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### Preconception Screening for Family Planning

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Preconception Screening for Family Planning

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### **Abstract**

**Purpose/Objectives:** The purpose of this literature review is to evaluate the effects of preconception screening tools on non-pregnant women between 13 and 44 years old in the primary care setting. The primary care setting is unique because non-pregnant women often visit a primary care provider more frequently than they visit their obstetrician/gynecologists when not pregnant. Every visit to a primary care provider is an opportunity to discuss family planning and evaluate potential health risk factors.

**Data Sources:** A literature search of peer-reviewed articles from 2010 to 2020 was conducted. The databases searched included: Cumulative Index to Nursing and Allied Health line (CINAHL), Cochrane Database and Medline databases.

**Conclusions:** Preconception screening is an imperative piece for discovering potential risk factors that could impact maternal/fetal health. The literature did not indicate that preconception screening increased the workflow of healthcare workers providing the screening. Preconception screening during routine primary care visits can target the high rate of unintended pregnancies by increasing rates of family planning.

**Implications for Nursing Practice:** Current evidence reveals that any type of preconception screening led to better health outcomes than no screening at all. The primary care setting is uniquely positioned to see more non-pregnant women consistently than an annual obstetrician-gynecologist visit. The nurse practitioner can optimize each visit to discuss the reproductive health of women ages 13 to 44 and ultimately mitigate negative outcomes for both mother and fetus.

**Key words:** preconception, screening, tool, contraception

## **Introduction**

In the United States more than 80% of women will give birth at least once in their lifetime (Office of Disease Prevention and Health Promotion, 2014). An alarming 31% of these women suffer from pregnancy complications (Office of Disease Prevention and Health Promotion, 2014). Healthy People 2030 has continuously put forth initiatives to address concerns regarding maternal and fetal mortality (Office of Disease Prevention and Health Promotion, 2020). Preconception and interconception are periods of time in which changes can be made to improve maternal health outcomes, subsequently, improving fetal outcomes. It is important to utilize the period prior to conception to create a healthy environment for the fetus to grow.

Preconception risk factors in women ages 13 to 44 that can impact both maternal and fetal health (Fahari & Zolotor, 2013). These risk factors include women who are overweight or obese, current smokers, as well as those diagnosed with hypertension or diabetes. Many of the risk factors identified are modifiable and can be adequately controlled prior to conception. The negative effects of poor maternal health can include birth defects, neonatal infections, low birth weight, transmission of diseases such as HIV and STIs, as well as gestational diabetes and eclampsia (WHO, 2019). These poor outcomes mentioned are only a fraction of the conditions that can result from unintended pregnancies (WHO, 2019).

Despite the continued efforts, 40% of pregnancies are reported as unplanned (WHO, 2019). Unplanned or unintended pregnancies include pregnancies that are mistimed, occur during a period of time in which children were not desired, or a result of no use or misuse of birth control (Center for Disease Control and Prevention, 2019). Over 70% of unintended pregnancies occur in women 15 to 19 years of age (Center for Disease Control and Prevention, 2019). Furthermore,

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lower income, less than college education, Hispanic or African American, and unmarried women were also identified as contributing factors to unintended or unplanned pregnancies (Center for Disease Control and Prevention, 2019). This data reveals an underlying disparity that can be mitigated with appropriate interventions.

A primary care clinic (PCC) is unique because non-pregnant women often present more frequently to this type of service than to a women's health clinic (Phelan et al., 2000). Women visit PCC for a myriad of reasons including family planning services. During PCC visits, clinicians may take advantage of this time by screening and identifying preconception risk factors. A preconception screening tool can assist in providing more targeted care to women of childbearing age. The screening tool can identify "existing health risks and prevent future health problems for women and their children" (Office of Disease Prevention and Health Promotion, 2014, n.p). Through preconception screening tool utilization at every visit to the PCC provider, maternal-fetal outcomes can be improved.

### **Current Practice Guidelines**

The Center for Disease Control and Prevention [CDC] (2006) has recommendations regarding preconception care in the PCC setting. The first recommendation is to conduct risk assessment, education, and health promotion counseling during all PCC visits for women of childbearing age. The second recommendation is to ensure that all childbearing aged women receive preconception care. Finally, it is recommended to clinicians that appropriate interventions are implemented to reduce potential risks identified from previous adverse pregnancy outcomes. Each recommendation emphasizes the importance of consumer knowledge, health promotion programs, and clinical practice.

## Search Criteria

A database search was used to identify literature that examined the effects of preconception screening. The search was restricted to publications between January 2010 and August 2020. The databases searched included: Cumulative Index to Nursing and Allied Health line (CINAHL), Cochrane Database and Medline databases.

