

Advance Provision of Emergency Contraception and Adolescent Pregnancy; A Systematic Review of Research and Practice Recommendations

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Abstract

Although the overall pregnancy rate for adolescent females has decreased in the past few years, teen pregnancy continues to be an issue in the United States. Teen pregnancy adversely affects the mom, infant, and community. Emergency contraception (EC) is a contraceptive method adolescents can use to prevent pregnancy and when used correctly can prevent 95% of unintended pregnancies. Studies have shown adolescent females who receive advance provision of EC use it more frequently and sooner after unprotected intercourse than those who do not receive EC in advance. The aim of this article is to provide a systematic review to identify if advance provision of emergency contraception to adolescent females decreases pregnancy rates. A search was performed on MEDLINE, CINAHL, OVID, PubMed, and the Cochrane Library for research studies meeting inclusion criteria. Reference lists for systematic and meta-analysis studies were manually reviewed. A total of 16 articles were identified, with 6 studies meeting inclusion criteria. These studies were reviewed and evaluated using Stetler's Evidence Ranking system. Stetler's Quality Rating Tool was used to evaluate the level and quality of evidence of the randomized control trial studies. The QUOROM statement checklist for quality was used to evaluate the meta-analysis study, and the AMSTAR tool was used to measure the quality of the systematic review. Based on evidence from the analysis of the articles, advanced provision of emergency contraception to adolescents does not deter pregnancy rates. However, advance provision does increase the use of emergency contraception.

Keywords: Emergency contraception; Advance provision; Adolescent; Contraception use

1. Introduction

Adolescent pregnancy is a problem in the United States (U.S.). Statistical data indicates that almost half of all pregnancies in the United States each year are unintended (Finer & Zolana, 2016). Furthermore, 82% of pregnancies to adolescent moms in the US are unintentional [U.S. Department of Health and Human Services Healthy People 2020, (HP), 2020]. Amongst the recent decrease in adolescent pregnancy over the past few years, the US continues to have one of the highest adolescent pregnancy rates among industrialized nations (Sieving, Resnick, Garwick, Bearinger, Beckman, Oliphant, Plowman, & Rush, 2011).

Unintended pregnancy has many adverse effects on the adolescent mom, the infant, and the community. Adolescent pregnancy raises health care costs and burdens society. Teen pregnancies cost taxpayers an estimated \$9.1 billion annually (HP, 2020). More than 1.3 billion dollars each year is spent on direct health care of pregnant adolescents (Trusell, Koenig, & Stewart, 1997). Pregnant adolescent females are more likely to abuse substances such as alcohol or tobacco during pregnancy and suffer from depression (Tzilos, Zlotnick, Raker, Kuo, & Phipps, 2012). They are less likely to complete high school or get married (HP, 2020). Teen moms tend to be of lower socioeconomic status and more dependent on public assistance,

receiving nearly twice as much Federal aid assistance (HP, 2020). Infants born to adolescent moms are more likely to be under weight and more prone to neonatal death (Chedraui & Sotomayor, 2008).

Sudden infant death syndrome (SIDS) is more common in infants born to teen moms (Malamitsi & Boutsikou, 2006). These infants are also less likely to benefit from breast feeding and are at greater risk for child abuse and neglect (Sipsma, Magriples, Dinvey, Gordon, Gabdzyl, & Kershaw, 2013; Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Furthermore, female descendant of adolescent moms are more likely to become pregnant adolescents, and male descents are more likely to be incarcerated (HP, 2020).

Frequency of sexual activity, early sexual debut, and non-use or misuses of contraceptive methods are associated with adolescent pregnancy. The average age of sexual debut for adolescent females is 17 years, with one fourth of adolescents reporting intercourse before the age of 15 (Klein & Aldeman, 2008). According to Healthy People 2020, lack of or noncompliance with contraception is one of the main causes of unintended pregnancy in the United States. Several barriers may prevent adolescent from seeking contraceptive services. Adolescents rely on their parents for health coverage and transportation and may be uneasy confiding in them about sexuality issues. Although many states provide free contraception services to sexually active teens, they may not seek these services due to confidentiality. Teens wait an average of 9.5 to 14 months after the onset of sexual activity before seeking contraceptive health care, and majority of adolescent pregnancies occur in the first 6 months of sexual activity (Klein & Adelman, 2008).

