# IMPROVING ASSESSMENT OF PERINATAL DEPRESSION IN ADOLESCENTS: AN INTEGRATIVE LITERATURE REVIEW

by

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## Abstract

Perinatal depression is a diagnosis associated with potentially debilitating and far-reaching health consequences for both mother and infant. Although research demonstrates a much higher prevalence of perinatal depression in adolescents compared to adults, a significant gap exists within the literature regarding the particular factors that increase an adolescent's risk of developing this condition. As a result, this project seeks to answer the question: How can nurse practitioners in British Columbia identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? Eligibility criteria for this literature review included data published in 2000 or later, related to risk factors for perinatal depression in adolescents. This review utilised a socio-ecological framework to identify risk factors at the individual, interpersonal, community and social and cultural level of influence. Incorporating an assessment of these risk factors into routine prenatal and postpartum care of adolescent patients may enable nurse practitioners to identify those at high risk and begin interventions aimed at reducing their risk factors as early as possible to improve health outcomes of mother and infant. This project also makes recommendations for practice and education. Limitations of this project include the paucity of research, the retrospective nature of the studies reviewed, and the potential for recall bias in these studies. Further research can help to broaden and strengthen our understanding of risk factors for this high-risk, vulnerable population.

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## Glossary

**Adolescence:** The period between 13 and 19 years of age.

**Cohort design:** Prospective or retrospective observational study design indicating temporal sequence between exposure and outcome, since participants are known to be disease-free at the beginning of the observation period. Measure levels of exposure for each participant at baseline and again at intervals during the period of follow-up. Benefits: allows for multiple exposures to be examined. Limitations: selection bias is a potential issue with retrospective designs and lost data; difficulty identifying controls and potential for influence of unidentified confounders. (LaMorte, 2016; Levin, 2003)

**Community violence:** Represents past exposure to witnessing violence – physical, verbal, or sexual – as opposed to being a victim of it (Kennedy, Bybee & Greeson, 2015).

**Cross-sectional design:** Study design in which data is gathered at a single time point to examine the relationship between disease and other variables of interest. Benefits: relatively inexpensive, simple, and ethically safe. Limitations: establishes associations, but not causality; reliance on self-report of data increases susceptibility to recall bias. (Public Health Action Support Team, 2011)

**Generalizability:** The extent to which research findings and conclusions from a study conducted on a sample population can be applied to the population at large (Research Connections, 2013).

**Incidence:** The number of individuals in a population who will develop a specific health condition within a particular time period (Harvard T. H. Chan School of Public Health, 2016).

**Perceived social support:** An adolescent's belief in the level and quality of support she is receiving (Matsuda, Tsuda, Kim & Deng, 2014).

**Perinatal depression:** Depression originating at any point from conception to one-year postpartum. Symptoms are based on DSM-V diagnostic criteria for MDE with peripartum onset.

**Peripartum:** The last month of pregnancy or the first few months after delivery (Peripartum, 2016).

**Pregnancy intention:** Refers to whether the pregnancy was planned (Nunes & Phipps, 2013).

**Prenatal:** The period between conception and delivery (Prenatal, 2015).

**Prevalence:** The total number of individuals in a population who have a specific health condition at a specific period of time (Harvard T. H. Chan School of Public Health, 2016).

**Reliability:** The ability of a measurement tool to produce consistent results (American Academy of Pediatrics [AAP], 2010)

**Repeated measures design:** Study design in which measurements are collected at multiple time points in a longitudinal study. Benefits: more statistical power, fewer subjects needed to detect desired effect, able to track an effect over time. Limitations: potential for order effects, such as carry-over (occurs when effects of one treatment still present as next treatment is started) or latent effects (dormant effect of one treatment is activated by the next). (Frost, 2015)

**Self-esteem**: The confidence or belief in one's abilities or worth (Gerrig & Zimbardo, 2002). Types of self-esteem are defined below.

- **Global self-esteem:** One's overall sense of worth (Miller, 2007)
- **Maternal self-efficacy/self-esteem:** The belief in one's abilities to perform tasks of motherhood successfully (Kohlhoff & Barnett, 2013). Essentially it is an adolescent's self-esteem as it relates to her role as a new mother.
- **Parenting sense of competence:** Sense of satisfaction and efficacy in one's ability to perform tasks of parenthood successfully or efficiently (Deković et al., 2010).
- **Perceived caretaking ability:** The belief in one's ability to care for one's child (Cox et al., 2008).

**Sensitivity**: The accuracy of a measurement tool in correctly identifying the problem (AAP, 2010).

**Social support:** Assistance provided through social networks. Types of social support are defined below. (Dalgard, 2009)

- **Comparison support:** Support given by someone in a similar situation.
- **Appraisal or Confidante support:** Support in the form of feedback or affirmation.
- **Emotional or Affective support:** Support in the form of expressions of empathy, love, trust, caring, esteem, or concern.
- **Informational support:** Support in the form of suggestions, advice, or information.
- **Material or Instrumental support:** Support in the form of tangible aid and service in the form of labour, money, or time.

**Specificity:** The accuracy of a measurement tool in correctly identifying individuals who do *not* have the problem (AAP, 2010).

**Suicide gesture:** The act of self-harm intended to give the appearance of suicidal behaviour, but without actual intent to die (Nock, Holmberg, Photos, Michel, 2007).

**Validity:** The ability of a measurement tool to discriminate between an individual with the problem and those without (AAP, 2010).

**Victimisation:** Being the victim of physical, sexual, or verbal abuse by another (Kennedy et al., 2015).

**Vulnerability:** the quality or state of being susceptible to injury of a physical or non-physical nature (Vulnerability, 2015).

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This thesis is dedicated to my husband, Kyle, and my parents, Colin and Janet. You never stopped believing in me, even when I didn't believe in myself. You were a constant source of encouragement, love, support, and endless cups of tea through all of the ups and downs and without all of you I would not have finished this project. I am forever grateful for everything you have done in helping me to achieve this major milestone in my life.

## Introduction

Perinatal depression is a serious and prevalent condition affecting Canadian women. Adolescents represent a unique population of perinatal women with added vulnerabilities, which may include overlapping developmental stages of adolescence and new motherhood, poor health literacy, or susceptibility to financial instability without parental support. The research demonstrates a substantially higher rate of perinatal depression in adolescents, with prevalence rates more than twice those of adult women (British Columbia [BC] Reproductive Mental Health and Perinatal Services BC, 2014; Fleming et al., 2015). Yet, despite evidence demonstrating that perinatal adolescents are a high-risk group, very little is known about the particular factors that increase their risk of developing this condition. This lack of knowledge is particularly problematic, as it precludes healthcare providers from referring their patients to interventions that target their specific risk factors to reduce their risk of, or prevent, perinatal depression.

To address this gap, this integrative review of the literature will examine the particular risk factors that adolescents have for perinatal depression. This review will be guided by the following research question: How can nurse practitioners (NPs) in British Columbia identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? The findings of this review will help to inform NP practice by making evidence-based recommendations to identify adolescents at high risk for perinatal depression in order to provide more comprehensive care, act as advocates for these women, and achieve better health outcomes for mother and child.

To answer this question, an overview of the relevant concepts and gaps in knowledge will be presented. Next, the literature search methods for the review will be described. Following, the studies meeting the inclusion and exclusion criteria for this review will be presented and the

findings critiqued and synthesized through the lens of a socio-ecological theoretical framework. Finally, a discussion of findings, including implications and recommendations for NP practice, and recommendations for education and research will ensue.

# CHAPTER ONE

## BACKGROUND

Pregnant and parenting adolescents represent an important, yet vulnerable population of women cared for by NPs in BC, with prevalence rates almost double that of adult women (Fleming et al., 2015) and significantly increased severity of depressive symptoms (Kleiber & Dimidjian, 2014; Lanes et al., 2011; Siegel & Brandon, 2014). Perinatal depression rarely resolves on its own without treatment (NIHCM, 2010); therefore providers should be aware of the particular risk factors for perinatal depression associated with adolescence in order to identify those at high-risk and facilitate interventions targeting these risk factors as early as possible to prevent the poor outcomes associated with perinatal depression. The consequences of not recognizing adolescents at high-risk can have far-reaching negative effects on the health and well being of both the adolescent and her child. Therefore, this review aims to investigate the particular risk factors that increase perinatal adolescents' risk for depression.

This Chapter provides a review of the literature on what is known about adolescent perinatal depression and highlights the gaps in knowledge that this paper aims to address. In doing so, this Chapter will provide an overview of perinatal depression and its potential consequences. From there, current recommendations for screening and the role of NPs in the provision of care will be discussed. Next, a discussion of the attributes and life circumstances of pregnant and parenting adolescents that make them unique from perinatal adults will ensue. Finally, the theoretical framework that will be used throughout this paper will be presented. Due to the paucity of literature available on the topic of adolescent perinatal depression, literature older than 10 years has been included.

## Perinatal Depression

Perinatal depression is a common adverse outcome of pregnancy that can affect all aspects of a woman's life, from her emotions and social interactions, to her physical state. The diagnosis for perinatal depression is based on the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) for major depressive episode (MDE) with Peripartum Onset, presented in Table 1. The DSM-V indicates that symptoms begin either during pregnancy or within the first month postpartum (American Psychological Association [APA], 2013). However, based on a review of the literature demonstrating that symptoms often persist at 12 months postpartum (Logsdon et al., 2010), the definition of perinatal depression for the purpose of this project has been expanded to include MDE originating at any point from conception to one-year postpartum. Expanding upon the aforementioned diagnostic criteria, Box 1 presents the most common clinical manifestations of perinatal depression.

Table 1 *DSM-V Diagnostic Criteria for MDD and MDE with Peripartum Onset*

| | |
|---|---|
| **MDE WITH PERIPARTUM ONSET** | Unspecified depressive disorder in which symptoms characteristic of a depressive disorder causing clinically significant distress or impairment in social, occupational, or other important areas of functioning predominate, but do not meet the full criteria for MDD.<br>The specifier 'with peripartum onset' can be applied if onset of mood symptoms occurs during pregnancy or in the 4 weeks following delivery.<br>Women with peripartum MDE often have severe anxiety or even panic attacks |
| **MAJOR DEPRESSIVE DISORDER (MDD)** | Five (or more) symptoms present during the same 2-week period and representing a change from previous functioning that cause clinically significant distress or impairment in social, occupational, or other important areas of functioning; at least one of the symptoms is either depressed mood or loss of interest or pleasure.<br><br>• Depressed mood most of the day, nearly every day<br>• Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day<br>• Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day<br>• Insomnia or hypersomnia nearly every day<br>• Psychomotor agitation or retardation nearly every day<br>• Fatigue or loss of energy nearly every day |

| | |
|---|---|
| | • Feelings of worthlessness or excessive or inappropriate guilt nearly every day<br>• Diminished ability to think or concentrate, or indecisiveness, nearly every day<br>• Recurrent thoughts of death, suicidal ideation with-out a specific plan, suicide attempt, or a specific plan for committing suicide |

Source: APA (2013)

Box 1 *Clinical Manifestations Associated with Perinatal Depression*

- Persistent sadness or excessive crying
- Mood swings, irritability, crankiness
- Difficulty concentrating or remembering and indecisiveness
- Feelings of worthlessness, inadequacy or guilt
- Inability to sleep or sleeping too much
- Fatigue, loss of energy
- Feeling overwhelmed
- Significant increase or decrease in appetite
- Feelings of doubt, guilt, and helplessness
- Anxiety manifested as fear of harming or extreme concern and worry about the baby
- Poor mother-infant bonding
- Poor parenting self-efficacy
- Negative maternal attitudes
- Psychomotor agitation or retardation
- Somatic symptoms (headaches, chest pains, heart palpitations, numbness, and hyperventilation)
- Loss of interest or pleasure
- Recurrent thoughts of death or suicide

Source: Kammerer et al. (2008); Lanes, Kuk and Tamim (2011); NIHCM (2010); Norhayati (2015); Patel et al. (2012)

Two conditions, postpartum psychosis and 'baby blues', although frequently associated with perinatal depression, have been excluded from this literature review. Postpartum psychosis, a rare but serious condition, was excluded as it is a psychiatric emergency requiring hospitalization, and is therefore too specialized for the aim of this paper (NIHCM, 2010). The 'baby blues' are also not included, as they do not meet the DSM-V criteria for MDE with peripartum onset. Baby blues generally occur in the first few days after delivery and affect the majority of mothers (50% to 80%; Earls, 2010). It is differentiated from perinatal depression as its classical symptoms of crying, worrying, sadness, anxiety, or mood swings do not impair function and generally resolve within one to two weeks (Earls, 2010).

**Consequences of Perinatal Depression**

Perinatal depression can have devastating consequences for both mother and child if it is not adequately treated (American College of Obstetricians and Gynecologists [ACOG], 2015). While the previous section depicted the clinical manifestations of perinatal depression, which can negatively impact a woman's quality of life, this section further elucidates the potential consequences of under-treated perinatal depression by discussing the impact on pregnancy and birth outcomes, parenting skills, and short and long-term negative outcomes for the child.

Adverse pregnancy and birth outcomes associated with untreated perinatal depression are as follows, spontaneous abortion, low birth weight (LBW) and small for gestational age (SGA) babies, preterm delivery, low Apgar scores, and high cortisol levels in babies at birth (Bonari et al., 2004; Hodgkinson et al., 2010; Kleiber & Dimidjian, 2014; Reid & Meadows, 2007). Of particular concern is the risk for LBW and preterm delivery, as these are leading causes of neonatal mortality and infant morbidity (Hodgkinson et al., 2010). More severe depressive symptoms in adolescent mothers have also been found to negatively impact infant feeding interactions, infant attention, and infant arousal (Kleiber & Dimidjian, 2014; Reid & Meadows, 2007).

Women with perinatal depression are more likely to exhibit poor parenting, aggressive parenting behaviour, and less responsive or affectionate contact behaviour with their infants (Letourneau et al., 2004; Siegel & Brandon, 2014). This negative parenting, in turn, can have a profound impact on the child that may continue throughout his or her life. Indeed, children of mothers with perinatal depression have demonstrated increased levels of psychopathology, higher incidence of cognitive and social-emotional developmental difficulties, poorer school performance, poorer reading ability, higher levels of criminal activity, and increased tobacco and

alcohol use compared to children of mothers without perinatal depression (Letourneau et al., 2004; Shaw, Lawlor & Najman, 2006).

The consequences of perinatal depression remaining unrecognized or undertreated are particularly concerning for adolescents, due to their increased risk of adverse birth outcomes and parenting difficulties compared to adult mothers (Passino & Whitman, 1993). Severity of depressive symptoms and suicide risk is also substantially higher for perinatal adolescents compared to either non-perinatal teenagers or perinatal adults, with the greatest severity of symptoms noted between the second and third trimesters (Kleiber & Dimidjian, 2014; Lanes et al., 2011; Siegel & Brandon, 2014; Fleming et al., 2015). Further, adolescents with perinatal depression are at higher risk of experiencing psychosocial and self-maturation issues throughout the remainder of their adolescence (Secco et al., 2007), and are more likely than their adult counterparts to suffer recurrent depressive episodes later in life (Schmidt et al., 2006).

These potentially far-reaching negative effects of perinatal depression highlight the significance of this issue for BC's healthcare system from a health promotion and disease prevention standpoint, and demonstrate the importance of identifying high-risk adolescents as soon as possible. By identifying high-risk adolescents, providers may be able to implement interventions earlier, in order to provide the skills and support necessary to promote a healthy environment for the mother to raise her infant.

## Current Screening Recommendations

A major factor in perinatal depression remaining under-recognized and under-treated may pertain to the lack of clear guidance for healthcare providers regarding screening and assessing for risk factors. Indeed, the BC Reproductive Mental Health Program (2006) found healthcare

providers often feel under-informed, under-resourced, or both, for treating and supporting women with perinatal depression.

Only one national guideline, produced by the Society of Obstetricians and Gynaecologists of Canada (SOGC), specifically addresses perinatal depression in adolescents. Within this guideline, the authors (Fleming et al., 2015) briefly address perinatal depression in adolescents and recommend routine and repeated screening in each trimester and postpartum. The authors then make a vague recommendation for providers to screen more frequently "as deemed necessary" (p. 746), with no guidance as to what this means in a patient-centred context. Further, the SOGC guideline is very recent. As such, it may not be universally implemented by NPs, particularly in BC where the Perinatal Services BC programme recommendations, specifically their *Maternal Care Pathway*, are widely adhered to by many healthcare providers. This is problematic, as the recommendations by the BC Reproductive Mental Health and Perinatal Services BC (2014), while broad in their coverage of pregnancy related issues, do not make a distinction between adolescent and adult women. Further, the authors only recommend screening for perinatal depression once between 28 and 32 weeks gestation using the Edinburgh Postnatal Depression Screen (EPDS). Given the high rate of perinatal depression and severity of symptoms in adolescents, this recommendation is likely inadequate and probably too late to begin screening for this population.

Consequently, the SOGC recommendations are more appropriate for use with pregnant adolescents. However, a gap remains, as the guideline does not provide a comprehensive review of risk factors associated with this condition, mentioning only two factors that have been identified in the literature – prenatal depressive symptoms and intimate partner violence (IPV). In order to improve the health outcomes of mother and child by identifying adolescents at high-

risk for perinatal depression, NPs must be provided with the necessary knowledge regarding the risk factors to assess for. Clearly, there is room for more clarity for BC healthcare providers regarding perinatal depression in adolescents, which is where the findings of this project may be helpful in informing NP practice.

## Role of Nurse Practitioners

NPs are well suited to address the issue of perinatal depression in adolescents, as they often provide routine care to women, youth, and vulnerable populations (Dahrouge et al., 2014), with an emphasis on social determinants of health and health promotion (Archibald & Fraser, 2012). The Canadian Nurses Association ([CNA], 2009) defines NPs as "registered nurses with additional educational preparation and experience who possess and demonstrate the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform special procedures within their legislated scope of practice" (p. 1). Originally introduced in an effort to improve access to individualized, high-quality, cost-effective healthcare, NPs are now the fastest growing advanced practice nursing role in Canada with legislation authorizing their role in all 10 provinces and three territories (Donald et al., 2010).

NPs provide primary health care to individuals and families across the lifespan with an emphasis on health promotion, disease prevention, and evidence-based holistic healthcare (CNA, 2009; Donald et al., 2010). A study by Dahrouge et al. (2014) examined the role of family physicians and NPs in primary care clinics in Ontario, finding that while physicians were more likely to treat patients with serious acute or chronic illnesses, NPs were more likely to see patients from vulnerable groups and perform routine care for women and children. The study found that women made up 65% of NPs' patient population (versus 53% for physicians) and NPs

saw more than twice as many patients in the 10 to 19 year age range. Dahrouge et al. also found NPs saw more homeless, new immigrants, and uninsured patients than their physician counterparts. This is supported by a study by Sangster-Gormley (2012), in which 37 NPs in BC were surveyed. Sangster-Gormley found that a large population of NPs' patients were homeless/street involved patients (19%), First Nations or Inuit (16%), and new immigrants to Canada (10%). Thus, NPs are more likely to see adolescent females, including marginalized and minority adolescents, in their practice and can be influential in contributing to improved health outcomes for these adolescents and their children through assessing for risk factors, screening for depression, initiating interventions as needed, and providing regular follow-up for the adolescent and child.

## Perinatal Depression in Adolescence

This section will review perinatal depression as it pertains to adolescence to highlight the need for closer attention and monitoring of this condition in this population. A search of the literature reveals that for adolescents, this issue has received little empirical and clinical attention to date, leaving perinatal depression in this population largely unaddressed by researchers and healthcare providers (Logsdon & Myers, 2010; McCue Horwitz et al., 2002; NIHCM, 2010). This is particularly concerning, given their risk profile and the high prevalence of perinatal depression in this population. Understanding the unique needs and experiences of pregnant and postpartum adolescents that differentiate them from perinatal adult women is necessary to provide effective healthcare to this population.

