Adolescent Pregnancy and Mental Health

Mary E. Dillon

Keywords
Mental health · Antenatal depression · Rapid repeat pregnancy · Low birth weight · Postpartum depression · Bipolar disorder · Nature–nurture · Puberty · Psychosocial problems · Menarche

Introduction

This chapter is a survey of what we know about mental health issues and adolescent pregnancy. Literature and studies from different countries and cultures are presented to inform and help disentangle the influence of adolescent pregnancy on mental health and the influence of mental health on adolescent pregnancy. We know that culture and environment has an influence on behavior and one's life trajectory. We also know that genetics has an influence and we know there is interplay among these factors that produce a nature and nurture balance. We are also aware that other conditions, such as mental illness can dominate or at minimum complicate the nature and nurture balance. In the process of addressing these mental health issues, the incidence and rate of observed mental health disorders among pregnant adolescents will be covered. Then, the impact of depression and other mental health disorders, the adolescent mother's age, rapid repeat pregnancy, and other uniquely adolescent characteristics such as risk-taking behavior and substance use and misuse will be discussed in relationship to the differential effect on the development and life trajectory of children of adolescent mothers with a mental disorder.

Until late in the twentieth century, there was scant literature and almost no research on mental health issues among pregnant and parenting adolescents. Because adolescent pregnancy (or more often the real concern, unwed pregnancy) was perceived of as a *problem behavior,* the response from the community was to fix the *problem*. By the 1950s in the United States, traditional approaches used to prevent unwed adolescent pregnancy were failing or no longer practical. Close supervision of girls when they were in the company of boys and 'marriage' if the girl became pregnant were strategies used in the past that do not work well in a modern and rapidly changing society. When the high rate of adolescent pregnancy could not be easily fixed (for the most part an international trend) during the 1970s claims-makers declared that teen pregnancy was at epidemic levels; it was a crisis in the US practitioners and researchers took up the challenge and began to ask questions about

M. E. Dillon (✉)
University of Central Florida, School of Social Work, Orlando, FL, 32816 USA
e-mail: Mary.Dillon@ucf.edu

A. L. Cherry and M. E. Dillon (eds.), *International Handbook of Adolescent Pregnancy*,
DOI: 10.1007/978-1-4899-8026-7_4, © Springer Science+Business Media New York 2014

adolescent pregnancy as a phenomenon that was a behavioral problem, but a problem that could be studied and understood. Using a problem-oriented paradigm, the community of researchers and practitioners began exploring the causes and consequences of adolescent pregnancy. Among these causes and consequences were mental health issues.

Before the 1990s, the demographic characteristics and the number of pregnant and parenting adolescents were being tracked and followed worldwide; but there were few studies of mental health disorders and service needs that differentiated adolescents from adult pregnant females. This does not seem too odd, considering the fact that there was and still is a great deal of variation in the definition of a female, who is of childbearing age. In the mind of many, once a girl becomes pregnant she is no longer a child but a mother who needs to learn to be a 'good mother.' The question is, however, how do you convince the pregnant and mothering adolescent that she is no longer a child herself?

Since the turn of the twenty-first century, the professional literature on the mental health of pregnant adolescents has grown substantially. These studies support the claim that adolescent pregnancy and parenthood can change mental health status, mental health over time, and the developmental outcomes of both the mother and her child (Biello et al. 2010). Other studies have established that mental health disorders can be an antecedent to adolescent pregnancy. Mental health issues such as depression (Woodward et al. 2001), anxiety (Quinlivan et al. 2004), aggression (Gest et al. 1999), childhood trauma (Carpenter et al. 2001), and child abuse—both physical and sexual (Herrenkohl et al. 1998), have been associated with adolescent pregnancy. Given these and other studies focused on pregnant adolescent girls with observed mental health issues, there is a growing body of research describing an adolescent spectrum of mental health issues that unique to pregnant adolescents (Kessler et al. 1997).

It has been long recognized that adolescence is often a period of transitory mental health stability. We are not referring to a mental illness but a developmental stage that is emotionally a watershed between childhood and adulthood. As a result, we expect an overall improvement in adolescent emotional health over time, and this occurrence has consistently been supported by research that suggests the mental health of adolescents improve as they transition into adulthood (Wickrama et al. 2009). Adolescence is also a developmental period when mental health disorders begin to effect behavior and one's thought processes. It is a period when mental illness develops and begins to change the trajectory of the life course of those affected.

Conventional wisdom suggests that pregnancy is a time of emotional well-being, and for most women, which includes adolescents, it is. For a substantial percentage of women (about 25 %), however, mental health problems such as depression, mood disorders, and anxiety become clinically significant. Certainly, the symptoms would be expected to be more frequent among women and adolescent girls who have a history of a psychiatric disorder or who are in the course of developing a mental health disorder. Even more confounding, studies since the 1970s concerning psychotropic medication during pregnancy have not sufficiently answered questions about the safety of prenatal exposure to psychotropic medications, nor the use of psychotropic medications by adolescents under any circumstances. Furthermore, among adolescent girls who are being treated for a serious mental health disorder with psychotropic medication, it is a common practice for the expectant adolescent mother (like adult pregnant women) to discontinue all pharmacologic treatment, particularly medications typically used to treat severe mental illness. Stopping a medication, that is successfully treating a mental disorder, may result in a slow process where the adolescent decompensates both behaviorally and mentally. In a pregnant adolescent mother, this process puts her and her child's welfare at risk. To reduce the increased risk caused by an untreated adolescent mental illness, at minimum an intervention program would need to include case coordination and management of social and financial services, mental health services, parenting education, and academic educational services.

Adolescent Pregnancy and General Health Problems

The impact of pregnancy as a condition that affects the general health and well-being of women has been given little attention. As for the nulliparous adolescent, there has been even less consideration of the affects of common pregnancy on their general health. What we think we know is that the younger the female, the more she reports common pregnancy symptoms having a marked impact on her physical and mental health during pregnancy, for example, Gartland et al. (2010) found that almost 70 % of pregnant women experienced three or more physical symptoms. The most common physical complaints were exhaustion (87 %), nausea (64 %), back pain (46 %), constipation (44 %), and severe headaches or migraines (30 %). These physical symptoms can bring on mental health crises or complicate them in adolescents who are not prepared or aware of these physical problems related to pregnancy. As well, there is ample evidence that mental health problems seriously complicate gestation, birth, and child rearing. For example, the mother's age at her first birth has consistently correlated with a mother's elevated risk for depression, anxiety disorders, and other serious mental health problems (Hoffman et al. 1993; Moore et al. 1993; Lee and Gramotnev 2006; Biello et al. 2010). Additionally, there is also ample evidence to show that negative socioeconomic circumstances are associated with the variations in the rates of adolescent pregnancy and the incident of adolescent mental health disorders. It is understood by almost everyone, including most adolescent girls that adverse economic circumstances and privation befall the adolescent when she gives birth and attempts to raise her child. Above and beyond the effect of pregnancy and privation on the life of an adolescent mother and her child, the reality is that the majority of pregnant adolescent moms are from disadvantaged communities and families and giving birth typically reduces their chances for a better life for themselves and their child(ren). The birth often limits the adolescent mother's educational attainment, restricts her economic opportunities, and too often results in an unstable relationship with the child's father (Coley and Chase-Lansdale 1998; Geronimus and Korenman 1992; Lee and Gramotnev 2006; Paranjothy et al. 2009; Taylor 2009). These outcomes, whether the fault of the adolescent or society, have long-lasting effects on the adolescent mother and her children and are an additional source of depression and anxiety.

Predisposition for a Mental Health Disorder

Then, there are the pregnant and parenting adolescents who have a predisposition for depression, anxiety related to stress, somatoform disorders, mood disturbances, and psychotic disorders that commonly emerge and are identified during adolescence (Evans et al. 2001; Andersson et al. 2003). These disorders need to be treated in adolescents because they are also predictive of postpartum depression (O'Hara and Swain 1996; Austin and Leader 2000; Heron et al. 2004), premature delivery (Dayan et al. 2002; Dole et al. 2003; Orr et al. 2002), and low birth weight (Patel and Prince 2006; Rahman et al. 2007). In other research, psychological distress has been shown to suppress the immune system and leave the mother susceptible to infections (Halbreich 2005). Complicating a depressive disorder, adolescents who report being depressed are more likely to smoke and abuse drugs (Tzilos et al. 2012). Among adult mothers in general and adolescent mothers in particular, drug-taking behaviors increase the risk of premature deliveries and low-birth-weight babies.

Diminished Resources and Low-Birth-Weight Babies

The consequences of a low birth weight for the neonate are initially manifested as health problems. This is notable because adolescent mothers

tend to give birth to a higher rate of low-birth-weight babies than young adult women. As a rule, a community with a substantial percentage of low-weight births among its residents is also a community with limited resources. A high percentage of low-weight births equate poverty. It is one of those phenomena that transcend race, ethnicity, and culture (Paige et al. 2007). To test the concept, take any community from around the world where there is information on birth weight, and stick flag-pins in the address of the mothers of the low-birth-weight babies. The flags of the mothers of the low-birth-weight newborns will define the community where residents are impoverished and have little access to community resources such as healthcare.

In fact, some credible research has shown that the age of the mother is not as important as environmental and health-related factors. The use of alcohol and drugs during pregnancy will have more of an impact on the child's outcome than the mother's age. As well, when researchers controlled for socioeconomic status, the rate of low-birth-weight and premature babies born to adolescent mothers, as it turns out, is no different than older mothers (Goldenberg and Klerman 1995). The lack of access to prenatal care, another condition related to socioeconomic status, has also been shown to be associated with greater percentages of low-birth-weight infants Laditka et al. (2005).

In the United States, the typical pregnant adolescent is very likely to be from a minority racial or ethnic group that historically has been disadvantaged in the United States. Typically, she is a girl of color (Mathews et al. 2009). She and her family have few resources and live in a community with little social capital. Add to this, bureaucratic procedures that create confusion and obstacles in relationship to financial and medical assistance (particularly prenatal services) results in a delay in starting prenatal care; often resulting in a low-birth-weight or premature birth (Kinsman and Slap 1992).

Impact of Mental Health Disorders on Adolescent Pregnancy

The impact of adolescent parenthood on mental health has also been shown to affect the adolescent mother more than the adolescent father when compared to their non-parenting adolescent peers. In a six-year follow-up study of adolescents in the United States, Biello et al. (2010) compared changes in the mental health of parenting adolescents and non-parenting adolescents. They found that mental health improved for all teenagers over the six years; however, the mental health of adolescent fathers showed far more improvement and a faster rate of improvement than non-parenting adolescent males. They also found that adolescent mothers improved at a slower rate than non-parenting teenage females. Consequently, they concluded that mental health issues among adolescent mothers need to be considered and that these mental health issues have important implications for both adolescent mothers and their children. They suggest interventions should be developed to promote and ensure mental health among adolescent mothers.