Emergency contraception (EC) is contraceptive method adolescents can use to prevent pregnancy and when used correctly can prevent 95% of unintended pregnancies (Ekstrand, Larsson, Darj, & Tyden, 2008). EC is most effective in preventing pregnancy when used within 120 hours after unprotected intercourse, with maximum effectiveness achieved the sooner it is used (Trussell, Stewart, Guest, & Hatcher, 1992). Studies have shown adolescent females who receive advance provision of EC use it more frequently and sooner after unprotected intercourse than those who do not receive EC in advance (Polis, Schaffer, Blanchard, Glasier, Harper, & Grimes, 2007) (Raymond, Trussell, & Polis, 2007), (Harper, Cheong, Rocca, Darney, & Raine, 2005) (Gold, Wolford, Smith, & Parker, 2004), (Belzer, Sanchez, Gelson, Jacobs, & Tucker, 2005). Providing emergency contraception in advance to adolescent females allows for rapid access to the medication in case of unprotected intercourse and may intern avert pregnancy. Additionally, EC can be used in cases where contraception is taken ineffectively. The aim of this study is to conduct a systematic review of literature to determine if advance provision of emergency contraception to adolescent females deters pregnancy.

2. Literature Search

The Cochrane Library, MEDLINE, CINAHL, OVID, and PubMed databases were searched to find published research on advance provision of emergency contraception to adolescent females and its impact on adolescent pregnancy rates. Various search terms and combinations were used in locating articles including: adolescent pregnancy, teen pregnancy, emergency contraception, adolescents and emergency contraception, teens and emergency contraception, adolescents and contraception, and advance provision of emergency contraception and adolescents. Due to the wealth of information on adolescent pregnancy and emergency contraception, the time frame in the search was narrowed to 2005-2014. The search produced a total of 16 articles addressing advance provision of emergency contraception in adolescent females and pregnancy outcomes. Six articles met the inclusion criteria and are analyzed in this review. Inclusion and Exclusion criteria for the articles are listed in Table 1.

The six studies meeting inclusion criteria were assessed for validity of research findings and potential biases and errors, as these factors can affect the quality of research evidence. The quality of the research was evaluated using various tools including Stetler's Evidence Ranking System and Quality Rating Tool, the

Quality of Reporting Meta-analysis (QUOROM) statement checklist, and A Measurement Tool to Assess Systemic Reviews (AMSTAR). Stetler's Evidence Ranking system and Stetler's Quality Rating Tool were used to evaluate the level and quality of evidence of the randomized control trials. Stetler's model is a nursing model that ranks evidence into six levels of hierarchy, according to the strength of evidence provided. The model was designed to aid nurses analyzing research data for implementation of changes in clinical practice protocols (Polit & Beck, 2004). Stetler's Quality Rating Tool was used to evaluate the quality of evidence. The tool uses the A-D grades, with A implying the highest quality and D the lowest (Truglio-Longdrigan & Leweston, 2011). Stetler's Evidence Ranking System and Stetler's Quality Rating Tool are presented in Tables 2 and 3 respectively. The Quality of Reporting Meta-analysis (QUOROM) statement checklist for quality was used to evaluate the metaanalysis study, and A Measurement Tool to Assess Systemic Reviews (AMSTAR) was used to measure the quality of the systematic review. The AMSTAR tool is a reliable and valid quality instrument composed of 11 questions assessing the quality of systematic reviews (Shea, Hamel, Wells, Bouter, Kristjansson, Grimshaw, Henry, & Boers, 2009).

