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The Evolution of Teen Pregnancy: A Comprehensive “Application” to Educate Teen Mothers

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The Evolution of Teen Pregnancy:
A Comprehensive “Application” to Educate Teen Mothers

by

Brittany Thermos Cordes

A Senior Honor Project in Partial Fulfillment of the Requirements of the Honors Program

ST. CATHERINE UNIVERSITY

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**The Evolution of Teen Pregnancy:
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Overview

Teen pregnancy in the United States has steadily declined since the early 1990’s. In 1972, the pregnancy rate for teens age 15-19 was 95.1 pregnancies per 1,000 women (95.1/1000) resulting in 62 births (Guttmacher Institute, 2010). For decades to follow, that rate increased although the number of births remained around 52 until 1990. From 1990 until 1995 the birth rate ranged from approximately 56 to 62. From 1995 forward, the rate of pregnancies and births for women ages 15-19 have decreased steadily to the most current data which reports a birth rate of 40.2 births per year for women between the ages of 15 and 19 in 2008(Guttmacher Institute, 2010). These statistics are reported in Table 1 (pg.6).

While birth rates appear to be on the decline, teen pregnancy is still a concern (Stewart & Kaye, 2012). Through education and campaigns such as the National Campaign to Prevent Teen and Unwanted Pregnancy (NCPTUP), teens are better at making decisions about sex than teens were 20 years ago. The NCPTUP was established and has played a significant role in “strengthening a culture of personal responsibility regarding sex, getting pregnant, and bringing children into the world, as well as strengthening the practice of always using contraception when you aren’t ready to have a child” (The National Campaign, 2012a, para. 1). The goal of NCPTUP is to reduce the rate of teen pregnancy and reduce the rate of unplanned pregnancy among young adults. This national campaign provides a large number of resources to aide in preventing teen and unplanned pregnancy nationwide including education for teens who are thinking about having sex.

EVOLUTION TEEN PREGNANCY

Table 1.1 Rates of pregnancy, birth and abortion, and abortion ratios, among women aged 15–19, by race or ethnicity, according to year, 1986–2008

Race or ethnicity and measure	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
TOTAL																							
Pregnancy rate*																							
All	106.7	106.6	111.4	114.9	116.9	115.3	111.0	108.0	104.6	99.6	95.6	91.4	88.7	85.7	83.4	78.7	74.4	71.8	70.1	68.3	70.1	69.8	67.8
Sexually experienced†	210.5	206.5	211.4	218.6	223.1	220.6	213.0	207.8	201.8	192.6	187.5	181.6	178.9	175.2	173.0	165.8	158.9	156.7	156.5	155.9	163.8	163.1	158.5
Birthrate	50.2	50.6	53.0	57.3	60.3	61.8	60.3	59.0	58.2	56.0	53.5	51.3	50.3	48.8	47.6	45.0	42.6	41.1	40.5	39.7	41.1	41.5	40.2
Abortion rate	42.3	41.8	43.5	42.0	40.5	37.4	35.2	33.9	31.6	29.4	28.6	27.1	25.8	24.7	23.9	22.5	21.1	20.4	19.5	18.7	18.9	18.2	17.8
Abortion ratio‡	45.7	45.2	45.1	42.3	40.2	37.7	36.9	36.5	35.2	34.5	34.8	34.6	33.9	33.6	33.4	33.3	33.1	33.2	32.5	32.0	31.5	30.6	30.6
WHITE																							
All																							
Pregnancy rate	90.0	89.6	93.0	95.8	98.8	96.6	92.3	90.0	87.8	84.9	81.4	77.9	75.9	73.4	71.2	67.7	64.4	62.3	60.7	59.1	60.6	60.9	58.8
Birthrate	42.3	42.5	44.4	47.9	51.2	52.6	51.4	50.6	50.5	49.5	47.5	45.5	44.9	44.0	43.0	41.0	39.2	38.0	37.4	36.7	37.9	38.4	37.3
Abortion rate	35.6	35.1	36.1	34.8	33.9	30.4	27.9	26.6	24.7	23.2	22.2	21.1	20.0	18.7	17.8	16.8	15.7	15.2	14.4	13.7	13.7	13.5	12.8
Abortion ratio	45.7	45.2	44.9	42.1	39.8	36.6	35.2	34.4	32.8	31.9	31.9	31.7	30.8	29.8	29.3	29.0	28.6	28.5	27.8	27.1	26.5	25.9	25.5
Non-Hispanic§																							
Pregnancy rate	u	u	u	u	86.6	83.6	77.8	75.3	72.5	69.7	66.4	63.6	60.9	58.0	55.4	51.7	48.2	46.5	44.5	43.3	44.0	43.8	43.3
Birthrate	u	u	u	39.9	42.1	43.4	41.7	40.7	40.4	39.3	37.6	36.0	35.3	34.1	32.6	30.3	28.5	27.4	26.7	25.9	26.6	26.6	26.6
Abortion rate	u	u	u	u	32.9	28.7	25.3	24.0	21.8	20.5	19.3	18.6	16.9	15.5	14.8	13.9	12.7	12.3	11.4	11.1	11.0	10.8	10.4
Abortion ratio	u	u	u	u	43.9	39.8	37.7	37.1	35.1	34.3	33.9	34.0	32.4	31.3	31.2	31.5	30.9	31.1	29.9	30.0	29.3	28.8	28.0
NONWHITE																							
All																							
Pregnancy rate	180.7	180.1	189.1	193.4	189.4	188.5	183.5	177.6	169.0	155.1	148.9	141.6	136.2	130.8	127.7	118.7	110.1	105.1	102.3	99.3	101.3	98.6	96.3
Birthrate	84.8	85.5	89.2	95.9	96.3	97.8	94.6	91.2	87.5	80.5	75.9	72.6	70.2	66.1	64.2	59.4	54.8	52.0	51.2	49.9	51.4	51.3	49.5
Abortion rate	71.8	70.4	74.5	71.3	67.0	64.7	63.6	62.0	58.2	53.2	52.5	49.4	47.3	46.8	46.1	43.1	40.3	38.8	37.1	35.8	36.0	33.7	33.6
Abortion ratio	45.8	45.2	45.5	42.6	41.0	39.8	40.2	40.5	39.9	39.8	40.9	40.5	40.3	41.4	41.8	42.1	42.4	42.7	42.0	41.8	41.2	39.6	40.4
Black																							
Pregnancy rate	u	u	u	u	223.8	222.3	216.6	209.9	198.7	181.4	175.1	168.1	162.0	156.1	152.9	141.2	131.6	125.3	122.5	118.9	121.6	119.1	117.0
Birthrate	95.8	97.6	102.7	111.5	112.9	114.8	111.3	107.3	102.9	94.4	89.6	86.3	83.5	79.1	77.2	71.3	65.7	62.5	61.7	60.1	62.2	62.0	60.1
Abortion rate	u	u	u	u	80.3	76.9	75.5	73.8	68.3	61.9	61.4	58.7	56.2	55.7	54.8	50.6	47.9	45.7	44.1	42.5	42.7	40.6	40.8
Abortion ratio	u	u	u	u	41.6	40.1	40.4	40.7	39.9	39.6	40.7	40.5	40.2	41.3	41.5	41.5	42.1	42.3	41.7	41.4	40.7	39.5	40.4
HISPANIC																							
Pregnancy rate	u	u	u	u	162.2	169.1	169.7	165.8	164.4	158.5	152.8	143.5	142.5	139.4	137.1	132.1	126.5	122.3	121.9	116.9	118.1	114.6	106.6
Birthrate	u	u	u	100.8	99.5	104.6	103.3	101.8	101.3	99.3	94.6	89.6	87.9	86.8	86.6	84.4	80.6	78.4	78.1	76.5	77.4	75.3	70.3
Abortion rate	u	u	u	u	39.9	39.6	41.6	39.7	39.0	35.8	35.7	32.7	33.7	32.1	30.2	28.0	27.0	25.7	25.7	22.9	22.9	22.1	20.1
Abortion ratio	u	u	u	u	28.1	27.5	28.7	28.0	27.8	26.5	27.4	26.8	27.7	27.0	25.8	24.9	25.1	24.7	24.7	23.0	22.9	22.7	22.2

*All rates are the number of events per 1,000 women aged 15–19; pregnancy rate includes the estimated number of pregnancies ending in miscarriage or stillbirth. †The pregnancy rate among all 15–19-year-olds who have ever had sex. ‡The number of abortions per 100 pregnancies ending in abortion or live birth; denominator excludes miscarriages and stillbirths. §Pregnancy rates, birthrates and abortion ratios of non-Hispanic whites follow the NCHS methodology of including all white births of unknown Hispanic ethnicity with non-Hispanic births (<1% of all birth certificates).

Note: In this and subsequent tables, data are tabulated according to the woman's age at the pregnancy outcome and, for births, according to the mother's race (not the child's). Numbers and rates may differ slightly from those published previously because we updated the population numbers from 2000 through 2008, using revised estimates of the intercensal populations based on the 2000 and 2010 censuses. We have also updated the proportion of all 15–19-year-olds who have ever had sex for 2003–2006 (see "National-level methods" in text), which affects the estimated pregnancy rates among sexually experienced teens for those years. u=unavailable.

Note. Adapted from “U.S. teenage pregnancies, births and abortions: National and state trends and trends by race and ethnicity,” by Guttmacher Institute, 2010, p. 6.

While the work of NCPTUP is important and has been influential in decreasing teen pregnancy rates, teen pregnancy still exists and babies are still born to girls who may not be well prepared to achieve a healthy pregnancy and subsequently parent. Efforts to provide education for teens who are pregnant tends to be very straightforward providing little support, and can be extremely hard to understand. One such example is TeenHealth which provides teens with seven short pages on having a health pregnancy (The Nemours Foundation, 2012a). Other pregnancy materials are either geared toward pregnant adults and those who are prepared for pregnancy, or educators making the material extremely difficult to comprehend.