### Prevalence of Adolescent Perinatal Depression

While rates of teenage pregnancy have seen a steady decline in recent years, there are still a sizeable number of adolescents giving birth annually. In BC, McKay (2013) found that in 2010

the number of pregnancies in females aged 15 to 19 was 29.5 per 1000 females. With Statistics Canada (2015) reporting 134,124 females aged 15 to 19 in BC, this equates to approximately 3,957 adolescent pregnancies in BC in this past year alone. Further, it is estimated that three in 10 girls will become pregnant at least once by the age of 20 (Fulmer & Cumming, 2014).

Most alarmingly, up to half of these adolescents who become pregnant each year will develop perinatal depression (Fleming et al., 2015). While the period of adolescence is commonly associated with depression, the rate of depression in non-pregnant teens, 4% to 8%, pales in comparison to that of perinatal teens, 16% to 44% (Fleming et al., 2015). Further, rates of perinatal depression in adolescents are almost twice as high as those seen in perinatal adults (BC Reproductive Mental Health and Perinatal Services BC, 2014). With approximately 1600 new cases of perinatal depression in adolescents each year in BC this is a substantial public health issue that merits further attention regarding how to improve the identification of high-risk teens to facilitate earlier interventions and treatment.

**Perinatal Adolescents as a Unique and Vulnerable Population**

In discussing the heightened vulnerability of pregnant adolescents, the following three components must be present for this population to be considered vulnerable (Economic Commission for Latin America and the Caribbean [ECLA], 2002). First, a potentially adverse event, such as a risk, must exist. Second, the individual must have incapacity to respond to this situation, due to personal lack of capability or absence of outside support. Third, the individual must have an inability to adapt to the new situation caused by presence of the risk (ECLA, 2002). This section will demonstrate that perinatal adolescents do indeed meet this criteria for being considered a vulnerable group, as the factors that contribute to teenage pregnancy and being in

the developmental stage of adolescence limit their capacity to cope with and adapt to the biological, emotional, and psychosocial changes of pregnancy and the transition to motherhood.

**Socio-demographics of pregnant adolescents.** Females who become pregnant during adolescence are more likely to have a poor socio-economic profile, which can have a profound impact on their health. Pregnant teens are more likely to be impoverished, single, and socially isolated with low education levels (Fleming et al., 2015; Kingston, 2012) and low employment rates (Fulmer & Cumming, 2014). They often have histories of major mental illness, maltreatment or abuse, and are more prone to engage in high-risk behaviours, such as substance use or lower rates of contraceptive use (Fulmer & Cumming, 2014). Further, pregnant adolescents are more likely to not want their pregnancies and to be unhappy about them (Kingston, 2012). Low socio-economic status also impacts access to care and decreases the likelihood of having a regular healthcare provider (Escarce, 2003). Therefore, the very circumstances that contribute to these adolescents becoming pregnant in the first place also act as a barrier to accessing quality healthcare. This not only substantially increases their risk for poor health outcomes during and after their pregnancy, but also increases the likelihood that any health issues that may develop, such as perinatal depression, will remain unrecognized and untreated, due to barriers in accessing timely and quality healthcare.

**Adolescence.** The period of adolescence is a lengthy and critical transition, during which the teen is neither a child nor an adult. This becomes particularly challenging as the adolescent attempts to establish independence, develop individuality, and assert emotional autonomy from her parents, while still remaining part of the family (Nolen-Hoeksma & Hilt, 2009; Birkeland, Thompson & Phares, 2005; Siegel & Brandon, 2014). Concurrently, parents and society have difficulty letting go of their perception of the adolescent as a child, recognizing her "relative lack

of preparedness for the assumption of full adult responsibilities" (Nolen-Hoeksma & Hilt, 2009, p. 4). The ensuing flux and renegotiation between adolescent and society potentiate external and internal conflict (Nolen-Hoeksma & Hilt, 2009). Adolescence is also marked by an increase in self-consciousness with the emergence of the social self, where teens' behaviours become increasingly influenced by peer interactions and societal influences (Choudhury et al., 2006; Lewis et al., 2015).

Thus, during this period, adolescents move away from the security of their nuclear family to assert themselves as independent and autonomous in an attempt to establish their own identity. At the same time, peers, society, and social media can have an even more powerful influence on their self-esteem and behaviour. Indeed, the pressures to engage in high-risk behaviours become particularly great during this transition (Fulmer & Cumming, 2014). Coping with these changes and pressures can be particularly challenging, as adolescents are not yet capable of fully comprehending complex concepts, actions and consequences, or how to make informed decisions about their health (World Health Organization [WHO], 2016). Thus, difficulties adjusting and mental health problems, such as depression, can become a significant issue during this developmental period (WHO, 2016).

**Transition to motherhood.** New motherhood also represents a critical transition. During this period, changes include adapting to a new role as a parent, altered relationships with family and friends, changes in self-perception and body image, physical recovery from childbirth, and adjusting to the work necessitated by caring for a new infant (Fahey & Shenassa, 2013). This transition often results in numerous stressors, such as decreased financial resources, physical exhaustion, task overload, role restriction and confusion, social isolation, and depressive symptoms (Birkeland et al., 2005). While these factors and events are all a normal part of

adapting to motherhood, it is likely that this transition may result in perinatal depression in women who also have additional risk factors that increase their susceptibility.

**Dual developmental crisis.** Evidently, both the period of adolescence and new motherhood are marked by significant physical, hormonal, and psychosocial changes (Fahey & Shenassa, 2013; Nolen-Hoeksma & Hilt, 2009; Choudhury, Blakemore & Charman, 2006; Lewis et al., 2015). Transitioning to motherhood during adolescence can be particularly challenging, and may further affect a pregnant teen's mental health. Indeed, as pregnant adolescents attempt to resolve the developmental tasks of adolescence and pregnancy, the conflicting goals of these overlapping developmental periods can result in a 'dual developmental crisis' that may hinder a healthy transition to motherhood (Kingston, 2012) and make adolescents more vulnerable to perinatal depression and its consequences than adult mothers.

In summary, pregnant adolescents are a particularly vulnerable group, differentiated from adult perinatal women by their poor socio-economic profile and being caught in two conflicting developmental stages. As such, research regarding assessing risk factors for perinatal depression in adults may not be applicable to adolescents, as it does not take into account the specific life events and challenges that distinguish them from adult women. Additionally, adolescents' unique circumstances and stressors can negatively impact their health and well-being, including increasing their risk for mental health concerns, and affect their capacity to cope with and seek help for adverse outcomes should they arise. This highlights the importance of NPs and other primary care providers (PCPs) accurately assessing pregnant and postpartum adolescents for adverse outcomes, including perinatal depression. It also demonstrates the need to address the knowledge gap regarding the particular risk factors for perinatal depression in adolescence to

provide PCPs with the necessary information to correctly identify those at high-risk and initiate appropriate interventions.

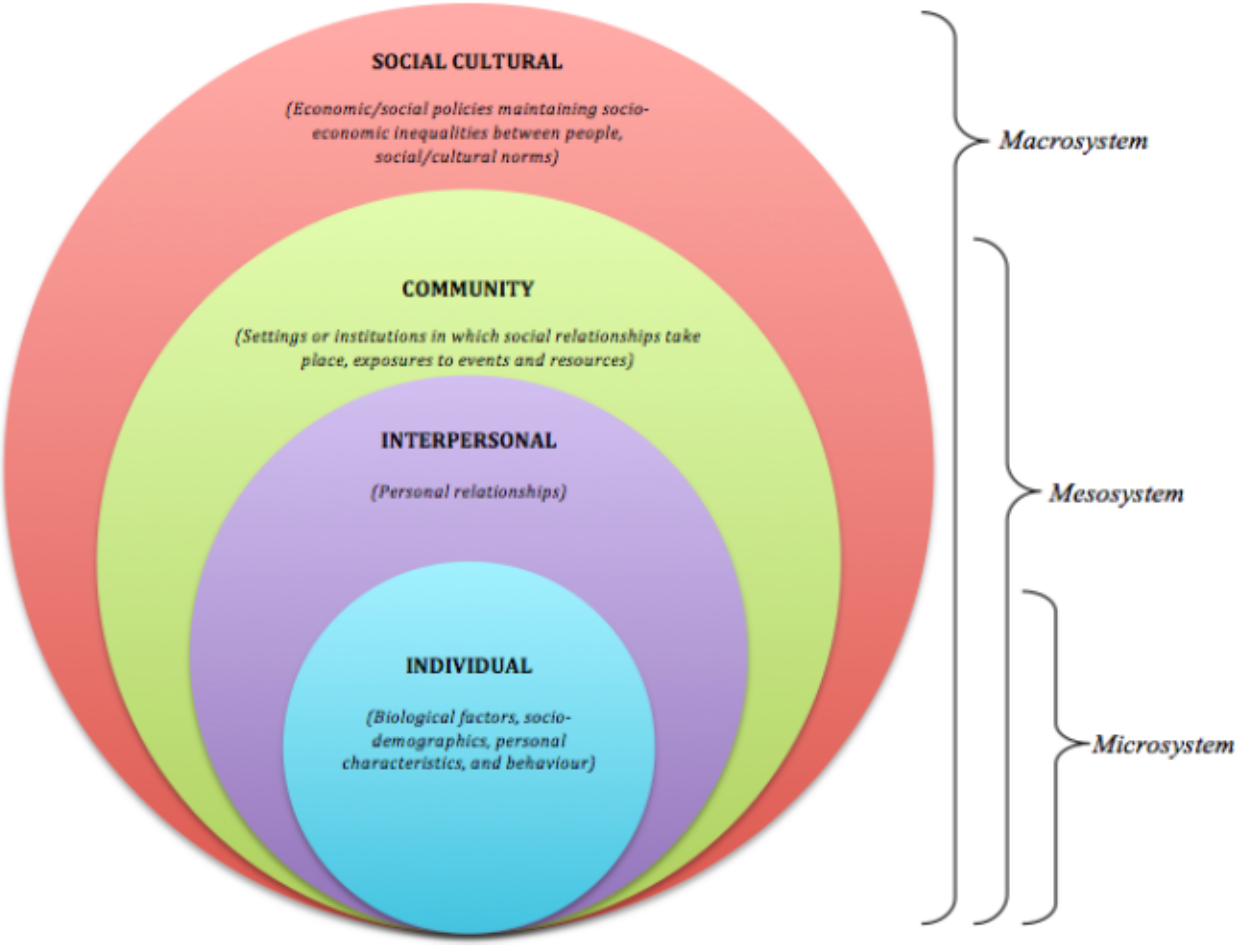
## Theoretical Framework

Given the biological, hormonal, and psychosocial changes occurring during the period of adolescence and transition to new motherhood, the socio-ecological model (Brofenbrenner, 1979) is useful as a framework for analysing the findings regarding the particular risk factors for developing perinatal depression in adolescence. This theoretical perspective addresses disease conditions by examining the interaction between the developing person, their social network, and the community and environment in which they exist. According to this theory, an individual's development and behaviour are influenced by these various systems, within which factors exist that influence an individual ranging from direct, such as family, to indirect, such as social support networks (Buzi, Smith, Kozinetz, Fleschler Peskin & Wiemann, 2015). The socio-ecological framework incorporates micro (individual characteristics of the pregnant or postpartum adolescent), meso (interpersonal and community influences), and macro (social, cultural, political and environmental influences) level influences that interact to cause a disease state. This theoretical framework is depicted in Figure 1 on the following page.

Throughout this Chapter, the knowledge gap pertaining to risk factors for perinatal depression in adolescents has been highlighted. An overview of perinatal depression, its clinical manifestations, and consequences was provided as a means of establishing the importance of identifying adolescents at risk for this condition and treating them as early as possible. Current guidelines were then discussed to elucidate the lack of recommendations regarding screening and assessing for risk factors, and the role of NPs in the provision of care for perinatal adolescents was explored. Following that, the heightened vulnerability of adolescents was discussed, to

establish them as a unique population from perinatal adult women. Finally, the socio-ecological theory that will serve as the framework for this paper was presented. This paper will now move to discuss the methods for this project's literature search, followed by an analysis and discussion of the findings.

Figure 1 *Socio-Ecological Theoretical Framework*



# CHAPTER TWO

## METHODS

The goal of this paper is to answer the question: How can NPs in BC identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? In order to answer this question, the literature search included studies examining risk factors for perinatal depression in an adolescent population. The methodology for this integrative literature review was based on the criteria of Whittemore and Knafl (2005).

The literature search was conducted by utilizing online databases available through the University of Northern British Columbia's library website. Search terms and MESH phrases used in the literature search can be found in Box 2. The search field was defined by medicine, nursing, and psychology. Databases searched included the following: Academic Search Primer, Biomedical Reference Collection: Comprehensive, Canadian health research collection, CINAHL, Cochrane Reviews, EBSCO, MEDLINE, Ovid SP, and PsychINFO. Google Scholar was also searched for studies pertaining to perinatal depression in pregnant and postpartum adolescents. Additionally, reference lists of studies and review papers were hand searched for relevant articles to make the search as comprehensive as possible.

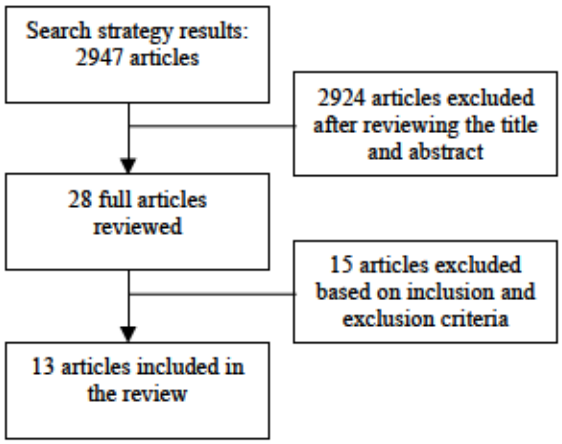
Box 2 *Search Terms for Databases*

| | |
|---|---|
| • Postpartum or postnatal depression | • Adolescent postpartum |
| • Perinatal depression | • Pregnant adolescent |
| • Maternal depression | • Pregnancy |
| • Depression | • Risk factors or risk |
| • Adolescent or teenager or youth | • Variable |
| • Adolescent mother | • Screening |

Relevant literature was collected through a three-step process depicted in Figure 2. First, the titles were screened to select articles that appeared relevant to the topic. Second, the abstract

of each of these articles was screened using the inclusion and exclusion criteria outlined in Box 3. Third, the full-text of the remaining articles was reviewed based on the same criteria. An effort was made to ensure the articles reviewed were as current as possible; however, the paucity of available research on the topic precluded the exclusion of articles published over ten years ago. Therefore, the search was extended to include articles published within the last 15 years, in an effort to be inclusive of research while still maintaining relevance to present day practice.

Figure 2 *Screening the Literature*




Box 3 *Inclusion and Exclusion Criteria*

| INCLUSION CRITERIA | EXCLUSION CRITERIA |
|---|---|
| • Published in 2000 or later<br>• Full text<br>• English language<br>• Peer-reviewed<br>• Primary qualitative, quantitative or mixed method design<br>• Adolescents 13 to19 years<br>• Depression beginning after conception and before one-year post delivery<br>• Factors affecting/influencing perinatal depression | • Published before the year 2000<br>• Non-academic articles<br>• Published in foreign language<br>• Diagnosis of depression beginning prior to conception<br>• Adult women > 19 years<br>• Non-pregnancy or childbirth related depression<br>• Postpartum psychosis<br>• Baby blues |

In defining the inclusion and exclusion criteria (Box 3), three elements required further clarification. First, the decision to define the period of perinatal depression from delivery to one-year postpartum was influenced by a longitudinal study by Schmidt et al. (2006), which examined depressive symptoms among adolescent mothers up to four years postpartum. In this study, the researchers found that the highest number of reports of new depressive symptoms occurred within the first 12 months postpartum. This finding was also supported by a study by Logsdon et al. (2010), which found that 47% of adolescent mothers had significant depressive symptoms at four to six weeks postpartum, and that these symptoms persisted at 12 months postpartum. Lastly, extending the inclusion period to one year postpartum helped ensure that all studies pertaining to depression related to pregnancy and childbirth in adolescents were included in the review.

Second, although some females experience menarche at a younger age and thus could become pregnant before reaching their teen years, research could not be found that addressed this issue of perinatal depression in females younger than 13 years old. Therefore, the period of adolescence was set at 13 to 19 years old.

Third, studies dealing with an adult population were excluded except where comparison between the age groups helped elucidate the risk factors and their level of significance on perinatal depression.

Following the literature screening process, a total of 13 studies were selected for review to answer this project's research question. The following chapters will analyse these articles and discuss the findings.

# CHAPTER THREE

## FINDINGS

The search strategy described in Chapter Two resulted in a total of 13 individual studies to assist in answering the research question: How can NPs in BC identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? The findings of this focused review are presented and critically analysed using the lens of a socio-ecological framework (Brofenbrenner, 1979). Prior to analysing these studies, it is beneficial to comment on the validity of screening and measurement tools used by researchers in the studies, the study designs used, and the interacting nature of the risk factors discussed.

To begin, since the validity and reliability of screening tools used by the researchers is important, given the need for accurate identification of adolescents with depression, I first evaluated the screening tools used by researchers based on the following criteria. An ideal screening tool should be reasonably priced, non-invasive, and identify a clinically significant disease that would cause significant morbidity and mortality if left untreated (Seballos, 2010). The disease to be screened should also have a preclinical phase when the screening test can be administered and have an acceptable treatment method (Seballos, 2010). Additionally, Seballos (2010) notes that a valid and reliable screening tool should be sensitive (able to correctly identify patients with the disease) and specific (able to correctly identify those who do not have the disease).

Lastly, the benefits of a screening test should outweigh the harm. The benefit of screening is early identification of a disease or condition to facilitate earlier treatment. In a systematic review of depression screening tools in perinatal women, O'Connor et al. (2016) found that screening "pregnant and postpartum women, with or without additional treatment-

related supports, reduced the prevalence of depression and increased remission or treatment response" (p. 398) in the one good-quality and five fair-quality trials reviewed.

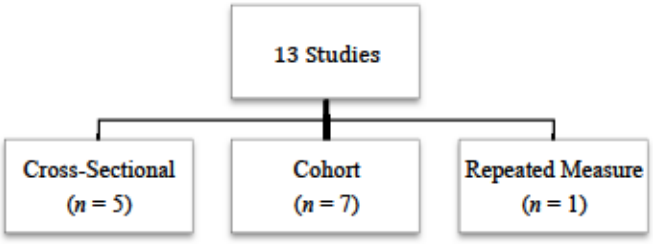
There are also potential harms to consider when screening for depression. Indeed, the National Collaborating Centre for Mental Health (2005) note that adolescents are more likely to over report depressive signs and symptoms, potentially leading to false positive screening results. Given the stigma associated with mental health conditions, including depression, there is the possibility that labeling a teen as depressed, particularly in the case of a false positive, may infer some potential harm. Further, research into the validity of depression screening tools in adolescents, particularly perinatal adolescents, is lacking and at times contradictory. For example, regarding the Center for Epidemiologic Studies Depression Scale (CES-D), the AAP (2010) notes that this tool may not discriminate well between depressed and non-depressed adolescents, while DeRosa and Logsdon (2006) found it to have great utility as a screening tool in teens, with high reliability and validity in perinatal adolescents. The Beck Depression Inventory (BDI-II) does not include the atypical symptoms commonly associated with perinatal depression, with the exception of irritability, potentially leading to higher false negatives in perinatal adolescents. On the other hand, the Reynolds Adolescent Depression Scale (RADS-2) includes somatic symptoms and negative self-evaluation that may be influenced by common changes in pregnancy and maternal self-esteem, possibly leading to higher false positives in perinatal teens.