Table 1

<u>Inclusion Criteria</u>	<u>Exclusion criteria</u>
Adolescent females between the ages of 13-19 years	Pediatric and male clients
Adolescent females not desiring pregnancy	Pregnancy at the time of the study
Studies including pregnancy outcomes of adolescents using emergency contraception	Articles that were cited in the meta-analysis and systematic review
Studies using the Yuzpe regimen, levonorgestrel, and mifepristone as emergency contraception	Studies using postcoital insertion of a copperbearing intrauterine device (IUD) as emergency contraception
Articles in English language	

Table 2

<u>Level of Evidence</u>	<u>Description; Source of Evidence</u>
I	Meta-analysis of multiple control studies
II	Individual experimental studies
III	Quasi experimental study, such as non-randomized control single group, pre-post test, time series, or matched case control studies
IV	Non-experimental study, such as correlation descriptive research and qualitative or case studies
V	Case report or systematically obtained, verifiable quality or program evaluation data
VI	Opinion of respected authorities, regulatory or legal opinions

(Stetlar, 2001).

Table 3

Quality Rating	Description
A	A very well designed study project
B	A well designed meta-analysis with at least five studies
C	Well designed individual studies with sample sizes
D	A study or project with a major flaw impacting the validity of the findings

(Truglio-Longdrigan & Leweston ,2011).

3. Results

Six articles meeting inclusion criteria were reviewed and analyzed. Table A1 includes an extensive overview of individual study findings including design, purpose, population, exclusion and inclusion criteria, conclusions, limitations and strengths, and level and quality of evidence. The studies were conducted in 10 countries and were reported between 2005 and 2014. It is important to note that the age groups of the adolescents varied in each study, and ranged from 13-20 years. The studies entail one meta-analysis, one systematic review, and five randomized control trials. The meta-analysis reviewed 8 studies and the systematic review included 23 studies. There was an overlap of three studies in the meta-analysis and systematic review, with the overlapping studies having the same outcomes. The intervention in each of the studies included advance provision of EC for the clients to use as needed. One study also included advance provision of condoms in addition to emergency contraception. The type of emergency contraception used in the studies varied from the Yuzpe regimen, levonorgesterl, and mifepristone. The meta-analysis and systematic reviews included studies that used any or all of these EC methods. Two studies used levonorgestrel as the contraceptive method and one study did not specify the type of EC option used. Participant follow-up in the studies ranged from 6 weeks to 3-12 months. Pregnancy was measured via HCG testing and/ or participant verbalization of pregnancy at follow- up visits. None of the studies found clinically or statistically significant data supporting that advance provision of emergency contraception to adolescent females averts pregnancy. However, four of the studies found that advance provision of EC increased its use in adolescents.

Polis, et al. (2007), conducted a meta-analysis to determine what effect advanced provision of emergency contraception had on pregnancy rates, sexually transmitted infections (STIs), and sexual and contraceptive behavior. Out of the 8 studies in the meta-analysis, four studies focused on female adolescent populations and one study focused on adolescent mothers. Inclusion criteria for the meta-analysis consisted of randomized control trials evaluating advance provision of EC compared with a control group. Studies that failed to report pregnancy statistics were excluded from the review. Results of the analysis concluded that advance provision of EC increased its reported use, but did not reduced or deter pregnancy rates among adolescent females.

Raymond, et al. (2007), conducted a systematic review to determine the effects increased access of EC had on pregnancy rates and its reported use. Twenty three studies were included in the analysis and consisted of 14 randomized control trials and 9 studies that did not use control groups. Inclusion criteria consisted of studies of any design that yielded data on the effects of advanced provision of EC. Studies that did not present data comparing interventions were excluded. Out of the 14 randomized control trials, 7 studies included female adolescent populations. Results support advance access of EC increases use, but does not reduce unintended pregnancy in adolescent females.

Schriber, et al. (2010), conducted a randomized control trial on 50 post-partum adolescent females to determine if advance provision of EC to teen mothers helped to prevent repeat pregnancies. Inclusion

criteria consisted of adolescent females 14-19 years who were post-partum patients at the Hospital of the University of Pennsylvania, and wanting to delay pregnancy for at least one year. Patients reporting allergic reactions to levonorgestrel, substance abuse, or relocating outside of Pennsylvania were excluded from the study. Follow up consisted of interviews and questionnaires conducted at 6 weeks and 3, 6 and 12 months. Results included 3 pregnancies out of the 23 adolescents receiving advanced provision of EC and 8 pregnancies out of 28 adolescents who were not supplied with EC. However, statistical analysis was not significant between the control groups, and did not support that advance provision of EC helped in preventing repeat pregnancy among adolescent moms.