In addition to the complexity of pregnancy related material available, the developmental stage of the teen impacts how they may feel or act in regards to their pregnancy. One of the biggest issues teens face is comfort. Often teens are embarrassed or ashamed of their pregnancy, especially in younger adolescence, and as a result they may delay seeking medical attention or letting their parents know they are pregnant. This can reduce the opportunities present for the pregnant teen to make healthy choices for themselves and their babies (Story & Hermanson, 2012). Creating an option for the pregnant teen to easily access resources and information related to teen pregnancy could empower the teen to make healthy choices earlier in pregnancy and assist them in continuing to make healthy choices throughout their pregnancy.

This scholarly project attempts to address the need of the pregnant teen population for easily accessible education and includes this paper, also known as the educator's companion, and a smart phone application (app) template (outline presented in Appendix A). This comprehensive smart phone application is entitled "Pregnancy Management for Teens: Center for the Expecting Teen" or "PM4Teens" (refer to figure 1).

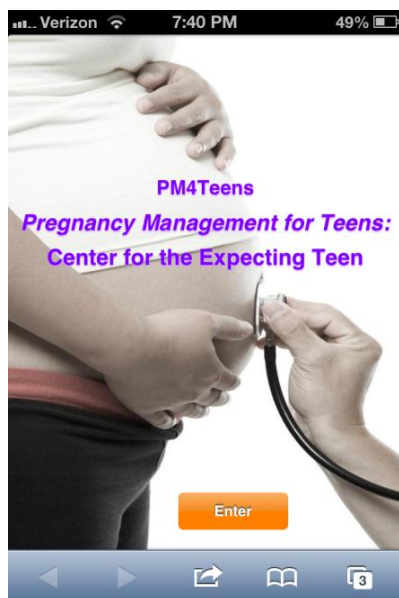


Figure 1. PM4Teens Open Screen. This figure illustrates the opening screen for the Pregnancy Management for Teen Apps.

Due to the limitations of this project, the app is targeted toward the Minnesota population of expecting teens, however, could be modified to target additional states. The app will provide the teen with the knowledge that she may seek out in her own time when she feels most comfortable. The purpose is to allow expecting teens to explore topics on their own and in an easy accessible manner that is both understandable and educational. The application will provide additional outside resources that teens can seek via the web or other apps, or within their community. The app will also allow them to formulate questions and encourage teens who are afraid to seek health care seek care sooner. The purpose of this project is not to encourage teen pregnancy, but to educate those teens who do get pregnant and to provide a developmentally appropriate resource for teens seeking education on teen pregnancy. The paper component of this project is meant to be utilized by the educator working with the teen who uses the app. Information provided will include how to assist the teen in understanding her economic and health management resources, as well as planning for family and social support in pregnancy and

the immediate postpartum period. Following, the reader will be provided with a brief overview of these topics and specific ways in which the educator can assist the teen to utilize the app.

Economics

History of Economic Factors.

Vinovskis (1981) reports that up until the 1950's many assumed that mothers would remain in the home and raise their children. However, for non-parenting teens the increasing need to complete high school became highly important. Pressures on teen parents to stay in school became more intense as agencies reported the increasing negative effects of dropping out of school. Welfare programs began to incur an increase in both direct and indirect costs. As a result, the 95th Congress faced debates on adolescent pregnancy. The discussions arising from this debate resulted in legislation to increase efforts to improve the social wellbeing and health outcomes of early childbearing for both the teen mother and the baby (Vinovskis, 1981). In 1979, the Carter Administration proposed that an additional 148 million dollars should be used to address the issue of adolescent pregnancy. As a result, a portion of the money was directed towards the Adolescent Health, Services, and Pregnancy Prevention Act of 1978. These measures and increased awareness about teen pregnancy resulted in teen pregnancy being identified as a public issue. Solutions for teen pregnancy included legislation to fund reproductive health and assistance programs for young mothers which in turn created a change in social opinion and the acceptability of contraception use, especially for teenagers (Luker, 1996).

In the 1980's and 1990's an increased use of condoms and more effective contraceptive methods was seen amongst teens (Luker, 1996). However the increase in birth control use did not eliminate the teens having children out of wedlock. In 1995, President Clinton declared teen pregnancy as the country's most serious social problem (Hoffman & Maynard, 2008). Many

argue that this played a large role in the welfare reform of 1996. The changes of the welfare program were intended to defer adolescents from parenthood, however significant changes in pregnancy and birth rates were not seen (Luker, 1996). To date, pregnant teens continue to face economic challenges. The economic sections that follow will provide an overview of the current economic issues of teen pregnancy and available resources.

Economics Overview.

Kids Having Kids by Hoffman and Maynard (2008) provides a comprehensive overview of the economic consequences of teen childbearing for mothers, fathers, children, and society. Supported by research in this area, the book highlights that the most significant findings are the costs of adolescent parenting to society. Teen mothers cost society approximately \$5,500 dollars per mother each year. This includes loss of mother and father earnings, earnings of adult children, public assistance, out of pocket cost of children's health insurance, foster care of minor children, and incarceration of adolescent and adult children (Hoffman & Maynard, 2008). Thus, if the teen were to delay pregnancy and childbearing until after the age of twenty they would save society over \$28 billion annually. The authors summarize that the economic costs for teenage mothers are small in comparison to the nonmonetary consequences such as not continuing their education, having additional children, or single parenthood, which can be significant (Hoffman & Maynard, 2008).

With a pregnant teen there are a great deal of economic issues for both the teen and the family of those involved. The parent of the pregnant teen often times takes over financial responsibility relating to the teen during her pregnancy. Yet, it is still important to educate the teen mom on the options she has available. Economic resources available include insurance options for mother and/or child, nutritional support programs, and welfare options. It is important

that the teen be educated on what to expect with each program and what her responsibilities are. For an overview of the average annual cost of child of childbearing please refer Table 2 (this page).

Table 2

Estimated annual expenditures on a child by single-parent families, overall United States, 2011								
Age of child	Total expense	Housing	Food	Transportation	Clothing	Health care	Child care and education ^a	Miscellaneous ^b
Before-tax income: Less than \$59,410 (Average = \$26,350)								
0 - 2	\$7,760	\$2,840	\$1,400	\$680	\$410	\$520	\$1,400	\$510
3 - 5	8,610	2,840	1,370	920	330	600	1,940	610
6 - 8	8,450	2,840	1,830	1,030	340	670	960	780
9 - 11	9,030	2,840	2,010	1,060	400	620	1,360	740
12 - 14	9,440	2,840	2,150	1,130	420	940	1,120	840
15 - 17	9,180	2,840	2,270	1,130	460	930	880	670
Total	\$157,410	\$51,120	\$33,090	\$17,850	\$7,080	\$12,840	\$22,980	\$12,450

Note. Adapted from “Expenditures on Children by Families, 2011,” by Lino, 2012, p. 32.

Expecting teens can utilize the economic programs available to them during pregnancy to help reduce some of the costs. One of the most valuable programs available to pregnant teens is Women, Infants, and Children (WIC). Additional needed resources include health insurance, which and is available in both public and private options, welfare programs, and resources for the teen to continue her education. The latter resources will be discussed in further detail in the following pages and WIC will be discussed under Health Management.

Health Insurance.

Private insurance.

Private health insurance is always an option. Most teens that become pregnant are covered under their parent’s health insurance. They may seek additional insurance coverage through Medical Assistance (MA) if necessary, to assist with the costs incurred by pregnancy care. However, most private insurance will not cover the baby born to the teen. This is because the baby to be born would be considered the grandchild of the policy holder to the health

insurance company. It is always important to advise the teen to speak with their parent's insurance company to find out what their rules are regarding this type of coverage. It can be difficult for grandparents to get medical or dental insurance for children if they do not have legal guardianship or custody of the child (Goyer, 2011). If coverage cannot be provided through the teens parents, the teen can find coverage for the child under Medical Assistance (MA).

Public insurance.

In the state of Minnesota, insurance for pregnant women or teens includes Medical Assistance (MA) or MinnesotaCare. The difference is in the cost for the insurance or the premium you must pay. Coverage for the teen parent may be difficult to find under federal programs, especially when they can be covered under their parents private insurance. The challenge can then be that mother and baby have different insurance policies.

Medical assistance (MA).

MA is essentially of no premium cost for the insured, although there may be small copays for parents and adults without children. Pregnant women/teens have no copay with MA (Children's Defense Fund Minnesota, 2012a). There are limits to those who can apply for MA, although it is much easier for a pregnant woman to qualify for MA due to different rules and income limits. The income limits depend on family size and a pregnant woman is counted as two people (Minnesota Department of Health, 2012). The MA application is approximately eight pages long with instructions. It asks questions ranging from who resides in the home, to how much money they make, and what their assets are. Documents providing proof of income and assets may also be required. For pregnant women, there is no limit on assets. It can take anywhere from one to two months to get on to the program, but MA does provide a back-date benefit of up to three months. This means that they will back date your medical assistance up to

that amount of time and cover any claims during that period. This program lasts for six months and will require you to renew coverage during the end of that time frame (Children's Defense Fund Minnesota, 2012b).

MinnesotaCare.

MinnesotaCare is health insurance for those who are not able to or cannot afford health insurance through their job or elsewhere (Children's Defense Fund Minnesota, 2012b). This program is a reduced-cost health insurance program that depends on the number of people in the family, the number receiving insurance coverage, and their incomes. There is a small copay for receiving services. If you live in Minnesota you are eligible if you have income and assets below the max limit and have been four months without insurance. The only exception to the rule is children. Many teen moms may be ineligible for coverage under this program because their parents typically are able to cover them on their insurance. The process is much like MA regarding the application, documents for proof of income and assets as well as the length of time it takes to get assistance. However, for MinnesotaCare your insurance will not start until the first day of the next month after you have paid your first premium. They will not pay any existing or past medical bills. You stay on the program by paying your premium and renewing every 12 months (Children's Defense Fund Minnesota, 2012b).

