

**Adverse Life Events and Perinatal Depression Among Young Pregnant and Postpartum
Women**

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Abstract

Background: Young childbearing women have an increased risk of experiencing perinatal depression when compared to adult childbearing women. Perinatal depression has been associated with adverse life events in the literature and conceptually, in frameworks such as the *Lifecycle Approach to Risk Factors for Mental Disorders Model*. **Purpose:** The purpose of this manuscript-based thesis was to (1) determine the prevalence of: (i) adverse life events that have been associated with depression and (ii) depressive symptoms among the young pregnant and parenting women who access specialized services in an urban centre in Ontario, Canada; (2) determine which adverse life events are predictive of depression during the perinatal period, in this population; and (3) examine the psychometric properties of the Edinburgh Postnatal Depression Scale (EPDS) for use in a population of young childbearing women who access specialized services in an urban centre in Ontario, Canada. **Methods:** A survey was conducted with 102 young women from two agencies that provide specialized services to young parents. The interviewer-administered questionnaire included demographic questions, the Edinburgh Postnatal Depression Scale, the Antenatal Psychosocial Health Assessment, the Centers for Epidemiologic Studies Depression Scale, Brown's Support Behaviour Inventory. **Results:** 31.4% of the sample screened positive for perinatal depression. The only adverse life events found to predict perinatal depression were satisfaction with support from 'others' and intimate partner violence. Another predictor was very young maternal age (14 – 17 years). The EPDS was found to be psychometrically sound when used in this population of young childbearing women. **Conclusion:** In this study of young childbearing women in Ontario, Canada, we found a high prevalence rate of perinatal depression and adverse life events. Furthermore, we identified specific factors that predict the development of perinatal depression in this group. Nurses can use

these findings to help prioritize perinatal screening efforts to identify this condition early on in order to lessen the adversities related to perinatal depression.

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Chapter One – Introduction

Women's health has always been an interest of mine, specifically the health and well-being of young mothers. My clinical expertise is caring for women admitted to hospital for labour, birth, and the immediate postpartum period. I chose to focus my Master's research on community-based care of young mothers, a part of the continuum of maternal-newborn health services, with which I am less familiar. During my clinical placement, I became aware of public health nurses' and community-based health care providers' shared concerns about the prevalence of depressive symptoms among young pregnant and parenting women. In particular, providers from one agency that provides specialized perinatal health, social, and educational programming and services for young mothers, noted anecdotally that their clientele were increasingly disclosing or displaying symptoms of mental illness, specifically depression (Cathryn Fortier, personal communication, February 2014).

Maternal depression not only affects a woman's immediate and future well-being (Ross, Dennis, Robertson Blackmore, & Stewart, 2005), it may also have negative consequences on her children's growth and development (Grace & Sansom, 2003), and the well-being of future generations (Kielsing et al., 2011). Reviews of the literature have concluded that maternal depression in the perinatal period and beyond may have immediate and lasting impacts on infants and children (Grace & Sansom, 2003; Kleiber & Dimidjian, 2014). For example, research has shown that postpartum depression may impact infants' emotional and cognitive development (Beck, 1998; Grace & Sansom, 2003; Murray, Kempton, Woolgar, & Hooper, 1993) and increase infant complications in the postpartum period such as less vagal tone and elevated hormones (norepinephron, cortisol, and serotonin) (Field et al., 2000).

The aetiology of depression is a complex interplay of genetic and environmental factors (Kieling et al., 2011; Ross et al., 2005) and, therefore, the reasons for a heightened risk of depression among young mothers is not clear. However, there is strong evidence that adverse life events such as poor social supports, maternal substance use, and trauma are associated with the onset of depression in the perinatal period (Meltzer-Brody et al., 2013; Nunes & Phipps, 2013). Similarly, these adverse life events are associated with high-risk behaviours including early, unprotected sex, leading to early motherhood (Al-Sahab, Heifetz, Tamim, Bohr, & Connolly, 2012; Hillis et al., 2004; Kingston, Heaman, Fell, & Chalmers, 2012). This empirical evidence and the providers' anecdotal observations support the hypothesis that young mothers (≤ 24 years) accessing the specialized services offered by young parent resource centres are more likely to have experienced adverse life events that also predispose them to a heightened risk of perinatal depression, compared to older adult mothers (≥ 25 years).

The purpose of this study is to (1) determine the prevalence of: (i) adverse life events that have been associated with depression and (ii) depressive symptoms among the young pregnant and parenting women who access specialized services in an urban centre in Ontario, Canada; (2) determine which adverse life events are predictive of depression during the perinatal period, in this population; and (3) examine the psychometric properties of the Edinburgh Postnatal Depression Scale (EPDS) for use in a population of young childbearing women who access specialized services in an urban centre in Ontario, Canada. The study findings will inform the planning of services that are responsive to the mental health needs of young pregnant and parenting women in the region.

Perinatal Depression

Depression that is diagnosed during pregnancy or during the first year after childbirth is referred to as perinatal depression (O'Hara & Wisner, 2014). Perinatal depression can be further sub-divided into antenatal depression and postpartum depression, depending on when it is first diagnosed (Milgrom & Gemmill, 2014). Furthermore, depression that was present prior to conception, but resurfaces during pregnancy or the postpartum period is also considered to be perinatal depression (O'Hara & Wisner, 2014), even though it did not first occur in the perinatal period. Regardless of when the initial onset of depression occurs, the perinatal period is an opportune time to screen for depression, because most pregnant women access the health system regularly and perinatal nurses are knowledgeable about this condition. By using the EPDS to screen perinatal women, nurses, whether in the hospital or community setting, can determine if early interventions are needed to minimize further morbidity (Cox & Holden, 2003).

According to The Mood Disorder Society of Canada, 10% of childbearing women in Canada will develop antenatal depression. An additional 15 – 20% of Canadian women will develop postpartum depression (The Mood Disorder Society of Canada, 2009); these rates increase to 30% for women with a history of depression prior to pregnancy. Furthermore, women who have experienced perinatal depression in one pregnancy are twice as likely to experience perinatal depression in subsequent pregnancies (The Mood Disorder Society of Canada, 2009).

Mothers with perinatal depression experience emotional distress, physical symptoms, sleep disturbances, fatigue, and diminished concentration (Ross et al., 2005). These symptoms can then impact the health and well-being of their infant, especially if the symptoms become chronic or are left untreated (Lesser & Koniak-Griffin, 2000; Ross et al., 2005).

Mothers are a primary component of their infant's environment and, therefore, have a direct impact on their child's growth and development. Although most long-term developmental deficiencies have now primarily been associated with chronic or recurrent maternal depression (Grace & Sansom, 2003), depression in the perinatal period also has an impact on the infant (Grace & Sansom, 2003; Kleiber & Dimidjian, 2014) and can become chronic if untreated. For example, Field et al. (2000) found that infants of mothers with postpartum depression had fewer active sleeps, more complications in the postpartum period, and biochemical differences compared to infants of non-depressed mothers. Murray et al. (1993) found that postpartum depression had negative effects on cognitive development of infants at 18 months. These effects were mediated by communication between the mother and her infant (Murray et al., 1993). In a meta-analysis, Beck (1998) found that although the effect was small, a mothers' depressive state in the postpartum period had a significant effect on her infants' cognition and emotional behaviours. More recently, postpartum depression has been negatively associated with infant affect, meaning that infants of mothers with postpartum depression show more negative facial expressions than infants with non-depressed mothers (Jones, Field, Fox, Davalos, & Gomez, 2001). Although studies linking postpartum depression and infant development are not conclusive, there is evidence that chronic or untreated maternal depression does impact infant development (Ross et al., 2005).

The evidence for effective treatment of perinatal depression is limited. A recent systematic review examining antidepressant treatment in the postpartum period, concluded that more research is needed to determine the best pharmacological approach for treating perinatal depression in adult populations (Molyneaux, Howard, McGeown, Karia, & Trevillion, 2014). Limitations of this group of studies include small sample sizes and a lack of studies that examine

the risk that maternal ingestion of anti-depressants has on fetuses and breastfeeding infants (Molyneaux et al., 2014). Furthermore, mothers are often reluctant to use anti-depressants in the perinatal period, preferring non-pharmacological treatments (Whitton, Warner, & Appleby, 1996). A systematic review of non-pharmacological and non-psychosocial/psychological treatments for postpartum depression in adults concluded that more research is needed to determine the effectiveness of alternative treatments such as, massage, bright light therapy, acupuncture, prenatal treatment, and supplementation (Dennis & Allen, 2008). Treatments that have shown promise in reducing perinatal depression in adult populations are cognitive behavioural therapy (Dennis, 2003; Stuart & Koleva, 2014) and home visitations by trained health professionals (Dennis & Creedy, 2004).

There has also been some research that has investigated interventions specifically aimed at preventing and treating perinatal depression in adolescent populations. A recent literature review (Kleiber & Dimidjian, 2014) and a recent systematic review (Lieberman, Le, & Perry, 2014) have examined research studies investigating interventions to reduce both incidence and prevalence of perinatal depression in adolescents. Interventions that have shown promise in reducing either incidence or prevalence of this condition include, infant massage (Oswalt, Biasini, Wilson, & Mrug, 2009), multi-component interventions (Field et al., 2000; Mercado, 2004), interpersonal psychotherapy (Miller, Gur, Shanok, & Weissman, 2008), individual therapy (Phipps, Raker, Ware, & Zlotnick, 2013), a phone based interview intervention (Logsdon, Foltz, Stein, Usui, & Josephson, 2010), and maternal massage (Field, Grizzle, Scafidi, & Schanberg, 1996). Interventions that did not show promising results in adolescent childbearing populations were: social support interventions (Logsdon, Birkimer, Simpson, & Looney, 2005; Silfven, 1990), a cognitive behaviour program (Ginsburg et al., 2012), and psycho-education

programs (Barnet, Liu, DeVoe, Alperovitz-Bichell, & Duggan, 2007; Walkup et al., 2009).

However, more research is needed in this area as many of these studies have limitations including, but not limited to, small sample sizes and the lack of being able to generalize findings.

Young Pregnant and Parenting Women in Canada

Birth rates among young women (< 24 years old) in Canada are lower than those in the United States, but higher than the rates in many European countries (The World Bank, 2012). According to Statistics Canada, in 2010, birth rates for young women < 15 years old accounted for 0.03% of births in Canada, 15 – 19 year olds accounted for 4% of births in Canada, and 20 – 24 year olds accounted for 15% of births in Canada (Statistics Canada, 2012).

A number of characteristics have been documented with regards to young childbearing women in Canada that identify this population as having poor access to the social determinants of health and consequently, this puts them at risk for poor health and social outcomes. In two recent studies using data from the national Maternity Experience Survey (MES), seven variables were found to be characteristic of adolescent (≤ 20 years old) motherhood in Canada (Al-Sahab, Heifetz, Tamim, Bohr, & Connolly, 2012; Kingston, Heaman, Fell, & Chalmers, 2012). These variables are: low household income, being a non-immigrant, not being married, no intention of being pregnant at the time of conception, living on the prairies, a history of violence in the past two years, and having attended prenatal classes (Al-Sahab et al., 2012). A history of violence was also found to be an experience that the majority of young mothers ages 15 – 20 years old had in a study of young women in Montreal (Cassidy, Zoccolillo, & Hughes, 1996).

Furthermore, childbearing at a young age may impact the young woman's ability to attend school, therefore, impacting her future chances of attending post-secondary education and

securing employment that will provide her and her children with economic security (Luong, 2008).

Some of the results of the MES have been supported by another Statistics Canada survey entitled *Survey of Labour and Income Dynamics* (SLID). The SLID examined socioeconomic factors of women in their 30s who had become mothers under the age of 20. This retrospective survey found that adolescent mothers in Canada were less likely to be married and less likely to be from an immigrant family; however, it also found that First Nations women were twice as likely as others to become adolescent mothers (Luong, 2008). In a secondary analysis of data from the *British Columbia Adolescent Health Survey*, a group of researchers found that young Aboriginal adolescents in grades 7 – 12 had higher odds of becoming pregnant if they had experienced: substance use in their lifetime, or had ever been sexually abused (Devries, Free, Morison, & Saewyc, 2009). The variable measuring volunteering in one's community, however, decreased one's odds of becoming pregnant at a young age (Devries, Free, Morison, & Saewyc, 2009).

Luong (2008) argues, that in Canada, just like in the United States (Ruedinger & Cox, 2012), childbearing at a young age is often a consequence of socioeconomic factors, instead of the other way around. For example, low socioeconomic status among adolescent-headed families is more likely related to low socioeconomic status of the adolescents' family of origin and low levels of education, rather than childbearing at a young age (Luong, 2008). This complicates efforts to decrease birth rates among young women, as the root cause is complex in nature and requires efforts that will reduce poverty.

Specialized Comprehensive Services

To address the needs of young pregnant and parenting women, a network of independent resource centres and homes (shelters) exist throughout Ontario, Canada (Appendix A). These centres provide a ‘one stop shop’ model of care that includes resources and services to young childbearing women and men from adolescence into their mid-twenties. Some of these centres date back to the early 1900s and were started by nuns concerned for the well-being of the young and unmarried pregnant women within their dioceses (Rosalie Hall, 2015; St. Mary’s Home, 2015), while other centres had their start as a result of social activism (Jessie’s Centre, 2015).

Today these resource centres and homes provide a multitude of services and resources to young parents including: prenatal classes, parenting classes, child development classes, nutrition classes, anger management classes, medical services, food banks, and counselling services (Jessie’s Centre, 2015; Rosalie Hall, 2015; St. Mary’s Home, 2015). Although some of the resource centres provide counselling supports specifically for mental health issues (Jessie’s, 2015) the funding for these programs is not consistent, and the emphasis of programming has traditionally concentrated on prenatal nutrition/care and parenting skills.

Research Purpose and Questions

Health and social service providers from across Ontario, Canada that offer specialized comprehensive services to young mothers, have noted an increasing trend in the mental health needs of their clientele (Cathryn Fortier, personal communication, February 2014). These clinical observations fit with our existing empirical and theoretical (Kieling et al., 2011) understanding of the shared risk factors for both early motherhood and perinatal depression. However, there is a lack of studies specifically examining the prevalence of perinatal depression among young mothers who access specialized services in Canada. It is essential that the agencies offering these

specialized services know how prevalent perinatal depression is in young childbearing women so they can respond to the needs of the population they are mandated to serve.

The objectives of this research study were to (1) determine the prevalence of depressive symptoms among the current agency clientele; determine the prevalence of specific adverse life events (satisfaction with social supports, substance use (i.e., alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood trauma and intimate partner violence)) that have been correlated with the onset of depression; (2) determine if adverse life events predict depressive symptoms in young childbearing women aged 14 – 24 at young parent resource centres; and (3) examine the psychometric properties of the EPDS for use in a population of young childbearing women who access specialized services in an urban centre in Ontario, Canada. The four research questions are:

- i) What is the prevalence of depressive symptoms in young childbearing women ages 14 – 24 years?
- ii) What is the prevalence of satisfaction with social supports, substance use (i.e., alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood trauma and intimate partner violence) in young childbearing women ages 14 – 24 years?
- iii) Are satisfaction with social supports, substance use (i.e., alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood trauma and intimate partner violence) predictive of the presence of depressive symptoms in this population?
- iv) Is the EPDS a psychometrically sound tool for use in this population of 14 – 24 year olds?

Relevance

Studies conducted in the United States have concluded that depression in the perinatal period is more prevalent among young childbearing women, especially adolescents (Kleiber & Dimidjian, 2014). In Canada, however, few studies have examined perinatal depression in young childbearing women. This study seeks to address this gap in our knowledge of perinatal depression.

Young childbearing women aged 14 – 24 years who are affected by perinatal depression pose a unique challenge for public and community health nurses, as this condition can affect both the young woman, and possibly her children (Grace & Sansom, 2003; Ruedinger & Cox, 2012; Ryan-Krause, Meadows-Oliver, Sadler, & Swartz, 2009). There is a lack of research examining the prevalence and predictors of perinatal depression among young childbearing women in Ontario, Canada. This gap in knowledge poses a concern for nurses and other service providers caring for this population, as this void limits awareness of the problem, inhibits appropriate program development/implementation, and diminishes advocacy initiatives.

Community health nurses, such as public health nurses and family practice nurses, are often the initial and most frequent healthcare provider that young pregnant and parenting women will contact. For example, public health nurses with the Healthy Babies Healthy Children Program (HBHC) in Ontario visit high-risk mothers, including young mothers, on a long-term basis. In addition, resource centres such as those that exist across Ontario, are ideal places to provide specialized mental health services to young childbearing women, as the mandate of these centres is to create comprehensive ‘one-stop shop’ services that are responsive to the needs of their clientele. This research will help to determine the need for on going specialized mental health services that are both acceptable and accessible to this population.

Organization of Thesis

This manuscript-based thesis consists of six chapters. This first chapter is an introduction to the thesis and presents the research problem, purpose, research questions, and relevance of the study. Chapter two is a narrative literature review on the topic of perinatal depression, specifically pertaining to young childbearing women. A conceptual framework, *The Lifecycle Approach to Risk Factors for Mental Disorders*, will be introduced (Kieling et al., 2011) and will frame the literature review. This chapter provides background information regarding what is known about perinatal depression in Canada, as well as, what is known about perinatal depression in young childbearing women in high-income countries like Canada. The research that investigates the association between perinatal depression and social supports, substance use (i.e., alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood trauma and intimate partner violence), will be examined in-depth. Chapters three and four are stand-alone manuscripts prepared for submission to specific peer-reviewed journals. Chapter three is a manuscript prepared for submission to the *Journal of Nursing Measurement*. This manuscript reports the psychometric properties of the EPDS for young childbearing women ages 14 – 24 years. *The Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999) was the guiding framework used for validating the items in the EPDS, by investigating its validity, reliability, and acceptability of the tools' items for use in the population of young childbearing women, and addressing the fourth research question in this study. Chapter four is a manuscript prepared for submission to the *Journal of Community Health Nursing* that reports the prevalence findings of this study, as well as, the findings pertaining to variables that predict a higher risk of experiencing perinatal depression. Therefore, this chapter

addresses the first three research questions in this study. Chapter five is an integrated discussion of the study findings with existing literature and highlights the implications that the findings from this study have on nursing practice in the Canadian context. Chapter six summarizes the contributions of the co-authors of this research study and provides acknowledgments.

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Chapter Two – Conceptual Framework and Literature Review

Introduction

This chapter will provide an overview of perinatal depression in young childbearing women in Canada and abroad. The *Lifecycle Approach to Risk Factors for Mental Disorders Model* (Kieling et al., 2011) will be introduced as the conceptual framework that will frame the literature review and inform the study. In the narrative literature review perinatal depression will be examined, as well as, the adverse life events that may have an impact on both becoming a young parent and experiencing perinatal depression. These adverse life events, informed by the conceptual framework are: satisfaction with social supports, substance use (i.e., alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood and intimate partner violence). The purpose of this literature review will be to gain a better understanding of what is currently known about these specific risk factors for perinatal depression in young childbearing women in Canada.

Conceptual Framework

The aetiology of perinatal depression is unknown (Ross, Dennis, Robertson Blackmore, & Stewart, 2005). It is thought that the simultaneous occurrence of multiple risk factors complicates the identification of exact causative factors related to the onset of mental illness, such as depression (Kieling et al., 2011). Therefore, this literature review will be informed by *The Lifecycle Approach to Risk Factors for Mental Disorders Model* (Figure 2.1) (Kieling et al., 2011), which helps to guide the investigation of risk factors, both distal and proximal, that affect an individual's mental health throughout their childhood, adolescence, and beyond (Kieling et al., 2011).

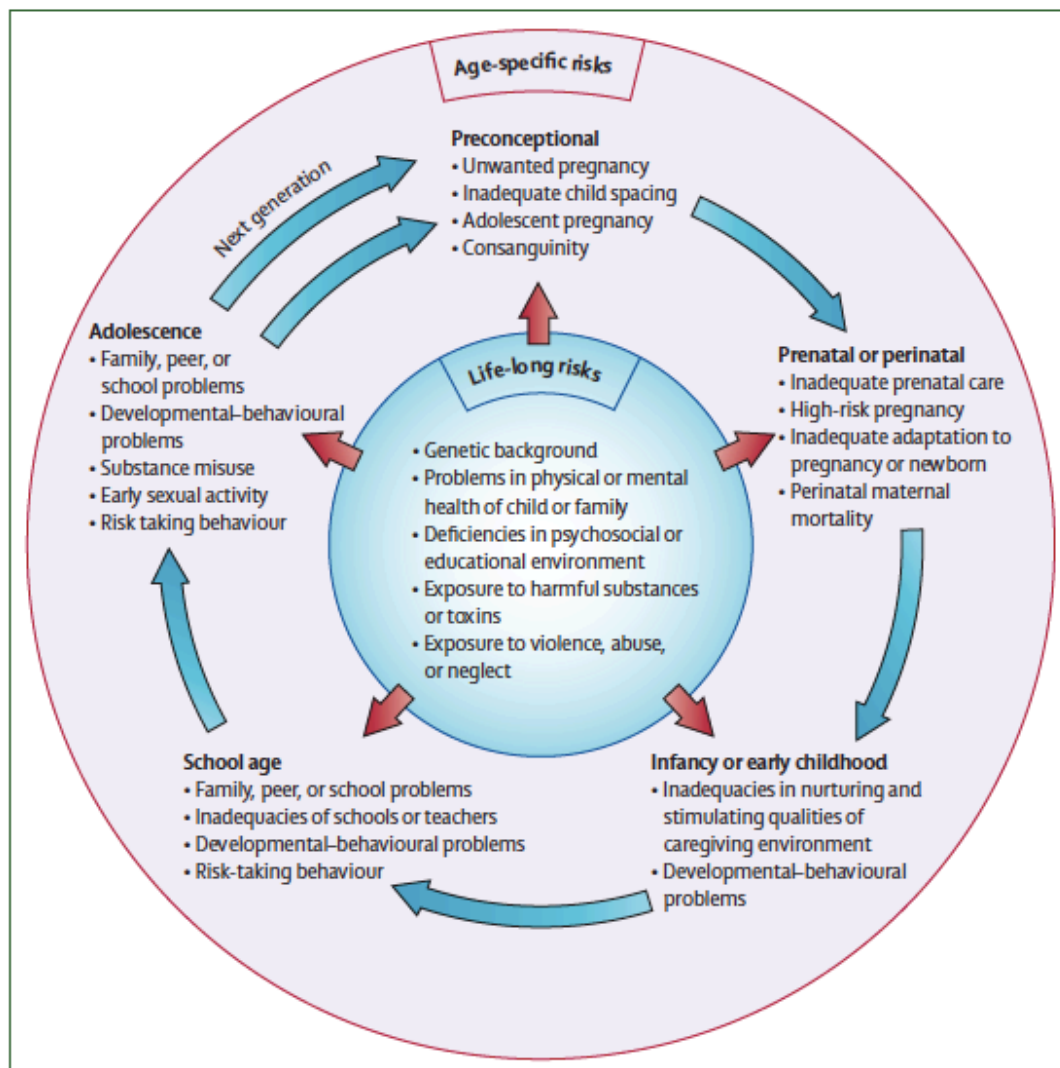


Figure 2.1. The Lifecycle Approach to Risk Factors for Mental Disorders Model (Kieling et al., 2011) (permission was obtained from Kieling et al., (2011) to use this framework in this thesis see Appendix B)

This framework was first developed by Ertem (2011) to highlight developmental risks and protective factors in childhood that may not only impact the individual from childhood into adulthood, but also may impact subsequent generations. Kieling et al., (2011) applied this framework to help explain how mental illness impacts children through the lifecycle, as well as, future generations (permission was obtained from Kieling et al., (2011) to use this framework in this thesis see Appendix B).

The Lifecycles Approach to Risk Factors for Mental Disorder Model informs our understanding of how the mental health of a young mother can impact not only her own life, but also the developmental outcomes of her infant (Kieling et al., 2011). This framework is centred on risk factors that can affect an individual at any point during their lifetime. These risks include elements such as “deficiencies in psychosocial or educational environments, exposure to harmful substances and toxins, and exposures to violence, abuse or neglect” (Kieling et al., 2011, p. 1516). The outer ring of the framework provides a description of risk factors associated with specific age groupings from preconception to adolescence (Kieling et al., 2011). Risk factors associated with adolescence include: “family/peer/school problems, developmental-behavioural problems, substance misuse, early sexual activity, and risk taking behaviour” (Kieling et al., 2011).

This framework has been well supported by the existing literature, such as the multiple articles published from the *Adverse Childhood Experience (ACE) Study*; a large national study (n = 17 421) that surveyed American adults about past childhood experiences of abuse, and other stressful life events such as, household substance use, family history with mental illness, family history of incarceration, and parental separation/divorce (Hillis et al., 2004). Researchers who have used the ACE data have consistently found positive associations between adverse childhood

events and specific experiences in adulthood. In particular, two separate research teams demonstrated strong positive correlations between adverse childhood experiences and depressive symptoms throughout an individual's lifetime and into adulthood (Chapman et al., 2004; Edwards, Holden, Felitti, & Anda, 2003).