In general, it appears the benefits of screening for depression far outweigh the potential risks, as O'Connor et al.'s (2016) review found no evidence of harm from depression screening in any of the six studies reviewed. Therefore, if the screening tools used by researchers within the study were found to meet the aforementioned criteria (Seballos, 2010), the study was then

analysed for its findings pertaining to risk factors for perinatal depression. For the reader's convenience, an analysis of the depression screening tools used by authors of the studies included in this review is presented in Appendix I. Similarly, a variety of different tools were utilised in the studies to measure risk factors, and a table of these tools, summarizing their purpose and validity in a perinatal adolescent population, is presented in Appendix II.

Three study designs were used in the 13 studies reviewed in this chapter (see Figure 3). The cohort design, which entails data collection at two time points to establish whether risk factors have a direct or indirect influence on depression, was most commonly used. The time required for follow-up of participants to update measures of exposures, confounders, and health outcomes may have been a drawback to more researchers choosing this design. The second most common design was the cross-sectional design, which involves data collection at a single time point and thus, can only establish associations and not causality. Although the evidence is not as strong from this type of study, it was likely a popular choice given its cost-effectiveness and simple, ethically safe design. Only one study utilised a repeated measures design. Although this particular design offers superior evidence into the relationship between risk factors and depression by tracking the effect of an exposure on an outcome over time, the time investment needed for its longitudinal design may have been a deterrent to researchers.

Figure 3 *Study Designs Used by the Studies Analysed Within this Project*



Many of the studies analysed within this chapter examined risk factors at more than one level of influence and are therefore discussed within multiple sections. In such cases, the reader will be alerted that the study has been previously analysed in an earlier section. Further, although the risk factors are discussed within the micro, meso, or macrosystem, it is key to note that factors from each level can interact and influence one another to increase a teen's risk of perinatal depression. To assist the reader in visualizing these connections, a diagrammatic depiction of these interactions between the risk factors identified within this chapter is provided in Appendix III.

## Microsystem Risk Factors

At the microsystem level, individual factors, such as biological factors, socio-demographics, and personal characteristics influence pregnant and parenting adolescents' behaviours and their likelihood of developing perinatal depression (Centers for Disease Control and Prevention [CDC], 2015). Of the 13 studies, eight examined risk factors at the individual level of influence, specifically age, self-esteem, and stress.

### Age

In Chapter One, the role of being less than 19 years of age and pregnant on increasing the risk for perinatal depression was discussed in terms of the overlapping developmental periods of adolescence and new motherhood. Two studies (Figueiredo et al., 2007; Nunes & Phipps, 2013) examined the impact of age on perinatal depression and risk factors for perinatal depression by comparing adolescents to adults to assess for differences between age groups.

In a cohort study, Nunes and Phipps (2013) studied age as it pertains to risk factors for perinatal depression in a sample of 6959 predominantly Caucasian and Hispanic, recently postpartum women in the United States (US), using the Rhode Island Pregnancy Risk

Assessment Monitoring System (RI PRAMS) questionnaire to identify depression and risk factors as follows: race, marital status, alcohol use, tobacco use, prior depression, hospitalization related to pregnancy, neonatal outcomes (birth defects, NICU, infant is alive, infant is living with mother, birth weight), stressors, social support, and pregnancy intention. Participants were divided into the following groups: adolescents (aged 15 to 19; $n = 676$), young adults (aged 20 to 24; $n = 1387$), and adults (one group aged 25 to 29; $n = 1735$ and another group aged 30 and over; $n = 3161$). The researchers found that compared to the young adult and adult groups, adolescents with perinatal depression demonstrated a higher prevalence and severity of depressive symptoms postpartum ($p < .0001$). Adolescent participants were also more likely to report a prior history of depression in the year prior to pregnancy than the adult participants (14.5% versus 9% respectively, $p < .0002$). Regarding risk factors, material and comparison support[1] were found to decrease the likelihood of reporting postpartum depressive symptoms in all age groups ($p < .05$). While race and pregnancy intention were important for adult mothers, they were not significant risk factors for perinatal depression in adolescents. Stress was also found to be a significant risk factor for all age groups, as the researchers found that participants of all age groups reporting six or more of the stressors discussed below were more likely to report depressive symptoms, although this risk was greatest in participants over 20 years of age.

This lack of importance attributed to stressors for adolescent participants may be due lack of applicability to an adolescent population. The stressors examined within this study were as follows: 'A close family member was very sick and had to go into the hospital', 'I got separated or divorced from my husband or partner', 'I moved to a new address', 'I was homeless', 'My husband or partner lost his job', 'I lost my job even though I wanted to go on working', 'I argued

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[1] Definitions for types of support can be found in the Glossary.

with my husband or partner more than usual', 'My husband or partner said he didn't want me to be pregnant', 'I had a lot of bills I couldn't pay', 'I was in a physical fight', 'My husband or partner or I went to jail', 'Someone very close to me had a bad problem with drinking or drugs', and 'Someone very close to me died'. Therefore, the stressors pertaining to losing jobs, going to prison, ill family members in hospital, having lots of bills to pay, or someone close dying are better suited to adults than adolescents. Indeed, there is no inclusion of stressors typical for adolescents and their developmental stage, such as school pressure, dating and friendships, peer pressure, body image, family and peer conflicts, or dealing with the physical and cognitive changes of puberty (McNeely & Blanchard, 2009). This highlights the need for assessing stressors pertinent to the patient's age, as stressors common to adults may not be applicable to adolescents and vice versa. Not screening for age-appropriate stressors may result in a false negative screen, which could contribute to adolescents at risk for perinatal depression remaining unrecognized and untreated.

Limitations of this study (Nunes & Phipps, 2013) included use of the RI-PRAMS questionnaire to measure all risk factors, as this author found no studies validating its use with an adolescent or postpartum population, and no validity data was provided within the study. There was also the potential for recall bias due to the retrospective design. Despite these limitations, this study had several strengths, including random sampling of participants, which minimized the risk of selection bias, a large sample, and the inclusion of multiple comparison groups based on age. Additionally, exclusion of women with diagnosed prenatal depression ensured observed depressive symptoms were new onset, rather than chronic symptoms (Nunes & Phipps, 2013). The findings of this study demonstrate that differences exist in risk factors between age groups. The findings also highlight that even though factors, such as social support and stress, may

increase the risk for perinatal depression in both adolescents and adults, the assessment of these risk factors should be age-specific by taking into account what types of social support and stressors are important for adolescents in particular in order to correctly identify the presence of these risk factors in perinatal teens.

A second cohort study (Figueiredo et al., 2007) examined the influence of age on perinatal depression in a random sample of 108 adolescent and adult mothers in Portugal. The researchers used a socio-demographic questionnaire to obtain data on age, place of birth, parity, education, occupation, and marital status, and the Portuguese version of the EPDS to obtain data on depression at 24 to 36 weeks gestation and two to three months postpartum. To compare risk factors by age, participants were divided into two groups, as follows: adolescents (aged 14 to 18; $n = 54$) and adults (aged 19 to 40; $n = 54$). In keeping with the findings of the previous study, the researchers found a higher prevalence of depressive symptoms in adolescents compared to adults ($p = .0421$ for depression during pregnancy, $p = .021$ for depression postpartum), however contrary to Nunes and Phipps' (2013) findings, they did not note a higher severity of symptoms in adolescents. This may have been influenced by the limited sample size and ethnicity of this study. During pregnancy the researchers found young age to be the greatest risk factor for perinatal depression; the younger the age, the higher the EPDS result ($p = .003$). When age was removed from the analysis, living without the partner was the strongest risk factor for depressive symptoms during pregnancy in both adolescents and adults ($p = .019$). In the postpartum period, the researchers found being under 18 years old ($p = .008$), living *with* the partner ($p = .051$), and already being depressed during pregnancy ($p = .002$) were the strongest risk factors.

Generalizability of the findings of this study (Figueiredo et al., 2007) was limited by participants' ethnicity. Additionally, the sample size was small, with 54 participants in each

group. A major strength of this study, however, was the time points at which depressive symptoms were measured, as these have been identified in the literature as peak incidences for development of perinatal depression (BC Reproductive Mental Health and Perinatal Services BC, 2014; Figueiredo et al., 2007). The findings of this study are useful to answer this project's research question, as they demonstrate that being 19 years or younger is the greatest risk factor for perinatal depression. Indeed, it was only when age was excluded from analysis that other risk factors, such as living without the partner during pregnancy or with the partner postpartum, had any effect on increasing the risk for depression in all age groups.

When comparing the age groups, the results indicated that while some risk factors were common to all age groups, the strength of their influence on depressive symptoms varied significantly. In particular, depressive symptoms in adolescents were most influenced by social support, stress, and prior history of depression. Conversely, adult depressive symptoms were most influenced by pregnancy intention, then race, stress, economic status, and finally, by social support (Nunes & Phipps, 2013). These findings demonstrate that risk factors for perinatal depression differ by age. Therefore, existing recommendations for assessing risk factors based on evidence in adult women are likely insufficient for adolescents and may lead to at-risk teens remaining unrecognized. This supports the need for an analysis of the research pertaining to adolescent-specific risk factors.

**Self-Esteem**

Of the studies reviewed, five examined the risk factor of self-esteem in adolescents (Cox et al., 2008; Fagan & Lee, 2010; Hudson et al., 2000; Logsdon et al., 2005; Logsdon et al., 2008). Of these, three studies (Hudson et al., 2000; Logsdon et al., 2005; Logsdon et al., 2008) examined the role of global self-esteem, while the remaining two studies (Cox et al., 2008; Fagan

& Lee, 2010) examined the influence of self-esteem related to motherhood (maternal self-efficacy, perceived caretaking ability, and maternal parenting competence)[2]. The period of adolescence and new motherhood both constitute major life transitions that may have a substantial impact on an adolescent's self-esteem. Further, self-esteem can significantly affect adolescents' long-term mental health, as low or decreasing self-esteem during adolescence not only predicts perinatal depression, but also depression later in adolescence, young adulthood (Orth, Robins & Roberts, 2008), and even in middle-adulthood (Steiger et al., 2014). This potential for low self-esteem to have such lasting effects on depression throughout a patient's life is perhaps why several studies have explored the role of these fluctuations in self-esteem on the development of perinatal depression in adolescents.

**Global self-esteem.** Global self-esteem often fluctuates during adolescence, depending upon whether experiences during this period are deemed as negative stress-inducing experiences, or positive self-enhancing experiences (Morin et al., 2013). For example, body image can be particularly meaningful during adolescence; therefore issues such as weight gain and changes in body shape that are normal during pregnancy may negatively impact a pregnant teen's global self-esteem.

In a cross-sectional pilot study, Hudson et al. (2000) examined the relationship between depression, self-esteem, loneliness, and social support in a convenience sample of 21 primarily Caucasian adolescent mothers in the US, by administering the Rosenberg Self-Esteem Scale (RSES) to measure global self-esteem and the CES-D to measure depression. The researchers found that while self-esteem was positively associated with social support ($p < .05$), there was no significant relationship noted between self-esteem and depression, suggesting self-esteem may

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[2] Definitions for types of self-esteem can be found in the Glossary.

have more of a mediating effect between social support and depressive symptoms, rather than a direct influence on depression itself. The findings highlight the linkage between self-esteem and social support; however, the findings should be interpreted with caution, given the small convenience sample used.

In a repeated measures study Logsdon et al. (2005) investigated the role of global self-esteem and social support on perinatal depression in a sample of 128 African-American and Caucasian pregnant adolescents in the US, by administering the RSES to measure global self-esteem and the CES-D to measure depression at baseline (32 to 36 weeks gestation) and six weeks postpartum. The researchers found global self-esteem had a direct impact on depression scores; not only was low self-esteem associated with higher depressive scores, but also as self-esteem improved, participants reported fewer depressive symptoms ($p < .01$). Strengths of this study included a high completion rate (85%) that minimized the likelihood of response bias and controlling for potential indirect effects of support on depression through self-esteem. The findings add to the research question, as they suggest that global self-esteem has both a predictive and protective effect on perinatal depression in adolescents.

A cross-sectional study by Logsdon et al. (2008) utilised a bio-ecological model to examine the impact of self-esteem, stress, social support, and exposure to community violence on adolescent postpartum depression in a convenience sample of 85 newly postpartum adolescents in the US, by administering two validated tools – the RSES to measure global self-esteem and the CES-D to measure depression. Researchers also administered Pearlin's Sense of Mastery Scale to measure the extent to which the adolescents felt their lives were under their own control, although no studies were found to validate this tool in an adolescent or postpartum population. The researchers found global self-esteem was highly correlated with depressive

symptoms ($p = .004$). It was unclear from the study's results whether participants had high self-esteem scores with low depression scores, low self-esteem scores with high depression scores, or both, thus making it difficult to infer whether global self-esteem was predictive or protective against depressive symptoms. Another limitation of this study was low enrolment rate of eligible participants (Logsdon et al., 2008) and use of a small convenience sample. Despite these limitations, the findings still warrant attention, as they help to confirm Logsdon et al.'s (2005) study that had similar findings.

It is possible that some of the effects seen on depression from global self-esteem may be mediated by social support, as Cox et al. (2008) found social support to have a modifying effect on the relationship between self-esteem and depression and Hudson et al. (2000) found a significant positive relationship between social support and self-esteem. This may be due to the underlying cause of low self-esteem itself, as Nunley (1996) noted than low self-esteem is the result of social rejection. Thus, low social support may lead to increased feelings of isolation and decreased self-esteem. At the same time, low self-esteem may inhibit an adolescent's coping mechanism and ability to seek out new supports (Nunley, 1996). The correlation between these two risk factors makes it difficult to clearly establish whether the true risk factor for perinatal depression in adolescents is low social support, low self-esteem, or the presence of both low social support and low self-esteem together.

**Maternal Self-Esteem.** Maternal self-esteem, which encompasses types of self-esteem pertaining to the role of motherhood (maternal self-efficacy, parenting sense of competence, and perceived caretaking ability), has also been linked with depression in the literature. Mothers who perceive their infants as irritable or difficult to console may feel their physical and psychological resources depleting (Denis, Ponsin & Callahan, 2012). This may influence their belief in

themselves and their abilities as a mother. In turn, these feelings of parental incompetency may increase depressive symptoms (Denis et al., 2012).

In a cross-sectional study, Cox et al. (2008) investigated the associations between maternal caretaking ability, social support, and depressive symptoms in a sample of 168 primarily African American and Latina adolescent mothers in the US, by administering two validated tools, the CES-D Scale for Children (CES-DC) to measure depressive symptoms, and the Maternal Self-Report Inventory (MSRI) to measure maternal self-esteem, maternal caretaking ability, and self-perceived positive parenting attributes at two weeks postpartum. The researchers found that low maternal self-esteem and low self-perceived caretaking ability were associated with higher depressive symptoms ($p < .001$ and $p = .003$ respectively). While not a direct variable of study, the researchers also noted that mothers with depressive symptoms were far more likely to report a prior history of mental health problems ($n = 106$ vs. $n = 62$, $p = .06$) and suicidal gesture ($n = 126$ vs. $n = 42$, $p = .03$), providing insight into the strong association between prior mental health problems, including suicidal ideation and suicidal gestures with perinatal depression in adolescents.

The generalizability of this study (Cox et al., 2008) was limited by use of a convenience sample and the cross-sectional design inhibited the inference of causality between maternal self-esteem and depression. Further, since depressed mothers often have poorer maternal infant relationships (Kleiber & Dimidjian, 2014; Letourneau et al., 2004; Siegel & Brandon, 2014), it is unclear whether maternal self-efficacy is a risk factor for depression, or a consequence of it. Regardless, the findings of this study are useful, as they reveal a significant association between low maternal self-efficacy and perinatal depression.

A cohort study (Fagan & Lee, 2010) examined the association between adolescent mothers' postpartum depressive symptoms and their perceptions of the amount of father care-giving and satisfaction with the father's involvement with the baby in a sample of 100 predominantly African-American and Latina pregnant adolescent volunteers from very low-income urban US communities. The researchers used post-test data from the Adolescent Father Involvement Intervention Project, a pre-test/post-test randomized control trial (RCT), which assessed a co-parenting and child development intervention on adolescent mothers and their male partners. Researchers in this RCT administered two validated tools, the Parenting Sense of Competence Scale to measure maternal self-efficacy and the CES-D to measure depressive symptoms, at baseline and three months postpartum. Postpartum depressive symptoms were found to be moderately and positively associated with prenatal depressive symptoms ($p < .0001$) and postpartum maternal parenting stress ($p < .0001$). Negative correlations were noted between postpartum depressive symptoms and postpartum satisfaction with father support ($p < .01$) and maternal parenting competence ($p < .0001$). However, after controlling for the mediating effect of all variables in accordance with Baron and Kenny's (1986) guidelines, the researchers found that only maternal parenting competence ($p = .01$) and prenatal depressive symptoms ($p = .001$) were significant predictors of depressive symptoms postpartum.

Two limitations of this study (Fagan & Lee, 2010) were the potential for bias due to self-selected volunteers and use of a sample from a highly impoverished US community. However, the longitudinal design with data collection both prenatally and postpartum strengthened the findings. These findings are important, as they support the findings of the previous study (Cox et al., 2008) regarding the influence of parenting sense of competence on perinatal depression.

Further, these findings demonstrate the impact parenting competence has on an adolescent mother's satisfaction with involvement and support from the father of her baby.

The studies discussed above demonstrate that global self-esteem may have both a protective and predictive influence on the development of depressive symptoms in perinatal adolescents (Hudson et al., 2000; Logsdon et al., 2005; Logsdon et al., 2008), while low maternal self-efficacy and parenting competence were strongly associated with increasing depressive symptoms (Cox et al., 2008; Fagan & Lee, 2010). Cox et al. (2008) also noted that the relationship between maternal self-efficacy and depression goes in both directions; while low maternal self-efficacy can increase the likelihood of developing depressive symptoms, adolescents with perinatal depression are subsequently more likely to have decreased parenting competence, increasing the likelihood of strained maternal-child interactions and poor child outcomes.

### Stress

Of the studies reviewed, three examined the risk factor of stress (Lesser & Koniak-Griffin, 2000; Logsdon et al., 2008; Venkatesh et al., 2015). Unmanaged stress has been linked to mental health concerns, such as anxiety and depression, in the literature (McNeely & Blanchard, 2009). Stressors common during adolescence, as previously discussed with Nunes and Phipps' (2013) study, may have a particularly significant impact during pregnancy, when situations such as changing friend and peer groups, weight gain, increasing school pressure from juggling the role of student and mother, and increasing conflict with partners can become more common. Additionally, stressors can have a greater impact in adolescents than they might in adults, as the prefrontal cortex is not yet fully developed, causing the physical response to stress to be much quicker (McNeely & Blanchard, 2009).