The researches on the impact of a mental health disorders on pregnancy and parenting are not isolated to the developed countries (e.g., *Australia*: Gartland et al. 2010; *United Kingdom:* Winship 2009; *United States:* Crittenden et al. 2009). Although relatively small in number, studies consistently find mental health disorders affect pregnancy in countries where poverty and culture restricts sexual reproductive health education and practice (e.g., *Brazil:* Faisal-Cury et al. 2009; *Thailand*: Wingwontham et al. 2008; *South Africa*: Meintjes et al. 2010). These findings are neither surprising nor unexpected. The incident of endogenous mental health disorders such as depression, anxiety, mania, and schizophrenia while varying in name and expression (depending on culture and social context) is found in all human groups of pregnant adolescent and adult females. Poverty, general stress, stress related to

pregnancy, lack of medical care, and cultural norms, however, disproportionately burden pregnant and parenting adolescents with a propensity for a mental health problem. Even the most common symptoms of pregnancy have an obvious effect on the mother's physical and mental health, especially in early pregnancy, and especially among adolescent mothers (Winship 2009).

Depression and Adolescent Sexual Risk Behavior

Both endogenous and situational depression has been widely studied and found to be predictive of sexual risk behavior and problematic behavior during pregnancy especially for disadvantaged women. Depression among adolescents has shown similar affects. Lehrer et al. (2006) compared baseline depressive symptoms and sexual risk behaviors in a national sample of male and female middle and high school students in the United States over a one-year period. They examined the effect of 'religiosity,' 'same-sex attraction,' 'sexual intercourse before the age of ten,' and 'sexual risk behavior.' They found that boys and girls with high depressive symptom levels were significantly more likely than those with low depressive symptom levels to participate in risky sexual behaviors. Among boys, high levels of depression were specifically predictive of nonuse of a condom when they last had sex, and they had used alcohol or other drugs. Among girls, high levels of depression were significantly correlated with substance use, condom nonuse, and birth control nonuse with their last three sexual partners. Sexual risk behaviors among adolescents are consistently found to be associated with STDS, HIV/AIDS, and pregnancy.

Antenatal

During pregnancy *antenatal depression*, especially among low-income adolescent girls should be an expectation. In the general population of expectant mothers, research has been perplexing. Consequently, the reported prevalence of antenatal and postpartum depression varies widely from 10 to 50 %. Among disadvantaged women (i.e., low-income and women lacking average resources), the prevalence of *antenatal depression* is considerably elevated with rates of pregnancy-related depression reported to be as high as 40 % (Freeman 2007; Luke et al. 2009). Among pregnant adolescents, rates of pregnancy-related depression have been reported to be as high as 46 % (Holzman et al. 2006).

Antenatal depression is less common and is not as widely known as postpartum depression; nevertheless, if untreated, it can be just as harmful to both the mother and her unborn child. Cohen et al. (2006) reported that among a sample of pregnant women with a history of major depression, 43 % experienced a major depressive episode during pregnancy. Depressive episodes during pregnancy were even higher (68 %) among women who discontinued antidepressant medication when they realized they were pregnant. This is a concern because, although in practice, risk/benefit assessments commonly overlook or minimize the risks associated with untreated maternal depression (Logsdon et al. 2010).

In one study of 155 women (representing 87 % of a random sample of antenatal patients in two general practices in South London), 65 % of their children with depression were initially exposed in their mother's antenatal period. The researchers found that the children of women who experienced antenatal depression were almost five times as likely to experience depression themselves as children whose mother did not experience antenatal depression. Quite the reverse, however, occurred when the child's initial exposure to maternal depression happened during other developmental periods in the child's life. In these cases, maternal depression was not associated with adolescent offspring depression (Pawlby et al. 2009).

Antenatal depression can reach clinical significance during any trimester. Like other types of depression, it can last for weeks or months and may last through the entire pregnancy or

until after the baby is born. Antenatal depression has been described as feelings of being overwhelmed and is often associated with high stress levels. Women who report an antenatal depression spectrum disorder may describe a lack of connection to their unborn child. They may disassociate and may feel a lack of a bond with their baby even after the baby begins to move and kick. They will also report behavior observed among people who are clinically depressed. Unimportant events may cause her to tear up, become anxious, and annoyed (Pawlby et al. 2009). Given the physical and emotional consequences of adolescent pregnancy, antenatal depression must be considered a serious risk to the mother and child's health.

Treating Antenatal Depression with Antidepressant Medications

Determining the risks and benefits of treating antenatal depression with antidepressant medications is difficult. The selection of a treatment should be based on the severity of symptoms, the mother's history of depression, and her past response to antidepressant medication. Although the risks of antidepressant exposure for the fetus are still uncertain, some studies have found that there is a potential risk of cardiac teratogenicity with paroxetine (Paxil); persistent pulmonary hypertension of the neonate's SSRIs; and birth (under 37 weeks) associated with antidepressants medications as a class of drugs (Dole et al. 2003; Freeman 2007). In spite of the risk, research suggests that for women who experience moderate to severe depression or who have a history of recurrent major depression, antidepressants should be considered in conjunction with non-pharmacological treatment.

In adolescents with mild antenatal depression, non-pharmacological approaches should be the first choice for treatment. More specifically, mild depression can often be mitigated with exercise. Gynecologists recommend 30 min of exercise a day during pregnancy (Artal and O'Toole 2003). Likewise, exercise can be helpful in preventing and reducing postpartum depression . Although still inconclusive, omega-3 fatty acids may be helpful as an adjunct with other treatments for antenatal depression. The two fatty acids—docosahexanoic acid (DHA) and eicosapentanoic acid (EPA)—are found naturally in fish oil, flaxseed, and walnuts and they tend to be well tolerated in pregnant and postpartum women (Michel et al. 2011). The evidence available provides some small support for a benefit from omega-3 fatty acids to individuals with a diagnosed depressive illness but no evidence of any benefit to individuals who experience mild depression but whose depression does not meet clinical significance for a depressive disorder (Appleton et al. 2011). Psychosocial and psychological interventions have also been shown to help reduce antenatal depression and can often prevent postpartum depression among pregnant women at risk for depression (Suri et al. 2007).

Adolescent Mothers and Postpartum Depression

In the not-too-distant past, postpartum depression was considered to be rare. Postpartum depression is 'a mood disorder that can begin any time during the first year after delivery' (Beck and Gable 2001, p. 243). In the second decade of the twenty-first century, many consider postpartum depression among adolescents to be rare. This is not the case. Conversely, research on the experience of adolescent mothers has shown the rates of depressive symptoms in the postpartum period to be higher than expected. A number of studies have found rates as high as one half of adolescent mothers experience symptoms of depression during the postpartum period (Cantilino et al. 2007). Identifying postpartum depression is important considering the potential for long-term damage to the development of both the mother and baby (Field et al. 2005; Riley et al. 2009). Adolescent mothers report feeling abandoned and rejected by their partners, peers, and their family. These young mothers often describe feeling scared, feeling different, and feeling changed by the

reality of being a mother. In this emotional state of chaos, they are often at a loss to explain the experience or understand it (Eshbaugh 2006).

Symptoms of depression in adolescents during the postpartum year, as it turns out are quite common (Reid and Meadows-Oliver 2007). Logsdon (2008), Logsdon et al. (2005) studied postpartum depression among adolescent mothers and collected data from them on two different occasions during the postpartum year. They assessed the adolescent mothers for depression at 4–6 weeks postpartum and they assessed for depression again at 12 months postpartum.

What they found was both surprising and concerning. In terms of the numbers, 47 % of adolescent mothers were found to have clinically significant symptoms of depression. Moreover, the symptoms continued into the 12th month of the postpartum year. Although the percentage of girls experiencing postpartum depression was high, the issue is providing services to prevent and treat the depression. This percentage gives us a rough estimate of the need. What is disturbing, however, is that in this study, none of the girls who tested positive for depression asked for or receive treatment for depression. Untreated postpartum depression as stated above has the potential for long-term harm to both the mother and baby (Zlotnick et al. 2006).

In an effort to understand the barriers that impede adolescent mother's access to mental health treatment, Logsdon et al. (2009a) in their study found that there are personal and service barriers that adolescent mothers must deal with to receive mental health treatment. Personal barriers include lack of knowledge of depressive symptoms and depression treatment, and life challenges that interfere with attention to mental illness. Health service barriers include provider requirement that parental permission must be given to receive treatment, and in some cases, a parent must be present before services can be provided. In other cases, treatment cannot be accessed because of a lack of insurance coverage (National Academy of Sciences 2008).

Another issue related to seeking treatment for postpartum depression is an adolescent mother's intentions. The question is, why do some adolescent mothers seek treatment for postpartum depression and others do not. For the most part, their intentions are based on subjective norms (Logsdon et al. 2009b). Norms critical to seeking treatment are the adolescent mother's personal experiences with mental health treatment, and I would add her family's history of depression particularly, among first-degree relatives (i.e., parents, offspring, and full-siblings) and second-degree relatives (i.e., grandparents, half-siblings, and grandchildren).

Studies in developed countries typically report between 10 and 15 % of new mothers were affected by a major episode of postpartum depression. Mothers who suffer from postpartum depression may endure difficulties regarding their ability to cope with life events, as well as negative clinical implications for maternal-infant attachment. In a recent Canadian study, the prevalence of minor postpartum depression in all mothers was detected in 8.46 % of mothers. The prevalence of major postpartum depression was found in an additional 8.69 % of mothers. In that study, a number of conditions that contributed to postpartum depression were identified. The mother's stress level during pregnancy was a strong predictor of postpartum depression. The availability of support after pregnancy was also important. And, as has been shown in many studies, a prior diagnosis of depression, or a history of depression were significantly associated with the development of postpartum depression (Lanes et al. 2011).

In another small study in the United States, the psychosocial factors associated with postpartum depression were examined. The study was an attempt to help determine factors that increase the likelihood of the mother experiencing a postpartum depression. The sample was small. The 61 mothers were White, African-American, and Hispanic from a rural North Carolina community. The mothers were low-income and Medicaid recipients. In this study, mothers who reported problems with a mood disorder before or during pregnancy (especially adolescents reporting depression and anxiety) were significantly more likely to report postpartum depression ($p = 0.035$). Additionally,

the percentage of adolescent mothers who displayed minor depressive symptoms was slightly over 17 %. This tends to be fairly typical for adolescent mothers. In total, in this group of girls, almost 33 % of adolescent mothers were experiencing some level of major or minor depression when the survey was conducted (Hutto et al. 2011). Of course, these findings are not a surprise for those working in adolescent mental health. What is not widely known is that a substantial percentage of girls and young women who become pregnant will also experience mild to major symptoms of other mental health disorder. When at least a third of all adolescents who become pregnant also suffer from mental health disorders, both health policy makers and service providers should be using best practices for treating adolescent mental health and design specific treatment programs for adolescent mothers.

Postpartum Depression Among Latina Adolescents Mothers

Perry et al. (2011) adds to the knowledge about the applicability of this phenomenon among a group of 217 Latina mothers. These mothers were participating in a prenatal depression prevention program. In addition, to testing interventions to modulate postpartum depression among these adolescent mothers, a number of variables were examined to determine the impact of the mother's postpartum depression on their child's attachment to them. Attachment was measured using the Maternal Postnatal Attachment Scale. This scale was administered every 6–8 weeks after the child's birth. Predictor variables, thought to affect early attachment were depressive symptoms during pregnancy, pregnancy intention, feelings about the pregnancy.

