Community-based Outreach Doula Program

Open Arms Perinatal Services

Report on Program Outcomes

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I. Summary

Open Arms Perinatal Services (Open Arms http://www.openarmsps.org/) is a non-profit organization that provides vital perinatal and early parenting support to women and families in King County. The organization currently supports over 300 new mothers and babies each year. Since 1997, Open Arms has served over 2,500 clients and conducted 18,000 home visits, which help to improve maternal and infant health, as well as promote healthy foundations for early learning.

Open Arms offers two main types of doula services to clients living within 200% of the federal poverty level: Birth Doula services and a Community-based Outreach Doula program (CBODP). The Birth Doula program provides services from the third trimester of pregnancy until three months after a baby is born. The more intensive CBODP is a home-visiting program that supports women from as early as the second trimester of pregnancy, during childbirth, and until a child is two years old. The CBODP program is the only home visiting program in Washington state that provides support during labor and childbirth, in addition to prenatal and postpartum support.

This report presents data on program implementation and outcomes for 123 Open Arms clients in the CBODP – all Latina and Somali women and their children between 2008 and 2016. All were low-income. Almost all were on public assistance of some kind and had little access to culturally appropriate birth education and support without Open Arms' assistance. Data were drawn from the Open Arms client database which included information on demographics, program retention and dosage, developmental screening, and birth outcomes. Comparison data were obtained from Washington state programs funded by the federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program, as well as from King County birth outcome records for comparable populations.

Doulas are trained community health workers (CHWs) who provide physical, emotional, and informational support to pregnant people before, during and after childbirth. The birth and outreach doulas offered by Open Arms, have a unique ability to reach and work with communities affected by inequity. As trusted members of the communities they serve, doulas are intermediaries between the health care and social services systems and community members, helping to ensure that services are provided in a culturally-appropriate way.

Today's doulas are trained to provide emotional and physical support during labor, as well as advice and support during pregnancy and in the early postpartum period. They complement medical providers such as doctors, nurses, and midwives. All of the ethnically-diverse, multilingual CBODP doulas receive extensive training that meets HealthConnect One's accreditation standards. They receive additional extensive training through established local training and certification programs.

Results showed that Open Arms delivered services resulting in positive program outcomes in many domains that met or exceeded comparison group standards where comparisons were available. In particular, the program and its clients demonstrated:

- 15% higher program retention rates than state and national MIECHV-funded programs

- Higher rates of completed home visits compared with a statewide sample of MIECHV-funded program clients
- Over 85% screening rates for depression and intimate partner violence, comparable to rates among MIECHV-funded program clients
- Lower pre-term birth rates among Latina and Somali clients than a comparable sample from King County
- Similar cesarean section rates compared to those reported by King County for all races. Somali CBODP clients had lower rates of cesarean sections compared to the Black population in King County (25% vs 35%)
- 99% of clients initiated breastfeeding, exceeding rates reported by King County
- 94% of clients were still breastfeeding at six months, exceeding rates reported by Washington state MIECHV-funded programs
- Rates of low birth weight infants, cesarean sections, and breastfeeding initiation and duration that are all substantially better than what is reported in the literature
- Low rates of child developmental concerns, with nearly all showing improvement on follow up screening assessments

II. Background

Supporting parents and children through home visiting programs can contribute to a range of outcomes that promote children's success in school and life.[i] Washington State funds a portfolio of home visiting models that includes three models recognized by the federal Maternal Child Health Bureau as "evidence-based": the Nurse Family Partnership and Parents as Teachers programs, and Early Head Start Home Based. Others – known as "research-based" and "promising" programs – have some evidence to suggest effectiveness, but have not met the criteria of being tested in a randomized study required to be recognized as an evidence-based program (EBP).

Typically, research-based or promising programs are more flexible than evidence-based programs and can more easily be tailored to match participants' needs and circumstances. By including these programs in the portfolio, state partners have expanded the reach of home visiting to communities and populations that do not meet criteria for enrollment and continuation in EBPs.

It is critical to assess the impact of these programs, particularly the research-based programs that have more limited evidence to demonstrate their impact on children and families. This report presents data on program outcomes for the Open Arms Perinatal Services' Community-based Outreach Doula Program, a research-based program that serves families in Seattle and King County.

