Effective Interventions to Decrease Repeat Adolescent Pregnancy and Possible Risk Factors

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1. Introduction/Background

Although rates of teen pregnancy have been on the global decline over the past decade, the United States continues to have one of the highest rates of adolescent childbearing when compared to other industrialized nations (Ventura, Hamilton, & Matthews, 2014). In the United States, the rate of teen births among women ages 15-19 years old has declined slightly from over 365,000 in 2010 to 249,078 in 2014 (Hamilton, Martin, Osterman, Curtin, & Matthews, 2015; "Vital signs: Repeat births among teens - United States, 2007-2010," 2013). With this continued prevalence of teen pregnancy, the risk of having an additional child during adolescence remains a serious concern. Repeat adolescent pregnancy is defined as the second, or greater, pregnancy resulting in a live birth before the age of 20, and accounts for one of every five births to teen mothers (Center for Disease Control and Prevention, 2013).

Adolescent pregnancy is associated with several negative outcomes that can affect the health of both the mother and the child through physical, emotional, financial, and social strains. Unfortunately, these negative health implications increase substantially with each additional birth by the teen mother (Schaffer, Jost, Pederson, & Lair, 2008). Infants born to teens who have already been pregnant are at increased risk of low birth weight and preterm delivery, especially when subsequent births are spaced closely together (Ventura et al., 2014). In 2010, of the infants who were second teen births, 17% were born preterm and 11% were low birth weight ("Vital signs: Repeat births among teens - United States, 2007-2010," 2013). When compared to first-births, mothers experiencing repeat adolescent birth are less likely to receive prenatal care for their second or higher order child, putting both themselves and their child at risk (Manlove, 2011).

In addition to the negative health implications faced by the mother and child, repeat adolescent pregnancy is a public health concern. First, mothers who have subsequent births during adolescence are at higher risk for long-term financial challenges and dependence on welfare, which can result in cyclical poverty (Basch, 2011; Raneri & Wiemann, 2007). Teen childbearing costs also weigh heavily on the health care system in the United States. On average, each pregnancy costs the federal government roughly $5,000, and each year the cost of teen childbearing is about $11 billion (Han, Teal, Sheeder, & Tocce, 2014; "Vital signs: Repeat births among teens - United States, 2007-2010," 2013). Second, a lack of access to affordable contraceptives is a public health concern because it shows that contraceptives are not appropriately available to all indivdiuals (Hicks-Courant & Schwartz, 2016). Third, adolescent mothers are among the highest groups to drop out of school and not complete formal education. With each additional teen birth, many mothers achieve a lower level of educational attainment (Ventura et al., 2014). Repeat adoelscent pregnancy is not only an indivdiual health issue, but a public health issue.

The extensive health impact that repeat adolescent pregnancy has throughout all levels of society prompted this investigation into the risk factors that promote repeated births and the intervention models that assist in preventing them. Previous studies have focused on the benefits of contraceptive interventions and sexual education courses for adolescents as preventative measures for first-birth, unintended pregnancies. Unfortunately, there are few programs focused on preventing pregnancy for adolescents who have already had a child.

The purpose of this literature review is to address what factors impact the likelihood of having a repeat pregnancy during adolescence, and to understand which components of

previously successful interventions are primarily responsible for reducing rates of repeat adolescent pregnancies.

2. Methods

Search Strategy

An organized online search was conducted to find peer-reviewed studies that discussed the prevalence of repeat teen pregnancy among adolescent mothers and the success rates of pregnancy prevention programs that have already been implemented. The databases that were used to search for the articles in this paper were accessed through the UGA Library and included PubMed, PsycINFO, and Google Scholar. The following key search terms were used: teen pregnancy, student, high school, repeat adolescent pregnancy, RAP, contraceptive use, subsequent births, and their variants. A more detailed description of the search pattern for this review can be found in *Table 1.1*. Other articles used in this literature review were found under the "related articles" tab after reviewing studies that may or may not have been included in the review. Additionally, several articles included were found by checking the "references" section of alternative articles.