Harper, et al. (2005), analyzed data on the effects of increased access of EC among adolescents. The study was a randomized control trial consisting of three EC study groups; a pharmacy access group, an advance provision group, and a clinical access group. Inclusion criteria consisted of females 15-24 years not pregnant and not desiring pregnancy. Female adolescent participants comprised 45.5%, (n= 964) of the sample. Exclusion criteria included females requesting EC or engaging in unprotected intercourse within 3 days of enrollment in the study. Results concluded use of EC was greater in the advance provision group, yet statistical data did not support a decrease in pregnancy among adolescent females.

Ekstrand, et al. (2007), conducted a randomized control trial of 420 Swedish adolescent females 15-19 years that were supplied with advance provision of EC. Participants were randomized into two groups. Both groups received advance provision of EC with one group receiving an extra dose of EC and condoms, along with pamphlets containing specific instruction on the use of each method. Inclusion criteria included Swedish speaking females between the ages of 15-19, that were not pregnant and desired EC. Exclusion criteria were males and pregnancy. Participants were followed up at 3 weeks, 3 months, and 6 months after enrollment. Data results did not support advance provision of EC delayed pregnancy in the Swedish adolescent females. However, data did support advance provision of EC increases its use. The study also found advance provision resulted in EC use 12 hours sooner after unprotected intercourse.

Consistent with the other study findings, Weaver, et al (2009) found no statistical significance to support advance provision of EC delays pregnancy in adolescent females.

Weaver, et al (2009). conducted a randomized control trial on 1, 490 sexually active female 14- 24 years. Out of the total number of participants in the study, 878 participants were between the ages of 14-17 and 528 were 18-20 years. Inclusion criteria were sexually active females between the ages of 14-24 years in Nevada and North Carolina, not desiring pregnancy, and not planning to use a long-acting contraceptive method within the subsequent year. Females who were pregnant at the time of enrollment were excluded from the study. Participant follow up was conducted at 6 and 12 months after enrollment. Although there was no statistical data to support advance provision of EC deters pregnancy, the study stipulates one reason for the lack of supportive findings is women in the study provided with advance provision of EC used it as a substitute for their usual contraceptive method.

By assessing each individual study's design, population sample, inclusion and exclusion criteria, interventions, outcomes, and strengths and limitations, the level and quality of evidence was evaluated and presented in Table 4. Tools used to evaluate the level of quality and evidence of the studies included; QUOROM statement checklist for the meta-analysis study; AMSTAR for the systematic analysis; and Stetler's Evidence Ranking System and Quality Rating tool for the remaining studies. Using these tools, the level and evidence of quality for the studies ranked from I-B to II-C. All of the studies, regardless of level and evidence of quality, found no association between advance provision of EC and aversion of pregnancy among adolescent females.