III. Organizational history and program description

Open Arms Perinatal Services (Open Arms) is a non-profit organization that provides vital perinatal and early parenting support to women and families in King County. Since 1997, they have worked to fulfill their mission of "providing community-based support during pregnancy, birth, and early parenting to nurture strong foundations that last a lifetime." The organization currently supports over 300 new mothers and babies each year. They have served over 2,500 clients and conducted 18,000 home visits, which help to improve maternal and infant health, as well as promote healthy foundations for early learning. Open Arms is the only community-based organization in Washington state providing perinatal and early learning support through doulas. It is the only home visiting program that incorporates support during labor and birth as an integral part of its program model. Services include:

- Culturally-sensitive case management
- Prenatal support, including home visits
- Postpartum support, including home visits
- Emotional and physical support throughout labor and delivery
- Breastfeeding counseling and support
- Parenting education and support groups
- Home counseling
- Training and workshops for doulas on anti-racism and culturally sensitive services

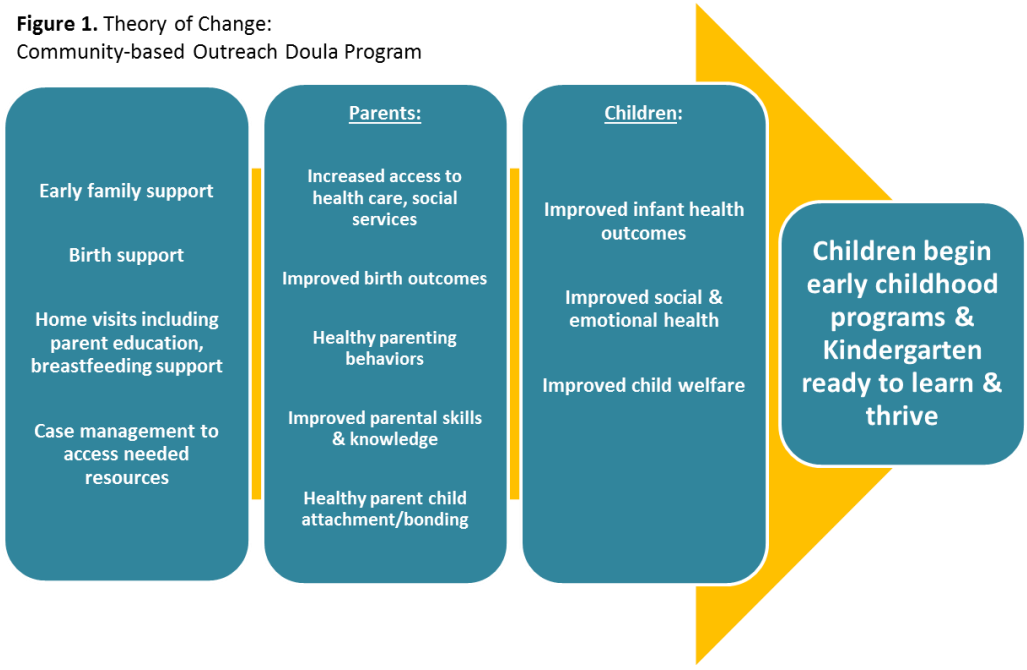
[i] See: http://mchb.hrsa.gov/programs/homevisiting/ and http://www.del.wa.gov/development/visiting/Default.aspx

Two main types of doula services are offered: Birth Doula services and a Community-based Outreach Doula Program. The birth doula program provides services from the third trimester of pregnancy until three months after a baby is born. The more intensive Community-based Outreach Doula Program is a home-visiting program that supports women from as early as the second trimester of pregnancy, during childbirth, and until a child is two years old.

Program Description – Community-based Outreach Doula Program

The CBODP includes home visits during pregnancy, on-site support at birth, and continued postpartum support into early childhood. Doulas trained through the program are from the same ethnic and linguistic communities as the clients and are able to provide culturally appropriate support and build strong, trusting relationships. The CBODP currently supports women in the Somali, Latino, African American, and American Indian Alaska Native (AIAN) communities. Figure 1 shows the theory of change for the CBODP. As a result of the program's inputs, CBODP aims to promote healthy parenting behaviors and maternal-infant bonding from birth, which will lead to the development of emotionally and physically healthy children, and result in children who enter early childhood education and eventually school ready to learn and thrive.

