

Michigan 2001 External Quality Review

Maternal Support Services Study

Introduction

The Michigan Department of Community Health (MDCH) contracted with Delmarva Foundation for Medical Care to conduct a statewide external quality review (EQR) of Michigan's Maternal Support Services (MSS) program during 2001. The purpose of the MSS program is to reduce infant mortality and morbidity by providing pregnancy and infant care education as well as the psychosocial, nutritional, and transportation support to high-risk, low-income pregnant women in Michigan.

Purpose

The purpose of the MSS study is twofold.

1. **Study A.** This study utilized administrative data to look at the Medicaid managed care and fee for service (FFS) populations participating in MSS and not participating in MSS. It compared the two populations with regard to participation rates and adequacy of care.
2. **Study B.** This study compared a sample of the Medicaid managed care and FFS MSS participants, using data abstracted from MSS provider records. It considered the intake process of MSS referrals, quality of MSS assessments, plans of care, type of interventions, and extent to which MSS is achieving program objectives.

Background

In 1986, Michigan convened a task force to analyze the problem of infant mortality and to formulate public policy recommendations that would reduce infant deaths. The task force produced the *Infant Mortality in Michigan Report*, commonly known as the *Blue Ribbon Report* (Michigan Department of Public Health, 1987). The report set out a five-year plan with four major objectives:

- Increase the number of women receiving prenatal care
- Decrease the number of unintended pregnancies

- Increase the number of high-risk newborns receiving comprehensive care
- Improve data gathering and application

The *Blue Ribbon Report* and its recommendations served as the impetus for establishing the MSS program in 1987.

MSS

The MSS program in the State of Michigan supplements routine prenatal care for pregnant women who are Medicaid beneficiaries. MSS is intended to improve prenatal outcomes for beneficiaries who are most likely to experience serious health problems due to psychosocial or nutritional problems. MSS services include:

- Psychosocial and nutritional assessments
- Plan of care development
- Professional interventions
- Care coordination
- Referrals to specialists and linkage to community resources
- Childbirth education
- Transportation as needed for health, substance abuse treatment, support services, and/or pregnancy-related appointments

The primary care providers, obstetrician/gynecologists (OB/GYN), or other care providers outside the MSS program identify, screen, and initiate MSS referrals. Women referred to MSS receive professional interventions and care coordination from a multidisciplinary team consisting of a qualified social worker, nutritionist, and registered nurse (RN).

The MSS program team provides in sequence:

- Intake and comprehensive assessment
- Risk and problem identification
- Development of a written care plan
- Direct intervention such as childbirth education, referrals for appropriate medical interventions, transportation, and community psychosocial support services
- Recommendations for appropriate continuing care as part of a discharge summary
- Postpartum visitation to observe mothers' bonding skills, and participating in infant care and nutrition

MSS Providers

Providers of MSS are required to be certified by the MDCH. Providers located across the state include a network of 35 local health departments and 42 community-based organizations (health plans, home health care and hospice agencies, hospitals, OB clinics, health centers, and community action agencies).

MSS provider teams are organizationally diverse. Some MSS providers function in a clinic setting where prenatal services are integrated with MSS. Some practice in clinic settings where MSS is organizationally independent of other services. Others provide home-based and community-oriented services, or a combination of clinic and community-based services.

MSS Participants

MDCH requires that pregnant Medicaid participants be screened for eligibility to participate in MSS. Criteria for access to MSS are based on risk of poor pregnancy outcomes. MSS referrals are encouraged given the presence of any one of the following situations:

- Disadvantaged social situation
- Negative or ambivalent feelings about the pregnancy
- Under 18 years of age and no family support
- In need of assistance to care for herself and her infant
- Cognitively, emotionally, or mentally impaired
- Nutritional problems
- Abuse of alcohol, drugs, or tobacco
- In need of transportation assistance to keep medical appointments
- In need of childbirth education

Data from the National Maternal and Infant Health Survey (1991) suggest that women receiving health behavior advice during pregnancy are at lower risk of delivering low-birth-weight infants. Health behavior advice addresses issues such as smoking, single parenthood, having a first child (primiparity), and utilization of prenatal services. Higher risk for low-birth-weight infants is associated with tobacco use, single marital status, primiparity, and inadequate utilization of prenatal care (Kogan, Alexander, Kotelchuck, & Nagy, 1994). In reviewing the literature, Goldenberg and Rouse (1998) found that enhanced prenatal care (for example, patient education, case management, home visits, and nutrition counseling) appeared effective in reducing preterm births.

Coordination with Other State Programs

Michigan MSS program specifications require that services be coordinated, as needed, with other appropriate statewide programs. Related programs include Infant Support Services (ISS); the Women, Infants, and Children (WIC) program; state-supported programs for substance abuse, smoking, and violence prevention; the Michigan Family Independence Agency; and any other state or local program with a focus on preventing adverse maternal or infant outcomes and child abuse or neglect. MSS providers make referrals to other community services as needed beginning at the point of treatment planning, throughout the course of pregnancy, and through discharge planning.

MSS Practice Standards and Guidelines

The MDCH requires that MSS providers be accredited or certified. The standards for accreditation and certification address team structure and processes, personnel qualifications, patient intake, assessment parameters, plans of care, interventions, and discharge protocols. Teams must consist of health care professionals—RNs, social workers, and nutritionists.

Standards of health record documentation for MSS are specific. The standards call for:

- Written referrals to and from MSS;
- Assessments completed within specified time frames;
- Plans of care based on the assessments; and
- Documentation reflecting communication and coordination of care among the providers.

Methods

The research design consisted of two parts (described under Purpose) referred to as Study A and Study B:

Study A. Information for Study A was obtained from administrative data (i.e., the MDCH Decision Support System [DSS]). The study addressed prenatal care and birth outcomes of women participating in MSS (MSS participants) and pregnant women who did not participate in MSS (nonparticipants), and other characteristics of pregnant women. The study analyzed the relationships of MSS participation and demographic characteristics of the women with utilization of prenatal care, birth weight, and gestation.

Study B. For Study B, information was obtained from both administrative data and participants' MSS records as maintained by MSS providers. The study measured MSS utilization by type and volume. Measures included:

- Presenting problems, assessment and treatment plan completion;
- Utilization of office and home visits;
- Transportation services;
- Participation in childbirth education;
- Counseling for nutrition, social services; and
- Referrals for additional services.

The MSS record review enabled closer examination of the nutritional and psychosocial needs of participants and the specific services to which they were referred. Furthermore, the MSS record review permitted examination of the providers' processes and interventions, such as the existence of written referrals, timely and complete care plans, documentation of services provided (referrals, visits, counseling, etc.), consistent communication and coordination among the team of providers, use of translation services, and the status of the participant upon discharge.

Study Questions

The following questions were addressed in the studies.

Study A – Maternal Characteristics and MSS Participation

Question 1. What are the distinguishing characteristics of MSS participants compared to nonparticipants? Are certain demographic groups such as younger women and racial minorities more likely to participate in MSS?

Question 2. Are MSS participants more likely than nonparticipants to receive early and appropriate prenatal care?

- What are the general demographic characteristics of women receiving adequate prenatal care compared to women who did not receive adequate prenatal care?
- Are MSS participants more likely than nonparticipants to receive prenatal care in the first trimester?
- Is the adequacy of prenatal care as measured by the Kotelchuck Index (1994) better for MSS participants than nonparticipants?

Study B – Comparison of Medicaid Managed Care and FFS MSS Participants

Question 3. Do MSS provider practices adhere to MDCH MSS policy requirements?

Provider practices include:

- Referrals for intake into MSS
- Completion of intake assessments
- Completion of care plans
- Matching care plans to assessed needs
- Providing counseling and education to participants about pregnancy, nutrition, childbirth, family planning, and parenting
- Completion of discharge summaries

Question 4. What was the level of care coordination in the MSS program?