Welfare: The Minnesota Family Investment Program

There are many welfare options available to the public, however from a pregnant teen perspective, only the most beneficial welfare option will be discussed, the Minnesota Family Investment Program (MFIP). This program is a federal-state program that was designed to provide assistance for eligible low-income families with minor children or pregnant women (Minnesota Department of Human Services, 2012a). To be eligible for MFIP income and assets

must fall under the program limits and a family must satisfy other eligibility requirements made by federal and state law. A county worker will help assess family income and compares it to the applicable MFIP standards (Resource Department: Minnesota House of Representatives, 2012). A family can receive benefits for 60 months. All parents under MFIP are required to participate in work activities or they have to be working. Special requirements exist for teens under MFIP. If the caregiver in the MFIP program is a custodial parent under age 20 they are required to provide documented educational attainment level (Resource Department: Minnesota House of Representatives, 2012). If the teen has not yet obtained a high school diploma or GED they must be working toward doing so. They may be exempt if they have an employment plan or under other additional circumstances as assessed by the county. Benefits for MFIP are based on family size and consist of cash and food portions issued by the county of residence. These benefits are all provided electronically through a debit card known as an EBT card. By opting out of the cash benefits, families can extend their MFIP benefits greater than the 60 months. Additional benefits of the MFIP program include employment and training assistance, child care eligibility, and transitional assistance. By qualifying for MFIP, they may also qualify for other state funded assistance programs.

Education

The biggest economic barrier for teen mothers is a direct result of educational attainment which directly impacts the wage earnings. As the demand for well-paying jobs increases, the need for education also increases to qualify for those jobs (The National Campaign, 2012b). Teen mothers are less likely to earn a high school diploma or its equivalent (Perper, Peterson, & Manlove, 2010). Of teen mothers, 34 percent do not attain a high school diploma or a GED compared to only six percent of teens who did not become teen mothers. Of the teens who drop

out of school, 30 percent attribute it to pregnancy or parenthood (The National Campaign, 2012b). Education is also important when looking at the statistics regarding repeat births. Teen mothers are less likely to have repeat births if they received a high school diploma/GED, lived with one parent, and/or were employed or enrolled in school after their first birth (Manlove, Mariner, & Papillo, 2000). Currently, the average salary for an individual with a high school diploma is \$29,000 compared to an individual without a high school diploma or GED \$21,000, and those with at least 4 years or bachelor's degree of higher education (\$45,000) (Institute of Educational Sciences, 2012). Therefore, the biggest impact of teen parenting is the potential of lost wages for those who do not further their education beyond a high school diploma.

One of the best things that educators can do for adolescent mothers is to assist them in staying in school. Encouragement should be given to them to get a high school diploma or GED. Teen mothers should also consider college. Less than two percent of teen mothers attain a college degree by the age of 30 (The National Campaign, 2012b). The biggest struggle may be finding funding assistance. Financial aid should help reduce costs for teen mothers. Minnesota also provides teen mothers with a child care grant to assist with child care costs as they attend classes. Child care grants are awarded for the nine-month academic year, with a maximum grant of two-thousand six hundred per child (Resource Department: Minnesota House of Representatives, 2012). This grant is available to most Minnesota postsecondary institutions, with the exception of private, for-profit, postsecondary schools not offering baccalaureate degrees (Resource Department: Minnesota House of Representatives, 2012). They are available by applying for the grant through the institution's financial aid office. Other forms of assistance for child care will reduce the amount of the child care grant that the individual will receive.

Like all teens that plan on attending college, teen mothers should seek out additional scholarships or grants that they may qualify for. There are some scholarships that are specifically for students who are parenting. One scholarship that teen moms may qualify for is the Patsy Takemoto Mink Education Foundation award. This scholarship is available to women who are at least 17 years old with minor children and are of low income status (Patsy Takemoto Mink Foundation, 2013). Additional scholarships specific for teen moms may be found through using scholarship search engines such as ScholarshipExperts.com (2013).

PM4Teens Economics App Links

Within the smart phone application, links to the programs listed above are provided for the teen in “The Economics” section (see Figure 2). For WIC, the app links the teen to the Minnesota WIC program website. This website allows the teen to inquire about WIC programs. It also provides a WIC services locator tool that helps eligible expecting teens to find a WIC location near them. The health insurance link opens a new tab to link them to private and public health insurances options. The private insurance page will give a brief overview of how private insurance typically works. A link will connect the teen to both the Minnesota Medical Assistance website and the MinnesotaCare website. The app will also connect the teen with MFIP as well as additional resources available when one qualifies for MFIP.



Figure 2. MFIP links from the Economic Section of the App. This figure illustrates how to move through the app from Economic to “MFIP” tab and then to the “Who Qualifies” tab link. Adapted from “MFIP: The details” by World Institute on Disability, 2013, *Disability Benefits 101*.

Health Management Overview

The purpose of this section will be to provide the educator with an understanding of the information delivered to the teen through the PM4Teens app on how to manage the health complexities faced during pregnancy. The subsections that follow include managing the psychological health issues, the nutritional issues of mom, substance abuse and newborn feeding options. Following each section is an overview of the PM4Teens Health Management app links, and necessary supports, regarding the growth of herself and her baby during pregnancy. It will provide the teen with a reference and allow her to explore the changes in her nutrition along with her body as she develops during pregnancy. It is extremely important that she be aware not only of the nutritional needs during pregnancy, but of the complications that can develop as a result of poor nutrition or being a young mother. This also includes the impact of additional substances during pregnancy. This section will focus on the norms of pregnancy for the teen but also

provide fact and truth to the possibility of complications. It will also provide the teen with answers to some of the necessary and uncomfortable questions relating to the body and overall health during pregnancy. Additionally, it will discuss the impact of substance use on the growth and development of the fetus. Lastly, the discussion of newborn feeding options and the decision to be made by the teen to breast or bottle feed.

Psychological Health of Mother

The psychological health of the mother is extremely significant. Along with hormonal changes that occur during pregnancy other factors such as cultural, emotional, and socioeconomic challenges can impact the ability of the teen to cope with the demands of motherhood (Sieving & Stevens, 2012). These challenges are greater for teens as they also face developmental issues. Emotional distress is significantly related to teen pregnancy. For instance, adolescent mothers are more likely to report signs of depression than mothers between 25-34 year of age (Wang, Wu, Anderson, & Florence, 2011).

Generally, developmental tasks of adolescents are divided up between three categories: 1) Early adolescence includes 11 to 14 years of age; 2) Middle adolescence includes the ages 15 to 17; and 3) Late adolescence ages 18 to 20. Early adolescents are more likely to experience stress in relation to changes of body image, identity issues, relationships with peers, and conflict with male partners. The challenges differ depending on the adolescent's stage. Early adolescents tend to struggle with finding their independence during parenting and pregnancy while still needing extensive family support whereas late adolescents tend to have an increased understanding of who they are and have greater economic independence. Therefore the late adolescent rely less on their parents for support (Sieving & Stevens, 2012). There are similarities between each category as well. Adolescents of all ages need support from parents and family members during

pregnancy and parenting. Many new parents, especially teens tend to seek out support during pregnancy and child rearing. Supports need to be available when they need a favor or someone to talk to, when they are tempted by bad choices, and to make them feel good about themselves and their situation (American Adoptions, 2012). If stressors are not managed, they can lead to greater problems. One of the most significant complications that could be associated with poor stress management in teen pregnancy is postpartum depression. Although postpartum depression is a risk with any pregnancy regardless of stress, depression becomes an even greater risk for adolescents as they struggle with the demands of pregnancy and parenting while still trying to accomplish the developmental tasks of adolescence mentioned previously (Sieving & Stevens, 2012). Overall, psychosocial health needs to be addressed and managed so that teens may complete the development tasks at their stage while also managing the new stressors that come with motherhood.

Identifying the support system.

For all populations, it's crucial to assess the teen parent family in regards to support systems. This not only includes the teen parents themselves but also members of their extended families (Herrman, 2010). Some populations find adolescent pregnancy more socially acceptable. These families and friends tend to be more supportive of adolescent parents (London, 2007). Many times they may already have friends who are teen parents. Relationships between the teen parents and their respective parents may provide vital information regarding their supports. Outside supports may include friends, educators, health workers, or distant relatives. The quality of supports can impact the individual's ability to meet needs during times of stress. Extended family members may assist the expecting teen by assuming roles such as child caregiver, household management, economic support, discipline, and nurturing (Herrman, 2010).

The father may also be included in the support system. In many cases, how the girl feels regarding pregnancy will depend on how much support she has from the baby's father (The Nemours Foundation, 2012a). A father that is not involved will put greater stress on the individual and can impact the future of the infant. Male partners of adolescent mothers where teen pregnancy is more socially acceptable often find pregnancy and the birth of the baby a sign of adulthood and increased sexual skill (London, 2007). These fathers may provide more support to the expecting teen during pregnancy.

Support from parents.

The biggest support system for teens is typically their parents. At first, teens admit to finding it difficult to communicate with their parents when attempting to tell them they are pregnant. Many times teens feel like they have let their parents down. They know telling them will make them sad or disappointed while they should be happy about bringing a new life into the world (Lloyd, 2004). The mother of the expecting teen is usually the first to be told (London, 2007). Many parents react with anger at their daughter with this news (Bartell, 2005). At first, the anger results from betrayal rather than the actuality of pregnancy. For these parents it's the loss of their daughter's childhood that creates a fear of aging that many parents are unable to admit. Continued family strain can place emotional conflict upon the pregnant teen as she thinks of ending pregnancy, adopting, or keeping the child. For many, that decision may not be made until family resolution is reached. Many times parents struggle with the feeling of anger and betrayal while also wanting to take care and nurture their child as she goes through pregnancy (Bartell, 2005). The role of the family in the support system is vital to the pregnancy outcome. In a positive-mother daughter relationship, a mother may assist the adolescent in seeking prenatal

care and attending appointments with her. In fact, many expecting teens find that pregnancy improved their relationship and communications with their parents (Lloyd, 2004).