Table 1.1 – Search Results

Key Term Used	**Date Searched**	**Database**	**Filters**	**Number of Results**	**Articles Found**
Pregnant AND student	1.19.17	PubMed	-Sort by: relevance	1279	
Teen pregnancy AND student	1.19.17	PubMed	-Sort by: relevance	649	(Oman, et al., 2015)
Teen pregnancy AND dropout	1.19.17	PubMed	-Sort by: relevance	72	
"Teen pregnancy" AND dropout	1.19.17	PubMed	-Sort by: relevance -Published within the last 10 years	9	(Hicks-Courant & Schwartz, 2016)

Dropout AND school AND pregnancy	1.19.17	PubMed	-Sort by: relevance -Published within the last 10 years	58	(Hicks-Courant & Schwartz, 2016)
"Adolescent pregnancy" AND "family planning services"	1.23.17	PubMed	-Sort by: relevance -Published within the last 10 years	18	
"adolescent pregnancy" AND "antenatal care"	1.23.17	PubMed	-Sort by: relevance -Published within the last 10 years	14	
"teen pregnancy" AND "school support"	1.23.17	PubMed	-Sort by: relevance -Published within the last 10 years	1	
"teen pregnancy" AND school AND programs	1.23.17	PubMed	-Sort by: relevance -Published within the last 10 years	36	
Repeat pregnancy AND adolescent	1.23.17	PubMed	-Sort by: Most Recent -Published within the last 10 years	309	(Charles, et al., 2016) (Quinn, Mitchell, & Lewin, 2017) (Wilkie, Leung, Kumaraswami, Barlow, & Moore, 2016)
Pre-pregnancy Contraceptive Use Among Teens with Unintended Pregnancies Resulting in Live Births Pregnancy Risk Assessment Monitoring System	1.29.17	PubMed	-Sort by: Most Recent	1	
Dropout Prevention and Intervention Programs for Improving School Completion Among School-Aged Children and Youth: A Systematic Review	1.29.17	PsycINFO	-Sort by: Relevance -Publication Date: 2007-2017	1	
Live-birth order	2.15.17	PubMed	-Sort by: Most Recent	1179	
Repeat pregnancy AND adolescent	2.15.17	PubMed	-Sort by: Best Match	709	(Damle, et al., 2014) (Raneri & Wiemann, 2007)
Repeat AND adolescent AND pregnancy	2.23.17	PsycINFO	-Sort by: Relevance	197	(Raneri & Wiemann, 2007)
Repeat AND adolescent AND pregnancy	2.23.17		-Sort by: Relevance -Publication Date: 2007-2017	127	(Raneri & Wiemann, 2007)
Children AND discipline AND behavior	3.1.17	PsycINFO	-Sort by: Relevance -Publication Date: 2007-2017	3,133	

Teen pregnancy AND program AND theory	3.13.17	PubMed	-Sort by: Most Recent -Published within the last 10 years	13	
Sexual education AND theory AND teen pregnancy	3.13.17	PubMed	-Sort by: Most Recent	17	
Vital Signs: Repeat Births Among Teens United States, 2007-2010[Title]	3.26.17	PubMed	-Sort by: Most Recent	1	
Births final data 2014	3.26.17	PubMed		3	

The criterion for selected articles started off broad and included all articles about teen pregnancy in the United States. This resulted in an overabundance of literature that varied in specific subject matter and could not be summarized in a single review. The search criteria were narrowed down to focus specifically on repeat adolescent pregnancy and health interventions surrounding that health matter. The search time frame was also constrained to only include articles that were published within the past 10 years. Articles that consisted of clinical-, organizational-, and home-based intervention programs were included, but those with interventions focused on adolescent male sexual behavior were excluded. Eligible literature included studies that sampled women who were ages 13-20 years old, adolescent nursing or pregnant mothers, and women from all socioeconomic statuses, racial ethnicities, religious beliefs, marital statuses, and housing situations.

3. Results

Of 32 articles evaluated, 15 were included in this literary review. The summation of eligible, peer-reviewed articles produced a substantial amount of information expressing the main risk factors for repeat adolescent pregnancy and also indicated health intervention models that have been effective in similar populations.