Table 4

Author(s)	Research Design/ Purpose Question	Population Studied	Exclusion/ Inclusion Criteria	Conclusion/ Application	Strengths/ Limitations	Level of Evidence of Quality
Polis, C., Schaffer, K., Blanchard, K., Glasier, A., Harper, C., Grimes, D. (2007)	<p>Research Design: Meta-analysis Used 8 RCT that met inclusion criteria; studies were evaluated by 2 reviews.</p> <p>Purpose/ Question: To summarize RCT evaluating advance provision of EC to explore effects on pregnancy rates, STIs, and sexual and contraceptive behaviors.</p>	<p>Population (From the 8 RC), 6, 389 patients in the US, China, and India; 4 out of 8 studies focused on adolescent female population</p> <p>Databases searched: CENTRAL, EMBASE, POPLINE, MEDLINE via PubMed, and a specialized EC article database</p>	<p>Inclusion: All RCT, in English language, that evaluated advance provision of EC compared with a control group; studies using Yuzpe regimen, levonorgestrel alone, or mifepristone as EC;</p> <p>Exclusion: Studies that failed to report pregnancy levels</p>	<p>Conclusion: None of the studies found significant differences in pregnancy rates among women provided with advance EC and control groups. Advance provision of EC increased its reported use but did not reduce unplanned pregnancies when compared with standard access.</p> <p>Application to question of interest: Does advance provision of EC decrease pregnancy</p>	<p>Strengths: Objective of study identified; databases given; Criteria and process used identified; type of study design, participants, details of intervention and outcome of interventions identified; a metaanalysis; descriptive data provided for trials; quantitative data synthesis provided; summarizing trail flow was provided; inclusion and exclusion data identified; primary and secondary outcome measures identified; Methodological quality of studies were addressed; appropriate statistical analysis used- RevMan 4.2.8; 95% confidence intervals; data pitfalls addressed; discussion summarized key findings and interpret results; discussed future research agenda; basis were addressed;</p> <p>Limitations: Validity of studies; self-reports lack objective verification; Quality of the RCT varied; trial with poor follow up were included</p>	I-B QUOROM statement Checklist

Raymond, E., Trussell, J., Polis, C. (2007)	<p>Research Design: Systematic Review</p> <p>Purpose: Review of data on effects of increased access to EC on pregnancy rates and use of the pills</p>	<p>Sample: 23 studies in 10 countries; 10 RCT and 4 cohort studies with 7 of these studies focusing on adolescent females</p> <p>Databases Searched: MEDLINE, POLINE, EMBASE, LILACS</p>	<p>Exclusion: 694 studies which entailed 689 that contained no data comparing interventions, three that evaluated change in legislation in GB, two that had the same data</p> <p>Inclusion: Studies of any design which had data that compared effects of intervention with advanced access to EC</p>	<p>Conclusion: None of the studies found statistically significant differences between intervention groups using provision of EC and control groups and pregnancy</p>	<p>Strengths: Prior design provided; Comprehensive literature search performed with search terms identified; duplicate study extraction was discussed and inclusion/ exclusion criteria addressed; list of studies provided in table format; methods used to combine study findings addressed; publication bias was addressed</p> <p>Limitations: Quality of design of studies was addressed but was not documented</p>	II-B (AMSTAR)
Schreiber C., Ratcliffe S.J., & Barnhart, K. (2010)	<p>Research design- Quantitative study; RCT; Questionnaires</p> <p>Participants were randomized into a routine care arm (RCA) and an advance supply arm (ASA). Participants in the ASA group were supplied with one dose of EC. Participants completed follow up interviews/ questionnaires at 6 weeks and 3, 6, and 12 months.</p>	<p>Population Studied: 50 postpartum adolescent females at the Hospital of the University of Pennsylvania</p>	<p>Inclusion criteria: Females 14-19 years, postpartum patients at the Hospital of the University of Pennsylvania English speaking, delivered a live infant and planning to parent the infant, desiring to delay pregnancy for at least a year, in general good health</p>	<p>Conclusion: There were three pregnancies (13%) in the 23 adolescents who were supplied with advance provision of EC (ASA group), and 8 pregnancies in the 28 adolescents who were not supplied with EC (RCA group). Risk of pregnancy occurring in the intervention group was .57 times greater (p=.23). Seventy three percent of pregnancies occurred in the group of adolescents who did not receive advance supply of EC.</p>	<p>Strengths: Hypotheses and objective of study addressed; Randomization addressed; modifications were made to improve quality of instrument- a pilot questionnaire; statistical analysis were used to determine confidence intervals, odds ratios, and Fisher's Exact Tests; drop out/ attrition rates were addressed.</p> <p>Limitations: Participants were compensated with \$50 gift card at each visit in return for their time and effort; challenges of long term follow up yielded loss in participant rates; no power analysis; quality of instrument – initially was pilot tested; instrument was a questionnaire; sample size, generalizability, recall bias</p>	II-C (AMSTAR)