Support from Public Health.

The biggest support within a community available to the teen will be from public health nurses. Local health departments find teenage pregnancy and parenting a major issue of concern. These departments often play an integral role in connecting teen parents to medical and social services that they need (NACCHO, 2009). Public health nurses often connect and work with teen mothers as their pregnancy progresses. Many public health nurses provide prenatal and postnatal assessments during pregnancy. Adolescent mothers are encouraged to speak with public health nurses during pregnancy. Many times WIC sites will require that you be seeing the county public health nurse during your pregnancy. Public health nurses are able to provide assistance during pregnancy in finding resources and providing educational materials during pregnancy. They can provide education regarding pregnancy, labor, and breastfeeding as well as how to place a car seat safely. Nurses may also be able to assist the teen in regards to financial concerns and provide them with additional community resources.

PM4Teens health management/support system app links.

The app (see Figure 3) will help the teen to identify who their support system includes. Educators may need to have additional discussions around this topic as it is complex and not easily addressed through a smart phone application. It will, however, assist teens in becoming aware of the importance of the support system in pregnancy through resources. It will provide the expecting teen with articles such as “How to tell your parents you’re Pregnant.” Identifying supports will assist the teen in figuring out how to manage the stressors of pregnancy. Resources

will also provide them connection with county public health offices and community resources that may be able to provide them with additional support outside their family and friends.

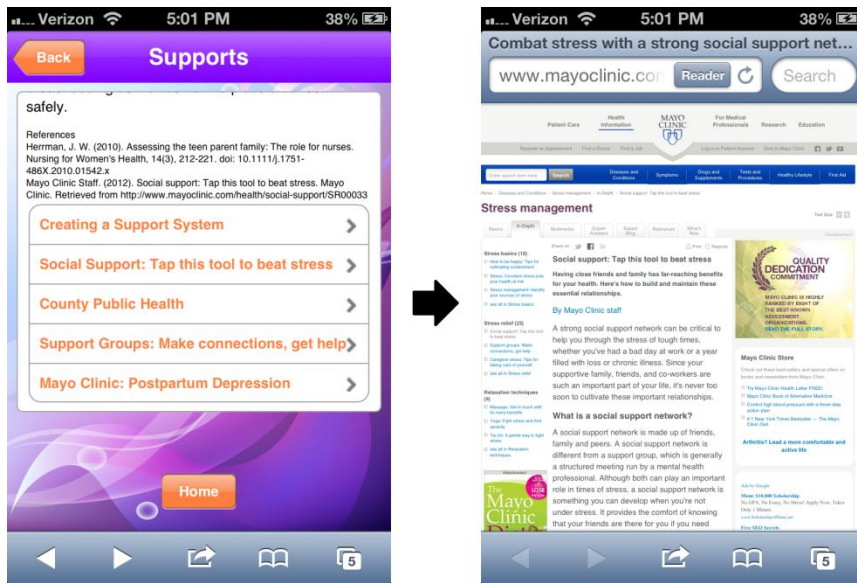


Figure 3. Supports to Social Support: Tap this tool to Beat Stress link. This figure illustrates how to move through the app from Supports to the Social Support: Tap this tool to Beat Stress link. Adapted from “Social support: Tap this tool to beat stress” by Mayo Clinic Staff, 2012b.

Nutrition During Pregnancy

The purpose of this section is to give the educator insight on providing the teen with information regarding nutritional needs. A well balanced diet can be extremely crucial for a pregnant woman. It’s important to cover the nutrition related complications of teen pregnancy. These include iron deficiency anemia, diabetes mellitus, hypertensive disorders, pica, and eating disorders (Story & Hermanson, 2012). Making teens aware of the complications of pregnancy helps teens understand why the need for nutrition during pregnancy is so important for both their development and that of their fetus.

The importance of dietary support during pregnancy is important, but can be challenging. Growth and development of the adolescent is greatly impacted during pregnancy. A pregnant teen tends to grow at a slower rate than a non-pregnant teen that is at the same stage of

development. Consequently, the growth of the fetus is also affected by the growing adolescent. Both are in need of nutrients and thus at times cause a competition for the limited supply of nutrients coming in. This can lead to hindered fetal growth resulting in babies with low birth weights. The nutritional needs related to gestational weight gain in pregnant teen are significantly increased. A pregnant teen should gain anywhere from 15-45 lbs. during her pregnancy depending on her pre-pregnancy body mass index (BMI). In non-growing adolescents or teens weight gain tends to have a greater impact on fetal growth for healthy birth weights (Story & Hermanson, 2012). It is crucial to educate pregnant teens on the importance of weight gain and the risks of inadequate or excessive weight gain for fetal growth and development.

While all nutrients are important during pregnancy, some are more critical for both the growing teen and fetus. The most important nutrient for all pregnancies is Folate, especially for adolescents because teen pregnancies are typically unplanned (Story & Hermanson, 2012). Adolescent diets often lack folate. Folic acid, a synthetic version of folate found in food, is known to reduce the risk of spina bifida if taken from conception through the sixth week of pregnancy. Folic acid also has the potential to reduce other neural tube defects that impact the ability of the baby's brain or spine to fully form during later pregnancy (WebMD, 2010).

In addition, adolescent girls require increases in lean body mass and red blood cells. The start of menses also requires higher quantities of iron. For a pregnant adolescent, iron needs increase as expansion of maternal plasma volume increases and is necessary to support the growth of the fetus and placenta (Story & Hermanson, 2012). If iron needs are not met in the teen's diet it can lead in iron deficiency anemia. Anemia lowers the levels of healthy red blood cells that are needed to carry oxygen to the tissues in the body. During pregnancy, the body produces more blood to adequately supply the teen and the growing fetus. Low iron, or anemia,

can prevent the body from making adequate red blood cells which can lead to feeling extra tired and weak during pregnancy. If left untreated, iron-deficiency anemia can result in preterm or low-birth weight babies, need of a blood transfusion during delivery, and increases the risk of postpartum depression (WebMD, 2012).

Calcium is also an important nutrient during adolescence. Calcium is essential for skeletal mineralization and bone density; therefore, increased calcium needs are essential to support both that of the adolescent and the fetus (Otten, Hellwig, & Meyers, 2006). The actual calcium dietary recommended intakes are not increased during pregnancy. This is because during pregnancy the calcium-regulating hormones increase calcium absorption efficiency (Story & Hermanson, 2012). If calcium needs are not met during pregnancy, the body will draw calcium from the mother's bones increasing her risk for osteoporosis (The Cleveland Clinic Foundation, 2009). Inadequate calcium can also contribute to the risk for preeclampsia during pregnancy (Kumar, Devi, Batra, Singh, & Shukla, 2009).

WIC.

As mentioned previously within the economics section, WIC is a federally funded program that provides expecting teens with education regarding the nutritional demands of pregnancy. The purpose of WIC is to provide nutritional assessments and one-on-one counseling about food, nutrition, and breastfeeding to women who have children. WIC provides vouchers to income eligible mothers to buy healthy foods, including fresh foods, a new addition since 2009. Women who are pregnant are automatically included under the pretense that they are pregnant and have increased nutritional needs, this includes pregnant teens. WIC is also a great resource for pregnant mothers as it provides healthy eating tips for mothers and babies during pregnancy,

after delivery, during infant and children growth, and information for breastfeeding women (Minnesota Department of Health, 2012).

During a health visit at a WIC location, the teen may be required to provide ID and proof of income. A health assessment will be performed including labs to check the teen's hemoglobin levels. She will then be asked a variety of questions and receive WIC vouchers to use that day along with a WIC ID folder and a WIC shopping guide. There will be multiple vouchers with a listing of what items that voucher will allow the teen to buy. If the teen plans to use a voucher it is recommended that she buy all the items on that list, as she will not be able to buy them at a later time. Once the voucher has been used it cannot be used again. Fruit and vegetable vouchers usually have a set dollar amount; anything over that dollar amount the teen will pay themselves. The WIC staff will provide the teen with a variety of information regarding pregnancy and will give the teen a calendar of when WIC vouchers are to be picked up. The WIC folders will have the teens name on it as well as two additional names that allows those identified by the teen to be able to use the vouchers on their behalf.

PM4Teens health management/nutrition/WIC app links.

The smart phone application will include the nutrition tab on the home screen as well as under the health management tab due to its importance during pregnancy. The subsections incorporated under the nutrition tab will include let's talk weight gain, a healthy diet, overview of nutrients, complications of poor diet, breastfeeding diet and WIC (see Figure 4). The app will help the teen understand the dietary needs as well as proper weight gain needed during pregnancy. A section will be dedicated to creating a healthy diet and linking with sample meal plans that are appropriate for the needs of pregnancy. The app will provide a general overview of the nutrients needed during pregnancy and include a recommended dietary intake table that is

pregnancy specific. A section will also discuss the complications of poor diet during pregnancy that is specific to the teen population. Also included will be a short discussion of a diet for breastfeeding, as the nutrient needs stay increased after delivery. Again additional resources will be linked in under each topic of discussion.

In addition, a link will be made under the nutrition tab to WIC. The WIC section will include links to the WIC brochure, WIC foods, additional nutrition information provided through WIC, breastfeeding, and eligibility and income guidelines for connection under the economic section. In using the WIC section under nutrition, educators can assist the teen in understanding the benefits of WIC, especially in regards to achieving a healthy diet during pregnancy.