There have also been two literature reviews that have shown a positive association between maternal depression and poor child development outcomes (Grace & Sansom, 2003; Kleiber & Dimidjian, 2014). In a study highlighted by Kleiber and Dimidjian (2014), Field et al. (2000) concluded that infants of mothers with postpartum depression had less active sleep, more complications in the postpartum period, and differences in their biochemical lab results than infants of mothers who had not experienced postpartum depression.

In this study, *The Lifecycle Approach to Risk Factors for Mental Disorders Model* (Kieling et al., 2011) has been used to inform the development of the research questions, and to situate the relationship between adverse life events and perinatal depression. Adverse life events that will be the focus of this literature review are: deficiencies in psychosocial environment (i.e., satisfaction with social support), exposure to harmful substances (i.e., substance use: alcohol, illicit drugs, and cigarettes), and exposures to violence, abuse, or neglect (i.e., trauma: childhood trauma or intimate partner violence). This literature review will begin with a review of prevalence rates of perinatal depression in young childbearing women in Canada and abroad, followed by a review of the associations between perinatal depression and the chosen adverse life events (satisfaction with social supports, substance use (alcohol, illicit drugs, and cigarettes), and trauma (childhood trauma and intimate partner violence) in young childbearing populations.

Literature Search Procedures

The initial literature search for this narrative review of the literature took place in January– March 2014. A number of searches were done to examine the phenomena of perinatal depression in young childbearing women and adolescents. Both the CINAHL and PubMed databases were accessed at this time and search terms included, risk factors, single parent family, pregnancy in adolescence, Canada, perinatal depression, and postpartum depression. The Boolean operator AND and OR were used and only English language articles were included. Resources that were not accessible online were requested through the interlibrary loan service or requested from the Annex. This search was updated in September - October 2014 and again in September 2015. These updates also included searches on Google Scholar. Further articles were acquired from reference lists of research found via the original computerized searches.

Inclusion criteria included all studies written in English that examined the risk factors of social support, substance use (alcohol, illicit drugs, or cigarettes), and trauma (childhood trauma and intimate partner violence) in relation to perinatal depression in adolescents (< 20) and young women (≤ 24). Both primary studies and secondary analysis were included in the literature review. Research from middle and low-income countries were excluded, as it was thought that this research is not applicable to the Canadian situation. A total of 268 articles were found and 246 were excluded because they did not include mention of social support, trauma, or substance use. After removing duplicates (10 articles) from the searches, 12 studies were left to be included in this review (Appendix C). Another five articles were added to the review from reference lists of included articles.

Another search was undertaken in January 2014, and again in September 2015 to review the psychometric properties of the Edinburgh Postnatal Depression Scale (EPDS) when used in

populations of young childbearing women. Search terms that were used included, adolescent, Edinburgh Postnatal Depression Scale, validity and reliability, and psychometric. Inclusion criteria included all studies written in English and that were undertaken in high-income countries. 16 studies were found, however, only one was included based on the inclusion criteria. Another study was retrieved at a later date and, therefore, two studies were included in the discussion about the psychometrics properties of the EPDS when used in populations of adolescents.

Literature Review

Prevalence of Depression in Young Canadian Women

Unlike research of young childbearing women in Canada, the documentation of depression among young Canadians ≤ 24 is prevalent. *The Canadian Community Health Survey (CCHS): Mental Health and Well-Being* has tracked the mental health of Canadians for over a decade (Statistics Canada, 2014a). Although this survey is not specific to the perinatal period, in 2012 it was documented that depressive symptoms were almost twice as common in young women (9.0%), than in young men (5.3%) (Pearson, Janz, & Ali, 2013). Statistics Canada (2014b) has also shown that mood disorders, including depression, have been consistently increasing in both adolescents (12 – 19 years old) and adults (20 – 34 years old) since 2011. Furthermore, findings from the 2002 CCHS showed that young women were at greater risk of experiencing depression if they: no longer lived with their parents, lived in low-income households, were no longer in school, and/or were experiencing extreme stress (Nguyen, Fournier, Bergeron, Roberge, & Barrette, 2005).

Prevalence of Perinatal Depression in Young Women

Existent research concerning perinatal depression among young childbearing woman is predominantly from the United States. These studies have consistently shown a positive correlation between perinatal depression in childbearing adolescents and adverse life events such as: poor social supports (Birkeland, Thompson, & Phares, 2010; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013), substance use (Gavin, Lindhorst, & Lohr, 2011; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013; Tzilos, Zlotnick, Raker, Kuo, & Phipps, 2012), and trauma (Gavin et al., 2011; Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013).

There is significant variation among study findings regarding the prevalence of perinatal depression in adolescents and young women. However, the majority of researchers have found that the prevalence of perinatal depression is $\geq 20\%$ in populations of young childbearing women (Gavin et al., 2011; Logsdon et al., 2005; Schmidt, Wiemann, Rickert, & Smith, 2006; Secco et al., 2007), which is higher than the Canadian national average (antenatal depression 10%; postpartum depression 15 – 20%) (The Mood Disorder Society of Canada, 2009).

A number of studies have compared the rate of perinatal depression among different age groups of women. Nunes and Phipps (2013) compared a sample of American childbearing adolescents from Rhode Island aged 15 – 19 years old with older childbearing women (age 20 – 24; age 25 – 29; age ≥ 30). The authors found that more adolescents (8.4%) and young women (11%) experienced antenatal depression when compared to the women ≥ 30 (6.77%). In addition, rates of moderate/severe postpartum depression had a significant ($p = 0.0001$) decline as age increased (adolescents: 12.11%; 20 – 24: 9.77; 25 – 29: 7.32; 30 +: 4.78) (Nunes & Phipps, 2013).

Lanzi, Bert, and Jacobs (2009) also compared the rate of perinatal depression between three groups: first time adolescent mothers, first time low-income adult mothers, and first time high-income adult mothers. The mean ages of the three samples were: 17.5 years old (adolescents), 25.5 years old (low-income adults), and 27.9 years old (high-income adults) (Lanzi, Bert, & Jacobs, 2009). The researchers found that adolescent mothers had significantly higher perinatal depression scores than the other two groups of mothers. Likewise, adolescent mothers were significantly more likely to have consistent depressive symptoms over the course of the perinatal period compared to the other two groups. However, both the adolescent and low-income mothers had a significantly higher rate of becoming depressed than the high-income mothers (Lanzi et al., 2009).

In a recently published secondary analysis of findings from the Canadian *Maternal Experiences Survey (MES)*, a national study of women ≥ 15 years old who gave birth between November 2005 to May 2006, 14% of adolescent mothers (< 20 years old) experienced postpartum depression compared to 7% of adult mothers (Kim, Connolly, & Tamim, 2014). Although these prevalence rates are lower than previously documented national rates of perinatal depression in Canada and lower than documented rates of perinatal depression in childbearing adolescents in the literature, the findings show that prevalence of postpartum depression were twice as high in adolescents, than in adult mothers.

Limitations.

The variation seen in the prevalence rates of the above studies may be partly due to differences in the study designs. First, there are a number of different screening tools that can be used to measure depressive symptoms in the perinatal period. Some tools, like the EPDS (Cox, Holden, & Sagovsky, 1987), were created specifically for detecting perinatal depression in the

childbearing women. Other tools such as the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Centre for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), were developed to assess depressive symptoms in the general population. The BDI was created based on the depressive symptoms as delineated by the *Diagnostic and Statistical Manual of Mental Disorders* (McDowell, 2006). Whereas, the CES-D was created based on depressive symptoms found in the literature (McDowell, 2006).

A second explanation for the variation in the study findings regarding the prevalence rates of perinatal depression in young pregnant and postpartum women is the ages of the women in the various study samples are not consistent. Some studies focus on adolescents aged 15 – 19 years old (Birkeland et al., 2010), whereas others included young women aged 12 – 20 years old (Meltzer-Brody et al., 2013).

Thirdly, researchers have chosen to examine samples from different populations. Some researchers chose to study specific ethnic groups (Eshbaugh, 2006; Schmidt et al., 2006), whereas other researchers recruited from clinics or centres that provide services to young women from low-income households (Fagan & Lee, 2010). Furthermore, other researchers completed secondary analyses of large national studies of adolescents, and therefore, are capturing a more general sample (Gavin et al., 2011; Kim et al., 2014).

Finally, outcomes investigated and study designs also differed greatly. Whereas some researchers examined perinatal depression (Gavin et al., 2011; Meltzer-Brody et al., 2013), others investigated only postpartum depression (Fagan & Lee, 2010; Secco et al., 2007). Furthermore, about half the studies were secondary analyses (Agrawal, Ickovics, Lewis, Magriples, & Kershaw, 2014; Ellis et al., 2003; Eshbaugh, 2006; Fagan & Lee, 2010; Kim et al., 2014; Lesser & Koniak-Griffin, 2000; Nunes & Phipps, 2013; Secco et al., 2007). The designs

of the studies included, prospective longitudinal (Ellis et al., 2003; Gavin et al., 2011), cross-sectional (Birkeland et al., 2010; Eshbaugh, 2006; Kim et al., 2014; Tzilos et al., 2012), randomized control trials (Fagan & Lee, 2010; Lesser & Koniak-Griffin, 2000; Mckee, Cunningham, Jankowski, & Zayas, 2001), repeated measures (Agrawal, Ickovics, Lewis, Magriples, & Kershaw, 2014; Bottomley & Lancaster, 2008; Lanzi et al., 2009; Logsdon et al., 2005; Meltzer-Brody et al., 2013; Secco et al., 2007), and cohort studies (Ellis et al., 2003; Nunes & Phipps, 2013). All of these variations impact research findings and make it difficult to make any definitive declaration about perinatal depression in this population.

Regardless of the population studied or the variations in study design, this body of literature does show that the prevalence of perinatal depression among young mothers is a concern (Gavin et al., 2011; Nunes & Phipps, 2013; Tzilos et al., 2012). However, despite a growing body of research pertaining to perinatal depression and young childbearing women, the majority of the studies are American. Therefore, little is known about perinatal depression in young childbearing Canadians. Kleiber and Dimidjian (2014), stress the importance of identifying young women at risk of developing perinatal depression in order to intervene early and with appropriate interventions. One way to detect a risk of developing perinatal depression is by identifying adverse life events in young childbearing women's lives that have been associated with this condition. The following section will highlight three adverse life events that have been associated with perinatal depression.

Adverse Life Events Associated with Perinatal Depression

The three risk factors that have been consistently associated with perinatal depression in the literature, as well as, supported by the conceptual framework *The Lifecycle Approach to Risk Factors for Mental Disorders Model* (Kieling et al., 2011) are: social support, substance use (i.e.,

alcohol, illicit drugs, and cigarettes), and trauma (i.e., childhood trauma and intimate partner violence) (see Appendix D for summaries of the articles). These three adverse life events will be discussed in detail in the following sections.

Social support.

Social support has been negatively associated with perinatal depression in childbearing adolescents and young women (Eshbaugh, 2006; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013). Researchers have predominantly examined social support in terms of an adolescent's connection to family (Deptula, Henry, & Schoeny, 2010; Ellis et al., 2003), peers (Secco et al., 2007), and partners (Eshbaugh, 2006; Meltzer-Brody et al., 2013). However, some researchers have examined social support in general (Mckee et al., 2001; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013).

Poor social support has been recorded as one of the main risk factors associated with developing postpartum depression in the general childbearing population, as well as the adolescent childbearing population (Ross et al., 2005). Furthermore, social support has also been negatively associated with depression among Canadian youth in the general population (Nguyen et al., 2005). In their secondary analysis of data from the *Canadian Community Health Survey (CCHS)*, Nguyen et al. (2005) found that young Canadians not living with their parents were at heightened risk of developing depression.

Support from family.

Lanzi et al. (2009) undertook a secondary analysis of data from a study that investigated parenting practices of first time mothers. The sample included a cohort of first time adolescent mothers, and it was found that the number of adults living with an adolescent mother was significantly ($p = < 0.01$) and negatively associated with developing some amount of postpartum

depression. Whereas, 17.4% of adolescent mothers living with two or more adults experienced some postpartum depression, 48.2% of adolescent mothers living with one adult experienced some postpartum depression. This association was not present in the low-resource adult or high-resource adult groups in the study (Lanzi et al., 2009).

Ellis et al. (2003) also found that the number of adults in the home had an effect on the mental health of young women (≤ 18 years old) in their secondary analysis of two studies; one from the United States and the other from Australia. In this study Ellis et al. (2003) were examining the relationship between father absence and 16 variables including psychosocial adjustment and teenage pregnancy. Although this study was not designed specifically to examine young mothers' risk of developing perinatal depression, it still provides insight into the issue of young mothers and mental health. The authors found that in both countries, a father's absence at an early age had the largest effect on teenage pregnancy (USA, $> 30\%$; AUS, 15%), whereas daughters of fathers who were absent later in their lives had the second highest chance of becoming pregnant in adolescence (USA, 15% ; AUS, $\sim 8-9\%$). Daughters whose fathers were always present had the lowest risk of adolescent pregnancy (USA, $\sim 6-7\%$; AUS 5%) (Ellis et al., 2003).

This positive trend was supported in the Australian data that examined father absence and mental health. Ellis et al. (2003) found a modest trend that earlier father absence increased an adolescent's odds of developing a mood disorder (OR 1.64, $p < .001$), which includes depression. In this study 54.2% of daughters of fathers in the category of 'early onset of father absence' had a mood disorder, 49.1% of daughters with a father in the 'late onset of father absence' were diagnosed with a mood disorder, and 31.8% of daughters of fathers who were always present had a mood disorder (Ellis et al., 2003).

In a Canadian study, Secco et al. (2007), surveyed young childbearing mothers ($n = 78$) between 12 – 18 years old in Winnipeg, Manitoba. The authors examined perceived social support from both family and friends during the third trimester and then enacted social support, or assistance in the form of information, guidance, or emotional support, in the postpartum period. Despite looking at various forms of support, only perceived support from family, and not peer support or enacted support, was found to be significantly associated with lower levels of perinatal depression (Secco et al., 2007).

Support from partner.

Support from the baby's father has also been examined in relation to perinatal depression. Meltzer-Brody et al. (2013) found involvement of the baby's father to be negatively correlated with postpartum depression ($r = -0.32$, $p < .001$), but not antenatal depression. Eshbaugh (2006) also examined whether having a significant other had an affect on postpartum depression status. In this study the author found that marginal means of postpartum depression differed based on having a partner or not being partnered, as well as, ethnicity. Whereas young African American women were more likely to show signs of postpartum depression when partnered ($M = 18.71$), than when not partnered ($M = 13.09$, $p < 0.05$); Latina mothers were more likely to experience postpartum depressive symptoms when not partnered ($M = 14.99$), than when partnered ($M = 9.63$, $p < 0.05$). No significance was found for mothers in the categories of 'White' or 'Other' (Eshbaugh, 2006).

Fagan and Lee (2010) also examined partners' support and its effect on young mothers' risk of developing postpartum depression. In their study of women younger than 20 years old in the North-Eastern United States, the authors examined a number of variables including support from fathers and a young woman's satisfaction with the support she received from her partner in

the postpartum period. The results of this study found that only satisfaction with support received in the postpartum period was significant. The authors also found that it had a negative effect on postpartum depressive symptoms of the young women (Fagan & Lee, 2010).

Support in general.

Finally, some researchers chose to examine social support in general terms. For example, Nunes and Phipps (2013) found that general support lessened symptoms of postpartum depression in their study of American adolescents (15 – 19 years old) and young childbearing women (20 – 24 years old). Meltzer-Brody et al. (2013) found similar results, citing that poor social support was an independent risk factor for antenatal depression (*OR, 0.35; 95% CI, 0.16-0.76; $p < 0.008$*) and postpartum depression (*OR, 0.55; 95% CI, 0.27-0.69; $p < 0.03$*). Birkeland et al. (2010) examined the role of isolation and found it to be a significant predictor of postpartum depression ($\beta = .44, p < .001$). McKee et al. (2001) also examined general social support. These authors examined social support in terms of: functional support, total network, frequency, and total loss. However, only total functional support ($r = -.21; p < 0.05$) was significantly correlated with postpartum depression (McKee et al., 2001).

Summary.

From this narrative review of the literature, the association between social support and perinatal depression is apparent. Young childbearing women with strong actual and perceived social supports are more highly protected from developing perinatal depression, than their less supported counterparts. This finding is especially impactful if that support, comes from either their family and/or their partner. Support from peers has not been found to be a significant influence on perinatal depression in young childbearing women (Secco et al., 2007).

The main limitation of these studies, however, is the differing definitions of social support. This difference between studies makes it difficult to compare results. Whereas some researchers assumed that presence of parents was a sufficient definition of social support (Ellis et al., 2003; Lanzi et al., 2009), other researchers asked study participants about perceived or satisfaction with support (Fagan & Lee, 2010; Secco et al., 2007).

Substance use.

The second variable that will be examined is substance use. This variable has been positively associated with perinatal depression (Gavin et al., 2011; Nunes & Phipps, 2013; Tzilos et al., 2012) in childbearing adolescents and young women. Substances such as alcohol (Gavin et al., 2011; Nunes & Phipps, 2013; Tzilos et al., 2012); illicit drugs, specifically marijuana; (Gavin et al., 2011; Tzilos et al., 2012), and cigarette use (Bottomley & Lancaster, 2008; Gavin et al., 2011; Nunes & Phipps, 2013) have all been examined in relation to perinatal depression.

Alcohol use.

Three studies examined alcohol use and development of perinatal depression in young women. Tzilos et al. (2012) found that having ‘ever drank alcohol’ was a significant predictor of perinatal depression in adolescents ($p < 0.01$) in their cross-sectional study of 13 – 18 year olds accessing an urban prenatal clinic. Nunes and Phipps (2013) used data from a large population based study and found that alcohol use prior to pregnancy or in the last trimester of pregnancy was a predictor of perinatal depression, but only among those in the age group of 15 – 19 year olds (2.01; 1.08-3.86; $p < 0.05$). Gavin et al. (2011) combined alcohol and marijuana use into one variable in their longitudinal study of adolescent mothers. In this longitudinal study alcohol/marijuana use was only found to increase rates of perinatal depression when the sample was 17.7 - 22.5 years old.

Illicit drug use.

Tzilos et al. (2012) used a variable entitled 'illicit drug use' in their study. Although 41% of the sample admitted to ever using illicit drugs, this variable was not found to be of significance. Nevertheless, a positive trend was established between both illicit drug use and perinatal depression.

Cigarette use.

The third substance that has been investigated in the literature is cigarette use. Nunes and Phipps (2011) found cigarette smoking prior to pregnancy or in the young woman's last trimester of pregnancy to be significantly and positively associated with perinatal depression within the age group of 15 – 19 year olds ($p < 0.05$). Gavin et al. (2011) determined that in their sample smoking cigarettes increased the likelihood of experiencing depressive symptoms in young women when they were between the ages of 17.7 - 29.0 years old. Bottomley and Lancaster (2008) also investigated the association between cigarette smoking and antenatal depression. Although there was a positive trend between the two, no statistical significance was found (Bottomley & Lancaster, 2008).

Summary.

While researchers have begun to find some statistical associations between substance use and perinatal depression in young childbearing women, there is limited research in this area. Furthermore, other limitations were also apparent. Firstly, many of the studies did not ask about substance use in detail. Secondly, the participant feeling a need to give answers that were socially desirable may have affected answers pertaining to substance use. More research is, therefore, needed to better understand how these variables relate to one another.

Trauma.

The final variable that will be investigated in relation to perinatal depression in young childbearing women is trauma. Trauma includes a number of adverse events: sexual and physical assault, emotional trauma, and neglect. Trauma has been positively associated with perinatal depression (Gavin et al., 2011; Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012) in childbearing adolescents and young women. In the literature, researchers have defined the variable trauma in one of two ways. Some researchers have used the variable ‘trauma’ generically to combine the experiences of physical abuse, sexual abuse, emotional abuse, and/or neglect into one variable (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012). Whereas, other researchers have differentiated between kinds of trauma such as sexual abuse, physical abuse, and neglect (Agrawal et al., 2014). Furthermore, most researchers investigated a history of trauma, with no differentiation between childhood trauma and intimate partner violence (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012), whereas, other researchers investigated solely intimate partner violence (Agrawal et al., 2014; Gavin et al., 2011).

Trauma in general.

Meltzer-Brody et al. (2013) examined trauma with the use of an inventory that assessed for a variety of forms of abuse including, neglect, emotional, physical, and sexual. The authors did not differentiate between the various types of trauma, but combined them into one variable entitled ‘trauma history’. Of the young women who were categorized as depressed ($EPDS \geq 11$), 71.73% had a history of physical or sexual trauma, whereas, of the young women categorized as not depressed, 44.4% had been physically or sexually traumatized ($p = 0.0047$). The result of this exploration was that the authors found trauma increased the odds of both antenatal depression

(*OR*, 5.01; 95% *CI*, 1.34-18.70; $p < 0.02$) and postpartum depression (*OR*, 3.76; 95% *CI*, 1.46-9.66; $p < 0.006$) in their sample of 12 – 20 year olds in the United States (Meltzer-Brody et al., 2013).

Similar findings were recorded by Tzilos et al. (2012). These authors surveyed young women aged 13 – 18 years old in the United States to determine if psychosocial factors such as sexual and physical abuse were associated with antenatal depression. Like Meltzer-Brody et al. (2012) these authors examined two types of trauma as one variable. They found that 53% of their sample had experienced a history of either sexual or physical trauma. It was also found that a history of abuse was significantly and positively associated with antenatal depression severity in adolescents (Tzilos et al., 2012).

Types of trauma.

Nunes & Phipps (2013) conducted a secondary analysis of data collected in the United States that compared four groups of women including, adolescents (15 – 19 years old) and young women (20 – 24 years old). In this study comparing prenatal risk factors and postpartum depression, one variable was named ‘stress in year prior to birth’, which included individual stressors such as ‘physical fight’ and ‘argue more than usual’. Although most of the individual stressors reported in this study were not found to be associated with increased odds of experiencing postpartum depression, ‘being in a physical fight’ and ‘increased arguing’ were among the stressors that were found to be the most strongly associated with postpartum depression across all four groups. However, it was women in the age group of 20 – 24 years old who had the highest odds of these two traumatic experiences, physical fights (9.53, 4.03-22.49) and arguing more (7.39, 4.54-12.04), increasing their risk of moderate-severe postpartum depression (Nunes & Phipps, 2013).

Lesser and Koniak-Griffin (2000) also conducted a secondary analysis of a large national study of childbearing adolescents aged 14 – 19 years in the United States. In this study trauma, both physical and sexual, in adolescence was examined in relation to the risk of developing postpartum depression, as well as chronic depression. Chronic depression was defined as scoring ≥ 16 on the CES-D scale over the four time periods that the survey was administered.

The results of Lesser and Koniak-Griffin's (2000) study showed that, in their sample, trauma and postpartum depression were positively associated with each other. Of the 95 participants, 62% had experienced trauma. This percentage could be further broken down into: 56% ($n = 53$) reporting physical abuse, 23% ($n = 22$) reporting sexual abuse, and 18% ($n = 17$) reporting both types of abuse. Lesser and Koniak-Griffin (2000) also found that young women who had a history of abuse, either physical or sexual, scored significantly higher on the CES-D at intake ($t = -2.12$, $p = 0.04$) and 4 – 6 weeks postpartum, ($t = -2.89$, $p = 0.00$), than women who had not previously experienced abuse. However, there was no significant difference between the two groups at either the 6 month or 12 month marks (Lesser & Koniak-Griffin, 2000).

Intimate partner violence.

In a longitudinal study examining prevalence and correlates of postpartum depression in childbearing adolescents, Gavin et al. (2011) assessed young mothers at 17 different times in their lives from age 14.2 – 34.5 years. These researchers found that when their sample was between the ages of 17.7 – 34.5, intimate partner violence was found to be significantly associated with postpartum depression (Gavin et al., 2011).

Agrawal et al. (2014) also investigated the relationship between intimate partner violence in the postpartum period and postpartum depression among 14 – 25 year olds in the United States. They divided their sample into four groups: emerged intimate partner violence, dissipated

intimate partner violence, repeated intimate partner violence, no intimate partner violence, and also looked at the main effect of intimate partner violence on various variables including postpartum depression. The authors found intimate partner violence in the postpartum period, within the main effect group, to be significantly and positively associated with postpartum depression ($F = 22.31$; $p < 0.001$). Agrawal et al. (2014) found a significant increase in mean levels of postpartum depression between 6 and 12 months in women in the ‘emerged intimate partner violence’ group (6 months: $M = 12.2$, $SE = 0.7$; 12 months: $M = 14.4$, $SE = 0.7$; $p = 0.05$), whereas those in the group ‘dissipated intimate partner violence’ had a significant decrease between 6 and 12 months in mean levels of postpartum depression (6 months: $M = 12.2$, $SE = 1.0$; 12 months: $M = 10.4$, $SE = 1.0$; $p = 0.05$). These rates were comparable even when the authors examined intimate partner violence by category of intimate partner violence such as, emotional or physical/sexual (Agrawal et al., 2014).