Care coordination encompasses:

- Coordinating ongoing care with other providers (e.g., primary care physicians and OB/GYNs)
- Referral by MSS providers to physicians, other health care providers, and community services

Data Sources

Two major data sources were utilized in the study: the DSS and MSS provider record reviews. The DSS includes health plan enrollment and encounter data, FFS Medicaid claims, and non-Medicaid data such as vital records (birth registry), lead screening, WIC, and Michigan Childhood Immunization Registry (MCIR) data.

MSS records, the second data source, were submitted by MSS providers from lists generated from the sample of randomly selected MSS participants in both managed care and FFS populations.

Measures

Measures for Study A included demographic characteristics of MSS participants and nonparticipants, FFS and health plan enrollment status, and pregnancy history. Study A included MSS participation status and information obtained from birth registry data. Study B included process measures taken from MSS service records maintained by the MSS agencies. MSS record measures included referral sources, assessment, treatment plan, service, and discharge information.

Population and Sampling

The study population consisted of all Medicaid beneficiaries who were pregnant and delivered in calendar year (CY) 2001. The population in Study A included Medicaid beneficiaries participating in MSS services and those not participating in MSS services.

Study B included a sample of Medicaid beneficiaries enrolled in managed care or FFS who participated in MSS. The sample consisted of 420 randomly selected enrollees in health plans and 420 randomly selected beneficiaries in FFS. The study included only beneficiaries who remained consistently enrolled with the same type of coverage or plan from the first month of participating in MSS services through the date of delivery. The same criteria were applied to both health plans and FFS. The sample was designed to be large enough to provide a minimum 95% confidence level with a 10% margin of error for statistical comparisons.

Data Analysis

Questions 1 – 2. The statistical analysis explored the demographic differences between MSS participants and nonparticipants.

To answer Questions 1 and 2, data from the DSS were used to compare MSS participants to nonparticipants. Data for the entire population of MSS participants and nonparticipants were extracted from the DSS for further analysis. Logistic regression was used to analyze characteristics such as race and location of residence that were most predictive of whether pregnant women did or did not participate in MSS and to explain variation in whether women received adequate prenatal care.

Questions 3 – 4. Means and percentages were computed to describe the processes of referral into MSS, assessment and treatment planning, linkage with community resources and other services in the community, and discharge and follow-through (e.g., referral to ISS).

To answer Questions 3 and 4, information from MSS provider records was abstracted and analyzed descriptively to identify processes that may be related to MSS outcomes and lead to quality improvement recommendations. The information included:

- Types and documentation of referrals into MSS
- Completeness and content of MSS intake assessments
- Risk factors assessed such as smoking, substance abuse, homelessness, and poor nutrition
- Completeness and content of treatment plans in comparison to assessments
- Education and other direct interventions
- Completeness and content of discharge summaries
- Indications of continuity of care based on evidence of communication and referrals to other providers

Once the abstracting process was completed, quality indicators were tabulated and summarized overall and by health plan membership (i.e., managed care compared to FFS).

Table 1 provides a summary of the information extracted from the MSS records.

Table 1. Quality indicators.

Indicator	Numerator	Denominator
1. Required elements addressed in assessment (%)	Number of MSS participants with each required element	Total number of MSS participants
2. Structured plan of care (%)	Number of MSS participants with structured plan of care	Total number of MSS participants
3. Identified needs addressed in plan of care (%)	Number of MSS participants with each need addressed	Total number of MSS participants with plan of care
4. Identified needs addressed with services (%)	Number of MSS participants with services addressing needs	Total number of MSS participants with plan of care
5. Participants with multidisciplinary team (%)	Number of participants who consulted with all 3 disciplines (nursing, social work, and nutrition)	Total number of MSS participants
6. Coordination with other agencies and community resources (%)	Number of participants with mention of other agencies or community resources in record	Total number of MSS participants
7. Coordination with prenatal care physician (%)	Number of participants with referral form from physician	Total number of MSS participants

Limitations

For Study A, since all pregnant women were represented in comparisons between MSS participants and nonparticipants, results are likely to be generalizable to the state as a whole. However, because of the dynamic nature of the health care system, results may not be generalizable beyond the study period. The study was designed as a statewide population study and not a provider specific study.

For Study B, the sample size was adequate only for broad statewide comparisons and did not produce results specific to providers or individual managed care plans. MSS quality indicators were limited to information in the MSS provider records. General conclusions based on the review of existing materials and their relationships were made. Caution should be exercised in making inferences about cause-effect relationships or clinical significance.

Results – Study A

Maternal Characteristics and MSS Participation

Question 1.

What are the distinguishing characteristics of MSS participants compared to nonparticipants? Are certain demographic groups such as younger women and racial minorities more likely to participate in MSS?

This section describes population demographics for MSS participants compared to other pregnant women (nonparticipants). These comparisons are based on information from the DSS.

Figure 1 shows that for women under the age of 20, the percentage of MSS participants exceeded the percentage for non-MSS participants.

Figure 1. Age distribution of MSS participants and nonparticipants according to the DSS.

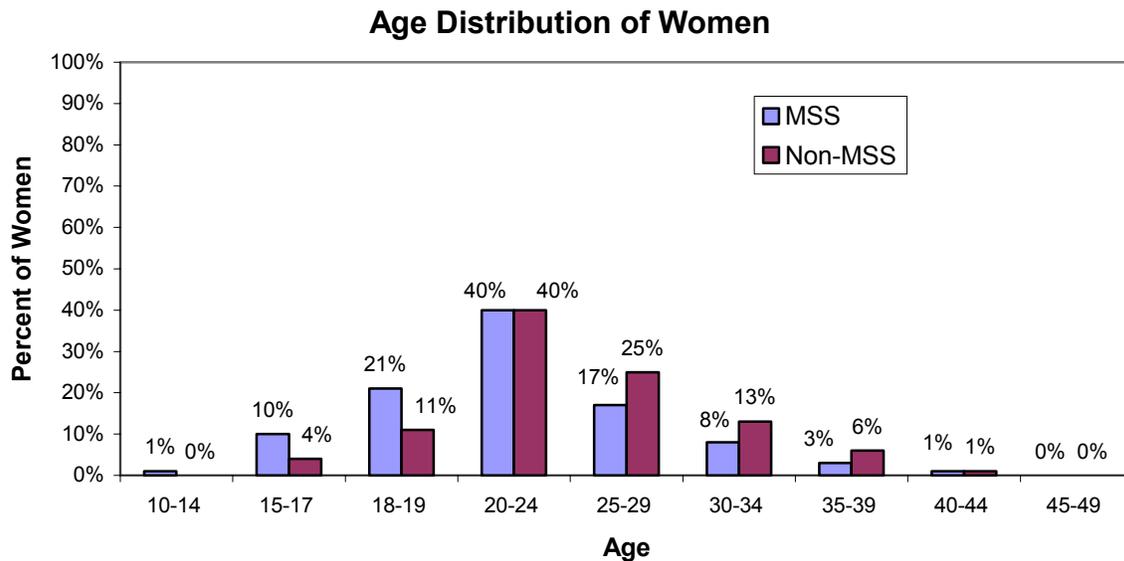


Table 2 indicates that MSS participants were more likely to be Caucasian and less likely to be African-American or Hispanic. It also indicates that the demographic mixture of women who were likely to enroll in MSS differed from the demographic mixture of nonparticipants.

Table 2. Race distribution of MSS participants and nonparticipants according to the DSS.

