

ABSTRACT

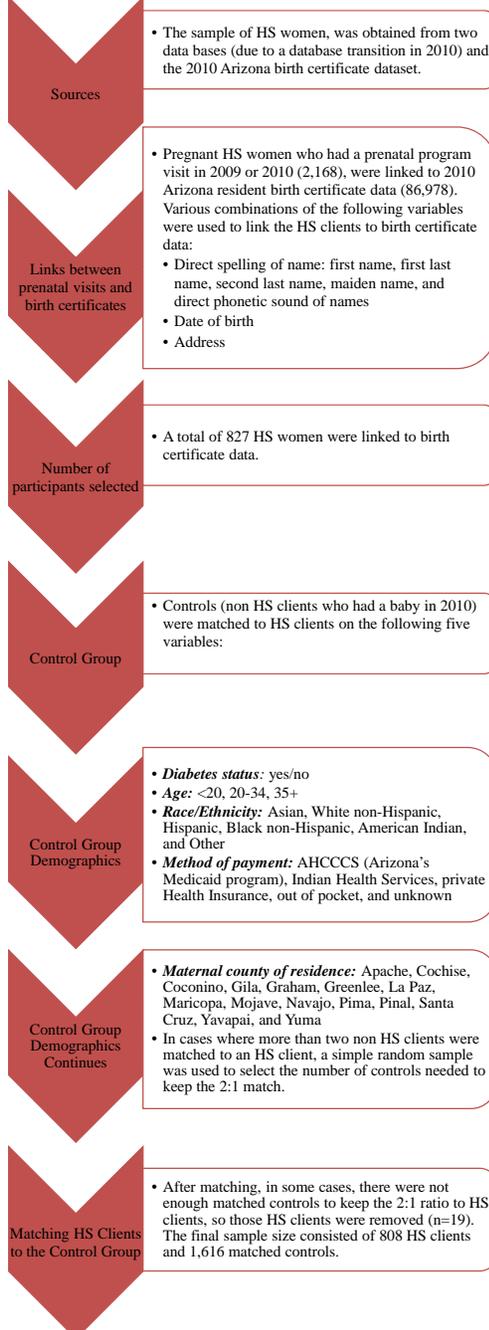
In Arizona, the Health Start program, a home visiting program, aims to identify at risk (for babies of low birth weight) women, and educate them about maternal, child, and fetal health, and refer them to medical care throughout their pregnancy and two years post-partum. The goals of the program are to reduce low birth weight infants, reduce the number of infants and young children affected by childhood disease, and increase the number of pregnant women receiving prenatal care. During the years 2009-2010, 2,168 pregnant women received a visit from in the Health Start (HS) program. After matching and exclusions, 808 pregnant women who gave birth in Arizona in 2010 were included. Of the 808 matched HS clients, 3% (n=23) of women were identified as having diabetes (gestational, type I or type II); this group of women was examined for birth outcomes and compared to a matched 2:1 control group of non-HS Arizona women who gave birth in 2010. Known diabetic complications were compared between the groups using chi square tests. Additional birth outcomes that were measured among both groups were congenital abnormalities. The hypothesis was that women with diabetes in the HS program would have better birth outcomes as compared to the control group. The results comparing the groups were not statistically different.

INTRODUCTION

The goal of this project was to evaluate women with diabetes in the Health Start program, and compare their birth outcomes to that of matched controls (2 controls for every HS client). Diabetic women were a focus of the study due to the increasing incidence of diabetes in the US; currently approximately 26 million Americans carry a Diabetic diagnosis¹. The HS program is administered by the Arizona Department of Health Services, through the Bureau of Women and Children's Health. The funding for the program comes from monies allocated to the ADHS from the Arizona State Lottery. HS serves pregnant women, post-partum women, their children, and their families in 11 counties. Women can qualify for the HS Program if they have at least one social risk factor plus one or more medical risk factors demonstrated in the table below.

