Severe Mental Illness and Reproductive Health

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Abstract

Severe mental illness (SMI) during pregnancy and the postpartum has the potential to impact negatively on the well-being of the mother, the mother-infant dyad, and her family. Untreated SMI can lead to poor attendance to antenatal care, impair mother-infant attachment, and, in rare cases, lead to suicide and infanticide. The wider usage of newer antipsychotics, deinstitutionalization, lessened stigma, and greater opportunities for social interaction have allowed many women with preexisting severe mental illness to embrace the possibility of, and plan for, parenthood. However, mothers with SMI in general continue to experience multifaceted risks such as unplanned pregnancies, obstetric complications, comorbid substance abuse, poor social support, and interpersonal violence which impact on outcomes and stretch available health resources. Mental health services and clinicians need to be aware that their female patients with SMI of reproductive age can and often do become pregnant and that preventative strategies (preconception counseling) for those who plan to become pregnant and contingent strategies (timely referral pathways and specialist consultations) for those who have unplanned pregnancies should become part of their core business. Obstetric and child health services need to work in conjunction with mental health services in identifying the needs of high-risk women, who may develop index episodes of severe mental illness during their perinatal period, particularly in the postpartum. As psychotropic medication is the mainstay of treatment for women with SMI, a necessary impetus is on the need for robust safety data in pregnancy and breastfeeding, so the woman and her family can make informed choices. Equally important though are the relational and sociocultural forces that pervade the lives of pregnant women with SMI, which need to be explored and addressed. Despite advocacy from caregivers, women's groups, and health professionals, services for mothers with mental illness are unevenly distributed worldwide with majority of the services only available in developed or high-income countries. In low- and middle-income countries (LAMICs), where high rates of maternal morbidity have been reported, the focus is predominantly on physical health with a less emphasis on mental health services. Strategies to overcome this challenge will be needed. In this chapter, we focus on the spectrum of perinatal healthcare for women with SMI.

Keywords

Severe mental illness · Pregnancy · Postpartum · Mother-infant dyads · Perinatal services

Introduction

Motherhood is an exciting time full of anticipation for many women and their families. For some it is a time of stressful adjustment, which includes the need to manage physical and mental ill-health, relationship tension, and social adversities. It

is known that women with severe mental illness (SMI) struggle with all aspects of their sexual and reproductive health.

Howard et al. (2002) found that women with psychotic disorders have reduced fertility rates compared to controls, although it is likely that psychosocial causes such as lowered marriage rates and long-term relationship attainment and social isolation play more important roles than physical causes such as high prolactin levels associated with antipsychotic use (Abel and Morgan 2011). Miller and Finnerty in their study found that women with schizophrenia and related disorders reported high rates of sexual assaults, as well as unstable, less satisfying relationships than their non-mentally ill counterparts (Miller and Finnerty 1996). In addition the studied women had low rates of contraception use and therefore were exposed to the risk of unwanted pregnancies. When pregnant, they face birth complications, risks of relapse of their disorders, and losing child custody.

Suicide remains a leading cause of maternal mortality in high-income countries and possibly in low- and middle-income countries (LAMICs) as well if reporting is better. That being so, such a finding belies a complexity beyond the biomedical model, where cycles of poverty, social inequity, and intimate partner violence interact with inadequately treated mental illness, to lead to women feeling "... humiliated, entrapped and isolated" and thus susceptible to suicide (Fisher 2016, p. 192). Beyond these catastrophic but thankfully rare outcomes, maternal severe mental illness can devastate the individual and their family in multifaceted ways, often with negative downstream effects in terms of child development (Stein et al. 2014).

In high-income countries, the focus of reproductive mental health has largely been on screening for depression and anxiety during the perinatal period. While important as a public health measure, the use of the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al. 1987) has major limitations in application to those disabled by SMI but do not necessarily have significant depressive or anxiety symptoms. Programs for screening of high-prevalent disorders during pregnancy may need to be adapted to target those with low-prevalent but high-risk SMI. Notwithstanding this recognized limitation, the care of women with SMI has evolved from the initial attention on new mothers with psychotic disorders (postpartum psychosis) to the mental health of pregnant women in general and the developmental trajectories of children of parents with mental illness (Boyce 2017). The postnatal has become perinatal with a broader period of time (preconception to a 1000 days postpartum) in which services and clinicians can provide flexible and patient-centered assessment and intervention.