A cohort study (Venkatesh et al., 2014) examined the impact of parental stress on predicting the development of postpartum depression in a sample of 106 primarily Latina, African-American, and Caucasian adolescent mothers in the US, by administering two validated tools – the Structured Clinical Interview for DSM-IV Childhood Diagnoses (KID-SCID) to diagnose depression and the Parenting Stress Index, short form (PSI-SF) to measure stress – at six weeks, three months, and six months postpartum. Specifically, the PSI-SF measures levels of stress within the parent-child system, through the following subscales: parental distress (PD), which measures the level of distress resulting from personal factors (for example, depression or conflict with a partner) and from life restrictions due to the demands of parenthood (Haskett, Ahern, Ward & Allaire, 2006); parent-child dysfunction (PCDI), which measures parents' expectations of and satisfaction with interactions with their child (Dardas & Ahmad, 2013); and difficult child (DC), which measures parents' perceptions of their child's temperament, including "demandingness and compliance" (Dardas & Ahmad, 2013, p. 3). The PSI also combines each of these subscales into a total stress score. The researchers found higher levels of total parenting stress were significantly associated with a diagnosis of depression ($p < .0001$). By subscale of the PSI, the researchers also found high parental distress (PD; $p < .0001$), parent-child dysfunction (PCDI; $p = .03$), and difficult chid (DC; $p = .04$) scores were significantly associated with a diagnosis of depression.

Limitations of this study (Venkatesh et al., 2015) included a relatively small sample size and limited generalizability. Strengths of this study were as follows: exclusion of adolescents with a current affective disorder or those receiving mental health treatments, the use of a clinician-administered KID-SCID that eliminated the potential for bias inherent to self-report measures, the longitudinal design with measurements at multiple time points, and controlling for

potential confounding factors (Venkatesh et al., 2015). It should be noted, that given that participants were primiparous, it is possible their high stress may be related to low maternal self-efficacy from their inexperience with parenting (Venkatesh et al., 2014). Therefore, the effect seen on depressive scores in this study may be owing to this low maternal self-efficacy, rather than parental stress itself. Indeed, the researchers noted that the actual causal process by which stress leads to depression was not established in this study. Thus, maternal self-efficacy appears to influence the risk factor of stress in addition to social support, suggesting maternal self-esteem may be one of the most important risk factors for adolescents, given its influence on other risk factors identified within this chapter. The findings of this study not only demonstrate the influence of parental stress on developing perinatal depression, but also provide insight into what types of parental stress have the greatest influence.

Another cohort study (Lesser & Koniak-Griffin, 2000) also examined the role of stress on perinatal depression in a sample of 95 primarily Latina and Caucasian adolescents by administering two validated measurement tools – the CES-D to measure depression and Perceived Stress Scale (PSS) to measure stress – at intake (during the second or third trimester of pregnancy), four to six weeks postpartum, and six months postpartum. Data was collected as a secondary analysis of a larger experimental study that examined an Early Intervention Programme for Adolescent Mothers. Participants were recruited to the study from referrals to public health, and then randomly assigned to either the experimental group (regularly conducted intervention from second trimester through first year postpartum; $n = 50$) or the control group (traditional public health nursing care of one prenatal and one postnatal visit; $n = 45$). The researchers found higher perceived stress scores were significantly associated with higher depressive scores at all time points (correlations ranged from .23 to .62 in both groups). As with

Venkatesh et al.'s (2015) study, a cause-effect relationship was not established, therefore it is possible that higher perceived stress was a result of higher depressive symptoms, rather than a cause of it. Additionally, no difference was found between the experimental or control group, suggesting that if stress was identified as a risk factor for a teen, an intense public health intervention would have little effect on reducing her stress or depressive symptoms. These findings serve to advance the idea that stress is strongly associated with depression, thus supporting Venkatesh et al.'s findings. Further, these findings also highlight the need for NPs to be mindful of choosing efficacious interventions to target risk factors in adolescents identified as at risk for perinatal depression.

A cross-sectional study (Logsdon et al., 2008), discussed previously under 'Self-Esteem', assessed the impact of stress on perinatal depression by administering two validated tools – the PSS, short form to measure stress and the CES-D to measure depression, in a sample of 85 newly postpartum Caucasian participants in the US. The findings demonstrated a significant correlation between higher perceived stress scores and increased depressive symptoms ($p < .001$). While sources of stress were not definitively established within this study, Logsdon et al. (2008) suggested that participants'' high perceived stress may have been due to adjusting to the early postpartum period, their lower socioeconomic status, or the overlapping roles of adolescence and new motherhood. Although speculative, this suggests that high stress may be a greater issue for adolescents than adults, given the challenges associated with teen pregnancy itself, supporting the need to provide PCP's with knowledge of adolescent-specific stressors and indicates the need for assessment of stress throughout pregnancy and postpartum in teens.

The three studies discussed here demonstrate a significant correlation between high perceived stress and high depressive scores. In particular, the findings highlight that perceived

stress from conflict with the partner and/or child may be an important source of stress for adolescents. These findings highlight the need for NPs to assess for stress during pregnancy and postpartum, paying particular attention to increased conflict between the adolescent and her partner, and difficulties in the parent-child relationship. As the cause-effect relationship between stress and perinatal depression remains unclear, perceived stress (especially parenting stress) may have an indirect effect on depression through low maternal self-efficacy, or stress may be a result of depression itself.

In summary, the findings pertaining to risk factors at the individual level analysed here contribute greatly to closing the knowledge gap surrounding risk factors for adolescent perinatal depression. In evaluating the risk factor of age, the findings demonstrated that not only does being younger than 19 years of age when pregnant substantially increase the risk of developing perinatal depression, it also likely increases the severity of symptoms. The findings also indicated that depressed perinatal adolescents are likely to report a recent history of depression, which is unsurprising, given that depression is a highly recurrent condition with repeated episodes common (Holtzheimer & Nemeroff, 2006). Perinatal teens are also more likely to present with a history of suicidality. Global self-esteem and parenting competence (or perceived caretaking ability) were found to be both predictive and protective against perinatal depression, while low maternal self-efficacy was strongly associated with high depressive symptoms. Additionally, high levels of perceived stress, particularly relating to conflict and new parenting, was highly correlated with perinatal depression. Finally, an inverse relationship was identified between stress and maternal self-efficacy, whereby an increase in stress may lead to a decrease in a teen's maternal self-efficacy and vice versa, particularly with regard to parenting sense of competence. As each of these microsystem factors may increase the risk for perinatal depression

in adolescents, it is essential for NPs to be aware of them and to include them as part of their risk assessment for perinatal adolescents.

## Mesosystem Risk Factors

At the mesosystem level, attention is paid to interpersonal factors, such as personal relationships (family, friends, intimate partners, and peers) and community factors, such as exposure to events and resources may influence the risk of adolescents developing perinatal depression (CDC, 2015). These interpersonal relationships and community exposures are significant due to their contribution to the adolescent's range of experience, and their influence on her behaviour, including her willingness and ability to seek help and access health care. Nine of the 13 studies reviewed examined risk factors at this level of influence, specifically social support, history of victimisation, and exposure to community violence.

### Social Support

Of the studies reviewed, social support has received by far the most empirical attention, with seven of the 13 studies examining its influence on the development of perinatal depression in adolescents (Brown et al., 2012; Cox et al., 2008; Fagan & Lee, 2010; Huang et al., 2014; Hudson et al., 2000; Logsdon et al., 2005; Logsdon et al., 2008). In examining social support, five studies provided information on types of support[3] that are important to adolescents (Brown et al., 2012; Cox et al., 2008; Huang et al., 2014; Logsdon et al., 2005; Logsdon et al., 2008), while the remaining two studies (Fagan & Lee, 2010; Hudson et al., 2000) provided information on the role of satisfaction with support over perceived quantity of support received.

It is possible that so many studies have concentrated on social support as a risk factor because of the substantial role of social support and social networks during the period of

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[3] Definitions for types of support can be found in the Glossary.

adolescence. As discussed in Chapter One, the overlapping developmental periods of adolescence and motherhood alter the dynamics of social support for teen mothers. For example, teen mothers must try to balance their desire for independence from their parents, a developmental task of adolescence, with their financial needs as a new mother. Thus, they may struggle more than adult mothers with asking for material support. Similarly, the transition to motherhood during adolescence can alienate teen mothers from their peer supports, as their interests and priorities shift to parenthood. As adolescents are less able to cope with these challenges and changes than adults (WHO 2016), the impact of decreased social support may be especially poignant for adolescents. Additionally, research has consistently demonstrated positive associations between psychological well being and social support among adolescents, suggesting that social support may also be an important psychosocial buffer against the negative effects of other risk factors for depression in adolescents, such as perceived stress (Hussong, 2000).

**Types of support.** In a cohort study conducted by Brown et al. (2012), the researchers investigated whether social support was associated with lower levels of depression in a sample of 120 primarily African-American and Latina adolescent mothers in the US, by administering two validated tools, the Duke-UNC Functional Social Support Questionnaire (FSSQ) to measure quantity of support (with subscales measuring confidante, affective, and instrumental support) and the CES-D to measure depression. Measurement tools were administered at baseline, 12 weeks from baseline, and one year from baseline. Participants ranged from a few days postpartum to 10 months postpartum at baseline. Brown et al. (2012) found that depressive symptoms decreased with higher levels of social support ($p = .017$). Additionally, for adolescents reporting higher baseline depressive symptoms (CES-D scores $\geq 16$), despite their social support

scores remaining relatively unchanged ($p < .001$), their CES-D scores significantly decreased over the one-year follow-up ($p = .95$), with the most dramatic decrease in CES-D scores in the first 12 weeks ($p = .017$). This suggests that adolescents reporting higher levels of depressive symptoms initially may be more sensitive to the positive moderating effects of social support than those reporting lower levels of depressive symptoms (Brown et al., 2012). Interestingly, for participants with lower baseline depressive symptoms (CES-D < 16), a significant decrease in social support scores was noted between baseline and 12 weeks ($p = .035$).

Brown et al. (2012) theorized that participants' baseline levels of depression may have influenced their perceptions, awareness of, expectations for, and satisfaction with social support, hence leading to the different trajectories of social support scores noted between the teens with higher or lower levels of depression at baseline (Brown et al., 2012). This reveals that depressive symptoms can impact whether a teen feels her social support is sufficient and may impact the effectiveness of social support interventions. Specifically, this study's findings suggest that social support interventions may be more efficacious for teens with moderate to severe depression (scoring above the cut-off on depression screening tools) than minimal depression (scoring below the cut-off on depression screening tools, yet still experiencing depressive symptoms).

While attrition bias was a concern in this study (Brown et al., 2012), as 25% ($n = 31$) of the initial sample was lost to follow-up over the course of the year, the researchers did minimize the chances of a response bias by comparing the socio-demographics of those who had dropped out to those remaining. This study had several additional strengths. The participants were randomly selected, decreasing the likelihood of selection bias and the final sample size was sufficient to detect moderate or large effects (Brown et al., 2012). Additionally, the researchers

controlled for potential confounders and accounted for both fixed and random effects of clustered data through mixed effects modelling (Brown et al., 2012). The findings of this study are useful when exploring risk factors for perinatal depression in adolescents, as they suggest that social support may also have a potential protective influence.

A cross-sectional study (Cox et al., 2008), discussed previously under 'Self-Esteem', also used the FSSQ and CES-DC to measure types of social support and depression, respectively, to evaluate the relationship between social support and perinatal depression in a sample of 168 primarily African-American and Latina adolescent mothers in the US. The researchers found that higher social support from intensive social and mental health services and psychosocial parenting groups at the teen-tot clinic were associated with lower depressive symptoms ($p < .0001$). These findings support Brown et al.'s (2012) findings that confidante, affective, and instrumental support have a protective effect against perinatal depression. Use of a convenience sample limited the findings. Strengths included an adequate sample size and long period of follow-up.

A cohort study by Huang et al. (2014) examined the effects of social support on perinatal depression in a sample of 180 African-American and Latina adolescents in the US, by administering two validated tools. The Multidimensional Scale of Perceived Social Support (MSPSS) was administered at six months postpartum to measure affective and informational social support from family and friends, while the RADS-2 was administered at six and 12 months postpartum to measure depression. Comparing perceived social support scores at baseline (six months postpartum) with depression scores at follow-up (12 months postpartum), the researchers found low perceived social support was associated with higher levels of maternal depression ($p < .001$), while high perceived social support was associated with lower levels of depression ($p < .001$). Selection bias was a possible limitation, as the method of sampling

participants was not specified. Strengths included controlling for missing data and use of a matched comparison group. The findings add insight into what interventions may be helpful in reducing the risk of perinatal depression, as they demonstrate that not only is low support a risk factor for perinatal depression, but high perceived affective and informational support may also be protective against it.

A repeated measures study (Logsdon et al., 2005), previously discussed under 'Self-Esteem', examined the effect of a social support intervention in a sample of 128 predominantly African-American and Caucasian adolescents in the US by administering two validated tools, the CES-D to measure depression and the Postpartum Support Questionnaire (PSQ) to measure social support at baseline and six weeks postpartum. The PSQ measures the informational, material, emotional, and comparison support women commonly need in adjusting to motherhood. When used during pregnancy, it measures predicted postpartum support. The researchers revised the PSQ, based on expert feedback, to add six new items to address adolescents' need for "support with schoolwork, child care, planning for the future, improving relationships with others, transportation, and balancing the simultaneous responsibilities of school, job, child care, and so on" (Logsdon et al., 2005, p. 38). They also adapted the PSQ to reduce it to a 6$^{th}$ grade reading level, making it more appropriate for adolescents. The researchers cited a study by Logsdon et al. (2004) that tested the psychometric properties of this version of the PSQ in a pilot study of adolescents ($n = 26$), obtaining a coefficient alpha of .94 for both importance and support. The social support intervention was delivered in the form of a pamphlet or video. Participants were randomly assigned to one of three treatment groups (pamphlet only, video only, or pamphlet and video) or the control group. The content of the intervention was identical in each group, except the eight-minute video contained two extra role-playing scenes.

Higher levels of support received ($p = .590$) – specifically, material support ($p = .423$), emotional support ($p = .513$), informational support ($p = .727$), and comparison support ($p = .445$) – were found to have a direct, though not significant, effect on decreasing postpartum depression. As previously discussed, this lack of statistical significance was likely due to an inadequate sample size (Logsdon et al., 2005). Following secondary path analysis of the entire sample, the researchers found that *more* support had a direct and significant effect on postpartum depression ($p < .001$), suggesting that receiving more support than desired may be just as harmful as receiving too little support. Interestingly, the researchers also found that prenatally, participants had high expectations of the amount of support they would receive (thinking they would receive more support than they were likely to need), yet postpartum, they generally reported receiving less support than expected ($p = .001$). This finding suggests that part of the risk associated with low support may be due to an adolescent's perception that she is receiving inadequate support based on her preconceived expectations of how much support she thinks she should be receiving.

The researchers noted a 28% reduction in participants exhibiting depressive symptoms between baseline and follow-up. It is unclear from the results provided whether this meant 28% of those depressed at baseline were no longer depressed at follow-up, indicating no new cases of depression occurred between the time points. This is an important distinction, since the absence of new depression at follow-up would indicate that high social support might also help *prevent the development* of new-onset perinatal depression in addition to diminishing symptoms in those already suffering from it.

In addition to lack of statistical power, generalizability was another limitation to this study's (Logsdon et al., 2005) findings. As with Cox et al.'s (2008) study, participants were

already attending a teenage parenting programme prior to administration of the social support intervention. Additionally, in this study participants were also attending alternative public schools. As both of these provide support services for adolescents, there is the potential for a carry-over or latent effect on the results, whereby the social support received from being enrolled in the teen parenting programme or the alternative school may have influenced participants' depressive symptomatology prior to the onset of the social support intervention (carry-over effect), or the intervention may have activated the dormant effects of the teen parent programme (latent effect). However, the inclusion of a control group of adolescents who attended the same programme and school but were not involved in the intervention likely controlled for either of these effects. Additional strengths included measuring social support and depression pre- and post-intervention, which allowed a clearer understanding of how depression was influenced by social support, and use of a social support measurement specific to postpartum support that has been adapted for use in adolescents further strengthened these findings, as it is a better predictor of outcomes and better captures the adolescents' experiences than global measures of social support would (Logsdon & Usui, 2006). This study's findings add to the knowledge surrounding the link between social support and perinatal depression in teens, suggesting a possible hierarchy regarding what types of support are most or least helpful in reducing the risk of perinatal depression.

Finally, in a cross-sectional study previously discussed under 'Self-Esteem' and 'Stress', Logsdon et al. (2008) examined the relationship between social support and perinatal depression in a sample of 85 postpartum adolescents in the US, by administering two validated tools – the PSQ to measure informational, material, emotional, and comparison support, and the CES-D to measure depression. One additional tool used that has not been validated with adolescent or

postpartum populations was the Social Network Index (SNI), which assesses participation in 12 types of social relationships, as follows: spouse, parents, parents-in-law, children, other close family members, close neighbours, friends, classmates, workmates, fellow volunteers, members of groups without religious affiliation, and religious groups (Cohen et al., 1997). Logsdon et al. (2008) defined 'social network' as communication with family, friends, and peers at least once every two weeks. The researchers found the social network to be significantly associated with postpartum depressive symptoms ($p = .016$), and suggested that the number of different social relationships in an adolescent's social network also plays a role in the development of perinatal depression (Logsdon et al., 2008). Limitations of this study included the use of a small convenience sample, restricted range of socioeconomic status of participants, and low enrolment in the study, which may have influenced the results (Logsdon et al., 2008).

The findings of these five studies demonstrate the importance of different types of support on perinatal depression. The most important types of support appeared to be material and comparison support, followed by emotional support, and finally informational support. This suggests that social support interventions offering instrumental support (such as, financial assistance, skills training, health services, or transportation) or interventions providing comparison support (such as, teen parenting groups in which the adolescent is surrounded by peers with mutual interests) may be more helpful in reducing the likelihood and impact of perinatal depression than interventions aimed at enhancing emotional support (such as, from friends, family, or professionals) or informational support (such as, providing information about perinatal depression and its treatment). When comparing these findings with those of Nunes and Phipps (2013), previously examined under "Age", Nunes and Phipps also found that social support in the form of financial assistance and help with baby care was important for

adolescents, which fits with Logsdon et al.'s (2005) findings that instrumental support is key. However, Nunes and Phipps also found that having someone to talk to was equally as important, while Logsdon et al.'s (2005) findings suggest this comparison support should be less so. These findings should be interpreted with caution given the lack of statistical significance in Logsdon et al.'s (2005) study and that the purpose of Nunes and Phipps' study was to compare risk factors by age groups, not to study social support in adolescents specifically.

**Satisfaction with support.** A cross-sectional study (Fagan & Lee, 2010), previously discussed under 'Self-Esteem', examined associations between adolescent mothers' postpartum depressive symptoms and their perceptions of the amount of father care-giving and satisfaction with the father's involvement with the baby in a sample of 100 predominantly African-American and Latina pregnant adolescents in the US, by administering seven measurement tools and two general survey questions. The four validated tools used to obtain quantitative data were as follows: the CES-D to measure depression, the Parental Childcare Scale to assess mothers' perceptions of fathers' caregiving, the Parenting Sense of Competence scale (PSOC) to assess mothers' sense of competence as a new parent, and 'How Involved Are You During Pregnancy" to assess mothers' perception of the fathers' involvement in her pregnancy. Three additional tools used that have not been validated with adolescent or postpartum populations were administered: items from Ahrons and Wallisch's Coparental Conflict scale and Rands et al. Coparental Conflict Management/Resolution scale to measure mother's perceptions of conflict in the couple's relationship, and Ahrons' Coparental Cooperation measure to assess mothers' perceptions of support from the father. Finally, two Likert-type scale general survey items used to assess for satisfaction with father involvement were 'I am satisfied with the amount of time he spends with me' and 'I am satisfied with the amount of time I spend with him'.