Perry et al. (2011) (along with a few other researchers and practitioners who have studied the effects of depression on early attachment) are suggesting is that depression in the mother can profoundly affect the development of a bond between the child and mother. This suggests that if a mother presents with depressive symptoms, the attachment between the child and mother needs to be assessed. If the expected bond between the child and the mother or the mother and the child is not developing as expected, clinical intervention is indicated.

Substance Abuse and Adolescent Pregnancy

Teenage experimentation with alcohol and other drugs is legendary in most European countries and in the Americas where it plays a major role in the social life of a large segment of the population. In other countries where there is not a tradition of alcohol use, drug experimentation specifically with alcohol is less common. Nevertheless, given the vast changes in social media, and the popularity of Western culture, even adolescents from different social traditions would know that other young people use alcohol and other drugs as a way of escaping their dissatisfaction with life as an adolescent.

In human development, adolescence is a transitional period between childhood and adulthood. It is also a period of development where a great deal of experimentation takes place, especially in terms of prominent major social and moral behaviors that are the restricted purview of adults. This seems to be especially true when it comes to alcohol and other drugs of abuse. Although some would argue that the social and legal restrictions placed on alcohol use, drug use, and cigarette smoking tend to make these drugs and attractive nuisance, nevertheless the numbers of adolescents involved in substance use and the potential damage from experimentation and use make this behavior especially risky for the fetus. The truth is that adolescents die from experimenting with alcohol and other drugs. This is a double tragedy when a pregnant adolescent dies from a drug overdose or a drug-related event.

In the United States for instance, in a study of youth risk behaviors (2009), researchers found that 72.5 % of high school students had at least one drink during their lifetime and about 42 % had at least one drink in the last 30 days. It was

also reported that 46.3 % of students had tried smoking cigarettes and approximately 20 % had smoked a cigarette in the last 30 days. Marijuana experimentation (37 %) was slightly lower than cigarette experimentation over the lifetime of the students but marijuana use in the last 30 days was slightly higher (21 %) than cigarette smoking for these high school students. What is pertinent to a discussion of adolescent mental health and mental health of children born to adolescent mothers is that in the same survey, 46 % of the students reported sexual intercourse during their lifetime (Eaton et al. 2010).

When alcohol use, drug use, and cigarette smoking are widespread within the adolescent population, such as in Australia, Canada, United Kingdom, United States, and other adolescent populations influenced by Western culture, this is an indication of a major public health challenge. Based on this assumption, Barnes et al. (2007) examined adolescent substance misuse and pregnancy in the United Kingdom. Their study followed the release of demographic data that reported a doubling of maternal deaths (which included suicide) among young substance misusers.

The increase in adolescent maternal death both in the United Kingdom and the United States is not a new trend as much as it is a corollary with the general increase in substance use and abuse among female adolescents. The turn of the twenty-first century saw a new historical landmark in the annals of adolescent drug experimentation. For the first time, girls were experimenting and using alcohol and other drugs in larger numbers than their male counterparts. This increase in the percentage of girls experimenting and using substances was not just a local phenomenon; it was not simply a regional phenomenon, as it turns out, it was an international phenomenon. The rates vary but since the year 2000, in countries where data are available, the rate of female adolescent drug use tends to be as high as 25–30 % with some countries reporting slightly higher or slightly lower percentages (Office for National Statistics (ONS) 2003; Australian Institute of Health and Welfare 2004; Phipps et al. 2008). This rate of substance use has been fairly consistent since the mid-1990s. Common antecedents associated with adolescent substance misuse during pregnancy include coming from a dysfunctional family, maternal depression, exposure to violence, verbal and physical abuse, and familial substance misuse. In spite of the cause or motivation, alcohol use, drug use, and cigarette smoking have been shown to be deleterious to the fetus (Whitbeck and Crawford 2009).

Prevention of substance misuse is undeniably the best approach for reducing the problems caused by substance misuse. Regrettably however, it is not always the most effective approach. Given the reality that many adolescent girls began using drugs in some form when they are very young, a harm reduction approach would be more effective.

Delaying Childbearing Among Adolescents

Pregnancy as a condition that affects the general health and well-being of women is widely understood. Medically, a pregnancy can be uneventful or dramatic and even profound. For the nulliparous adolescents, the risk of medical complications is greater for younger girls and less so for older girls. What little we do known suggests that the younger the female, the more she reports that common pregnancy symptoms have a marked impact on her physical and mental health during pregnancy.

The primary social issues and many of the health issues are related to the adolescent's age. The younger the age of a first-time mother, the more likely her child will experience poor pregnancy outcomes such as low birth weight, birth defects, premature birth, and the pregnancy may precipitate or aggravate the mother's mental health problems. Conversely, nulliparous pregnancies that occur in a mother's late teens or in her early adulthood result in better outcomes for both the mother and the child. On a positive note, the improvement in outcome among older adolescents has been shown to be quite dramatic. In a study out of Australia, Gartland et al. (2010)

reported that *maternal age*, *employment, relationship status*, *and highest level of education* had the most effect on physical health while *maternal age*, *gestational age*, *employment*, and *cigarette smoking* had the greatest impact on mental health. Statistically, they were able to show that a 10-year increase in maternal age was associated with a 1.2 times decrease in physical health problems. In many ways, more important to the mother and child's mental health, the statistical analysis showed a 2.4 times decrease in mental health problems. This suggests that reported health and mental health problems are likely higher among younger expectant mothers and lower among older expectant mothers.

Another way that age of the adolescent mother plays an important role in her and her child's health is related to her decision to initiate prenatal care. Adequate prenatal care is essential to the future health and mental health of the child. In the United States, between the years 1986 and 1991, Medicaid eligibility was extended to additional groups, one of which was pregnant adolescents. While Medicaid has reduced some of the economic disadvantage for adolescent mothers and their children, it has most notably and demonstratively improved the physical and mental health of the mother and her child (Hueston et al. 2008).

Medicaid eligibility, funding made available to access prenatal care, has made a significant difference in the number of pregnant adolescents who initiate prenatal care. Research verified a trend toward starting prenatal care earlier among adolescents and preteens in the United States between 1978 and 2003 (Hessol et al. 2004). The improvements, although notable, have not reached all adolescents. In 2003, the last data available, 9 % of young adolescents and 16 % of preteens who became pregnant, were still not initiating prenatal care in the first or second trimester. Even though these percentages show a significant increase among pregnant adolescents who initiate prenatal care in the first and second trimester, up from 65 % to 90 %, the efforts to provide prenatal care early in the pregnancy for all pregnant adolescents needs to focus on young adolescents and preteens. Girls in this age group who become pregnant for many reasons continue to be a challenge for service providers.

Several of the reasons for a delay in initiating prenatal care have been identified. One reason is that a relevant proportion of adolescents, particularly young adolescents and preteens, is unfamiliar with available services and does not realize the importance of prenatal care. In other cases, the delay can be attributed to the younger girls trying to conceal their pregnancy.

Regardless of the reasons for not seeking prenatal care, a lack of prenatal care is associated with low-birth-weight infants, premature delivery, and poor pregnancy outcomes. Although pregnancy outcome is more associated with the mother's access to resources and her environment, early prenatal visits can identify many of these risks (Herbst et al. 2003). For instance, research in the United States and elsewhere has established that women who delay prenatal care are often impoverished, are involved in unstable relationships, are involved in substance misuse, and are the victims of domestic violence (Bloom et al. 2004; Brady et al. 2003). Many of these risks to the neonate that result in low birth weight such as inadequate nutrition, exposure to infection, the mother's use of drugs, and other risks can be addressed during prenatal care to reduce the likelihood of a low-birth-weight delivery (Ricketts et al. 2005).

Conditions that Affect Age at First Birth

There is good evidence to support programs and public policy that focus on delaying first birth, especially for preteens and young adolescents. Research has shown time and again that everything being equal, the older the adolescent, the better she and her child will do before and after the birth. Similar outcomes are reported in countries and cultures from around the world. Cultural sanctions aside, the commonalities that pregnant adolescents share almost worldwide are a lack of financial support, a lack of emotional support, and health and mental health services for themselves and their child. Many social scientists would point out that these

problems are not a part of the natural order of pregnancy. They are sanctions and obstacles that result in large part because of the adolescent mother's age.

Added to the social problems, there is an increased risk of physical problems associated with age of the mother. The younger the adolescent mother, the greater the risk of complications during pregnancy and at delivery. Because the physiological problems and the social problems are time sensitive, interventions that work in a positive way to delay pregnancy would help the potential mother in both domains.

There is also a great deal of evidence to suggest that better drug education, drug prevention, and drug treatment services can reduce unintended pregnancies. Mental health services will also play a role in reducing unwanted and unintended pregnancies. Providing mental health services to adolescent girls who are experiencing or developing a mental health disorder such as bipolar would also go a long way to mitigating the tendency to act out sexually.

As well, there is substantial evidence that a woman's age at first birth varies across countries and regions. This suggests that the age of the nulliparous mother can be and is influenced by different circumstances and surroundings, particularly in countries where Western culture prevails. For instance, in Australia and Canada, over 50 % of births are to women who are 29 years old and older (Riley et al. 2005; Statistics Canada 2006). Other studies, one in the United Kingdom reported the average age of women at first birth was 28 years of age (UK National Statistics 2008). In the United States, the average age of women at first birth is 25 (Mathews et al. 2009). Both in Japan and Sweden, the average age for first-time mothers is 29.2 and 29.4, respectively. In part, this change has been the result of the decrease in adolescent pregnancies and the increase in the number of first-time mothers who were 35 years of age and older when they became pregnant.

The change in the age of first-time mothers has not occurred just in different countries around the world, for example, in the United States, the changes have also varied from state to state. Mathews et al. (2009) reported that between 1970 and 2006, the average age of mothers at first birth had increased over five years in Massachusetts, New Hampshire, and Washington, D. C. While in other states with less opportunity for adolescent girls, such as Mississippi, New Mexico, and Oklahoma, these states saw a modest increase in the age of mothers at first birth of 2.5 years.

In 1970, the state of Arkansas had the youngest first-time mothers, 20.2 years of age. In the same year, Connecticut, Massachusetts, and New York had the oldest first-time mothers, 22.5 years of age. By 2006, a dramatic change had taken place. The state of Mississippi had the lowest average age for first-time mothers at 22.6 years of age. Massachusetts continued to have the highest average age for first-time mothers at 27.7 years of age. The age of first-time mothers also varied in the United States by race and ethnicity. The youngest first-time mothers were African-American with an average age of 22.7 years. Hispanic first-time mothers were slightly older, 23.1 years. The oldest first-time mothers were found among non-Hispanic white mothers. They were on average 26 years old.

This increase in age of mothers who gave birth for the first time can be observed among all ethnic and racial groups in the United States. The oldest average age for first-time mothers was found among Asian and Pacific Islanders. These women were on average 28.5 years old when they gave birth for the first time. The youngest average age for first-time mothers was found among American Indians and Alaska natives. On average, they were 22 years old when giving birth for the first time.