Race	MSS Participants	Nonparticipants
American Indian	1%	0%
African-American	27%	32%
Caucasian	65%	54%
Hispanic	5%	10%
Other	1%	2%
Unknown	0%	1%
Total	100%	100%

Logistic regression modeling with data extracted from the DSS for the entire population of pregnant women was used to determine what factor(s) explained differences in MSS participation rates. The modeling process identified patterns of relationships between MSS participation and the characteristics of pregnant women and their infants. After controlling for the other variables such as race and age in the model, enrollment in a health plan remained a significant factor associated with an increased likelihood that women would participate in MSS. Health plan enrollees (28%) were found to be more likely than the FFS (26%) to participate in MSS. While the difference was small, it appeared generalizable.

The likelihood of participation in MSS varied widely across the health plans. The variation in MSS participation across plans is depicted in Table 3.

Table 3. MSS utilization by women who delivered within each health plan and FFS.

	Nonparticipants		MSS Participants		Total
	Population Size	Percent	Population Size	Percent	Population Size
Botsford Health Plan	61	91%	6	9%	67
Cape Health Plan	683	94%	46	6%	729
Care Choices HMO	105	81%	25	19%	130
Community Care Plan	405	61%	257	39%	662
Community Choice MI	1,004	54%	843	46%	1,847
Great Lakes Health Plan	1,067	71%	432	29%	1,499
Health Plan of MI	438	52%	397	48%	835
HealthPlus of MI	1,100	82%	237	18%	1,337
M-Care HMO	169	71%	68	29%	237
McLaren Health Plan	189	57%	144	43%	333
Midwest Health Plan	421	95%	22	5%	443
Molina Healthcare of MI	201	71%	81	29%	282
OmniCare Health	1,084	89%	137	11%	1,221
Phys Health Plan of Mid MI	289	48%	312	52%	601
Phys Health Plan of SW MI	475	61%	304	39%	779
Priority Health	366	65%	199	35%	565
Total Health Care	607	90%	64	10%	671
Upper Peninsula Health Plan	207	52%	191	48%	398
Wellness Plan	1,571	82%	335	18%	1,906
Total (all Health Plans)	10,422	72%	4,100	28%	14,542
Fee-for-Service	12,365	74%	4,250	26%	16,615
Total (overall)	22,787	73%	8,350	27%	31,157

Note: The population columns represent the number of live births: for example, women giving birth to twins were counted twice. The table is based on women on Medicaid in Michigan who had matching Vital Statistics Birth Records.

Overall 27% of Medicaid eligible women who gave birth during 2001 participated in MSS.

Question 2.

Are MSS participants more likely than nonparticipants to receive early and appropriate prenatal care?

- What are the general demographic characteristics of women receiving adequate prenatal care compared to women who did not receive adequate prenatal care?
- Are MSS participants more likely than nonparticipants to receive prenatal care in the first trimester?
- Is the adequacy of prenatal care as measured by the Kotelchuck Index (1994) better for MSS participants than nonparticipants?

Demographics for all pregnant women as well as participation in MSS were analyzed to determine what factors explained variation in the initiation of prenatal care (Table 4) and in the Kotelchuck index (Table 5). In these tables rates of prenatal care specific to each maternal characteristic (for example, mother's age group) are presented. The rates sum to 100% (within rounding) in each row of the tables. The tables show what percentage of mothers are more or less likely to receive adequate prenatal care within each age, race, and other types of categories. For some mothers, no information about prenatal care was listed in the vital records. The percent with no information (listed as "Unknown") varied depending upon maternal characteristics.

Logistic regression was applied to assess the strength of the relationship of each factor with prenatal care.

Table 4. Percent distributions of the trimester initiating prenatal care by demographics and MSS participation.

	1st	2nd	3rd	No Care	Unknown
	Trimester	Trimester	Trimester	No Care	Unknown
	Percent	Percent	Percent	Percent	Percent
Age Group					
<18	55%	31%	9%	2%	2%
18-30	71%	21%	5%	2%	2%
31-40	69%	21%	4%	3%	2%
>40	65%	22%	4%	7%	2%
Health Plan Type					
Health plan	70%	21%	5%	2%	2%
FFS	69%	21%	5%	2%	2%

Table 4. Percent distributions of the trimester initiating prenatal care by demographics and MSS participation. (continued)

	1st	2nd	3rd	No Care	Unknown
	Trimester	Trimester	Trimester	Percent	Percent
	Percent	Percent	Percent	Percent	Percent
Mother's Ethnicity					
Arab American	79%	12%	5%	2%	3%
Hispanic	62%	29%	6%	1%	2%
Not Hispanic / Arab American	70%	21%	5%	2%	2%
Unknown	70%	14%	4%	2%	11%
Mother's Race					
American Indian	67%	28%	4%	1%	0%
Asian or Pacific Islander	69%	24%	3%	0%	3%
African-American	59%	27%	8%	4%	2%
Unknown	50%	27%	10%	2%	11%
Caucasian	75%	19%	4%	1%	2%
Plurality					
Multiple birth	71%	21%	3%	3%	2%
Single birth	70%	21%	5%	2%	2%
Prior Live Birth Indicator					
No prior births	72%	20%	4%	1%	2%
Yes prior births	68%	22%	5%	3%	2%
Geography					
Rural	77%	18%	3%	1%	1%
Urban	68%	22%	5%	2%	2%
Change in Plan					
Changed plan	69%	22%	5%	2%	2%
Same plan	72%	20%	5%	2%	2%
MSS Utilization					
Nonparticipant	69%	22%	5%	2%	2%
MSS Participant	72%	21%	4%	1%	2%

As indicated in Table 4, 71% of women age 18 through 30 received prenatal care in the first trimester, whereas 55% of women under 18 received care in the first trimester. Among women least likely to receive prenatal care in the first trimester were Hispanics and African-Americans.

According to Table 4, women in the MSS program were more likely to receive first trimester care (72%) than nonparticipants (69%). Overall, counting women with no care and women with unknown prenatal care status according to the birth registry, less than 4% of women received no prenatal care.

The Kotelchuck index is a way to define the adequacy of prenatal care based on month of entry into prenatal care, number of prenatal visits, and gestational age (Kotelchuck, 1994). The Kotelchuck index takes into account the timing and number of visits for prenatal care in relation to the total gestation weeks. This index assesses the utilization of care once prenatal care has begun, not the quality. Actual visits are compared to expected visits and grouped into four categories:

- Inadequate (less than 50% of expected visits)
- Intermediate (50% – 79%)
- Adequate (80% – 109%)
- Adequate Plus (equal to or greater than 110%)

The month prenatal care began is also grouped into four categories:

- Inadequate (7th month or later, or no prenatal care)
- Intermediate (5th or 6th month)
- Adequate (3rd or 4th month)
- Adequate Plus (1st or 2nd month)

These two ratings are then combined to produce an overall rating in one of the four categories.

As indicated in Table 5, the Kotelchuck index revealed a varied pattern of relationships with demographic variables.

Table 5. Distribution of the adequacy of prenatal care measured by the Kotelchuck index.