Perhaps unsurprisingly, Fagan and Lee (2010) found that mothers' prenatal perceptions of parental support were higher than perceived postpartum support ($p < .0001$), particularly regarding father involvement. While the researchers initially found satisfaction with father involvement to be negatively correlated with postpartum depressive symptoms ($p < .01$), after controlling for mediators, this association was significantly reduced by the mediating effect of parental competence ($p = .049$). This suggests that the stronger an adolescent's belief in her parenting abilities, the less influence her satisfaction with the father of her baby's support has on her risk for developing perinatal depression. This adds to the understanding of the interrelation between maternal self-esteem and social support, indicating that higher maternal self-esteem may have a greater protective influence against the development of perinatal depression, as it may mediate the relationship between social support and perinatal depression.

Fagan and Lee (2010) identified two limitations to their study. First, they assessed for the amount of time the father spent with the teen, but not quality of the father's involvement. Second, there was the potential for selection bias, as participants volunteered for the original study. Despite these limitations, this study merits attention, as it suggests that it is the mother's satisfaction with the father's involvement, rather than her perception of the degree of support he was giving her and the child, that was significantly associated with lower CES-D scores.

Another cross-sectional study (Hudson et al., 2000), discussed previously under 'Self-Esteem', examined social support and perinatal depression in a convenience sample of 21 primarily Caucasian adolescent mothers in the US by administering three validated tools at three months postpartum. Measurement tools were the CES-DC to assess for depression, the Revised UCLA Loneliness Scale to measure subjective feelings on loneliness and social isolation, and the Social Support Questionnaire, short form (SSQ-6), which assessed whom participants felt they

could depend on for support and their overall satisfaction with the support received. The researchers found lower social support scores were associated with high depression scores ($p \leq .05$). Although the findings were limited by the small convenience sample, this study is nevertheless important, as it supports Fagan and Lee's (2010) findings that satisfaction with support plays a significant protective role against perinatal depression. This is consistent with previous literature regarding the importance of subjective measures of social support over objective measures (Barker, 2007). Indeed, Costello, Pickens & Fenton (2001, as cited in Barker, 2007) state, "the perception that social support is available seems to lessen – to buffer – the negative impact of a stressful event and to hasten recovery even if it is not actually verified, or used" (p. 3). Therefore, an adolescent mother may feel satisfied that the father of her baby, her friends, or family are available to her, even if she does not actually ask for any support. This is in keeping with self-determination theory, which suggests that individuals function effectively and experience wellness when their needs are satisfied (Self-Determination Theory, 2016).

Further, Logsdon et al.'s (2005) finding that receiving too much support was significantly correlated with higher depressive symptoms also fits with self-determination theory, in that receiving too much support may be perceived by the teen mother as a lack of confidence in her parenting abilities, which in turn may negatively affect her maternal self-esteem. This bears keeping in mind for answering this project's research question, as it emphasises the need for NPs to collaboratively discuss options for interventions targeting risk factors or treatment options for diagnosed perinatal depression with the teen to ensure she is amenable to the suggestions and feels her needs are sufficiently met.

In examining social support from the father of the baby specifically, romantic relationships between young mothers and fathers often end following the birth of their child, as

the adolescent and her partner go through a period of increasing uncertainty and conflict with the transition to parenthood (Figueiredo et al., 2007). This may result in decreased maternal satisfaction with support from her partner, and the adolescent mother may prefer to establish distance between herself and the father of the baby (Fagan & Lee, 2010). An adolescent mother's desire for involvement by the father of her child may also be influenced by her family's negative opinion of him, since parental support of the father plays a significant role in whether the adolescent mother chooses to continue or end the relationship (Krishnakumar & Black, 2003; Rhein et al., 1997). Thus, the ex-partner's repeated attempts to be involved and offer support with the baby may be viewed negatively by the mother who no longer desires his involvement, possibly leading to increased depressive symptoms (Fagan & Lee, 2010).

The findings of these seven studies analysed above substantiate social support as a major risk factor for adolescent perinatal depression. The findings also highlight the interrelation between social support and self-esteem, where too much social support may negatively impact maternal self-esteem, while low global self-esteem may impinge upon an adolescent's ability to seek out additional supports when needed. This demonstrates the need to assess for these interrelated risk factors concurrently, rather than as three distinct risk factors independent of one another. Further, the importance of receiving support from a number of different social relationships within adolescents' social network was noted, as receiving support from just one or two social relationship may not be as beneficial as receiving the same overall quantity of support from several sources.

**Victimisation**

Of the studies reviewed, two (Kennedy et al., 2015; Lesser & Koniak-Griffin, 2000) examined the role of prior victimisation on adolescent perinatal depression. As previously

discussed in Chapter One, pregnant adolescents represent a vulnerable subset of perinatal women who are more likely to have histories of maltreatment or abuse (Fulmer & Cumming, 2014). As such, NPs should already be on alert for a history of victimisation in any pregnant adolescent who comes to their practice, particularly given the distressing impact of victimisation on general depression in female adolescents (Klomek et al., 2008).

A cohort study (Lesser & Koniak-Griffin, 2000), previously analysed under 'Stress', examined the relationship between history of childhood abuse, stress, and perinatal depression in a sample of 95 primarily Latina and Caucasian adolescents in the US, by administering two validated tools – Straus' conflicts-tactics scale to measure incidents of physical abuse and the CES-D to measure depression. The researchers also administered Finkelhor's questions on sexual abuse to measure incidents of sexual abuse, though this tool has not been validated with adolescent or postpartum populations. Participants were followed from pregnancy through 24 months postpartum, and the tools were administered at intake (during the second or third trimester of pregnancy) and again at 4-6 weeks, 6 months, and 12 months postpartum. The researchers found that participants from the abused group (physical and/or sexual) had higher depressive symptoms at all time points, although the findings were only significant at intake ($p$ = .04) and 4-6 weeks postpartum ($p$ = .00[4]). Following repeated measures analysis of variance, however, the researchers found significant differences on CES-D scores between the total abused group and non-abused group over time ($p$ = .01). Chronicity of depressive scores was also significantly higher for the abused group than the non-abused group ($p$ = .01). The researchers

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[4] Lesser and Konkiak-Griffin (2010) reported the statistical significance of this finding as '$p$ = .00'. *P*-values should lie between 0 and 1, and therefore cannot equal 0. It is likely Lesser & Koniak-Griffin's value was the result of automatic rounding off or truncation to a preset number of digits after the decimal point by their statistical programme (Fonseca, 2013). Generally, in such cases, the value should be presented as '$p < .001$'.

also found a significantly higher incidence of suicide attempts in the year prior to pregnancy for the abused group than the non-abused group ($p = .01$). This is particularly concerning, given that past suicide attempts increase the risk for future suicide attempts (Lesser & Koniak-Griffin, 2000) and that risk for suicidality is already higher in adolescents with perinatal depression (Kleiber & Dimidjian, 2014).

There were three limitations to this study (Lesser & Koniak-Griffin, 2000). First, history of abuse relies on self-report by the participant, and therefore there was the possibility of repressed memories of abusive incidents and/or an unwillingness to disclose this history, leading to an underreporting of abuse (Lesser & Koniak-Griffin, 2000). The researchers attempted to avoid unwillingness to disclose by having the interviews conducted by a public health nurse (PHN) who was trained in administration techniques including methods of asking sensitive questions. Second, the researchers defined history of abuse as being by a parent or parental figure. Therefore, physical abuse incurred by another party, such as an intimate partner, was not elicited. Third, the study only measured history of childhood abuse prior to the age of 12, thus excluding any abuse that occurred during adolescence. Despite these limitations, strengths of this study included controlling for lost data and removing one item regarding physical abuse (hit, grabbed, spanked, slapped, or shoved with a hand) due to variations in cultural norms of discipline that may have negatively impacted the results if left in (Lesser & Koniak-Griffin, 2000). The findings of this study establish victimisation as a significant risk factor for adolescent perinatal depression and indicating the need for close monitoring for depressive symptoms and suicide risk in any perinatal adolescent reporting a history of victimisation.

Another cross-sectional study (Kennedy et al., 2015) examined the relationships between cumulative victimisation beginning during childhood, as mediated by IPV victimisation and

homelessness, and depressive symptoms in a convenience sample of 206 predominantly African-American and Caucasian low-income perinatal adolescents in the US, by administering three validated tools and one general survey question. Validated tools included the CES-D to assess depression, the Revised Conflict Tactics Scale to assess lifetime exposure to physical violence between adults within the home and lifetime physical abuse by a parent or adult caregiver beginning by age 12, and Russell's interview framework for child sexual abuse to assess for lifetime sexual victimisation beginning by age 12. One general survey question was used to assess homelessness. Participants of this study (Kennedy et al., 2015) were assigned to five groups, as follows: *HiAll* (high witnessing IPV, medium-high physical abuse by a caregiver, and high sexual victimisation), *HiFV* (high levels of exposure to both witnessing IPV and physical abuse by a caregiver and very low sexual victimisation), *HiWIPV* (high witnessing IPV, low physical abuse by a caregiver, and almost no sexual victimisation), *HiSV* (high sexual victimisation, medium witnessing IPV, and low physical abuse by a caregiver), and *LoAll* (low exposure to witnessing IPV, physical abuse by a caregiver, and sexual victimisation). *LoAll* was used as the reference category and had significantly lower levels of depressive symptoms compared to the other four clusters. Results pertaining to *HiWIPV* will be discussed later under 'Exposure to Community Violence'.

In examining the indirect effects of the victimisation clusters on depression through IPV victimisation and homelessness, direct effects of victimisation on depression, and total effects (both indirect and direct effects) on depression, the researchers (Kennedy et al., 2015) found indirect effects of *HiAll* on depressive symptoms through IPV victimisation ($p < .05$) and homelessness ($p < .01$), direct effect of *HiAll* on depression ($p < .05$), and total effects on depression were significant ($p < .001$). For *HiFV*, the researchers found indirect effects on

depression through IPV victimisation ($p < .05$) and homelessness ($p < .05$), direct effects of *HiFV* on depression ($p < .05$), and total effects ($p < .001$) were also all significant. Finally, for *HiSV*, the indirect effects on depressive symptoms through homelessness ($p < .05$), direct effects of *HiSV* on depression ($p < .05$), and total effect on depressive symptoms ($p < .001$) were significant.

Unlike the former clusters, the indirect effect of *HiSV* through IPV victimisation was not significant ($p > .05$). This may be due to the significantly higher rates of IPV noted in the *HiAll* and *HiFV* clusters, compared to the *HiSV or LoAll* clusters (Kennedy et al., 2015). The researchers also found significant direct associations between each of the clusters and IPV victimisation (*HiAll*, $p < .001$; *HiFV*, $p < .001$; *HiSV*, $p < .05$) and homelessness (*HiAll*, $p < .01$; *HiFV*, $p < .05$; *HiSV*, $p < .05$), suggesting that a history of cumulative victimisation beginning in childhood is a risk factor for IPV victimisation and homelessness, and that in turn, IPV victimisation and homelessness explain a significant portion of the impact of victimisation history on perinatal depression (Kennedy et al., 2015).

This study (Kennedy et al., 2015) had three notable limitations. First, while clustering was an effective way to study a number of variables in a controlled fashion, it made it difficult to interpret these findings at a clinical level, as there was no clear way to individually establish the effect on perinatal depression of the specific forms of violence or level of exposure. Second, victimisation beginning after the age of 12 was not included as a variable of study, limiting the generalizability of the findings. Third, the use of a convenience sample limits generalizability. Kennedy et al. (2015) also noted that method variance may have inflated the variable associations. Despite these limitations, strengths included minimizing differential weighting due to the different measurement scales used by standardizing the variables prior to cluster analysis

(Kennedy et al., 2015). Further, although this study used a cross-sectional design, since victimisation occurred in childhood (prior to the adolescents' pregnancies) causality can be inferred.

**Exposure to Community Violence**

Of the studies reviewed, two (Kennedy et al., 2015; Logsdon et al., 2008) examined the impact of exposure to witnessing violence on perinatal depression. Exposure to high levels of family violence can "disrupt affect regulation and result in interpersonal insecurity and hostility; reduce capacities in the areas of problem solving and self-efficacy; distort beliefs about relationships… and interfere with accurate threat appraisal" (Kennedy et al., 2015, p. 586). This can lead to traumatic effects and personality difficulties, including interpersonal inadequacy, hostility, and post-traumatic stress disorder, which all increase the risk for IPV victimisation (Kennedy et al., 2015). These effects may be exacerbated in socially and economically disadvantaged teens who generally have poorer academic and economic opportunities, including a smaller group of suitable potential partners (Miller, 2008). Consequently, low-income perinatal adolescents who come from abusive or inhospitable families are more likely to find themselves in a vulnerable position with an abusive partner and few supports or means of shelter should they want to leave the relationship (Kennedy et al., 2015). Thus, the risk factors of victimisation and exposure to community violence are closely linked and often co-occur.

A cross-sectional study by Kennedy et al. (2015), previously analysed under 'Victimisation', examined exposure to community violence in 206 primarily African-American and Caucasian perinatal adolescents in the US by administering the CES-D to measure depression and the Revised Conflict Tactics Scale to measure lifetime exposure to physical violence between adults within the home. For the *HiWIPV* group (high witnessing IPV, low

physical abuse by a caregiver, and almost no sexual victimisation), the researchers found the direct effect on depression ($p < .01$) was significant. While the sum of indirect effects was significant ($p < .05$), neither the indirect effect through IPV victimisation or homelessness was significant ($p > .05$). Further, the researchers note that this finding, in combination with the confidence interval being close to zero, suggests that mechanisms other than IPV victimisation and homelessness account for the effect of *HiWIPV* on depression. The researchers also found that while *HiWIPV* was associated with higher depressive scores, the results were not as strong compared to the groups containing high witnessing violence in combination with a personal history of violence, suggesting that while being exposed to community violence is a risk factor for perinatal depression in adolescents, this risk is further compounded if a personal history of victimisation exists as well.

These findings were supported by one study (Logsdon et al., 2008), previously discussed under 'Self-Esteem', 'Stress', and 'Social Support', in which researchers examined exposure to community violence in sample of 85 newly postpartum Caucasian participants in the US, by administering the CES-D to measure depression and the Survey of Exposure to Community Violence Scale to assess how often participants had witnessed or were a victim of environmental violence and the type of violence. The researchers found exposure to community violence and being a victim of violence were significantly associated with increased postpartum depressive symptoms, with a personal history having a slightly greater influence. The low reliability scores of the Survey of Exposure to Community Violence Scale limited the findings of this study.

The findings of these two studies support the need for assessing exposure to community violence as a substantial risk factor for perinatal depression. Both a history of prior victimisation and exposure to community violence may also influence other risk factors previously discussed

within this Chapter, as once pregnant, teens with histories of abuse or witnessing abuse are not only at increased risk for homelessness and inadequate social support, but their limited support (Nunley, 1996) and victimisation history (Turner, Finkelor & Ormrod, 2010) may also negatively impact their self-esteem. Further, they are more likely to experience multiple stressors, such as financial stress and inter-partner conflict (Kennedy et al., 2015). This snowball effect on risk factors all stemming from a history of victimisation and exposure to IPV may be the reason that history of IPV was one of the only risk factors mentioned in the SOGC guideline (Fleming et al., 2015).

In summary, social support, history of childhood victimisation, and exposure to family violence were found to be principal risk factors for adolescent perinatal depression. A teen's perceptions of and satisfaction with social support, in addition to the number of social relationships within her social support network, were found to impact the likelihood of developing perinatal depression. Further, a cause-effect relationship was noted between social support and both global self-esteem and maternal self-esteem (specifically maternal self-efficacy ad parenting sense of competence). Exposure to family violence and physical or sexual victimisation beginning prior to the age of 12 significantly increased both chronicity and severity of symptoms (including suicide risk), with a personal history of victimisation having a slightly greater influence on depressive symptoms. The relationship between victimisation beginning in childhood, IPV victimisation, homelessness and perinatal depression was also discussed. Victimisation history was commonly associated with a prior history of depression and suicidality, and a cause-effect relationship was noted between this risk factor and IPV and stress. Similarly, exposure to community violence was noted to be correlated with IPV, social support, global self-esteem, and stress. As each of these mesosystem factors may increase the risk for

perinatal depression in adolescents, it is necessary for NPs to be aware of them and to include them as part of their risk assessment for perinatal adolescents.

## Macrosystem Risk Factors

At the macrosystem level, social cultural factors, such as economic and social policies that maintain socioeconomic inequalities between people (for example, poverty and access to healthcare) and social or cultural norms (for example, religion, culture, and race/ethnicity; CDC, 2015) may influence an adolescent's likelihood of developing perinatal depression. Studies examining risk factors at this level of influence are scarce, likely due to the broad and difficult to study nature of factors such as healthcare policies on perinatal depression in adolescents, or the highly personalised nature of factors such as religion. One factor that was studied at the social cultural level, however, was race/ethnicity.

### Race/Ethnicity

Only one study (Schmidt et al., 2006) specifically examined race/ethnicity as a risk factor. This is probably due to the challenges in studying macrosystem factors owing to the highly personalised manner in which individuals attribute importance to these broad factors, such as race/ethnicity, religion, and culture. This makes it difficult to clearly determine whether it is these macrosystem factors themselves that increase the risk for perinatal depression, or whether the risk is due to more intrinsic factors. Many of the studies within this literature review had a high number of ethnic minority participants, which appears to suggest a greater incidence of perinatal depression in racial/ethnic minorities (see Appendix IV for more detailed information of the ethnic makeup of the studies' samples). However, it is also possible that this high percentage of minority participants was a result of selection bias based on the communities and clinics researchers chose to recruit participants from.

The racial/ethnic minorities in these studies are not representative of BC's predominant minorities, which affects generalizability. The findings regarding race/ethnicity may still be applicable to BC youth, given that race/ethnicity has been identified as a risk factor for depression in Canadian ethnicities as well (Gadalla, 2010), although pending further research involving BC minority populations, the findings of this study should be interpreted with caution.

A longitudinal cohort study by Schmidt et al. (2006) examined race/ethnicity as a potential risk factor in a sample of 932 African-American, Mexican-American, and Caucasian adolescent mothers in the US, by administering a general survey at baseline and the BDI to measure depressive symptoms at three, six, 12, 18, 24, and 48 months postpartum. Over the four-year period, only 33% of participants were lost to follow-up. The results indicated that depressive scores for Caucasians and Mexican-Americans were highest at three months postpartum with a steady decline thereafter. Conversely, African-American participants had a slight increase in symptoms between 24 and 48 months. While Mexican-Americans were significantly more likely to report symptoms of depression up until two years postpartum ($p = .025$), longevity of depression was greatest among African-American participants, with almost half still reporting depressive symptoms at 48 months postpartum ($p < .01$). In contrast, just over a quarter of Caucasian and Mexican-American participants continued to report depressive symptoms at 48 months. The findings demonstrate that ethnic minorities may have an increased risk of perinatal depression and greater longevity of symptoms, signifying the need for future research into the role of race/ethnicity with BC's minorities.

## Summary of Findings

In summary, the 13 studies analysed within this chapter provide insight into the risk factors for perinatal depression in adolescence. A diagram representation of the risk factors

within the socio-ecological framework is presented in Figure 4 (see below). At the microsystem level, the individual risk factors of age, prior history of depression, global self-esteem, maternal self-esteem, and stress all played a role in the development of perinatal depression. At the mesosystem level, the interpersonal risk factors of social support and victimisation and the community risk factor of exposure to community violence were found to have a substantial impact on adolescents developing perinatal depression. Further, IPV and a history of homelessness were found to increase the likelihood of vicitmisation leading to perinatal depression. Finally, at the macrosystem level, the social cultural risk factor of race/ethnicity was found to increase both the risk of developing perinatal depression and chronicity of symptoms. The interrelation between many of the risk factors identified within this chapter and the overlapping role of factors from the micro, meso, and macrosystem of influence was also identified (see Appendix III for a diagrammatic depiction). This finding indicates the need for NPs to assess these factors collectively, given their potential to influence one another and further heighten a teen's risk for perinatal depression, as opposed to viewing them as individual risk factors distinct from one another.