Because age is such a determinant in pregnancy outcome, public health programming, with the goal of delaying adolescent pregnancy until the mother is in her late adolescence or early adulthood would have many benefits. We know that opportunity and future prospects have a great deal of influence over an adolescent or young woman's decision to become pregnant. Education about the advantages of waiting until one is mature before becoming pregnant and providing opportunity that allows the adolescent

to maximize her value without becoming pregnant would increase the age of first-time mothers.

The Risk of Rapid Repeat Adolescent Pregnancies

The logic of extending the time between the first and second child of an adolescent mother not only makes sense but the concept is supported by a growing body of research focused on repeat pregnancies among adolescent mothers. Repeat pregnancy is defined as two births to the same mother within 24 months (Mott 1986; Rigsby et al. 1998). Repeat pregnancies are more likely among girls who live in disadvantaged communities.

Adolescent mothers, especially very young mothers who live in poverty, are at the highest risk level among adolescent mothers for a rapid repeat pregnancy. These very young mothers more often than older mothers, even in the same impoverished community, suffer the consequences of closely spaced pregnancies (Klerman et al. 1998). As mentioned before, very young mothers are less likely to initiate adequate prenatal care for their first child and they are less likely to initiate adequate prenatal care for their second child (Wiemann et al. 1997). Thus, the very young adolescent mother and her child are at greater risk for adverse health outcomes.

In addition to environmental and contextual conditions that increase the risk of a rapid repeat pregnancy among adolescent mothers, a mental disorder or the onset of a mental disorder will also increase the risk of a rapid repeat pregnancy among adolescent mothers. As mentioned earlier in this chapter, there is ample evidence to conclude that a mental health disorder can be an antecedent to adolescent pregnancy (Quinlivan et al. 2004). Taking into consideration that a mental disorder increases the risk of adolescent pregnancy; reason would support the conclusion that a mental health disorder would also play an important role in a rapid repeat pregnancy (Crittenden et al. 2009).

Supporting these conclusions, researchers concerned with risky sexual behavior among adolescent mothers point out that a history of suicidal ideation and attempts and clinically significant psychiatric symptoms are more prominent among adolescent mothers who gave birth the second time within 24 months of her first birth than teenage mothers who did not give birth a second time within 24 months. Depression and anxiety during an adolescent's postpartum period is a warning sign that she is at increased risk of a rapid repeat pregnancy.

Adolescents who have a rapid repeat pregnancy have been studied in the United States since the late 1990s, for good reason. The United States has the highest adolescent pregnancy rate among developed nations, and between 20 and 30 % of those adolescent mothers deliver a second child within 24 months (Schelar et al. 2007). As concerning as rapid repeat pregnancies are, several studies have suggested that the younger the adolescent (11-16 years), the more she is at risk of a rapid repeat pregnancy.

Urban and minority youth have been the primary focus of research on rapid repeat pregnancies in the United States. The findings have been fairly consistent. African-American and Hispanic adolescents are more likely to become pregnant and give birth than their white counterparts. These urban, minority adolescent mothers, as well, are more likely to live in poverty and live in high crime communities. These environments tend to limit the adolescent mother's access to healthcare, education, and employment opportunities. These types of environmental conditions have been clearly shown to impact the health and mental health of a young mother and her child (McLoyd 1998).

Social Predictors of Rapid Repeat Pregnancies

The sociodemographic and contextual variables or conditions that predict a rapid repeat pregnancy, as it turns out, are the same situations and conditions that are associated with adolescent

pregnancy in the first place. The family plays an important role in increasing or decreasing the risk of a rapid repeat adolescent pregnancy. Adolescent girls with poor or inadequate family involvement (Rigsby et al. 1998), poorly educated parents (Kalmuss and Namerow 1994), families that experience economic hardship (Furstenberg et al. 1987a, b) and mothers who had their first child during adolescence are at increased risk of a rapid repeat adolescent pregnancy (Atkin and Alatorre-Rico 1992). Girls that participate in at risk behaviors also had a higher risk for a rapid repeat pregnancy. Low educational achievement and aspiration (Bennett et al. 2006), delinquent behavior (Hope et al. 2003), use of alcohol and other drugs (Crosby et al. 2002), and resistance or failure to use effective contraception increases the risk of adolescent rapid repeat pregnancy (Garbers et al. 2010). Finally, adolescents who have their first child at a very young age (Gillmore et al. 1997), marrying during adolescence (Koenig, and Zelnik 1982), intended to become pregnant, and were disappointed or dissatisfied with the birth outcome of her first child (i.e., abortion, miscarriage, stillbirth) (Coard et al. 2000; Rosengard 2009) have been significantly associated with the rapid repeat adolescent pregnancies.

One of the most interesting variables associated with rapid repeat adolescent pregnancy is aggressive behavior. In their study, Miller-Johnson and colleagues (1999) found that girls who presented with persistently aggressive behavior in the third to fifth grades were at an increased risk of becoming pregnant. They reported that girls with stable patterns of aggressive behavior were younger when they gave birth for the first time and had twice the number of children than non-aggressive girls. In another study, adolescent girls who had rapid repeat pregnancies reported less confidence in their ability to negotiate with others without using physical force. These girls also agree more often than non-repeaters that a person had to use physical force to gain the respect of others. In another study, Raneri and Wiemann (2007) found interpersonal violence experienced by adolescent mothers increased the risk for a rapid repeat adolescent pregnancy. To some degree, this is related to competent self-regulation. Adolescence is a developmental phase where self-regulation is being acquired. As a result, adolescents tend to respond to the present and have difficulty considering the long-term consequences of their risk-taking behavior or even identifying risk-taking behavior (Cauffman and Steinberg 2000). Clearly, the research shows that there are more indicators of mental health problems and traumatic experiences during the prenatal and postpartum periods among adolescent mothers who have a rapid repeat pregnancy than among adolescent mothers who do not have a rapid repeat pregnancy (Patchen et al. 2009). With this knowledge, interventions that reduce the risk of a repeat pregnancy can be designed.

Long-acting contraceptives such as depot medroxyprogesterone acetate or progesterone implants during the first postpartum year have been used with limited success. Girls who continue regular use are less likely to experience a repeat birth; however, the rate at which these girls stop using the long-acting contraceptives is fairly high. Even though most adolescent girls report their repeat pregnancy was unplanned, research into their ambivalence about contraception, and inconsistent use of contraception, is needed to explain these inconsistencies (Thurman et al. 2007).

Prevention of rapid repeat pregnancies among at risk adolescents will depend on early identification and treatment of the girl's mental health issues and traumatic experiences. This makes screening and assessment for symptomology of a mental health disorder and trauma essential. Protocol is needed to quickly identify and treat pregnant adolescents who present with unexplained injury, traumatic experiences, suicidal ideation and suicidal attempts, and symptoms related to a mental disorder. Such intervention and treatment will improve the outcome of the adolescent mother and her child. It will also help reduce the number of rapid repeat adolescent pregnancies.

The Mental Health of Children of Adolescent Mothers

This section covers the research on mental health problems experienced by children of adolescent mothers. The primary focus will be on the child's risk of developing a mental health problem during his or her lifetime simply because the child was born to an adolescent mother. There is a large and credible body of knowledge that supports the notion that children of adolescent mothers are more at risk of behavioral problems and mental health disorders during their lifetime than children born to women 19 years old and older.

We know that parents influence the behavior and emotional well-being of their children in many ways. Primarily through dyadic contact, parents shape the development of their child by teaching, coaching, trying to manage their child's environment, particularly their child's social environment. We also know that failure in any one of the areas that are essential for normal growth and development can result in adverse outcomes for the child (Dodge 1990). Consequently for many, the explanation is fairly simple; children develop pathology as a result of failures in parenting. Even though in political circles, failed parenting is often a popular scapegoat, there is substantial empirical research and logic behind a model of child development that includes factors and other major domains to explain a child's deviant behavior. Genetic predisposition, environment, socialization, and the interactional effects of all of these inherent factors have long been understood as influencing the personality development and mental health of each child (Rutter and Quinton 1984).

In the case of the children of adolescent mothers, especially very young adolescent mothers, all else being equal, the children are still more often identified as antisocial (Jenkins et al. 2006; Levine et al. 2001; Wakschlag et al. 2000) and these children are more likely to experience depression in their lifetime (Hofferth 1987; Moore et al. 1997). Subsequent adjustment disorders have also been found to last into adulthood (Brooks-Gunn and Furstenberg 1986; Furstenberg et al. 1987a, b).

The factors that are associated with this risk can be organized into internal and external determinates. Internal influences, such as genetic makeup and a predisposition for developing a mental health problem, affect child behavior and development. External influences that are associated with behavioral and mental health problems are largely the product of a deprived environment; yet, an environment that can be modified if the will exists. Unfortunately, it takes substantial social capital; the commitment of considerable social and mental health services to insure a reasonably positive outcome for all at risk children being damaged by inadequate care and support.

What we do know is that, children of adolescent mothers are more often low-birth-weight deliveries and often premature. Sadly, they are also at more risk of dying in the perinatal period (i.e., five months before and one month after birth) (Elfenbein and Felice 2003; Klein 2005). Beers and Hollo (2009) go as far as declaring that 'All children born to adolescent mothers including the healthy term infants are at risk for future developmental and behavioral problems even when controlling for other background characteristics' (p. 217). Without little to indicate otherwise, physical and mental maturity of the mother are crucial to the child's future. In the area of academics, these children do not fare as well academically as children with adult mothers. In one study, the children of adolescent mothers as a group scored lower on a kindergarten readiness scale that measured cognitive and social skills. Interestingly, the children of mothers who were 17 years old or younger at their child's birth scored lower on kindergarten readiness than children of mothers who were 18 and 19 years old at the time of the child's birth. Factors associated with a higher level of maternal education and better living conditions for the child explained much of the difference (Luster et al. 2000).

In addition to having more academic problems and school adjustment problems, these children are more likely to experience developmental delay (Terry-Humen et al. 2005). Behaviorally, these children are at greater risk

for substance experimentation and use, and of becoming sexually active at a young age (Klein 2005; Pogarsky et al. 2006). These behavioral outcomes of children with adolescent mothers are similar to outcomes of children who experience less sensitive and responsive parenting. Sadly, because of a lack of maturity, depression, and other mental health issues, this is a parenting style that is often observed among struggling adolescent mothers.

Depression by far has been shown to be the most common mental health problem among pregnant adolescent and adult mothers. Because of the consequences of depression, the high prevalence of adverse child outcomes and the high burden associated with disability and poor infant development, the treatment of perinatal depression is considered a public health priority (Rahman et al. 2008). In studies, conducted in the United States and other countries, over 60 % of pregnant women were reported to have experienced clinical depression for some period during their pregnancies (Pawlby et al. 2009). Accordingly, research on the extent of depression among pregnant women (at least since the 1990s) has focused on the differential effect of the mother's depression on her child's development. Some of the crucial events and factors associated with a mother's depression that are more likely to affect the mental health of her child have been identified, that is the time during the prenatal and postpartum period when the depression occurred, the severity of a depressive episode, and the chronic nature of the mother's depression (Abbott et al. 2004; Halligan et al. 2007). Intergenerational transmission of depression and the child's inherit tendency toward depression must also be included among those major forces involved in determining a child's outcome (Hammen and Brennan 2003).