Figure 1. Theory of Change:
Community-based Outreach Doula Program



Open Arms began implementing the CBODP in 2006. The organization is nationally accredited by HealthConnect One (http://www.healthconnectone.org/) to replicate HealthConnect One's community doula model. HealthConnect One is a national organization that partners with grassroots maternal and child health and social service providers to help advance "respectful, community-based, peer-to-peer support for pregnancy, birth, breastfeeding, and early parenting." At the core of HealthConnect One's philosophy is the belief that the model succeeds because doulas are "of and from" the same community

as their clients and can bridge language and cultural barriers to help meet health needs. At the core of the model are *five essential components* of the community-based doula model, which accredited programs must fulfill:

- Employ women who are trusted members of the target community
- Facilitate experiential learning using popular education techniques and the HealthConnect One training curriculum
- Extend and intensify the role of doula with families from early pregnancy through the first months postpartum
- Value the doulas' work with salary, supervision, and support

Eligibility

The CBODP is open to any pregnant person who is interested in a long-term intervention and who either qualifies for the Temporary Assistance for Needy Families (TANF) program, or, if they do not qualify for TANF, has an income at or below 200% the federal poverty level (FPL).

Curriculum

A home visit curriculum guides doula home visitors in familiarizing their clients to a variety of topics, including but not limited to:

- Fetal growth and development
- Attachment and bonding
- Nutrition
- Social support
- Birth planning
- Breastfeeding
- Physical activity
- Well-child visits, immunizations
- Postpartum care
- Emotional health, postpartum depression
- Relationship health, domestic violence
- Toddler development and health
- Feeding solids
- Child safety
- Toilet training
- Early learning

The home visit content described above is also enhanced by the Promoting First Relationships (PFR)[ii] curriculum, which is informed by attachment theory and aims to promote secure and trusting caregiver-child relationships. PFR focuses on developing the parent-child relationship and increasing parental awareness of their child's needs and cues, while acknowledging the parent as the expert in knowing their child. Elements of the curriculum include: theoretical foundations of social and emotional development in early childhood, promoting trust and security in infancy, promoting healthy development of self during toddlerhood, understanding and intervening with children's challenging behavior, building caregiver confidence, uncovering deep emotional feelings and needs underlying caregiver and child's stress and behaviors, and promoting reflection and mindfulness. The PFR

[ii] Promoting First Relationships was developed at the Barnard Center for Infant Mental Health and Development at the University of Washington School of Nursing. http://pfrprogram.org/

curriculum also involves videotaping parent-child play time, and time for the doula to review tapes with the family.

Dosage

Beginning in the 2nd trimester of pregnancy, a family receives 1-2 hour visits two times per month until week 38 of pregnancy. Doulas attend labor and birth, and post-partum home visits occur about two times per week, for the baby's first two weeks and then weekly until the baby is three months of age. Home visit frequency decreases to twice monthly from three months of age until the child is two years old. The 10-week PFR curriculum begins around the child's first birthday.

IV. Evidence base for doula services and Promoting First Relationships curriculum

Evidence for doulas

There is growing evidence, both in the peer reviewed and grey literature, for the value of doula support in encouraging breastfeeding and promoting positive birth outcomes.

Breastfeeding: initiation, duration, exclusivity

Initiation: After HealthConnect One developed the Community-based Doula Program in Chicago, the organization was awarded funding for four years (2008-2012) as the Community-based Doula Leadership Institute, to support and train several grantees across the county to replicate the program. The institute convened an expert panel in 2012 to assess results from eight organizations that had replicated the doula program. The eight programs served a total of 592 women who were mostly young, low-income, and with limited formal education, from communities with complex health issues, socio-economic challenges, and at high risk for poor birth outcomes. The majority were Black (33.1%) or Hispanic (47.1%). The results, documented in the report titled *The Perinatal Revolution,* showed significantly higher rates of breastfeeding duration and exclusivity among both the Black and Hispanic mothers when compared to a national sample of similar women[iii] (Black/African American mothers breastfeeding duration = 76.8% initiation, 37.1% at 6-months, versus 74.8% and 16.8% in comparison group; Hispanic mothers breastfeeding duration = 96.3% initiation, 64.9% at 6-months, versus 95.6% and 32.7% in comparison group).[1]