	Adequate Plus Care	Adequate Care	Intermediate Care	Inadequate Care	Unknown
	Percent	Percent	Percent	Percent	Percent
Age Group					
<18	25%	30%	10%	31%	4%
18-30	32%	36%	11%	19%	3%
31-40	34%	33%	10%	20%	3%
>40	32%	34%	7%	23%	3%
Health Plan Type					
Health plan	34%	33%	10%	19%	3%
FFS	30%	36%	11%	19%	3%
Mother's Ethnicity					
Arab American	28%	43%	11%	15%	3%
Hispanic	26%	33%	15%	24%	3%
Not Hispanic/ Arab American	32%	35%	10%	19%	3%
Unknown	28%	32%	10%	15%	14%
Mother's Race					
American Indian	27%	40%	13%	19%	1%
Asian or Pacific Islander	29%	38%	12%	17%	4%
African-American	34%	26%	8%	28%	4%
Unknown	22%	24%	9%	31%	14%
Caucasian	31%	40%	12%	15%	3%
Plurality					
Multiple birth	59%	15%	6%	16%	4%
Single birth	31%	36%	11%	20%	3%
Prior Live Birth Indicator					
No prior births	31%	38%	11%	16%	3%
Yes prior birth	32%	34%	10%	21%	3%

Table 5. Distribution of the adequacy of prenatal care measured by the Kotelchuck index. (continued)

	Adequate Plus Care	Adequate Care	Intermediate Care	Inadequate Care	Unknown
	Percent	Percent	Percent	Percent	Percent
Geography					
Rural	32%	41%	12%	13%	2%
Urban	32%	33%	10%	21%	3%
Change In Plan					
Changed plan	31%	36%	11%	20%	3%
Same plan	35%	33%	11%	18%	3%
MSS Utilization					
Nonparticipant	32%	34%	10%	20%	3%
MSS participant	31%	37%	13%	17%	3%

Table 5 indicates that women 31-40, women in health plans, African-Americans, and women who remained enrolled in the same health plan were among those more likely to receive adequate plus prenatal care. According to Table 5, MSS participants appeared slightly more likely to receive adequate care (37%) than nonparticipants (34%). MSS participants were less likely (17%) than nonparticipants to receive inadequate care (20%).

Results – Study B

Comparison of Medicaid Managed Care and FFS MSS Participants

Study B investigated the processes occurring throughout the delivery of MSS services from referral into MSS, intake assessment, treatment planning, and intervention through discharge and referral for other types of services such as ISS. Data abstracted from MSS records were analyzed to address these questions. While results are displayed separately for MSS participants in FFS and health plans, no pattern of differences between FFS and health plan MSS participants emerged. This was to be expected because both groups of MSS participants received services from the same MSS providers.

Question 3.

Do MSS provider practices adhere to MDCH MSS policy requirements?

Referrals for Intake into MSS

Pregnant women typically entered MSS with a written referral from a physician or clinic providing prenatal care or from a social service agency. Physicians participating in Medicaid are encouraged by MDCH and the MSS clinics to screen for risk factors in pregnant women and refer women whom they consider at high risk for poor pregnancy outcomes to MSS. According to MDCH, physicians are expected to provide these referrals in writing. The rates of formal written referral documented in MSS records are depicted in Figure 2.

Figure 2. Referrals to MSS.

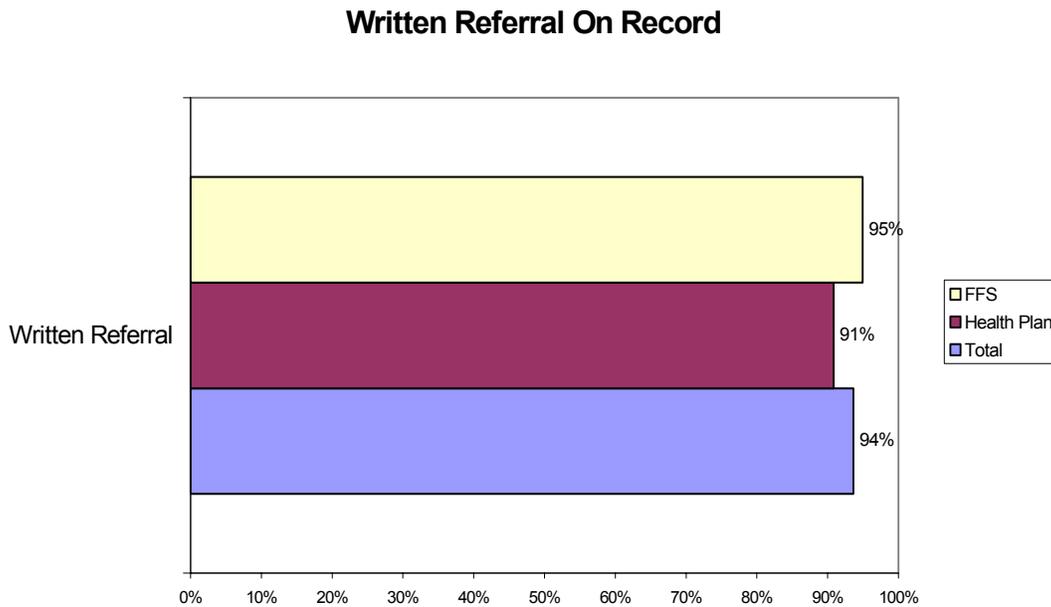


Figure 2 indicates that for women participating in MSS services, written referrals from physicians appeared at a rate of 94% overall. Written referrals occurred at a rate of 91% for health plan participants. According to state standards, each referral into MSS is to be documented in writing.

The sources of documented referrals are indicated in Figure 3.

Figure 3. Source of referrals into MSS.

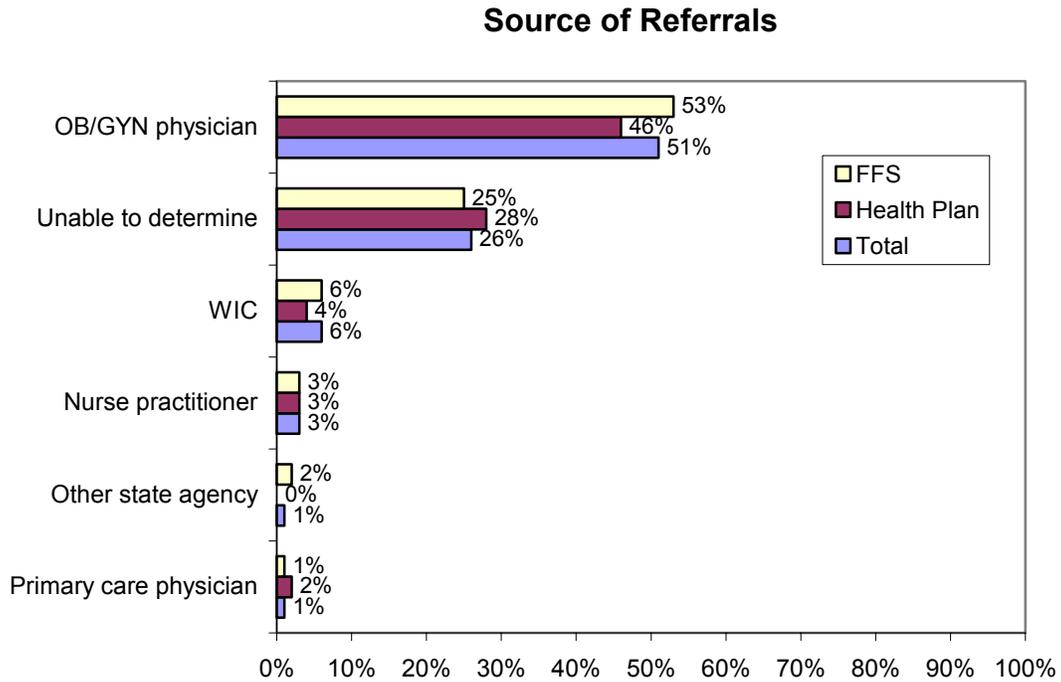
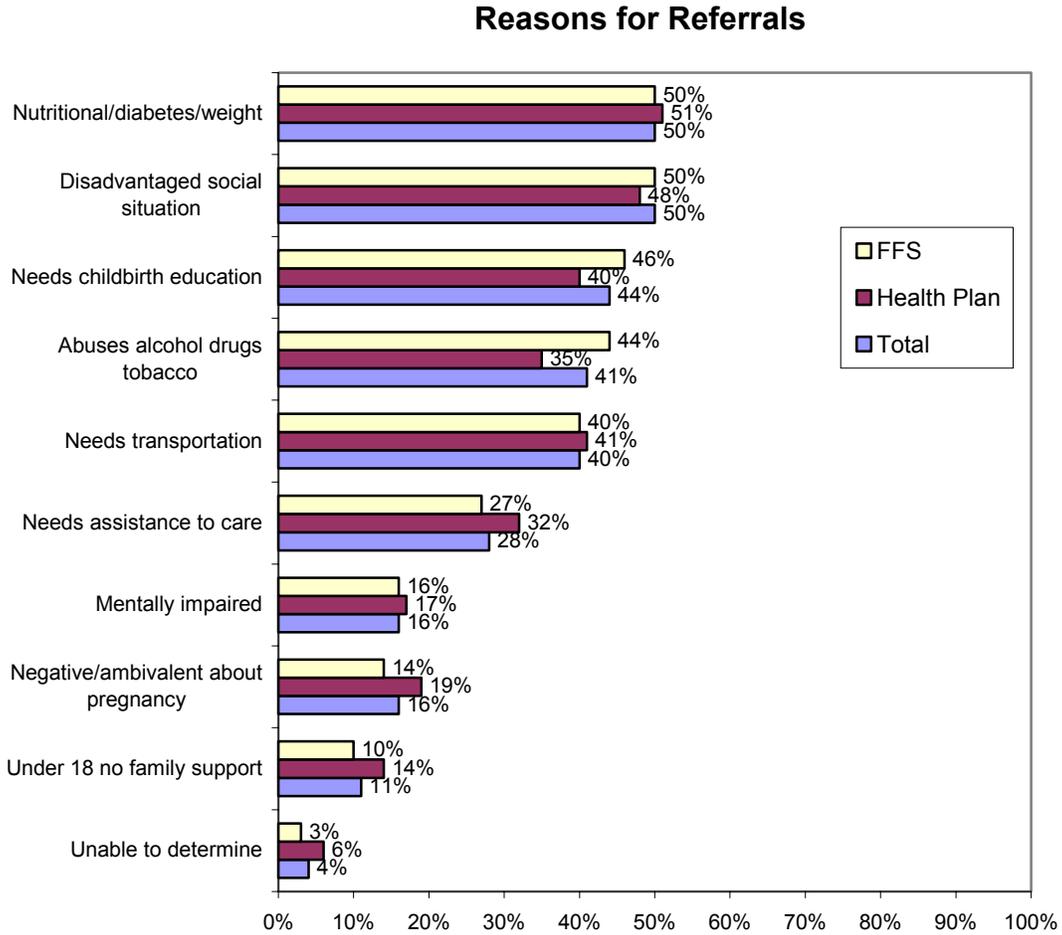


