PROGRAM AND EVALUATION PLAN:
BERTIE COUNTY ADOLESCENT PARENT PROGRAM - REDUCING REPEAT TEEN PREGNANCY

By

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ABSTRACT

Adolescent mothers are at an increased risk of repeat teen pregnancy and the negative consequences that arise with these additional pregnancies. There is even more of a risk for these mothers in rural areas. In an effort to reduce repeat teen pregnancy in a rural low income county in North Carolina, the Bertie County Adolescent Parent Program (BCAPP) is proposed. This school-based program will provide various interventions including weekly peer group meetings, collaboration with the local health department to provide long acting reversible contraception, as well as providing mentors. An analysis of similar existing secondary teen pregnancy prevention programs and their evaluation strategies and findings helped strengthen the design for the Bertie County Adolescent Parent Program. This paper will describe this analysis and provide a detailed program and evaluation plan for the Bertie County Adolescent Parent Program with the hope that this information can be used as a template in other rural settings.
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INTRODUCTION

The Bertie County Adolescent Parent Program (BCAPP) is a program designed to prevent repeat teen pregnancies among adolescent mothers in Bertie County, North Carolina. This school based program held at Bertie County High School aims to accomplish this mission by providing education, counseling and resources to decrease risky sexual behaviors and increase use of long acting reversible contraception among these adolescent mothers. There are many programs that have been developed throughout the country to address repeat teen pregnancy; however, there are few in rural areas. Rural areas tend to have less prevention programs that target teenagers as well as limited resources leading to the lack of repeat teen pregnancy prevention programs. As a result, repeat teen pregnancy rates tend to be higher in rural areas. Consequently, the Bertie County Adolescent Parent Program was uniquely developed to address the issue of repeat teen pregnancy in a rural county.

The rationale behind the program plan for the Bertie County Adolescent Parent Program is based on evidence that subsequent teen pregnancies leading to negative consequences for both mothers and their children. The consequences include poorer educational, economical, health, and developmental outcomes as compared to teen mothers of one child. Furthermore, it has been well documented that adolescents who experience a repeat pregnancy are more likely to leave school without graduating, to be unemployed, and to be welfare dependent. Currently, nearly one-quarter of all teen mothers have a second birth before turning twenty and these rates tend to be higher in southern states and rural areas. Specifically, the rate of teen pregnancies in Bertie County is ranked 8 out of the 100 counties in the state of North Carolina. Based on these negative outcomes and the priority of preventing repeat teen pregnancy national, statewide, and locally in Bertie County, a program like this is necessary.
Interventions shown to effectively address the issue of repeat teen pregnancy include promoting long acting reversible contraception, providing group sessions to address social norms about teen pregnancy, establishing mentorship programs, and creating policies that insure schools provide school-based childcare and that school nurses provide some form of prenatal care. Some of these interventions are included in the main activities of the Bertie County Adolescent Parent Program and other activities specific to Bertie County are included as well. Teen mothers will participate in weekly group sessions to address knowledge on the prevention of a second pregnancy, the use of long acting reversible contraception, the importance of completing high school, and the importance of having a support system as well as focusing on improving parenting skills. In addition, teen mothers will be provided with long acting reversible contraception at a reduced rate, transportation and childcare during and after sessions, as well as mentors when possible. Also, with the goal of preventing/reducing repeat teen pregnancy in Bertie County, this program will serve as a pilot program that can be used to create other programs like it in rural counties of North Carolina and beyond.

This paper will give a more in depth view of the program plan and program evaluation through various sections. Section one includes a systematic review of the literature for programs with similar goals and components to the Bertie County Adolescent Parent Program which will clarify effective strategies of programs targeting teen mothers. Section two is a more detailed description of the program plan including goals and objectives, underlying theoretical constructs, a logic model, and an implementation plan. Section three is an evaluation plan for the Bertie County Adolescent Parent Program which addresses gathering data on how well the program is being implemented as well as on the strength of the effect the program has on teen mothers.
Lastly, the discussion of the significance of the program and its future directions will conclude the paper.
SYSTEMATIC REVIEW

Introduction
The purpose of this literature review is to identify and analyze programs similar to the Bertie County Adolescent Parent Program with the intention of using this information to improve the effectiveness of the Bertie County Adolescent Parent Program. Similarity of the programs will be determined by the number of matching elements between the program and the Bertie County Adolescent Parent Program. These elements include: (a) target population is pregnant teens and teen mothers; (b) main focus is on prevention of subsequent teen pregnancy; (c) school-based; (d) focuses on provision and use of long acting reversible contraception; (e) focuses on completion of high school; (f) weekly counseling/education sessions where child-care and transportation are provided; and (g) mentoring from local volunteers. Once similar programs are identified, based on these elements, their approach to implementation and evaluation will be analyzed. In addition, the strengths and weaknesses of each study will be discussed. This literature review will conclude with an analysis of how the results can be applied to the Bertie County Adolescent Parent Program.

Methods

Research Question
This literature review was performed with the following research question: What can be learned from programs similar to the Bertie County Adolescent Parent Program? In order to be considered similar enough to the Bertie County Adolescent Parent Program to be useful, programs were only included if they targeted pregnant teens and/or teen mothers and if the main focus was to prevent subsequent teen pregnancies.

Search Strategy

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A PubMed online database search was undertaken to identify articles describing possible programs. Search terms used were ("Pregnancy in Adolescence"[Mesh] OR "pregnancy in adolescence") AND (repeat OR subsequent OR rapid*) AND (program evaluation OR intervention studies). The search was limited to the English language. Additional methods to identify additional articles included searching the reference lists of included papers and searching the reference lists of relevant systematic reviews. Titles and abstracts of resulting articles were reviewed to determine whether or not each article met the primary inclusion criterion. The primary inclusion criterion were programs that shared elements with the Bertie County Adolescent Parent Program with a priority on elements (a), (b), and (c) above. Programs were excluded if the pregnant teens and/or teen mothers were not attending a regular public school and if the majority of the program activities were held outside of the school. Three programs which met this inclusion criterion are summarized and analyzed below (see also Table 1).

**Summary of Programs**

**Pregnancy-Free Club**

The Pregnancy-Free Club (PFC) is a program established by a public health agency in an alternative school with similar goals and objectives to the Bertie County Adolescent Parent Program. The goal of the Pregnancy-Free Club is to delay repeat pregnancies and promote high school graduation of these adolescent mothers through various services coordinated by public health nurses. All pregnant and parenting adolescents were invited to participate in the PFC during the school year and were allowed to continue participating until they graduated or left school. These teens were provided services monthly during the summer, seeing the public health nurse at home or at school monthly. For an incentive, participants were given a $5 gift card each month of their participation.
The services provided to these adolescents include monthly pregnancy tests, counseling, and interventions to help them obtain health care, birth control, and other resources. In addition, the public health nurses discussed health education topics with participants and provided them with mentors for additional support. Public health nurses were allowed to be present during the entire school day in case participants needed assistance at any time.

At each monthly pregnancy test, surveys are completed by the participants and information is documented by the nurses to be used for program evaluation. The survey contained questions about sexual activity, desire to be pregnant, consistency of birth control use, reason for birth control use, what the adolescent would do if pregnant, substance use, and number of children the adolescent would like to have over their lifetime and while they are in high school. The documentation by the nurses included pregnancy test results, dates of last sexual contacts, number of sexual partners in the last 30 days, current birth control method(s), and student history of violence, sexual abuse, homelessness, abandonment and having a specialized education plan at school. Nurses also recorded nursing interventions and referrals. These methods were used to answer the main outcome evaluation question, does participating in the PFC delay repeat pregnancy among adolescent mothers?

Additionally, process evaluation measures were collected in order to evaluate participants’ satisfaction with their experience. The method for process evaluation included two focus groups with adolescent participants. The focus groups were audiotaped, transcribed, and analyzed for major themes of benefits and suggestions for improvement. Questions considered in the focus groups were how the PFC was helpful, how nurses were helpful, what participants did not like about the PFC, what they would like to see changed, and how the program helped them to think about their future.
The evaluation showed that in the first year of the program (1998-1999) there were no repeat pregnancies. Over a period of nine years, the rates of repeat pregnancies ranged from 1.9% to 10.3% with the overall rate being 7.2% (20 pregnancies among 276 participants). This is noted to be well below the repeat pregnancy rate of 25% prior to the beginning of PFC. Focus group evaluation showed that participants thought monthly pregnancy test, survey questions about pregnancy planning, the gift card incentive, daily nurse availability and open nurse-participant relationships were helpful. The focus group identified areas of improvement include wanting more sensitivity from nurses when addressing positive pregnancy test, wanting more assurance of confidentiality and wanting reminders about monthly pregnancy test so they would not forget.