Recent research studies have also shown positive results linking doula support to breastfeeding outcomes. Several studies have shown that doula-supported women from similar backgrounds as Open Arms clients initiate breastfeeding at higher rates than women not supported by doulas. Studies showed rates between 46% and 80% initiation in the doula supported groups, [2-4] much lower than those reported by Open Arms.

[iii] Comparison group data was drawn from the PRAMS, the Pregnancy Risk Assessment Monitoring System, a surveillance project of the Centers for Disease Control and Prevention, which collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy. https://www.cdc.gov/prams/

Duration: Three studies looking at breastfeeding duration as an outcome showed significant differences in the length of time a woman breastfed if she was supported by a doula compared to women who were not. Two found higher rates of breastfeeding at 6 weeks among groups of women supported by doulas compared to those receiving "standard care."[5,6] In addition, Nommsen-Rivers and colleagues found that even a subset of women with a "prenatal stressor" was more than twice as likely to be breastfeeding at 6 weeks if they had been attended and supported by a doula (89% versus 40%).[5] Another study found that mothers in a doula intervention group were more likely to be breastfeeding at 4 months postpartum than the control group (29% versus 17%).[2]

Exclusivity: Two studies of women (one of a multi-ethnic, low income group, and the other specifically of Latinas) showed that women attended by doulas in the hospital had higher rates of breastfeeding exclusivity (were not supplementing with formula) at the time of their discharge from the hospital,[7,8] with one study showing a difference of over 20% (85.7% of mothers attended by a doula breastfed exclusively at the time of their hospital discharge compared to 62.1% of mothers in the matched control group).[7]

Birth outcomes: Cesarean sections, preterm birth, low birth weight

Cesarean sections: In the report by HealthConnect One mentioned above, cesarean section rates were shown to be statistically significantly lower among the program participants: 24% in the community doula group compared with 30% in the comparison group.[1]

Numerous research studies looked at the impact of doula support on rate of cesarean section and several showed statistically significant differences between mothers supported by doulas and those who are not.[5,9-12] Kozhimannil and colleagues found after controlling for clinical and social/demographic factors, a group of women with doula support had a 41% lower rate of cesarean section among women supported by doulas when compared to a group without doula care.[11] A follow up study found even more striking results: the odds of a non-indicated cesarean section were 80-90% lower among doula-supported women.[10] Dundek reported a 17.1% cesarean section rate among Somali women attended by a doula compared to 26.6% rate among those who did not receiving doula support.[9]

Preterm birth and low birth weight: Two recent studies have shown positive impacts on pre-term birth and low birth weight among those who received doula care.[3,13] One randomized control trial (RCT) showed lower rates of low birth weight babies and lower birth complications (for baby and mother) among mothers who received doula care as part of a childbirth education program in an underserved community.[3] And a large study comparing a sample of Medicaid-funded births nationally to a sample of Medicaid-funded births supported by a community-based doula organization found lower preterm birth rates among women who received doula support compared to those who did not (20.4% versus 34.2%). They reported that women receiving doula care had 22% lower odds of experiencing a preterm birth.[13] These are important results because pre-term birth can impact mental health and early childhood development.

Cost effectiveness

The annual societal economic burden associated with preterm birth in the U.S. was estimated by the Institute of Medicine in 2005 to be at least $26.2 billion.[14] HealthConnect One asserts that "each avoided Cesarean section provides $4,459 in medical care savings." [1] Researchers have recommended that states consider reimbursement of professional doula labor support services to not only improve outcomes but to control costs.[11,13,15]One study modeled the potential cost savings to states that could be realized if Medicaid reimbursed for doula support at births. Based on their own research, where they observed a difference in Cesarean section rates of 22.3% among mothers assisted by doulas versus 31% for those not assisted by doulas, they asserted that if Medicaid offered doula services to their beneficiaries (at a rate of $200 per birth doula), "at least a quarter of all states could see a cost savings to Medicaid of $2.5 million dollars per year." In other words, even when doulas are paid (reimbursed) to attend births, the state would still save money, because doulas attending births lower the Cesarean section rate significantly.[11]