Figure 3 displays the rates for the sources of referral to MSS. Referrals are often made by an OB/GYN more than half of the time (51%). In 26% of the MSS records the type of referring provider was not documented.

Figure 4 displays reasons for referrals into MSS.

Figure 4. Primary reasons for referrals to MSS.



As indicated in Figure 4, substance abuse, disadvantaged social situations, need for childbirth education, and nutritional/diabetes/weight problems were common reasons for referrals. Women could have been counted in more than one reason category. All reasons for referral were documented in each case.

Completion of Intake Assessments

As indicated in Figure 5, assessments were typically completed and signed by a RN. Other members of the assessment team included a social worker and a nutritionist. Over 90% of the assessments were signed. All three providers signed 16% of assessments (RN, social worker, nutritionist). RNs completed 61% of the assessments, social workers completed 21%, and nutritionists 9%.

Figure 5. MSS staff completing the assessment.

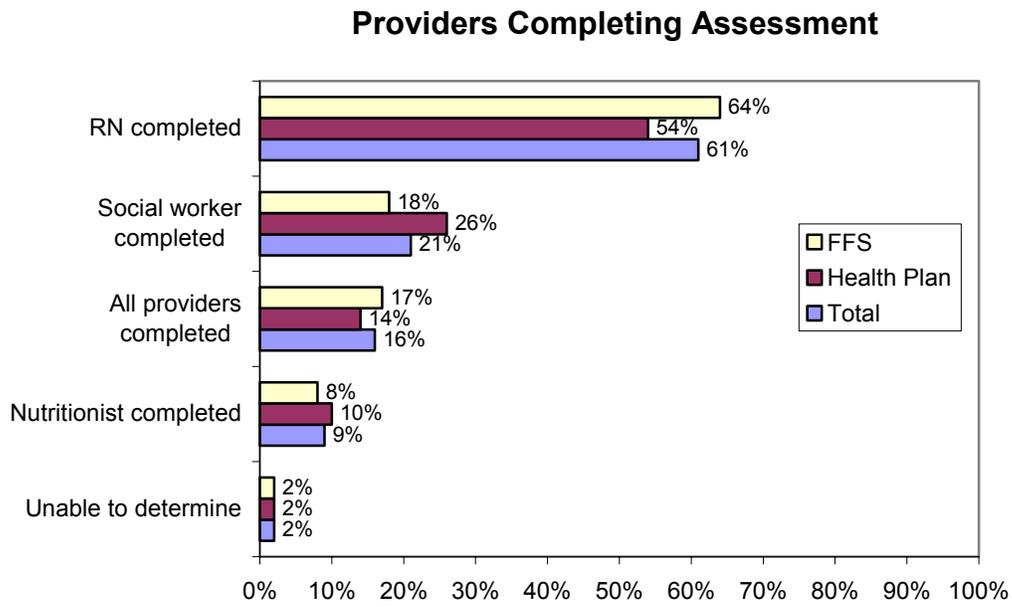
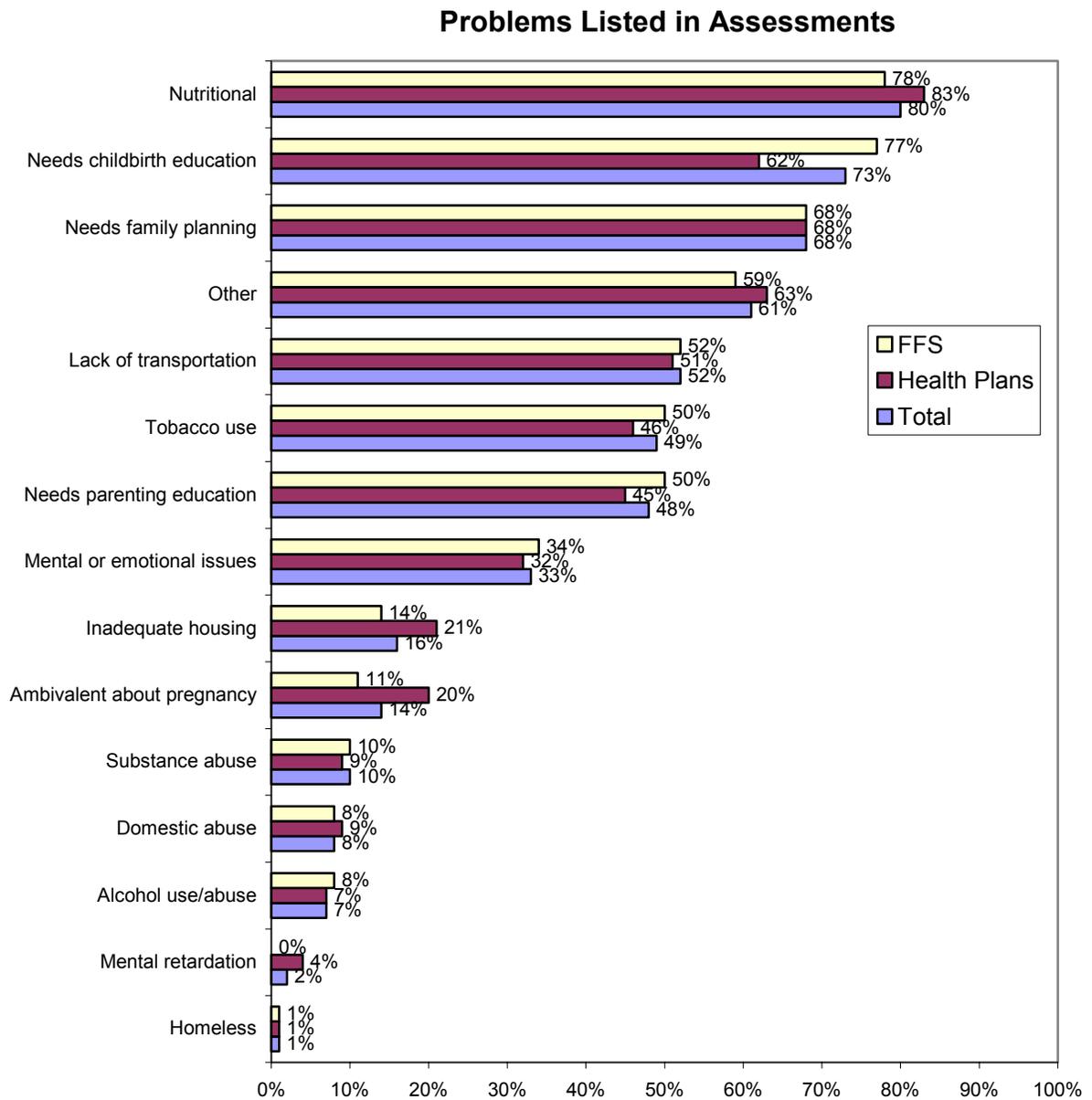