The results of evaluation seem promising; however one weakness with the outcome evaluation is the lack of comparison group data. Since there are typically a limited number of pregnant and parenting teens in a specific area, it is hard to find pregnant and parenting teens not participating in the program for comparison. The article was able to compare the rates of repeat pregnancy before and after the program to give some sense of how effective the program was at delaying repeat pregnancy. Despite this limitation with outcome evaluation, the process evaluation was a strength of this program. Using focus groups to collect process evaluation data was great for determining program satisfaction. More importantly, Schaffer et al. noted that feedback from participants in the focus group was used to improve the program for subsequent years.

Strengths of the program components included monthly pregnancy test which added objective accountability, incentives which increased participation, trusting relationships between the nurses and the adolescents created the support these teens needed and services over the
summer provided continuity. Overall the program and evaluation for the PFC was effective and there are many things that can be learned from this program to improve the Bertie County Adolescent Parent Program.

**Second Chance Club**

The Second Chance Club is another program similar to the Bertie County Adolescent Parent Program with the same goal of preventing repeat pregnancies among adolescent mothers. The Second Chance Club is a peer-education, school based program developed by researchers at the University of South Carolina for an urban high school in Charleston, South Carolina.\(^8\) Initiated in August of 1994, all pregnant and parenting adolescents in this high school were asked to participate in the program.\(^8\) Participants remained in the program until graduation, formal withdrawal from school, or transfer to another school. Participants in the program were low income African Americans ages 15-17.

The Second Chance Club consisted of several components: peer support provided by project participants through weekly facilitated group meetings (held during lunch); health education on issues concerning adolescence, parenting and careers, health care for both the mothers and their children (including contraception) at a local clinic; social work services such as individual case management, home visits, and counseling. Participants were also required to participate in school events and service projects.\(^8\) The project coordinator was a social worker, who was racially and culturally matched with the participants and who followed up with participants even when they did not attend group meetings or school.\(^8\)

The main source of evaluation described for the Second Chance Club consisted of an outcome evaluation focused on determining if there was a reduced rate of repeat births among the participants. Two sets of preliminary evaluations were done for this program, one using
matched controls from birth certificates and another using an ecological evaluation which compared the repeat community birth rates before, during and after implementation of the program. In 2001, Key, Barbosa, and Owens described the study for the first preliminary evaluation as a retrospective case-controlled cohort study. Controls were selected for the participants randomly and anonymously from the South Carolina Birth Certificate Data Registry matched by race, age at delivery, year of delivery, parity, Kessner Index of prenatal care, and mother’s educational level. Controls were excluded if they were residents in the intervention high school attendance zone. There were no significant differences in initial demographic variables between control subjects and participants. The reappearance of a participant or control subject’s name and social security number on a birth certificate in the South Carolina Birth Certificate Data Registry between the years 1994 to 1997 was used to determine if a repeat birth occurred.

The results of this evaluation showed that only 6% (3 out of 50) of the participants had repeat births compared to 37% (95 out of 255) of the control subjects who had repeat births. Each of the three participants who had a repeat birth had only one. Among the control subjects 29% had one repeat birth, 7% had two repeat births, and 1% had three repeat births. The number of multiple repeat births between the participants and control subjects was statistically significant. Repeat births among active participants (participants attending 4 meetings or more) and inactive participants was not statistically significant.

The main limitation of this evaluation was selection bias. The authors noted that there were no significant differences in the initial demographic variables between currently pregnant control subjects and participants; however, 24% of the control subjects had inadequate prenatal care as compared to 12% of the Second Chance participants. This could be clinically significant.
even though it was not statistically significant. The controls could have possible gotten less prenatal care due to increased shame and reluctance to acknowledging their pregnancies due to lack of support therefore putting them more at risk for a repeat pregnancy. This possible initial difference in support could have affected the differences in repeat pregnancies among controls and participants. This is just one example of how selection bias could have affected the results. One strength of the evaluation was the use of power analysis to determine the number of participant and controls needed to detect a 50% reduction of the expected repeat adolescent birth rate. These numbers were met which is important when the sample size is limited. Overall, the evaluation methodology of this study was objective and was an effective way to evaluate the rates of repeat teen pregnancy.

The second preliminary evaluation of the Second Chance Club was described by Key et al. in a 2005-2006 article. This ecological evaluation compared the rate of repeat births in the two zip codes served by the high school with the Second Chance Club with selected community data from South Carolina as a whole. Repeat birth rates were calculated using data from the South Carolina Birth Certificate Data Registry and the United States Census for 15-17 year old African-American girls before (1990-1993), during (1994-1997) and after (1998-2001) the program was implemented. The results of this evaluation showed that the repeat birth rate for 15-17 year old African American girls in the program catchment area decreased during the intervention period with a rebound after the intervention period but to a lower rate than before program implementation. This change in repeat birth rates was statistically significant. The repeat birth rates in the state were higher than in the catchment area before, during, and after program implementation, but there was a linear decrease over time.
The main limitation of this evaluation is that one cannot conclude that the outcome is directly attributable to the program because all population data was used. For example, the catchment area was not mutually exclusive; data collected in the catchment area was from participants in the Second Chance Club. If pregnant or parenting adolescents did not attend high school, they could not participate in the program. Other community influences have had positive or negative impact on the role in the catchment area and the state which is not detectable in this type of evaluation. The combined results from both preliminary evaluations have promising results. A final more detailed evaluation was described by Key et al. in a 2008 article which also showed lower rates of subsequent pregnancies in the Second Chance participants as compared to non-participants. The methodology was similar to the initial preliminary study except it was prospective instead of retrospective. As in the prior evaluations, the rate of subsequent births was statistically significantly lower in participants (17%) than in the comparison group (33%). In order to address the issue of the catchment area not being mutually exclusive, intention to treat analysis was used. The strengths and weakness of this analysis mirrors the first preliminary evaluation. The results of these three evaluations indicate effectiveness of the intervention on reduction of subsequent adolescent pregnancies. One possible confounder so all these results are rates of abortion since birth certificates were used to determine the number of repeat teen pregnancies. Birth certificates would not include numbers of repeat teen pregnancies that were aborted. However, the combination of outcome evaluation methodologies is a major strength of the Second Chance Club evaluation and their a few studies that consider abortion rates.

There was no described or evaluation protocol for process evaluation to determine component effectiveness in the preliminary evaluations; however, it was described in the final evaluation analysis. Process evaluation included monitoring enrollment and participation, focus
groups of participants, and interviews of parents and school personnel. The qualitative analysis showed overall positive attitudes towards the program. Participants noted that being able to learn and receive support from others in the program that already had children was beneficial, while parents noted improved motivation to achieve and hopefulness in their daughters. School personnel noted the educational benefit and the importance of the peer approach. It was not stated in the article that this feedback was used to modify the program overtime. Some strengths of the program overall include weekly peer group meetings, emphasis of community/school involvement, and having a coordinator who is racially and culturally matched to the participants in the program. As with the Pregnancy Free Club, many aspects of the Second Chance Club could be incorporated in the Bertie County Adolescent Parent Program.

**Adolescent Parenting Program**

The Adolescent Parenting Program (APP) is another secondary pregnancy prevention program for first-time pregnant or parenting teenagers in North Carolina that is managed by the North Carolina Department of Health and Human Services. APP is located in 30 of the 100 counties in North Carolina; however Bertie County is not one of the participating counties. The program is housed in many settings including public school systems. Each program is tailored to fit the needs of its county, keeping in mind the program objectives which include avoiding a second pregnancy during program participation, using appropriate health care services for mother and child, remaining in high school or equivalent program until graduation, enhancing parenting abilities, preparing for employment, and eliminating substantiated referrals of abuse and neglect.