There was a tremendous amount of literature pertaining to preconception counseling and genetic screening. However, when identifying literature specific to screening tools for preconception there was a paucity of available data. Other key terms such as *preconception counseling* and *genetic screening* were irrelevant to the specific topic of preconception screening, and were not included in search terms. The search focus is related to the completion of an actual screen for preconception risk factors such as health morbidities, drug use, and alcohol use.

The initial key terms searched included: *preconception, screening, and tool*. The terms “AND” “OR” assisted as Boolean operators. Inclusion criteria included primary care setting and childbearing aged women between 13 and 44, peer reviewed literature, and English language. Exclusion criteria included inter-conception screening, postpartum screening, and non-English language. The initial search yielded 89 articles: 20 articles from CINAHL, two articles from Cochrane, 35 from Scopus and 32 articles from PubMed/Medline databases. Articles were evaluated using the inclusion and exclusion criteria and relevance to clinical practice. Two articles overlapped between CINAHL and PubMed/Medline databases, resulting in a total of four articles used for further analysis.

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The articles written by Shah et al. (2019), Dunlop et al. (2013), Tuomainen et al. (2013), and Landkroon et al. (2010) were assessed using John's Hopkins Evidence Based Practice (JHEBP) guidelines. Each article was level 3 of good quality of evidence except Tuomanen et al. (2013), which was low quality of evidence (Table 1).

### **Findings**

The studies in Shah et al. (2019), Dunlop et al. (2013), Tuomanen et al. (2013) and Landkroon et al. (2010) were used to describe the effectiveness, feasibility, and rate of preconception screening. Each article was analyzed for data that could be further explored and connected with one another in relation to preconception screening.

#### **Effectiveness of Preconception Screening Tools**

There were positive effects identified by implementation of a preconception screening tool into primary care settings. In one study, the rate of family planning was 64% before implementation of a preconception screening tool, post implementation there was a 6% increase noted within a 13-month period (Shah et al., 2010). Also, through the use of preconception screening, there was an improvement in preventive screenings and vaccinations (Shah et al., 2010). The preconception screening discussed in Shah et al. identified 25% of the women screened needed family planning services (2010). Lack of preconception screening in the PCC setting is a missed opportunity to mitigate identifiable risk factors.

Through the use of preconception screening, risk factors were identified such as sexually transmitted infections, illicit drug use, psychological risks, alcohol and tobacco use, as well as intimate partner violence (Dunlop et al., 2012). Each of the risk factors described pose a risk for

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poor health outcomes and ultimately adverse pregnancy outcomes. These risk factors are modifiable and with appropriate identification, education, and plan of action, the risks could be reduced significantly.

When comparing a questionnaire or screening to a provider gathered data preconception data the results of Landkroon et al., describe the risk assessment as both reliable and useful (2010). The Kappa score for lifestyle variables, medical history, and obstetric history items noted good to excellent level of agreement (Landkroon et al., 2010). There is minimal difference between the results of outcomes for patients when comparing questionnaire and face to face provider questioning. Through the use of a questionnaire, risk factors can be further verified and explored. Regardless of screening choice, any screening for preconception is better than no screening at all (Landkroon et al., 2010).

The perception of risk was evident through the screening tool. In the Tuomainen et al. study, women's perception of preconception health was modest or poor (2013). The screening tool identified attitudes towards health risk as well as health practices related to preconception. Women described anxiety, doubts, and uncertainty related to preconception care. The screening tool was effective in highlighting potential areas of consideration when implementing preconception screening tools in the primary care setting. Although there may be an increase in time spent, the preconception screening tool utilization is highly valued and needed (Tuomainen et al, 2013).

Preconception screening tools vary in depth of questionnaire and level of assessment. There is limited data pertaining to the sensitivity and specificity of preconception screening tools. However, select examples regarding types of questionnaires can be found in Appendix B.



### **Feasibility of Screening**

A large concern of implementation of a preconception screening tool is feasibility, which often includes time constraints and comfortability with screening. When interviewing staff who will conduct screening, 72% stated the screening took less than one minute and 83% stated patients were comfortable with questions (Shah et al., 2010). There is also a notable positive response when asked about the experience of a preconception questionnaire. In the Dunlop et al. study 92% of patients described a positive impression and 98% described comfort as well as 98% of women reported the importance of the preconception encounter (2013).

A notable limitation of the feasibility of a preconception screening tool is the time lapse between completing the screening and attending the scheduled appointment (Landkroon et al., 2010). To address this limitation, it is important to conduct the screening during the visit. Having patients complete the screening prior to the visit can increase chance of identifying risks without appropriate follow-up as patients have been found leaving prior to their scheduled visits (Landkroon et al., 2010).