Summary.

The Lifecycle Approach to Risk Factors for Mental Disorders Model delineates that trauma, whether violent, abusive, or neglectful, can impact the mental health of an individual throughout their lifecycle (Kieling et al., 2011). Therefore, it is not surprising that trauma, regardless of the type or the timing, has been well documented as a factor that places young childbearing women at risk of developing perinatal depression. It is, therefore, important for practitioners to have knowledge about the history of trauma in a young woman’s life in order to provide patient centred care.

Conclusion

From this narrative review of the literature, it is apparent that the adverse life events specified by Kieling et al. (2011) are supported by empirical evidence. All three of the adverse

life events identified in this review: deficiencies in one's psychosocial environment, exposure to harmful substances and toxins, as well as, exposure to violence, abuse, and neglect, have been found to increase a young childbearing woman's risk of developing perinatal depression.

Although the exact causative factors of perinatal depression are unknown, this review has shown that there are a number of specific factors that do play a role in protecting or increasing one's risk of developing perinatal depression.

This chapter has provided an overview of the prevalence of perinatal depression in young childbearing women, in addition to a discussion of what is known about the association between the occurrence of specific adverse life events (social supports, substance use, and trauma) and the development of perinatal depression in young women. While there exists a growing number of research studies examining this phenomenon, little is known about perinatal depression among young Canadian women. In this study both the psychometric properties of the EPDS (chapter three) and the prevalence and predictors of perinatal depression (chapter four) in a sample of young childbearing women were examined. These findings will have implications on practice, as public health nurses and other health and social service providers in Ontario, Canada have limited context specific knowledge upon which to base program development and advocacy efforts. This study, therefore, will begin to address the lack of knowledge regarding the prevalence of, and the relationship between adverse life events and perinatal depression in young childbearing women in Ontario.

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Chapter Three - Validation of the Edinburgh Postnatal Depression Scale for use with Young Childbearing Women

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Abstract

Background and Purpose: The Edinburgh Postnatal Depression Scale (EPDS) was created specifically to screen for perinatal depression. The purpose of this study was to assess the psychometric properties of the EPDS for use in a population of pregnant and postpartum 14 – 24 year olds in Canada.

Methods: *The Standards for Educational and Psychological Testing* was used as the framework to assess the validity, reliability, and acceptability of responses obtained using the EPDS with pregnant and postpartum adolescents and young adults.

Results: A total of 102 young women were surveyed. Principal component analysis supported the EPDS as a two-dimensional instrument. Test scores also showed the EPDS to be reliable and acceptable.

Conclusions: The EPDS was found to be a psychometrically sound tool for use in this population of young childbearing women.

Key words: Edinburgh Postnatal Depression Scale (EPDS), Perinatal Depression, Adolescent, Validation

Perinatal depression is a depressive state that can occur at anytime during pregnancy or within the first year after the birth of a child (Milgrom & Gemmill, 2014; O'Hara & Wisner, 2014) and is frequently sub-divided into antenatal depression and postpartum depression. The World Health Organization (2001) has deemed perinatal depression to be one of the most debilitating conditions to effect childbearing women worldwide. However, it frequently goes undiagnosed and untreated (Ross, Dennis, Robertson Blackmore, & Stewart, 2005).

The Edinburgh Postnatal Depression Scale (EPDS) is a screening tool used by clinicians in Canada, the United Kingdom and elsewhere to screen for perinatal depression (BC Reproductive Mental Health Program & Perinatal Services BC, 2014; Health Information Standards Committee for Alberta, 2009; Healthy Babies Healthy Children, 2005; National Institute for Health and Care Excellence, 2015; Reproductive Care Program of Nova Scotia, 2002). However, when conducting research with young women during the perinatal period, the Centers for Epidemiological Studies Depression (CES-D) Scale is used more frequently than the EPDS (Kleiber & Dimidjian, 2014; Reid & Meadows-Oliver, 2007), even though the CES-D was not developed specifically for perinatal women (Radloff, 1977). Using a general depression scale, like the CES-D, means that women are scored on somatic symptoms, which may not be related to depression, but be a result of physiological changes in the perinatal period (Cox, Holden, & Sagovsky, 1987).

Of the 12 studies included in a review that examined postpartum depression in adolescent mothers, Reid and Meadows-Oliver (2007) found that seven articles used the CES-D and only one used the EPDS. In a second review by Klieber and Dimidjian (2014), also examining postpartum depression in adolescent mothers, 14 of 24 studies used the CES-D and only one used the EPDS. As a result, the psychometric properties of the EPDS have only been tested in

two studies with samples of childbearing adolescents (Logsdon, Usui, & Nering, 2009; Venkatesh, Zlotnick, Triche, Ware, & Phipps, 2014). The purpose, therefore, of this study is to report the validity, reliability, and acceptability of scores obtained using the EPDS with a sample of young (≤ 24 years) childbearing women.

Background and Guiding Framework

In recent years perinatal mental health has been featured prominently in the media due to a number of heartbreaking cases of mothers experiencing psychotic episodes. Although only a small percentage of women (0.1 - 0.2%) (The Mood Disorder Society of Canada, 2009), experience perinatal psychotic episodes; a much larger number of women experience perinatal depression. In Canada prevalence is estimated at: 10% for antenatal depression and 15 – 20% for postpartum depression (The Mood Disorder Society of Canada, 2009) and in the United States prevalence of postpartum depression is estimated at 9 – 16% (American Psychological Association, 2015). Prevalence rates of perinatal depression for young women, however, tend to be $> 20\%$ (Schmidt et al., 2006; Secco et al., 2007).

Perinatal depression is associated with negative maternal outcomes, such as feeling low, numbness, anhedonia (inability to feel pleasure), and psychomotor retardation (Ross, Dennis, Robertson-Blackmore, & Stewart, 2005); pregnancy and labour complications such as, higher risk of pregnancy induced hypertension (Kurki, Hiilesmaa, Raitasalo, Mattila, & Ylikorkala, 2000) and preterm labour (Dayan et al., 2006; Orr, James, & Blackmore Prince, 2002); and negative outcomes for the infant such as, less active sleep, more complications in the postpartum period, such as differences in biochemical lab results, and developmental delays (Field et al., 2000; Grace & Sansom, 2003; Murray, Kempton, Woolgar, & Hooper, 1993). If not treated in a timely manner, perinatal depression can continue to impact the health and well-being of the

maternal-infant dyad in the long-term, in the form of continued symptoms of depression and developmental delays into childhood (Grace & Sansom, 2003). Therefore, it is important to screen for and treat this condition early.

As the EPDS has specifically been created to screen for perinatal depression, it is important to examine its psychometric properties to determine if it is an appropriate tool to use with young childbearing women between 14 – 24 years old. In order to investigate the psychometric properties of the EPDS for use with young childbearing women, *The Standards for Educational and Psychological Testing (The Standards)* was used as the guiding framework (American Educational Research Association et al., 1999). This framework is known as the gold standard in psychometrics for ensuring that measurement tools are both properly developed and assessed (Streiner & Norman, 2003). *The Standards* are comprised of two main concepts: validity and reliability. In addition, a third component of psychometrics, acceptability, will be examined (Squires, Estabrooks, O'Rourke, et al., 2011).

The Standards for Educational and Psychological Testing

In *The Standards* (1999) validity is understood as a uni-dimensional concept, and is based on the collection of evidence from a variety of sources including test content, response processes, internal structure, and relations to other variables. *Test content* refers to how well the instrument items represent the concept of interest (American Educational Research Association et al., 1999). *Response processes* refers to how well the responses given by participants represent the concept that is being studied (American Educational Research Association et al., 1999). *Internal structure* refers to how well the instrument's items are related to each other and whether or not the instrument is measuring one or more concepts (American Educational Research Association et al., 1999). The final source of evidence for validity is *relations to other variables* which refers

to how well scores obtained using an instrument relate to external variables that measure similar concepts and instruments that measure similar or different concepts, as well as, confirm established relationships between measurement tools (American Educational Research Association et al., 1999).

The second main concept in *The Standards* is reliability. Reliability refers to how consistently an instrument measures what it was intended to when administered repeatedly to the same population (American Educational Research Association et al., 1999). The final concept to be tested, acceptability, refers to how easy the tool is to use (Waltz, Strickland, & Lenz, 2005).

Procedures for Development of the EPDS

Historically, generic depression scales have been used to screen women for symptoms of perinatal depression (Cox, Holden, & Sagovsky, 1987). However, scores obtained using these scales were consistently found to lack validity in this population, primarily because they scored women on somatic symptoms of depression such as eating and sleeping behaviours, which are similar to the normal physiological changes that pregnant and postpartum women experience (Cox et al., 1987). As such, Cox et al. (1987) developed the EPDS, a depression tool specifically designed to screen for perinatal depression in the clinical setting (Cox, Holden, & Henshaw, 2014).

The EPDS was developed for use in adult postpartum populations (Cox et al., 1987) and consists of 10 – items that relate to depressive symptoms, excluding somatic symptoms such as, restless sleeping and appetite changes (Milgrom & Gemmill, 2014). The EPDS was created based on an analysis of three existing depression and anxiety scales: the Irritability, Depression, and Anxiety Scale (IDA) (Snaith, Constantopoulos, Jardine, & McGuffin, 1978); the Anxiety and Depression Scale (Bedford & Foulds, 1978); and, the Hospital Anxiety Depression Scale

(HAD) (Zigmond & Snaith, 1983), as well as expert opinion (providing context validity evidence) (Cox et al., 1987). Initially Cox et al. (1987) selected 21 items to be included in the tool, but after testing the tool on a few samples and completing a rotated factor analysis only 10 items remained (Cox et al., 1987).

The 10 – item EPDS was validated further in a study of women who were more than six weeks postpartum living in Edinburgh and Livingston, UK (n = 84) (Cox et al., 1987). The EPDS scores were found to be valid, reliable (split-half reliability 0.88, $\alpha = 0.87$), sensitive to variations in depressive symptomology over time (86%), and had a specificity (i.e., the proportion of participants experiencing postpartum depression who were actually true negatives) of 73% (Cox et al., 2014; Cox et al., 1987). The authors, therefore, concluded that the EPDS was psychometrically strong and appropriate for use in community postpartum populations (Cox et al., 1987).

Since its development, the EPDS has been translated into 57 languages, 37 of which have undergone psychometric testing (Cox et al., 2014). The tool has also been tested for use in screening for antenatal depression (Murray, 1990), and for use in adolescent populations in the United States (Logsdon et al., 2009; Venkatesh et al., 2014). The current study is needed to understand the psychometric properties of the EPDS when used in a population of young childbearing women aged 14 – 24 years old who access specialized services in Ontario, Canada.

Description, Administration, and Scoring of the Instrument

Clinically the EPDS is used as a uni-dimensional tool that screens for perinatal depression. Although, Cox et al. (1987) state that the tool should not be used to screen for other psychiatric illnesses, such as anxiety, some researchers have questioned the uni-dimensionality of the EPDS (Brouwers, van Baar, & Pop, 2001; Logsdon et al., 2009; Reichenheim, Moraes,

Oliveira, & Lobato, 2011), finding that it does measure both perinatal depression and anxiety (Brouwers et al., 2001; Logsdon et al., 2009; Matthey, 2008; Phillips, Charles, Sharpe, & Matthey, 2009; Pop, Komproe, & van Son, 1992) or perinatal depression, anxiety, and anhedonia (inability to feel pleasure) (Reichenheim et al., 2011; Tuohy & McVey, 2008).

The EPDS was created as a self-report questionnaire (Appendix E), to be completed by postpartum women after discharge from hospital (Cox et al., 1987). However, since its creation, the EPDS has also been tested and performs well when screening women in the form of an interview by care providers, both by telephone (Zelkowitz & Milet, 1995) and in person (Kaminsky et al., 2008).

Each of the 10 – items in the EPDS are scored from 0 – 3, with 0 representing less depressive symptomology and 3 signifying more depressive symptomology (Cox et al., 1987). Seven of the items are reverse coded. The total EPDS score ranges between 0 – 30.

Methods

A cross-sectional survey design was used to collect data on perinatal depression in young childbearing women (14 – 24 years old).

Sample

The sample was comprised of women accessing two young parent resource centres in an urban setting in Ontario, Canada that provide services to young women and men aged 14 into their mid-twenties. Both young parent resource centres provide ‘one stop’ comprehensive social and health services, including prenatal and parenting classes, counselling, and health clinics. To be eligible to participate in the study the participants had to be: either pregnant or ≤ 12 months postpartum, between 14 – 24 years old, speak English, and accessing specialized services at one of the two participating young parent resource centres.

Procedures

The managers and executive directors at the two centres recommended specific programs where the first author could recruit participants. The recommended programs were weekly drop-in pre/postnatal groups and a prenatal and postpartum medical clinic. Group facilitators initially introduced the first author to the young women attending the drop-in groups and clinics. The first author then arranged a time to meet with any interested women. Administration of the questionnaire took place in a private room, at which time the first author obtained informed consent (Appendix F). The first author administered the questionnaire to all of the study participants in interview format by reading the questions aloud and documenting the participant's responses on paper.

Questionnaire

The questionnaire administered was comprised of 90 – items (Appendix G) grouped into five sections: demographics (author developed), EPDS (Cox et al., 1987), The Antenatal Psychosocial Health Assessment (ALPHA) (Reid et al., 1998), CES-D (Appendix H) (Radloff, 1977), and Brown's Support Behaviour Inventory (Brown, 1986). The analysis reported in this paper uses data from three of these sections: demographics (see Table 2), EPDS, and CES-D. Approval was obtained to use the Brown's Support Behaviour Inventory (Appendix I) (Brown, 1986). All other tools did not require approval from the developers.

Ethics

This study was approved by The Health Sciences and Science Research Ethics Board at the University of Ottawa (H06-14-20) (Appendix J) and the Executive Directors at both young parent resource centres (Appendices K and L). Informed, written consent was obtained prior to

the administration of the questionnaire and counsellors were available in case any participants became distressed while responding to the questions.

Analysis

Data analysis was based on *The Standards* (American Educational Research Association et al., 1999). According to *The Standards* a validity assessment requires the assessment of four sources of validity evidence: test content, response processes, internal structure, and relations to other variables (American Educational Research Association et al., 1999). Given that test content for the EPDS has previously been established by Cox et al. (Cox et al., 1987), we examined: response processes, internal structure, and relations to other variables. We also assessed the scores obtained using the EPDS in this study for reliability and acceptability. All statistical tests were analysed in SPSS 22.

Validity

Response processes validity was assessed by discussing the EPDS items with two antenatal participants and two postpartum participants to determine if their understanding of the items were consistent with what the items were created to measure.

Prior to conducting analyses for internal structure and relations to other variables validity, we examined the EPDS data for univariate and multivariate outliers. To assess for univariate outliers the frequency distributions of each item was examined; values greater than 3 standard deviations from the mean indicate univariate outliers (Tabachnick & Fidell, 2001). Screening for multivariate outliers was by calculation of the Mahalanobis distance scores for all cases (D^2_i); D^2 probability < 0.001 indicate multivariate outliers (Thompson, 2004). No outliers were identified, and therefore, all cases were retained for our validity (internal structure and relations with other variables) analyses.

The *internal structure* of the EPDS was assessed using item-total statistics and principal component analysis (PCA). Item totals were accepted if they exceeded the accepted cut-off score of 0.30 and if they were not highly correlated (> 0.8) (Nunnally & Bernstein, 1994). Since this was the first major field assessment of the EPDS with young childbearing women in Canada, our assessment was largely exploratory rather than confirmatory in nature. In order to determine if a PCA was an acceptable test, we computed both the Kaiser-Meyer-Olkin test and Bartlett's test of sphericity. To proceed with a PCA the Kaiser-Meyer-Olkin had to be > 0.80 and the Bartlett's test of sphericity needed to be significant (Polit, 2010).

A PCA with orthogonal (Varimax) rotation was performed rather than factor-analytic methods such as 'principal axis factoring', 'common factor analysis', or 'confirmatory factor analysis'. Factors were determined with an eigenvalue with a cut-off of 1.0 and by looking at the scree plot (Estabrooks, Squires, Cummings, Birdsell, & Norton, 2009). Factor loadings were retained if they were ≥ 0.35 . Factors that cross-loaded were dealt with in two ways. Firstly, we examined each cross-loading factor individually (Estabrooks et al., 2009) and in light of the existing psychometric studies examining the dimensionality of the EPDS. Secondly, factors that cross-loaded, but had a difference of 0.2 were assigned to the factor with the larger number (Polit, 2010)

To examine *relations with other variables validity*, the researcher assessed for a relationship between the EPDS and the CES-D, a known and valid depression tool used with populations of adolescents (McDowell, 2006; Wilcox, Field, Prodromidis, & Scafidi, 1998). Pearson's r was computed and Cohen criteria were followed. A large correlation of $r = 0.5 - 1.0$ would indicate a strong relationship between the EPDS and the CES-D (Polit, 2010).

Reliability

Reliability was assessed by examining the internal reliability coefficient using Cronbach's alpha. Although an alpha of 0.70 is often viewed as acceptable, for an established scale like the EPDS, a 0.80 or higher is preferred (Nunnally & Bernstein, 1994).

Acceptability

Finally, acceptability was assessed by examining the time needed to complete the EPDS, as well as, by examining the amount of missing data on the EPDS in the study.

Results**Sample Characteristics**

Sample characteristics for all 102 women who completed the survey are presented in Table 3.1. The response rate for this study was 87% and there was no missing data for either the EPDS or the CES-D. The sample was nearly evenly comprised of pregnant (49%) and postpartum (51%) women and there were slightly more multiparous women (had previously given birth) (55.9%) than primiparous women (giving birth for the first time) (44.1%). The majority of the women were born in Canada, low-income, and identified English as their primary language spoken at home (Table 3.1).

A sub-sample of four young women, which included two antenatal and two postpartum women from the larger sample, were recruited to assess response processes validity. These young women had recently answered the questionnaire and were regular attendees of programs at one of the young parent resource centres. All four of the women spoke English as their primary language at home, one woman was not born in Canada, and two women were multiparous.

Table 3.1: Sample characteristics (N = 102)

Maternal Characteristics	N (%)
Primiparous ^a	45 (44.1)
Multiparous ^b	57 (55.9)
Antenatal	50 (49)
Postpartum	52 (51)
History of Depression	53 (52)
Being Treated for Depression	19 (18.6)
History of Another Mental Illness	55 (53.9)
Income < \$1670/month	91 (89.2)
Born in Canada	94 (92.2)
English spoken as the primary language at home	76 (74.5)
	Mean (SD)
Age (15-24)	19.85 (2.365)
Completed education (years)	10.73 (1.252)
EPDS ^c	8.75 (5.696)
CES-D ^d	15.29 (10.978)

^aGiving birth for the first time^bHas previously given birth^cRange 0 – 33 (less risk of depressive symptomology to higher risk of depressive symptomology)^dRange 0 – 60 (less risk of depressive symptomology to higher risk of depressive symptomology)

Validity

Response process. All four young women in the sub-sample were able to provide responses that showed that they interpreted all 10 – items of the EPDS with no variation from their intended meaning. As such, no items needed revisions as a result of this phase, providing response processes validity evidence of scores obtained from the EPDS when administered to young childbearing women.

Internal structure.

Item-total statistics.

Item-total correlations were computed to determine the homogeneity of the EPDS. These results ranged from 0.363 – 0.759 (see Table 3.2), with all items exceeding the accepted cut off score of 0.30 (Nunnally & Bernstein, 1994). Inter-item correlations, which are not shown, were

also computed and found to be acceptable as none exceeded 0.80 (Nunnally & Bernstein, 1994). Furthermore, the scale's Cronbach alpha did not increase considerably after removing each item separately, indicating that no items should be removed. Therefore, all 10 – items were retained and entered into the PCA.

Table 3.2: Item Totals for the EPDS

Items	Labels	No. Completed responses	Mean (SD)	Item Total Correlation	Cronbach's Alpha if Item Deleted
1.	I have been able to laugh and see the funny side of things.	102	.03 (.61)	.568	.857
2.	I have looked forward with enjoyment to things.	102	.44 (.725)	.609	.852
3.	I have blamed myself unnecessarily when things went wrong.	102	1.49 (.972)	.424	.869
4.	I have been anxious or worried for no good reason.	102	1.49 (.972)	.618	.851
5.	I have felt scared or panicky for no very good reason.	102	1.04 (.984)	.636	.849
6.	Things have been getting on top of me.	102	1.29 (.863)	.465	.863
7.	I have been so unhappy that I have had difficulty sleeping.	102	.90 (1.076)	.722	.841
8.	I have felt sad or miserable.	102	.87 (.84)	.733	.841
9.	I have been so unhappy that I have been crying.	102	.75 (.789)	.759	.840
10.	The thought of harming myself has occurred to me.	102	.16 (.392)	.363	.869
Cronbach's Alpha for the entire scale		.867			

Score Range for each Item: 0-3

Principal component analysis (PCA).

To determine the appropriateness of PCA for this analysis both the Kaiser-Meyer-Olkin test and Bartlett's test of sphericity were computed. Both tests showed that a PCA could be

undertaken. The Kaiser-Meyer-Olkin showed acceptable sampling adequacy (0.858) and the Bartlett's test showed that the correlation was not an identity matrix ($\chi^2 = 426.675$; $df = 45$; $p = 0.000$).

From the PCA, two dominant factors were revealed (Table 3.3). Factor 1 (depression) accounted for 47.44% of the variance while factor 2 (anxiety) accounted for 11.66% of the variance (Table 3.3). This was confirmed by a visual inspection of the scree plot. Factor loadings were substantial, ranging from 0.539 to 0.816 for Factor 1 (depression) and from 0.679 to 0.744 for Factor 2 (anxiety), providing internal structure of validity evidence.

Factor loadings can be found in Table 3.3. A number of the factors cross-loaded. Item five (i.e. I have felt scared or panicky for no good reason) cross-loaded (Factor 1, 0.354; Factor 2, 0.679), we kept the item with Factor 2 because there was a difference of > 0.2 . Item seven (i.e. I have been so unhappy that I have had difficulty sleeping) (Factor 1, 0.632; Factor 2, 0.490), eight (i.e. I have felt sad or miserable) (Factor 1, 0.638; Factor 2, 0.516), and nine (i.e. I have been so unhappy that I have been crying) (Factor 1, 0.539; Factor 2, 0.649) also cross-loaded, however, much more closely than item five. All three of these items were assigned to the factor 1, over factor 2, based on empirical findings from other studies that have investigated the PCA of the EPDS.

Table 3.3. Principal Components Analysis (PCA) Factor Loadings for the EPDS

Items	Factor 1 (depression)	Factor 2 (anxiety)
1. I have been able to laugh and see the funny side of things.	0.842	
2. I have looked forward with enjoyment to things.	0.816	
3. I have blamed myself unnecessarily when things went wrong.		0.744
4. I have been anxious or worried for no good reason.		0.707
5. I have felt scared or panicky for no very good reason.		0.679
6. Things have been getting on top of me.	0.643	
7. I have been so unhappy that I have had difficulty sleeping.	0.632	
8. I have felt sad or miserable.	0.638	
9. I have been so unhappy that I have been crying.	0.539	
10. The thought of harming myself has occurred to me.		0.553
Eigenvalues	4.744	1.166
% of variance	47.44%	11.66%

Relations to other variables.

We assessed relations to other variables validity by correlating the EPDS with the CES-D. To determine if these findings were significant a Pearson's r was then computed to compare the EPDS and the CES-D. The findings showed a strong and positive correlation between the two scales ($r = 0.860$; $p = 0.01$), providing relations to other variables validity evidence for the scores obtained using the EPDS in this sample.

Reliability

The Cronbach's alpha for the EPDS was 0.867, which is above the accepted standard for scales intended to compare groups (Nunnally & Bernstein, 1994).

Acceptability

There was no missing data from the EPDS section of the questionnaire. The response time of this scale was not noted, as it was one component of a larger questionnaire. However the entire questionnaire (of 90 – items) took under 15 minutes to complete.

Discussion and Implications

The purpose of this paper was to investigate and report the validity, reliability, and acceptability of the EPDS for use in young women ages 14 – 24 years old. Overall, this study showed that the EPDS is a valid, reliable, and acceptable tool for assessing perinatal depression in young childbearing women in Canada.

Validity

In our sample the data from the PCA indicated that the EPDS was made up of two factors, instead of the one factor that it was originally created to screen for. In their initial article describing the development of the EPDS Cox et al. (1987) stated that the EPDS should not be used to screen for conditions other than postpartum depression. However, since then there have been numerous studies showing that the EPDS is not uni-dimensional, but either two-dimensional (Logsdon et al., 2009; Matthey, 2008; Phillips et al., 2009) or three-dimensional (Reichenheim et al., 2011). Our results add support to the literature that has found the EPDS to be a two-dimensional instrument screening for both perinatal depression and anxiety.