Rate of Major Depression During Pregnancy

Over the years, studies from different countries (e.g., Australia, China, Honduras, India, Japan, Malaysia, United States, and United Kingdom) suggest that approximately 20 % of mothers can be expected to experience a major depression. Wulsin et al. (2010) reported that the rate of major depression among rural mothers was approximately 18 %, but they found 56 % of mothers in rural Honduras had experienced mild depression. Given the growing literature on maternal depression in different countries from around the world, it is likely that maternal depression is a substantial problem that has negative consequences on the health of both mother and child.

In a longitudinal study from the United Kingdom conducted to learn more about the incident and effect of depression experienced during pregnancy, Pawlby et al. (2009) recruited and followed 127 pregnant women throughout their pregnancy and conducted follow-up interviews with them over the next 16 years. The women were chosen from two communities that were demographically known to have a high level of socioeconomic deprivation. These communities were selected, because in communities where residents struggle with socioeconomic deprivation, it has been observed by numerous researchers that the residents also struggle with higher rates of depression (Ostler et al. 2001).

First, it is informative to look at the characteristics and influences where no differences existed between mothers who experience depression and mothers who did not. Not surprisingly, there were no significant differences between the mothers identified as depressed during pregnancy and mothers not identified as depressed on such demographics as maternal age, marital status during the pregnancy, social class, level of education, and ethnicity or gender of the child. While much of this homogeneity among group characteristics can be attributed to the small convenient sample used in this study, the lack of difference on these characteristics also speaks to the genetic nature of depression.

What they did find was that among these women, 65 %, or 3 in every 5 women reported at least one episode of depression during their pregnancy and the 16 year timeframe that followed the delivery. Moreover, the researchers

found that the highest number of depressive episodes for these mothers occurred during their pregnancies. Of this group of mothers who experienced depression during pregnancy, 90 % reported at least one additional depressive episode during the 16-year follow-up. This is important information for practitioners in the field of mental health and service providers.

Another significant indicator of depression during the pregnancy or during the 16-year follow-up was a reported visit to a general medical practitioner because of a mental health problem. Among this group of mothers who reported being depressed during the 16-year long study, over 50 % had visited a general practitioner complaining of a mental health problem before becoming pregnant. In sum, based on this and similar studies, 90 % of women who present as depressed during their pregnancy are likely to experience another depressive episode before their child reaches the age of 16.

What is abundantly clear, from the research since the 1990s, is that a large and significant group of women, adolescent girls, and preteen girls experience depression that reaches clinical significance at some point during their pregnancy. It is also realistic to expect that these pregnant women and girls who become depressed will be offered treatment for their depression as part of their prenatal care. Identification and treatment for depression during pregnancy or during the postnatal period is feasible given the expected contact mothers have with health care professionals during the prenatal and postnatal timeframe. Support and treatment of the mother's depression can make all the difference in the world to the child and the mother.

Rate of Diagnosed Depression among Children of Depressed Mothers

Research over the years has left little doubt about there being an intergenerational predisposition for depression. This is not to say that people cannot be depressed if there is not depression in their family; nor is it saying that a person will be depressed if depression does run in their family. Clinicians working in the mental health field see this type of depression as intergenerational. When working with a depressed patient, it is not uncommon to interface with a depressed father, mother, sibling, or child.

Kraepelin (1921) was the first to write about children raised by depressed parents and to declare that the children of depressed parents were at risk of developing depression or other pathology during their lifetime. Rutter (1966) was the first to observe the intergenerational transmission of depression, which has been confirmed in a number of subsequent studies. Schizophrenia had been recognized as having a genetic link since the 1970s (Garmezy 1974a, b). The genetic link and predisposition for depression was well established by the 1990s (Rutter and Quinton 1984; Trad 1986).

The estimates for the strength of this genetic predisposition vary, but based on the accumulative evidence, it is reasonable to assume that the children of depressed parents are 2–3 times more likely to be diagnosed with a maladaptive or depressive disorder in their lifetime than children who were not exposed to parental depression (Beardslee et al. 1983; Weissman et al. 2006).

Infants of depressed mothers have been shown to be fussier, score lower on mental and motor development, and develop less secure attachments to their mother than infants of non-depressed mothers (Hipwell et al. 2000). Toddlers of depressed mothers tend to react more negatively to stress and are slower in the development of self-regulation behaviors. School-age children from this group have more school problems, particularly behavioral problems, are less socially competent and have a negative or poorer concept of self, than children whose mothers were not depressed (Field et al. 2005; Cummings and Davies 1994; Gotlib and Goodman 1999; Gotlib and Lee 1996; Riley et al. 2009).

Going back as far as the 1980s, children of depressed mothers have been identified as being at risk for developing a depressive disorder (Boyd and Weisman 1981), aggressive behavior (Weisman et al. 1984), anxiety (Weisman et al.

1984), somatic symptoms (Whiffen and Gotlib 1989), attention deficit disorder (Weissman et al. 1984), insecure attachments (Hipwell et al. 2000), and emotional dysregulation (Field et al. 1985). To modulate the consequences for these children early detection, treatment, and psychosocial support are essential.

In their longitudinal study, Pawlby and her associates also tested for differences between children of the depressed mothers and children of the non-depressed mothers that they were studying. Children exposed to maternal depression during pregnancy or in the 16 years that followed the pregnancy were significantly more likely to be diagnosed with a depressive disorder at the age of 16. In this UK sample of children, 20 % or 1 in 5 of these children were diagnosed with a depressive disorder (dysthymia or some other depressive disorders) when they were psychiatrically evaluated at the age of 16. The diagnosis of depression was based on the DSM-IV criteria that the depression had been significant for at least three months preceding the diagnosis. Given the stringent nature of the definition of depression, this criterion excludes any experiences or problems these children may have had with depression before being diagnosed at age 16. The researchers diagnosed 127 children who were the offspring of the mothers in the study sample. In this group, 18 (14.2 %) of the children were diagnosed with a depressive disorder. Of these 18 depressed offspring, over three times as many girls (14) as boys (4) were diagnosed with a depressive disorder when evaluated at age 16. This difference in the incident of depression by gender is not out of line with estimates, for the most part, because boys are most often diagnosed with a conduct disorder rather than depression. Clinically, agitated depression would be a more accurate diagnosis for many boys who are acting out their fears and frustrations associated with their experience with depression. The strength of intergenerational depression was present, in that all of the children diagnosed with a depressive disorder had been born to mothers who were themselves diagnosed with a depressive disorder. Finally, as a way of emphasizing the serious nature of the depression faced by these children, 6 of the 18 adolescents diagnosed as depressed had also planned to commit suicide or had made a suicide attempt.

Maternal Depression and Infant Risk for Illness and Impaired Developing

Most of the initial research on the rate of depression among pregnant women and the effect on their offspring were conducted in the United States. Since the 1980s, however, similar investigations into the rate of depression and the effect of maternal depression on her child has been replicated and expanded by researchers in other countries both developed and in developing countries, especially in countries where depression and other psychiatric disorders are seen as treatable and the wherewithal is available to treat them (Swami et al. 2010).

One research finding that cuts across all studies and countries and is not a surprise is that providing adequate infant care and attention is an extremely demanding task for any mother. Caring for an infant is even more stressful and demanding than caring for a toddler or young child. If the mother is in poor physical or mental health, this poor health will impact in an adverse way the child's health, nutrition, and emotional well-being. As discussed previously, the association between poor mental health and the mother's reduced capacity to care for her child is well established for mothers and children living in developed and industrialized countries.

Not as well studied is the incidence of mental illness among mothers in developing countries. What research is available has empirically linked poverty in poor and developing countries with a high prevalence of mental illness (Lund et al. 2010). In rural Pakistan, for instance, one study found among that 25 % of men and 66 % of women reported depression and anxiety reached clinical significant (Mumford et al. 1997). This is comparable to findings from a study from Japan. Ishikawa et al. (2011) reported that 32.0 % of the Japanese women they studied experienced clinically significant depression during pregnancy. In

fact, 21.6 % of the women were found to have experienced serious depression at least one day during the five-day period following delivery. In another study, children from a Brazilian slum whose mothers presented with poor mental health were found to be malnourished significantly more often than others who were not struggling with mental health issues (De Miranda et al. 1996). By the mid-1990s, research was also showing higher rates of HIV/AIDS among mothers with mental health disorders in developing countries (Patel and Kleinman 2003).

It seems reasonable to assume that being a mother of an infant under the best of circumstances can still be stressful at times. Added to the stress of being a new mother is the stress of being a parenting adolescent with few psychosocial and economic resources. Another important stressor can be a lack of available child care services. Another important stressor can be a lack of available child care services. Under these circumstances, it would not be a surprise to find that their children were given less than optimal maternal care. This is a serious problem, but for infants in many developing countries, the mother's care is the difference between living and dying. As Rahman et al. (2002) pointed out, in some developing countries, the level of maternal care is more important than it is in developed and industrialized countries. In developing countries, he observed, the environment is often harsh, there is overcrowding, inadequate sanitation, and food insecurity. In these situations, maternal care is often the difference between infants who survive and infants who perish.

The perinatal period is likely to be the time when infants in developing countries are likely to be at the greatest risk. Of course, the perinatal period is a time when infants need the most care in both developed and developing countries. Consequently, we would expect and the research seems to support a conclusion that infants of mothers, particularly adolescent mothers, who are in poor mental health in developing countries with limited resources to support the perinatal period, would have infants with higher rates of physical illnesses, stunted growth, and infant mortality.

Adolescent girls and adult women with a mental health disorder are as likely to bear children as females without a mental health disorder in the general population. Nonetheless, the burden of carrying a child to term and providing adequate care for the infant during the perinatal period, as the research confirms, is particularly more difficult for mothers with a mental health disorder, especially when the mother is also an adolescent. The mental health disorder and the mother's youth, however, while creating a situation where the mother and child will need supplemental services and support, is not as predictive of an adverse outcome as the failure or inability of the mother child dyad to obtain the necessary services and supports Meintjes et al. (2010).

Numerous reasons may exist for supporting or not supporting adolescent mothers with a mental health problem who are carrying or parenting a child. From a mental health perspective, however, there is abundant evidence that adult and adolescent mothers with mental disorders can and do provide a nurturing environment for their child(ren). Given appropriate rehabilitation assistance and interventions that address parenting as a rehabilitation goal have been successfully used for years. Assisting mothers to modify their environments and social context has improved parenting. Finally, helping adolescent and first-time mothers develop knowledge of child development and individual parenting skills has been shown to be effective in both developed and in developing countries (Rahman et al. 2008).

Discussion

As is apparent from this review, risk factors that affect the physical and emotional development of adolescent mothers and their children are widely reported in research studies. Although the endogenous and physiological risk factors related to mental health problems are fairly clear; for the most part adverse outcomes observed among pregnant adolescents are related to the degree to which resources are available to and utilized by young mothers. This includes circumstances where the adolescent may not be able to take full

advantage of available sexual and reproductive services due to her age or judgmental provider; or, because of a mental health disorder, she may be struggling with at the time.