### **Populations that are Typically Screened**

There is a paucity of literature on preconception screening in the PCC setting. In a mixed method approach Dunlop et al. (2013) administered a risk assessment questionnaire and conducted individual semi-structured interview on 150 attendees of a Women, Infants, and Children (WIC) program. They concluded that participants found the preconception risk assessment and counseling to be acceptable and important. Additionally, they concluded that the

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WIC program is a suitable location for identifying women in need of preconception risk assessment.

Landkroon et al. (2009) conducted a preconception risk assessment tool via online questionnaire and history taking during the first appointment at the outpatient clinic for preconception care or fertility. The article concluded the tool was effective, efficient, and clear in comparing results between both assessments. While these two studies showed the importance of preconception screening they also highlighted the absence of the screening tool in the PCC setting.

### **Best Practice**

Best practice, according to American College of Obstetricians and Gynecologists (ACOG), in the PCC setting, recommends all women of reproductive age be asked, “Would you like to become pregnant in the next year?” This recommendation is also referred to as the “One Key Initiative” (ACOG, 2019). Following the key question is a process of identifying risk factors, some of which may be modifiable, and providing an opportunity to optimize health outcomes (ACOG, 2019). Referral to an obstetrician may be required if need is identified during screening process.

### **Discussion**

The review of literature provides data to support the implementation of preconception screening in primary care settings. The screening tool in each study varied in depth of preconception screening. However, each study evaluated women of reproductive age and their current plans regarding family planning. Each article expressed a positive relationship between the implementation of preconception screening and family planning counseling. The evidence contributes to the drive to standardize preconception screening in primary care settings. Primary care providers, such as nurse practitioners, are able to establish relationships with their patients. Often times the patients are seen on more than one occasion for a variety of health concerns.

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Maximizing the visit to include preconception offers a unique opportunity to address a frequently missed health screen.

Each article revealed preconception screening questionnaire as an effective method of obtaining health information regarding potential risk factors that can affect future pregnancies. The data analysis used in Landkroon et al. (2010) and Dunlop et al. (2013) confirms that a screening questionnaire can reveal reproductive health risk factors. Shah et al. (2019), establishes an increase in family planning can be documented and conducted post utilization of a screening questionnaire. Identifying risk factors is the first step to preconception care. The primary care setting can identify and properly manage or refer patients to the appropriate services.

Preconception screening is a fundamental piece of managing poor reproductive health outcomes. This essential screening historically is missed in practice and respectively pushed to obstetric services. Data from the literature review identifies opportunities to mitigate health risk factors prior to conception. Although this paper specifically expands on preconception screening, there was an unintentional finding of increased family planning when preconception screening occurs. While preconception is not directly correlated to reducing maternal and fetal mortality, identifying health risk factors and managing women's health prior to conception is.

### **Limitations**

The generalizability of the results is strong due to the strength of the findings, but limited by the number of articles found. When using JHBEP each article discussed had level 3 evidence, as qualitative studies. Shah et al. (2019), Dunlop et al. (2013), and Landkroon et al. (2010) had good and consistent quality of evidence. Further investigation is required to solidify findings and

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ensure generalizability. Tuomanen et al. (2013) had low quality of evidence due to small sample size, results were limited, and findings are difficult to generalize.

Correlations can be found between and within the four articles. There is limited data regarding the effects of preconception screening as a standalone. Many of the articles that were excluded discussed the effects of preconception care, not the actual screening tool. Future articles should identify types of preconception screenings and their effects on patients and staff. It is important to assess staff functionality, as the screening may affect work flow. Shah et al. (2019), was the only article to discuss the effect of the preconception questionnaire on the staff prior to implementation and during the implementation process.

### **Implications for Practice**

The literature supports the need to screen women of reproductive age for preconception care. Each article carefully highlights various risk factors women may not be aware of that can have negative implications before and during pregnancy. Primary care providers are uniquely positioned in primary care to provide an essential service of screening women for preconception care. During the screening process providers can begin the conversation about family planning and provide referrals if necessary to the appropriate women services.

Primary care providers, which include nurse practitioners, have more contact with women of reproductive age than any other providers (ACOG, 2019). They have the opportunity to discuss preconception in a variety of settings and ensure acute and chronic diseases are managed appropriately. The Center for Disease Control and Prevention recommends risk assessment, education, and counseling regarding preconception should be conducted during

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every visit (CDC, 2006). Currently, discussing family planning during acute or chronic clinic visits is limited to the discretion of the provider or need of the patient. If the process of preconception screening was implemented as a standardized process in all PCC settings there is potential for decreasing rates of maternal and fetal mortality.

### **Conclusions**

The percentage of unplanned pregnancies has risen over the last two decades. It is no surprise that if no changes are made regarding pregnancy planning this number will continue to escalate. Due to increased access to healthcare, more people are seen by providers in PCC. This access is an opportunity to conduct preconception screening. This literature review establishes a positive effect of preconception screening and feasibility within the primary care setting.