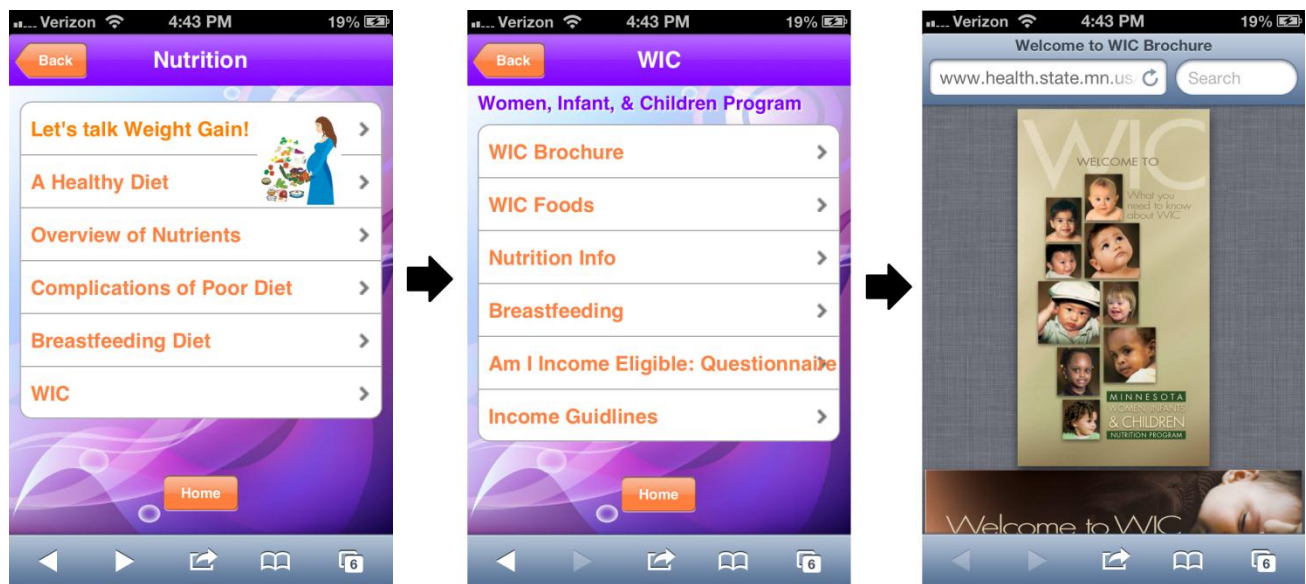


Figure 4. Nutrition to WIC to the WIC Brochure Tab. This figure illustrates how to move through the app from Nutrition to WIC to the WIC Brochure. Adapted from “Women, infants and children (WIC) Program” by Minnesota Department of Health, 2012, *Minnesota Department of Health*.

Newborn Feeding Styles

Breastfeeding.

One of the most important decisions the teen will make following pregnancy will be how to feed her baby. Breastfeeding can provide many great health, psychological, and economical

benefits for the infant and the mother. Today, just over half of teen mothers within the United States breastfeed their children (Tucker, Wilson, & Samandari, 2011). The most common factors or barriers that contribute to lower breastfeeding rates include teens returning to school, discomfort with the act of breastfeeding, embarrassment of breastfeeding in public, lack of confidence in ability, and reluctance to ask for help (Tucker, Wilson, & Samandari, 2011). Still, there are many benefits to breastfeeding that should be considered when deciding what an infant should be fed. The most important health benefits that breastfeeding provides to infants is the immune support (Gartner, Morton, Lawrence, Naylor, O'Hare, Schanler, & Eidelman, 2005). Infants are born with underdeveloped immune systems that continue to develop as they grow. Breast milk provides antibodies that infant's immune systems are too premature to make (Kaiser Permanente, 2011). Mothers who breastfeed also receive benefits including decreasing postpartum bleeding, helping mothers return to pre-pregnancy weight and decreasing a mothers risk for breast cancer, ovarian cancer, and osteoporosis (Gartner et al., 2005). The biggest benefit of breastfeeding for many families is that it is essentially free.

However, like any other option available there are barriers. Breastfeeding can become difficult for individuals who have lack of access to space for pumping at school or work, lack of support from family, and lack of confidence. These factors can impact the ability to adequately produce a big enough supply of breast milk (Holt, 2012). The best way to break down the barriers of breastfeeding is to educate individuals on alternate ways to provide the infant with some amount of breast milk. For some, that may mean only breastfeeding for the first few weeks of the infant's life while they are able. While for others, it may mean only feeding the infant at certain times during the day. Even the smallest amount of breast milk is beneficial to the infant (Gartner et al., 2005).

In addition to the benefits associated with breastfeeding, teens that choose to breastfeed have higher nutritional needs. As breast milk is made within the body, a healthy diet is needed to promote enough milk production and to ensure that the baby will grow and develop (Kaiser Permanente, 2008). A diet should include three to four cups of nonfat or low-fat milk every day, seven ounces of grains, two cups of fruit, six and a half ounces of protein, and plenty of fluids (Kaiser Permanente, 2008). Much like pregnancy, the importance of nutrients is vital to the growth and development of the infant.

Formula feeding.

Formula is a commercially prepared nutritious alternative to breast milk and most commonly contains some additional vitamins and nutrients, although it lacks the antibodies and many other components of human milk (DiSanto & DiSanto, 2012; American Academy of Pediatrics, 2012). Generally, infant formula is available in three forms including ready-to-feed, concentrated liquid, and powder. Although breastfeeding is considered the best nutritional option for infants by the American Academy of Pediatrics, the American Medical Association, the American Dietetic Association, and the World Health Organization, it may not be the best option for every mother (DiSanto & DiSanto, 2012).

Formula feeding is the most common method of feeding for adolescent mothers. There are three general indications for use of infant formula. One is to substitute or supplement breast milk for infants of mothers choosing not to breastfeed. Second, formula can provide a substitute for mothers where breastfeeding is contraindicated; and lastly, formula can be used to provide a supplement for infants who are not gaining adequate weight through breastfeeding alone (Holt, 2012). Benefits of formula feeding include convenience, flexibility, less time and frequency of feedings, and less concern of mothers diet (DiSanto & DiSanto, 2012). Formula feedings allow

additional individuals beside the mother to feed the infant, which allows the mother to share feeding duties. This also helps make the partner of the mother feel more involved in the feeding process. Flexibility of formula feeding allows the mother to leave the infant with other individuals and not have to schedule around infant feedings and pumping (DiSanto & DiSanto, 2012). Another benefit of formula feeding is that the bottle can show how much the infant has received (Hill, 2012). The biggest barrier to formula feeding, especially for adolescent mothers, is cost. According to BabyCenter.com, formula can cost 60 to 100 dollars per month (2011).

One particular concern of the educator is assuring that the teen understands the importance of preparing formula according to the manufacturer's directions in order to provide the infant with all essential nutrients. Proper infant formula preparation teaching is crucial to ensure proper nutrition and to avoid food-related illnesses.

PM4Teens health management/nutrition/infant nutrition app links.

The app (see Figure 5) will provide a brief overview of breastfeeding and formula feeding including links for the teen to access resources such as the Mayo Clinic. Mayo clinic (2013) provides seven steps to prepare safe infant formula including checking the expiration date and condition of the container, washing hands, preparing the bottle, adding water to formula, measuring the formula, warming formula if necessary, and safely storing formula.

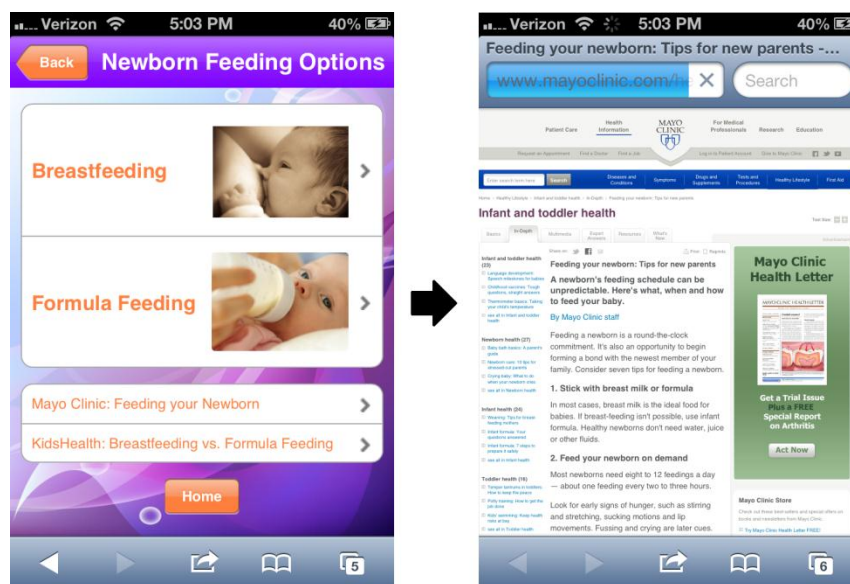


Figure 5. Newborn Feeding Options to Mayo Clinic Feeding Your Newborn Link. This figure illustrates how to move through the app from the newborn feeding options tab to the Mayo Clinic: Feeding Your Newborn link.

Adapted from “Feeding your newborn: Tips for new parents” by Mayo Clinic Staff, 2012a.

Substance Use While Pregnant

During pregnancy, the growth and development of the fetus is impacted by the health status of the mother. Adolescents are much more likely to participate in risk-taking behaviors such as substance abuse. Pregnancy and substance abuse may occur simultaneously, especially prior to discovering one is pregnant (Alton, 2012). Tobacco is the most common substance used during pregnancy (Cornelius, Goldschmidt, DeGenna, & Day, 2007). Substance use during pregnancy significantly increases the risk for perinatal mortality and increases the risk of compromised nutritional status and inadequate weight gain. Substance use during pregnancy can also impact fetal growth and development at all stages of gestation, varying in severity based on the type, amount and frequency of use. These complications can continue to affect the growth and development of the fetus into childhood (Alton, 2012). Risks associated with substance use in pregnancy are listed in Table 3 below.