Researchers have produced an overabundance of studies showing that obvious risk factors in terms of the baby's development are correlated with the mother's age. The influence of age is based on the effect of age on adolescent maturity. The mother's level of maturity is important in terms of the effect of the mother's maturity on her child's psychological development. The conclusion is that the older the adolescent, when she gives birth, the better her child's cognitive and psychosocial development. What we also know is that when resources are available to meet the mother and child's needs, outcomes are not significantly different for children of younger and older adolescent mothers.

The positive side of the findings from these studies is that material differences are creating situations and circumstances that can be modified and changed to reduce the risk to adolescent mothers and their children are exposed to. This is especially true for adolescent girls who have mental health issues that are activated or complicated by pregnancy.

Poverty is the most widespread of the harmful environment for pregnant adolescents. It even exists in the many developed countries where there is a thriving middle and upper class. Human beings have basic needs that must be provided if a child is going to develop normally. Anything less must be defined as poverty. When adolescent girls grow up in poverty, in a community with little or no social capital, the girl's socioeconomic status puts her at increased risk of developing mental health problems and of experiencing an adolescent pregnancy (Geronimus 2004).

Based on the research that has accumulated from around the world, since the 1970s, it is clear that untreated maternal mental illness results in an unacceptable global burden. A cost so great at the individual level that this global burden demands the provision of mental health care as an integrated part of prenatal and postnatal care for both adult and adolescent mothers and their children.

References

Abbott, R., Dunn, V. J., Robling, S. A., & Paykel, E. S. (2004). Long-term outcome of offspring after maternal severe puerperal disorder. *Acta Psychiatrica Scandinavica, 110*, 365–373.

Andersson, L., Sundström-Poromaa, I., Bixo, M., Wulff, M., & Bondestam, K. (2003). Common mental disorders during pregnancy during the second trimester of pregnancy: A population-based study. *American Journal of Obstetrics and Gynecology, 189*, 148–154.

Appleton, K. M., Rogers, P. J., & Ness, A. R. (2011). Updated systematic review and meta-analysis of the effects of n−3 long-chain polyunsaturated fatty acids on depressed mood. *American Journal of Clinical Nutrition, 91*(3), 757–770. doi:10.3945/ajcn.111.011817

Artal, R., & O'Toole, M. (2003). Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. *British Journal of Sports Medicine, 37*, 6–12. doi:10.1136/bjsm.37.1.6

Atkin, L. C., & Alatorre-Rico, J. (1992). Pregnant again?: Psychosocial predictors of short-interval repeat pregnancy among adolescent mothers in Mexico City. *Journal of Adolescent Health, 13*, 700–706.

Austin, M. P., & Leader, L. (2000). Maternal stress and obstetric and infant outcomes: epidemiological findings and neuroendocrine mechanisms. *Australian and New Zealand Journal of Obstetrics and Gynaecology, 40*, 331–337.

Australian Institute of Health and Welfare (AIHW). (2004). *Statistics on drug use in Australia*. Canberra: AIHW.

Barnes, W., Khaled, M. K., Ismail, K. M., & Crome, I. (2007). Triply troubled: Criminal behavior and mental health in a cohort of teenage pregnant substance misusers in treatment. *Criminal Behaviour and Mental Health, 20*, 335–348. doi:10.1002/cbm.776

Beardslee, W. R., Bemporad, J., Keller, M. B., & Klerman, G. L. (1983). Children of parents with major affective disorder: A review. *American Journal of Psychiatry, 140*, 825–832.

Beck, C. T., & Gable, R. K. (2001). Comparative analysis of the performance of the postpartum depression screening scale with two other depression instruments. *Nursing Research, 50*, 242–250.

Beers, L. A., & Hollo, R. E. (2009). Approaching the adolescent-headed family: A review of teen parenting. *Current Problems in Pediatric and Adolescent Health Care, 39*(9), 216–233. doi:10.1016/j.cppeds.2009.09.001

Bennett, I. M., Culhane, J. F., McCollum, K. F., et al. (2006). Unintended rapid repeat pregnancy and low education status: Any role for depression and contraceptive use? *American Journal of Obstetrics and Gynecology, 194*, 749–754. doi:10.1067/mob.2000.106580

Biello, K. B., Sipsma, H. L., & Kershaw, T. (2010). Effect of teenage parenthood on mental health

trajectories: does sex matter? *American Journal of Epidemiology, 172*(3), 279–287.

Bloom, K. C., Bednarzyk, M. S., Devitt, D. L., et al. (2004). Barriers to prenatal care for homeless pregnant women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 33*, 428–435.

Boyd, J. H., & Weissman, M. M. (1981). Epidemiology of affective disorders. *Archives of General Psychiatry, 38*, 1039–1046.

Brady, T. M., Visscher, W., Feder, M., & Burns, A. M. (2003). Maternal drug use and the timing of prenatal care. *Journal of Health Care for the Poor and Underserved, 14*, 588–607.

Brooks-Gunn, J., & Furstenberg, F. F. (1986). The children of adolescent mothers: Physical, academic, and psychological outcomes. *Developmental Review, 6*, 224–251.

Cantilino, A., Barbosa, E. M., & Petribu, K. (2007). Postpartum depression in adolescents in Brazil: An issue of concern. *Archives of Women's Mental Health, 10*(6), 1434–1816.

Carpenter, S. C., Clyman, R. B., Davidson, A. J., et al. (2001). The association of foster care or kinship care with adolescent sexual behavior and first pregnancy. *Pediatrics, 208*, 46–52.

Cauffman, E., & Steinberg, L. (2000). Immaturity of judgment in adolescence: Why adolescents may be less culpable than adults. *Behavioral Sciences and the Law, 18*, 741–760.

Coard, S. I., Nitz, K., & Felice, M. E. (2000). Repeat pregnancy among urban adolescents: Socio-demographic, family, and health factors. *Adolescence, 35*, 193–200.

Cohen, L. S., Altshuler, L. L., Harlow, B. L., Nonacs, R., Newport, D. J., Viguera, A. C., et al. (2006). Relapse of major depression during pregnancy in women who maintain or discontinue antidepressant treatment. *JAMA, 295*, 499–507.

Coley, R. L., & Chase-Lansdale, P. L. (1998). Adolescent pregnancy and parenthood: Recent evidence and future directions. *American Psychologist, 53*(2), 152–166.

Crittenden, C. P., Boris, N. W., Rice, J. C., et al. (2009). The role of mental health factors, behavioral factors, and past experiences in the prediction of rapid repeat pregnancy in adolescence. *Journal of Adolescent Health, 44*(1), 25–32. doi:10.1016/j.jadohealth.2008.06.003

Crosby, R. A., DiClemente, R. J., Wingood, G. M., et al. (2002). Psychosocial predictors of pregnancy among low-income African American adolescent females: A prospective analysis. *Journal of Pediatric and Adolescent Gynecology, 15*, 293–299.

Cummings, E. M., & Davies, P. T. (1994). Maternal depression and child development. *Journal of Child Psychology and Psychiatry, 35*, 73–112.

Dayan, J., Creveuil, C., Herlicoviez, M., Herbel, C., Baranger, E., Savoye, C., et al. (2002). Role of anxiety and depression in the onset of spontaneous preterm labor. *American Journal of Epidemiology, 155*, 293–301.

De Miranda, C. T., Turecki, G., Mari, J. D. J., et al. (1996). Mental health of the mothers of malnourished children. *International Journal of Epidemiology, 25*, 128–133.

Dodge, Kenneth A. (1990). Developmental psychopathology in children of depressed mothers. *Developmental Psychology, 26*(1), 3–6. doi:10.1037/0012-1649.26.1.3

Dole, N., Savitz, A., Hertz-Picciotto, I., Siega-Riz, A. M., McMahon, M. J., & Buekens, P. (2003). Maternal stress and preterm birth. *American Journal of Epidemiology, 157*, 14–24.

Eaton, A., et al. (2010). Youth risk behavior surveillance—United States, 2009. *Morbidity and Mortality Weekly Report, 59*(5), 1–142. Retrieved from: www.cdc.gov/mmwr

Elfenbein, D. S., & Felice, M. E. (2003). Adolescent pregnancy. *Pediatric Clinics of North America, 50*, 781–800.

Eshbaugh, E. M. (2006). Predictors of depressive symptomology among low-income adolescent mothers. *Archives of Women's Mental Health, 9*, 339–342.

Evans, J., Heron, J., Francomb, H., Oke, S., & Golding, J. (2001). Cohort study of depressed mood during pregnancy and after childbirth. *BMJ, 323*, 257–260.

Faisal-Cury, A., Menezes, P., Araya, R., & Zugaib, M. (2009). Common mental disorders during pregnancy: Prevalence and associated factors among low-income women in São Paulo, Brazil: Depression and Anxiety during Pregnancy. *Archives of Women's Mental Health, 12*, 335–343. doi:10.1007/s00737-009-0081-6

Field, T., Hernandez-Reif, M., Vera, Y., Gil, K., Diego, M., & Sanders, C. (2005). Infants of depressed mothers facing a mirror versus their mother. *Infant Behavior and Development, 28*, 48–53.

Field, T., Sandberg, D., Garcia, R., Vega-Lahr, N., Goldstein, S., & Guy, L. (1985). Pregnancy problems, postpartum depression and early mother-infant interactions. *Developmental Psychology, 21*, 1152–1156.

Freeman, M. P. (2007). Antenatal depression: Navigating the treatment dilemmas. *American Journal of Psychiatry, 164*, 1162–1165. doi:10.1176/appi.ajp.2007.07020341

Furstenberg, F. F., Brooks-Gunn, J., & Morgan, S. P. (1987a). Adolescent mothers and their children in later life. *Family Planning Perspectives, 19*, 142–151.

Furstenberg, F. F., Brooks-Gunn, J., & Morgan, S. P. (1987b). *Adolescent mothers in later life*. New York: Cambridge University Press.

Garbers, S., Correa, N., Tobier, T., Blust, S., & Chiasson, M. A. (2010). Association between symptoms of depression and contraceptive method choices among low-income women at urban reproductive health centers. *Maternal and Child Health Journal, 14*, 102–109. doi:10.1007/s10995-008-0437-y

Garmezy, N. (1974a). Children at risk: The search for antecedents of schizophrenia. Part I: Conceptual models and research methods. *Schizophrenia Bulletin, 9*, 14–90.

Garmezy, N. (1974b). Children at risk: The search for the antecedents of schizophrenia. Part II: Ongoing

research programs, issues, and interventions. *Schizophrenia Bulletin, 9*, 55–125.

Gartland, D., Brown, S., Donath, S., & Perlen, S. (2010). Women's health in early pregnancy: findings from an Australian nulliparous cohort study. *The Australian and New Zealand Journal of Obstetrics and Gynaecology, 50*(5), 413–418. doi:10.1111/j.1479-828X.2010.01204.x

Geronimus, A. T. (2004). Teenage childbearing as cultural prism. *British Medical Bulletin, 69*, 155–166.