Future studies should establish the best type of screening for preconception as well as how to conduct the screening in primary care. Research findings can assist in creating a standard in which all PCCs have preconception screening as part of their standard of care. It is imperative that preconception screening continues to be a focal point in improving family planning and referral.

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Appendix A: John’s Hopkin’s Evidence Based Practice Rating Scale

Citation	Statistical Tools	Data Collected	Quality of Evidence	Highlights from Article
Landkroon, A., Weerd, S., Vliet-Lachotzki, E., Steegers, E. (2010).	Data was collected qualitative study using SPSS 12.0.1. Kappa statistics was utilized to indicate poor, fair, good, and excellent agreement. <0.40 indicates poor agreement, 0.40-0.75 indicates fair to good agreement, and >0.75 indicates excellent level of agreement.	Data was collected data from 2004 to 2006. Primary outcomes were 349 eligible women for the study. Lifestyle variables noted good to excellent level of agreement. Medical history and obstetric history noted good to high levels of agreement. Use of over the counter drugs noted poor level of agreement. Information regarding family history showed good levels of agreement.	There were 349 women included in the study. Level 3 of good quality.	The preconception questionnaire can be used to identify potential risks for adverse pregnancy outcomes. It is efficient and clear screening tool.
Tuomainen, H., Cross-Bardell, L., Bhoday, M., Qureshi, N., Kai, J. )2013)	Qualitative study using NVivo V9 (QRS) software to analyze data from 9 focus groups and interviews.	Data was collected from 41 women of mixed ethnic origin.	The sample size included 41 women. Level 3 of low-quality data.	Through preconception screening an evaluation of the preparedness for pregnancy could occur. Data revealed a limited awareness of preconception health.
Dunlop, A., Dretler, A., Badal, H., and Logue, K. (2013)	Mixed-methods study using qualitative and quantitative analysis of reproductive risk and post counseling interviews was utilized. SPSS 19.0 was used to calculate descriptive statistics for participants responses regarding reproductive health and risk assessment. Qualitative analyses using MaxQDA 10.0 was used to code	Data was collected from 150 women eligible for WIC services. Of the women screened, 30% experiences previous preterm delivery, 19% low birth weight, 26% miscarriage, and 26% abortion. 9% of the women hope to have a baby in the next year and 52% in one or more years. 74% of participants did not use condoms on every sexual encounter and 48% reported history of sexually	The sample size included 150 women. Level 3 of high-quality data.	By conducting a preconception screening the women in the WIC clinic, risk factors that can affect pregnancy can be identified. A notable percentage of women present conditions and behaviors that can affect reproductive health.



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	<p>participant responses during the independent interviews to uniform working definitions.</p>	<p>transmitted infection. 66% of participants did not report taking folic acid daily and 65% did not recognize folic acid recommendation or reproductive aged women. 21% are current smokers, 11% report history of cigarette smoking, and 57% report drinking alcohol. 42% of participants screened positive for depression and 42% report intimate partner violence. 98% of the women reported reproductive health risk assessment and counseling was important.</p>		
<p>Shah, S., Prine, L., Waltermaurer, E., Rubin, S. (2019)</p>	<p>Prior to implementation, anonymous pre and post surveys were conducted. Descriptive statistical analyses were used to analyze staff responses. Descriptive analyses of race, age, and type of insurance of all women of reproductive age was conducted. Preintervention was compared to intervention period using chi square test for significance. Chi square was also used to compare family planning documentation prior to intervention and during intervention. A time series analysis was conducted in 4 week blocks to note trends in relation to time.</p>	<p>1503 patients were seen, 96% of the patients were screened. Data noted 20% of the women wanted assistance with birth control, 5% wanted assistance with family planning, 51% reported no concerns with current method of birth control. Family planning documentation increased post intervention.</p>	<p>Sample size of 1503. evidence was a level 1 of high quality of evidence.</p>	<p>Staff did not describe increased time added to work flow. There was an increase in family planning documentation.</p>

Appendix B: Select Preconception Screening Tools

<b>Citation</b>	<b>Select Key Examples of Preconception Tools</b>	<b>Practice Strategies</b>
Bellanca, H. K., & Hunter, M. S. (2013).	One Key Question Initiative: Asking “would you like to become pregnant in the next year?”	The initiative also includes contraceptive counseling tailored to intentions and assists in reproductive planning. All women of reproductive age are asked the one key question during every patient encounter.
Telner, D., Barrett, R., Shirodkar, A., van Hal, A., & Salach, L. (2017)	Preconception Health Care Tool Per Canadian Family Physician	Support primary care providers in screening, counseling, and treating all patients of reproductive age. Identifies preconception risk factors.
March of Dimes (n.d)	March of Dimes Preconception Screening & Counseling Checklist	Evaluates diet, exercise, lifestyle, medication, medical/family history, women’s health, genetics, and home environment.