Table 3.

Potential Risks Associated With Substance Use in Pregnancy

Substance	Perinatal	Infancy/Childhood
Alcohol	Placental abruption Spontaneous abortion Stillbirth Prematurity Fetal growth restriction Congenital malformation	Failure to thrive Neurobehavioral abnormalities Developmental Delay Cognitive deficits Reduced brain Volume
Caffeine	Spontaneous abortion Lowered infant birthweight	
Cocaine	Placental abruption Spontaneous abortion Stillbirth Prematurity Precipitous delivery Fetal growth restriction Congenital anomalies Fetal/newborn withdrawal distress Cerebral infarctions	Neurological and neurobehavioral abnormalities Sudden infant death syndrome Seizures Tremulousness Irritability Feeding difficulties
Heroin	Pregnancy-induced hypertension Constipation Placental abruption Spontaneous abortion Stillbirth Fetal growth restriction Preterm birth Neonatal death Intracranial hemorrhage	Sudden infant death syndrome Seizures Irritability Poor consolability Feeding difficulties Vomiting Diarrhea Sweating
Methamphetamine	Fetal growth restriction Placental abruption Preterm birth Congenital anomalies	Abnormal brain development Learning deficits
Inhalants	Congenital anomalies Central nervous system abnormalities	Developmental delayed Growth impairment
Marijuana	Placental abruption	Neurobehavioral changes

	Prematurity Intrauterine growth retardation Abnormal labor	
Tobacco	Prematurity Placenta previa Premature rupture of membranes Placental abruption Spontaneous abortion Stillbirth Intrauterine growth retardation Congenital malformations	Sudden infant death syndrome Growth deficits Impaired intellectual development Respiratory illness Attention deficit disorder Asthma

Note. Adapted from “Substance use in pregnancy” by Afton, 2012, Minneapolis, MN, p. 3.

Tobacco.

Tobacco use during pregnancy or prenatal tobacco exposure (PTE) can lead to growth deficits at birth and behavioral problems in childhood (Cornelius et al., 2007) and yet is the largest modifiable risk factor for intrauterine growth retardation and prematurity (Alton, 2012). According to a study performed by Cornelius et al. (2007), the authors reported that those who smoked prior to becoming pregnant were not likely to quit smoking by their third trimester of pregnancy. Smoking during the third trimester shows the strongest link to poor infant growth; therefore birth weight retardation can be prevented by quitting smoking by the third trimester of pregnancy (Alton, 2012). Also associated with smoking and linked with low infant birth weight is increased risk for neonatal and congenital anomalies of cleft lip, cleft palate, and heart defects (Alton, 2012). Smoking not only impacts the growth and development of the infant in-utero, it increases the risk of stillbirth by 20-30%, infant mortality by 40%, and SIDs by 50% (Salihu & Wilson, 2007).

Alcohol.

Alcohol use during pregnancy has one of the greatest impacts on fetal growth and development. During pregnancy, alcohol has the ability to cross the placenta exposing the fetus

to the alcohol which was consumed (Bhuvanewar, Chang, Epstein, & Stern, 2007). The fetus is exposed for a longer time than the mother as a direct result of the fetus' delayed ability to metabolize the alcohol (Bhuvanewar et al., 2007). Alcohol becomes teratogenic as it is metabolized causing toxic effects to the fetus and placenta which can impair the placental function of glucose and amino acid transfer to fetus (Alton, 2012). Alcohol can lead to stillbirths, prematurity, placental abruption, and prenatal or postnatal growth retardation (Alton, 2012). The most serious result of alcohol consumption during pregnancy is fetal alcohol syndrome (FAS). Alcohol use during any part of pregnancy is a risk for FAS (Bhuvanewar et al., 2007). The manifestations of FAS are directly linked to the fetus' timing of exposure to alcohol as well as the quantity of alcohol consumed (Bhuvanewar et al., 2007). FAS results in neurological and behavioral abnormalities that affect the child for life. Infants born with FAS may experience slow growth and development, unusual facial features, brain and neurological disorders, irritability, and mental retardation (American Academy of Child and Adolescent Psychiatry, 2011). As the child develops they may experience problems with learning, become easily frustrated, have inadequate social boundaries, and have difficulty with reading (AACAP, 2011).

Controlled substances.

Controlled substance use in pregnancy can include any number of drugs. The two most commonly used will be discussed here as their ability to cross the placenta is similar to alcohol and may be more commonly encountered by the educator. These include cocaine and marijuana. Cocaine and marijuana use during pregnancy impact fetal growth and development. Similar to alcohol, cocaine readily crosses the placenta and impacts the fetus as a result of delayed fetus metabolism (Alton, 2012). The impact that cocaine has on the human body includes direct vasoconstriction of vessels including uterine vessels which increases the risk for preterm labor,

premature birth, impaired motor skills, feeding difficulties, rigid posture and poor consolability when used during pregnancy (Alton, 2012).

While marijuana can often be considered a less influential drug, the fact that it is often used during pregnancy in combination with tobacco and alcohol can make for a risky combination (Alton, 2012). Marijuana, as a lipid soluble drug, accumulates in the fatty tissues especially in the brain. It can result in high carbon monoxide levels and constricted uterine blood flow decreasing the amount oxygen and nutrients supplied to the fetus (Alton, 2012). This in effect increases the risk for premature labor, placental abruption, meconium stained fluid, intrauterine growth retardation, and neonatal neurobehavioral effects such as tremors, hyperflexia, and sleep disturbances (Alton, 2012). Used in combination with alcohol or tobacco, the risks increase significantly.

With education and support, expecting teens can be made aware of the complications associated with substance use and make healthy choices for themselves and their fetus. Education and support can provide motivation for the teens to choose to decrease or stop substance use as a direct result of concern for their growing fetus.

PM4Teens health management/substance abuse app links.

The app (see Figure 6) will assist teens in understanding the complications associated with substance use during pregnancy. Links will be provided to medical sources such as MedlinePlus that discuss the impacts of substance use on pregnancy in greater detail. The app encourages that teens seek help from a health care provider if the teen is currently using.

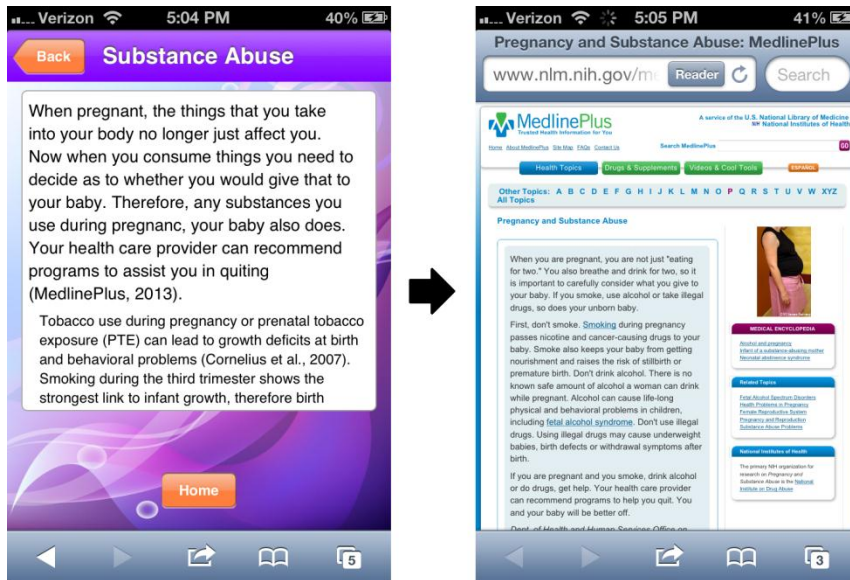


Figure 6. Substance Abuse to Pregnancy and Substance Abuse Link. This figure illustrates how to move through the app from the substance abuse to link of Pregnancy and Substance Abuse. Adapted from “Pregnancy and substance abuse” by MedlinePlus, 2013.

Resources Overview

The purpose of this section is to connect teens with additional resources and discussion topics that they may face during pregnancy. The subsections include preventing subsequent pregnancies and adoption. Following these sections is an overview of the PM4Teens Resources app links which provide a wide array of additional resources that may benefit the teen during pregnancy and in thinking ahead to after the birth.

Preventing Subsequent Pregnancies After Baby

Having one child as a teen can be extremely hard, however having a second child soon after can create even more issues for a teen mother. In 2002, teen mothers under the age of 20 gave birth to approximately 432,808 babies. That year, approximately 21 percent of those births were second or subsequent births. Of teen mothers who have a second birth, nearly one-quarter of these births occur before her twentieth birthday (Klerman, 2004). More recent data from

National Vital Statistics Reports (2012) reported that there were approximately 333,770 births to teens mothers age 19 and under. Of that, only 82 percent were first births (Hamilton, Martin, & Ventura, 2012). The reason for additional births to teen mothers is not clear as many teens struggle caring for the infant they already have. However, data states that teen mothers are more likely to have additional teen births if they are younger at first birth, have lower cognitive abilities, classify their first birth as intended, and are living with their husband or partner. Teen mothers who have subsequent births face adverse consequences in regards to education and economic self-sufficiency. For instance, additional births create barriers for the teen mother to attend school or work jobs (Klerman, 2004). In addition, many teens who become pregnant a second time are less likely than during their first pregnancy to seek prenatal care (Herrman, 2010). Subsequent pregnancies also impact the children involved. Children of teen mothers who had additional children as teens were less prepared for school, less behaved, and less likely to be outgoing or happy (Klerman, 2004).