Figure 6 displays problems listed in the assessment. Review of problems listed in the assessment highlighted nutrition (80% overall), childbirth education (73%), and family planning (68%) as the problems most often needing attention. Tobacco use and transportation were identified somewhat less frequently. Housing and alcohol/substance abuse were not frequently documented as problems in the MSS assessments.

Figure 6. Problem listed in the assessments.



Completion of Care Plans and Matching Care Plans to Assessed Needs

Reviewers looked for problems that were identified in the assessment and whether those problems were addressed in the treatment plan.

The types of problems addressed by MSS in the treatment plans were abstracted from the MSS records. For each type of problem the abstractors compared the assessment to the treatment plan and recorded whether the problem noted in the assessment was addressed in the treatment plan and whether any services related to the problem had been received. Review of the problems listed on the assessment and the treatment plan highlighted tobacco use, nutrition, need for education, family planning, and transportation. In most instances (90%) problems identified in the assessment received attention in the treatment plan and subsequent services.

Table 6 shows the number of problems that received attention for MSS participants in FFS and health plans.

Table 6. Problems addressed as documented from abstracted reviews.

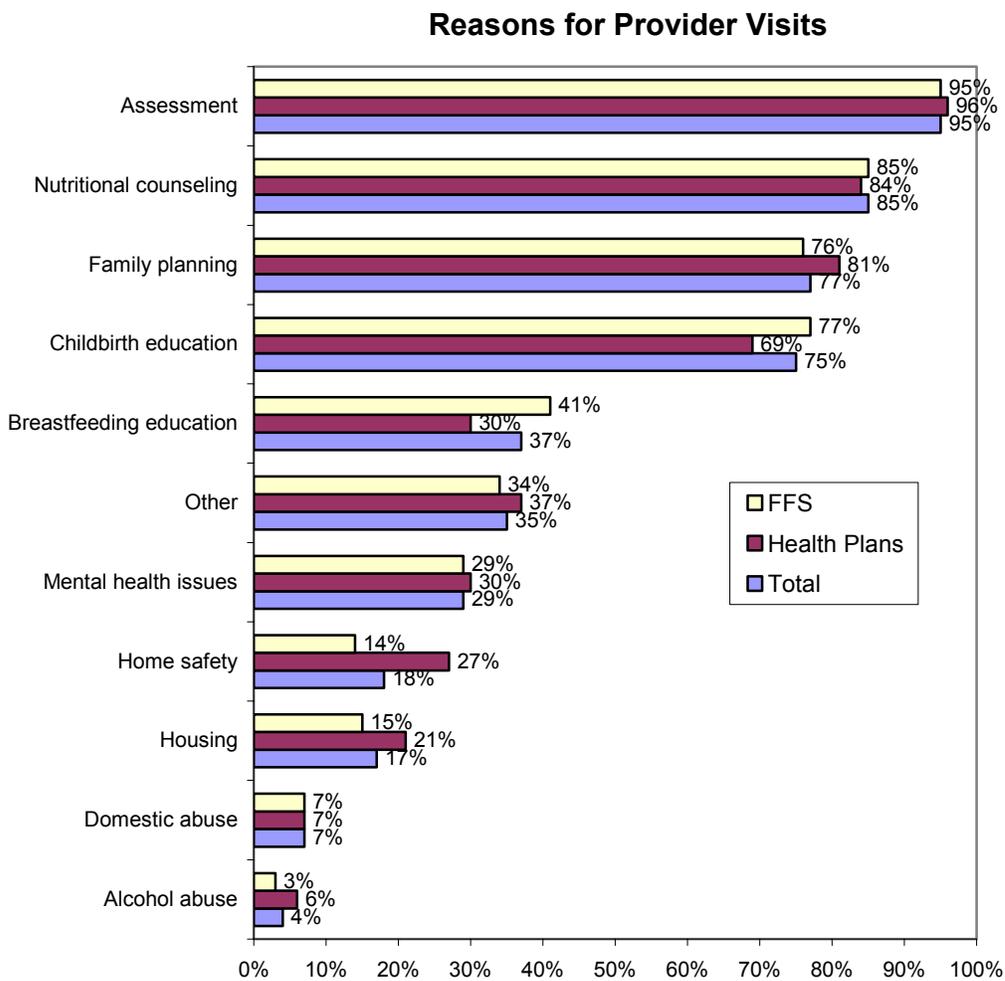
Problem	FFS		Health Plan		Total	
	Sample Size	Percent	Sample Size	Percent	Sample Size	Percent
Nutritional	248	79%	264	84%	512	80%
Domestic abuse	26	8%	30	9%	56	9%
Homeless	5	2%	3	1%	8	1%
Inadequate housing	50	16%	71	22%	121	18%
Ambivalent about pregnancy	39	12%	64	20%	103	15%
Tobacco use	162	51%	149	47%	311	50%
Alcohol use abuse	27	9%	22	7%	49	8%
Substance use abuse	34	11%	31	10%	65	10%
Lack of transportation	166	53%	168	53%	334	53%
Need childbirth education	249	79%	203	64%	452	74%
Need parenting education	162	51%	147	47%	309	50%
Need family planning	218	69%	222	70%	440	70%
Mental or emotional issues	111	35%	108	34%	219	35%
Mental retardation	1	0%	13	4%	14	2%
Other	193	61%	206	65%	399	63%

Nutrition, family planning, and transportation were commonly addressed in the treatment plan. Housing and alcohol and substance abuse were rarely addressed.

Providing Counseling, Educational Interventions, and Other Direct Services

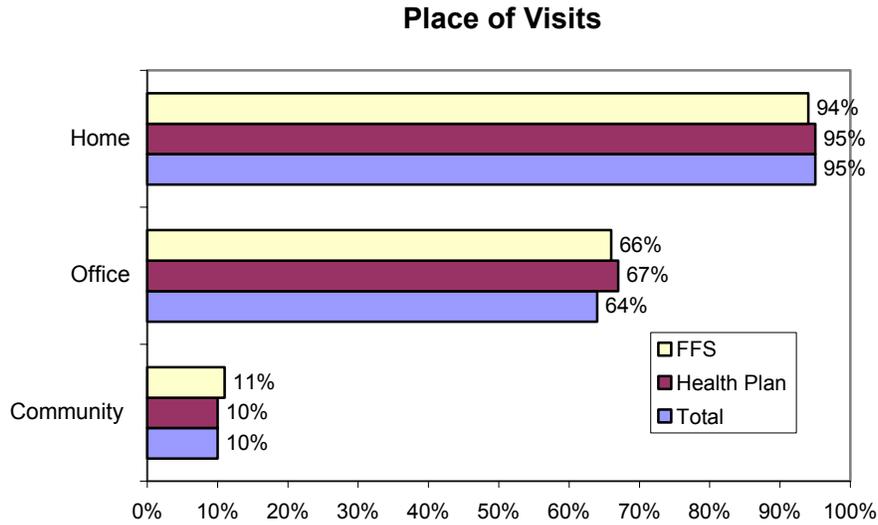
Figure 7 depicts reasons for visits with MSS providers based on visit notes. Assessment (95% overall), education (75%), nutritional counseling (85%), and family planning (77%) were the most common reasons for visits.