	<p>Purpose: To assess whether postpartum advance provision of EC to adolescent mothers helps prevent repeat pregnancies</p>		<p>Exclusion: Any allergies to levonorgestrel, current substance abuse, women who planned to relocate outside of Pennsylvania</p>	<p>However, statistical analysis did not show statistical significance between the RCA and ASA groups (could be due to sample size and loss to follow-up)</p> <p>Application to Question of Interest: To determine if advance provision of EC decrease pregnancy in adolescent females</p>		
Harper, C., Cheong, M., Rocca, C., Darney, P., Raine, T. (2005)	<p>Research Design: RCT participants randomized into 1 of 3 study groups: pharmacy access, advance provision, and clinical access of EC, questionnaires and surveys were used to gather data at baseline and 6 month intervals</p> <p>Purpose/Question: Are young adolescents any different in their response to increased access to EC from older adolescent and adult women</p>	<p>Population 964 female adolescents recruited from 4 clinics in San Francisco from 2001-2003. Adolescents were grouped into the following categories: young adolescents, 16 years; middle adolescents 16-17; older adolescents 18-19, adults 20-24</p>	<p>Inclusion Criteria: Females not pregnant and not wanting to become pregnant, and using oral contraception, condoms, other barriers, or no method of BC.</p> <p>Exclusion: Females requesting EC or having had unprotected intercourse in the past 3 days</p>	<p>Conclusion: EC use was greater in adolescents in the advance provision group than in the clinic group (44% and 29% respectively, $P < .001$) Logistic regression confirmed pregnancy rates higher in all adolescent groups than in adults (20-24 yrs) Statistical data did not detect significant differences in pregnancy rates among advance provision of EC, clinical access to EC or pharmacy access.</p> <p>Application to Question of Interest: To determine if advance provision of EC decrease pregnancy in adolescent females</p>	<p>Strengths: Outcome of study identified; Blind randomization of participants; statistical analysis used twotailed test, alpha calculations, probability calculations, contingency table analysis and x squared statistics. Logistic regression results; outcome variables were clearly identified. Of the 964 enrolled adolescents, 93% completed the study- high attrition rate;</p> <p>Limitations: Impact of outliers, Quality of instrument, Generalizability, recall bias</p>	II-C (AMSTAR)

<p>Ekstrand, M., Larrson, M., Darj, E., Tyden, T. (2008)</p>	<p>Research Design: RCT- Swedish adolescent females were grouped into an intervention group and control group. The intervention group received one extra dose of ECP, condoms, and information pamphlet on use of both. The control group received only one pack of ECP with no pamphlets or condoms. Baseline questionnaire with subsequent telephone interviews at 3rd and 6th month after enrollment</p> <p>Purpose/ Question: Evaluate the effect of advance provision of EC to adolescent females regarding EC use, time span from unprotected intercourse to ECP intake, contraceptive habits, and sexual risk taking.</p>	<p>Population 20 adolescent Swedish females ages 15-19 at a local youth clinic in a medium-sized university town in Sweden</p>	<p>Inclusion: Swedish speaking girls 15-19 years, nonpregnant, desiring EC</p> <p>Exclusion; Pregnancy, males</p>	<p>Conclusion: Advance provision of EC resulted in more frequent use of EC and use 12 hours sooner after unprotected intercourse compared to the control group. No significant statistical data to support advance provision of EC delays pregnancy. In the study, at 6 months post recruitment interviews, seven adolescents had become pregnant- 4 in the intervention group and 3 in the control group</p> <p>Application to question of interest: To determine if advance provision of EC decrease pregnancy in adolescent females in other countries</p>	<p>Strengths: Outcome of study identified; Pilot study was conducted 2 months prior of use if questionnaire to test reliability/ validity of instrument; power calculation was performed to determine sample size, drop-out rates were assumed into the calculation; blind randomization of participants; Statistical analysis was calculated using SPSS, T test, Pearson's correlations, Fishers exact test, demographic data was presented; attrition rates were accounted for;</p> <p>Limitations: Generalizability, recall bias due to interview, high attrition rate in immigrant girls</p>	<p>II-C (AMSTAR)</p>
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4. Practice Recommendations