Encouragement must be made to teen mothers after first child is born to protect against additional pregnancies. Strong relationships between the teenage mother and the individual she is working with are capable of providing the best encouragement for prevention of additional pregnancies (Klerman, 2004). This connection may be made through public health nurses, through social workers, or through healthcare practitioners who care for these teen mothers. Pregnancy prevention options should be provided to the teen prior to delivery so that the immediate use of the method can begin in the post-partum period. Contraception methods should be discussed to provide options that are safe for breastfeeding for those choosing to breastfeed and overall are best for the individual.

Adoption

Adoption as an alternative to parenting once pregnant is a difficult decision. If adoption is chosen, the choice needs to be made solely by the teen, however, the role of the educator is to provide the teen with information so that they know that there is a choice to parent or adopt. Typically, adoption will be of no cost for the teen as all pregnancy-related expenses are paid (American Adoptions, 2012). This can include medical care, rent, utilities, maternity clothing, food, prenatal vitamins, and any other medical expenses not covered by your insurance. For many, choosing adoptions means that the teen can pursue goals earlier, live independently, not have to parent prematurely, avoid early marriage, and they can resume a youthful lifestyle. A common myth is that putting a child up for adoption means that the mother never really cared. The truth is that the mother or teen cared enough to make a choice that put her child's best interest above her own (American Adoptions, 2012). She provided the child with a life that was best for the child. An even greater truth is that having your child and providing it with unconditional love is not always the best solution.

Today, more options of adoption are available. In the past, options were typically closed adoptions where the birth mother was never given an opportunity to see the child. A closed adoption is one in which the adoptive family and the birth parents remain confidential. There is no contact between either party before or after the delivery of the child. An open adoption is one in which the adoptive parents and the birth parents meet and speak prior to and after the birth of the child. Some may be very open where the adoptive family and birth parents maintain contact and periodically visit as the child grows. Others are less open and include keeping the birth family involved via mail pictures and letters. Another option would be semi-open adoptions where the birth parents and the adoptive family do not meet but they know the basic information of one another. The adoptive parents may provide the birth parents with information as the child

grows (American Adoptions, 2012). If the choice of adoption is made, all avenues should be explored and the teen should contact an adoption agency where an adoption professional can assist the teen in deciding which type is best for her.

PM4Teens Resources App Links

Expecting teens can locate resources by speaking with their doctor or by navigating the internet. Resources are the best way to get all the information teens need. Many are specific to topic therefore a wide array of resources are often needed. A few of the most common and helpful links are described below and included within the resources app. The app will provide a wide array of additional resources for the teen (see Figure 7). In regards to preventing subsequent pregnancies the app will provide information about natural family planning and contraceptive options.

Adoption will also be discussed under resources as an option. It will link the teen with a discussion regarding being pregnant and considering adoptions. The app will outline the options but encourage them to seek assistance if thinking about adoption by connecting them with resources regarding adoption. The app will also link the teens to a discussion on how to tell their parents they are pregnant and include resources for fathers who wish to become involved.

Some resources can assist teens in finding daycare. *Provider's Choice* allows you to search for providers by name and city or zip code. These individuals are Minnesota providers that participate in the Child and Adult Care Food Program with Provider's Choice, Inc. (Providers Choice, Inc., 2013). Additionally, *Think Small* (2013) is an electronic resource that assists parents and guardians in searching for child care in the metro area counties. They also provide tools and tips for finding child care as well as ways for paying for it.

Additional resources such as Teenwise Minnesota provide the teen with a statewide resource that promotes adolescent sexual health, prevention of adolescent pregnancy, and gaining support for adolescent parents (Teenwise Minnesota, 2013). Teenwise provides a listing of adolescent parenting programs within Minnesota. It also provides additional resources for both teen parents and educators.

Lastly, the resource section will provide links to a pregnancy tracker application as well as other pregnancy related apps. These apps are for pregnancy in general and do not provide specific material for the pregnant teen population. Such applications include iPregnancy and I'm expecting. Some apps also provide information relating to caring for newborns and infants including BabyCenter.

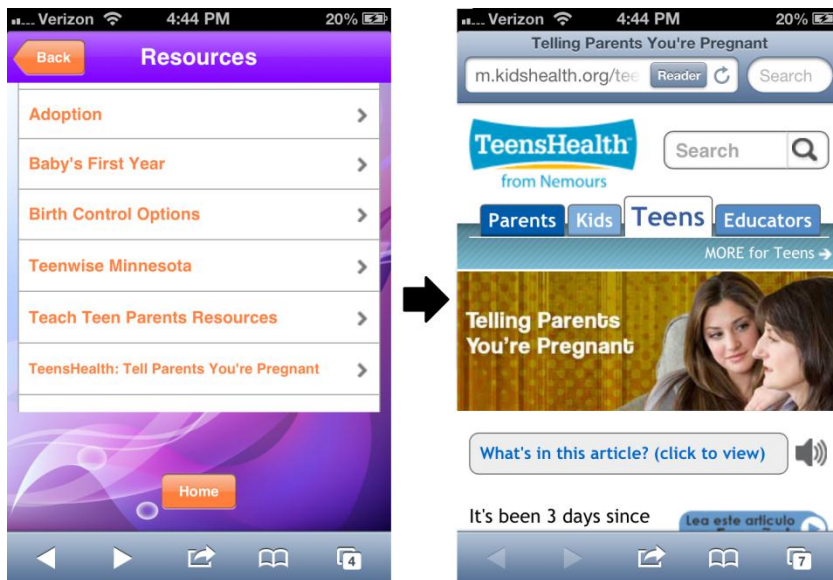


Figure 7. Resources to Telling Parents You're Pregnant. This figure illustrates how to move through the app from the resources tab to the Telling Parents You're Pregnant link. Adapted from "Telling parents you're pregnant" by The Nemours Foundation, 2012, *TeensHealth*.

Conclusion

Teens who become pregnant and decide to carry the baby have an obligation to get the care they and their baby need (The Nemours Foundation, 2012). The app included in this honors

project provides a multitude of resources to assist the teen in doing so. Areas discussed within this paper are directed toward the educator. The purpose of this text is not to encourage teen pregnancy, but to assist the educator in providing accurate, age appropriate education to the teens who do become pregnant. Not discussed within this companion is information regarding babies first year. Additional information on this topic can be found in alternative resources, some of which have been provided in the “other resources” section for the teen.

The issues that teen mothers face are not ones that can be solved just by reducing the number of teens that become pregnant. There will still be teens that end up becoming pregnant. Therefore, we must provide those teens that do become pregnant with appropriate education, support, and encouragement. By doing so we help the pregnant teen overcome and learn from the challenges that come with pregnancy so that positive pregnancy and birth outcomes are achieved.

As a companion to the smart phone application, this paper has provided the background related to teen pregnancy for the educator so that they may assist the expecting teen in using the PM4Teens: The Center for the Expecting Teen smart phone app. Together, this educator’s companion and the smart phone app has the potential to narrow the access gap for teen education on pregnancy.

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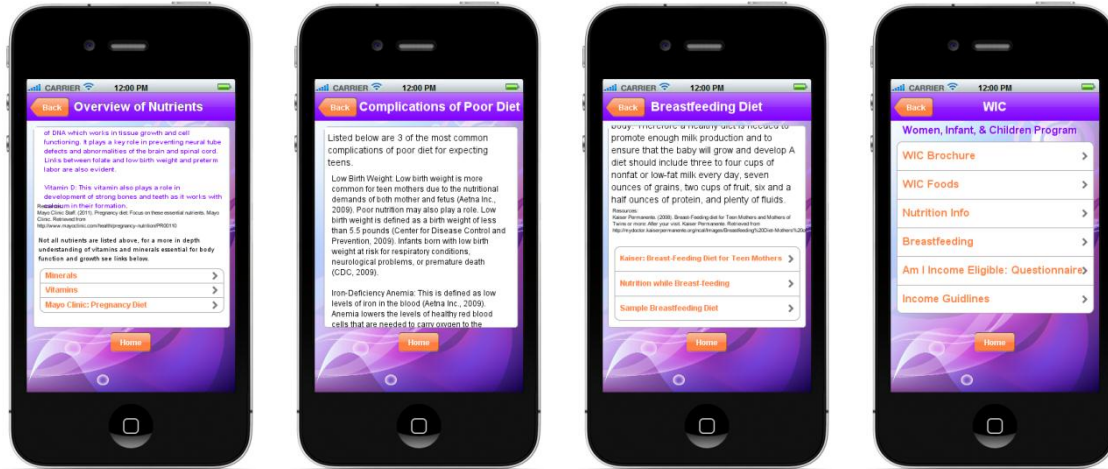
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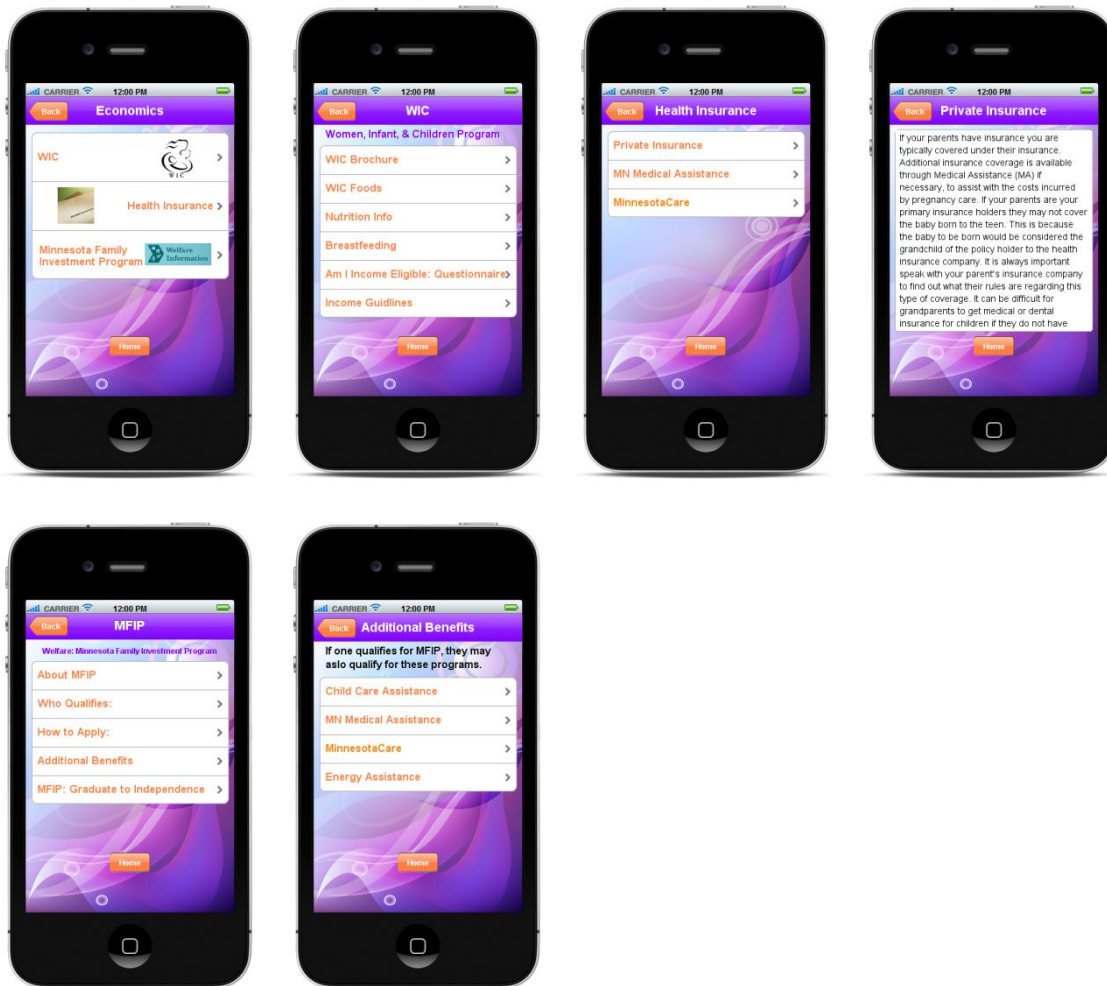