Risk Factors for Repeat Adolescent Pregnancy

Four common themes emerged which illustrated the primary factors that contributed to repeat adolescent pregnancy: 1) poor access to contraceptives, 2) lack of appropriate sexual health education, 3) experiencing poverty, and 4) low educational attainment by the teen mother before or after first-birth.

Contraceptives

Several studies concluded that failure to initiate a long-acting contraceptive reversible (LARC) method within three months of first-birth was one of the strongest predictors of repeat adolescent pregnancy (Lewis, Doherty, Hickey, & Skinner, 2010; Raneri & Wiemann, 2007). One study that observed the deliveries of 340 adolescent mothers and documented their decision to initiate contraception postpartum, stated that failure to establish contraception prior to discharge from the hospital was associated with a 144.7% increase in risk of repeat pregnancy (Damle, Gohari, McEvoy, Desale, & Gomez-Lobo, 2015).

Although some adolescent mothers understood how to use contraceptives and wanted to use them correctly, many faced barriers to carrying out their intentions. In a study published by the *Journal of Pediatric Adolescent Gynecology,* researchers observed the decision-making process and perceptions towards contraceptive use and pregnancy among adolescent mothers. Of the mothers who had experienced repeat pregnancy a major barrier to initiating or continuing the use of contraceptives was time. Adolescent mothers expressed that it was impossible to juggle the demands of being a mom and take time out of the day to see a doctor for prescription refills or insertion of LARCs (Conroy et al., 2016).

Additionally, a lack of health clinics in close proximity of adolescent mothers in school inhibited many subjects' use of contraceptives and increased their rates of dropping out. One

study showed an association between geographical access to contraceptive/maternal healthcare services within a community and rates of high school dropout among female students in that area. Researchers discovered that increased proximity of a school to a Planned Parenthood clinic significantly reduced the female student dropout rate. Given that access to contraceptive methods was associated with reduced pregnancy rates, a correlation was found between lack of access to contraception, school dropouts, and increased rates of adolescent pregnancy (Hicks-Courant & Schwartz, 2016).

Sexual Health Education

In the United States, the level of sexual health education was found to significantly impact the rate of teen births in a given geographical area. In many states, sexual health education has been taught through teen pregnancy prevention (TPP) programs based in public schools. Unfortunately, about one-third of school districts in the U.S. maintained traditional abstinence-only sex education programs. These courses taught that abstinence until marriage is the best and only way to prevent pregnancy, and they often neglected to instruct on contraceptive use. The results of one study revealed that states with the abstinence-only education programs were among those with the highest teen pregnancy rates in the nation (Oman, Merritt, Fluhr, & Williams, 2015). An additional study showed that exposure to school-based sexual education programs at a young age was associated with lower rates of unprotected sex and diagnosis of a sexually transmitted infection (STI) (Vivancos, Abubakar, Phillips-Howard, & Hunter, 2013).

Poverty

Economic resources were another predictive factor for repeat pregnancy among teen mothers. Adolescent mothers who had limited financial support were at greater risk of having another child before turning 20 years old (Raneri & Wiemann, 2007). Many interventions that

sampled teen mothers contained a large demographic of women who were enrolled in or were eligible for various financial assistance programs. (Lewin, Mitchell, Beers, Schmitz, & Boudreaux, 2016; Quinn, Mitchell, & Lewin, 2017). In an intervention that sampled 150 adolescent mothers, 69% reported receiving Medicaid and 82% reported receiving services from Special Supplemental Nutrition Program for Women, Infants, and Children at baseline. This suggests that a majority of teen mothers were of low income levels (Lewin et al., 2016).

Education Attainment

Adolescent mothers who were enrolled in formal education and decided to drop out right before or immediately after delivering their first child were more likely to have a repeat pregnancy than teen mothers who stayed in school after giving birth (Reese & Halpern, 2017). Teen moms who were not in school within three months of delivering their first child were associated with having significantly increased rates of repeated pregnancy (Raneri & Wiemann, 2007). An additional intervention program showed fewer repeated adolescent births among participants who graduated from high school compared to subjects who did not graduate. Of the participants who graduated, only 11% had subsequent births, while of the teen mothers who dropped out, were expelled, or enrolled in a GED program, 27% had subsequent births before the age of 20 (J. D. Key, Gebregziabher, Marsh, & O'Rourke, 2008).