Geronimus, A. T., & Korenman, S. (1992). The socioeconomic consequences of teenage childbearing reconsidered. *Quarterly Journal of Economics, 107*, 1187–1214.

Gest, S. D., Mahoney, J. L., & Cairns, R. B. (1999). A developmental approach to prevention research: Configural antecedents of early parenthood. *American Journal of Community Psychology, 27*, 543–565.

Gillmore, M. R., Lewis, S. M., Lohr, M. J., et al. (1997). Repeat pregnancies among adolescent mothers. *Journal of Marriage and Family, 59*, 536–550.

Goldenberg, R. L., & Klerman, L. C. (1995). Adolescent pregnancy: Another look. *New England Journal of Medicine, 332*, 1161–1162.

Gotlib, I. H., & Goodman, S. H. (1999). Children of parents with depression. In W. K. Silverman & T. H. Ollendick (Eds.), *Developmental issues in the clinical treatment of children and adolescents* (pp. 415–432). New York: Allyn & Bacon.

Gotlib, I. H., & Lee, C. M. (1996). Impact of parental depression on young children and infants. In C. Mundt, M. J. Goldstein, K. Hahlweg, & P. Fiedler (Eds.), *Interpersonal factors in the origin and course of affective disorders* (pp. 218–239). London: Royal College of Psychiatrists.

Halbreich, U. (2005). The association between pregnancy processes, preterm delivery, low birth weight, and postpartum depressions—the need for interdisciplinary integration. *American Journal of Obstetrics and Gynecology, 193*, 1312–1322.

Halligan, S. L., Murray, L., Martins, C., & Cooper, P. (2007). Maternal depression and psychiatric outcomes in adolescent offspring: a 13-year longitudinal study. *Journal of Affective Disorders, 97*, 145–154.

Hammen, C., & Brennan, P. A. (2003). Severity, chronicity and timing of maternal depression and risk for adolescent offspring diagnoses in a community sample. *Archives of General Psychiatry, 60*, 253–258.

Herbst, M., Mercer, B., Beazley, D., et al. (2003). Relationship of prenatal care and perinatal morbidity in low-birth-weight infants. *American Journal of Obstetrics and Gynecology, 189*, 930–933.

Heron, J., O'Connor, T. H., Evans, J., Golding, J., & Glover, V. (2004). The course of anxiety and depression through pregnancy and the postpartum in a community sample. *Journal of Affective Disorders, 80*, 65–73.

Herrenkohl, E., Herrenkohl, R., Egolf, B., et al. (1998). The relationship between early maltreatment and teenage parenthood. *Journal Adolescence, 21*, 291–303.

Hessol, N. A., Vittingoff, E., & Fuentes-Afflick, E. (2004). Reduced risk of inadequate prenatal care in the era after Medicaid expansions in California. *Medical Care, 42*, 416–422.

Hutto, H. F., Kim-Godwin, Y., Pollard, D., & Kemppainen, J. (2011). Postpartum Depression Among White, African American, and Hispanic Low-Income Mothers in Rural Southeastern North Carolina. *Journal of Community Health Nursing*, *28*(1), 41-53. doi: 10.1080/07370016.2011.539088

Hipwell, A. E., Goossens, F. A., Melhuish, E. C., & Kumar, R. (2000). Severe maternal psychopathology and infant–mother attachment. *Development and Psychopathology, 12*, 157–175.

Hofferth, S. L. (1987). The children of teen childbearers. In S. L. Hofferth & C. D. Hayes (Eds.), *Risking the future: Adolescent sexuality, pregnancy and childbearing* (pp. 174–206). Washington, DC: National Academy Press.

Hoffman, S. D., Foster, E. M., & Furstenberg, F. F. (1993). Reevaluating the costs of teenage childbearing. *Demography, 30*, 1–13.

Holzman, C., Eyster, J., et al. (2006). A life course perspective on depressive symptoms in midpregnancy. *Maternal and Child Health Journal, 10*(2), 127–138.

Hope, T. L., Wilder, E. I., & Watt, T. T. (2003). The relationships between adolescent pregnancy, pregnancy resolution, and juvenile delinquency. *Sociological Quarterly, 44*, 555–576.

Hueston, W. J., Geesey, M. E., & Diaz, V. (2008). Prenatal care initiation among pregnant teens in the United States: An analysis over 25 years. *Journal Adolescent Health, 42*(3), 243–248. doi: 10.1016/j.jadohealth.2007.08.027

Ishikawa, N., Goto, S., Murase, S., Kanai, A., Masuda, T., Aleksic, B., Usui, H. & Ozaki, N. (2011). Prospective study of maternal depressive symptomatology among Japanese women, *Journal of Psychosomatic Research, 71(*4), 264–269. doi. org/10.1016/j.jpsychores.2011.02.001

Jenkins, J. M., Shapka, J. D., & Sorenson, A. M. (2006). Teenage mothers' anger over twelve years: Partner conflict, partner transitions and children's anger. *Journal of Child Psychology and Psychiatry, 47*, 775–782.

Kalmuss, D. S., & Namerow, P. B. (1994). Subsequent childbearing among teenage mothers: The determinants of a closely spaced second birth. *Family Planning Perspectives, 26*, 149–153.

Kessler, R. C., Berglund, P. A., Foster, C. L., et al. (1997). Social consequences of psychiatric disorders, II: Teenage parenthood. *American Journal of Psychiatry, 154*, 1405–1411.

Kinsman, S. B., & Slap, G. B. (1992). Barriers to adolescent prenatal care. *Journal of Adolescent Health, 13*, 146–154.

Klein, J. D. (2005). Adolescent pregnancy: Current trends and issues. *Pediatrics, 116*, 281–286.

Klerman, L. V., Cliver, S. P., & Goldenberg, R. L. (1998). The impact of short interpregnancy intervals on pregnancy outcomes in a low-income population. *American Journal of Public Health, 88*, 1182–1185.

Koenig, M., & Zelnik, M. (1982). Repeat pregnancy among metropolitan-area teenagers: 1971–1979. *Family Planning Perspectives, 14*, 341–344.

Kraepelin, E. (1921). *Manic-depressive insanity and paranoia*. Edinburgh: Livingstone.

Laditka, S. B., Laditka, J. N., Mastanduno, M. P., et al. (2005). Potentially avoidable maternity complications: An indicator of access to prenatal and primary care during pregnancy. *Women and Health, 41*, 1–26.

Lanes, A., Kuk, J. L. & Tamim, H. (2011). Prevalence and characteristics of Postpartum Depression symptomatology among Canadian women: A cross-sectional study. *BMC Public Health, 11*, 302. doi: 10.1186/1471-2458-11-302. Retrieved from: http://www.biomedcentral.com/1471-2458/11/302

Lee, C., & Gramotnev, H. (2006). Predictors and outcomes of early motherhood in the Australian longitudinal study on women's health. *Psychology, Health, and Medicine, 11*, 29–47.

Lehrer, J. A., Shrier, L. A., Gortmaker, S., et al. (2006). Depressive symptoms as a longitudinal predictor of sexual risk behaviors among US middle and high school students. *Pediatrics, 118*(1), 189–200. doi: 10.1542/peds.2005-1320

Levine, J. A., Pollack, H., & Comfort, M. E. (2001). Academic and behavioral outcomes among the children of young mothers. *Journal of Marriage and Family, 63*, 355–369.

Logsdon, M. C. (2008). Maternal role functioning in adolescents at 12 months postpartum. *Women's Health Care: A Practical Guide for Nurse Practitioners, 7*, 27–32.

Logsdon, M. C., Birkimer, J. C., Simpson, T., & Looney, S. (2005). Postpartum depression and social support in adolescents. *Journal of Obstetrics, Gynecology, and Neonatal Nursing, 34*, 46–54.

Logsdon, M. C., Hines Martin, V., & Rakestraw, V. (2009a). Barriers to depression treatment in low-income, unmarried, adolescent mothers in a southern, urban area of the United States. *Issues Mental Health Nursing, 30*, 451–455.

Logsdon, M. C., Usui, W., Pinto Foltz, M., & Rakestraw, V. (2009b). Intention to seek mental health treatment in adolescent mothers and a comparison group of adolescent girls. *Archives of Psychiatric Nursing, 23*, 41–49.

Logsdon, M. C., Foltz, M. P., Stein, B., Usui, W., & Josephson, A. (2010). Adapting and testing telephone-based depression care management intervention for adolescent mothers. *Archives of Women's Mental Health*, *13*(4), 307–317.

Luke, S., Salihu, H. M., Alio, A. P., et al. (2009). Risk factors for major antenatal depression among low-income African American women. *Journal Women's Health, 18*(11), 1841–1846. doi:10.1089=jwh.2008.1261

Lund, C., Breen, A., Flisher, A. J., Kakuma, R., Corrigall, J., Joska, J. A., et al. (2010). Poverty and common mental disorders in low and middle income countries: A systematic review. *Social Science and Medicine, 71*(3), 517–528.

Luster, T., Bates, L., Fitzgerald, H., & Vandenbelt, M. (2000). Factors related to successful outcomes among preschool children born to low-income adolescent mothers. *Journal of Marriage and Family, 62*, 133–146.

Mathews, T. J., Brady, E. & Hamilton, B. E. (2009). *Delayed childbearing: More women are having their first child later in life. NCHS data brief, no 21*. Hyattsville: National Center for Health Statistics.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*, 185–204.

Meintjes, I., Field, S., Sanders, L., van Heyningen, T., & Honikman, S. (2010). Improving child outcomes through maternal mental health interventions. *Journal of Child and Adolescent Mental Health, 22*(2), 73–82.

Michel, L., Mirzaei, F., O'Reilly, E. J., Pan, A., Willett, W. C., Kawachi, I., et al. (2011). Dietary intake of n-3 and n-6 fatty acids and the risk of clinical depression in women: a 10-year prospective follow-up study. *American Journal of Clinical Nutrition, 93*(6), 1337–1343. doi:10.3945/ajcn.111.011817

Miller-Johnson, S., Winn, D., Coie, J., Maumary-Gremaud, A., Hyman, C., Terry, R., & Lochman, J. (1999). Motherhood during the teen years: A developmental perspective on risk factors for childbearing. *Development and Psychopathology*, *11*, 85–100.

Moore, K. A., Myers, D. E., Morrison, D. R., Nord, C. W., Brown, B., & Edmonston, B. (1993). Age at first childbirth and later poverty. *Journal of Research on Adolescence, 3*, 393–422.

Moore, K., Morrison, D. R., & Greene, A. D. (1997). Effect on the children born to adolescent mothers. In R. Maynard (Ed.), *Kids having kids* (pp. 145–180). Washington, DC: The Urban Institute.

Mott, F. L. (1986). The pace of repeated childbearing among young mothers. *Family Planning Perspectives, 18*, 5–12.

Mumford, D. B., Saeed, K., Ahmad, I., et al. (1997). Stress and psychiatric disorder in rural Punjab: A community survey. *British Journal of Psychiatry, 170*, 473–478.