To participate in the program, first-time pregnant or parenting adolescents must be age 18 or younger, remain in school and not have a second pregnancy. One full-time program
coordinator is responsible for providing direct casework services to program participants, as well as planning and managing the program. APP coordinators interact with their approximately 12-20 participants on average 3-4 times a month through a combination of individual contacts and group meetings. Components of the program include: (a) case management to create connections within the community to facilitate school continuation, access to health care and parenting/employment education; (b) reproductive health information containing abstinence and birth control resources to prevent a second pregnancy; (c) individual counseling; and (d) peer group meetings.\textsuperscript{11}

The outcome evaluation methods for APP are similar to the methodology used in the preliminary evaluations of the Second Chance Club. A retrospective study using North Carolina birth certificate records was used to compare APP participants (n = 1260) to adolescent mothers not participating in APP (n = 1260).\textsuperscript{11} Teenage mothers not participating in the program were randomly selected from birth records, matching the APP group on county and maternal age at first birth. Even after matching, there were differences between the APP group and the non-APP group. The differences were in race, marital status, and tobacco use during pregnancy; however these factors were controlled through the use of statistical analysis.\textsuperscript{11} The outcomes examined were prenatal care utilization, birthweight, gestational age and time until second birth. Since time until second birth is a main focus of the Bertie County Adolescent Parent Program, those results will be the focus of this analysis. Time until a second birth was measured as the number of days between the births of the first and second child.

The results of this evaluation from time until second birth were similar to the other programs; however, these results were different based on the age of the adolescent mother at the time of the first birth. The percentage (approximately 62\%) of mothers having only one child
was similar for both the APP group and the non-APP group.\textsuperscript{11} APP participants age 12 to 16 had significantly longer time until second births as compared to the 12 to 16 year olds in the non-APP group.\textsuperscript{11} For example, two years after their first births, 88\% of the young mothers ages 12 to 16 in the APP group still did not have a second birth, compared to 85\% of the 12 to 16 year olds in the non-APP group mothers in this age group (p=0.006).\textsuperscript{11} On the contrary, in the age group 17 to 19 there was no significant difference between the APP participants and the non-APP group.\textsuperscript{11} This lack of significant difference could be due to the fact that 17 to 19 year olds were not in APP as long as the younger mothers to gain all the benefits of the program because support after graduation from high school is withheld.

As with all the other evaluations, there were some limitations to this evaluation design. First, it was a non-experimental design; therefore, causal interpretations require caution. Secondly, as with the other programs, participation is voluntary. This causes some selection bias, since the APP group is self-selected and adolescent mothers who choose to participate in APP could be intrinsically different than other adolescent mothers. Statistical analysis was used to reduce the selection bias but only a limited number of variables were considered.\textsuperscript{11} Due to the use of birth certificates only this evaluation is possibly confounded by abortion rates like the Second Chance Club evaluation.

Unlike the Second Chance Club, one weakness of this evaluation was the lack of description of process evaluation for APP. It would be helpful to know the participants’ perspective on the implementation of the program and what was most beneficial. One major strength of the program was how APP coordinators collaborated with other agencies to coordinate, locate, and refer services to assist adolescent mothers with their needs, including access to health care services, parenting education, education assistance, and support services.
However, since not all Adolescent Parenting Programs are held at public schools further analysis should be done to determine specific effectiveness of only the school based programs. Overall, many things can be learned from this program.

**Analysis**

By examining these three programs and their evaluation strategies much can be learned to improve the Bertie County Adolescent Parent Program.\textsuperscript{2,7-9,11} As far as program element similarities, all three programs targeted pregnant teens and teen mothers, focused on preventing subsequent pregnancy, were school based and focused on completion of high school. Delivery and use of contraception was addressed by all programs; however, none of the programs specifically stated a focus on long acting reversible contraception use like the Bertie County Adolescent Parent Program. The Second Chance Club, like the Bertie County Adolescent Parent Program, has weekly group meetings with participants. The other programs had group meetings, but they were only held once a month.\textsuperscript{8} Individual consulting was provided in all programs; however, mentoring was only mentioned in the Pregnancy Free Club.\textsuperscript{7,8,11}

Elements of the other programs that were shown to be beneficial and that could add the effectiveness of the Bertie County Adolescent Parent Program include monthly pregnancy testing, program participation incentives, using a racially and culturally matched program coordinator and collaboration with other agencies. Monthly pregnancy testing could increase the accountability of the participants in the program; however, since there are limited resources in Bertie County it would need to be provided by the Bertie County Health Department instead of being done at the school. Since Bertie County is a rural low income county in North Carolina, many of the participants could benefit from a small monetary incentive to be used for their children for participation in the program since many activities will be held afterschool. If afterschool activities start to be a conflict, lunchtime meetings like in the Second Chance Club
could be more effective. Bertie County Adolescent Parent Program participants may feel more comfortable with a coordinator that is racially and culturally matched to them, like in the Second Chance Club.² The Bertie County Adolescent Parent Program is already collaborating with the public school system and the health department; however, participants may need other services, such as social work or employment services, that could be organized through the program. All these elements will be considered in the final design for the Bertie County Adolescent Parent Program based on the available resources.

As far as evaluation methodologies, some elements of effective process and outcome evaluations could be useful in evaluating the Bertie County Adolescent Parent Program. The Pregnancy Free Club and the Second Chance Club described effective process evaluation techniques through the use of focus groups and interviews.² ⁷ Using qualitative methods, these programs were able to use this feedback throughout the programs to make necessary adjustment to further benefit the participants. In addition, gaining the opinions of parents could add to the effectiveness of the program because Bertie County is a very close-knit county in which family support is very important.¹²

There are limited outcome evaluation methods for secondary pregnancy prevention due the nature of the programs and the limited number of adolescent mothers for comparison. Several thorough analyses were done for the Second Chance Club. The use of a prospective and/or a retrospective case-control cohort based on birth certificates is an objective way to track individuals in the program and not in the program to get repeat pregnancy data. Since the population of Bertie County is so small and rural, using birth certificates only from rural countries matched for key demographics to collect repeat pregnancy data would be useful. In addition, the use of pregnancy tests performed within the program could support data collected
from birth certificates. Yet, initially with limited resources, an evaluation without a comparison group like the one for the Pregnancy Free Club may be less time consuming and more effective for the Bertie County Adolescent Parent Program, which has limited staff. Over time the use of cohort studies may be more reasonable. After the completion of the Bertie County Adolescent Parent Program, an ecological evaluation would be useful to determine if the program was effective and if this program design could be used in high schools in other rural counties. The positive results from all three existing programs on delaying repeat teen pregnancy further demonstrate that Bertie County Adolescent Parent Program could be as effective since many elements are shared.

**Conclusion**

This literature review revealed three programs which share important elements with the Bertie County Adolescent Parent Program, such as foci on preventing subsequent pregnancy, on completion of high school, and the use of peer group meetings. The programs slightly varied in program components, program objectives, and the methods used to evaluate them. In general, there are several important lessons to take from this review. First, there appear to be benefits to using incentives, administering pregnancy tests, collaborating with several agencies, and using a program coordinator who is racially and culturally matched with the participants. Also, how active a participant is in the program and the age at which participant start the program may alter the effectiveness of the program for these individuals. This should be kept in mind when applying evaluation results to the program. Finally, thorough evaluations are necessary to learn from a program. Therefore, there needs to be thorough ongoing process and outcome evaluation, possibly via various methodologies and various time frames. Applying some of these lessons to the Bertie County Adolescent Parent Program will hopefully lead to a more effective program to
address repeat teen pregnancy among pregnant and parenting teens in Bertie County, North Carolina.
Program Plan

Program Overview and Rationale

Even though teen pregnancy rates have been gradually declining in the United States since 1990, teen pregnancy and repeat teen pregnancy continue to be a growing problem in North Carolina, specifically among teens in Bertie County, a rural county in eastern North Carolina. In an effort to reduce repeat teen pregnancy in the female adolescent population, I have created Bertie County Adolescent Parent Program (BCAPP). The program is designed to reduce repeat teen pregnancy among adolescents in Bertie County who have already had one teen pregnancy, by decreasing risky sexual behavior and increasing long acting reversible contraception use through a school based program providing education, counseling and resources to these teen mothers.

The program will be initiated in Bertie County High School, the only high school in the county, to provide these services to teenage mothers. This will be a pilot program that can possibly be implemented in other rural eastern North Carolina counties in the future. The overall goal is to target current teen mothers, in order to prevent subsequent pregnancies in these individuals.