Proactive interventions to keep adolescents stocked with advance provision of EC can be expensive, and research has not supported its effectiveness in averting pregnancy. Yet, conclusions about population-level effects should not deter adolescents from having access to EC. Practice recommendations include routine health screens on adolescents with inquiries on sexual activity, and education on abstinence, condom use, and contraception, including EC. The best programs aimed at reducing adolescent pregnancies are multi-factorial and encompass both abstinence and contraceptive education (Gavin, Richard, & Markham, 2010). However, certain ethical issues surrounding adolescent health may impede implementation of routine contraceptive education and EC.

Ethical and legal issues pertaining to adolescent health focus on the rights of adolescents to consent to healthcare services and to maintain confidentiality of these services. Sexually active teens are less likely

to seek health care services if they must obtain parental consent (Tillett, 2005). An adolescent's ability to consent to family planning services can vary widely from state to state. Certain situations allow adolescents younger than 18 to consent for health services without parental involvement. Examples of these situations include emergency care, emancipated minors, and state mandated situations. State mandated situations vary from state to state and include family planning services, abortions, and treatment of sexually transmitted infections (STI) (Tillett, 2005).

To increase adolescent's accessibility to family planning services, the United States Supreme Court extended the constitutional right to privacy by allowing minors to obtain contraception without parental consent (Tillett, 2005). Each state has adopted different statutes on the age of consent for contraceptive services (Alan Guttmacher Institute, 2010). Adolescent's right to confidentiality also present legal and ethical concerns. Research studies have found adolescents are less likely to seek family planning services due to fear of parental notification (Jones & Boonstra, 2004). The American Medical Association (AMA), American College of Nurse-Midwives (ACNM), Association of Women's Health Obstetric and Neonatal Nurses (AWHONN), and the American Academy of Pediatrics (AAP) all have position statements encouraging health care providers maintain confidential adolescent family planning and STI services (Tillett,2005).

Health care providers play an important role in the reduction of adolescent pregnancy and can serve as advocates for adolescent health. They may be able to deter adolescent pregnancy by providing education on abstinence and contraceptive methods, including EC, at routine adolescent health screenings. They can offer confidential services to sexually active teens and be knowledgeable on their states statutes concerning adolescent health. Age of legal consent for health care services and confidentiality can affect the care of sexuality active adolescents. Health care providers can access state specific information on adolescent consent for health care services from The Alan Guttmacher Institute at www.guttmacher.org (Alan Guttmacher Institute, 2016).

5. Conclusion

The small number of studies evaluated decreases the generalizability of the conclusion of the review. Limitations of the articles include self-reports on use of EC, unprotected intercourse, and pregnancy. Only one of the articles provided insight about adolescent education and correct use of EC. Specific interventions also varied among the studies, and the quality of some of the studies was less than stellar. Nevertheless, the results of the studies were consistent. Based on evidence from the analysis of the articles, advanced provision of emergency contraception to adolescents does not deter pregnancy rates. However, advance provision does increase the use of emergency contraception.

Because EC can safely decrease the risk of unintended pregnancy, improved awareness of EC and improved access of EC is desirable. Decreasing the rate of adolescent pregnancy in the US is multi-factorial. Research shows that adolescents are more likely to have unprotected intercourse, use less effective forms of contraception, and use contraception more intermittently than adults (Glei, 1999). Sexually active adolescent females should continue to have access to EC. Future research should focus on compliance, education, and behavioral issues associated with EC use among adolescents to see if these affect pregnancy rates. Efficacy rates of EC should also be revisited.

Health care providers can serve as liaisons by educating teens with correct information on sexual practices. They can provide adolescent patients the guidance and tools needed to avoid unwanted pregnancy. Health care providers should collaborate and strengthen partnerships with health care agencies that influence family planning objectives. They must be aware of ongoing research pertaining to adolescent sexual

behaviors and best evidence based practices, to provide holist care to adolescents in their communities and aid in decreasing adolescent pregnancy.

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