While the findings contribute to closing the knowledge gap regarding adolescent risk factors for perinatal depression, the research lacks any clear, consistent, and comprehensive recommendations for practice. Inconsistencies in the research can be seen through use of numerous different measurement tools used by the various researchers to measure both depression and risk factors, as this makes it difficult to compare the studies' findings when the exposures and outcomes are being measured slightly differently within each study. Further, the research lacked insight with regards to applicability to the clinical practice setting, as none of the researchers made any concrete recommendations for how to utilise their findings in terms of

assessing for these risk factors or what to do if a risk is identified. For example, although stress was found to be highly correlated with depression through use of various measurement tools, there was no clarity as to what stressors the teens were experiencing, making it challenging to transpose this finding to a clinical practice recommendation informing NPs what specific stressors to assess for.

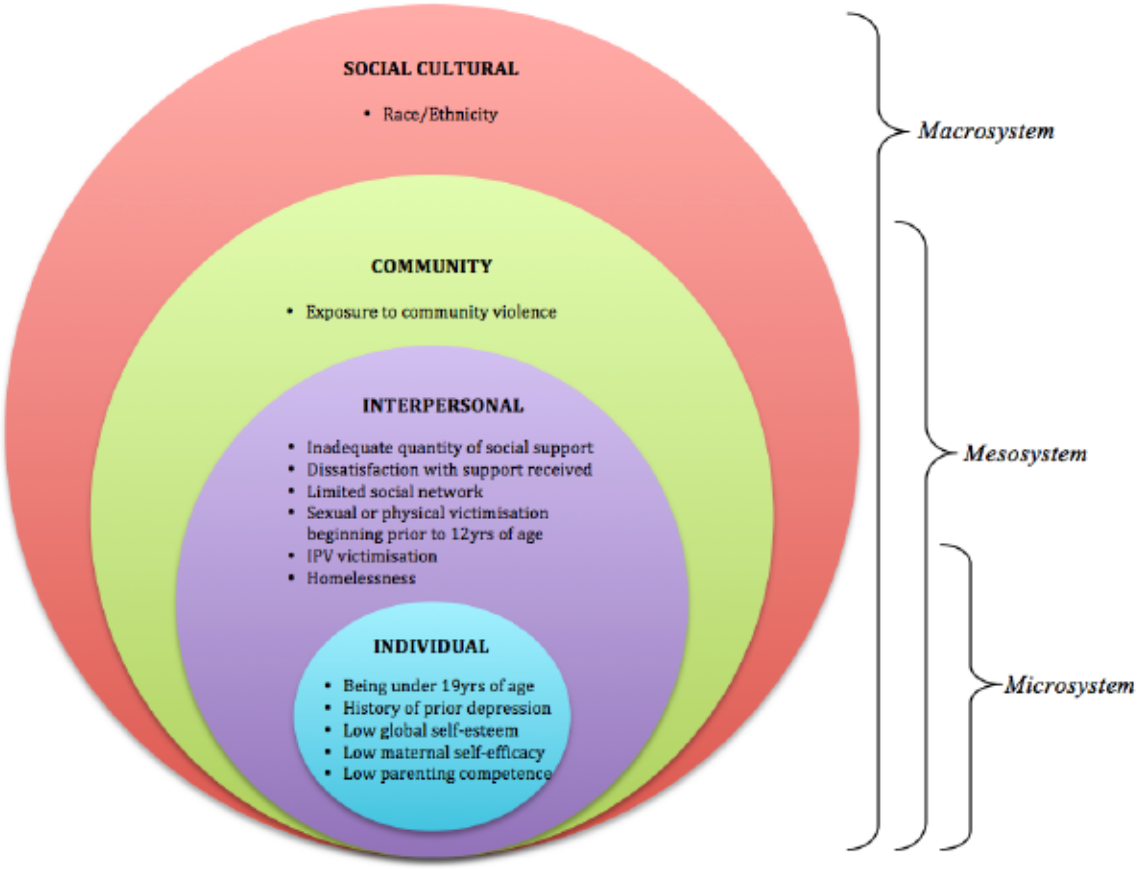
This lack of information and clarity leaves many unanswered questions regarding how to implement these findings. For instance, what particular types of social support do perinatal teens find beneficial versus unnecessary? What specific stressors do they experience during this transitional period that contribute to them feeling overwhelmed and unable to manage? What situations affect their global self-esteem? Is it the usual factors associated with adolescent global self-esteem, such as weight gain or relationships changing, or are there new influences that have a greater impact during this perinatal period? Are the factors affecting maternal self-esteem the same for adolescents as adult mothers, or do they have additional needs, such as greater lack of insight into the parenting role, that put them at greater likelihood of experiencing low maternal self-esteem? Incorporating qualitative research into studies examining risk factors may help address these remaining gaps in knowledge by providing greater insight into how teens perceive their situation and the risk factors associated with perinatal depression.

Race/ethnicity is another risk factor that requires clarification. The assumption that race/ethnicity is a risk factor is based on one study, which compared only two different minorities to Caucasians, and the observation that many of the studies reviewed within this chapter include minority participants. While some researchers did specifically choose minority participants in their study, others appeared to have an inadvertent predominantly minority sample due to selection of participants from low-income urban areas that happened to have a higher

minority population. Without further research examining the role of race/ethnicity on depression with a large sample of multiple minority groups, it is unclear whether this project's finding that race/ethnicity increases the risk and chronicity of depressive symptoms is indeed true, or whether it is merely a coincidental finding.

Despite the identified gaps, the findings of this review do demonstrate that risk factors differ between adolescence and adults, indicating the need for adolescent-specific risk assessment strategies by NPs and other PCPs. From here, Chapter Four will move forward by discussing the implications of these findings for NP practice and make recommendations for clinical practice and education based on the available research.

Figure 4 *Socio-Ecological Risk Factor Framework for Perinatal Depression in Adolescents Based on the Findings of This Review*


SOCIAL CULTURAL
• Race/Ethnicity
COMMUNITY
• Exposure to community violence
INTERPERSONAL
• Inadequate quantity of social support
• Dissatisfaction with support received
• Limited social network
• Sexual or physical victimisation beginning prior to 12yrs of age
• IPV victimisation
• Homelessness
INDIVIDUAL
• Being under 19yrs of age
• History of prior depression
• Low global self-esteem
• Low maternal self-efficacy
• Low parenting competence
Macrosystem
Mesosystem
Microsystem

# CHAPTER FOUR

# DISCUSSION

The purpose of this project was to answer the following research question: How can NPs in BC identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? This chapter will synthesise the research findings of Chapter Three, supplemented by the guidelines introduced in Chapter One to discuss implications for identifying at-risk adolescents in NPs' practice and to provide evidence-based clinical practice recommendations.

Although this paper was written for an audience of primary care NPs, hence directing all of the recommendations towards NPs specifically, the clinical practice and education recommendations can be utilised by any PCP caring for perinatal adolescents. Further, since perinatal depression can affect teens anywhere in BC – including urban, rural, and remote areas – the recommendations are made within the context of BC teens in general. Therefore, NPs or other PCPs utilising these recommendations may need to tweak them slightly in order to align better with the needs and available resources of their geographical location, including their particular office policies regarding how to refer the adolescents to an obstetrician and engage in co-management of high-risk teens.

This chapter will begin with a discussion of the risk factors identified in Chapter Three and recommendations for how to assess these in clinical practice. Discussion of the risk factors will be organized according to the socio-ecological framework for continuity of presentation. Next, structuring prenatal visits for adolescents, including the recommended frequency of prenatal appointments and strategies for addressing adolescents who seek initial prenatal care later in their pregnancies, will be discussed. Following, recommendations will be made for

incorporating risk factor assessment into routine perinatal care for adolescents, including providing strategies for risk factor assessment in adolescents initiating prenatal care late. Subsequently, evidence-based recommendations for screening for depression will briefly be discussed. In recognition of the time constraints of NPs, a one-page summary of recommendations is provided in Appendix V and a checklist for identifying adolescents at risk for perinatal depression is provided in Appendix VII. Finally, this chapter will conclude with recommendations for education and further research.

## Assessing Risk Factors for Perinatal Depression in Adolescents

In order to assist NPs in identifying adolescents at risk for perinatal depression, this section will provide clinical practice recommendations for how to assess for each risk factor. To do so, examples of open-ended questions are provided as suggestions for NPs to use in clinical practice. These questions were all written by this author unless cited otherwise. Questions were developed based on the findings of Chapter Three and are designed to garner the most pertinent information applicable to each risk factor.

It is important to distinguish between the interview questions discussed in this section and the screening/measurement tools used within the studies reviewed. While the goal of screening tools is to identify the presence of a disease or condition, the purpose of interview questions is to elicit information about risk factors in order to provide a more comprehensive history for the patient. Improved knowledge of a teen's history may assist NPs in their clinical decision-making, in terms of selecting interventions that may be helpful to reduce the teen's risk of developing perinatal depression, and determining whether to screen for depression more frequently in teens with significant risk factors in order to identify perinatal depression and begin treatment as early as possible.

As PCPs, NPs develop longitudinal relationships with their patients. However, adolescents are not commonly found in primary care offices if otherwise healthy before they are pregnant, hence NPs may have limited knowledge of the adolescent's risk factors for perinatal depression prior to the appointment. Therefore, this discussion is based on the assumption that when the teen presents for prenatal care, it may have been a number of years since she was last seen in the NP's office, hence the NP may be unaware of her risk status.

It is vital to also mention the need for NPs to provide patient-centred interventions with demonstrated efficacy to address any identified risk factors. Indeed, it would be counterproductive to identify at-risk adolescents without appropriate referrals for resources and interventions in place (Reid & Meadows-Oliver, 2007). Therefore, following a positive screen on any of the risk factors, NPs are encouraged to consult clinical pathways, evidence-based research, and the expertise of allied healthcare professionals to assist them in determining the best interventions for their patients, based on the severity of the risk factors and the teens' preferences for their care.

**Assessment of Microsystem Risk Factors**

**Age.** The BCPHP (2007) *Antenatal Record*, which is the standard for documenting prenatal care by PCPs in BC, includes a risk assessment guide for identifying women at risk for perinatal depression. However, this guide is based on research in adult women. Since the findings of this review demonstrated that risk factors for perinatal depression differ between adolescents and adults, using this risk assessment guide may result in at-risk adolescents remaining unrecognised, as it does not take into account their specific risk factors. Therefore, when patients present for their initial prenatal appointment, NPs can determine their age at

delivery, based on their estimated due date, and assess for adolescent-specific risk factors if 19 years of younger.

**History of depression.** The findings demonstrated that having a history of depression increases the risk for developing perinatal depression, likely due to depression being a highly recurrent condition (Holtzheimer & Nemeroff, 2006). Of particular concern for adolescents is the finding that they are more likely than their adult counterparts to report both a recent history of depression (in the year prior to pregnancy) and a history of suicidality (including suicidal gesture, ideation, or attempt). Therefore, while the *BC Antenatal Record Part 1* already includes assessment for history of both depression and perinatal depression, adolescents should also be asked specifically about a history of suicidality. NPs can use a combination of open- and closed-ended questions to establish suicide risk. As enquiring about depression and suicidality may be a sensitive subject for some teens, it may be preferable to begin with a general question, such as the one provided below:

- "How would you describe your current emotional/mental health?" (Midmer, 2005, p. 42).

If current depression seems a possibility following the teen's response to this question, NPs can then move to more direct questions assessing for suicide risk and cultural views of depression. When asking these more focused questions, it is important for NPs to properly frame them so that they are delivered in a delicate, non-judgemental manner that facilitates open discussion. An example of an appropriately framed suicide risk question is provided following:

- "I appreciate how difficult this problem must be for you at this time. Some of my patients with similar problems/symptoms have told me that they have thought about

[harming themselves or] ending their life. I wonder if you have had similar thoughts?" (Suicide Risk Assessment Guide, n.d., p. 5)

- Because different cultures can have different views on the causes of and treatment for depression, I wonder: "In your culture, what does a woman do if she has serious emotional/psychiatric problems?" (Midmer, 2005, p. 42).

NPs "should be prepared to develop and implement a treatment plan to address suicidality and coordinate the plan with other providers" (US Department of Health and Human Services, 2009, p. 4) if a positive suicidal history is found. Given the risks associated with a positive history of depression or suicidality, more frequent screening for depressive symptoms is suggested if a teen reports a history of depression. Methods of screening for depression in adolescents will be discussed later within this chapter.

**Global self-esteem.** The findings identified global self-esteem as having both a risk and resilience influence on the development of depressive symptoms in perinatal adolescents. Unfortunately, no research could be found identifying causes of low self-esteem for pregnant teens, however the findings do shed some light on possible influences. For instance, low social support was found to be correlated with low global self-esteem (Cox et al., 2008; Hudson et al., 2000; Nunley, 1996), suggesting that inadequate social support may lead to feelings of isolation and subsequently decreased self-worth or that teens with low self-esteem are less likely to seek out the necessary supports. A link between a history of childhood victimisation and low self-esteem has also been identified in the literature (Turner, Finkelor & Ormrod, 2010), indicating that teens with abusive pasts may enter pregnancy with lower self-esteem than their non-abused counterparts. Additionally, although not linked by any of the studies analysed within this paper, literature on global self-esteem during adolescence suggests global self-esteem may be affected

by stressful experiences (Morin et al., 2013). These interventions suggest that if low global self-esteem is identified as a risk factor, social support, stress, and history of victimisation should also be assessed, as these may be contributing to the teens' low global self-esteem. Bearing these influences in mind, examples of open-ended questions NPs might choose to use include:

- How do you feel about yourself as a person?
- What and/or who influences how you feel about yourself?
- Some experiences can negatively impact our self-worth, particularly if they are very stressful for us. Can you tell me about any experiences, either from your past or present that make you feel less confident in yourself?

**Maternal self-esteem.** A significant correlation was found between maternal self-esteem and depression in perinatal adolescents. While a low sense of parenting competence was established as a risk factor for perinatal depression, it is possible that low maternal self-esteem may also be a consequence of depression, given that depressed mothers often have poorer relationships with their infants (Cox et al., 2008). Maternal self-esteem, specifically parenting sense of competence, was found to have a moderating effect on the impact of teens' satisfaction with support from the father of her baby and depression. Maternal self-esteem in adolescents can also be negatively influenced by poor social support networks, particularly when the father of her baby is her primary source of support (DeVito, 2007). This interaction between social support and maternal self-esteem suggest that the two should be assessed together, as each can negatively influence the other.

Younger adolescent mothers may also have more negative maternal self-esteem due to their emotional and social immaturity and lack of clear identify formation (DeVito, 2007), suggesting that it may be prudent to assess maternal self-esteem more often in younger pregnant and

parenting teens. This correlation between these two risk factors indicates the need to ask questions addressing the influence of social support on maternal self-esteem when assessing this risk factor. Examples of suggested open-ended assessment questions include:

- Have you had any parenting experience or educations If so, what?
- How do you feel about becoming a mother?
- Do you have any concerns about your ability to be a parent? If so, what are they?
- "In your culture, what are mothers expected to be like?" (Midmer, 2005, p. 41).
- If you had questions or concerns as a parent, where would you get help? Who would you ask?
- After your baby is born, who will be your main source of support? Do you feel you will have enough help?

**Stress.** High perceived stress was consistently associated with increased depressive symptoms in the findings of this review. Only one study (Venkatesh et al., 2015) analysed within this project provided information on the sources of stress important to perinatal adolescents. These were: stress resulting from conflict with her partner (including arguing more than usual, physical fights, or separation), finding it difficult to cope with her infant's temperament, and financial stress (Venkatesh et al., 2015). Typical sources of stress for adolescents and their developmental stage that may be exacerbated by the challenges associated with pregnancy and transitioning to new motherhood include: school pressure, dating and friendships, peer pressure, body image, family and peer conflict, and dealing with the physical and cognitive changes of puberty (McNeely & Blanchard, 2009). It is also possible that low maternal self-efficacy from inexperience parenting may be an additional source of stress for primiparous teens (Venkatesh et al., 2015). Thus, assessing for stress as a risk factor should include asking about these potential

stressors, paying particular attention to stressors pertaining to interpartner conflict, child temperament, and financial strain.

Suggestions for open-ended assessment questions that take into account the sources of stress identified within this review include:

- "What major negative life changes have you experienced this year?" (Midmer, 2005, p. 25).
- How do you manage/cope with stressful situations?
- How are you managing with your schooling now that you're pregnant/a new mother?
- How is your relationship with your boyfriend/partner? Friends? Family?
- Raising a child can be expensive. Do you have any financial concerns, such as difficulty paying bills or worries you may not be able to provide for you or your child?
- It can be challenging adjusting to life with an infant. How are you coping with the adjustment? How do you find your child's temperament?

Some mild stress can be a normal, healthy part of development and daily life, and responses to stress can vary between individuals, where a particular stressor may not affect one person, yet be very distressing for another. Generally, stress is considered unhealthy if it negatively affects the teen's ability to function or cope. Interestingly, although not identified in the findings of this review, research on the relationship between stress and health indicates that "the impacts of stressors on health and well-being are reduced when persons have high levels of mastery, self-esteem, and/or social support" (Thoits, 2010, p. S41), suggesting a possible link between stress, global self-esteem, and social support.

**Assessment of Mesosystem Risk Factors**

**Social support.** Social support was also identified as a significant risk factor for perinatal depression in adolescents. Preliminary research by Logsdon et al. (2005) seemed to suggest a possible hierarchy to social support, with material and comparison support being slightly more important than emotional and informational support, although no statistical significance was found. Conversely, Nunes and Phipps' (2013) found a lack of material and comparison support to be equally as important in increasing risk for perinatal depression in adolescents. Further research is needed to investigate whether there is indeed any difference in the types of support and their influence on perinatal depression before being able to make any clinical practice recommendations based on these findings.

Satisfaction with support was found to be particularly important in impacting teens' risk for perinatal depression; the lower the satisfaction with support received the greater the risk of perinatal depression. Teens may be dissatisfied with support if they feel they are receiving either too much or too little. The risk for depression from receiving more support than wanted may be mediated by maternal self-esteem, as teens may perceive the excess support to be indicative of a lack of confidence by others in their parenting abilities, thus negatively impacting their maternal self-esteem and increasing their risk for depression. Similarly, the findings demonstrated that the greater an adolescent's belief in her parenting abilities, the less influence her satisfaction with support had on her risk for depression, reinforcing the recommendation that social support and maternal self-esteem should be assessed concurrently, as they may influence one another.

Further, the previous finding that low social support may decrease global self-esteem suggests that if inadequate social support is identified as a risk factor, assessment of teens' global self-esteem should ensue. The number of social relationships in a teen's social network were also

found to play a role in the likelihood of developing perinatal depression, with fewer social relationships increasing the risk.

These findings highlight the need for NPs to ask open-ended questions to assess how much material, informational, comparison, and emotional support the teen is receiving, her expectations for and satisfaction with support received, and the size and structure of her support network. Additionally, the association between social support, global self-esteem, and maternal self-esteem indicates the need to assess for these risk factors concurrently. Logsdon and Koniak-Griffin (2004) developed the following social support assessment questions (see Box 4) that NPs may find useful to assess this risk factor.