Health Management Screens:

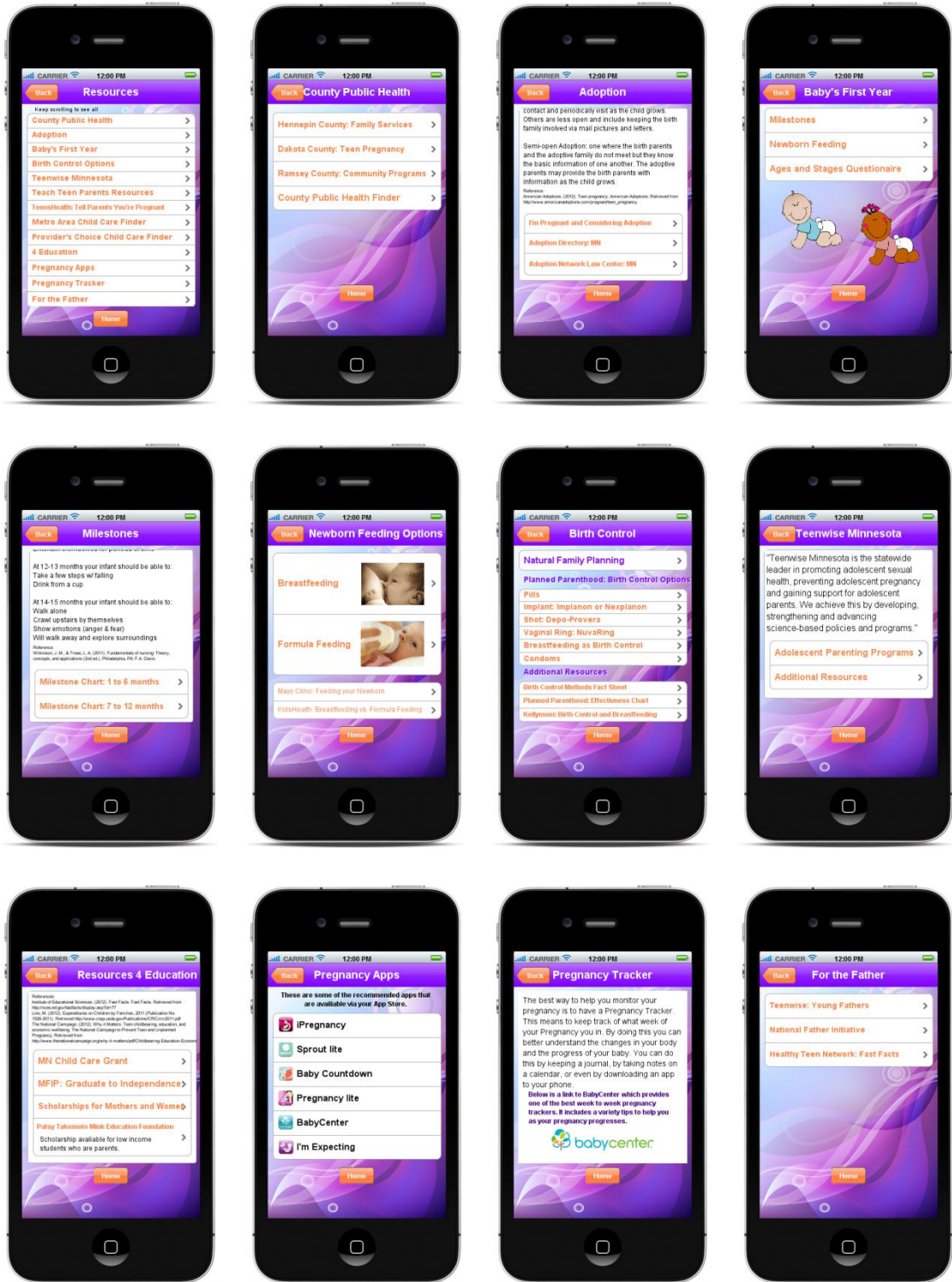




Economics Screens:



Resources Screens:



Notes Screen:



Appendix B

This project was inspired by personal experience. When I was 18, I found out I was pregnant. I was just out of high school and literally just starting to think about college. Of course I had all things planned out and having a baby would change everything. It was a struggle at first; my boyfriend and I were not ready or in a position to raise a baby. We worked together, struggled through, and have ultimately have become a stronger unit as we have watched our son grow. Now three years have passed and my son is growing but I still remember the struggles of becoming a pregnant teen. So as I thought about a project that I would want to spend a year working on, I decided I wanted a project that I felt passionate about, maternal health. I also wanted to bring some of my own experience into it; I know from personal experience the struggles of being young and pregnant.

At first, the project was to be an educational handbook with the purpose of provide educators with a basis of knowledge on the trends of Teen Pregnancy over time relating to Demographics, Culture, Economics, and Society that would provide a basis for the chapters in the educational materials that they would be providing to those pregnant teens. My question was to find out what happens to teens that end up getting pregnant. With this knowledge I would create a booklet that would be used to educate the teen on pregnancy related topics. In meeting with my committee, I was so excited with the project I had planned. My committee members assisted me and provided great feedback. In just one meeting, the direction of the entire project changed. One of my members asked, “What if you created an app?” My first reaction was is she crazy; I didn’t know how to make an app.

I spent days thinking this over. I did some digging as to how this could be done. The more I thought about it the better it sound, I mean it would be a great idea for the target

population; I mean teens use smart phone technology all the time, an application would be perfect. From here on my plans changed. Now my project was creating a smart phone application geared toward educating expecting teens and then an educator's companion that would address the topics provided within the app.

The first thing was figuring out how to make an app. I found a program that looked easy enough and went with it. I struggled with trying to figure the program out, dealing with how to add text, pictures, and essentially making it work like an app. I found just how much work it takes to create an app and what it means to make changes. Many times one small fix would require multiple changes on different app pages. Then there was also the need to test the app because the formatting often changed from my computer to how it displayed on my iPhone.

Then there was the paper component. I spent much of my time researching teen pregnancy history and demographics which was essential in creating this project but ended up not being necessary in the actual paper component. I found that sometimes you spend time doing certain things that may not apply but are relevant. They may seem important at the time and become unnecessary but that does not make the work you did wasted, it just means you have a wider understanding. You may ultimately find that you can use all that work in another area, and that is what I did. I eliminated the history portion from the paper but I used it in my public presentation.

Additionally, in creating this project I found that I have a great passion for maternal health, which I already knew, but I found that I like dealing with public health topics, especially when they relate to maternal health. I loved reading through all the maternal health education and finding the topics that were especially important to teens. Then taking that information and creating topics tabs within the application. It was a great way to bring in my nursing education as

I researched the health topics and organized those that were particularly more important for my target population.

Now that the project is complete, I am honestly happy to say that I am glad I took a leap and created an app. I am incredibly satisfied with the project and with how it has turned out. I am forever grateful to my advisor and committee for all their assistance throughout the project. They gave me such hope and inspiration to make a great project and to be satisfied with how it has turned out. In moving forward I plan to further explore my new found interest in public health and continue with involving myself in maternal health learning. I look forward to working with this app and seeing the benefits it can bring. I plan to explore my options with the actual app and find a way to use the app for its original intended purpose of educating expecting teens. I am confident that the smart phone application being used and look forward to the many changes and improvements that will be made to the app in the future.