Emergent evidence suggests that the postnatal period can be a specific risk phase in a woman's life. Early epidemiological data on the heightened risks of psychosis in the first month after giving birth (Kendell et al. 1987) have been supplemented by information on potential mechanisms, highlighting a biological vulnerability model involving an interaction between the endocrine, immunological, and neuropsychiatric systems (Bergink et al. 2013). The postpartum period is seen as a convergence of vulnerabilities, which in turn necessitates a focus on

identification of risk factors during the antenatal period. As a corollary, the growth in the understanding of developmental origin of fetal health and disease (DoHAD) has also focused on pregnancy health and exposures (such as maternal mental ill-health, stress, and teratogens) and their epigenetic impact on child development (Lewis et al. 2014). A recent study (Ursini et al. 2018) showed the importance of placental functioning in the mediation of the interaction between obstetric complications and schizophrenia genetic-risk foci. These findings lead to a need for targeted interventions such as enhanced antenatal care for women with schizophrenia, in whom it can be conceptualized as a preventative strategy. The optimum antenatal care also has the potential to address modifiable risk factors such as weight and physical activities, nutrition, micronutrient deficiencies, as well as interpersonal violence, in improving quality of life.

The definition of "severe" or "serious" mental illness can sometimes depend on factors beyond the usual psychiatric nosology. Availability of mental health provision, or psychiatric expertise, can sometimes determine definitions, through a process of inclusion and exclusion. In the perinatal field, severe mental illness is often defined as schizophrenia, bipolar disorder, and affective psychosis, including postpartum psychosis (Jones et al. 2014). In low- and middle-income countries (LAMICs) like India, acute transient psychosis can be a common presentation during postpartum period (Chandra et al. 2015), as is catatonia, which is increasingly recognized in developed countries as well. Catatonia during postpartum period can have significant impact on the mother's health and infant care and is considered a psychiatric emergency (Nahar et al. 2017).

The focus on the psychotic disorders, while important in terms of highlighting risks and management complexity, may reflect a biomedical bias and neglect the fact that other disorders, such as personality disorders, eating disorders, post-traumatic stress disorder, obsessive compulsive disorder, and mental and behavioral sequelae of substance dependence, are also severe in the way they fragment a person's sense of self and function. Pregnant women with borderline personality disorders and eating disorders have been shown to be at risk of obstetric and neonatal complications, as well as mother-infant relational disruptions. Models of care that are needs-based that attend to the physical, psychiatric, and the associated relational contexts will likely benefit all women with SMI irrespective of their diagnoses.

A detailed discussion of the role of fathers, intimate partner violence, comorbid substance abuse, and medical disorders for women with SMI is beyond the scope of this chapter and will only be referred to in relevant sections.

Women with SMI from Low- to Middle-Income Countries (LAMICs)

Globally, the high-impact social determinants for mental ill-health in LAMICs are seen to be poverty and social exclusion, gender disadvantage, and loss, trauma, and displacement (Patel 2007). The specific impacts of these risk factors on the

perinatal mental health needs of women from these countries are only recently investigated.

There is scant literature for the reproductive health of pregnant women with severe mental illness from LAMICs, and to date, there is no intervention targeting this group. Nevertheless, one can extrapolate using the findings for women with common perinatal disorders such as depression and anxiety in LAMICs, as the social determinants for these disorders will likely to be of relevance in moderating more severe conditions such as psychotic disorders.

Fisher and colleagues in their seminal review found that the prevalence rates of both antenatal and postnatal nonpsychotic common perinatal disorders were higher in LAMICs than in high-income countries (Fisher et al. 2012). Risk factors for these disorders were found to include a past history of mental health problems, intimate partner relationship difficulties (partner lacking empathy or openly antagonistic), exposure to violence, and a lack of reproductive autonomy (Rahman et al. 2013b). Additionally, disruptive relationships with mothers-in-law, infant gender disappointment, ethnic and religious minority, and relative rather than absolute social disadvantage (Fisher et al. 2012) were also found to predispose women to mental health problems. Baron and colleagues (2016) carried out a situational analysis in Ethiopia, India, Nepal, South Africa, and Uganda and found a number of challenges to the delivery of optimal perinatal mental healthcare for women living in these countries. Among the important findings, two issues are noteworthy: firstly, there is generally a lack of any mental health information system, so that data available on prevalence and outcomes of severe mental illness are not clear. Secondly there is no dedicated perinatal mental health service, with a consequent lack of prescription guidelines for pregnancy and breastfeeding. However, in all the countries studied, referral mechanisms were in place, mostly to general mental health services and inpatient units (Baron et al. 2016), suggesting that all is not dire. Overcoming access barriers, training, and integration of mental health into maternal and child health programs (Rahman et al. 2013a) may be sustainable solutions going forward.