Location: Bertie County, North Carolina

In 2005, the teen pregnancy rate in the United States was 69.5/1000 which is a record low and down 41% since the peak in 1990 of 116.9/1000. In 2006, the teen pregnancy rate increased by 3%, the first time in more than a decade. Despite this slight increase in teen pregnancy rate, the overall rate is still lower now than it has been in the past in the United States. However, among teens that get pregnant, it is very common for these to be repeat
pregnancies—not their first teen pregnancy. Of all the teen pregnancy births in 2002, approximately 89,000 (21%) were among teens who already had a child. Nearly one-quarter of all teen mothers have a second birth before turning 20.\textsuperscript{1} Repeat teen pregnancy is a larger problem in southern states and for African American teenagers.\textsuperscript{3} In addition, teens in rural areas have an increased rate of repeat teenage pregnancies.\textsuperscript{3} Being rural, Bertie County, North Carolina is a high risk location placing its teen mothers at an increased risk of repeat teen pregnancies.

Bertie County is located in northeastern NC with an estimated permanent population of 19,434 in 2010; however, unlike NC as a whole, its population has decreased over time.\textsuperscript{12} The population is predominately non-white minorities who comprised 63.7\% of the populations in 2000, 62.3\% were black. 100\% of the population is considered to be in rural areas based on the demographics of the county.\textsuperscript{12} The largest number of residents in Bertie County are between the ages of 5-19 making up 22.3\% of the population.\textsuperscript{12} The pregnancy rate for girls ages 15-17 between 2005 and 2009 was 48.0/1000 (n = 95) overall, with rates of 20.7/1000 (n = 12) in whites and 59.3/1000 (n = 83) in all minorities.\textsuperscript{5} This is a significantly higher pregnancy rate for girls ages 15-17 than the overall state rate of 33.6/1000.\textsuperscript{5} In fact, Bertie is ranked 8 out of 100 counties in NC for pregnancy rates for girls ages 15-17 between 2005-2009, only behind Richmond, Scotland, Robeson, Hertford, Tyrrell, Edgecombe, and Lee Counties.\textsuperscript{5} There is limited data on the number of births per year that are repeat adolescent pregnancies. However, based on data showing that about 20\% of these pregnancies were repeat pregnancies it is a significant problem.

Targeted Risk Factors

The primary risk factors for repeat teen pregnancy are continued risky sexual behaviors and inconsistent contraceptive use. These behaviors account for majority of repeat teen
pregnancy among current adolescent mothers.\textsuperscript{6} Other risk factors include lower educational achievement and a non-supportive family environment. It is important to address these risk factors because data has shown that having one child as a teenager leads to negative implications for both the mothers and their children, such as having poorer long term educational, economic, health, and developmental outcomes.\textsuperscript{3} Having a second child compounds these problems which lead to even more problems.\textsuperscript{3} Adolescents who experience a repeat pregnancy are more likely to leave school without graduating, to be unemployed, and to be welfare dependent.\textsuperscript{4}

To combat these risk factors and prevent repeat adolescent pregnancy, the CDC publication of evidence-based practices for improving health, The Community Guide, suggests comprehensive risk reduction programs and interventions associated with community service and social, emotional, and cognitive competence training to reduce sexual risk behaviors.\textsuperscript{14} The proposed school based program in Bertie County will be based on elements of these evidence-based intervention models.

**Program Context**

As the Bertie County explored options for program design, the following contextual factors were identified that could influence implementation of an effective repeat teen pregnancy prevention intervention in Bertie County school.

*National, State, and Local Priorities*

Currently, there is a focus on rates of teen pregnancy and possible interventions at local, state, and national levels, providing a timely context for the implementation of a repeat pregnancy prevention program in Bertie County.
Based on the Bertie County Community Health Assessment, the priority areas include chronic disease management, child and maternal health, and fitness and wellness. Within the priority of child and maternal health, the focuses are HIV/STDs, low birth weight/very low birth weight babies and infant mortality with lack of prenatal care, poor preconceptional health and unprotected sex as key behaviors noted. Many of these issues are very salient in first time and repeat teen pregnancy because many of these factors contribute to unwanted teen pregnancies and the negative consequences of teen pregnancies.

In North Carolina, one of the 13 focus areas for the Healthy NC 2020 project is risky sexual behavior. Within this focus area, sexually transmitted diseases and unintended pregnancy are major objectives. One of the main proposed targets is to reduce the percent of all pregnancies that are unintended. The current percentage of unintended pregnancies as of 2007 is 39.8%; the goal is to reduce it to 30.9% by 2020.

Along these same lines, there has been a national emphasis on adolescent health including teen pregnancy based on the national Healthy People 2020 campaign. One main proposed objective is to increase the prevention and management of unintended pregnancies in adolescents. The focus is on the role and responsibilities of primary care clinicians who treat adolescents. The objective states that prevention strategies at the primary, secondary, and tertiary levels should be integrated into adolescent-focused clinical settings in which primary care clinicians provide care. Examples of these prevention strategies include contraception counseling, dispensing and prescribing contraception and education regarding sexual health, promoting positive health behaviors that improve pregnancy outcomes, and pregnancy options counseling. Other objectives include increasing the number of adolescents who delay onset of sexual activity and increasing the use of and access to condoms and contraception for all
sexually active adolescents.\textsuperscript{17} The overall goal is to reduce unintended pregnancies in adolescent girls.

\textit{Political Environment}

Current, there is a highly supportive political environment for programs aimed to reduce teen pregnancy. In September of 2010, the U.S. Department of Health and Human Services announced that $155 million in teen pregnancy prevention grants were going to be awarded to states, non-profit organizations, school districts, and universities.\textsuperscript{17} The grants are designed to support the duplication of teen pregnancy prevention programs that have been shown to be effective through research as well as the testing of new innovative approaches to combating teen pregnancy. Teen pregnancy is considered a serious national problem that needs to be addressed to promote health and success of young people throughout the country. Therefore, creating a program designed to reduce repeat teen pregnancy during this political time is in line with national goals. In addition, it is consistent with local, state, and national priorities described in the goals within the Bertie County Health Assessment, Healthy NC 2020, and Health People 2020 as discussed above.

\textit{Acceptability to Recipients}

Interventions within a rural community can be very difficult and expensive. However, implementing the program within Bertie County High School allows us to reach adolescent mothers at risk of repeat teen pregnancy. Since North Carolina law requires students to remain in school until 16 years of age, there is an increased likelihood that we can target most adolescent mothers before they are at risk of dropping out of school. Even more encouraging is that the drop-out rate in Bertie County is 6\% lower than the average NC county rate in 2007-2008.\textsuperscript{12}
With this low dropout rate, the program is likely reach 16-19 year olds as well. Engaging the community and earning support for these adolescent mothers is very important for repeat teen pregnancy prevention because Bertie County consist of several close knit communities, such as churches, families, and longtime friendships. Working within these communities and earning the trust and support of their members will allow for greater acceptability in the target population. By gaining trust and support from family members, church members, and friends that teen mothers value will hopefully help encourage acceptability from teen mothers. In addition, providing incentives, ensuring privacy, and listening to the concerns of these mothers will aid in gaining acceptability from perspective participants.

**Possible Financial Resources, Technical Feasibility and Stakeholders**

Possible financial resources include national, state, and local funds that are used for promotion of adolescent health. Being able to access this funding in Bertie County could be a challenge because it is such a small rural county. There is definitely a need, but organizations providing the funds may look at the population and absolute number of teen pregnancies and see this as likely to yield a poor return on investment. In order to address this problem, it is necessary to provide these agencies and organizations with data to show the impact repeat teen pregnancies have on the people in Bertie County. Despite small numbers in the county, repeat teen pregnancies are important to address because they have long term consequences on both mother and child. The financial impact of these long term educational, economic, and health consequences is quite significant for a low income county like this one. In larger rural counties the impact is also great; however, creating a program in a county that is often overlooked is worthwhile. In addition, stating that this is a program that could be used in other countries in
Eastern North Carolina and other rural areas in the future to provide a greater overall reduction in the state of North Carolina could be useful.