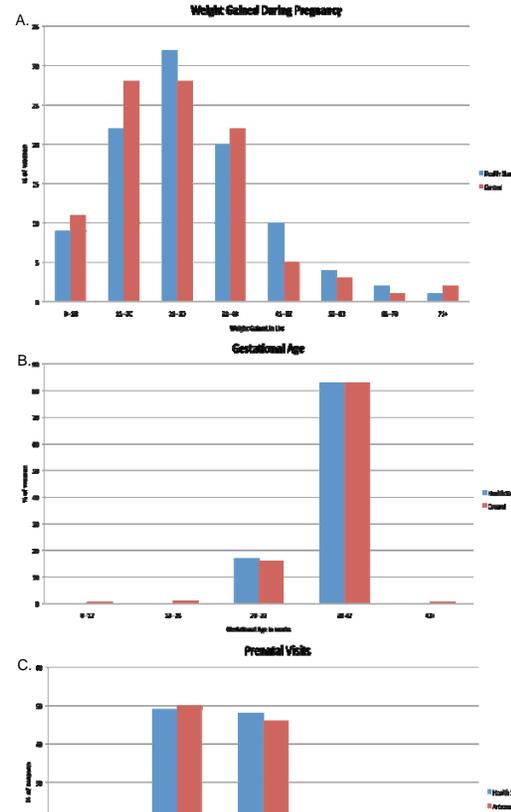
| Medical Risk Factors | Social risk factors |
|---|---|
| Preterm birth/labor | Prenatal/postpartum Depression |
| Low birth weight (<2500g) | |
| High birth weight (>4500g) | Domestic violence |
| Birth Defects | Lack of social/family support |
| Cocaine or other illicit drug use | |
| Alcohol use | |
| Tobacco use | |
| Miscarriage | Lack of basic needs: food, shelter, transportation, unsafe neighborhood |
| Previous birth complications | |
| Previous termination | |
| Kidney disease in mother | No OB/GYN or primary care providers in area |
| Anemia in mother | |
| Diabetes in mother (type I, II, or gestational) | |
| Weight of mother (<100lbs or obese) | Unemployment/lack of job opportunities |
| Height <5 feet | |
| High blood pressure in mother | |
| HIV/AIDS, sexually transmitted infections | Less than high school education |
| Previous or current multiple births | |
| Birth Spacing <2 years | |
| Age 18 or less, 35 or greater | |
| Bacterial Vaginosis | |
| Urinary tract infections | |
| Vaginal hemorrhaging | |
| Lack of dental care | |

METHODS



RESULTS

There was no statistical difference in weight gained during pregnancy (figure A), gestational age (figure B), or number of prenatal visits (figure C) in the HS group vs. the control group.



A. Birth Outcomes of Health Start vs. Control Group

| Outcome | HS in % (n=808) | Control in % (n=1,616) | P-Value |
|------------------------------|-----------------|------------------------|---------|
| Fetal Distress | 0 | .08 (13) | 0.486 |
| Hyaline Membrane disease | .01 (1) | .01 (2) | .617 |
| Meconium Aspiration Syndrome | 0 | .01 (2) | .479 |
| Newborn Seizures | .01 (1) | 0.3 (5) | .621 |
| Omphalocele | 0 | .01 (1) | .479 |
| Cleft Palate | .01 (1) | 0.2 (4) | .527 |
| Club Foot | 0 | .01 (2) | .479 |
| Down Syndrome | 0 | .01 (2) | .479 |

Table A depicts the birth outcomes that were reported on birth certificates in both the Health Start clients and the control group, in addition to their p-values. **The diabetic women in the HS group (n=23) and control group (n=46) did not have any fetal anomalies at all, and therefore were not included in the table above.** The results above depict both non-diabetic HS clients, and non-diabetic controls.

Overall, the birth outcomes were not statistically different in the HS population as compared to the control group. Furthermore, the results of the birth outcomes in the HS diabetic group, vs. those in the control diabetic group were also not statistically different.

There were no recorded cases of the following diseases in either group, so they no analysis was conducted: Fetal alcohol syndrome, Anencephalus/Spina Bifida, Heart Malformations, Tracheoesophageal Fistulas, Malformed Genitalia, Renal Agenesis, Newborn Anemia, Polydactyly, and Diaphragmatic Hernia.

DISCUSSION & CONCLUSION

This study had several limitations. First, the sample sizes were quite small at 808 HS women, in which 3% (n=23) had diabetes, as well as 1,616 controls of whom 3% (n=46) had diabetes. With such a small proportion of subjects with diabetes, it is difficult to determine whether HS was truly effective. Second, the type of diabetes that each woman in the project had was also unknown, so it is difficult to extend generalizations about diabetic outcomes to all types of diabetes. And given that the diabetic status was self-reported, certain patients in the study may not have been classified properly. Third, individuals in the control group were matched on diabetes, and therefore, are not representative of the actual percentage of diabetes in the community. Fourth, confounding variables such as obesity, hypertension, and hypercholesterolemia which may affect birth outcomes, were not controlled for in this study. Finally, the matching criteria may have been too specific and eliminated women who could have had different birth outcomes.



Although this study indicates that there is no statistical difference between HS clients and control clients in specific health outcomes; the HS program may provide benefits in outcomes that were not assessed in this study and may not be apparent from health records. For example, HS provides personalized health care and prenatal education that may subsequently lead to greater patient satisfaction, empowerment, or compliance though these are factors that cannot be analyzed with the data currently available. In addition, HS provides opportunities for assessing future public health improvements by archiving birth outcomes of current clients using birth certificate information.

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