There is evidence to suggest that interventions which are community based with outreaching capabilities, which involve the family and emphasize community participation, lead to better outcomes for people living with severe mental illness in LAMICs (Patel 2007). In a mother and baby unit in India, the woman and her baby are often admitted with a family member (usually a female relative of the mother) (Chandra et al. 2015), which represents both a cultural adaptation of an intervention developed in high-income countries and an opportunity for systemic intervention that can sometimes be overlooked.

Women living in high-income countries who are part of an indigenous minority or who come from culturally and linguistically diverse backgrounds (often LAMICs) represent another group that is understudied. Healthcare providers for these women need to be aware of gender roles, family structures, and philosophies, as well as personality and self-esteem in the context of extended family settings. Better understanding of the cultural meaning of childbirth and culturally sanctioned dependency for the individual woman (Henshaw et al. 2017) will also be needed.

Prevalence and Course of SMI During the Pregnancy

Studies from high-income countries have demonstrated that the prevalence rates for SMI during pregnancy are: 0.4% for psychotic disorders, 2.8% for broadly defined bipolar disorders, 0.3% for eating disorders, and 0.7% for borderline personality disorder (Vesga-Lopez et al. 2008; Howard et al. 2018). As yet, there is no prevalence data on pregnant women with SMI in low- and middle-income countries (LAMICs); however it is possible that rates of some SMIs are higher in these countries given that the rates of common perinatal psychiatric disorders are higher (Fisher et al. 2012).

The literature on the course of psychotic disorders such as bipolar affective disorder during pregnancy often has methodological limitations with conflicting results with some studies indicating that pregnancy may have a protective or neutral effect (Sharma and Pope 2012). What is clear however, is that the discontinuation of mood-stabilizing pharmacotherapy during pregnancy exposes the pregnant woman with bipolar to a heightened risk of relapse (Viguera et al. 2007; Sharma and Pope 2012). This is more so if she is primiparous, has obstetric complications, or is treated with unopposed antidepressants (Sharma and Pope 2012). In the same way, stability of illness control during the pregnancy appears to be protective against the development of postpartum episodes (Sharma and Pope 2012). For pregnant women with schizophrenia, rates of relapse during pregnancy requiring admission varied significantly but can be as high as 40.8% in one study (Harris et al. 2018). Women who experienced psychiatric admissions during the pregnancy were shown to have reduced antenatal care attendance as well as adverse psychosocial outcomes such as child protective services involvement (Harris et al. 2018).

The Preconception

Family Desire, the Motherhood Journey and Preconception Care

Successful motherhood can be seen as a marker for recovery for many women with severe mental illness. Nevertheless, even for women who have been stable for prolonged periods of time, the journeys to become parents are often strewn with challenges, ranging from the feelings of guilt to stigma to coping with the dual identity of needing help for their illness while at the same time being expected to be a competent mother (Dolman et al. 2013). The adage of "when a child is born, a mother is also born" highlights the transformative effect that motherhood can bring, a process that can be challenging for women with SMI who have been struggling with an identity tightly woven around illness and recovery. While little studied in women with SMI, the psychological transformation and reorganization of the maternal identity can be further impaired in those who have histories of poor parenting, abuse, and neglect (Judd et al. 2018).

Women with SMI's narratives on motherhood also mirror those without mental illness, in that the general challenges of not knowing what to do with the baby and

managing conflicting work and relationship demands are important to their family planning (Dolman et al. 2013; Nguyen et al. 2015). There may also be felt guilt around exposing the unborn child to the risks of medication, psychiatric destabilization, as well as pregnancy complications. Notwithstanding these challenges, a metasynthesis by Dolman and colleagues highlighted that motherhood can be esteem enhancing and is seen as *central* to the lives of women with SMI (Dolman et al. 2013). Furthermore, many women with SMI appear to have strong maternal desires (Nguyen et al. 2015) which can motivate their behaviors and engagement with their psychiatric treatments. An important study by Kendler and colleagues (2017) on pregnant women who abused illicit drugs showed that the risk of drug use was reduced during the pregnancy, as well as the postpartum, suggesting a protective effect of pregnancy on addictive behaviors. The social and interpersonal processes associated with maternal caregiving can therefore have the potential to interrupt brain-based neuro-adaptation (Massey and Wisner 2018) which in turn may have implications for those suffering from SMI. Pregnancy is an opportunity for women with SMI to minimize and cease maladaptive behaviors (illicit substance use treatment) and optimize adaptive behavior (compliance with medication, relationship counseling, mobilize support network).

