental health, domestic violence, or substance abuse problem, to an "action" stage, where a client actively seeks out service to address the problem.

CONCLUSIONS

Our research provides a first glimpse into BCFSS' progress toward impacting birth and young child outcomes via home visitors' work in communicating about and responding to home visited clients' mental health, domestic violence, and substance abuse risks. BCFSS has used our findings to help enhance home visiting program effectiveness. For example, BCFSS has required that all home visiting staff attend a mandatory 5-day substance abuse training, which may help home visitors better communicate about and respond to their clients' substance abuse needs. Mandatory training on domestic violence has also been provided to all home visitors in response to this study's findings. In regard to mental health, our findings led to strategic discussions among programs and initiative leadership on how to better link home visiting programs with existing mental health resources in the city.

This study also illuminates the need to continue conducting formative evaluations of home visiting programs to examine aspects of program implementation, such as the delivery of home visits that address malleable risk factors. We believe that through a process of designing rigorous formative evaluations that highlight challenges to effective program implementation, home visiting programs' ability to improve the lives of mothers and their children will be enhanced.

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