In December 2015, the Washington state Governor's Interagency Council on Health Disparities formally recognized the role doulas can play in reducing adverse birth outcomes when they recommended that low-income women should have access to birth doulas through Medicaid, with community-based organizations.[iv]

Evidence for Promoting First Relationships

The PFR curriculum is supported by two recent randomized control trials (RCTs). A 2012 study looked at the impact of PFR on toddler/caregiver dyads (n=210 toddlers) in the child welfare system. Authors found a statistically significant increase in caregiver sensitivity to the child and in caregiver understanding of toddler competence in the PFR group when compared to the early education support comparison condition. At a 6-month follow up, differences between the two groups were no longer statistically significant, however, caregiver sensitivity was greater than for the control group and in a direction that favored the PFR group.[16]

The follow up study in 2016 included 247 families with 10-24 month old children who had a recent child protective services investigation for child maltreatment. Results showed statistically significant post-intervention differences between the group receiving PFR and the control group that received a telephone-based, three-call resource and referral service on: caregiver understanding of toddlers' social emotional needs and observed parental sensitivity. Children in the PFR condition also scored lower than children in the comparison group on an observation of their atypical affective communication. Children from the PFR group were also less likely to have been placed in foster care through 1-year post-intervention.[17] According to the University of Washington researchers, five other RCTs are being conducted, to test the curriculum with diverse populations including American Indian Alaska Natives and Spanish-speaking Latina mothers.

[iv] http://healthequity.wa.gov/Portals/9/Doc/Publications/Reports/ActionPlan-December2015-Final.pdf.

V. Methods

Data were gathered and analyzed for mothers enrolled in the CBODP program from 2009 to 2016. Prior to 2017, Open Arms' data existed in two forms: archived Excel exports from an Efforts to Outcomes (ETO) database that had been used from 2009 to 2014, and differently structured Excel files that had been used for data entry since ETO was discontinued. A new database was built and the divergent data sources were merged together and formatted for the new database structure. Duplicate records (data captured in both ETO and the most recent Excel-based data collection method) were removed. Extensive and iterative data quality checks were conducted; staff reviewed many paper files for information that was missing from the data. Thorough reviews of missing data were also conducted.

VI. Results

The following section describes demographic data for clients, as well as program process measures, and key outcomes. Where county and state level data were available and accessible, they are included for comparison. Table rows highlighted in green indicate that a measure is one of the nine high priority home visiting program measures identified by the Washington state home visiting data alignment working group.[v]

Client demographics & background

The data shared in this report include Somali and Latina women served between 2009 and 2016. Data are not yet available on new groups that have been recently added to the program, including women from African American, and American Indian Alaska Native communities. Of the 123 women the program served, 69% (85) of the clients were Latina and 31% (38) were Somali. Over half the group was under 30 years old, and the majority (63%) had less than a high school level education. Eighty-three percent of Somali women reported household incomes at 125% FPL or less (compared to only 63% of Latina women reporting household income of 125% FPL or less).

At the time of enrollment, 96% of the women were receiving some kind of public assistance. The most common support received was from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (90%), and Apple Health (Washington State's Medicaid program) (77%). Fifty-one percent also reported receiving benefits from the Basic Food and Employment Training (BFET, "food stamps") program, administered by the Washington State Department of Social and Health Services.

[v] The data alignment working group is made up of home visiting partners from the Washington state Department of Health, the Washington state Department of Early Learning, and Thrive Washington; as well as program evaluators from the Center for Community Health and Evaluation. The high priority measures are a subset of the 19 measures identified by the federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program in April, 2016. Measures include: breastfeeding, depression screening, well-child visits, child maltreatment, parent-child interaction, early literacy, developmental screening, caregiver education/employment, caregiver insurance status.