This finding is specifically congruent with the findings from Logsdon et al. (2009) who found the EPDS to be two-dimensional in their study of adolescent women in the United States. However, not all of our items factored in the same way as the Logsdon et al. (2009). Whereas, Logsdon et al. (2009) found that items six (i.e., things have been getting on top of me) and seven (i.e., I have been so unhappy that I have had difficulty sleeping) factored with ‘*Anxiety*,’ we

found both items loaded with our factor '*Depression*'. This is not surprising as these two items are known to be the least consistent, often cross loading between the depression and anxiety (Reichenheim et al., 2011).

Our most unconventional outcome, however, was how item 10 of the EPDS factored. Typically, item 10 '*the thought of harming myself has occurred to me*' factors with items that fall within the dimension 'depression' (Reichenheim et al., 2011), however, for our population this item factored more closely with items in the dimension 'anxiety'. The factor loadings for item 10 were not close with the item loading with a 0.095 in factor 1 (depression) compared to it loading with a 0.553 in factor 2 (anxiety). To our knowledge this finding is unique and may require further study. However, depression and anxiety often co-occur in children and adolescents (Brady & Kendall, 1992; Garber & Weersing, 2010) and this may explain our findings or this finding may simply be unique to this sample of young childbearing women.

Reliability

Our study found the EPDS to be reliable with a Cronbach's alpha coefficient of 0.867. This finding was similar to the results in Logsdon et al. (2009) study of American childbearing adolescents ($\alpha = 0.88$).

Acceptability

In this study the EPDS was found acceptable based on the quick completion time of the questionnaire. In total our 90 – item questionnaire took less than 15 minutes to complete. We did not time the duration of the EPDS, but on average the response time for each item in the questionnaire was 10 seconds. As the EPDS contains 10 items, one could assume that in total the instrument would have less than two minutes to complete. This is well within the five minutes time frame that previous studies have established (Cox et al., 1987).

Implications for Practice and Research

Our study provides insight into the use of the EPDS for research investigating perinatal depression in young childbearing women. Overall this screening tool was found to have satisfactory psychometric properties for use in this population. This is specifically important for community health, public health nurses, and nurse researchers who are often the care providers administering the EPDS and screening young women for perinatal depression.

These findings are also important for nurse researchers who have interest in using the EPDS when partaking in research that involves populations of young childbearing women. Future research investigating perinatal depression in young childbearing women should consider using the EPDS instead of the CES-D, as the former is both specific to perinatal depression and has been found to be psychometrically sound in a variety of young childbearing populations (Logsdon et al., 2009; Venkatesh et al., 2014), including the population in this study.

Strengths and Limitations

This study has a number of strengths. Firstly, we had a high response rate, with 87% (102 of 117 young childbearing women participated in the research study) of the young women approached taking part in the study. Secondly, the same researcher administered all of the questionnaires. Finally, our sample was highly homogenous with most young women having been born in Canada, speaking English as their primary language at home, and coming from low-income households. Our main limitation was the small sample size in this study.

The EPDS was found to be psychometrically sound for use in a sample of young childbearing women aged 14 – 24 years old, however, these findings are not generalizable to other populations. Nevertheless, our results support findings in the existent literature that the

EPDS is an acceptable screening tool for use in research studies of adolescent and young women populations.

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Chapter Four - Adverse Life Events and Perinatal Depression Among Young Pregnant and Postpartum Women

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Abstract

This study examined the prevalence of perinatal depression in 102 young pregnant and postpartum Canadian women and found that 31.4% of the women screened positive for this condition. Furthermore, we examined the relationship between adverse life events (satisfaction with social supports, substance use, and trauma) and perinatal depression. We found that 91.2% of participants had a history of childhood trauma, 54.9% had experienced intimate partner violence, 57.8% used substances, and the young childbearing women were quite satisfied with the support they received from both their ‘partners’ ($M = 51.9$) and ‘others’ ($M = 49.73$). Our final linear regression model found that very young age (14 – 17 years), satisfaction with support from ‘others’, and intimate partner violence predicted an increased risk of perinatal depression ($p < 0.05$). Knowing the predictors of perinatal depression can help nurses in the early detection of perinatal depression.

Key words: Young childbearing women, perinatal depression, Canada, Edinburgh Postnatal Depression Scale, Pregnancy, Postpartum

Perinatal depression is a depressive state that can occur at anytime during pregnancy or within the first year after the birth of a child (Milgrom & Gemmill, 2014; O'Hara & Wisner, 2014) and is frequently sub-divided into antenatal depression and postpartum depression. It is estimated that 10% of pregnant women and 15 – 20% of postpartum women in Canada will experience perinatal depression (The Mood Disorder Society of Canada, 2009). Similarly, in the United States the Centers for Disease Control and Prevention (CDC) estimates that 9 – 18% of women experience postpartum depression (2013) and Royal College of Psychiatrists in the United Kingdom estimate 10 – 15% of women experience postpartum depression (2015). In the United States these rates have been found to be even higher among adolescent mothers (Kleiber & Dimidjian, 2014). Despite these findings, studies in Canada have predominantly focused on studying perinatal depression among adult women (≥ 18 years old) and few studies have examined this condition in young childbearing women. In this study we examined the prevalence of perinatal depression in young childbearing women aged 14 – 24 years in an urban Canadian centre, as well as, prevalence of adverse life events associated with this condition.

Perinatal depression has both short and long-term effects on the health of mothers and their infants. Perinatal depression is a long lasting illness, which can result in both extreme emotional and physical symptoms (American Psychiatric Association, 2013). Emotional symptoms include experiences such as feeling low, tearful, numb, disconnected, hopeless, irritable, and/or losing interest in activities that once brought pleasure to the individual (American Psychiatric Association, 2013; Centers for Disease Control and Prevention, 2013; Royal College of Psychiatrists, 2015). Whereas physical symptoms include experiences such as, psychomotor retardation/agitation, loss of appetite, loss of sleep, and diminished concentration (American Psychiatric Association, 2013; Ross, Dennis, Robertson Blackmore, & Stewart,

2005). Furthermore, depression has been associated with higher risk of pre-eclampsia (Kurki et al., 2000) and preterm labour (Dayan et al., 2006; Orr, James, & Blackmore Prince, 2002).

Perinatal depression can also have a negative impact on the mother-infant attachment (Lesser & Koniak-Griffin, 2000; Martins & Gaffan, 2000), which can result in cognitive and emotional delays in infants (Beck, 1998; Grace & Sansom, 2003; Murray, Kempton, Woolgar, & Hooper, 1993). Finally, perinatal depression can also negatively impact the woman's relationship with her partner (Cox, Holden, & Henshaw, 2014), as it can put strain on these relationships (Ross, Dennis, Robertson Blackmore, & Stewart, 2005). Therefore, when women live with perinatal depression it can negatively impact the health of the woman and her child, infant development, and the mothers' relationship with her partner.

The aetiology of depression is unknown (Ross, Dennis, Robertson Blackmore, & Stewart, 2005) and thought to be associated with a combination of biological, psychosocial, and environmental factors present in a woman's life (O'Hara & Wisner, 2014). Whereas some researchers conclude that the drastic change in hormones after birth is likely to cause some women to experience depressive symptomology (Bloch et al., 2000); other researchers claim that genetics plays a key role in the development of perinatal depression (Mahon et al., 2009). However, most agree that the aetiology of perinatal depression is multifactorial and is associated with: a personal history of depression, depression/anxiety during a previous pregnancy, increased stress, and poor social support (O'Hara & Wisner, 2014; Ross, Dennis, Robertson Blackmore, & Stewart, 2005).

Young childbearing women into their early 20s are more likely to experience perinatal depression than older childbearing women (Kleiber & Dimidjian, 2014). Whereas rates of depression in the adult population are $\leq 20\%$ (Centers for Disease Control and Prevention, 2013;

Royal College of Psychiatrists, 2015; The Mood Disorder Society of Canada, 2009), the rates of depression among young childbearing women is often $\geq 20\%$ (Gavin et al., 2011; Logsdon et al., 2005; Schmidt et al., 2006; Secco et al., 2007); depending on the screening tool used, the age of participants, demographics of the sample, and the timeframe of the study. Despite this variation in prevalence of perinatal depression among studies, it is evident that perinatal depression is an important concern in this population. The purpose of this study was to determine the prevalence of perinatal depressive symptoms and whether adverse life events associated with perinatal depression among young childbearing women in the United States, similarly predict symptoms of perinatal depression in a sample of young childbearing women in Canada.

Conceptual Model

This study was informed by the *Lifecycle Approach to Risk Factors for Mental Disorders Model* (Kieling et al., 2011). The model is based on a framework that was first developed by Ertem (2011) to highlight risk factors that may have a negative impact on the development of a child throughout their lifecycle. The *Lifecycle Approach Model* adapted by Kieling et al. (2011) conceptualizes how these risk factors, some specific to certain developmental stages and some related to reoccurring lifelong events, contribute to the development of mental health conditions in children and adolescents. This model also shows how risk factors can impact future generations. The model helps to guide the investigation of risk factors, both distal and proximal, that affect an individual's mental health throughout their childhood, adolescence, and into adulthood (Kieling et al., 2011). For the purpose of this study, we focus on the lifelong risk factors to determine if these factors predict perinatal depression in adolescent and young (< 25) childbearing women. Specifically, we chose to look at the risk factors of: deficiencies in psychosocial environment (i.e., social support), exposure to harmful substances (i.e., substance

use (alcohol, illicit drugs, and cigarettes)), and exposures to violence, abuse, or neglect (i.e., trauma: childhood trauma or intimate partner violence). These lifelong risk factors may not only predispose young women to the risk of developing a mental illness, but they have also have been found to be associated with high risk behaviours, including early sexual activity among young women (Ellis et al., 2003) and consequently pregnancy at a young age (Hillis et al., 2004; Lehti et al., 2011; Santos & Rosário, 2011). In the following section, we review the existing evidence that links experiences of social support, substance use (alcohol, illicit drugs, and cigarettes), and trauma (childhood or intimate partner violence) with early childbearing and perinatal depression.

Literature Review

Pregnancy at an early age has been found to be associated with adverse life events during childhood. Hillis et al. (2004) examined data from the *Adverse Childhood Experience* study, a large American longitudinal study, and found that exposure to adverse events during childhood such as abuse, substance use in the home, mental illness, separated/divorced parents, and having an incarcerated family member all increased the risk of adolescent pregnancy and childbearing at a young age. These adverse events were also found to have long-term negative impacts on the women's finances, levels of stress, and familial problems (Hillis et al., 2004). Similarly, two Canadian studies found that young women who experienced trauma, or lived in a low-income household were more likely to become childbearing adolescents (Al-Sahab, Heifetz, Tamim, Bohr, & Connolly, 2012; Kingston, Heaman, Fell, & Chalmers, 2012).

Some of the adverse life events that have been associated with pregnancy at a young age have also been associated with the development of perinatal depression. For example, poor social support from family and partners has been found to increase the risk of a young woman developing perinatal depression (Eshbaugh, 2006; Meltzer-Brody et al., 2013; Nunes & Phipps,

2013). Maternal substance use, specifically cigarettes, marijuana, and alcohol, have also been found to have a positive association with increased risk of perinatal depression (Nunes & Phipps, 2013; Tzilos et al., 2012). Finally, a history of trauma in either childhood or by one's partner, whether it involved sexual, emotional, or physical abuse, has also been found to be positively associated with a higher risk of perinatal depression (Gavin et al., 2011; Meltzer-Brody et al., 2013; Tzilos et al., 2012). In fact, in some young mothers, depressive symptomology may precede their pregnancy (Nunes & Phipps, 2013). Given that both early childbearing and depression are outcomes associated with having experienced adverse childhood events, it is not surprising that studies have identified young childbearing women as being more likely than adult mothers to develop perinatal depression (Kleiber & Dimidjian, 2014; Nunes & Phipps, 2013).

Research Questions

The purpose of this study was to determine whether the life long adverse events associated with perinatal depression among young childbearing women in the United States, predict the presence of symptoms of perinatal depression in a sample of young childbearing women in Canada. The three research questions for this study were:

- 1) What is the prevalence of depressive symptoms in young childbearing women ages 14 – 24 years?
- 2) What is the prevalence of satisfaction with social supports, substance use (alcohol, illicit drugs, and cigarettes), and trauma (childhood trauma and intimate partner violence) in young childbearing women ages 14 – 24 years?
- 3) Are satisfaction with social supports, substance use (alcohol, illicit drugs, and cigarettes), and trauma (childhood trauma and intimate partner violence) predictive of the presence of depressive symptoms in this population?

Methods

A non-experimental cross-sectional survey design was used to obtain the descriptive quantitative data needed to address the intended research questions. Ethics approval for this study was granted by the University of Ottawa's Health Sciences and Sciences Research Ethics Board (Appendix J) and the Executive Directors at both young parent resource centres (Appendices K and L) where recruitment occurred. Data collection took place over five consecutive months during 2014 –2015.

Setting and Data Collection

Young pregnant and postpartum women were recruited from two young parent resource centres in an urban centre in Ontario, Canada. In Ontario there is a network of independent young parent resource centres that provide programming and services to young parents ranging in age from early adolescence into their mid-twenties. Both centres where recruitment occurred provide a safe space for young parents and their children to access services and programs that support them in making healthy choices from pregnancy to the time their children enter school. Eligible participants were 14 – 24 years old, pregnant or ≤ 12 months postpartum, English speaking, and accessing specialized services at one of the two participating young parent centres.

The primary investigator attended parenting groups and prenatal/postpartum clinics on a weekly basis to recruit eligible young women for the study. At the beginning of the recruitment period, resource centre staff facilitated the introduction of the researcher to young women attending the parenting groups and clinics and women were invited to approach her if they were interested in participating in the study. In the months after this initial introduction the researcher would introduce the study to the young women herself. The primary investigator administered the questionnaire to all of the study participants, in a private room at each of the resource centres.

Informed, written consent (Appendix F) was obtained prior to the administration of the questionnaire, including the researcher's duty to report knowledge of a participant's intention to harm herself or another and/or concerns about a child's safety. Resource centre counsellors were available in case participants became distressed while responding to the questionnaire or if the researcher thought the participant required additional support based on answers received during the questionnaire or the mood of the participant during the questionnaire.

Measures

A questionnaire (Appendix G) was used to survey young women who met the inclusion criteria. The questionnaire included a compilation four tools that have been found to be psychometrically sound (67 questions) (see Table 4.1) and demographic questions (see Table 4.2) that were developed in collaboration with a project manager at one of the participating resource centres. Findings from only three tools, however, will be reported in this paper. The tools were selected to measure the following concepts: perinatal depression, satisfaction with social supports, substance use (alcohol, illicit drugs, and cigarettes), and trauma (childhood trauma and intimate partner violence). Permission was obtained to use the Brown's Support Behaviour Inventory (Appendix I) (Brown, 1986). All other tools did not require permission from the developers.

Perinatal depression.

Perinatal depression was measured using the Edinburgh Postnatal Depression Scale (EPDS) (Appendix E). The EPDS was developed to measure postpartum depression and validated specifically for use in the adult postpartum population (Cox, Holden, & Sagovsky, 1987). The items that comprise the EPDS have since been found acceptable for use in the prenatal adult population (Murray, 1990) and the postpartum adolescent population (Logsdon et

al., 2009). The EPDS consists of 10 – items that are scored on a 4-point scale and can be completed within five minutes (Cox et al., 1987). Scores can range from 0 to 30. Women with a score of 12 – 13 are more likely to have symptoms of depression (Cox et al., 1987). Although a cut off score of 12 or higher is typically used to determine a positive screen for depression in adult women, research has suggested that the EPDS's cut-off score should be lowered for adolescents (Logsdon et al., 2009; Venkatesh et al., 2014). However, as a cut-off score of ≥ 12 is typically used in clinical and research settings, we used this marker for descriptive statistical purposes. All inferential statistics will be determined by using the EPDS as a continuous measure.

Satisfaction with social support.

Satisfaction with social support was measured using Brown's Support Behaviour Inventory (SBI). The SBI was the first measure developed to quantify satisfaction with social support for expecting parents (Brown, 1986). For the purposes of this study the shortened version, with 11 – items was used. This tool was selected because it was specifically created for use in the pregnant adult population and has been used with both pregnant and postpartum adolescents with valid results (McVeigh & Smith, 2000). This tool not only has face and content validity, but McVeigh and Smith (2000) also found that the 11 – item tool produced internal consistency reliability of 0.91 - 0.92 in the perinatal adolescent population. Secondly, the SBI was selected because the 11 – items are asked twice, once to measure satisfaction with support from 'others' and once to measure satisfaction with support from 'partners' (Brown, 1986). With the SBI, satisfaction with social support is scored as a continuous variable on a 6-point scale (1 '*very dissatisfied*' to 6 '*very satisfied*'). Scores for each measure (satisfaction with support from 'others' and satisfaction with support from 'partners') can range from 11 to 66, where lower

scores represent poorer satisfaction with social support and higher scores represent more satisfaction with social support (Kemp & Hatmaker, 1989; McVeigh & Smith, 2000).

Substance use, childhood trauma, and intimate partner violence.

The Antenatal Psychosocial Health Assessment (ALPHA) was used to measure substance use, childhood trauma, and intimate partner violence. The ALPHA was developed to aid prenatal care providers to screen women for psychosocial risk factors associated with negative postpartum outcomes, such as perinatal depression (Reid et al., 1998). The ALPHA questionnaire was produced as a result of a systematic review (Wilson et al., 1996) and has been tested for effectiveness a number of times (Blackmore, Carroll, Reid, & Biringer, 2006; Carroll et al., 2005; Midmer, Bryanton, & Brown, 2004). Furthermore, this tool has been successfully used in diverse clinical settings across Canada (Carroll et al., 2005; Dennis & Vigod, 2013; Midmer et al., 2004). The full tool, which includes 46 – items, was not included in this survey. Only the scales pertaining to substance use (either alcohol use or illicit drug use), childhood trauma (physical, sexual, and emotional abuse), and past or present intimate partner violence (physical, sexual and emotional) were included (Midmer, 2005). As done previously by Dennis and Vigod (2013), an additional question regarding tobacco use was added to the survey and this item was included under the umbrella of substance use. Items measuring substance use (3 items) were scored with the use of short answers (i.e., Each week I drink ____ drinks; 0 = no and ≥ 1 = yes) and yes/no answers. The items pertaining to childhood trauma (3 items) and intimate partner violence (4 items) both used scoring systems of a 5-point scale (1 signifying no trauma and 2 – 5 signifying trauma) and yes/no answers. The ordinal and ratio items in each scale were dichotomized (as described above) in order that scores could be derived to signify the presence of substance use, childhood trauma, and intimate partner violence.

Table 4.1: Examples of survey questions

Concept(s)	Tool	Sample item	Scoring	Interpretation of scores
Perinatal depression	Edinburgh Postnatal Depression Scale (Cox et al., 1987)	I have been able to laugh and see the funny side of things. I have looked forward with enjoyment to things.	As much as I always could - 0 Not quite so much now - 1 Definitely not so much now - 2 Not at all - 3 As much as I ever did - 0 Rather less than I used to - 1 Definitely less than I used to - 2 Hardly at all - 3	0 = low risk of perinatal depression 3 = high risk of perinatal depression
Childhood trauma, intimate partner violence, and substance use	The Antenatal Psychosocial Health Assessment (ALPHA) (Wilson et al., 1996)	When you were a child did your parents sometimes scare or hurt you? You sometimes feel scared by what your partner says or does... Do you use recreational drugs?	1 2 3 4 5 1 2 3 4 5 Yes/No	1 = no experiences of trauma 5 = experienced trauma very often
Support from 'others' and 'partner'	Brown's Support Behaviour Inventory (Brown, 1986)	How satisfied are you with the amount that your partner goes out of his/her way to do special or thoughtful things for you? How satisfied are you with the amount that others allow you to talk about things that are very personal and private?	Very dissatisfied Somewhat dissatisfied Partly satisfied/partly dissatisfied Somewhat satisfied Satisfied Very Satisfied Very dissatisfied Somewhat dissatisfied Partly satisfied/partly dissatisfied Somewhat satisfied Satisfied Very Satisfied	1 = very dissatisfied 6 = very satisfied

Data Analysis

Data was entered into SPSS 22 for analysis. Demographic statistics included percentages and frequencies for all categorical variables and means with corresponding standard deviations (SD) for continuous variables. Percentages and means were also computed to determine the prevalence of perinatal depression and adverse life events. Bivariate statistics were then computed to determine which adverse life events (independent variables) would be included in a regression model of predictors of perinatal depression (our dependent variable, measured using the EPDS). The initial independent variables that were chosen for bivariate testing were selected based on literature or clinical knowledge about the population. Independent t-tests were computed to compare the means of the EPDS and the dichotomous independent variables (age, income, identifies as First Nation/Metis/Inuit, completed education, past involvement with child protection, current involvement with child protection, self-reported previous diagnosis of depression, self-reported current treatment for depression, self-reported previous diagnosis of another mental disorder, history of childhood trauma, intimate partner violence in current or most recent relationship, and, current substance use), ANOVA was used to compare the EPDS means with ordinal variables (language), and correlations were used to compare the EPDS means with interval variables (satisfaction with support from ‘others’ and satisfaction with support from ‘partners’). Independent variables with a statistically significant bivariate relationship with the EPDS were entered into a step-wise backwards linear multiple regression to identify which variables predict our dependent variable of perinatal depression. The criteria for step-wise backwards linear multiple regression included an entry p value for F of 0.05 and a removal p value for F of 0.10. The level of statistical significance for all tests was set at $p < 0.05\%$. A step-wise regression was chosen because few studies have investigated perinatal depression in young

childbearing women in Canada and, therefore, we were not able to rely solely on theory to inform our investigation of predictors of perinatal depression in this population.

Finally, the EPDS, SBI, and the ALPHA were analysed for reliability. This was accomplished by computing Cronbach's alphas for each scale.

Results

The response rate for this study was 87% (102 of 117 young childbearing women who were approached participated). Sample characteristics for all 102 participants are presented in Table 4.2. The mean age of the participants was 19.9 years old. The sample was nearly evenly divided between young women in the antenatal period ($n = 50$) and women in the postpartum period ($n = 52$). The sample was quite homogeneous with regards to demographic characteristics with English being the primary language spoken (74.5%), being born in Canada (92.2%), being unemployed (73.5%), and having a monthly personal income less than \$1670 CND (89.2%), which is considered low-income by the Canadian Government (Statistics Canada, 2013). Furthermore, over half of study participants self-reported a history of depression (52%) and/or another mental illness (53.9%), culminating in 65% of the sample self-disclosing a history of mental illness.

Table 4.2: Sample characteristics (N = 102)

Maternal Characteristics	n	%
Primiparous (first birth)	45	44.1
Multiparous (> 1 birth)	57	55.9
Pregnant at time of survey	50	49
Postpartum at time of survey	52	51
Born in Canada	94	92.2
Language spoken at home		
English	76	74.5
French	5	4.9
Both English and French	18	17.6
Other	3	2.9
Identifies as First Nations, Metis, or Inuit	17	16.7
Ever attended college or university	20	19.6
Currently employed or on maternity leave	27	26.5
Income < \$1670/month	91	89.2
Past involvement with child protection	49	48
Current involvement with child protection	32	31.4
Self-reported previous diagnosis of depression	53	52
Self-reported current treatment for depression	19	18.6
Self-reported diagnosis of another mental disorder ^a	55	53.9
	Mean (range)	SD
Maternal age (years)	19.85 (15 – 24)	2.365
Weeks Pregnant	20.08 (3 – 39)	11.111
Months Postpartum	4.6 (0.07 – 12)	3.59
Number of living children	1.48 (0 – 6)	1.073
Completed education (years)	10.73 (8 – ≥ 12)	1.252

^aSelf-reported mental illnesses included: bipolar, anxiety, eating disorders, obsessive compulsive disorder, post traumatic stress disorder, attachment disorder, borderline personality disorder, attention deficit hyperactive disorder, attention deficit disorder, and severe reactive disorder.

Prevalence of Depressive Symptoms

Approximately one third (31.4%) of the young women screened positive for depressive symptomology based on a cut-off score of ≥ 12 on the EPDS (Table 4.3).

Table 4.3: Prevalence of adverse life events (N = 102)

Maternal characteristic	n	%
History of childhood trauma	94	91.2
Intimate partner violence in current or most recent relationship	56	54.9
Current substance use	59	57.8
EPDS score ≥ 12	32	31.4
	Mean (range)	SD
EPDS mean	8.75(0-26)	5.69642
Satisfaction with social support from 'partner'*	51.9 (11-66)	14.789
Satisfaction with social support from 'others'*	49.73 (23-66)	10.319

* scores can range from 11 to 66, where lower scores represent less satisfaction with social support and higher scores represent more satisfaction with social support

Prevalence of Substance Use and Trauma

The prevalence of adverse life events in this sample are reported in Table 4.3. The majority of participants reported a history of childhood trauma (91.2%), intimate partner violence (54.9%), and current use of substances such as alcohol, illicit drugs, or tobacco (57.8%).