Since teen pregnancy, especial repeat teen pregnancy, is a major health problem, a program of this nature seems quite feasible. Other major problems such as STIs, HIV, and obesity do not always affect more than one person’s life like teen pregnancy. Therefore helping both mothers and child through preventing repeat teen pregnancy is acceptable. For example, healthcare providers and the school system will likely be accepting of a program aimed to prevent/reduce repeat teen pregnancy. Primary care providers, including pediatricians and obstetrician gynecologist, will probably be most receptive to this kind of program because much of their patient base is affected by this health problem. In order to provide optimal care and have healthy teens, it is necessary to reduce the number of teens having multiple children at a young age. Since, repeat teen pregnancy has direct education consequences for these teen mothers, the school system will be willing to help with this intervention. Overall, the atmosphere is conducive for a program to prevent/reduce repeat teen pregnancy in Bertie County. Possible stakeholders for this program include Bertie County Public Schools, Bertie County Health Department, Adolescent Pregnancy Prevention Campaign of NC, and parents of teenage mothers.

**Application of Program Theory**

A social ecological perspective can be used to approach health problems, such as the problem of rapid repeat teen pregnancy described above. Rapid repeat teen pregnancy is defined as one occurring within 24 months of the previous birth.⁶ According to McLeroy et al., the social ecological model focuses on both individual and social environmental factors in order to develop health promotion intervention.¹⁸ Therefore, interventions should be directed at changing
individually, interpersonal, community and population factors that support and maintain healthy behaviors. Utilizing this model to approach health problems means considering all the factors that lead to unhealthy behaviors and then developing interventions that address these factors in order to reduce unhealthy behaviors in individuals. This model assumes that changes in the social environment will lead to changes in individuals and having support from individuals within a population is necessary for overall environmental change. This approach can be used to further analyze the risk factors and determinants of rapid repeat teen pregnancy and the creation of the Bertie County Adolescent Parent Program as an intervention to reduce this health problem.

**Individual Level**

Individual factors focus on beliefs, knowledge, and skills possessed by individual people. For rapid repeat teen pregnancy, believing that one must stay in an unhealthy relationship is an individual risk factor. For example, teen mothers who are experiencing intimate partner violence may believe they are helpless and have no ability to refuse sexual activity or negotiate contraceptive use, even though they know by not doing so they are at increased risk of getting pregnant again. Based on the health belief model, this increase in unhealthy behavior is a result of decreased self-efficacy among these teen mothers. Interventions that screen for abuse early during the postpartum period can both prevent intimate partner violence and promote long-acting contraceptives. Since many of the long term contraceptives (injectable DMPA) can be used without a partner’s knowledge, it can increase individual’s self-efficacy even if they choose to stay in unhealthy relationships. For the Bertie County Adolescent Parent Program, activities which relate to this level include education, individual counseling and increase knowledge of and access to long acting reversible contraception.
Interpersonal Level

Interpersonal factors focus on interactions and feelings between people that are connected socially. Teens who have friends and family who were adolescent parents are at increased risk for repeat pregnancy. This can be addressed by interventions that enhance existing network ties or develop new social network linkages. For example, developing an intervention in which teen mothers and their friends can attend group session to address/change these social norms can create increased social support and affirmation that not rapidly getting pregnant again is acceptable within their social circle. In addition, mentorship programs can provide social support between these teens and their mentors, which can lead to a decrease in risk taking. For the Bertie County Adolescent Parent Program, activities which relate to this level include group sessions to create a support system and change social norms about repeat teen pregnancy in addition to promoting completion of primary and secondary education in order to create support for their children.

Community and Population Level

Community and Population factors focus on the ways in which power and resources are differentially distributed between groups of people on the basis of income, race, neighborhood or social capital. Teens who are forced to drop out of school due to the lack of school resources for pregnant teens are less likely to go back to school once they have their first birth, putting them at increased risk for rapid repeat teen pregnancies. Interventions that create policies that insure all school nurses can provide some form of prenatal care and insure schools will provide some form of school-based child care in areas where teen pregnancy is highest, which can lead to a decrease in the number of teens that drop out of school as a result of pregnancy. For the Bertie County Adolescent Parent Program, activities which relate to this level include providing childcare and
transportation for teen mothers as well as partnering with the Health Department to provide long acting reversible contraception.

**Goals and Objectives**

The goal of the Bertie County Adolescent Parent Program is to reduce subsequent pregnancies in teenage mothers in Bertie County.

The following are the identified short term objectives to be achieved by the activities of the Bertie County Adolescent Parent Program.

- By July 2012, 95% of program staff will have participated in training on the program model used in the Bertie County Adolescence Parent Program.
- By July 2012, program staff will have access to contact information for teenage mothers and recruit 75% of these mothers to the program based on referrals from Bertie County High School.
- By August 2012, at least 50% of teenage mothers recruited will be participating in the Bertie County Adolescent Parent Program through Bertie County High School.
- By August 2012, 95% of teenage mother participating will attend weekly sessions after school.

Long-term objectives are as follows:

- By August 2014, 98% of teenage mothers attending Bertie County High School will be referred to the program.
- By August 2014, 90% of teenage mothers attending Bertie County High School will participate in the program.
• By August 2014, 95% of the teenage mothers participated in the Bertie County Adolescent Parent Program will not have had a subsequent pregnancy.

• By August 2014, at least 50% of teenage mothers participating in the program will be using long acting reversible contraception.

• By August 2014, at least 50% of teenage mothers participating in the program and eligible for graduation will have graduated from high school.

**Program Implementation**

The Bertie County Adolescent Parent Program will begin in August 2011 at Bertie County High School. This program is designed for approximately 10-15 adolescent girls who are pregnant with their first child or who already have at least one child and attend Bertie County High School. The overall goals of the program are to reduce subsequent pregnancies in these teenage mothers by increasing knowledge and use of long acting reversible contraception and increasing the rate of these teen mothers graduating for high school. In order to accomplish these goals, the Program Coordinator, who will be racially and culturally matched to prospective participants, will work closely with the public school system and the health departments in Bertie County.

The Program Coordinator will recruit staff members and volunteers who will facilitate weekly sessions with these teen mothers after school. The framework for the weekly sessions will be dynamic, based on suggestion from the Community Guide, but can be changed based on input from the staff and needs of the participants of the program. The staff members will consist of at least one health educator, one counselor, and one healthcare provider. These staff members will conduct sessions that will address the detrimental effects of two or more births before the age of 20, discuss methods of contraception with a focus on long term methods (IUD or Depo-
Provera), encourage teen mothers to return to school after a birth, encourage graduation from high school, encourage post-graduation opportunities, address parenting skills, and stress the importance of surrounding oneself with a good support system through various group activities. In addition to group activities, each teen mother will have an allotted amount of time for individual counseling sessions. For increased support, teen mothers will be paired with volunteers from the community who agree to serve as mentors. Once selected and trained, staff members will work with the program coordinator to develop lesson plans for group sessions, which can change based on suggestions by the teen mothers.

The Program Coordinator will partner with Bertie County High School in order to identify possible teen mothers for the program, recruit health educators from the school, and gain access to a location on campus for the weekly activities to be held. In order to make participation more feasible for these teen mothers, the use of an activity bus to transport teen mothers home after program activities would be necessary and could be organized through the school. The Program Coordinator will organize childcare for the children of teen mothers who may need it in order to participate in the program. In addition, a small monetary incentive will be given monthly for continued participation in the program. To encourage completion of high school the program coordinator will gain access to the grades of teen mothers participating in the program and encourage academic assistance when necessary. The Program Coordinator will also work with the Bertie County Health Department in order to provide teen mothers with contraception. At least three weekly meetings per semester will be dedicated to going to the Health Department for individual contraception counseling and refills.

Overall, the Project Coordinator will be responsible for continuing coordination with the Bertie County High School, Bertie County Health Department, staff and teen mothers in order to
make sure the goals and objectives of the program are being met. These relationships as well as relationships created within the community with this program will increase sustainability.

**Logic Model**
See Figure 1 (Appendix) for the Bertie County Adolescent Parent Program Logic Model.

**Timeline**
See Figure 2 (Appendix) for a detailed timeline for the implementation for the Bertie County Adolescent Parent Program.
EVALUATION PLAN

Rationale for the Evaluation
The Bertie County Adolescent Parent Program is a program in a small rural area in NC with limited resources; consequently, evaluation of the program is very important for sustainability. The primary reasons for evaluating this program include monitoring progress toward program goals and objectives, determining if components of the program are producing the necessary outcomes, justifying the need for further funding, and making sure resources are not being wasted. Overall, it is necessary to make sure the program is running smoothly and is producing results in order to continue funding in this area with limited resources.