Box 4 *Examples of Assessment Questions for Adolescent Mothers' Social Support*

- With whom do you live? How do you feel about living with . . . (family members/partner/friend/other)?
- How do you get along with your baby's father? How often do you see each other (if currently together)? How long have you been together?
- How do you get along with members of your family?
- Do you have any friends who are supportive and helpful to you?
- Can you count on (name of family member/partner/friends) for help with the baby and other types of support? How long will their assistance be available to you?
- If you need help with childcare, need information on parenting, or have a problem such as an emergency with your baby, whom would you turn to? How much help could you expect from them?
- Are you involved in any activities in school or in the community (e.g., clubs, sports, parenting programs)?
- Are agencies available in your community to assist you (e.g., with financial problems, child care, vocational needs)?
- Is transportation available to get to places where you need to go and return home (e.g., health care provider, clinic)?
- How much of a concern are financial issues in your life? Who helps you pay for expenses for your baby and self?
- Are you satisfied with the support you are receiving from (family members/partner/friend/others)? If no, do you have a plan for getting more support?

Source: Logsdon and Koniak-Griffin (2004, p. 764).

**Victimisation.** A personal history of physical or sexual abuse beginning prior to the age of 13 was identified as a significant factor in not only increasing the likelihood of developing perinatal depression, but also increasing the chronicity of depressive symptoms. Given that there is a high correlation between victimisation history and previous depression, it is likely some of the risk on depression in perinatal teens may be due a recurrence of their prior depression. The findings did demonstrate that both a history of IPV and homelessness mediated the impact of victimisation history on depression, demonstrating that adolescents reporting two or three of these factors are at considerably higher risk of developing perinatal depression than reporting a history of only one. These interrelations between risk factors suggest the need to assess for history of homelessness and IPV for teens' with a history of victimisation, as the presence of these risk factors together with victimisation history indicate increased severity of risk for perinatal depression.

Teens reporting a history of victimisation were also more likely to experience multiple stressors, including financial stress and interpartner conflict (Kennedy et al., 2015), and may be more likely to have low global self-esteem (Turner et al., 2010), suggesting that a victimisation history should necessitate an assessment of global self-esteem as well.

Teens reporting a history of victimisation and IPV and/or homelessness represent a particularly vulnerable group at high risk for perinatal depression, especially if they also report a prior history of depression. In asking questions to assess for victimisation history, using a funnel approach to move from general to specific questions about abuse is recommended, as it helps provide context to the questions and some warning for the patient of what is coming (Read,

Hammersley & Rudegeair, 2007). The following funnel method of enquiry is suggested by Read et al. (2007).

- Tell me about your upbringing.
- How did you get along with your parents?
- How was discipline dealt with in your family?
- "When you were a child, did an adult ever hurt or punish you in a way that left bruises, cuts or scratches?" (Read et al., 2007, p. 106)
- "When you were a child, did anyone ever do something sexual that made you feel uncomfortable?" (Read et al., 20007, p. 106)

**Exposure to community violence.** Witnessing violence within the family was also identified as a significant risk factor for perinatal depression in teens, although the risk was not as substantial as a personal history of victimisation. Reporting a history of exposure to community violence may be associated with other risk factors, including social support, IPV, and stress. For example, teens with poor socio-economic profiles (Miller, 2008), a disadvantage common to pregnant teens (Escarce, 2003; Fleming et al., 2015; Kingston, 2012), and histories of exposure to family violence probably receive little to no support from their families, while their limited socio-economic opportunities and smaller pool of suitable partners increases their likelihood of finding themselves in an abusive relationship (Kennedy et al., 2015). Additionally, as with victimisation history, teens exposed to community violence are more likely to experience multiple stressors. These findings suggest that if a history of exposure to community violence is elicited, social support, IPV, and stress should be assessed thereafter. Suggestions of possible questions to ask in assessing exposure to community violence include:

- What was your parents' relationship like when you were growing up?

- Have you witnessed any hitting/pushing/shoving/punching/kicking and/or verbal threats by a parent, either toward each other or toward another family member?
- "In your culture, what happens when there is violence in the family?" (Midmer, 2005, p. 54).

**IPV.** A history of childhood victimisation was found to increase a teen's likelihood of experiencing IPV. In turn, IPV was found to be a significant mediator between a history of childhood physical abuse with or without sexual abuse and depression; adolescents reporting a history of both childhood physical abuse and IPV were far more likely to develop depression during their pregnancies or postpartum than adolescents reporting only a history of victimisation. IPV did not play a significant role in mediating the relationship between a history of childhood sexual abuse alone and perinatal depression, although as discussed in Chapter Three, this was possibly due to lower rates of IPV for study participants reporting only sexual abuse victimisation. IPV may also be a risk factor for homelessness, as teens in abusive relationships are likely to have fewer supports and means of shelter if they decide to leave their relationship (Kennedy et al., 2015). Therefore, if IPV risk is elicited, a history of homelessness should also be assessed.

In assessing for IPV, Deshpande and Lewis-O'Connor (2013) created a brief checklist for practitioners based on recommendations by the US Centres for Disease Control and Prevention and the American Congress of Obstetricians and Gynaecologists Committee Opinion on IPV to assist in identifying this risk factor. The five steps of this checklist include reviewing the patient's medical history for warning signs of IPV, reviewing the patient's medical history for pregnancy-related factors suggestive of IPV, observing the patient's behaviour and that of her partner (if he is present at her appointment), and directly asking the patient about IPV in private.

The BC Reproductive Care Program (2003) recommends that questions about IPV be prefaced with the reason for asking, such as *"Because violence is so common in many women's lives and because there is help available for women being abused, I now ask every patient about domestic violence"* (American College of Obstetricians and Gynaecologists [ACOG], 2002, p. 3). The following three questions are recommended by the ACOG (2002) to assess for IPV during pregnancy:

- "Within the past year, or since you have been pregnant, have you been hit, slapped, kicked or otherwise physically hurt by someone?" (ACOG, 2002, p. 3).
- "Are you in a relationship with a person who threatens or physically hurts you?" (ACOG, 2002, p. 3).
- "Has anyone forced you to participate in sexual activities that made you feel uncomfortable?" (ACOG, 2002, p. 3).

If NPs wish to develop their own questions to screen for IPV, the BC Reproductive Care Program (2003) recommends they be direct, simple questions that women can easily answer. When asking questions about IPV, NPs should employ non-judgmental, empathetic, and supportive language to promote a safe, trusting, and confidential environment (British Columbia Centre of Excellence for Women's Health, 2013).

Following a positive screen for IPV, NPs should refer to provincial policies and guidelines for follow-up, such as the Trauma-Informed Practice Guide ([TIP] Arthur et al., 2013). The TIP guide (available online at http://bccewh .bc.ca/wp-content/uploads /2012/05/2013_TIP-Guide.pdf) provides a summary of recommendations for responding to disclosure of trauma and includes a list of BC resources that can guide NPs in their direction of care.

**Homelessness.** A history homelessness was found to significantly increase the risk of a victimisation history (physical and/or sexual abuse) leading to perinatal depression. Further, both history of victimisation and exposure to community violence increase the risk of homelessness, suggesting the need to assess these three factors concurrently. The question provided below is the one used by Kennedy et al. (2015) in their study to assess for history of homelessness. NPs may choose a different question to assess this risk factor, however, given that Kennedy et al. were the only researchers to examine homelessness and establish it as a risk factor, their question may provide the best assessment for a history of homelessness in clinical practice too.

- "[Have you] ever spent the night sleeping or staying in a place that is not meant to be a home (e.g. a car or abandoned building or park) or staying with someone on their couch or floor, because [you] had nowhere else to go?" (Kennedy et al., 2015, p. 582).

**Assessment of Macrosystem Risk Factors**

**Race/Ethnicity.** The literature reviewed in Chapter Three demonstrated that race/ethnicity may increase both the risk of developing perinatal depression and chronicity of symptoms, although this finding is not transferrable to a BC population. However, since depression often goes undetected and/or untreated in minorities (Alegría et al., 2012), extra vigilance is probably needed when assessing for risk factors and screening for perinatal depression in BC minority populations as well. In particular, Aboriginal adolescents represent a particularly high-risk population, as they are not only one of the most socio-economically disadvantaged racial populations in Canada, but they also have substantially higher rates of teenage pregnancy than non-Aboriginals (Garner, Guimond & Senécal, 2013). Although data for Aboriginal adolescents and BC Aboriginal women specifically is currently unavailable, the Canadian Maternity Experiences survey found Aboriginal women experienced twice the rates of

perinatal depression compared to non-Aboriginal women (Daoud & Smylie, 2014, as cited in Smylie, 2014). This increased prevalence of perinatal depression is likely due to a combination of their limited access to quality healthcare and increased presence of risk factors, as discussed following.

Many Aboriginal people live in remote or rural communities where local maternity care programmes are not available (Fleming et al., 2015). Pregnant adolescents living in these communities are required to travel to regional centres or larger hospitals around 36 weeks gestation to plan for delivery (Couchie & Sanderson, 2007; Fleming et al., 2015). For these teens, this process may lead to increased stress (Ferguson-Hill, n.d.). Additionally, Couchie and Sanderson (2007) suggest that while this practice is beneficial in decreasing the morbidity and mortality associated with high-risk pregnancies, it may also contribute to higher rates of perinatal depression in this culture. This may be due to separation and isolation from partners, family members, and their communities during a time when the adolescents needs additional support (Fleming et al., 2015); lack of continuity of caregivers during their pregnancies; or, lack of involvement in decision-making regarding their care (Couchie & Sanderson, 2007). Further, the prevalence of trans-generational trauma within the Aboriginal population also increases the likelihood that Aboriginal teens will have histories of exposure to community violence, as well as personal histories of victimization and IPV. Indeed, Aboriginal women (excluding First Nations women living on-reserve) in BC experience almost four times higher rates of abuse and IPV than non-Aboriginal women (Smylie, 2014).

In providing perinatal care for racial/ethnic minority adolescents, cultural awareness, sensitivity, and safety is needed in order to improve health outcomes for minority populations. Cultural safety in healthcare not only improves access to care, but also facilitates women feeling

more comfortable and empowered throughout their prenatal and postpartum care (National Collaborating Centre for Aboriginal Health [NCCAH], 2013). As being culturally safe entails learning about patients' cultural beliefs, values, and traditions (NCCAH, 2013), it is recommended that NPs provide teens with an opportunity to discuss any cultural practices that are important to them that they would like incorporated in their prenatal and/or postpartum care. Suggestions for questions NPs can ask their patients to elicit this information in a safe, open, non-judgemental environment include:

- In your own words, how would you describe your race or ethnicity?
- Are there any cultural and/or religious practices you would like us to be aware of so that we may try to incorporate them into your prenatal care?

Additionally, NPs can be culturally sensitive when assessing for other risk factors of perinatal depression by prefacing questions with *'In your culture…'* to ascertain how these risk factors are perceived in the teen's culture and the importance the teen places on this. Examples of questions such as these were provided in previous question suggestions.

There is a fair amount of evidence-based research and recommendations regarding the provision of culturally competent and safe care for BC's Aboriginal populations, and NPs are encouraged to consult these sources of evidence to guide their care. For example, within the SOGC guidelines, Fleming et al. (2015) offer several specific recommendations regarding addressing Aboriginal culture that NPs working with this population may find helpful. Unfortunately, no specific recommendations could be found for BC's other predominant race/ethnicities, including Asians, East Asians, and Filipinos. Perinatal Services BC (2011) also provide an Aboriginal version of the pregnancy passport, *Our Sacred Journey: Aboriginal Pregnancy Passport*, developed in partnership with the Ministry of Health and First Nations

Health Authority, which incorporates traditional teachings and Aboriginal-specific resources (available at http://www.fnha.ca/wellnessContent/Wellness/AboriginalPregnancyPassport.pdf). This version emphasis perinatal care for Aboriginals combining aspects of traditional teachings and western medicine to honour "the wisdom of past, present, and future; connectedness and relationships of all things; [and] respect for the spirit, body, emotions, and mind of all human beings" (Perinatal Services BC, 2011, p. 4). NPs may consult this resource for Aboriginal-specific recommendations.

A number of promising BC-specific Aboriginal maternal health practices also exist that can be offered to Aboriginal pregnant teens to assist in addressing the health disparities seen in this population. These practices include: the Aboriginal Doula Training Project developed through a partnership between the First Nations Health Council and BC's Provincial Health Services Association, which helps "bridge the gap left by the disruption of traditional birthing practices in BC's Aboriginal communities" (Smylie, 2014, p. 8); the Sheway program, established in Vancouver's Downtown Eastside, which aims to improve maternal and infant health in urban areas, particularly for women with substance use and addiction concerns; and, Aboriginal midwifery, available in remote, rural, and urban areas across Canada, which aims to provide best practice care to Aboriginal women (Smylie, 2014).

Another tool to assist in addressing the health disparities of Aboriginal adolescents and the access to care barriers for teens living in remote communities is use of Telehealth. Telehealth is a live videoconferencing service provided over a secure, high speed provincial network that connects "health care professionals in a variety of specialties with patients in remote and distant communities across British Columbia and the Yukon, including First Nations communities" (Provincial Health Services Authority [PHSA], 2016, para 1). Thus, Telehealth can be used to

connect teens with the obstetrician or family physician who will be delivering their baby early in their pregnancy to assist the teen and specialist in building a rapport and increasing comfort with the transition to a new provider at 36 weeks gestation. It can also be used to link at-risk teens with other allied healthcare providers, such as social workers and psychiatrists, as and when needed. Additionally, NPs providing routine prenatal care to these teens can use Telehealth to continue providing education and support to their patients, even after they have left their home communities to plan for delivery. As such, using Telehealth would assist in improving access to quality healthcare, enhancing continuity of care, and increasing provider support for perinatal adolescents.

In summary, this section has explored the risk factors identified in Chapter Three in more detail, including highlighting which risk factors are influenced by one another. Open-ended questions were recommended to assess for these risk factors and examples of questions were provided as suggestions for NPs to use. Asking all of these questions within a single prenatal visit could take a considerable amount of time, particularly if any risk factors are identified, as further assessment would likely be required. Therefore, in determining the best method for incorporating these screening questions into adolescents' prenatal visits without disrupting or detracting from their important prenatal care, this paper next provides an overview of the standard structure of prenatal care in BC to set the stage for how these risk factor assessment questions are best integrated into prenatal appointments.

## Structuring Prenatal Visits for Adolescents

Prior to discussing how to incorporate the assessment of risk factors for perinatal depression into prenatal care, it is necessary to first discuss the structure of perinatal visits themselves, including the optimal timing and content of prenatal appointments. This discussion

will begin with recommendations for when to schedule prenatal visits for teens initiating care in their first trimester, followed by strategies to address prenatal care in adolescents initiating care in their second or third trimester.

**Recommended Frequency of Prenatal Appointments**

The frequency of prenatal visits recommended by the BC Perinatal Health Program (BCPHP, 2010) is as follows: one visit per month from 4-28 weeks, one visit every two weeks from 28-36 weeks, and one visit per week from 36-40 weeks. After 36 weeks gestation, prenatal care is transferred to an obstetrician or family practitioner for the delivery. The NP may still be involved in care as part of the collaborative team. This schedule is likely sufficient for most adolescents, however, more vulnerable patients, such as teens with low social support or IPV exposure, may require additional care, services, or referral to a specialist (BCPHP, 2010). For these patients, NPs may wish to increase the frequency of visits to one visit every two weeks until 36 weeks, manage their prenatal care collaboratively with a physician or obstetrician, refer to psychiatry (particularly a reproductive psychiatrist, if available), or consider earlier referral to an obstetrician to allow closer monitoring of the pregnant teen.

In determining the content of prenatal visits for adolescents, the BCPHP (2010) recommends a number of time-sensitive assessments, counselling, and screening that should be included as part of routine prenatal care within each trimester. These comprehensive recommendations are provided within the *Maternal Care Pathway* (available online at http://www.perinatalservicesbc.ca/Documents/Guidelines-Standards/Maternal/MaternityCarePathway.pdf). As adolescents often do not seek care until later in their pregnancy (Kingston, 2012; Smith & Bassett-Novoa, 2015; WHO, 2007), NPs may find it particularly challenging to incorporate all of these key prenatal care components, let alone add in assessing for risk factors

as well. Therefore, strategies to address late initial prenatal care in adolescents will be discussed next.

**Addressing Late Initiation of Prenatal Care**

Adolescents seeking initial prenatal care later in their pregnancies can be a challenging group for NPs. Indeed, Kleiber and Dimidjian (2014) note that "identification of adolescents with [perinatal depression] and assisting them in finding appropriate care may be one of the biggest hurdles to working with this population" (p. 55). Despite late initiation of prenatal care being common for adolescents, with approximately 15% not seeking medical care until after the first trimester (Kingston et al., 2012; SOGC, 2015), there are no available guidelines for healthcare practitioners to assist them in structuring visits for adolescents who initiate prenatal care late. Thus, it can be challenging for providers to determine how to incorporate all the aspects of prenatal care recommended within the *Maternal Care Pathway* and assessment of risk factors into fewer visits in a condensed period of time.

Fortunately, Smith and Bassett-Novoa (2015) identified this very problem and developed a guide for healthcare providers to assist them in prioritising care for women initiating prenatal care late. Smith and Bassett-Novoa's guide, discussed following, is based on reviews of evidence-based prenatal care, including third trimester-specific recommendations. At the initial prenatal assessment, Smith and Bassett-Novoa suggest addressing safety issues, psychosocial health, substance use, access to care, homelessness, immigration, and perspectives on prenatal care (such as, cultural or religious considerations). The history components suggested by Smith and Bassett-Novoa are the same as those contained on the *BC Antenatal Record Part 1* (available online at http://www.perinatalservicesbc.ca/Documents/Form/Form1582_AntenatalRecord1and2.pdf). In performing a physical exam on adolescents seeking care late, Smith and Bassett-

Novoa recommend focusing on assessing vital signs, fundal height, foetal heart rate, and foetal position, as well as assessing for caesarean delivery scar.

A laboratory requisition including all routine first trimester tests and any applicable time-sensitive tests (gestational diabetes screen if the teen is greater than 24 weeks gestation and Group B streptococcus if she is greater than 35 weeks gestation), as outlined in the *Maternal Care Pathway* should be provided at the initial visit along with an ultrasound requisition to assess foetal anatomy and determine the teen's estimated due date (Smith & Bassett-Novoa, 2015). In determining the estimated due date for adolescents seeking care late, Smith and Bassett-Novoa (2015) recommend using the last menstrual period (LMP) if the teen is sure of the date, or dating from the earliest ultrasound if she is unsure of her LMP, has a history of irregular periods, or if there is more than an 8% difference (in days) between the estimated due date of the LMP and ultrasound. Finally, Smith and Bassett-Novoa recommend assessing for any high-risk issues, such as preeclampsia, multiparity, and history of previous caesarean delivery or gestational diabetes. Smith and Bassett-Novoa also recommend providers attempt to procure any available prenatal and/or surgical records for the adolescent if she is new to the clinic.

As NPs may not be aware that the teen is late in her pregnancy prior to the initial appointment, more than one visit will likely be needed to cover all of these components. A suggested method is to use the first visit to compete the initial assessment, history, and risk stratification components. NPs can provide the teen with the laboratory and ultrasound requisition and ask her to complete/schedule them within the next few days. Any safety issues identified from the initial assessment should be addressed as soon as possible, in accordance with evidence-based guidelines and policies. A second appointment can then be scheduled within one

week to complete the physical exam, follow-up on any abnormal blood work (if available), and begin the educational recommendations per the *Maternal Care Pathway*.