Figure 7. Reasons for MSS office or home visits.



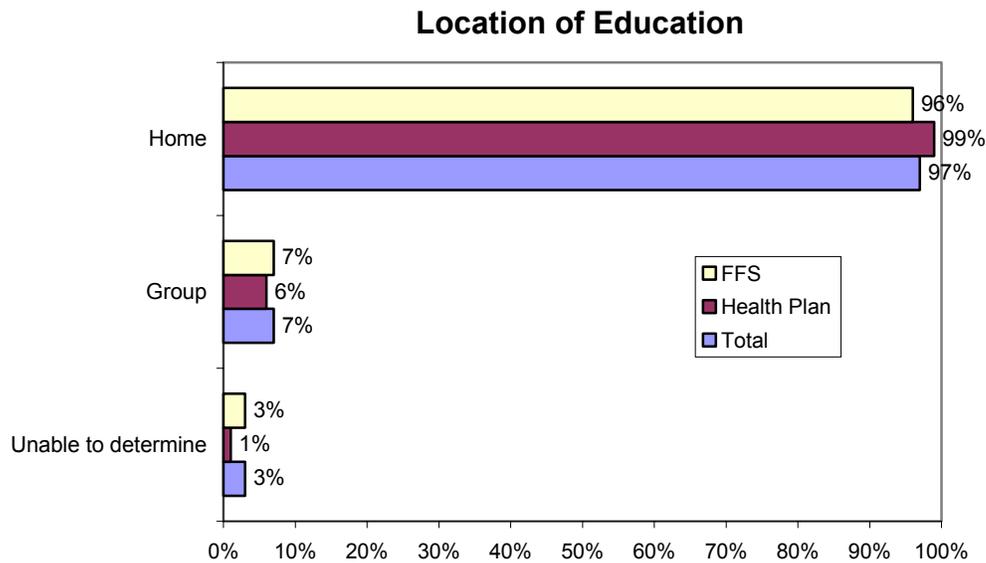
As indicated in Figure 8, 95% of MSS participants received home visits and 64% received office visits. Ten percent (10%) received services at other locations in the community.

Figure 8. Location of MSS visits.



As indicated in Figure 9, most educational services were provided in the home.

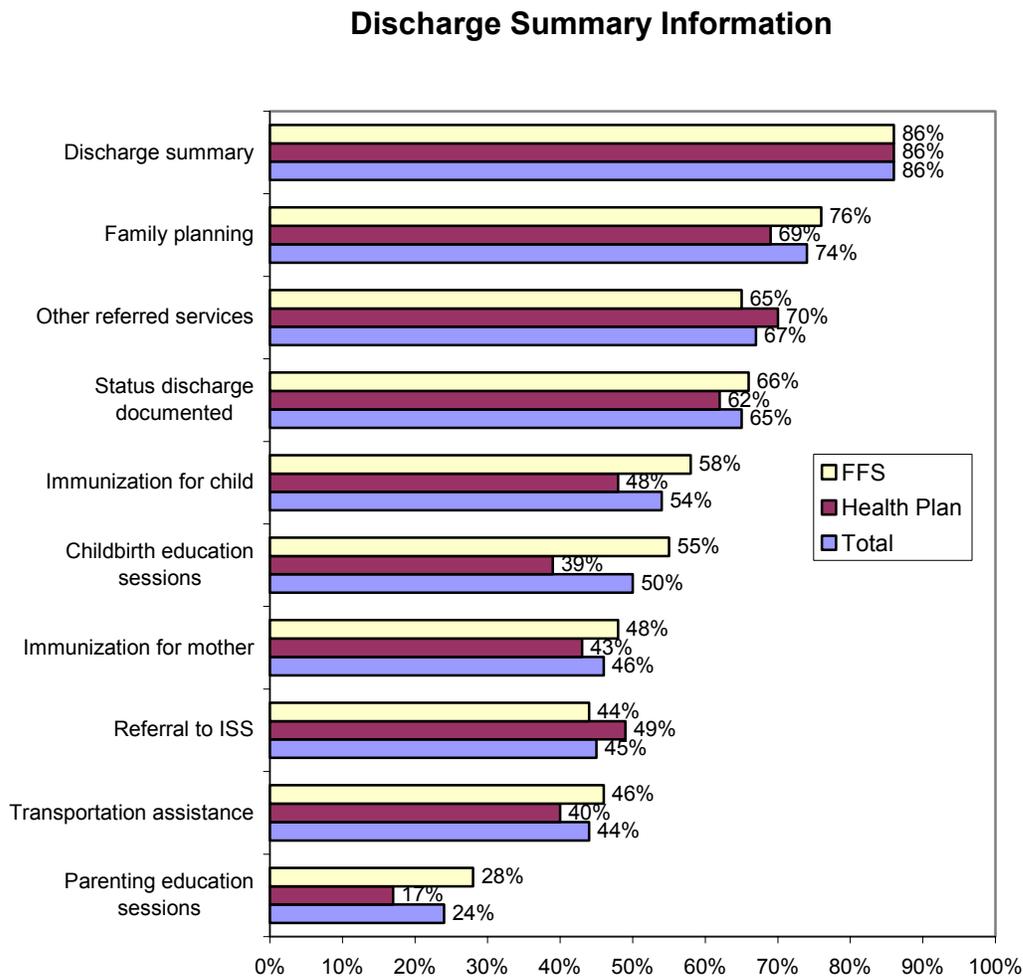
Figure 9. Location of education services.



Completion of Discharge Summaries

Discharge summaries were completed over 85% of the time. Transportation, immunization, family planning, and childbirth education were common topics addressed in the discharge summary. Significantly, 45% of MSS participants were referred to ISS for ongoing assistance with high-risk infants subsequent to delivery. Health plan members were more likely to receive the referral to ISS.

Figure 10. Discharge summary information.



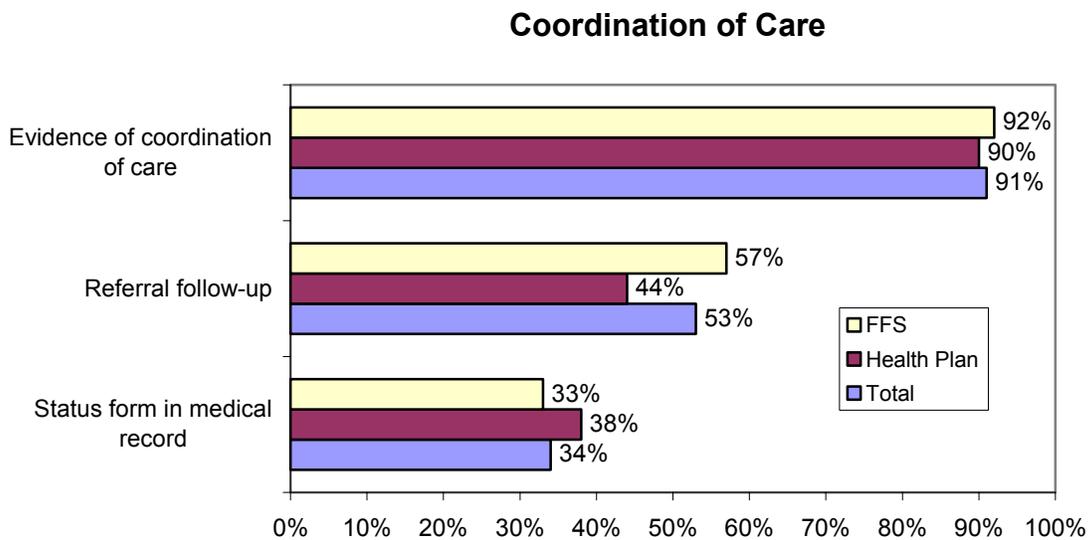
Question 4.