Approach to the Evaluation
Evaluator Role
The evaluator has the role of examining the operations of the program to determine the success of implementation and effectiveness. This information will be used to identify program strengths, weaknesses and areas for improvement. All the data collected will be used demonstrate accountability with hopes to ensure continued resources and maintenance of the Bertie County Adolescent Parent Program. In order to accomplish effective evaluation, both an internal and external evaluator is recommended. The internal evaluator will have a better understanding of the program and will be better able to determine what are good evaluation questions and measures. They have firsthand experience with the strengths and weakness of the program and the areas for improvement. In addition, an internal evaluator tends to be less costly than hiring an external evaluator. However, an external evaluator will have a more objective perspective on the program, which will be necessary for funder and political purposes. Therefore, it is recommended to start with an internal evaluator who will later work with an
external evaluator for a thorough evaluation. The skills and characteristics most important for these evaluators to have are experience with evaluations, knowledge of qualitative and quantitative data sources and analysis, respectful interactions with program staff, strong organization skills, understanding of the limitations in rural counties, and ability to deliver final reports in a timely manner.

**Stakeholder Input**

Stakeholders that need to be involved in the evaluation of the Bertie County Adolescent Parent Program include the Bertie County Public Schools, Bertie County Health Department, Adolescent Pregnancy Prevention Campaign of NC, adolescent mothers, their significant others, government officials, and medical providers. These stakeholders are most concerned with how the program is being implemented and if it leads to a reduction in repeat teen pregnancy. Bertie County Public Schools are also concerned about the number of students in the program that graduate from high school and how the resources that they providing are being used, such as a location for meetings and transportation. The Bertie County Health Department is concerned with the number of participants taking advantage of the reduced rates on contraception and how many participants are using long-term methods. There are many ways in which the stakeholders can be involved in the evaluation process. Stakeholders will be consulted to make sure all key questions relevant to them are being included. Stakeholders’ insight on effective and appropriate ways to collect data from adolescent mothers will be considered when deciding on a final evaluation plan. Overall stakeholders can help with question development and data collection and analysis, since there will be open lines of communication.

**Challenges to Evaluation**
Lack of resources for proper evaluation is a potential challenge. In a rural county like Bertie County, there are not many programs being created and there is a lack of tools already in place for evaluation. Getting an external evaluator could also be a challenge since there are limited resources for compensation.

**Evaluation Study Design**

Assessment for the implementation of the Bertie County Adolescent Parent Program will be completed using an observational study design. Both quantitative and qualitative measures will be collected. The opinions of the program coordinator, program staff, Bertie County High School Personnel and teenage mother participants will be requested by interviews and surveys at various points during the implementation of the program. In addition, quantitative data regarding number of staff members trained, number of teen mothers contacted/recruited, number of referrals from Bertie County High School, number of teen mothers at Bertie County High School, number of teen mother participants, and number of teen mother participants using transportation/child care services will be collected. This information will be collected twice per school semester.

Assessment for the outcomes evaluation will be completed using a quasi-experimental study design. The primary outcomes of Bertie County Adolescent Parent Program relate to the teen mother participants. The primary outcomes are the rate of subsequent teen pregnancy, rate of long acting reversible contraception use, and rate of high school graduation. The comparison group will consist of teen mothers attending Bertie County High School but not enrolled in the Bertie County Adolescent Parent Program based on 10 to 15 girls enrolled in the program. The program will use a post-test only prospective cohort evaluation design. This type of design will better demonstrate changes in outcomes that are due to the intervention compared to a design that only evaluates the participants. Confounding can also be addressed using this method.
among both participants and teen mothers who chose not to do the program. One disadvantage is the difficulty of following teen mothers not participating in the program, but with the help of Bertie County High School this is quite achievable.

**Evaluation Methods**

The primary methods used in the evaluation will be surveys, face-to-face open-ended interviews, focus groups, and document review. Open-ended interviews will be used to assess if implementation of the program staff training sessions, access to teen mothers’ contact information, recruitment and referral methods, and weekly program sessions went according to plan. It will also address what strengths, barriers and improvement should be addressed. These interviews will be focused on the Program Coordinator. In addition, program staff, Bertie County High School personnel, local health department staff, and participants will be given surveys to determine what went well or poorly from their perspectives and what can be improved. Surveys will also be used to assess program staff and teen mothers’ opinions of the program training and the components of program itself. To further access the opinions of teen mothers, one focus group per school semester will be held. Surveys will also be used to determine the primary outcomes for the participants. These outcomes will be verified by document review.

Document review will play a role in the assessment of the program’s implementation and outcomes. The program coordinator must maintain records of the number of staff attending training, number of contacts gained for teen mothers, number of referrals from Bertie County High School, number of teen mothers recruited and the number of teen mothers participating in the program. There also will be records of the number of sessions teen mothers attend, number of uses of transportation and childcare services by teen mothers. At the Bertie County Health Department, there will be a review of the medical records for participants to determine long
acting reversible contraception use and information on subsequent pregnancies. At the Bertie County High School, there will be a review of the graduation records. All document review on the participants will be used verify the participants’ answers on the survey for their outcomes.

**Evaluation Planning Table**

**Short Term Objective 1:** By July 2012, 95% of program staff will have participated in training on the program model used in the Bertie County Adolescence Parent Program. (Process Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the 95% of the program staff attended the program training by July 2012? If no, why not?</td>
<td>Program Coordinator, Program Staff</td>
<td>Document Review (coordinator records), Survey</td>
</tr>
<tr>
<td>Was the program staff satisfied with the content and delivery of the training?</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
<tr>
<td>Did the program staff consider the training relevant to their job?</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
<tr>
<td>Did the program staff learn what was intended to be taught at training?</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
<tr>
<td>Was there noticeable and measurable change in the activity and performance in the program staff after training?</td>
<td>Program Coordinator</td>
<td>Open-ended interview</td>
</tr>
<tr>
<td>Was the program staff who received training more likely to continuing working with the program as compared to staff who did not attend training?</td>
<td>Program Coordinator</td>
<td>Open-ended interview</td>
</tr>
<tr>
<td>Did anything unexpected happen?</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
</tbody>
</table>

**Short Term Objective 2:** By July 2012, program staff will have access to contact information for teenage mothers and recruit 75% of these mothers to the program based on referrals from Bertie County High School. (Process Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has program staff gained access to contact information for teen mothers in Bertie County by July 2012?</td>
<td>Program Coordinator</td>
<td>Document review (coordinator records)</td>
</tr>
<tr>
<td>Question</td>
<td>Source</td>
<td>Method</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>How did the program staff gain access to contact information for the teen mothers?</td>
<td>Program Coordinator</td>
<td>Open-ended interview</td>
</tr>
<tr>
<td>What were the barriers to gaining access to the teen mother contact information? And how could this access have been improved?</td>
<td>Program Coordinator</td>
<td>Open-ended interview</td>
</tr>
<tr>
<td>Were referrals for teenage mothers received from Bertie County High School by July 2012?</td>
<td>Program Coordinator</td>
<td>Document review (coordinator records)</td>
</tr>
<tr>
<td>How were the referrals selected?</td>
<td>Bertie County High School personnel</td>
<td>Document review (personnel records)</td>
</tr>
<tr>
<td>How were the referrals received from Bertie County High School?</td>
<td>Program Coordinator, Program Staff</td>
<td>Document review (coordinator records)</td>
</tr>
<tr>
<td>What were the barriers to the referral process? And how could this process been improved?</td>
<td>Program Coordinator</td>
<td>Open-ended interview</td>
</tr>
<tr>
<td>How many teen mothers whom program staff had contact information were recruited for the program by July 2012? Were at least 75% recruited?</td>
<td>Program Coordinator, Program Staff</td>
<td>Document review (coordinator records and contact/recruitment logs)</td>
</tr>
<tr>
<td>What were the barriers to the recruitment process? And how could this process been improved?</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
</tbody>
</table>