National Academy of Sciences (2008). *Adolescent health services: missing opportunities. Committee on Adolescent Health Care Services and Models of Care for Treatment, Prevention, and Health Development, National Research Council*. Retrieved Feb, 2011 from http://www.nap.edu.

Office for National Statistics (ONS). (2003). *General Household Survey*. London: ONS.

O'Hara, M. W., & Swain, A. M. (1996). Rates and risks of postpartum depression: A meta analysis. *International Review of Psychiatry, 8*, 37–45.

Orr, S. T., James, A. S., & Prince, C. B. (2002). Maternal prenatal depressive symptoms and spontaneous

preterm births among African-Americans women in Baltimore, Maryland. *American Journal of Epidemiology, 156*, 797–802.

Ostler, K., Thompson, C., Kinmonth, A. L., Peveler, R. C., Stevens, L., & Stevens, A. (2001). Influence of socio-economic deprivation on the prevalence and outcome of depression in primary care. *British Journal of Psychiatry, 178*, 12–17.

Paige, H. K., Lynch, S. K., Turkheimer, E., Emery, R. E., D'Onofrio, B. M., Slutske, W. S., et al. (2007). A behavior genetic investigation of adolescent motherhood and offspring mental health problems. *Journal of Abnormal Psychology, 116*(4), 667–683. doi: 10.1037/0021-843X.116.4.667

Paranjothy, S., Broughton, H., Adappa, R., et al. (2009). Teenage pregnancy: Who suffers? *Archives of Disease in Childhood, 94*(3), 239–245.

Patchen, L., Caruso, D., & Lanzi, R. G. (2009). Poor maternal mental health and trauma as risk factors for a short interpregnancy interval among adolescent mothers. *Journal of Psychiatric and Mental Health Nursing, 16*(4), 401–403. doi:10.1111/j.1365-2850.2008.01353.x

Patel, V., & Kleinman, A. (2003). Poverty and common mental disorders in developing countries. *Bulletin WHO, 81*, 609–615.

Patel, V., & Prince, M. (2006). Maternal psychological morbidity and low birth weight in India. *British Journal of Psychiatry, 168*, 284–285.

Pawlby, S., Hay, D. F., Sharp, D., Waters, C. S., & O'Keane, V. (2009). Antenatal depression predicts depression in adolescent offspring: Prospective longitudinal community-based study. *Journal of Affective Disorders, 113*(3), 236–243. doi:10.1016/j.jad.2008.05.018

Perry, D. F., Ettinger, A. K., Mendelson, T., & Le, H.-N. (2011). Prenatal depression predicts postpartum maternal attachment in low-income Latina mothers with infants. *Infant Behavior and Development, 34*(2), 339–350. doi:10.1016/j.infbeh.2011.02.005

Phipps, M. G., Rosengard, C., Weitzen, S., Meers, A., & Billinkoff, Z. (2008). Age group differences among pregnant adolescents: Sexual behavior, health habits and contraceptive use. *Pediatric and Adolescent Gynecology, 12*(1), 9–15. doi:10.1016/j.jpag.2007.07.009

Pogarsky, G., Thornberry, T., & Lizotte, A. (2006). Developmental outcomes for children of young mothers. *Journal of Marriage and Family, 68*, 332–344.

Quinlivan, J. A., Tan, L. H., Steele, A., et al. (2004). Impact of demographic factors, early family relationships, and depressive symptomatology in teenage pregnancy. *Australian and New Zealand Journal of Obstetrics and Gynaecology, 38*, 197–203.

Rahman, A., Bunn, J., Lovel, H., & Creed, F. (2007). Association between antenatal depression and low birth weight in a developing country. *Acta Psychiatrica Scandinavica, 115*, 481–486.

Rahman, A., Harrington, R., & Bunn, J. (2002). Can maternal depression increase infant risk of illness and growth impairment in developing countries? *Child: Care, Health and Development, 28*(1), 51–56. doi: 10.1046/j.1365-2214.2002.00239.x

Rahman, A., Malik, A., Sikander, S., Roberts, C., & Creed, F. (2008). Cognitive behaviour therapy-based intervention by community health workers for mothers with depression and their infants in rural Pakistan: A cluster-randomised controlled trial. *The Lancet, 372*(9642), 902–909. doi:10.1046/j.1365-2214.2002.00239.x

Raneri, L. G., Wiemann, C. M. (2007). Social ecological predictors of repeat adolescent pregnancy. *Perspective on Sex Reproductive Health*, *39*, 39–47.

Reid, V., & Meadows-Oliver, M. (2007). Postpartum depression in adolescent mothers: An integrative review of the literature. *Journal of Pediatric Health Care, 21*(5), 289–298. doi:10.1016/j.jpag.2009.09.003

Ricketts, S. A., Murray, E. K., & Schwalberg, R. (2005). Reducing low birthweight by resolving risks: Results from Colorado's Prenatal Plus program. *American Journal of Public Health, 95*, 1952–1957.

Rigsby, D. C., Macones, G. A. & Driscoll, D. A. (1998). Risk factors for rapid repeat pregnancy among adolescent mothers: A review of the literature. *Journal of Pediatric and Adolescent Gynecology, 11*, 115–126.

Riley, A. W., Coiro, M. J., Broitman, M., Colantuoni, E., Hurley, K. M., Bandeen-Roche, K., et al. (2009). Mental health of children of low-income depressed mothers: Influences of parenting, family environment, and raters. *Psychiatric Services, 60*, 329–336.

Riley M., Davey M. A. & King J. (2005). *Births in Victoria 2003–2004: Victorian Perinatal Data Collection Unit*. Melbourne: Victorian Government Department of Human Services. http://www.health.vic.gov.au/ccopmm/downloads/annrep0304.pdf

Rosengard, C. (2009). Confronting the Intendedness of Adolescent Rapid Repeat Pregnancy. *Journal of Adolescent Health, 44*(1), 5–6.

Rutter, M. (1966). The developmental psychopathology of depression: Issues and perspectives. In M. Rutter, C. E. Izard, & P. B. Read (Eds.), *Depression in young people* (pp. 3–30). New York: Guilford.

Rutter, M., & Quinton, D. (1984). Parental psychiatric disorder Effects on children. *Psychological Medicine, 14*, 853–880.

Schelar, E., Franzetta, K., & Manlove, J. (2007). *Repeat teen childbearing: Differences across states and by race and ethnicity. Child Trends Research Brief*. Washington, DC: Child Trends.

Statistics Canada (2006). Births. Catalogue 84F01210X 2006. Ontario, Canada. Statistics Canada. Retrieved from: http://www.statcan.gc.ca/pub/84f0210x/84f0210x2006000-eng.htm

Suri, R., Altshuler, L., Hellemann, G., Burt, V. K., Aquino, A., & Mintz, J. (2007). Effects of antenatal depression and antidepressant treatment on gestational age at birth and risk of preterm birth. *American Journal of Psychiatry, 164*, 1206–1213. doi: 10.1176/appi.ajp.2007.06071172

Swami, V., Loo, P., & Furnham, A. (2010). Public knowledge and beliefs about depression among urban and rural Malays in Malaysia. *International Journal*

of Social Psychiatry, 56(5), 480–496. doi:10.1177/0020764008101639

Taylor, J. L. (2009). Midlife impacts of adolescent parenthood. *Journal of Family Issues, 30*(4), 484–510.

Terry-Humen, E., Manlove, J., & Moore, K. A. (2005). *Playing catch-up: How children born to teen mothers fare*. Washington, D.C.: The national campaign to prevent teen pregnancy.

Thurman, A. R., Hammond, N., Brown, H. E., & Roddy, M. E. (2007). Preventing repeat teen pregnancy: Postpartum depot medroxyprogesterone acetate, oral contraceptive pills, or the patch? *Journal of Pediatric and Adolescent Gynecology, 20*(2), 61–65. doi:10.1016/j.jpag.2006.11.006

Trad, P. V. (1986). *Infant depression, paradigms and paradoxes*. New York: Springer.

Tzilos, G. T., Zlotnick, C., Raker, C., Kuo, C & Phipps, M. G. (2012). Psychosocial factors associated with depression severity in pregnant adolescents. *Archives of Women's Mental Health, 15*(5), 397–401.

UK National Statistics (2008). Births statistics: Births and patterns of family building England and Wales 2007. (Series FM1) No. 36, Office for National Statistics. Retrieved from: http://www.statistics.gov.uk/statbase/Product.asp?vlnk=5768

Wakschlag, L. S., Gordon, R. A., Lahey, B. B., Loeber, R., Green, S. M., & Leventhal, B. L. (2000). Maternal age at first birth and boys' risk for conduct disorder. *Journal of Research on Adolescence, 10*, 417–441.

Weissman, M. M., Prusoff, B. A., Gammon, G. D., Merikangas, K. R., Leckman, J. R., & Kidd, K. K. (1984). Psychopathology in the children (ages 6–18) of depressed and normal parents. *Journal of American Academy of Child Psychiatry, 23*, 78–84.

Weissman, M. W., Wickramaratne, P., Nomura, Y., Warner, V., Pilowsky, D., & Verdeli, H. (2006). Offspring of depressed parents: 20 years later. *American Journal of Psychiatry, 163*, 1001–1008.

Whiffen, V. E., & Gotlib, I. H. (1989). Infants of postpartum depressed mothers: Temperament and cognitive status. *Journal of Abnormal Psychology, 98*, 274–279.

Whitbeck, L. B., & Crawford, D. M. (2009). Gestational risks and psychiatric disorders among indigenous adolescents. *Community Mental Health Journal, 45*(1), 62–72. doi:10.1007/s10597-008-9172-5

Wickrama, K. A., Wickrama, T., & Lott, R. (2009). Heterogeneity in youth depressive symptom trajectories: Social stratification and implications for young adult physical health. *Journal of Adolescent Health, 45*(4), 335–343.

Wiemann, C. M., Berenson, A. B., Pino, L. G., et al. (1997). Factors associated with adolescents' risk for late entry into prenatal care. *Family Planning Perspectives, 29*, 273–276.

Wingwontham, S., Thitadilok, W., & Singhakant, S. (2008). Prevalence of mental health problem during first-half pregnancy at Siriraj Hospital. *Journal of the Medical Association of Thailand, 91*(4), 452–457.

Winship, G. (2009). Poor maternal mental health and trauma as risk factors for a short interpregnancy interval among adolescent mothers. *Journal of Psychiatric and Mental Health Nursing, 16*, 401–403.

Woodward, L., Fergusson, D. M., & Horwood, L. J. (2001). Risk factors and life processes associated with teenage pregnancy: Results of a prospective study from birth to 20 years. *Journal of Marriage and Family, 63*, 1170–1184.

Wulsin, L., Somoza, E., Heck, J., & Bauer, L. (2010). Prevalence of Depression among Mothers of Young Children in Honduras. *The International Journal of Psychiatry in Medicine*, *40*(3), 259–271.

Zlotnick, C., Miller, I. W., Pearlstein, T., Howard, M., & Sweeney, P. (2006). A preventive intervention for pregnant women on public assistance at risk for postpartum depression. *American Journal of Psychiatry, 163*, 1443–1445. doi:10.1176/appi.ajp.163.8.1443