Given that there are likely some barriers to care present for teens seeking prenatal care late, it would be beneficial for NPs to have a system in place for ensuring these vulnerable patients do not fall through the cracks with their subsequent appointments. Suggestions include: addressing teens' access to care barriers, providing teens with the BCPHP's (2010) *Women's Health: Pregnancy Passport* (includes a place for women to record their check-ups and tests to ensure they are receiving their recommended prenatal care), having the medical office assistant (MOA) call the teen a day or two prior to her appointment as a reminder, and following up on any missed appointments to reschedule as soon as possible. This chapter will now provide recommendations for how to incorporate assessment of risk factors into routine prenatal care.

## Incorporating Risk Assessment into Routine Prenatal Care for Adolescents

This section will discuss when to assess for risk factors in both prenatal and postpartum care, based on the discussion and recommendations from earlier in this chapter. As adolescents commonly initiate prenatal care late, possibly not until the third trimester, the recommendations for prenatal care include suggestions for incorporating assessment in adolescents seeking prenatal care in the first trimester, second trimester, and third. A checklist for risk assessment based on the following recommendations is provided in Appendix VII.

### Prenatal Care

The discussion and recommendations for incorporating assessment into prenatal care are broken down into trimesters, with the frequency of visits based on the recommendations of the *Maternal Care Pathway*, discussed earlier. The assumption within this section is that the teen has

presented for her initial prenatal visit in the first trimester. Recommendations for risk assessment in teens initiating prenatal care late will be addressed subsequently.

To assist in determining when to assess the remaining risk factors, this author has created an algorithm (see Appendix VI) linking the various risk factors. This algorithm begins with the four risk factors[5] (age at delivery, ethnicity, history of depression or perinatal depression, and IPV) already assessed as part of the *BC Antenatal Record Part 1*. The next levels depict associated risk factors, if any, based on the recommendations made earlier regarding what factors may influence each other. For example, the algorithm illustrates that a history of homelessness, victimisation, and exposure to community violence are all associated with IPV. Therefore, these factors should be assessed at the same time. Since time constraints likely make it unfeasible to assess all of these risk factors at once, the grey boxes indicate suggested groupings for assessing risk factors at each prenatal visit, as discussed following.

**First trimester (weeks 1-12).** When the teen presents for her first prenatal visit, the initial prenatal care recommended within the *Maternal Care Pathway* will likely need to be split between two visits, ideally within a week apart. Since the teen's subsequent prenatal visits are scheduled a month apart, it is important to try and incorporate as much of the risk assessment into the early visits as possible, to allow more time for risk-reduction interventions for teens identified as high risk. Splitting the initial visit into two also provides NPs with more time to complete the initial risk assessment. Although this early assessment could be shared between other team members (such as RNs), given that perinatal adolescents are a vulnerable group at high-risk for pregnancy-related complications, including perinatal depression, it would be

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[5]Although the antenatal record also includes assessment of 'support system' as a component of lifestyle/social history, this only represents one element of the social support assessment needed for teens and therefore is not included in this list of risk factors assessed.

preferable to have one provider do all of the assessments themselves, if possible. This allows the NP, or other PCP, to establish a better rapport with the teen and provides more opportunity for them to get to know their patient and her unique life circumstances. NPs can have the teen pre-book subsequent appointments with them to ensure this continuity of care.

At the initial visit, NPs may wish to complete the demographics, obstetrical history, present pregnancy, medical history, and lifestyle/social history portion of the *BC Antenatal Record Part 1*, deferring the physical examination and discussion of first trimester topics until the subsequent visit later in the week. In addition to history of depression, IPV, race/ethnicity, and age at delivery, NPs can also assess for history of victimisation, history of homelessness, and history of exposure to community violence. While this may seem like a lot, it is important to remember that most of these only require one or two questions to elicit the necessary information. Further, with the exception of IPV, these risk factors need only be assessed once. Since IPV can occur at any time before, during, or after pregnancy, and teens may be reluctant to report this risk factor initially, IPV should be reassessed at least once each trimester and at postpartum visits to monitor for any new onset, as "consistent use of any screening method will result in the highest rate of detection and prevention" (p. 145, Deshpande & Lewis-O'Connor, 2013).

At the second prenatal appointment, one month later, NPs can assess the teen's stress, global self-esteem, and social support. Assessing for these three risk factors at this early stage can assist NPs with identifying whether the teen is at-risk for perinatal depression, as well as establishing a baseline for future assessments.

**Second trimester (weeks 13-26).** A teen's social support, global self-esteem, and stress should be reassessed at least once during the second trimester to assess for any changes from

their baseline assessment that may indicate an increasing risk for perinatal depression. As NPs will have already conducted a thorough assessment of these risk factors, a quick check-in by asking one or two questions for each is all that is needed. If one of these questions identifies a negative change, NPs can then explore the issue further by asking additional open-ended questions, such as those provided earlier in this chapter. Suggestions for check-in questions include:

- How satisfied are you with the support you are receiving?
- Have there been any changes to your support network? If so, what?
- Since I last saw you, have there been any changes to how you feel about yourself? If so, what?
- Since we last spoke, have there been any significant stressors in your life?
- How are you coping with your pregnancy?

**Third trimester (27 weeks-delivery).** NPs should again reassess for any changes to social support, global self-esteem, and stress at least once within the third trimester. Additionally, as the teen nears delivery and concerns regarding becoming a mother may begin to surface, NPs can begin assessing maternal self-esteem within this trimester.

After 36 weeks gestation, primary care of the pregnant teen will be transferred to an obstetrician or family physician who delivers, as discussed previously. NPs can assist in continuity of care by providing a brief summary of depression risk factors that have been identified for the teen and what interventions have been started/completed. This can then alert the receiving physician that the adolescent is at-risk for perinatal depression and warrants closer monitoring.

**Adolescents initiating prenatal care in the second or third trimester.** Pregnant women, including teens, who initiate prenatal care late are more likely to "present with a challenging variety of concerns, encompassing the full range of their medical, psychosocial, and economic well-being" (Smith & Bassett-Novoa, 2015, p. 395). In particular, adolescents initiating care in their third trimester are more likely to have a lower body mass index, decreased weight gain in pregnancy, higher risk of anaemia, and twice the risk of delivering a low-birth weight infant. Late care-seeking can also pose additional challenges including: inadequate prenatal genetic screening, late diagnosis of gestational diabetes, inadequate treatment of chronic medical conditions, and potential strain on the patient-physician relationship (Smith & Bassett-Novoa, 2015). Given that adolescents are already considered a high-risk group for pregnancy complications (BCPHP, 2010), the additional risk associated with late care-seeking strongly suggest the need for NPs to co-manage the teen's prenatal care with a physician or obstetrician. Depending upon the obstetrician or family physician's geographical location and preferences, they may wish to provide the prenatal visits themselves, or they may prefer to work in tandem with the NP.

*Initiating care in the 2nd trimester.* If NPs are still involved in providing care for teens initiating prenatal care in the second trimester, NPs may find increasing the frequency of visits from once per month to once every two weeks may assist in getting the teen back on schedule with her prenatal care, according to the *Maternity Care Pathway*. The risk factors of age, prior history of depression, ethnicity, IPV, victimisation, exposure to community violence, and stress (if needed) can be assessed with the history and/or physical portion of prenatal care, likely split between two visits within a week of each other. At the second appointment two weeks later, NPs can assess for social support, global self-esteem, and stress. At the third appointment, two weeks

after that, NPs can assess for maternal self-esteem, given that these teens have less time to process all of the prenatal education and may have more concerns or anxiety regarding their transition to motherhood.

*Initiating care in the 3rd trimester.* If NPs are involved in providing prenatal care for teens initially presenting in their third trimester, NPs should focus on screening for depressive symptoms at each visit, as opposed to risk factor assessment, as this period of gestation has been identified in the literature as a peak incidence for perinatal depression (BC Reproductive Mental Health and Perinatal Services BC, 2014; Figueiredo et al., 2007). Therefore, it is more pertinent for the PCP to identify and treat any perinatal depression at this stage than to determine whether the teen is at risk for this condition. Recommendations for depression screening in adolescents will be discussed later in this chapter. Next, recommendations for postpartum care will be made.

**Postpartum Care**

This section discusses the continuation of risk assessment in the postpartum period. Of note, extra effort may be needed to re-engage adolescent mothers who may be seeing another provider, such as a paediatrician, for their infant's well-child visits and for teens who may not be the primary caregiver for their infant (for example, if the child has been placed with foster parents or adopted). Keeping a clear record of the pregnant teens in their care, including documenting the teens' delivery date and flagging when their first postpartum appointment should be scheduled may be a helpful reminder for NPs to follow-up with these teens. In the first few days following delivery, NPs can either call the teen themselves, or have their MOA call, to check-in with the teen and establish which provider the teen plans to continue her postpartum care with. If the teen plans to resume care with the NP, her first postpartum visit can be scheduled at this time.

The first three months postpartum may be the most challenging period following delivery, as the teen adjusts to new motherhood and the pressures of having a newborn. The first postpartum visit should occur within two to four days of the teen being discharged from hospital and subsequent visits scheduled one week later, one month after birth, and two months after birth (Perinatal Services BC, 2014). A summary of Perinatal Services BC's (2014) recommendations for postpartum care assessments is available online (http://www.perinatalservicesbc.ca/Documents/Resources/Checklists/PSBC_Postpartum_Checklist.pdf). After the two-month postpartum assessment, NPs may find it helpful to schedule appointments with the teen mother before or after her infant's well-child visits, as this may provide NPs with the best opportunity to continue assessing her risk for depression at regular intervals (4, 6, 9, and 12 months) within the first year. Risk assessment in the postpartum period can include a check-in of teens' social support, maternal self-esteem, global self-esteem and stress. Additionally, assessing for IPV should continue at each postpartum encounter as well.

### Screening for Perinatal Depression in Adolescents

In addition to assessing for risk factors to identify adolescents *at risk* for perinatal depression, it is also important to assess for depression itself by administering a reliable and validated screening tool. The EPDS (see Appendix VIII) is recommended as the screening tool of choice for use in perinatal adolescents based on the criteria for an acceptable screening tool (discussed previously in Chapter Three), its high sensitivity and specificity in adolescents (AAP, 2010), its validity in perinatal women including postpartum adolescents (Logsdon et al., 2009), and its good cross-cultural validity (AAP, 2010). Additionally, both the BC Reproductive Mental Health and Perinatal Services BC (2014) and SOGC (Fleming et al., 2015) guidelines recommend the EPDS.

In the prenatal period, the SOGC guidelines (Fleming et al., 2015) recommend screening for depression in adolescents at least once per trimester. As previously discussed, however, for teens initiating prenatal care in their third trimester, screening for depression at each prenatal visit is recommended. In the postpartum period, the BC Reproductive Mental Health and Perinatal Services BC (2014) recommend administering the EPDS before eight weeks postpartum and again between four and six months for women with moderate scores on the initial screen. For adolescents identified as at-risk for perinatal depression, NPs may wish to screen for depression more often in the postpartum period and continue screening until at least 12 months postpartum.

When scoring the EPDS for prenatal women, BC Reproductive Mental Health and Perinatal Services BC (2014) recommend using a cut-off of ≥ 15to detect *probable* depression or ≥ 13 to detect *possible* depression to maximize sensitivity, while maintaining a high level of specificity. Similarly, in postpartum women, BC Reproductive Mental Health and Perinatal Services BC recommend a cut-off of ≥ 13 to detect *probable* depression and ≥ 10 to detect *possible* depression. The literature evaluating the validity and accuracy of the EPDS in adolescents suggest the need for lower cut-off scores for this population (Logsdon & Myers, 2010; Martins et al., 2015; Venkatesh et al., 2014), indicating a cut-off score of ≥ 10 or lower to identify probable depression in perinatal adolescents.

In summary, this chapter has discussed how to assess for the risk factors identified in this review with examples of risk assessment questions provided as suggestions for NPs to use in practice. Optimal structuring of prenatal visits for adolescents was discussed, including how often prenatal appointments should occur and strategies to address adolescents seeking initial prenatal care late. Recommendations were made regarding when to incorporate risk factor

assessment into routine prenatal and postpartum care, including strategies for adolescents initiating prenatal care late. Finally, screening for depression in adolescents with the EPDS was discussed. A summary of recommendations and risk assessment algorithm were provided for use in clinical practice. From here, this chapter will now more to discuss recommendations for education, including strategies aimed at patients, families, peers, communities, organisations, and NPs.

## Recommendations for Education

This section provides educational recommendations for each level of influence within the socio-ecological framework. These strategies are aimed at decreasing adolescents' risk for developing perinatal depression and reducing barriers to timely care-seeking. NPs are encouraged to peruse these strategies to determine what, if any, exist within their communities already and what new strategies may be beneficial. While NPs are not expected to undertake all of these strategies themselves, they can be advocates for change within their communities by working collaboratively with other healthcare professionals, organisations, and members of the community to facilitate the implementation of strategies that will foster a supportive and positive environment for pregnant and parenting teens and address their proclivity for perinatal depression.

### Recommendations for Education at the Microsystem Level

**Strategies targeting patients.** Lack of education regarding pregnancy, parenting, and perinatal depression is an important issue for adolescents, as it can lead to delays in seeking care for depressive symptoms. Individual level strategies regarding education for pregnant adolescents include providing information on the following: perinatal depression (clinical manifestations, potential consequences, and treatment options), fostering healthy relationships,

common changes during the transition to motherhood and how to effectively cope with changes, when to seek help from a healthcare provider, and parenting skills for age-appropriate infant and toddler care. Providing this information may help prepare teens for what to expect during their pregnancies, alert them to warning signs of depression and when to seek care, and assist in fostering positive maternal experiences and parenting competence.

Group visits may be a useful, affordable way for providing this education to pregnant teens, particularly when after-school visits are required for more than one adolescent. Group visits can be a beneficial method for educating patients and cultivating "support and sharing of experiences" (Thielen, 2012, p. 216). A randomized control trial evaluating group prenatal care visits among adolescents found teens with group visits had improved perinatal outcomes, including those often associated with untreated perinatal depression, such as small for gestational age, low birth weight infants, and a decrease in rapid repeat pregnancies and unprotected sex (Icovics et al., 2016). If using this model of healthcare delivery, providers should reinforce the need for maintaining confidentiality to promote a safe sharing environment.

**Strategies targeting providers.** For providers, staying up to date on the most current evidence-based research regarding perinatal depression in adolescents through obstetrics and adolescent mental health journals, the BC Reproductive Mental Health and Perinatal Services BC and SOGC guidelines, conferences, or seminars, can improve NPs knowledge of the risk factors for perinatal depression in adolescents, recommended screening tools, and effective interventions. This knowledge can improve NP's comfort level with caring for perinatal adolescents and promote healthy outcomes for the teen and her infant.

**Recommendations for Education at the Mesosystem Level**

**Strategies targeting adolescents' support network.** At the interpersonal level, providing information to educate members of adolescents' social networks can promote awareness, encourage a positive supportive environment for perinatal adolescents, and reduce stigma. Encouraging teens to include important members of their support network in their care by bringing someone with them to their prenatal appointments can help facilitate this education. Further, connecting pregnant teens with other teen mothers through a mentorship program may provide another source for education and support.

**Strategies targeting the community.** At the community level, providing information to educate and enable community members and organisations (such as religious groups and schools) through use of educational pamphlets or posters provided in schools and youth centres or providing local lectures on mental health in pregnancy can promote broader awareness to facilitate a supportive environment and reduce stigma. At this broader level, NPs may wish to incorporate education regarding adolescent perinatal depression as part of a larger educational strategy addressing either adolescent depression or adult perinatal depression, to foster more interest from the community. For example, there may be few community members or other healthcare providers present at a lecture exclusively for adolescent perinatal depression, as they may feel it is not applicable to them if they do not come into contact with many perinatal teens. However, more individuals and providers may be interested in an educational lecture or conference on adolescent mental health, as they are far more likely to have a personal connection. Thus, providing information on perinatal depression within this context can alert attendees to the issue and serve as a flag for the next time providers see a perinatal adolescent in their clinical practice, or for community members who may have teens or know teens who become pregnant in the future.

### Recommendations for Education at the Macrosystem Level

At the social cultural level of influence, specific educational strategies include launching a provincial and/or national media campaign including TV, radio, newspaper, and social media communication to create awareness, decrease stigma, and change the way people think about depression in pregnancy. Examples of this are the #BellLetsTalk and #MedidateOnThis Twitter campaigns to facilitate a national conversation about mental health and postpartum depression, respectively, to reduce stigma and raise mental health awareness. Healthcare providers, parents, and teens themselves can instigate social media campaigns such as this within their communities. NPs can also advocate to local and provincial governments and health authorities for improved accessibility, availability, and affordability of equitable healthcare for all perinatal adolescents.

## Recommendations for Further Research

In conducting this integrative literature review, several areas were identified that would benefit from future research. One observation is that the majority of the research comes from the US; therefore, more Canadian studies would be beneficial, particularly with regard to the role of BC's predominant race/ethnicities (Aboriginal, Asian, East Asian, and Filipino) on perinatal depression in adolescents. It would also be advantageous to determine whether there are differences in risk factors between early and late adolescence. Further research is needed to establish whether there is a hierarchy to types of social support for adolescents and expand our knowledge regarding macrosystem risk factors for adolescents. Additionally, further research on the validity and accuracy of the EPDS in perinatal adolescents would be beneficial to establish an optimal cut-off score for this population. A greater number of prospective longitudinal studies are needed to better understand the course of risk and resilience factors on adolescent perinatal depression, particularly regarding stress, as causality was not established. Qualitative studies

examining risk factors may also provide more insight into what specific types of stress or social support teens find beneficial versus harmful, as well as what factors impact their global and maternal self-esteem most during the perinatal period. Finally, future research into the effectiveness of interventions in perinatal adolescents would be beneficial to guide recommendations for interventions in perinatal adolescents.

## Conclusion

Perinatal depression in BC adolescents is a prevalent and concerning problem due to the potentially far-reaching adverse effects for both the adolescent mother and her child. The combination of the developmental stage of adolescence and the transition to new motherhood is recognized as a tumultuous and difficult time that carries an increased risk for perinatal depression in comparison to adult mothers, however this review process identified significant gaps in the literature surrounding risk factors for adolescent perinatal depression. The goal of this paper was to increase awareness of perinatal depression and its associated risk factors in adolescents, and thereby improve clinical assessment of this population. Thirteen individual studies were reviewed in order to identify these risk factors. The process was guided by the research question: How can NPs in BC identify adolescents at risk for perinatal depression to improve assessment and facilitate earlier interventions? The socio-ecological model served as an effective lens through which to analyse the findings of these studies and to provide recommendations for NP practice.

Findings of this paper are limited by the paucity of literature with an adolescent population; however, they do make several significant contributions toward improving assessment and identification of high-risk perinatal adolescents. The findings of this review established that the following are risk factors for perinatal depression in adolescents: being younger than 19 years of age, prior history of depression, being a racial/ethnic minority, low global self-esteem and low parenting competence, low satisfaction with support, a history of witnessing family violence during childhood, a history of physical or sexual abuse beginning prior to the age of 12, homelessness, and IPV victimisation during adolescence. This project also

identified low maternal self-efficacy and stress as strongly associated with adolescent perinatal depression. The findings also reveal that many of these risk factors may influence one another.

Family NPs in BC are in an ideal position to improve the health outcomes of perinatal adolescents. By identifying an adolescent's risk factors, NPs can then initiate appropriate referrals to allied healthcare professionals or interventions aimed at strengthening the adolescent's protective factors and minimizing her risk factors. This project contributes to this process by providing evidence-based recommendations for assessing risk factors to identify adolescents at high risk for perinatal depression, as well as recommendations for frequency and duration of assessment and screening, structure of prenatal visits, education, and future research to assist NPs in managing adolescents with perinatal depression and help improve the health outcomes of both mother and infant.

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