Short Term Objective 3: By August 2012, at least 50% of teenage mothers recruited will be participating in the Bertie County Adolescent Parent Program through Bertie County High School. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many teen mothers recruited were participating in the Bertie County Adolescent Parent Program by August 2012? Were at least 50% participating?</td>
<td>Program Coordinator, Program Staff</td>
<td>Document review (coordinator records and contact/recruitment/participant logs)</td>
</tr>
<tr>
<td>What were the reasons that some recruited teen mothers chose not to participate in the</td>
<td>Program Coordinator, Program Staff</td>
<td>Open-ended interview, Survey</td>
</tr>
<tr>
<td>Question</td>
<td>Participant</td>
<td>Evaluation Method</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
</tbody>
</table>
| What improvements could be made to encourage participation in the program? | Program Coordinator  
Program Staff  
Participants | Open-ended interview  
Survey  
Survey |
| Is the Bertie County Adolescent Parent Program being offered through Bertie County High School by August 2012? If not, why? | Program Coordinator | Open-ended interview |

**Short Term Objective 4:** By August 2012, 95% of teenage mother participating will attend weekly sessions after school. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
</table>
| Were 95% of teen mothers participating in the program attending weekly sessions by August 2012? | Program Coordinator/Program Staff  
Participant | Document Review (attendance logs)  
Survey |
| Were weekly sessions being held after school?                                        | Program Coordinator  
Program Staff | Open-ended interview  
Survey |
| Did the teen mothers enjoy the weekly sessions?                                      | Participants                                                                 | Survey; Focus Group |
| By attending the weekly sessions, did teen mothers gain knowledge about the prevention of a second pregnancy, the use of long acting reversible contraception, the importance of completing high school, and the importance of having a support system? | Participants | Survey; Focus Group |
| Was there a noticeable change in behavior in teen mothers as a result of participant in weekly sessions? | Program Coordinator  
Program Staff  
Participants | Open-ended interview  
Survey  
Survey |
| Was transportation provided for teen mothers after all weekly sessions?              | Program Coordinator/Program Staff  
Participant | Document Review (transportation logs)  
Survey; Focus Group |
| Were teen mothers given the option of childcare during the hours of the weekly sessions? | Program Coordinator/Program Staff  
Participant | Document Review (childcare logs)  
Survey; Focus Group |
| What improvement could be made for transportation and childcare services?            | Program Coordinator  
Program Staff  
Participants | Open-ended interview  
Survey  
Survey; Focus Group |
**Long Term Objective 1:** By August 2014, 98% of teenage mothers attending Bertie County High School will be referred to the program. (Process Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were 98% of teen mothers attending Bertie County High School referred to the program by August 2014?</td>
<td>Program Coordinator Bertie County School Personnel</td>
<td>Document Review (coordinator logs and personnel logs)</td>
</tr>
<tr>
<td>Why were some teen mothers attending Bertie County High School not referred to the program?</td>
<td>Program Coordinator/Program Staff Bertie County School Personnel</td>
<td>Open-ended interview Survey</td>
</tr>
<tr>
<td>What steps can be implemented to increase referrals to the program?</td>
<td>Program Coordinator Program Staff</td>
<td>Open-ended interview Survey</td>
</tr>
</tbody>
</table>

**Long Term Objective 2:** By August 2014, 90% of teenage mothers attending Bertie County High School will participate in the program. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were 90% of teen mothers attending Bertie County High School participating in the program by August 2014?</td>
<td>Program Coordinator Bertie County School Personnel</td>
<td>Document Review (coordinator logs and personnel logs)</td>
</tr>
<tr>
<td>Why were some teen mothers attending Bertie County High School not participating to the program?</td>
<td>Program Coordinator Program Staff Participants/Non-participants</td>
<td>Open ended interview Survey Survey</td>
</tr>
<tr>
<td>What steps can be implemented to increase participation in the program?</td>
<td>Program Coordinator Program Staff Participants/Non-participants</td>
<td>Open ended interview Survey Survey; Focus Group</td>
</tr>
</tbody>
</table>

**Long Term Objective 3:** By August 2014, 95% of the teenage mothers participated in the Bertie County Adolescent Parent Program will not have had a subsequent pregnancy. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have 95% of teen mothers participating in the program not had a subsequent pregnancy by August 2014?</td>
<td>Participants</td>
<td>Survey; Medical Records</td>
</tr>
<tr>
<td>Did participants believe the program contributed to their not having a subsequent pregnancy?</td>
<td>Participants</td>
<td>Survey; Focus Group</td>
</tr>
<tr>
<td>What did participants who had a subsequent pregnancy attribute it to?</td>
<td>Participants</td>
<td>Survey; Focus Group</td>
</tr>
</tbody>
</table>
**Long Term Objective 4:** By August 2014, at least 50% of teenage mothers participating in the program will be using long acting reversible contraception. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were at least 50% of teen mothers participating in the program using long acting reversible contraception by August 2014? If not, why?</td>
<td>Participants</td>
<td>Survey; Medical Record; Prescriptions</td>
</tr>
<tr>
<td>Were teen mothers receiving long acting reversible contraception at a reduced rate by the Bertie County Health Department?</td>
<td>Program Coordinator Program Staff Participants</td>
<td>Document review (coordinator records) Survey Survey</td>
</tr>
<tr>
<td>How many teen mothers were using long acting reversible contraception prior to participation in the program?</td>
<td>Participants</td>
<td>Survey</td>
</tr>
</tbody>
</table>

**Long Term Objective 5:** By August 2014, at least 50% of teenage mothers participating in the program and eligible for graduation will have graduated from high school. (Participant Objective)

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Participant</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have at least 50% of teen mothers who participated in the program graduated from high school?</td>
<td>Bertie County High School Personnel Participants</td>
<td>Document Review (School Graduation Records) Survey</td>
</tr>
<tr>
<td>Was the graduation rate of the participants in the program greater than or equal to the overall graduation rates of Bertie County High School?</td>
<td>Bertie County High School Personnel, Participants</td>
<td>Document Review (School Graduation Records)</td>
</tr>
</tbody>
</table>

**Dissemination Plan**

Since the reduction of repeat teenage pregnancy is a priority to both the stakeholders and the community in Bertie County, dissemination of the outcomes of the Bertie County Adolescent Parent Program within the county is necessary. Once the evaluation study is completed, the results will be disseminated via a written report to a representative from the Bertie County High School and the Bertie County Health Department. The written report will contain a preliminary protocol outline to target adolescent mothers in rural settings to later reach additional groups of
adolescent mothers. In addition, the program coordinator and evaluator will meet with the above stakeholders to report both qualitative and quantitative key findings via Power Point presentation, such as rate of repeat teenage pregnancy, rate of graduation, and overall satisfaction with the program among participants. This meeting will provide time for all stakeholders to discuss major issues and provide possible solutions. Additionally, to ensure program improvement during program implementation and to provide ongoing changes based on participant feedback, each semester after focus groups are held the results will be disseminated at a program meeting. These results will be considered when implementing program change before a complete evaluation has been finished.

Likewise, it is important to disseminate the results to the medical and public health communities and the general public. The purpose of this dissemination is to emphasize the importance of addressing repeat teenage pregnancy, not just first time teenage pregnancy. An article in the local newspaper in Bertie County will be written, in order to describe the program and results to the people within the county to gain further support. More importantly, it is necessary for the results of the Bertie County Adolescent Parent Program to be disseminated so that other program planners interested in developing similar programs can use the results to learn from the successes and failures of this program. Finally, if the results are promising, dissemination could promote continuation of funding for the program in Bertie County as well as other possible rural counties similar to Bertie County.
DISCUSSION

Being an adolescent mother of more than one child is associated with poorer educational, economical, health and developmental outcomes as compared to mothers of one child. Yet, one-quarter of all teen mothers have a second birth before reaching the age of twenty. These rates tend to be higher in southern states and rural areas; but fewer secondary teenage pregnancy prevention programs are created in these areas to address teenage pregnancies. Unfortunately, without programs to prevent repeat pregnancy and to provide resources to combat the challenges these adolescent mother face, many of these mothers will experience the negative consequences of having another child. Consequently, it is a priority to create secondary teen pregnancy prevention programs in rural areas. With this in mind, Bertie County Adolescent Parent Program is a unique school-based opportunity developed for a rural low income county with the goal of reducing repeat teen pregnancy. Through the program, adolescent mothers will participate in weekly group sessions to address prevention of a second pregnancy, use long acting reversible contraception, the importance of completing high school and the importance of having a support system. Participants are provided with long acting reversible contraception at a reduced rate and mentors for further support.