Association Between Satisfaction with Social Support, Substance Use, Trauma, with Depressive Symptoms

In order to examine the relationship between satisfaction with social support, substance use, and trauma with perinatal depression a multiple linear regression was run. To determine what variables to enter as independent variables we first ran bivariate statistics on 15 variables with perinatal depression. Results of the bivariate testing can be found in Table 4.4. Of the 15 independent variables tested, 6 were found to have statistically significant associations with perinatal depression; these 6 variables (income, age, intimate partner violence, self-reported previous diagnosis of depression, satisfaction with support from 'others', and self-reported diagnosis of another mental disorder) were entered into a linear regression model. Childhood

trauma, despite not being significantly associated with perinatal depression was also input into the regression model as a history of trauma has consistently been found to have a relationship with perinatal depression in the literature (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012).

Table 4.4: Bivariate Analysis Variables input into multiple linear regression (N = 102)

Variables	t	df	p value	CI (95%)
Age	2.965	100	0.004*	0.12967 – 0.65396
Self-reported previous diagnosis of depression	-3.924	100	0.000*	- 0.62394 – - 0.20486
Self-reported diagnosis of another mental disorder	-3.387	100	0.001*	- 0.57322 - - 0.14508
Intimate partner violence	-2.750	100	0.007*	- 0.51994 - - 0.8410
Income	5.457	21.024	0.000*	0.35441 – 0.79084
Childhood trauma	0.310	37	0.759	- 0.47531 - -0.64674
First Nations, Métis, or Inuit	-1.231	100	0.221	- 0.48538 – 0.11362
Past involvement with child protection	-1.203	100	0.232	- 0.35895 – 0.08802
Current involvement with child protection	-1.475	100	0.143	- 0.41808 – 0.06147
Substance use	-1.707	100	0.091	- 0.41763 – 0.03135
Education	1.363	100	0.176	- 0.07343 – 0.39599
Currently being treated for depression	- 0.333	51	0.740	- 0.40432 – 0.28915
Variables	r	p value		
Satisfaction with support from ‘others’	- 0.379	0.01*		
Satisfaction with support from ‘partners’	- 0.280	0.05		
Variable	F	p value		
Language	1.010	0.392		

* p < 0.05

A backwards step-wise linear regression was computed and results from the third and final model are shown in Table 4.5. In the end three variables: age, intimate partner violence, and satisfaction with support from ‘others’ were found to be predictors of higher EPDS scores. When controlled for intimate partner violence, satisfaction with support from ‘others’, childhood trauma, self-reported previous diagnosis of another mental illness, and income, age was found to

have a moderate, but significant effect on perinatal depression ($\beta = -0.256$; $p = 0.004$).

Satisfaction with support from ‘others’ was found to have a large and significant negative relationship ($\beta = -0.304$; $p = 0.001$) with perinatal depression when age, intimate partner violence, childhood trauma, self-reported previous diagnosis of another mental illness, and income, were controlled for. Finally, when controlled for age, satisfaction with support from ‘others’, childhood trauma, self-reported previous diagnosis of another mental illness, and income, intimate partner violence was also found to have a moderate and significant relationship on perinatal depression ($\beta = 0.187$; $p = 0.033$).

This model was found to have a moderate degree of correlation ($R = 0.623$) and over 30% of the variance of the EPDS scores was explained by the independent variables.

Furthermore, the regression model was found to statistically and significantly predict the EPDS score, as seen by the ANOVA test ($F = 9.301$; $p < 0.001$).

Table 4.5: Multiple linear regressions of risk factors for depression in the perinatal period

Variables	B	SE	β	t	p value	CI (95%)
Age*	-0.382	1.134	-0.256	-2.983	0.004	- 5.635 - -1.129
Intimate partner violence	2.034	0.937	0.187	2.170	0.033	0.172-3.897
Satisfaction with support from 'others'	- 0.158	0.045	-0.304	-3.560	0.001	- 0.0247 - - 0.070
Childhood trauma	0.968	0.496	0.170	1.953	0.054	- 0.017 – 1.953
Self-reported previous diagnosis of another mental illness	1.616	0.954	0.150	1.695	0.094	-0.279 – 3.511
Income	-2.800	1.558	-0.159	-1.797	0.76	- 5.896 – 0.296

* Age is dichotomized 14 – 17 year olds versus 18 – 24 year olds

R = 0.623

Adjusted R² = 0.346

F = 9.301 (p < 0.001)

df = 6

Reliability of Instruments

In this study all multi-item scales that were used were found to be reliable. These scales included the EPDS (Cronbach's α = 0.867), the SBI (Cronbach's α = 0.927), and the ALPHA (childhood trauma Cronbach's α = 0.675; intimate partner violence Cronbach's α = 0.856; substance use Cronbach's α = 0.504).

Discussion

This study of young perinatal women ages 14 – 24 years old who access specialized services in an urban centre in Ontario is unique as it is the first study of its kind in Canada to provide insight into this young and vulnerable population regarding depressive symptomology and adverse life events. The findings that will be highlighted in this discussion are: the high prevalence of perinatal depression, age as a predictor of depression during the perinatal period, and adverse life events that predict and do not predict depressive symptoms in the perinatal period.

Perinatal Depression

Firstly, and of utmost concern was our finding pertaining to the high rate of women scoring ≥ 12 on the EPDS (31.4%). Almost one third of our sample scored ≥ 12 on the EPDS and this rate would have increased if a lower cut-off for the EPDS were used for this age group (e.g., ≥ 9), as recommended by Venkatesh et al. (2014). Even so, our findings were higher than the national averages of both antenatal (10%) and postpartum depression (15 – 20%) in the adult Canadian population (The Mood Disorder Society of Canada, 2009). However, our finding was similar to those found among young mothers in the United States, with prevalence's $\geq 20\%$ (Bottomley & Lancaster, 2008; Gavin et al., 2011; Lanzi et al., 2009; Logsdon et al., 2005; Schmidt et al., 2006).

Our findings are particularly concerning in light of the current state of the Canadian health system (Cohen, 2010). It is well known that perinatal depression can be detrimental to both the woman's health and infant health and development (Field et al., 2000; Grace & Sansom, 2003; Kleiber & Dimidjian, 2014), especially if not treated in a timely manner (Lesser & Koniak-Griffin, 2000; Ross, Dennis, Robertson Blackmore, & Stewart, 2005). Although the Canadian healthcare system is ranked 30th out of 191 nations for overall performance (Musgrove et al., 2000), mental health services across the country are lacking (Cohen, 2010). This is problematic for providing timely treatment to young childbearing women with depressive symptomology.

In 2010 the Mental Health Table Forum, made up of 12 Canadian regulated health care professional organizations, published a report listing the many gaps in the Canadian healthcare system when caring for the mental health of individuals. These gaps consisted of: lack of support from providers to help consumers access appropriate services, a lack of

collaboration/coordination of services, a need for more research, a lack of investment both politically and economically, a need for training and support for care providers, more public education, inequities, lack of accessible treatment, and a need for more advocacy (Cohen, 2010). These gaps present major challenges for care providers who work closely with young childbearing women in Canada experiencing depression prior to and/or during the perinatal period. Without appropriate and accessible health services young childbearing women and their children are at risk of experiencing long-term complications as a result of untreated perinatal depression.

Age as a Predictor of Perinatal Depression

Our finding that younger maternal age predicted perinatal depression is of great interest. We found that mothers who were 14 – 17 years old were at higher risk of developing perinatal depression, compared to mothers who were 18 – 24 years old. This finding is similar to those of Nunes and Phipps (2013) who found that both antenatal and postpartum depressive symptomology decreased as age increased. However, in a longitudinal study, Gavin et al. (2011) found that their population was at higher risk of experiencing antenatal depression (OR 14.80; CI 95% 4.38 – 50.02), but less likely to experience postpartum depression (19.8%), while in their adolescence, than when they were in their 20s and 30s. This changed as the population aged. When the sample was older they became more likely to experience postpartum depression (35.2%) and less likely to experience antenatal depression (OR 4.82; CI 95% 1.54 -15.11) (Gavin et al., 2011). Lanzi et al. (2009) also found in their study of first time mothers that compared adolescents (< 19 years old), low-income adults (> 21 years old), and high-income adults (> 21 years old), that adolescents had the highest prevalence of depressive symptoms in the postpartum period and the high-income adults had the lowest.

Younger childbearing women may be at higher risk of experiencing perinatal depression because they often have experienced more adverse life events than women who choose to have children later. It is known that adolescents are more likely to become childbearing if they have a history of: abuse, substance use in the home, mental illness, separated/divorced parents, and having an incarcerated family members (Hillis et al., 2004). Many of these adverse life events are similarly associated with a higher risk of experiencing perinatal depression, such as, history of abuse (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012), mental illness (Tzilos et al., 2012), and poor social support from family (Logsdon et al., 2005; Secco et al., 2007). Therefore, this may not be a surprising result, but it does indicate a need for further research to determine how best to care for this sub-group.

Perinatal Depression and Adverse Life Events

Of the adverse life events that we examined; only satisfaction with support from ‘others’ and intimate partner violence were found to predict a higher EPDS score. None of the other adverse life events that we investigated (satisfaction with support from ‘partners’, substance use, or childhood trauma) were found to be associated with perinatal depression in this population.

Adverse life events that predict perinatal depression.

It was not surprising to find that poor satisfaction with social support from ‘others’ was predictive of perinatal depression. Although the mean score for satisfaction with support from ‘others’ was quite high (mean of 49.73 of a possible 66), the standard deviation of 10.319 was large showing that there was variability within this variable. Our findings support the existent literature that has found that social support has a well established negative relationship with perinatal depression in young childbearing women (Mckee et al., 2001; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013).

Finding that intimate partner violence was similarly predictive of perinatal depression was also not surprising. Previous research that has investigated intimate partner violence in young childbearing women has also found that this adverse life event either predicted (Gavin et al., 2011) or was positively associated (Agrawal et al., 2014) with perinatal depression.

Adverse life events not associated with perinatal depression.

The adverse life events of: satisfaction with support from ‘partners’, substance use, and childhood trauma, were not found to have a relationship with perinatal depression in this population, despite evidence of relationships in the existent literature.

Similar to our findings regarding satisfaction with support from ‘others’, satisfaction with support from ‘partners’ also had a high mean, as well as, a sizeable standard deviation ($M = 51.9$; $SD = 14.789$), showing a large amount of variability in this variable. Our finding regarding a lack of a relationship between satisfaction with social support from ‘partners’ and perinatal depression was not entirely surprising as previous studies that have investigated these two variables have shown mixed results. Both Fagan and Lee (2010) and Meltzer-Brody et al., (2013) found that support from partners was only related to postpartum depression, and not antenatal depression. Furthermore, Eshbaugh (2006) found that ethnicity affected the relationship between support from partners and perinatal depression, with young childbearing women of African American decent showing more signs of postpartum depression when partnered, compared to young childbearing women of Latino decent experiencing less signs of postpartum depression when partnered. Future research will need to be undertaken to investigate whether satisfaction with support from one’s ‘partner’ is different based on timing of experiencing perinatal depression (i.e. antenatal depression vs. postpartum depression), or whether there are other factors that have influence on the relationship between satisfaction with support from ones

‘partner’ and perinatal depression in young childbearing women accessing specialized care in Ontario, Canada.

Regarding substance use, nearly 60% of our sample disclosed the use of at least one substance, however, this variable was not found to have a relationship with perinatal depression in this study. In the literature some substances have been more consistently associated with perinatal depression in young childbearing women, than others. Whereas, alcohol has been found to be associated with perinatal depression in three studies of young childbearing women (Gavin et al., 2011; Nunes & Phipps, 2013; Tzilos et al., 2012), there have been mixed results for cigarette use (Bottomley & Lancaster, 2008; Gavin et al., 2011; Nunes & Phipps, 2013), and no relationship was found when illicit drugs use was measured alone and perinatal depression (Tzilos et al., 2012).

The different conclusions among studies regarding substance use may be due to wording of the questions used to inquire about substance use. We asked about *current use* of alcohol, illicit drugs, and cigarette use, whereas, Tzilos et al. (2012) asked their participants if they had *ever tried* drugs, alcohol, or cigarettes and Nunes and Phipps (2013) asked about use of alcohol and cigarettes *in the previous three months*. Future research should continue to investigate the effects of substance use on perinatal depression, as there have only been a few studies that have investigated this phenomenon.

Finally, in our study 91.2% of our sample had experienced at least one type of childhood trauma (sexual, physical, or emotional) in their life. The high prevalence of childhood trauma found in this study, may be a result of the wording used in the items from the ALPHA pertaining to childhood trauma. Only one question asked about a specific type of abuse (i.e. *as a child were you sexually abused?*), whereas the other two questions were less specific (i.e. *when you were a*

child did your parents sometimes scare or hurt you?). Furthermore, because childhood trauma was a homogenous adverse life event in this sample, it may have prevented us from determining if it indeed had a relationship with perinatal depression.

The link between past trauma and perinatal depression in young childbearing women has been well established in the literature (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012). It is important to note, however, that these studies were investigating all past trauma and not specifically childhood trauma, like we did. Meltzer-Brody (2013) found that a history of trauma in the first 12 years of life, increased a young woman's risk of experiencing both prenatal depression and postpartum depression and Tzilos et al. (2012) found that a history of abuse increased a young woman's risk of depression in pregnancy. Finally, Lesser and Koniak-Griffin (2000) found significant differences between abused and non-abused young women, with regards to perinatal depression, with young women who had experienced abuse being at higher risk of experiencing depression in the perinatal period than their non-abused counterparts. Future research should continue to investigate childhood trauma separate from intimate partner violence.

Strengths and Limitations

This study had a number of strengths. First, we had a high response rate of 87%, indicating an improved chance of representativeness of the sample. Secondly, the same researcher administered all the questionnaires, which ensured consistency throughout the study. Thirdly, our sample was highly homogenous with regards to some demographic characteristics such as, most young women having been born in Canada, speaking English as their primary language at home, and coming from low-income households. Finally, we investigated intimate partner violence separately from childhood trauma.

The main limitation of this study was that the data was limited to the willingness of the participants to share honestly about very personal experiences such as substance use, trauma, and mental health diagnosis. In particular, even though confidentiality was integral to this study and was explained to all participants, some of the young women may have been uncomfortable admitting to substance use during pregnancy or in the postpartum period because of the fear of the researcher's obligation to report concerns for child safety. The researcher tried to minimize the risk by building relationships with the young women while spending time at the young parent resource centres.

Finally, we were also relying on self-report of diagnosis of mental disorders, instead of psychiatric diagnoses, however, all of participants were of an age and cognitive ability to share their medical history with the researcher and therefore, this should not have had a big impact on our findings.

Implications for Nursing Practice

Our finding that almost one third of our sample scored ≥ 12 on the EPDS will be helpful for community health nurses and public health nurses who work closely with young mothers as they advocate for age appropriate and timely services and care for this vulnerable population. This will require nurses to work in collaboration with their medical and social service colleagues to encourage policy makers to make mental health care a priority and to address the list of gaps that were identified by the multi-disciplinary *Mental Health Table Forum Report* (Cohen, 2010).

Furthermore, in order for health care providers and social service providers to provide appropriate perinatal care to young childbearing women, they need to be aware of adverse life events that increase the risk of experiencing perinatal depression. One of the predictors found in this study that is easy to identify is very young age (14 – 17). Therefore, health care providers,

such as nurses, should ensure that very young childbearing women (14 – 17 years old) are properly screened for perinatal depression. The other two predictors, satisfaction with support from ‘others’ and intimate partner violence, may be more difficult to identify, therefore, an important intervention is to screen for both of these adverse life events as, having a knowledge of these risk factors is vitally important for nurses, medical staff, and social service providers to assist these vulnerable clients to access appropriate mental health care and supports early in the perinatal period in order to prevent the negative complications associated with prolonged perinatal depression.

Young parent resource centres are the ideal places to help coordinate age appropriate and timely mental health care, as they are already equipped as a ‘one stop shop’ that provides both, health and social, services and programming and a space for collaborative care. Although these centres already provide a variety of supports for their clientele, placing an emphasis on perinatal mental health, both in individual and group programming, should be central.

Implications for Research

Future research should continue to investigate issues surrounding perinatal depression in young vulnerable women in Canada, as we should not be relying solely on research from other countries, but should have a better understanding of how this condition impacts the lives of our own young and vulnerable mothers. Specifically, research should investigate the variables that we found did not predict perinatal depression (e.g., satisfaction with support from ‘partners’, substance use, and childhood trauma) despite the literature from the United States indicating otherwise. Secondly, more exploration is needed into how the EPDS can be used to better assess for risk of perinatal depression in young women. Specifically, further investigation into the appropriate cut-off score when screening this population for perinatal depression is required.

Finally, more research is needed to identify effective non-pharmacological treatments for young childbearing women at risk of developing or experiencing perinatal depression. More research in this area will help strengthen the argument that more funding is needed to address the mental health concerns of young childbearing women.

Conclusion

In conclusion, we found that 31% of the sample of young childbearing women aged 14 – 24 years old scored ≥ 12 on the EPDS, signifying a high risk of having perinatal depression. We also found that very young maternal age (14-17 years) and adverse life events such satisfaction with support from ‘others’, and intimate partner violence were significant predictors of higher EPDS scores among young childbearing women. These findings are important for nurses to know so that they can initiate interventions to prevent and treat young women at risk for experiencing perinatal depression.

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Chapter Five – Discussion

The purpose of this chapter is to discuss the findings presented in chapters three and four in light of the existent literature. Subsequently, the strengths and limitations of this study and the implications of this research on nursing practice, education, research, health services, and policy will be presented.

The findings of this cross-sectional study indicate that perinatal depression is more prevalent among this sample of young childbearing women (31.4%), than in the general Canadian childbearing population (10 – 20%) (The Mood Disorder Society of Canada, 2009). Furthermore, very young maternal age (14 – 17 years), satisfaction with social support from ‘others’, and intimate partner violence were predictors of a positive screen for perinatal depression. This integrated discussion will focus on the following four areas: (1) high prevalence of perinatal depression in young women accessing specialized services; (2) the variables that predict the presence of perinatal depression in young pregnant and parenting women; (3) the variables that do not predict the presence of perinatal depression; and (4) the Edinburgh Postnatal Depression Scale (EPDS) as a psychometrically strong screening tool for use in this population of young Canadian childbearing women.

High Prevalence of Perinatal Depression in Young Women Accessing Specialized Services

Approximately one third (31.4%) of the young women in this study scored ≥ 12 on the EPDS, signifying symptoms of perinatal depression. The prevalence in this study is higher than the prevalence of perinatal depression among the general population of childbearing women in Canada (10 – 20%) (The Mood Disorder Society of Canada, 2009), as well as, national prevalence in the United States (9 – 18%) (Centers for Disease Control and Prevention, 2013). This finding contributes to the evidence from other studies from Canada and the United States

that have identified young childbearing women as a sub-group at higher risk for developing perinatal depression (Bottomley & Lancaster, 2008; Gavin, Lindhorst, & Lohr, 2011; Lanzi, Bert, & Jacobs, 2009; Logsdon, Birkimer, Simpson, & Looney, 2005; Schmidt, Wiemann, Rickert, & Smith, 2006).

Other studies specifically examining young or adolescent mothers have consistently identified higher rates of perinatal depression, compared to adult populations. For example, Bottomley and Lancaster (2008) in their study examining a sample ($N = 81$) of American adolescents aged 13 – 20 accessing services at a hospital clinic found that 30% of their sample experienced postpartum depression as measured by the EPDS. In another American study ($N = 369$) Lanzi et al. (2009) found, that 42% of their adolescent sample ($M = 17.5$ years old) experienced mild-moderate antenatal depression and 27% of the sample went on to experience mild-moderate postpartum depression as measured by the Beck Depression Inventory (BDI).

In a Canadian study ($N = 78$) of adolescent mothers ($M = 16.79$ years old) who had just given birth in Winnipeg, Manitoba, 43.5% of participants were found to have at least mild symptoms of perinatal depression as measured by the BDI (Secco et al., 2007). However, in the United States prevalence of perinatal depression has been found to be nearly 60% in two studies of childbearing adolescents (Logsdon et al., 2005; Schmidt et al., 2006). Logsdon et al. (2005) surveyed ($N = 128$) childbearing adolescents (ages 13 – 18) attending a childbirth class in an American school system and found 56% of their sample had depressive symptoms as measured by the Centres for Epidemiological Studies of Depression (CES-D) scale. Schmidt et al. (2006) found that over a four-year period that 57% of their sample ($N = 932$) of adolescents (≤ 18) experienced perinatal depression as measured by the BDI.

Some researchers have found high prevalence rates of depression specifically in the antenatal or postpartum periods. In two studies high prevalence rates ($\geq 20\%$) were only found in part of the perinatal period. Meltzer-Brody et al. (2013) found, whereas, 20% of their American sample ($N = 212$) of young childbearing women (ages 12 – 20) had depressive symptoms in the antenatal period, only 10% had depressive symptoms in the postnatal period. Nunes and Phipps (2013) found the opposite with lower antenatal depressive rates and higher postpartum depressive rates for both their American samples of 15 – 19 year olds ($N = 5676$; antenatal depression symptoms 8.44; mild postpartum depression symptoms 35.92) and 20 – 24 year olds ($N = 12247$; antenatal depression symptoms 11.04; mild postpartum depression symptoms 35.43). Despite showing some lower rates of depression in certain time periods of the perinatal period, these researchers identified that higher rates of perinatal depression still occurred at some point in the perinatal period.

Variations in prevalence findings may be due to differences in populations and research methods. These differences include, use of different depression screening tools, using different ages of participants, including participants from different populations in the study (e.g., specific ethnic group, national study, etc.), or use of different study designs (e.g., cross-sectional, longitudinal, etc.). Nevertheless, regardless of these differences, these studies have identified that a problem exists with regards to the perinatal mental health of young childbearing women. Furthermore, this study highlights the high prevalence rate of perinatal depression in young childbearing women who access specialized services in Ontario, Canada.

Variables that Predict the Presence of Perinatal Depression in Young Pregnant and Parenting Women

The adverse life events included as variables in this study were selected based on the life-long risk factors described in the conceptual framework adapted by Kieling et al. (2011) (see Figure 2.1), as well as, associated factors found in the literature. Although all of the seven variables entered into our model have previously been found to be associated with perinatal depression, in this study only six variables were found to be associated with perinatal depression and only three of the five variables were found to predict ($p < 0.05$) a higher score on the EPDS. These predictor variables are: very young maternal age (14 – 17 years), satisfaction with support from ‘others’, and having experienced intimate partner violence. In the following paragraphs, each of these variables will be discussed further in light of the existing literature.

Very Young Maternal Age as a Predictor of Perinatal Depression

In Canada 70% of mental illnesses have their onset during childhood and adolescence (Government of Canada, 2006). Furthermore, according to Statistics Canada young women aged 15 – 24 years have the highest prevalence of depression symptoms (9%) of any age group in this country (Pearson et al., 2013). Although the findings from Statistics Canada are not specific to perinatal depression or broken down to compare the younger adolescents to the older young adults, they do identify that young women have a higher prevalence of depressive symptoms than other segments of the population. Our findings also show a difference regarding age and risk of perinatal depression, as the very young childbearing women (14 – 17 years old) were more likely to experience perinatal depression, than their older counterparts (18 – 24 years old) even after controlling for intimate partner violence, satisfaction with support from ‘others’, childhood trauma, self-reported previous diagnosis of a mental illness, and income. Furthermore,

the Statistics Canada results highlight that there is a need to address the high rates of mental health conditions, especially in young women (Pearson et al., 2013). This will require more research, services, and funding for women at risk of or experiencing mental health problems, such as perinatal depression

In the current study, being 14 – 17 years old predicted an EPDS score of ≥ 12 , indicating a high risk of perinatal depression. This finding is supported by the existent literature. Two studies have examined perinatal depression between different age groups of childbearing women. Nunes and Phipps (2013) found that symptoms of perinatal depression decreased as their sample age increased, and Lanzi, Bert, and Jacobs (2009) found childbearing adolescents ($M = 17.5$ years old) had a higher prevalence of perinatal depression when compared to low-income adults ($M = 25.5$ years old) and high-income adults ($M = 27.9$ years old). Although these studies are from the United States, they show that young childbearing women are at increased risk of experiencing perinatal depression compared to older adults.

The current study also showed that being a very young childbearing woman (14 – 17 years old) predicted a higher risk of perinatal depression, when compared to mothers ≥ 18 years of age. However, to the authors knowledge this is the first study to show this relationship in a sample of young Canadians accessing specialized services. This is an important finding as age is an easily identifiable risk factor that can be used by nurses to prioritize perinatal depression screening of young childbearing women.