Table 1. Client demographics

Client demographics (n=123)	%		
Ethnicity (n=123)			
Latina (n=85)	69%		
Somali (n=38)	31%		
Primary language spoken	(n=111)		
Spanish	69%		
Somali	27%		
English	2%		
Tarasco	2%		
	Latina	***Somali***	***Overall***
Age	(n=85)	(n=38)	(n=123)
19 or younger	6%	0%	4%
20-24	20%	18%	20%
25-29	27%	34%	29%
30-34	18%	18%	18%
35 or older	15%	8%	13%
Unknown	14%	21%	16%
Marital status	(n=81)[1]	(n=30)	(n=111)
Married	51%	100%	64%
Partnered	27%		20%
Separated	2%		2%
Single	12%		9%
Unknown	7%		5%
Highest level of education	(n=74)	(n=30)	(n=104)
Never attended school	1%	17%	6%
Less than high school (HS) diploma[2]	57%	57%	57%
HS diploma	19%	17%	18%
Some college	9%	7%	9%
Vocational/technical certification	3%		2%
AA	1%		1%
BA	4%		3%
Graduate/professional degree	4%		3%
Family income (by % Federal Poverty Level, FPL)	(n=74)	(n=30)	(n=104)
100% FPL or less	51%	70%	57%
101-125% of FPL	12%	13%	13%
126-150% of FPL	8%	7%	8%
151-175% of FPL	4%	3%	4%
176-200% of FPL	3%	0%	2%
201% of FPL or higher	3%	3%	3%
Unknown	19%	3%	14%
Employed at enrollment (n=104)	(n=74)	(n=30)	(n=104)
	43%	13%	35%

Notes:
1. Sample sizes vary because of missing data for some variables. "Unknown" indicates that a question was skipped on a form that was collected from a family, but there are other instances where forms were not collected.
2. 42% of those who had less than a HS education had at least some HS education

Program process data

Enrollment and attrition

Retention results for the program were calculated by tracking cohorts of enrollees; for example, the one-year retention rate for a given year was calculated based on the number of women enrolled in that year who were still enrolled one year later. The program's overall one-year retention rate of 72% exceeded the rate of 55% reported for a selection of national Maternal, Infant, and Early Childhood Home Visiting-funded programs[vi] and the 47% rate for WA state-funded MIECHV programs (Table 2, next page).

Reasons for attrition documented by home visitors included staff being unable to reach the client (30%), clients moving from the program's target area (19%) or funding loss that led to the elimination of home visitor positions (6% overall; 33% for Somali clients); however, in a large number of cases, the reason for attrition is ultimately undetermined.

Latina clients generally had lower retention rates. One factor was staffing changes that occurred during that time; when clients develop relationships with individual doulas they may be more likely to withdraw from the program if their doula leaves. The program believes that lower retention may be partly explained by the migration that may occur among families who are following employment opportunities. The program also reflects that Latina clients may experience concerns related to immigration status which may make them wary of allowing organizations access to their homes and personal information. The particularly low retention rates among Latina clients between 2012 and 2015 may have been related to heightened distrust and concern during a period of heightened immigration raids and enforcement.

[vi] Maternal, Infant, and Early Childhood Home Visiting program, Technical Assistance Coordinating Center. *MIECHV Issue Brief on Family Enrollment and Engagement.* July 2015. Accessed on 5-16-17: https://mchb.hrsa.gov/sites/default/files/mchb/MaternalChildHealthInitiatives/HomeVisiting/tafiles/enrollmentandengagement.pdf

Table 2. Program one-year retention

1-year retention rate by enrollment year (n=123)	Latina/Hispanic (n=85)	Somali (n=38)	Overall	*National MIECHV program data (2015)*	*Washington State MIECHV-funded program data (2016)*
2009	43%	67%	50%		
2010	61%	90%	76%		
2011	100%	100%	100%		
2012	57%	100%	70%		
2013	75%	--	75%		
2014	44%	--	44%		
2015	58%	--	58%		
2016	100%	100%	100%		
Overall	64%	92%	**72%**	**55%**	**47%**

Note:
1. Funding cuts prevented the program from hiring a Somali doula during 2013 to 2015, so no Somali clients were enrolled during that time.