The literature review of similar programs to the proposed Bertie County Adolescent Parent Program identified several strategies that could be applied. For example, using incentives, administering regular routine pregnancy tests, collaborating with several agencies, and using a program coordinator who is racially and culturally matched with the participants were demonstrated to increase the accountability and satisfaction of participants. Program personnel must be sympathetic to the needs of this vulnerable group of mothers.
The literature review revealed the challenges of evaluating secondary teen pregnancy prevention programs such as having limited resources for evaluation, lacking adequate comparison group data, and the impracticality of using randomization/experimental designs. Despite these issues, it is important to evaluate if a secondary teen pregnancy program is functioning according to the plan and if its intended outcomes are achieved. The use of ongoing process and outcome evaluation of the Bertie County Adolescent Parent Program through various evaluation designs over various time frames is necessary to improve the program, justify continuation to funders and stakeholders, and provide strategies to be used by other programs like this in rural settings.

Beyond evaluating the program, there are other things to consider for the future development of programs similar to the proposed Bertie County Adolescent Parent Program. Close attention to short term goals of recruitment, referrals, and number of participants in the program should be documented in order to improve active participation in future programs of this nature. In the long term, this information, along with the development of a protocol to target adolescent mothers in rural settings, will be disseminated throughout the state of North Carolina and other rural areas to allow the program to reach additional groups of adolescent mothers.

Despite the challenges that arise when developing a repeat teen pregnancy prevention program, there is a need for programs that address this issue. The Bertie County Adolescent Parent Program has great potential to fill this need in Bertie County, North Carolina, while providing a template that can be used in other settings. With the use of the recommendations provided here, the Bertie County Adolescent Parent Program can continue to make an effort to reduce repeat teen pregnancy for many years.
ACKNOWLEDGEMENTS

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LaChonya Williams

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REFERENCES


### APPENDIX

#### Table 1 – Summary of Studies with Similarities to the Bertie County Adolescent Parent Program

<table>
<thead>
<tr>
<th>Program</th>
<th>Goal(s)</th>
<th>Similar Elements**</th>
<th>Implementation</th>
<th>Evaluation</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy Free Club7</td>
<td>1) To delay repeat pregnancies</td>
<td>a, b, c, g</td>
<td>1) Health education topic discussions 2) Organized help to obtain health care, birth control, and other resources 3) Monthly Pregnancy Test 4) Mentorship 5) Individual Counseling</td>
<td>Measures: # of repeat pregnancies</td>
<td>Participants: 7.2% (20 out of 276)</td>
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<tr>
<td></td>
<td>2) To promote high school graduation of adolescent mothers</td>
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<tr>
<td>Second Chance Club*2,8,9</td>
<td>1) To prevent repeat pregnancies among adolescent mothers</td>
<td>a, b, c, f</td>
<td>1) Weekly facilitated group meetings 2) Health education 3) Health care services for mother and children 4) Social work services 5) Required participation in school events and service projects</td>
<td>Key et al. 2001 Measures: # of repeat pregnancies</td>
<td>Participants: 6% (3 out of 50); Controls: 37% (95 out of 255)</td>
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</tr>
<tr>
<td>Adolescent Parenting Program*11</td>
<td>1) To avoid a second pregnancy</td>
<td>a, b, c, e</td>
<td>1) Monthly Peer group meetings 2) Case management 3) Reproductive health information 4) Individual counseling</td>
<td>Measures: time until a second birth</td>
<td>Ages 12 to 16: Participants had significantly longer time until second births than non-participants</td>
</tr>
<tr>
<td></td>
<td>2) To remain in high school until graduation 3) To enhance parenting abilities</td>
<td></td>
<td></td>
<td></td>
<td>Age 17-19: no significant difference between participants and non-participants</td>
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<td></td>
<td>4) To prepare for employment</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>5) To eliminate abuse and neglect referrals</td>
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<td></td>
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<tr>
<td></td>
<td>6) To use appropriate health care services</td>
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</tbody>
</table>

**Process Evaluation/Results not included in the table
**Similar Elements with Bertie County Adolescent Parent Program. The central elements of Bertie County Adolescent Parent Program are:

- a. Target population is pregnant teens and teen mothers
- b. Main focus is on prevention of subsequent teen pregnancy
- c. School-based
- d. Focuses on delivery and use long acting reversible contraception
- e. Focuses on completion of high school
- f. Weekly counseling/education sessions where child-care and transportation are provided
- g. Mentoring from local volunteers
### Figure 1 - Logic Model

<table>
<thead>
<tr>
<th><strong>Inputs</strong></th>
<th><strong>Activities</strong></th>
<th><strong>Outputs</strong></th>
<th><strong>Short-Term and Long-Term Outcomes</strong></th>
<th><strong>Impacts</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>In order to accomplish our set of activities we will need the following:</em></td>
<td><em>In order to address our problem we will accomplish the following activities:</em></td>
<td><em>We expect that once accomplished these activities will produce the following evidence of service delivery:</em></td>
<td><em>We expect that if completed or ongoing these activities will lead to the following changes in 1-3 then 4-6 years:</em></td>
<td><em>We expect that if accomplished these activities will lead to the following changes in 7-10 years:</em></td>
</tr>
<tr>
<td>Program Staff</td>
<td>Recruit staff, volunteers, and teenage mothers</td>
<td>Through education, counseling and provide resources, teenage mothers will gain knowledge on the prevention of a second pregnancy, the use of long acting reversible contraception, the importance of completing high school, and the importance of having a support system.</td>
<td>The majority of teenage mothers attending will be referred to our program.</td>
<td>A reduction in subsequent pregnancy in teenage mothers in Bertie County.</td>
</tr>
<tr>
<td>Monetary Resources</td>
<td>Organize referral systems with the Health Department and Public School System to recruit teenage mothers</td>
<td></td>
<td>At least half of teenage mothers referred will be participating in the program.</td>
<td>An increase in knowledge and use of long acting reversible contraception in teenage mothers in Bertie County.</td>
</tr>
<tr>
<td>Location for Program Activities at the high school</td>
<td>Provide training to our staff based on program model</td>
<td></td>
<td>The majority of teenage mothers participating in the program will have not had a subsequent pregnancy.</td>
<td></td>
</tr>
<tr>
<td>Time allotted to the program after school</td>
<td>Utilize resources from the Health Department to teach teenage mothers about long acting reversible contraception</td>
<td></td>
<td>At least half of teenage mothers in the program will be using long acting reversible contraception to prevent pregnancy.</td>
<td>An increased rate of teenage mothers graduating from high school.</td>
</tr>
<tr>
<td>Transportation for Teens after program meetings</td>
<td>Deliver long acting reversible contraception to teenage mothers at a reduced rate</td>
<td></td>
<td>At least half of teenage mothers in the program will have graduated from high school.</td>
<td></td>
</tr>
<tr>
<td>Data on Repeat Teen Pregnancy in Bertie County</td>
<td>Educate teenage mothers regarding the importance of completing primary and/or secondary education programs to support their family</td>
<td>Contraception available at reduced rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnerships with Bertie County Public Schools and Bertie County Health Department</td>
<td>Provide Child-Care Services during the program if necessary.</td>
<td>Children cared for so that mothers can attend program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child-Care Services</td>
<td>Organize and provide transportation for teens after program meetings if necessary.</td>
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</tbody>
</table>
### Figure 2 - Detailed Project Timeline

<table>
<thead>
<tr>
<th>Planning Phase</th>
<th>Implementation and Evaluation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>Advertise and appoint program coordinator</td>
<td>Jan</td>
</tr>
<tr>
<td>Network in community for program awareness</td>
<td></td>
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<tr>
<td>Collaborate with high school to gain access to school for location of program</td>
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<tr>
<td>Collaborate with health department for contraception resources</td>
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<tr>
<td>Recruit/train staff, and volunteers</td>
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<tr>
<td>Develop lesson plans for weekly sessions</td>
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<tr>
<td>Recruit teen mothers for BCAPP</td>
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<tr>
<td>Arrange transportation and childcare for teen mothers</td>
<td></td>
</tr>
<tr>
<td>Arrange access to grade reports for teen mothers</td>
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<tr>
<td>Recruit volunteer mentors</td>
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<tr>
<td>Start small group weekly sessions</td>
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<tr>
<td>Start mentor-mentee sessions</td>
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</tbody>
</table>