Effective Intervention Components

Along with risk factors of repeat adolescent pregnancy, many articles also hypothesized and tested public health intervention programs that showed promise towards decreasing repeat births and assisting teen mothers. Studies revealed that interventions effective in preventing initial teen pregnancy were not similarly influential at preventing repeat adolescent pregnancy.

Programs geared towards preventing repeat adolescent pregnancy required different or additional components compared to programs that were only aimed towards reducing first-time teen pregnancy (Salihu et al., 2011). Many interventions were composed of several elements, not all of which were successful at combating subsequent pregnancies in adolescents. The three intervention components that were found most effective at assisting adolescent mothers included: 1) consultation sessions with health professionals, counselors, or social workers, 2) individual and community support, and 3) school-based educational programs.

Health Counseling/Case Management

One intervention component that was found to successfully reduce repeat adolescent pregnancy was the inclusion of a social worker or professional health advisor to assist, educate, and guide adolescent mothers participating in the program. These counselors managed a comprehensive list of services for the teen moms, including case management, home visitation, referrals and access to community-based services, and discussions covering family planning options and sexual health education (Lewin et al., 2016).

One study implemented and improved upon the Young Parent Program (YPP), an intervention that helped to reduce the risk of repeat teen pregnancy among adolescent mothers. Over a 3-year period and with the participation of 1,386 teen mothers, only 11 (0.79%) had repeat pregnancies during that period. Through the evaluation of this intervention, researchers discovered that one important quality to an effective program is the provision of health educators and counselors to be accessible and able to counsel on contraceptive choice and sexual health decisions for the adolescent mothers (Omar, Fowler, & McClanahan, 2008).

Successful interventions that occurred in educational institutions included the implementation of a health professional, counselor, or social worker at the school. Program

advisors who had a presence on campus and established relationships with potential participants had higher retention and attendance rates. More so, subjects who actively participated in the program and attended more meetings had an increased rate of achieving positive outcomes, regardless of the intervention program (Markoe Hayes, Chapple, & Ramirez, 2014).

An additional intervention program utilized social workers based in the high school as case managers and counselors to adolescent mothers and pregnant adolescents (J. D. Key et al., 2008; Salihu et al., 2011). A key aspect of this program was keeping the location of the social worker's office confidential to individuals not taking part in the program. This allowed for teen mothers to not feel shame or embarrassment when they visited their social worker in school. Also, the social workers provided participants with their cell phone numbers so students who needed them could always reach them. In regards to the benefits of case management, subsequent births occurred in 66% of participants who did not receive case management compared to 15% of those who did receive case management (J. D. Key et al., 2008).

Individual and Community Support

Researchers discovered that a significant decrease in repeat adolescent births occurred when health educators and counselors specifically catered to the individual needs of the adolescent mother. Interventions that tailored to fit the adolescent's situation on an emotional, physical, social, and psychological level produced greater retention rates by adolescents participating in the program. One way that researchers succeeded in catering to the needs of the adolescent mothers was by conducting the intervention in the homes of the adolescent participants. In-home interventions reduced the rate of repeat adolescent pregnancy because it allowed flexibility for the participant, provided mothers with a more comfortable setting, and increased retention rates (Charles et al., 2016).

Adolescent mothers who felt a sense of support from their surrounding community also showed increased positive perceptions of their own abilities and greater self-esteem. Interventions that produced a supportive environment for adolescent mothers included the development of classes or support groups specifically for adolescent mothers (Charles et al., 2016). In addition, coordination between local health clinics, physicians, and social workers provided increased comrpehensive medical care for adoelscent mothers. Communities that implemented accessible health clinics were effective in supporting the needs of their local female adoelscents, which resulted in fewer repeat adoelscent births (J. D. Key et al., 2008).

School-Based Education Programs

Incorporating a component of the program that was based at the school where the participants were enrolled was found to be beneficial because it allowed easy access to subjects and assisted in the building of relationships between program directors/instructors and participants. One intensive school-based intervention was able to reduce the rate of repeat adolescent births by 50% (J. D. Key et al., 2008).