Satisfaction with Social Support from ‘Others’

Satisfaction with social support from ‘others’ was found to predict perinatal depression when controlled for age, intimate partner violence, childhood trauma, self-reported previous diagnosis of a mental illness, and income. In the literature, lack of social support has consistently

been found to have either an association with higher rates of perinatal depression (McKee et al., 2001) or similar to our study, predict higher rates of perinatal depression (Meltzer-Brody et al., 2013; Nunes & Phipps, 2013). These differences among studies with respect to the strength of the relationship between poor social support and perinatal depression may in part be due to how the researchers defined social support or a result of the differences in tools used to measure social support.

One disadvantage to investigating satisfaction with social support from a variety of different people ('others') in one variable is that no one group can be identified as providing the least satisfactory support. Future research should explore this better to understand the relationship between the satisfaction with supports offered by young parent resource centres and experiences of perinatal depression in young childbearing women who access such centres.

Intimate Partner Violence and Perinatal Depression

Finally, trauma has been long associated with both early sexual activity (Al-Sahab et al., 2012; Cassidy et al., 1996) and perinatal depression (Gavin et al., 2011; Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Tzilos et al., 2012) in the literature, and supported by our conceptual framework (see Figure 2.1) (Kieling et al., 2011). Therefore, it was not surprising that intimate partner violence was also found to be predictive of a higher EPDS score in this study. In the literature intimate partner violence consistently has a positive relationship with perinatal depression. Our finding was congruent with a longitudinal study of young American women ≤ 17 years old that found intimate partner violence to predict the occurrence of perinatal depression (Gavin et al., 2011; Lindhorst & Oxford, 2008). However, Agrawal et al., (2014) found only a positive relationship between intimate partner violence and postpartum depression

in a sample of 14 – 25 year olds in two American urban centres. These differences may be a result of how intimate partner violence was measured.

Importantly, this was the first study of young mothers to examine the association between perinatal depression and intimate partner violence separate from other forms of trauma such as, childhood trauma. Typically researchers studying populations of young childbearing women have not made this distinction and have investigated all past trauma, not specifying between intimate partner violence and childhood trauma (Lesser & Koniak-Griffin, 2000; Meltzer-Brody et al., 2013; Nunes & Phipps, 2013; Tzilos et al., 2012). However, the Antenatal Psychosocial Health Assessment (ALPHA) (Wilson et al., 1996), which was used in the study questionnaire, inquired about intimate partner violence separate from childhood trauma, and therefore a distinction was made between the two types of trauma. This study, therefore, demonstrates that there are differences in prevalence rates of these two types of trauma.

Finding that intimate partner violence was a predictor of perinatal depression is important for both clinical practice and future nursing research as it provides insight that screening for trauma should occur as a regular component of perinatal check-ups (O'Donnell, Agronick, Duran, Myint-U, & Stueve, 2009). Furthermore, supports and resources are needed to: prevent the occurrence of childhood trauma (Eckenrode et al., 2000; Olds et al., 1997; Olds, Henderson, Chamberlin, & Tatelbaum, 1986), support young women to understand the components of a healthy relationship (Tonelli, 2004), and, finally, how to safely leave an abusive relationship (Lindhorst, Nurius, & Macy, 2005). Furthermore, research is needed to accumulate evidence regarding which interventions have the greatest impact in addressing and reducing trauma in populations of young childbearing women in order to inform policy and practice.

Variables that do not Predict the Presence of Perinatal Depression

Three variables (satisfaction with social support from ‘partner’, substance use, and childhood trauma) were not found to predict perinatal depression in this sample of young childbearing women, even though they have previously been significantly linked to perinatal depression in the literature. Although none of these variables were predictive of perinatal depression in this population, they are important to discuss in light of the existing literature.

Satisfaction with Social Support from ‘Partners’

In this study satisfaction with social support from ‘partners’ was not associated with perinatal depression, despite, existing research showing otherwise (Eshbaugh, 2006; Meltzer-Brody et al., 2013). Although the mean score for satisfaction with support from ‘partners’ was good ($M = 51.9$; $SD = 14.789$), the standard deviation was large showing that there was a lot of variability in the young childbearing women’s responses. This is also an interesting result in light of our finding that 55% of the sample had experienced intimate partner violence in their current or most recent relationship. Future research should explore further the intricacies of the impact of relationships with ones partner on experiences of perinatal depression in young childbearing women in Canada.

Current Substance Use and Perinatal Depression

Substance use and mental illness are often concurrent experiences in adolescents (Leyton & Stewart, 2014). However, there have only been a few studies that have investigated the association between perinatal depression and substance use in populations of young childbearing women. In this study we asked participants about current use of three substances that were combined into one variable called ‘substance use’. In total 58% of the sample admitted to current use of at least one of the following substances: alcohol, cigarettes, or illicit drugs. Despite

existing relationships in the literature, this variable was neither associated with, nor predictive of perinatal depression in this population. This is an interesting finding, as any amount of alcohol use has been shown to increase one's risk of experiencing perinatal depression (Nunes & Phipps, 2013; Tzilos et al., 2012), and studies examining cigarette use and perinatal depression have shown mixed results with regards to the association between the two variables (Bottomley & Lancaster, 2008; Nunes & Phipps, 2013; Tzilos et al., 2012). Finally, in one study, researchers combined alcohol and marijuana (an illicit drug) into one variable and found this variable to be positively associated with perinatal depression (Gavin et al., 2011). However, on its own, illicit drugs were not found to be associated with perinatal depression in a study by Tzilos et al. (2012), although a positive trend was noted.

Our finding that substance use was not associated with a higher score on the EPDS is contrary to findings in the existing literature. One explanation for this finding is that combining the substances into one variable may have caused an interaction within the variable resulting in the three together not being associated with perinatal depression. This result may have differed if each substance had been tested separately. Furthermore, women are often reluctant to admit to current substance use during the perinatal period given the possible implications.

Childhood Trauma and Perinatal Depression

Our finding that childhood trauma was not a predictor of perinatal depression was interesting, and somewhat surprising as it shows contrary results from what has previously been found in both the literature and the conceptual framework (see Figure 2.1) (Kieling et al., 2011) that guided this research study. Many studies have found past trauma, which may include either childhood trauma or intimate partner violence to be positively associated (Lesser & Koniak-Griffin, 2000) or predictive (Meltzer-Brody et al., 2013; Nunes & Phipps, 2013; Tzilos et al.,

2012) of perinatal depression. Furthermore, studies, like ours, that investigated a history of trauma in general terms, including physical, sexual, and emotional trauma into one variable (Meltzer-Brody et al., 2013; Tzilos et al., 2012), had similar findings to studies that investigated physical, sexual, and emotional trauma separately (Lesser & Koniak-Griffin, 2000; Nunes & Phipps, 2013).

Our finding that childhood trauma had no relationship with perinatal depression was most likely affected by the fact that the items that screened for childhood trauma in the ALPHA did not ask about specific occurrences of trauma, resulting in a prevalence rate of 91.2% of the sample stating that they had experienced some form of childhood trauma in their life. As the prevalence of childhood trauma was homogenous in this sample, it made it difficult to find if there was in fact a meaningful relationship between it and perinatal depression. Future research should continue to investigate the intricacies of the relationship between childhood trauma and perinatal depression in young childbearing women in this country.

The EPDS as a Psychometrically Sound Screening Tool for use with Young Canadian Childbearing Women

Screening done by trained healthcare professionals for perinatal depression has been shown to improve outcomes for mothers experiencing depressive symptoms in the perinatal period (Milgrom & Gemmill, 2014). The EPDS is a tool that was specifically created for use among childbearing women (Cox, Holden, & Henshaw, 2014) and is widely used in clinical settings in Canada to screen for perinatal depression (BC Reproductive Mental Health Program & Perinatal Services BC, 2014; Health Information Standards Committee for Alberta, 2009; Healthy Babies Healthy Children, 2005; Reproductive Care Program of Nova Scotia, 2002). The EPDS has been found to be both easy for healthcare providers to use (Dennis, 2003), as well as,

acceptable for use by childbearing women (Cox et al., 2014), therefore, its widespread use in Canada is logical.

Despite the widespread use of the EPDS as a screening tool in Canadian clinical settings, the EPDS has not been used as frequently in research to measure perinatal depression in young childbearing women. Instead, the majority of studies that have investigated perinatal depression in young childbearing women use the CES-D as a measure for perinatal depression instead (Kleiber & Dimidjian, 2014). This could lead to problematic results, as the CES-D was created to screen for general depression and, therefore, includes items that screen for symptoms that are related to normal physiological events in the perinatal period that could be mistaken for depression. These items could therefore skew results. To avoid this, some researchers have omitted items from the CES-D, such as, ‘my sleep was restless’ and ‘I could not get going’, from the screening process (Agrawal et al., 2014). However, removing these items may have an impact on the psychometric properties of this tool. For these reasons, the EPDS may be a better choice for screening for perinatal depression, as it was specifically created to screen for this disorder and does not include items that could be misinterpreted for normal physiological processes in the perinatal period.

The EPDS is arguably a more fitting screening tool for perinatal depression, however, only two studies have investigated the psychometric properties of this tool for use in young childbearing women (Logsdon, Usui, & Nering, 2009; Venkatesh, Zlotnick, Triche, Ware, & Phipps, 2014), despite its psychometric properties being well investigated for use among adult women (Milgrom & Gemmill, 2014). Like the two previous studies that have reported on the use of the EPDS in samples of young childbearing women (Logsdon et al., 2009; Venkatesh et al.,

2014), this study also found the EPDS to be psychometrically sound and appropriate for use as a measure in studies of young childbearing women.

Another aspect that is integral for using the EPDS appropriately to screen young childbearing women for perinatal depression is determining the accuracy of the recommended cut-off score of ≥ 12 (Logsdon et al., 2009; Venkatesh et al., 2014). Although such an investigation was outside the scope of this research study, it is an important discussion point as the cut-off score affects the ability of researchers to determine prevalence rates of perinatal depression. The recommended cut-off score of ≥ 12 was originally selected as a result of studies examining English speaking adult women in the United Kingdom (Cox et al., 2014). As such, alternate cut-off scores have been suggested when using the EPDS to screen women whose primary language is not English (Cox et al., 2014). Although there has been no definitive cut-off score identified, similar studies have suggested that an alternate cut-off score may be needed for screening childbearing adolescents (Logsdon et al., 2009; Venkatesh et al., 2014). Both Venkatesh et al. (2014) and Logsdon et al. (2009) suggest that the cut-off score should be lowered, however, more research is needed to determine what cut-off score is appropriate for screening young childbearing women for perinatal depression.

Strengths and Limitations

This study had a number of strengths. Firstly, the high response rate of 87% is an important strength, as typically a response rate of 60% is deemed acceptable for surveys (Cook, Dickinson, & Eccles, 2009). This high response rate contributes confidence that our findings are representative of the young women accessing specialized services at the participating young parent resource centres.

Secondly, there was no missing data in this study. This is important, as it not only

supports the acceptability of the questionnaire for use in this population; it also strengthens the conclusions made in this study.

Thirdly, interview bias is always a concern with interviewer-administered questionnaires no matter how skilled an interviewer is. Interview bias occurs as a result of the interaction that occurs between the interviewer and the participant (Polit & Beck, 2012). This interaction can result in participants answering questions differently than, if there had been no interviewer present (Polit & Beck, 2012). However, keeping a consistent setting for administering the questionnaire and having only one researcher administer all of the questionnaires would have minimized the risk of interviewer bias in this study.

Finally, our sample was homogeneous on a number of demographic characteristics with the majority of participants speaking English as their primary language at home and coming from low-income households. This was important because homogeneity is preferred for testing psychometric properties (Squires, Estabrooks, Newburn-Cook, & Gierl, 2011).

The main limitation of this study was the risk of social desirability response bias, meaning that the participants may have felt a need to answer survey questions to be consistent with social norms (Polit & Beck, 2012). This was especially important with regards to questions pertaining to personal experiences such as, substance use (alcohol, illicit drugs, and cigarettes), trauma (childhood trauma and intimate partner violence), and mental health diagnoses. This is a common limitation in face-to-face questionnaires (Bowling, 2005), as well as, in studies that ask respondents to disclose sensitive information (Bowling, 2005). Because adverse life events such as substance use, trauma, and mental illness in the home could put a child's health and well-being at risk participants in this study may have had a fear of disclosing such experiences due to concerns over the researcher's obligation to report concerns over child safety. Despite this

limitation being a common problem in research studies such as this one, the primary investigator minimized its effects in three ways. Firstly, the primary investigator spent time building relationships with the young women at both resource centres in order to build trust with the mothers prior to recruitment. Secondly, the primary investigator is a nurse who has previous experience working with at risk young mothers through her work at an urban hospital that services a large number of vulnerable childbearing women, including adolescents and young women. Through this work, the primary investigator has gained valuable experience with interviewing vulnerable childbearing women about sensitive topics related to pregnancy and childbirth. This knowledge was transferable to interviewing the young childbearing women at the two young parent resource centres. Finally, confidentiality was integral to this study and was explained to each participant prior to the start of the questionnaire.

A second limitation was that the results of this study may have been affected by the way in which certain variables were defined. Firstly, questions regarding intimate partner violence asked solely about the occurrence of trauma in the participant's current or most recent relationship, but did not inquire about frequency or duration of the abuse. Secondly, questions regarding childhood trauma did not ask about specific traumatic events, but instead asked about non-specific traumatic events. Finally, the variable substance use included multiple substances, instead of comparing each type of substance individually.

A final limitation is that there is no agreed upon cut-off score for the EPDS for use in populations of young childbearing women. In this study we used a cut-off score of ≥ 12 as recommended for use in research studies (Dennis, 2003), however, this cut-off score has been questioned by both Venkatesh et al. (2014) and Logsdon et al. (2009). If a lower cut-off score were used perinatal depression would have been even more prevalent in our study. For example,

if a cut-off score of ≥ 9 , which is recommended as the optimal cut-off score when using the EPDS in one study (Venkatesh et al. 2014), were used prevalence of perinatal depression would have risen to 45% from 31%. Regardless of this limitation we still found that this population had a higher prevalence of symptoms of perinatal depression, when compared to the national average.

Implications for Nursing

The findings of this study have a number of implications for nursing practice, nursing education, nursing research, health services and policy.

Implications for Nursing Practice

Nurses are key members of inter-professional teams and are often well positioned to take the lead in caring for young childbearing women with perinatal depression. This is especially the case for community health nurses as they are in a position to help prevent, identify, and partake in treatment of clientele who could benefit from mental health services (Canadian Nurses Association, 2005). Two specific ways that community health nurses can become involved in the early detection of perinatal depression in young childbearing women is through screening and working in collaboration with medical and social service providers.

Early identification of perinatal depression best practice states that the EPDS is an important screening tool for nurses to use to screen women for perinatal depression (Registered Nurses Association of Ontario, 2005), however, there is no clear guidance as to how often screening should occur. There is, however, some evidence that indicates screening should be routine, as perinatal depression is under diagnosed (Ross et al., 2005). This is important for community health nurses to know as they are often the care providers who have direct and frequent contact with young childbearing women in the perinatal period, screen for perinatal

depression, and have the capacity to mobilize resources and refer clientele to other healthcare and social service providers as needed.

In our study, we found that approximately one third of participants scored ≥ 12 on the EPDS and that one of the main predictors of a higher score on the EPDS was being between 14 – 17 years old. This is important for community health nurses to know, as age is easy to identify, unlike the other predictors (satisfaction with support from ‘others’ and intimate partner violence). Knowing what risk factors predict perinatal depression can help community health nurses discern what questions to ask their clientele in pregnancy, especially if universal screening is not practiced. Therefore, when universal screening for perinatal depression is not practiced it will be important for community health nurses to ask young childbearing women about these risk factors to determine if screening should be undertaken.

Collaboration.

Collaborative care has been found to be a beneficial model of care for reducing adversities related to depression. The Canadian Nurses Association (CNA) uses the World Health Organizations (WHO) definition for collaborative care (Canadian Nurses Association, 2011). This definition is as follows: “collaborative practice in health-care occurs when multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, carers, and communities to deliver the highest quality of care across settings” (Hopkins, 2010, p. 13). Gilbody et al. (2006) found collaborative care was an effective method of reducing both short and long-term adversities related to general depression. Furthermore, a recent study examining collaborative care management of postpartum depression in the United States found this model of care offered more timely and a higher quality of care, when compared to standard care (Truitt, Pina, Person-Rennell, & Angstman, 2013). In

addition to collaboration, coordination must occur in order to ensure that services are well organized and offered in a timely manner.

No one profession is capable of fully meeting all the needs of an individual experiencing mental illness (Cohen, 2010). Therefore, community health nurses need to work in collaboration with their medical and social service colleagues to meet the mental health needs of young childbearing women. An accessible place for community health nurses to do this may be young parent resource centres, as they already attract a wide variety of professionals due to their 'one-stop shop' model of care.

Implications for Nursing Education

The College of Nurses of Ontario expects all members to partake in continuing competencies in order to stay current and ensure that quality of care is maintained in the ever-changing healthcare setting (College of nurses in Ontario, 2006). Furthermore, the Registered Nursing Association of Ontario (2005) acknowledges that for nurses to intervene appropriately when a client is at risk of or exhibiting symptoms of perinatal depression, both expert knowledge and skills are needed. However, Cohen (2010) found that specific training to address the mental health concerns of clientele is often not provided to healthcare providers.

Nurses in Canada are trained to be generalists once they graduate with their Bachelor degrees. This means that they are able to work in all areas of clinical nursing when they leave university and will often only receive specialized training once they enter the work force. It is therefore, recommended that individuals new to community health nursing receive specialized training to screen young childbearing women for perinatal depression, as well as, training to help nurses find appropriate supports and treatment for their clientele when needed. Although nurses are expected to seek out educational opportunities related to gaps in their clinical knowledge

(Registered Nurses Association of Ontario, 2005), employers should also provide experienced community health nurses with updated training regarding perinatal depression to ensure that they have access to the most current evidence based information and practices.

Furthermore, to address the unique concerns of this young childbearing population, community health nurses need training and supports to provide adolescent-friendly healthcare. The WHO states that adolescent-friendly health care should meet the following requirements: accessibility, acceptability, equitability, appropriate, comprehensive, confidential, affordable, and involve the young person in planning and monitoring of their care (McIntyre, 2002). A recent systematic review examining youth-friendly health care adds that clinicians should be friendly, respectful, and be good communicators (Ambresin, Bennett, Patton, Sanci, & Sawyer, 2013).

Implications for Research

This study highlights two main implications for research, these are: 1) there is a need for further research examining perinatal depression in young childbearing women in Canada, and 2) there is need for further research to determine an accurate cut-off score when using the EPDS in populations of young childbearing women. There are also two areas that should be explored by nursing researchers to promote mental health care for young childbearing women experiencing perinatal depression. They are, 1) a lack of research that has identified specific interventions to prevent and treat perinatal depression in young childbearing women, and 2) a lack of research that has investigated how to best train nurses to care for young childbearing women experiencing perinatal depression.

The first implication for research is that there is a need for research to examine perinatal depression in young childbearing women in the Canadian context and, therefore, we are unable

to compare our findings to similar studies in order to gain a better understanding of how our findings relate to similar populations in this country. The majority of what is known about this disorder is based on findings from studies with American participants. Although these studies can provide some knowledge into the adversities associated with perinatal depression, having studies that include Canadian participants may provide new insight into how this condition affects women in this country. Based on the findings of this study more research is need to better understand the adverse life events that predict an increased risk of experiencing perinatal depression in young childbearing women in Canada. Therefore, future research should specifically investigate the relationship between satisfaction with social supports from ‘partners’, substance use, and childhood trauma, as these adverse life events were not found to be predictive of an increased perinatal depression in this study.

Secondly, our findings, like the findings of Logsdon et al. (2009) and Venkatesh et al. (2014), support the use of the EPDS in populations of young childbearing women. However, there is no research that has determined the most accurate cut-off score for screening this segment of the population for perinatal depression. Future research should investigate the EPDS further to determine the most accurate cut-off score when screening young childbearing women. This could be accomplished by comparing EPDS scores with a standardized psychiatric interview, just like the creators of the EPDS did (Cox, Holden, & Sagovsky, 1987).

Furthermore, there are two areas that should be explored in nursing research. Firstly, there is limited research that has investigated specific interventions to prevent and treat perinatal depression in young childbearing women according to findings from a comprehensive review completed by Kleiber and Dimidjian (2014). Therefore, practitioners and policy makers have had to rely on findings from studies with adult subjects to inform their actions regarding how to care

for young childbearing women experiencing perinatal depression (Yozwiak, 2010). Not knowing what interventions are most effective to prevent and treat perinatal depression in this population can weaken the argument that clinicians should be screening this population for this debilitating condition.

A recent literature review (Kleiber & Dimidjian, 2014) and a recent systematic review (Lieberman et al., 2014) have examined the effectiveness of interventions to reduce both incidence and prevalence of perinatal depression in adolescents. Interventions that have shown to reduce the effects of perinatal depression in young childbearing women comprised of individual therapy programs (Phipps et al., 2013), infant massage (Oswalt et al., 2009), interpersonal psychotherapy (Miller et al., 2008), multicomponent treatments that included a mix of interventions such as: life skills, substance abuse interventions, parenting classes, counselling, schooling, and vocational training (Field et al., 2000; Mercado, 2004), and a phone based interview intervention (Logsdon, Foltz, Stein, Usui, & Josephson, 2010). Interventions that have been found to have some efficacy in adult populations are cognitive behavioural therapy (Dennis, 2003; Stuart & Koleva, 2014) and postpartum visitation programs by health professionals (Dennis & Creedy, 2004). Interventions that did not have an effect on perinatal depression included: social support interventions (Logsdon, Birkimer, Simpson, & Looney, 2005; Silfven, 1990), a cognitive behaviour program (Ginsburg et al., 2012), and psycho-education programs (Barnet et al., 2007; Walkup et al., 2009).

Future research should expand on the investigations to determine the most appropriate interventions to both prevent and treat perinatal depression in young childbearing women. Controlled clinical trials are especially needed to identify the efficacy of interventions that have shown promise in both adolescent and adult childbearing populations, such as, individual therapy

programs (Phipps et al., 2013), multicomponent treatments (Field et al., 2000; Mercado, 2004), cognitive behavioural therapy (Dennis, 2003; Stuart & Koleva, 2014), interpersonal therapy (Miller et al., 2008), and visitation programs (Dennis & Creedy, 2004).

Finally, to the authors knowledge there has been no research that has examined how to best train nurses to care for young women experiencing perinatal depression, although there have been a few studies that have investigated the benefits of training health visitors to respond to the needs of women experiencing perinatal depression (Gerrard et al., 1993; Holden, Sagovsky, & Cox, 1989; Morrell et al., 2011). It is recommended that research in this area be expanded in order to understand the training needs of nurses caring for young childbearing women and to understand how their training impacts the effects of perinatal depression on young childbearing women.

Implications for Health Services and Policy

Our research identified that approximately one third of our sample was experiencing perinatal depression. This means that approximately one third of our sample should be receiving mental health care. However, both the Government of Ontario (Ontario Government, 2013) and health and social service associations (Cohen, 2010) have identified numerous gaps in the healthcare system pertaining to mental health care in Ontario and in Canada more generally. These gaps include, lack of resources (especially for paediatric populations), inaccessible care, lack of coordination and collaboration of care, and a need for political leadership (Cohen, 2010; Ontario Government, 2013). It is imperative that young childbearing women have access to appropriate and timely mental health services because perinatal depression can cause both short and long-term negative effects for both mothers and infants (Grace & Sansom, 2003; Ross et al., 2005). Therefore, ensuring that appropriate mental health services are accessible and policies are

in place to support mental health services will help prevent some of the most vulnerable perinatal population, young childbearing women, from experiencing the negative effects of perinatal depression.

Although health services and health policy are inter-related, as policy often informs the creation of sustainable health services, these two entities will be discussed separately.

Health Services

A primary concern related to perinatal mental health services in Ontario, is that they are often not geared towards the specific needs of young childbearing women (C. Fortier, personal communication, May 27, 2015). Mainstream programs and services that support women with perinatal depression, such as community support groups or mental health programs, are more likely to address the needs of older mothers, and not those of young childbearing women, whereas mental health programs and services geared towards young women, often do not address the specific needs related to perinatal depression (C. Fortier, personal communication, May 27, 2015). One intervention, however, that has shown to have some positive results in preventing perinatal depression is home visitations by nurses (Ammerman, 2010; Boris et al., 2006; Dennis & Creedy, 2004).

Public health funded home visitation programs are common across Canada, however, these programs are not consistent with regards to frequency of visits, duration of the program, or education level of the home visitor (e.g., nurse, lay person, paraprofessional) (Jack, 2010). Nevertheless, home visitation programs, with nurses who are specially trained to address mental health concerns, have shown some promise in mitigating the effects of perinatal depression (Ammerman, 2010; Boris et al., 2006; Dennis & Creedy, 2004). Home visitation programs such as, Nurse-Family Partnership programs (Department of Health, 2011), have also been shown to

prevent underlying risk factors associated with perinatal depression, such as intimate partner violence (Sharps, Campbell, Baty, Walker, & Bair-Merritt, 2008). In addition to showing promising results pertaining to decreasing adversities of perinatal depression (Boris et al., 2006).