Participation in home visits

The recommended dosage for home visiting is typically two visits per month. The CBODP program reported that among all clients included in this report, 78% of graduated or still enrolled clients had at least two visits per month during the course of their participation in the program. Among those clients who dropped out before completing the program, 64% had the recommended dosage. MIECHV-funded programs in Washington state report a rate of only 31% of clients having this recommended dosage.

Screening

The CBODP had relatively high screening rates for both depression (86% overall) and domestic violence (85% overall) among its clients, comparable to the rates the Washington state MIECHV programs (Table 3).

Table 3. Screening for depression and intimate partner violence (IPV)

Mothers screened (n=123)	Latina/Hispanic (n=85)	Somali (n=38)	Overall	*Washington State MIECHV-funded program data (2016)*
Depression	81%	97%	**86%**	**85%**
IPV	88%	79%	**85%**	**84%**

Maternal health and birth background

Among the 105 women for whom data were available, 77% (74% Latina, 83% Somali) had a primary care provider or other regular source of health care when the enrolled and 77% (78% Latina, 73% Somali) had had their first prenatal visit before program enrollment. For 44% (46% Latina, 40% Somali), Open Arms

was supporting their first birth in the United States. Only 10% of mothers attended birth classes outside of Open Arms; many of these classes have costs to attend and are not taught in their primary language. The Open Arms doulas fill the need for birth education with free, one-on-one, culturally tailored instruction prior to birth. Nearly 90% of clients had their birth with the doula present.

Impact on birth outcomes

Table 4 shows how the CBODP clients compare to King County cohorts on available birth outcomes data. Pre-term birth rates for the CBODP clients overall were similar to a King County sample that includes all racial groups (9% for all CBODP clients versus 9.2% King County). When looking at specific client cohorts, Latina and Somali Open Arms client groups both showed lower pre-term birth rates compared to their King County counterparts (Latina: 9% vs. 10.3%, Somali: 7% vs. 11.7%[3]).

Overall cesarean section rates for the CBODP clients were similar to those reported by King County for all races, however, King County data is not disaggregated by planned or unplanned cesarean so it was not possible to compare at that level of detail. The Somali CBODP clients had lower rates of all cesarean sections compared to King County's Black population (25% vs 35%).

The CBODP group had higher rates of low birth weight babies, even when only singleton births were considered; this appeared to be largely driven by the Latina clients, as the Somali group had a lower rate than both the overall and "black" ethnic category in the county-level data.

Table 4. Birth outcomes

Birth outcome (n=109)[1]	Latina/Hispanic (n=72)	Somali (n=37)	Overall	***King County (2010-2014)***[2]
Pre-term birth	9%	7%	9%	9.2% all races 10.3% (Hispanic) 11.7% (Black)
Low birth weight (all)	16%	3%	11%	6.5% all races 6.0% (Hispanic) 9.2% (Black)
Low birth weight (singleton only)	10%	4%	8%	4.8% all races 4.8% (Hispanic) 7.3% (Black)
Admitted to NICU	6%	3%	5%	Not available
Unplanned cesarean	13%	22%	16%	28% all races[4] 25.1% (Hispanic) 35% (Black)
Planned cesarean	16%	3%	11%	

Notes:
1. There were a total of 109 children, 105 births, including two twin births and one mother who had two babies during time of enrollment.
2. From Public Health Seattle and King County, Community Health Indicators data, average rates for 2010-2014. http://www.kingcounty.gov/depts/health/data/community-health-indicators.aspx
3. King County racial category of "black" includes both African Americans and more recent immigrants from Africa.

4. Cesarean section rates are of "low risk" women and do not disaggregate planned and unplanned procedures.

Breastfeeding

Breastfeeding rates were very high for mothers in the program – nearly all mothers (99%) initiated breastfeeding, compared to only 96.4% of mothers in a King County sample. Ninety-four percent of mothers in the program reported still breastfeeding at 6 months, compared with only 35.3% of mothers in a cohort of Washington state MIECHV-funded program clients.