In situations where the intervention included an educational component, the course material that was taught to participants was also crucial. Schools that incorporated a comprehensive teen pregnancy prevention (TPP) program rather than an abstinent-only TPP program reported that adolescents had more positive behavior and attitudes towards sex and it was more likely to impact their future behavioral intentions (Oman et al., 2015).

4. Discussion

This systematic review compared literature that identified the various risk factors and health outcomes most commonly associated with repeat adolescent pregnancy. The goal of this

paper was to provide information that could lead to the establishment of a comprehensive protocol aimed at reducing the rates of subsequent adolescent births and provide a support system for pregnant or nursing teen mothers.

Multiple risk factors were found to promote repeat pregnancy among adolescent mothers, but the factors that had the greatest influence were the mother's access to contraceptives, knowledge of sexual health, financial situation, and educational attainment. Many interventions included in this analysis focused on only one or two of these conditions, but neglected to study the impact that a combination of these risk factors could have on rates of subsequent pregnancy among adolescents. Currently, there is a lack of literature that studies the comprehensive impact that the accumulation of several negative risk factors can have on pregnant adolescents and their risk of subsequent births.

As seen in the results of this review, no solely school-based or solely home-based interventions were effective in their entirety at reducing repeat adolescent pregnancy. However, certain programs have developed comprehensive intervention plans that utilized both school- and home-based components and generated positive results (Charles et al., 2016). One intervention called the Second Chance Club was a school-based program aimed towards assisting pregnant and parenting teen mothers. This intervention incorporated components such as weekly support group meetings, participation by subjects in an after-school club, individual case management and home visits made by counselors, access to medical care for mothers and children, and service projects conducted by the participants to integrate community outreach and involvement (J. Key, Barbosa, & Owens, 2001). The results of this program showed a significant reduction in rates of repeat pregnancies among adolescents who participated in the program compared to adolescents in the control group who did not (Schaffer et al., 2008).

After a thorough evaluation of the Second Chance Club, certain components of the intervention were more successful than others. Although the Second Chance Club incorporated both school-based and home-based elements, additional factors prevented the program from being as impactful as intended. The effectiveness of this program was difficult to measure because of the small sample size and the challenges faced in finding a comparison control group to use as a counterpart to the intervention group (J. Key et al., 2001). Evaluation showed that fear regarding the potential lack of privacy was also a major barrier that prevented adolescent mothers from participating in the club (Schaffer et al., 2008). This program provided evidence that comprehensive interventions can be implemented, but minor modifications must be made to improve participation rate. Program strategies that involve multi-level intervention have been successful in the past, but further conditions are required to provide true effectiveness. Potential future implications of these intervention components are discussed in greater detail in the Conclusion section of this paper.

There were several limitations present in this review that could have influenced the results. One limitation to consider was the restricted access to certain articles. Some journals and databases required a monthly fee before one could access their literature, and thus created a financial barrier for many researchers. A second limitation was the amount of time that was given to complete the review. If there had been more time available, this paper could have gone into more detail, collected more data, and incorporated more studies into the results. Lastly, a third limitation to this literature review was the language barrier. There were several peer-reviewed articles that were physically accessible, but were not available in English, and therefore could not be included in this review.

5. Conclusion

In regards to future implications on research and intervention strategies, comprehensive programs that desire to assist adolescent mothers in preventing repeat pregnancies should incorporate components to serve mothers at all levels of the socio-ecological model: individual, interpersonal, institutional, communal, and societal. Elements of this form of care include personal consultation with a professional health counselor that is easily accessible by the student parent and is in an environment where she feels comfortable and safe. In order to dissuade worries of confidentiality by participants, programs should provide multiple safe spaces that are unknown to individuals outside of the program. Additionally, future holistic programs require support from the surrounding community in the form of accessible clinics, support groups, training/parenting classes, and daycare centers for teen mothers. Lastly, interventions should be based out of a high school but incorporate home visits when requested by the adolescent. School-based programs allow for informal contact to the subjects and make it easier to build relationships between program staff and participants.

The hope of this literature review is that the information presented will be used as a resource guide to implement comprehensive sexual health intervention programs that aim to support and empower nursing or pregnant adolescent mothers.

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