Furthermore, it is interesting that two of the predictors of perinatal depression found in this study, satisfaction with support from ‘others; and intimate partner violence, are both related to current experiences. This is important as both of these experiences have the possibility of being addressed by health and social service providers prior to conception, as well as, during the perinatal period. Ensuring that health services promote healthy families and mental health may result in a reduction of the prevalence of perinatal depression. Therefore, reducing the short and long-term adversities related to this condition.

Despite a need for specific mental health services for young childbearing women being identified by clinicians, and evidence existing that shows the benefits of home visitations by nurses on reducing the adversities of perinatal depression in women, health service interventions to prevent perinatal depression in young childbearing women are reliant on policies that will offer guidance and support for professionals who work within health services. These policies should come from multiple levels, including, but not limited to, the agency level and the provincial level in order to be sustainable and reach the intended population.

Policy

Agency level.

Previously, we discussed the importance of health services providing age appropriate mental health interventions for young childbearing women, and specifically the promising findings that home visitations by specially trained nurses may help reduce the adversities caused by perinatal depression (Ammerman, 2010; Boris et al., 2006; Dennis & Creedy, 2004). Despite

clinicians identifying problems pertaining to mental health services for young childbearing women and researchers identifying a possible solution for these problems, policy makers in Ottawa are making cuts to the very program that would be best suited to address the mental health needs of young childbearing women. Ottawa Public Health is planning to cut funding to, the *Healthy Babies Healthy Children Program* (Levy, 2015), a service which provides public health nurse visits to mothers and their infants. Whereas, all postpartum women in the Ottawa region once received at least a phone call from a public health nurse, with the proposed cuts only at risk women identified during their short postpartum stay in hospital will receive contact from public health nurses (Levy, 2015). This is a concern as young childbearing women who would benefit from the services of public health nurses may miss out on this care as perinatal depression may not be present during her short stay in hospital. Although very young childbearing women would qualify for a phone call from public health, childbearing women ≥ 18 years of age may not be identified as needing a referral. Furthermore, contact with public health is voluntary, meaning, that young childbearing women flagged as being high risk may refuse contact. Therefore, no longer having universal referrals to public health could result in young women not being able to access timely and appropriate supports if they should experience perinatal depression. As a result of these cuts there is a role for healthcare providers at young parent resource centres to screen young childbearing women for perinatal depression, in order to help identify the risk of perinatal depression early on.

Perinatal depression is a condition that can have short and long-term negative effects on mothers and their children if not treated in a timely manner (Grace & Sansom, 2003; Ross et al., 2005). Therefore, policies should be put in place at the agency level to protect nursing services

that provide preventative care to young childbearing women, in order to avoid lasting negative outcomes due to perinatal depression.

Provincial level.

Policies made at the provincial level are important, as they are often helpful in supporting agency level policies and health services. There are two main areas that policy makers at the provincial level should address with regards to perinatal depression and young childbearing women. These include, policies to address the lack of funding for mental health services for young childbearing women and policies that will promote collaborative care in mental health services for young childbearing women.

Lack of funding.

Firstly, funding should address the following problems identified by Cohen (2010): a lack of mental health resources (especially for paediatric populations) and inaccessible mental healthcare. A lack of mental health services for young childbearing women in Ottawa has specifically been identified by clinicians (C. Fortier, personal communication, May 27, 2015) and with cuts to the *Healthy Babies, Health Children Program* of Ottawa Public Health (Levy, 2015), this need may grow.

Young childbearing women who access specialized services are either adolescents or young adults, and therefore, mental health services geared towards this population should be continuous to include both younger and older individuals. This may be problematic though, as mental health services that provide care to paediatric populations (≤ 18 years old) and adult populations (≥ 18 years old) are often autonomous entities and moving from one system to the next can be complicated (Kirby & Keon, 2006). Therefore, it has been recommended, by the Canadian Senate, that the mental healthcare system be created to provide continuous care from

childhood into adulthood (Kirby & Keon, 2006). This, however, will require policies to change how mental healthcare services are funded.

Another barrier that young childbearing women experience is the inaccessibility of mental health services. Although, some mental health services are covered by the Ontario Health Insurance Plan, these services often have long waiting lists and, therefore, may not be available when most needed (Ballon, Lamorie, & MacDonald, 2003). Services from professionals in private practice, however, can be expensive often costing between \$40 – 180 per hour (Ballon et al., 2003), which may make this option impossible for young childbearing women, as they are often in the low income bracket. Therefore, policies should be put in place to fund mental health services that can be accessed in a timely manner.

Collaboration.

Collaborative care has been shown to benefit individuals living with depression (Gilbody et al., 2006). However, it is difficult for collaborative care to occur when caring for young childbearing women because health and social service providers have limited capacity to work with one another due to provisions such as the Personal Health Information Act (PHIA). PHIA exists to prevent healthcare providers from sharing personal health information without consent from an individual, however, this can make it difficult for healthcare and social service providers to work collaboratively, despite having the same clients in their case loads. Therefore, policies should be put in place to promote collaboration and coordination of the healthcare and social service providers who care for young childbearing women.

Summary

Nurses have the ethical responsibility to advocate for fair distribution of resources for their clientele as stated by the Canadian Nurses Associations code of ethics (Canadian Nurses

Association, 2008). Therefore, community health nurses have the duty to campaign policy makers to address the existing concerns pertaining to funding and support for appropriate and accessible mental health services for young childbearing women in Ontario. In doing so, these nurses will not only be protecting the health of young childbearing women, but also the health of their children.

Conclusion

This study was the first of its kind to examine the prevalence and predictors of perinatal depression in young childbearing women accessing specialized services in Ontario, Canada. We found, not only a high prevalence of perinatal depression in this population, but also a high prevalence of adverse life events. The predictors of perinatal depression that we identified can guide perinatal depression screening initiatives for young childbearing women in order to reduce adversities caused by this condition.

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Chapter Six – Contributions of Collaborators and Acknowledgements

Contributions of Collaborators

Co-authorship

There were several authors who contributed to this thesis. In order to fulfil the requirements of the Masters of Science in Nursing degree at the University of Ottawa Kira Friesen RN, BN (KF) participated and directed all aspects of this research project from its conception to completion. KF is a registered nurse who has worked at the Health Science Centres Women's Hospital in Winnipeg, Manitoba on labour and delivery and postpartum units. She is also a member of the Nursing Best Practice Research Centre (NBPRC).

Three thesis committee members, Dr. Wendy Peterson RN, PhD (WP) (supervisor), Cathryn Fortier RN BScN (CF), and Dr. Janet Squires RN, PhD (JS) all participated at different times during the course of this research study (see Table 6.1). WP is a registered nurse and Associate Professor at the University of Ottawa. She also currently holds the position of Assistant Director of Graduate Programs in the School of Nursing and is a member of the NBPRC. WP's research interests include improving health services for marginalized maternal-newborn dyads, women-centred birthing, and inter-professional maternity care. She has extensive experience working along side young and marginalized women as a result of her past research endeavours. CF is a registered nurse and the Project Manager of The Community Action Program for Children (CAPC) and the Canada Prenatal Nutrition Program (CPNP) in Ottawa, Ontario, as well as, the Director of Programs at St. Mary's Home. She has extensive knowledge and experience in supporting young and marginalized childbearing and parenting women and their children. JS is a registered nurse and Assistant Professor at the University of Ottawa. She is also a Scientist at the Ottawa Hospital Research Institute in the Clinical

Epidemiology Program and a member of the NBPRC. Her research interests include, measurement, knowledge translation, and quantitative and mixed methods research. She has extensive experience in survey development and psychometric evaluation.

Table 6.1 Summary of contributions of co-authors

	Chapter One	Chapter Two	Chapter Three	Chapter Four	Chapter Five
Conception and Design	KF	KF	KF WP CF	KF WP CF	KF
Data Collection	KF	KF	JS KF	JS KF	KF
Data Analysis and Interpretation	KF	KF	WP CF	WP CF	KF
Draft Manuscript	KF	KF	JS KF	JS KF	KF
Edits and Revisions	KF WP CF	KF WP CF	KF WP CF	KF WP CF	KF WP CF
Approval of Final Version for Publication	JS KF WP CF JS	JS KF WP CF JS	JS KF WP CF JS	JS KF WP CF JS	JS KF WP CF JS
Responsibility for all Content	KF	KF	KF	KF	KF

Acknowledgements

Acknowledgement of Funding

KF would like to thank the Manitoba Nurses Union Local 10 and l'Institute de Recherche de l'Hôpital Monfort for providing funding to support her during this academic period.

Acknowledgement of use of Measurement Tools

KF would also like to acknowledge Dr. Cox and colleagues for creating the Edinburgh Postnatal Depression Scale (EPDS) and Dr. Brown for creating the Brown Support Behaviors Inventory (SBI).

Appendix A – List of Young Parent Centres/Homes in Ontario

Young Parent Centres	City/Town
Angela's Place	Hamilton
Arrabon House	Toronto
Columbus House	Pembroke
Community Youth Programs	Oakville
Fresh Start Maternity Supports	St. Thomas
Hannah House Maternity Home	Niagara Falls
Humewood House Association	Toronto
Jessie's – The June Callwood Centre	Toronto
Laurencrest Youth Services Inc.	Cornwall
LOFT Community Services	Toronto
Massey Centre	Toronto
Michael House Pregnancy Care Centre	Guelph
Monica Place for Pregnant and Parenting Youth	Waterloo
Rosalie Hall	Toronto
Rose of Durham Young Parents Support Services	Oshawa
Rose of Sharon Services for Young Mothers	Newmarket
Sancta Maria House	Toronto
Shifra Home	Burlington
St. Martin's Manor	Hamilton
St. Mary's Home/Maison Sainte-Marie	Ottawa
The Inn of Windsor	Windsor
The Salvation Army Grace Haven	Hamilton
The Salvation Army Bethany Hope Centre	Ottawa
Vita Centre	Mississauga
Youville Centre	Ottawa

Appendix B – Permission to use Lifecycles Approach to Risk Factors for Mental Disorders Model



Kira Friesen [REDACTED]

Permission to use The Life Cycles Approach to Risk Factors for Mental Disorders Model

3 messages

Kira Friesen [REDACTED]
To: atif.rahman@liverpool.ac.uk

Fri, Feb 6, 2015 at 10:59 AM

To Dr. Rahman,

I am a Masters of Nursing student at the University of Ottawa, Canada, and I am writing to ask for your permission to use your adaption of The Lifecycle approach to risk factors for mental disorders in my thesis? I have been using this framework to guide my work to investigate perinatal depression in young women ≤ 24 years old who access specialized services here in Ottawa and would really appreciate if I could include it in my final thesis.

Thank you for your time,

Kira Friesen

Rahman, Atif <Atif.Rahman@liverpool.ac.uk>
To: Kira Friesen [REDACTED]

Fri, Feb 6, 2015 at 11:02 AM

Dear Kira,

You have permission to use this figure in your thesis with the appropriate reference.

Regards

Atif

Atif Rahman

Professor of Child Psychiatry

University of Liverpool

Institute of Psychology, Health & Society

Child Mental Health Unit

Alder Hey Children's NHS Foundation Trust

Mulberry House, Eaton Road

Liverpool L12 2AP

Appendix C – List of Search Terms

Search Terms	Number of Studies Found	Number of Studies Included	Number of Studies Excluded	Number of duplicates from previous searches	Reason for Exclusion
Pregnancy in adolescents [mesh] AND postpartum depression [mesh]	45	9	36	0	Not relevant to the topic or not from high-income countries
Pregnancy in adolescents [mesh] AND perinatal depression	14	2	9	3	Not relevant to the topic
Adolescent [mesh] AND Risk factors [mesh] AND Postpartum depression [mesh]	194	1	191	2	Not relevant to the topic
Single parent family [mesh] AND Postpartum depression [mesh] AND Adolescent [mesh]	0	0	0	0	
Canada AND Postpartum depression [mesh] OR perinatal depression AND Pregnancy in Adolescence [mesh]	15	0	10	5	Not relevant to the topic

Search Terms	Number of Studies Found	Number of Studies Included	Number of Studies Excluded	Number of duplicates from previous searches	Reason for Exclusion
Validity and Reliability [mesh] AND psychometrics [mesh] AND adolescents [mesh] AND Edinburgh Postnatal Depression Scale	16	1	15	0	Studies were not exclusively examining adolescents

Appendix D – Review of Included Articles

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Agrawal, A., Ickovics, J., Lewis, J. B., Magriples, U., & Kershaw, T. S. (2014). Postpartum intimate partner violence and health risks among young mothers in the United States: A prospective study.	To assess the relationship between IPV and health risks in adolescents. Trauma	Secondary Analysis of an Randomized control trial (RCT) Interviews (computer assisted audio interview)	14-25 year olds n = 734	○ This study documented prevalence of IPV in the postpartum period, which has not extensively been done prior to this. ○ Used self-reporting measures. ○ Findings may not be generalizable.	IPV after childbirth increased from 17.9% at 6 months postpartum 25.3% at 12 months postpartum ($< .001$). Emerged and/or repeated IPV in the postpartum period was associated with increased depression, stress, fear of condom negotiation, and infant sleeping problems (< 0.5). Dissipated postpartum IPV was associated with decreased depression ($< .05$).
Birkeland, J., Thompson, K., & Phares, V. (2005). Adolescent motherhood and postpartum depression.	To explore the challenges that may contribute to postpartum functioning in the adolescent mothers. Social support	Cross-sectional survey design Questionnaire	15-19 year olds n = 149	○ Participants were recruited from school-based teen parent programs, which may cause a bias. ○ EPDS has not been well explored among adolescents. ○ Findings are limited due to the study being cross-sectional	Social isolation, maternal competence, and weight/shape concerns were found to predict variance in the young mothers level of depression.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Bottomley, K. L. & Lancaster, S. J. (2008). The association between depressive symptoms and smoking in pregnant adolescents.	To explore smoking and depression in Australian adolescent teens. Substance use	Repeated measures Questionnaire in 1 st and 3 rd trimesters	13- 20 years old n = 94	- Small sample size - Cofounding variables such as social class and drugs/alcohol use were not examined.	A weak association was found between the number of cigarettes and depression in the third trimester.
Ellis, B. J., Bates, J. E., Dodge, K. A., Fergusson, D. M., Horwood, L. J., Petit, G. S., & Woodward, L. (2003). Does father absence place daughters at special risk for early sexual activity and teenage pregnancy?	1. To determine if early onset of biological father absence increases early sexual activity and teen pregnancy. 2. Does early onset of father absence increase early sexual activity and teen pregnancy independently of external issues. 3. Is early onset of father absence a risk factor for developing psychopathology, or is it specific to sexual activity. Social support	Secondary analysis of two Longitudinal Studies USA – Cohort study (Interviews) New Zealand – Longitudinal prospective (Interviews)	USA – 5-18 years old New Zealand n = birth to 21 years old USA n = 242 New Zealand n = 520	Did not assess for genetic component of transmission of externalizing behavioural problems.	In both the USA and NZ studies father's absence was associated with early sexual activity. In the NZ study father's absence was associated with increase risk of developing a mood disorder.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Eshbaugh, E. M. (2006). Predictors of depressive symptomatology among low-income adolescent mothers.	To examine the predictors of depression among low-income teen mothers. Social support	Secondary analysis of a national RCT study. Questionnaire	< 20 years old n = 751	○ The model only accounted for 3% of variance, therefore, other factors, not measured may be factors related to the mental health of the teen mothers.	African American mothers with a partner had the highest rate of depression. Whereas Latino mothers with a partner had the lowest levels of depression.
Fagan, J. & Lee, Y. (2010). Perceptions and satisfaction with father involvement and adolescent mothers' postpartum depressive symptoms.	To examine the association between postpartum depression and the amount of father care giving and satisfaction with father involvement. Social support	Secondary analysis of a pre/post test RCT and interview	< 20 years old n = 100	○ Contributes to the existing literature. ○ Did not examine the quality of father involvement. ○ Two measures were used to measure mothers' satisfaction. ○ Should not assume cause and effect from these study results.	Higher levels of mother satisfaction with father involvement were associated with lower levels of depression. The relationship between mother satisfaction with involvement from the father and depression was partially a result of a mothers' sense of parenting competence.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Gavin, A. R., Lindhorst, T., & Lohr, M. J. (2011). The prevalence and correlates of depressive symptoms among adolescent mothers: Results from a 17-year longitudinal study	To examine the prevalence of and correlates of depression in young unmarried pregnant adolescents over a period of 17 years. Substance use and Trauma	Longitudinal prospective (17 years) Interviews (in person and by phone)	≤ 17 years old n = 173	○ Depression was self-reported. ○ Sample was from only one geographic region. ○ Pre-pregnancy depression is unknown in this sample.	AND was a risk factor for PPD at all developmental stages. IPV was a risk factor for PPD in all but one stage. Other significant risk factors were welfare, smoking, and parity.
Kleiber, B. V., & Dimidjian, S. (2014). Postpartum depression among adolescent mothers: A comprehensive review of prevalence, course, correlates, consequences, and interventions.	To provide a comprehensive review of PPD among adolescents.	Comprehensive review.			

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Kim, Connolly, & Tamim. (2014). The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the maternity experiences survey.	To examine the effects of social support in pregnancy and the postpartum period on postpartum depression in Canadian women. Social support	Secondary Analysis of a National Study Cross-sectional survey design	≥ 15 years old $n = 6421$	○ 14% of teen mothers and 7% of adult mothers experienced postpartum depression ○ No association between support in pregnancy and postpartum depression ○ Women who received minimal support in the postpartum period had increased risk of postpartum depression ○ Young age (≤ 20) was a significant predictor of postpartum depression ○ No difference in the relationship between support and postpartum depression when teens were compared to adults.	A validated tool was not used to assess social support.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Lanzi, R. G., Bert, S. C., Jacobs, B. K., & Centres for the Prevention of Child Neglect. (2009). Depression among a sample of first-time adolescent and adult mothers.	To understand the rates, correlates, and consequences of depression in first-time mothers. Social support	Longitudinal prospective study Questionnaire	15-35 years old n = 672 (total) n = 396 (adolescents)	Findings are similar to existing research.	Adolescent mothers had higher rates of prenatal and postpartum depression at 6 months than low-resource and high resource adults. Higher resource mothers were less likely to “become depressed” than lower-resource and adolescent mothers.
Lesser, J. & Koniak-Griffin, D. (2000). The impact of physical and sexual abuse on chronic depression in adolescent mothers.	To explore the impact of childhood abuse on the risk of developing perinatal depression, becoming suicidal, and maternal behaviour. Trauma	Secondary analysis of an RCT	14-19 years old n = 95	- Self-report measures were used for abuse and depression. - CES-D was developed for use in the general population. - Findings cannot be generalized.	History of abuse does increase the risk of perinatal depression, but there may be other factors at play.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Logsdon, M. C., Birkimer, J., Simpson, T., & Looney, S. (2005). Postpartum depression and social support in adolescents.	To determine if a social support intervention during pregnancy would prevent depressive symptoms at 6 weeks postpartum. Social support	RCT and Repeated Measures Questionnaire	13-19 years old n = 128	○ Statistical power was lacking.	No significant differences were found between the two groups of participants.
McKee, M. D., Cunningham, M., Jankowski, K., & Zay L. (2001). Health-related functional status in pregnancy: Relationship to depression and social support in a multi-ethnic population.	To examine well-being and functional status in low-income minority women. Social support	Cross-sectional survey design	18-40 years old (Mean 24 years old) n = 105	○ Beck's Depression Inventory (BDI) has no agreed upon cut-off point when used for pregnant women. ○ Other factors such as environment, ethnicity, and poverty may have contributed to results.	Over half of the sample had significant depressive symptoms. Total functional support was mildly correlated with mental health.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Meltzer-Brody, S., Bledsoe-Mansori, S. E., Johnson, N., Killian, C., Hamer, R. M., Jackson, C., Wessel, J., & Thorp, J. (2013). A prospective study of perinatal depression and trauma history in pregnant minority adolescents.	To examine the prevalence of AND and PPD in adolescent mothers and to determine if there is an association between social support/adjustment, trauma, and stress of developing perinatal depression. Social support and Trauma	Repeated Measures Questionnaire	12-20 years old n = 212	○ The participants were only assessed once in pregnancy and once in the postpartum period. ○ No prenatal mental health information is known. ○ The attitudes and perceptions of fathers and family were not assessed. ○ Trauma scale was retrospective. ○ The authors did not correct for multiple comparisons and tested multiple hypotheses.	AND was more prevalent than PPD. Furthermore, AND was the strongest predictor of PPD. Other correlates of AND were: history of trauma, social support, view of pregnancy, self-efficacy, social adjustment, and life stressors. Correlates of PPD were: primiparous, social support, view of pregnancy, social adjustment, life stressors, postpartum adjustment, and involvement of baby's father. Also, trauma, positive view of pregnancy and social support were found to significantly increase ones odds of developing both AND and PPD.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Nunes, A. P. & Phipps, M. G. (2012). Postpartum depression in adolescent and adult mothers: comparing prenatal risk factors and predictive models.	To determine if adolescent specific screening instruments are needed by assessing if postpartum depression risk factors differ between adolescents mothers and adult mothers. Social support, substance use, and trauma	Secondary analysis of a retrospective cohort study of State data	15 - > 30 years old n = 6977 n = 676 (15-19 years old) n = 1387 (20-24 years old)	○ Recall bias	Adolescents and young women were more likely to disclose that they had been diagnosed with depression in the year prior to their pregnancy. Furthermore, the highest rate of depression was found among the 20-24 year olds. Adolescents who smoke or drank prior to pregnancy or in their 3rd trimester were more likely to have depressive symptoms. Stressors such as having been in a physical fight or using “other drugs” were also found to impact depression scores. Social support was found to reduce depressive symptoms across the board.

Reference	Purpose and Predictors	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Secco, M. L., Profit, S., Kennedy, E., Walsh, A., Letourneau, N., & Stewart, M. (2007). Factors affecting postpartum depressive symptoms of adolescent mothers.	To determine if there is a relationship between prenatal infant care emotionality, social support, socioeconomic status, and postpartum depressive symptoms. Social support	Secondary analysis of a longitudinal prospective study Questionnaires	Average age was 16.79 years old n = 78	○ Convenience sampling ○ Attrition ○ Only recruiting from two centres	Support from ones family was significantly associated with postpartum depressive symptoms.
Tzilos, G. K., Zlotnick, C., Raker, C., Kuo, C., Phipps, M. G. (2012). Psychosocial factors associated with depression severity in pregnant adolescents.	To determine if young pregnant women with a history of abuse will have higher rates of depression. Substance use and trauma	Cross-sectional study Interview	13-18 years old n = 116	○ Cause and effect cannot be inferred. ○ Some variables were only assessed with one question and the question was not from a standardized measurement tool. ○ The study did include a diverse population.	History of abuse does increase ones risk of developing depressive symptoms. Use of alcohol was also significantly increased ones odds of experiencing depression.

Articles for the Review of Psychometric Properties of the EPDS when used with Adolescent Women

Reference	Purpose	Method/Design	Sample and Sample Size	Strengths/Limitations	Results
Logsdon, M. C., Usui, W. M., & Nering, M. (2009). Validation of Edinburgh postnatal depression scale for adolescent mothers	To examine the psychometric properties of the EPDS in an urban sample of American adolescents.	Cross-sectional design Reliability, principal components analysis, and item response theory.	Mean age 16 n = 149	○ No inclusion of the mental health diagnostic evaluation ○ Sample was from the one geographic area	○ EPDS is reliable (cronbach's alpha 0.88) ○ Correlated to the CES-D ○ Two dimensional ○ Moderate item-total correlations ○
Venkatesh, K., Zlotnick, C., Triche, E., Ware, C., & Phipps, M. (2013). Accuracy of brief screening tools for identifying postpartum depression among adolescent mothers.	To assess 3 subscales of the EPDS for identifying postpartum depression in adolescents.	RCT Receiver operator curves, compared to the diagnostic psychiatric interview.	≤ 17 years old n = 106	○ Compared to the diagnostic psychiatric interview. ○ Repeat visits increased accuracy of study. ○ Not generalizable	○ All three tools were all accurate. ○ Optimal cut-off score for full EPDS was ≥ 9.