Table 5. Breastfeeding

Mother breastfeeding	Latina/Hispanic	Somali	Overall	*King County (2010-2014)*[1]	*Washington State MIECHV-funded program data (2016)*
Initiated breastfeeding	100%	97%	99%	96.4% all races 96.3% (Hispanic) 93.8% (Black)	Not collected
Breastfeeding, 6 months	92%	96%	94%	Not collected	35.3%

Notes:
1. From Public Health Seattle and King County, Community Health Indicators data, average rate for 2010-2014. http://www.kingcounty.gov/depts/health/data/community-health-indicators.aspx

Child developmental screening

Child developmental screening was identified by Washington state as a high priority measure for home visiting programs to track. The CBODP uses the Ages and Stages Questionnaire (ASQ). Data from 2009 to 2016 show that just over half (53%) of the CBODP children received a developmental screen using the ASQ-3 assessment tool, compared to 78% of MIECHV-funded program participants. The program staff attributed the lack of recorded ASQ assessments to data entry issues rather than missed screens, i.e. more screening took place than was recorded. A newly installed database and refinements to data collection procedures should ensure that children's regular developmental assessments are recorded going forward, and this improved data tracking is a high priority for the program.

A small percentage of those screened showed delays in one or more ASQ domains. Of the 22 children who showed a delay for at least one domain of the initial assessment,[vii] 17 (77%) showed no delays on *any* domains at their most recent assessment, while five children still showed delays, but in at most only one domain.

[vii] The ASQ-3 assessment includes five domains: communication, gross motor, fine motor, problem solving, and personal social.

VII. Conclusions and next steps

This report presented data on program implementation and outcomes for 123 Open Arms clients – Latina and Somali women and their children. Almost all were on public assistance of some kind and had little access to culturally appropriate birth education and support without Open Arms' assistance. Data were drawn from the Open Arms client database which included information on demographics, program retention and dosage, developmental screening, and birth outcomes. Comparison data were obtained from Washington state programs funded by the federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program, as well as from King County birth outcome records for comparable populations.

Results showed that Open Arms delivered services resulting in positive program outcomes in many domains that met or exceeded comparison group standards where comparisons were available. In particular, the program and its clients demonstrated:

- 15% higher program retention rates than state and national MIECHV-funded programs
- Higher rates of completed home visits compared with a statewide sample of MIECHV-funded program clients
- Over 85% screening rates for depression and intimate partner violence, comparable to rates among MIECHV-funded program clients
- Lower pre-term birth rates among Latina and Somali clients than a comparable sample from King County
- Similar cesarean section rates compared to those reported by King County for all races. Somali CBODP clients had lower rates of cesarean sections compared to the Black population in King County (25% vs 35%)
- 99% of clients initiated breastfeeding, exceeding rates reported by King County
- 94% of clients were still breastfeeding at six months, exceeding rates reported by Washington state MIECHV-funded programs
- Rates of low birth weight infants, cesarean sections, and breastfeeding initiation and duration that are all substantially better than what is reported in the literature
- Low rates of child developmental concerns, with nearly all showing improvement on follow up screening assessments

The program is also making progress in its efforts to align its data system to a core set of measures that all home visiting programs in Washington state will be expected to collect and report on by 2018.[viii] Some of the required measures were already foci of the CBODP, e.g. breastfeeding, while others have required the program to collect new data, e.g. early language and literacy, parent child interaction. In the area of parent-child interaction, the program has already begun training home visitors in use of the

[viii] Measures include: breastfeeding, depression screening, well-child visits, child maltreatment, parent-child interaction, early literacy, developmental screening, caregiver education/employment, caregiver insurance status.

HOME assessment, and home visitors will begin to use the assessment in July 2017. In 2017, the program also created a new, custom-built, centralized database to track program implementation and outcome measures. Program staff is making efforts to strengthen its data capacity through improved training of home visitors for more complete data collection, and improving their data management and tracking. The improvements will also help ensure that the CBODP and Open Arms are able to analyze and report out on key process and outcomes measures for their program in the future, as well as continue to recognize where gaps occur and correct issues in a timely manner.

In summary, Open Arms Community-based Outreach Doula program serves communities with significant health and social needs and for which there aren't other comparable programs. The program delivers effective, culturally tailored support and education to women and their families during one of the most challenging times in a woman's life – the perinatal period and early childhood years.

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