What was the level of care coordination in the MSS program?

Coordinating Ongoing Care

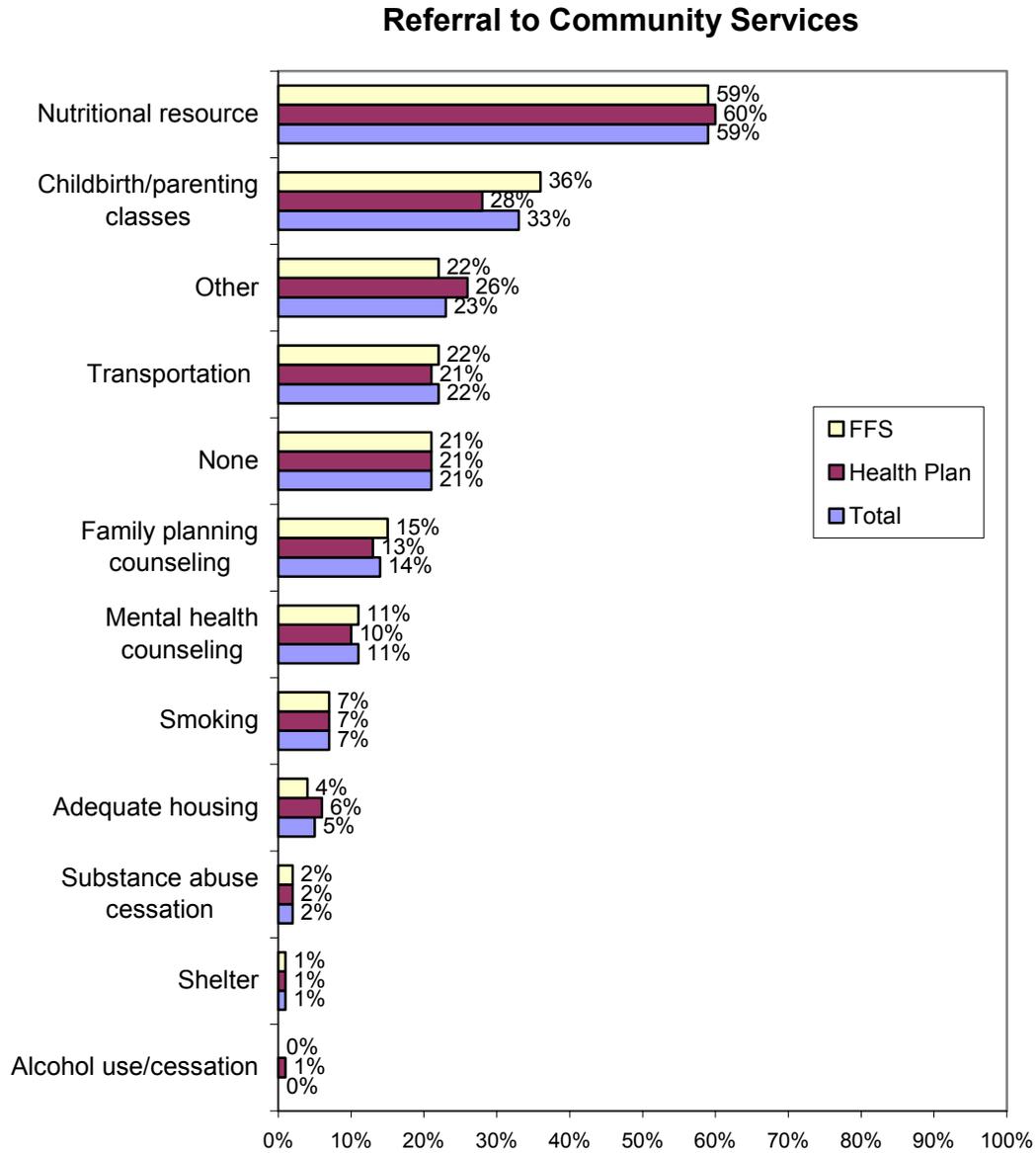
As indicated in Figure 11, one-third of participants had a referral status form in their MSS record. Fifty-three percent (53%) received follow-ups on referrals to other services outside of MSS. Over 90% of MSS participants had some documented evidence of care coordination such as notes in their record regarding communications with non-MSS providers.

Figure 11. Care coordination measures.

**Referral by MSS Providers to Other Providers**

Referral reasons by MSS providers to community services also indicate care coordination. These referrals are depicted in Figure 12. Childbirth education and parenting classes, nutritional counseling, and transportation were the most common reasons for referrals.

Figure 12. Referrals to community services.



Discussion

Highlights from Study A:

- MSS participants received prenatal care in the first trimester 72% of the time compared to 69% for nonparticipants, an increase of 249 women.
- Women least likely to receive prenatal care in the first trimester were Hispanics (62%) and African-Americans (59%).
- Less than 4% of women received no prenatal care.
- Enrollment in a health plan was positively associated with MSS participation (28%) as compared with FFS (26%).
- There is considerable variation in health plan MSS participation rates (Table 3).

Highlights from Study B:

- Documentation showed MSS providers complied with guidelines to complete assessments and treatment plans, and provide appropriate services and referrals.
- Ninety-five percent of MSS participants received home visits; the majority of these visits were for one-on-one educational interventions.
- Reasons for referral to MSS appeared consistent with state guidelines and criteria.
- Office visits were provided to 66% of the participants while 10% received visits in other community settings.
- Referrals to other community services occurred in 33% of the records reviewed, largely for nutritional resources (59%), childbirth and parenting classes (33%) and transportation arrangements (22%).
- Fifty-three percent (53%) of referrals had follow-up documentation in the MSS record.
- Discharge summaries were completed in 86% of the records reviewed.
- Forty-five percent of MSS participants were referred to ISS for ongoing assistance with high-risk infants.

Policy Implications and Recommendations

Recommendations

- Provide more MSS visits for women age 15–18 experiencing their first pregnancy.
- Target outreach to African-American and Hispanic women.
- Provide substance abuse screening and intervention.
- Study and promote referrals to ISS for at-risk infants.
- Encourage MSS providers to improve collection of follow-up documentation on all referrals.

Target educational programs about MSS to high-risk pregnant women particularly African-American women in urban areas, Hispanic women, and women under 18. Increase postpartum MSS visits and ISS referrals to provide education about Early and Periodic Screening, Diagnosis, and Treatment (EPSDT), required immunizations, family planning, and additional opportunities to reinforce the importance of preventive care.

While treatment plans sometimes identified substance abuse as a problem, MSS records showed very little evidence that substance abuse treatment was provided. MSS would benefit by adding a substance abuse counselor to the team or providing training to team members in screening, referral, and brief intervention techniques with substance abuse. MSS participants with substance abuse problems should be referred to community resources addressing substance abuse.

Future Studies

Studies could be conducted to investigate the quality and outcomes of ISS services. Further research could also be conducted to study the linkages that do and do not occur with other providers of perinatal care and community resources such as substance abuse treatment agencies, and the overlap and coordination among these resources.

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