Appendix E – Edinburgh Postnatal Depression Scale (EPDS)

Items	Answers
I have been able to laugh and see the funny side of things.	As much as I always could Not quite so much now Definitely not so much now Not at all
I have looked forward with enjoyment to things.	As much as I ever did Rather less than I used to Definitely less than I used to Hardly at all
I have blamed myself unnecessarily when things went wrong.	Yes, most of the time Yes, some of the time Not very often No, never
I have felt worried and anxious for no good reason.	No not at all Hardly ever Yes, sometimes Yes, very often
I have felt scared or panicky for no very good reason.	Yes, quite a lot Yes, sometimes No, not much No, not at all
Things have been getting on top of me.	Yes, most of the time I haven't been able to cope at all Yes, sometimes I haven't been coping as well as usual No, most of the time I have coped quite well No, I have been as well as ever
I have been so unhappy that I have had difficulty sleeping.	Yes, most of the time Yes, sometimes No, not very often No, not at all
I have felt sad or miserable.	Yes, most of the time Yes, quite often Only occasionally No, never
I have been so unhappy that I have been crying.	Yes, most of the time Yes, quite often Only occasionally No, never
The thought of harming myself has occurred to me.	Yes, quite often Sometimes Hardly ever Never

Appendix F – Consent Form



Université d'Ottawa
Faculté des sciences
de la santé

École des sciences
infirmières

University of Ottawa
Faculty of Health
Sciences

School of Nursing

Consent Form

Title of the study: The Influence of Life Experiences on Emotions of Young Pregnant Women and Postpartum Mothers'

Researchers: Kira Friesen RN BN
MScN Student
School of Nursing, University of Ottawa

Wendy Peterson RN, PHD
Associate Professor
School of Nursing, University of Ottawa

Invitation to Participate: I am invited to participate in this research study conducted by Kira Friesen as a part of her Master's thesis in Nursing. Kira is supervised by nursing professor Wendy Peterson.

Purpose of the Study: The reason for this study is to learn about how life experiences affect the emotions of young mothers.

Participation: My participation will involve answering survey questions and will take under 30 minutes.

Risks: As a participant in this study, I will be asked questions that are sensitive in nature. Volunteering this personal information about myself may cause me to feel distressed. I have received assurance from Kira that every effort will be made to minimize these risks. I will be asked the survey questions in a quiet and private room. If I do start feeling distressed Kira will assist me in finding a staff member at the centre who can provide me with counseling.

Benefits: My participation in this study will help the staff at [redacted] and [redacted] to offer services and resources that better suit the needs of other young women and adolescents who access specialized services in [redacted].

613 562-5473
613 562-5443

451 Smyth
Ottawa ON K1H 8M5 Canada

www.uOttawa.ca

Confidentiality and anonymity: I have received assurance from Kira that the information I share will remain strictly confidential. I understand that anything I share will be used only for purpose of research and that my confidentiality will be mentioned in any final reports or presentations. I understand that the interviewer (Kira) is obligated by law to report serious concerns about safety of a child or risk of suicide. In this situation confidentiality cannot be maintained.

Conservation of data: The data collected from the survey will be kept in a locked drawer at the Nursing Best Practice Research Centre at the University of Ottawa, where only Kira Friesen, Wendy Peterson, and a thesis committee member Janet Squires will have access to them. The surveys will be kept for up to 5 years.

Compensation: If I want, my name will be entered into a draw. See attached sheet.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be used only with my permission. Furthermore, by choosing to participate in the survey, or not completing the survey, will in no way effect the services that I receive at [REDACTED] or [REDACTED].

Acceptance: I, _____, agree to participate in the above research study conducted by Kira Friesen of the School of Nursing at the University of Ottawa, under the supervision of Wendy Peterson.

If I have any questions about the study, I may contact the researcher or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Cabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is for me to keep.

Participant's signature: _____

Date:

Researcher's signature: _____ Date:

Acceptance: I, _____, agree to participate in the above research study conducted by Kira Friesen of the School of Nursing at the University of Ottawa, under the supervision of Wendy Peterson.

If I have any questions about the study, I may contact the researcher or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Cabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is for me to keep.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

Appendix G – Questionnaire

Questionnaire

Thank you for being willing to take part in this questionnaire. Please answer the following questions as honestly as you can.

I am going to begin by asking you some general questions about yourself.

- 1) How old are you? _____
- 2) Are you pregnant now? Yes (1) /No (0)
- 3) How many weeks pregnant are you? _____
- 4) How many times have you been pregnant? _____
- 5) How old were you when you first became pregnant? _____
- 6) How many babies have you had? _____
- 7) How many months old is your youngest child (if applicable)? _____
- 8) Please look at this card and tell me how old your mother was when you were born?

(1) < 14	(2) 14-16	(3) 17-19
(4) 20-25	(5) 26-29	(6) > 30
- 9) Do you self identify as a First Nations, Métis, or Inuit? Yes (1) /No (0)
- 10) Were you born in Canada? Yes (1) /No (0)
- 11) If no, have you lived in Canada for more than 5 years? Yes (1) /No (0)
- 12) Please look at the card and tell me which language you speak the most at home?

(1) English	(2) French
(3) Both English and French	(4) Other
- 13) What is the highest grade you have completed? _____
- 14) If you have completed grade 12, have you attended college or university? Yes (1) /No (0)

15) Please look at this card and tell me what is your current living situation?

- | | | |
|---------------------------------------|---|-----------------------|
| (1) Independently
(without adults) | (2) With parent(s) | (3) With your partner |
| (4) Shelter | (5) With adults other than
your partner or parent(s) | (6) No fixed address |
| (7) Other | | |

16) Were you ever in the care of CAS when you were a child? Yes (1) /No (0)

17) Are you currently involved with CAS for your child(ren)? Yes (1) /No (0)

18) Please look at the card and tell me what best describes your employment status?

- | | |
|------------------|----------------------------|
| (1) Full-time | (2) Part-time |
| (3) Not employed | (4) I'm on Maternity Leave |

19) Now can you look at the next card and tell me what is your personal income each month?

- | | | |
|-----------------------|---------------------|-----------------------|
| (1) Less than \$1,250 | (2) \$1,251-\$1,670 | (3) \$1,671 - \$2,500 |
| (4) Over \$2,500 | | |

20) Have you ever been diagnosed with depression? Yes (1) /No (0)

21) If yes, are you currently being treated for depression? Yes (1) /No (0)

22) Have you ever been diagnosed with another mental illness such as anxiety, an eating

disorder etc.? Yes (1) /No (0) Please specify _____

23) Do you smoke cigarettes? Yes (1) /No (0)

Now I am now going to ask you some questions about how you have been feeling in the past week. It is not easy to be pregnant/a new mom and it is OK to feel unhappy at times. Please state the answer which comes closest to how you have felt during the past several days, not just how you are feeling today. I will be giving you a card to help you answer each of the following questions. Please tell me which answer best describes your feelings.

24) I have been able to laugh and see the funny side of things.

0 As much as I always could

1 Not quite so much now

2 Definitely not so much now

3 Not at all

25) I have looked forward with enjoyment to things.

0 As much as I ever did

1 Rather less than I used to

2 Definitely less than I used to

3 Hardly at all

26) I have blamed myself unnecessarily when things went wrong.

3 Yes, most of the time

2 Yes, some of the time

1 Not very often

0 No, never

27) I have felt worried and anxious for no good reason.

0 No not at all

1 Hardly ever

2 Yes, sometimes

3 Yes, very often

28) I have felt scared or panicky for no very good reason.

3 Yes, quite a lot

2 Yes, sometimes

1 No, not much

0 No, not at all

29) Things have been getting on top of me.

3 Yes, most of the time I haven't been able to cope at all

1 No, most of the time I have coped quite well

2 Yes, sometimes I haven't been coping as well as usual

0 No, I have been as well as ever

30) I have been so unhappy that I have had difficulty sleeping.

3 Yes, most of the time

1 No not, very often

2 Yes, sometimes

0 No, not at all

31) I have felt sad or miserable.

3 Yes, most of the time

1 No, not very often

2 Yes, quite often

0 No, not at all

32) I have been so unhappy that I have been crying.

3 Yes, most of the time

1 Only occasionally

2 Yes, quite often

0 No, never

33) The thought of harming myself has occurred to me.

3 Yes, quite often

1 Hardly ever

2 Sometimes

0 Never

Now I am going to ask you some questions about your childhood. Please use the scale on the following cards to help you answer the next few questions.

34) When you were a child did your parents usually get along?

Not at All 1 2 3 4 5 Very Well

35) When you were a child did your father sometimes scare or hurt your mother?

Never 1 2 3 4 5 Very Often

36) When you were a child did your parents sometimes scare or hurt you?

Never 1 2 3 4 5 Very Often

37) As a child were you sexually abused? Yes (1) /No (0)

Now I am going to ask you some questions about your current or most recent relationship. Again, I will give you cards to help you in answering the questions.

38) Your relationship with your partner usually has ...

No tension 1 2 3 4 5 A Lot of Tension

39) You and your partner work out arguments with ...

No Difficulty 1 2 3 4 5 Great Difficulty

40) You sometimes feel scared by what your partner says or does...

Never 1 2 3 4 5 Very Often

41) You have been hit/pushed/slapped by your partner ...

Never 1 2 3 4 5 Very Often

42) You've sometimes been put down or humiliated by your partner ...

Never 1 2 3 4 5 Very Often

43) You've been forced to have sex against your own will. Yes (1) /No (0)

Now I'm going to ask you some questions about your lifestyle.

44) Fill in the blank: Each week I drink _____ drinks (1 drink = 1 1/2 oz liquor, 12 oz beer, 5 oz wine)

45) Are there times when you drink more during the week? Yes (1) /No (0)

Please answer the following questions with a yes or a no.

46) Sometimes I've felt: A need to cut-down my drinking Yes (1) /No (0)

 Annoyed by people criticizing my drinking Yes (1) /No (0)

 Guilty about my drinking Yes (1) /No (0)

 A need for a drink first thing in the morning Yes (1) /No (0)

47) Do you use recreational drugs? e.g. marijuana, cocaine, etc. Yes (1) /No (0)

Below is a list of ways you might have felt or behaved. Please tell me how often you felt this way during the past week. Please use this card to answer the next few questions.

	Rarely or none of the time (1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	Most of all the time (5-7 days)
48) I was bothered by things that usually don't bother me.	0	1	2	3
49) I did not feel like eating; my appetite was poor.	0	1	2	3
50) I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
51) I felt that I was just as good as other people.	0	1	2	3
52) I had trouble keeping my mind on what I was doing.	0	1	2	3
53) I felt depressed.	0	1	2	3
54) I felt that everything I did was an effort.	0	1	2	3
55) I felt hopeful about the future.	0	1	2	3
56) I thought my life had been a failure.	0	1	2	3
57) I felt fearful.	0	1	2	3
58) My sleep was restless.	0	1	2	3
59) I was happy.	0	1	2	3
60) I talked less than usual.	0	1	2	3
61) I felt lonely.	0	1	2	3
62) People were unfriendly.	0	1	2	3
63) I enjoyed life.	0	1	2	3
64) I had crying spells.	0	1	2	3
65) I felt sad.	0	1	2	3
66) I felt that people dislike me.	0	1	2	3
67) I could not get "going".	0	1	2	3

These are the final few questions. I am now going to ask you some questions about the support you receive from the people in your life. I will be asking you about different things that people do for each other. Before I ask you these questions it is important for me to ask you:

68) Do you currently have a boyfriend or a husband? Y/N

A) With a Partner: The following questions will be asked twice. The first question asks how satisfied you are with the amount your boyfriend/husband does each of these things for you. The second question asks how satisfied you are with the amount other people (friends and relatives) do each of these things.

B) With No Partner: The questions ask how satisfied you are with the amount your friends and family do each of these things for you.

How Satisfied are you with the amount your boyfriend/husband does this for you?

	Dissatisfied	Somewhat Dissatisfied	Partly Satisfied/Partly Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied
69) Shares similar experiences with you.	1	2	3	4	5	6
70) Helps keep up your spirits.	1	2	3	4	5	6
71) Helps you out when you're in a difficult situation.	1	2	3	4	5	6

How Satisfied are you with the amount your boyfriend/husband does this for you?

	Dissatisfied	Somewhat Dissatisfied	Partly Satisfied/Partly Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied
72) Shows interest in your daily activities and problems.	1	2	3	4	5	6
73) Goes out of his/her way to do special or thoughtful things for you.	1	2	3	4	5	6
74) Allows you to talk about things that are very personal and private.	1	2	3	4	5	6
75) Lets you know that you are appreciated for the things you do for them.	1	2	3	4	5	6
76) Tolerates your ups and downs and unusual behaviours.	1	2	3	4	5	6
77) Takes you seriously when you have concerns.	1	2	3	4	5	6
78) If you don't understand something, helps to explain it.	1	2	3	4	5	6
79) Lets you know that they will be around if you need assistance.	1	2	3	4	5	6

How Satisfied are you with the amount others (friends and family) do this for you?

	Dissatisfied	Somewhat Dissatisfied	Partly Satisfied/Partly Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied
80) Shares similar experiences with you.	1	2	3	4	5	6
81) Helps keep up your spirits.	1	2	3	4	5	6
82) Helps you out when you're in a difficult situation.	1	2	3	4	5	6
83) Shows interest in your daily activities and problems.	1	2	3	4	5	6
84) Goes out of his/her way to do special or thoughtful things for you.	1	2	3	4	5	6
85) Allows you to talk about things that are very personal and private.	1	2	3	4	5	6
86) Lets you know that you are appreciated for the things you do for them.	1	2	3	4	5	6
87) Tolerates your ups and downs and unusual behaviours.	1	2	3	4	5	6
88) Takes you seriously when you have concerns.	1	2	3	4	5	6
89) If you don't understand something, helps to explain it.	1	2	3	4	5	6
90) Lets you know that they will be around if you need assistance.	1	2	3	4	5	6

Thank you for your participation. Now we can talk about anything you wish to talk about.

Appendix H – Centers for Epidemiological Studies Depression (CES-D)

	Rarely or none of the time (1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	Most of all the time (5-7 days)
91) I was bothered by things that usually don't bother me.	0	1	2	3
92) I did not feel like eating; my appetite was poor.	0	1	2	3
93) I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
94) I felt that I was just as good as other people.	0	1	2	3
95) I had trouble keeping my mind on what I was doing.	0	1	2	3
96) I felt depressed.	0	1	2	3
97) I felt that everything I did was an effort.	0	1	2	3
98) I felt hopeful about the future.	0	1	2	3
99) I thought my life had been a failure.	0	1	2	3
100) I felt fearful.	0	1	2	3
101) My sleep was restless.	0	1	2	3
102) I was happy.	0	1	2	3
103) I talked less than usual.	0	1	2	3
104) I felt lonely.	0	1	2	3
105) People were unfriendly.	0	1	2	3
106) I enjoyed life.	0	1	2	3
107) I had crying spells.	0	1	2	3
108) I felt sad.	0	1	2	3
109) I felt that people dislike me.	0	1	2	3
110) I could not get "going".	0	1	2	3

Appendix I – Permission to Use Brown’s Social Behavior Inventory Scale



Dear Colleague:

Office of the Dean
Box 357260
Seattle, WA 98195-7260
206/543-8732
FAX 206/543-3624

Office of Academic Programs
Box 357260
Seattle, WA 98195-7260
206/543-8736
FAX 206/685-1613

Office of Nursing Research and Practice
Box 357265
Seattle, WA 98195-7265
206/685-1525
FAX 206/685-9264

Biobehavioral Nursing and Health Systems
Box 357266
Seattle, WA 98195-7266
206/543-8577
FAX 206/543-4771

Family and Child Nursing
Box 357262
Seattle, WA 98195-7262
206/543-8775
FAX 206/543-6656

Psychosocial and Community Health
Box 357263
Seattle, WA 98195-7263
206/543-6960
FAX 206/685-9551

I am delighted about your interest in the Support Behaviors Inventory and have enclosed three different versions for your examination. The first version is the original 45 item scale, in which half of the items make direct reference to pregnancy and half are more general. In the second version, I have removed all references to pregnancy and improved the expression of the ideas. The second version could be used with any population. In the third version, I reduced the number of items from 45 to 11 and was able to maintain an internal consistency reliability of .91. I believe, however, that the longer scale offers richer data and is preferable unless questionnaire space is a major issue for you. If you decide to use the original version, you may wish to improve clarify some of the items as they are in the second version.

At this time I have received over 50 requests for use of the SBI in research endeavors, most addressing perinatal populations. While I did not undertake another research project specifically for the purposes of instrument development, data from these other studies has provided evidence of content, construct, criterion and predictive validity. The Cronbach alpha reliability coefficients have remained high ranging from .90 to .96. The study findings vary in regard to the association between partner support and other support. Correlations between the two types of support range from none to moderate, with some studies showing no relationship between the two while other reveal a weak to moderate (.1-.4) relationship. This data suggests that the two types of support are distinctive and the presence of one type of support cannot be counted on to serve as a marker for the other type of support. Data has also suggested there are no differences in the partner support scores between married women and single women living with their partner. The items are also designed to accommodate Gay and Lesbian couples, although I do not have any data comparing gay and straight couples.

Please note that the SBI is unique among support scales in that it provides the opportunity to obtain a measure of satisfaction with “partner” (spouse, mate, boyfriend, etc.) support separate from “others” support. All of my work, however, has been with family members or individuals who have a “steady partner.” If your sample will include some unpartnered or single people, several options come to mind: 1) leave scale as is and change the directions (in a VERY obvious way since I’ve found people don’t usually read directions!) and direct respondents to leave the partner column blank or mark a large X through that column, and 2) make only one column and change the question/directions to have people consider all the people in their life at one time while answering. I have

also thought that if option one was used, it would be very interesting to ask everyone who did have a partner, spouse, lover, boyfriend, etc. to complete the partner column and then include a question about exactly what kind of relationship people were involved in (i.e. living together or not, married or not, gay or straight, steady or casual boyfriend) in order to compare the groups. My clinical experience tells me that support from a boyfriend or partner even if people are not married or living together is important to assess and can make a substantial contribution to the individual's well-being. Also, in terms of format, some investigators have preferred to repeat the items in the scale first giving the instruction to answer in regard to partner and then give instruction to answer in regard to other people instead of the current two columns next to each other format. If you are interested in using the Shortened Version, the psychometrics of the scale indicate that all of the items are very highly intercorrelated. It would also be appropriate then for you to select 10-15 items that are most relevant to your particular study to form the shortened version.

Scoring for the SBI is simple and involves summing the responses with a higher score indicating greater support satisfaction. I used the satisfaction with partner support subtotal as a variable separate from the satisfaction with others support subtotal in some analyses. I also combined the two subtotals to create an overall support satisfaction score, depending on the research question I was asking. If you choose to implement a more creative strategy with both partnered and unpartnered subjects, then you will have some challenges in creating analysis strategies as well. The possible responses in the answer column of the SBI are somewhat unique and were developed through the process of several pilot tests. I found that initially people's responses were heavily weighted in the satisfied direction, so I developed more graduations of satisfied to increase the variability in the responses.

I am pleased that you are considering using the SBI, feel free to modify it to suit your specific needs. This letter serves as your permission for use. However, if you decide to use the SBI, I would sincerely appreciate receiving a summary of the results of your study, particularly any information you glean on reliability and validity. I wish you the very best in your dissertation research endeavors.

Sincerely,

Marie-Annette Brown, Ph.D., RN, ARNP, FAAN
Professor

Appendix J – University of Ottawa Ethics Approval

File Number: H06-14-20

Date (mm/dd/yyyy): 07/16/2014



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Wendy	Peterson	Health Sciences / Nursing	Supervisor
Kira	Friesen	Health Sciences / Nursing	Student Researcher

File Number: H06-14-20

Type of Project: Master's Thesis

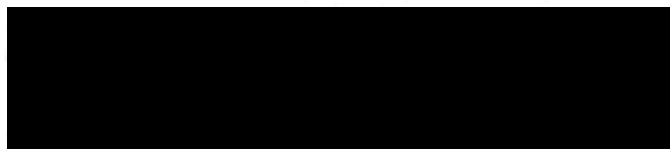
Title: The Influence of Life Experiences of Young Pregnant Women and Postpartum Mothers'

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
07/16/2014	07/15/2015	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A

Appendix K – Letter of Permission from Agency # 1

Office of Research Ethics and Integrity
Tabaret Hall
550 Cumberland St
Room 154
Ottawa, ON, Canada
K1N 6N5

May 28, 2014

Dear Members of the Research Ethics Committee,

The purpose of this letter is to indicate our strong support of the proposed study set forth by Kira Friesen a Master's of Science in Nursing student. We have met with Kira to discuss the proposed study "*The Influence of Life Experiences on the Emotions of Young Pregnant Women and Postpartum Mothers.*" This proposed study fits well with the mandate of [REDACTED] which is to provide specialized support and resources for this at-risk population of young mothers.

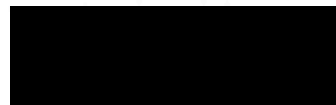
[REDACTED] is committed to providing a broad range of services, programs, and advocacy for pregnant and parenting youth and their children. Serving [REDACTED] since 1933, [REDACTED] offers services and programs that are intended to decrease the risk factors that young women, 14-24 years old, may face as a result of pregnancy in adolescence.

[REDACTED] is interested in using the results of the forthcoming study to help inform us of the current needs of our clientele. The results will also be beneficial when developing future programs, evaluating current programs, and in our advocacy initiatives. [REDACTED] supportive of Kira recruiting participants for her study from the clientele that access [REDACTED]. Please feel free to contact me should you have any questions.

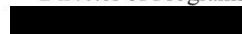
Sincerely,



Executive Director



Director of Programs



Appendix L – Letter of Permission from Agency # 2

[REDACTED]

Office of Research Ethics and Integrity
Tabaret Hall
550 Cumberland St.
Room 154
Ottawa, ON, Canada
K1N 6N5

October 10, 2014

Dear Member of the Research Ethics Committee,

The purpose of this letter is to indicate our strong support for the proposed study set forth by Kira Friesen, a Master's of Science in Nursing student. We have met with Kira to discuss the proposed study "*The Influence of Life Experiences on the Emotions of Young Pregnant Women and Postpartum Mothers.*" This proposed study fits well with the mandate of [REDACTED], which is to provide specialized support and resources for this at-risk population of young mothers.

[REDACTED] is committed to providing specialized services and supports to pregnant and parenting youth and [REDACTED] empowers young parents and their children through



[REDACTED] of the forthcoming study to help inform us of the current needs when developing future programs, evaluating current programs, and supportive of Kira recruiting participants for her study from the [REDACTED] feel free to contact me should you have any questions



Ottawa

Université d'Ottawa
Faculté des sciences

University of Ottawa
Faculty of Health
Sciences
School of Nursing

Appendix M – Letter to Agency # 1 Staff

uOttawa

Dear [REDACTED] Staff,

My name is Kira Friesen and I am nurse completing my Masters of Nursing at the University of Ottawa. I am interested in examining how life experiences of young pregnant and postpartum mother's affect their risk of depression in the perinatal period (pregnancy to 12 months postpartum). Little is known about perinatal depression in young women under the age of 25 here in Canada, and therefore, I am interested in finding out the prevalence of perinatal depression and some of the factors that have been previously associated with it, namely lack of social support, substance use, and trauma. I hope that this research study can inform practices, programming, and advocacy at [REDACTED], as well as, in the wider community.

I will be collecting my data in the form of an interviewer-administered survey. Doing the survey with me, will take under 30 minutes to complete. The survey is made up of 78 questions that are either: short answer, on a scale, or yes/no. As some of the questions are quite personal, the survey will be administered in a quiet and private place at the centre.

With your permission I will be starting my data collection at the centre in [REDACTED] 2014 and will hopefully be completed by sometime in [REDACTED] 2014 or [REDACTED] 2015. I am excited to participate in any programming that you would be willing to have me attend, so that I can reach my goal of surveying 90 women or more. I am very excited for this opportunity to learn more about what you do at [REDACTED] and to participate in any way that you find suitable.

Sincerely,

Kira Friesen RN BN

Are you Pregnant or Have You Had a Baby in the Last 12 Months?

If you participate, I will ask you questions, in English only, from a survey.

Your participation will involve **under 30 minutes** of your time.

For more information about this study, or to volunteer for this study
please contact:

Kira Friesen
Masters in Nursing Student at the University of Ottawa
Telephone #: [REDACTED]
Email: [REDACTED]

This study has been reviewed by and received ethics approval by the University of Ottawa.

Tel. [REDACTED]
or
Email: [REDACTED]

Call or Text Kira Friesen

Tel. [REDACTED]
or
Email: [REDACTED]

Call or Text Kira Friesen

Tel. [REDACTED]
or
Email: [REDACTED]

Call or Text Kira Friesen

Tel. [REDACTED]
or
Email: [REDACTED]

Call or Text Kira Friesen

Tel. [REDACTED]
or
Email: [REDACTED]

Appendix O – Draw Information



Information about the Draw

Title of the Study: The Influence of Life Experiences on Emotions of Young Pregnant Women and Postpartum Mothers'

To thank you for your contribution to the research project, you will be given the option to enter your name in a draw to win a gift certificate to Toys R Us or similar retailer valued at \$50.00. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from completing the survey.

On the last day of each month, from September to January, a name will be drawn from those who have entered, and the person whose name is drawn will be informed by text message or e-mail if they have won. To win the prize, the person must correctly answer a skill-testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is drawn and so on until the prize has given out. Once names are entered, they will remain in the draw until they are either chosen or the contest ends. Any names that are drawn will not be re-entered back into the contest. The odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name, when you enter the draw is collected for the purposes of contacting you if you win the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

The applicable laws of Canada govern this draw.

Ballot:

Name: _____

Contact information (phone number or e-mail): _____