Clinicians also need to be aware of the determination by women with SMI to take care of themselves and to exert personal agency in their motherhood journeys, and if relapse happens, then they would "deal with it and. . .come out of it" (Phillips and Thomas 2015, p. 4). This resilience is sometimes discrepant to the treating professionals' attitudes, which can be around symptom control and risk appraisals, with the sidelining of maternal desire as unrealistic or secondary goals.

The NICE guidelines (NICE 2016) suggest that all women with SMI should be given information about how their treatments might affect them and their babies, should they become pregnant. Along this line, it is worthwhile for mental health clinicians, particularly those caring for patients with psychotic disorders, to have a "surveillance of pregnancy intentions" (Stephenson et al. 2018, p. 1838) in their patients. This can be part of routine physical healthcare. Women with SMI who are actively planning a pregnancy should have an opportunity to have a preconception counseling discussion, preferably with a perinatal specialist.

A suggested content of such discussion together with general aspects of sexual and reproductive healthcare for women with SMI is listed in Table 1.

Reproductive Safety of Antipsychotics, Mood Stabilizers, Clozapine, and ECT

It is important to frame the discussion of psychotropic use during pregnancy and breastfeeding around the risk-benefit analysis of treatment rather than just focusing on the safety of medication. A pregnant woman with SMI has the right to receive treatment and to remain well, which would give her and her unborn child the best chance of success. It is necessary to address drugs and alcohol consumptions, and sometimes there is a need to highlight the patient's dissonance in withholding

Table 1 Sexual and reproductive health and preconception care for women with SMI

Sexual and reproductive health for all women with SMI of childbearing age
Health and social screening
STI screening
Pap smears
Screen for intimate partner violence
If has children, how are they caring for their children
Review the utility and safety of psychotropics in women of reproductive age
Teratogenic potential given high rates of unplanned pregnancies
Impact on fertility
Address smoking, alcohol, and illicit drug use
Optimize physical health, and manage any comorbid disorders such as premenstrual dysphoric disorder or polycystic ovarian syndrome
Family planning
Contraception, e.g., long-acting reversible contraceptives (LARC)
Plan for unexpected pregnancy, i.e., contact healthcare and do not suddenly cease medication
Access to reproductive choices (support around termination and pregnancy loss)
Engage with regular GP
Trauma-informed principles in psychiatric care
Avoid re-traumatization
Affect management (managing arousal in nondestructive ways)
Empowering women
Working collaboratively with flexibility
Working through grief and loss associated with past trauma
Preconception counseling
Review past and recent history of SMI, including risks when unwell, hospitalization, and impact on function and relationships
Discuss known safety data of psychotropics during pregnancy and breastfeeding
Individualized risk-benefit analysis
Measure prolactin level, and consider switching to another agent if hyperprolactinemia, provided clinically safe to do so
Explore maternal (and paternal) desires, fears, stigma, appropriate sources of information
Explore and process anxiety around the risk of their children inheriting the condition
Review and counsel on any cigarette, alcohol, or illicit drug use
Optimize weight, diet, and exercise
Micronutrient and vitamin supplementation (folate, iron, Vit D)
Relationship with intimate partner – explore practical and emotional availability of partner and quality of relationship
Review support network, particularly for available support postpartum

Frayne et al. 2009; Bloomfield and Rasmussen 2012; Acera Pozzi et al. 2014; Hauck et al. 2015

necessary medication for fears of negative effects on the fetus yet continuing to smoke, or use alcohol and drugs, which can all have deleterious effects on the pregnancy and child developmental outcomes. Non-pharmacological options for management of anxiety and stress should be discussed.

Table 2 Obstetric and neonatal risks for women with SMI

Risks	Schizophrenia	Bipolar	Other SMIs
Antenatal	Later presentation to antenatal care	Placenta previa	BPD
		APH	Low engagement with
	APH	Preeclampsia and gestational hypertension	Antenatal care
	Preeclampsia and gestational hypertension		GDM
			PROM
	GDM	GDM	Thromboembolic disease
	Thromboembolic disease		Chorioamnionitis
	IUGR		Eating disorders
	Psychiatric hospitalization		Gestational weight gain disturbance
Delivery	Preterm birth	Preterm birth	BPD
	Placental abruption	Caesarean or instrumental delivery	Preterm birth
			Caesarean delivery
			Eating disorders
			Preterm birth
	Fetal distress		Caesarean delivery
	Induction of labor		
	Non-elective caesarean delivery		
Neonatal/ infant	Stillbirth	Reduced Apgar scores	BPD
	LBW		Low Apgar scores
			Resuscitation
	Cardiovascular congenital abnormalities	SGA	LBW
	Reduced Apgar scores	LGA	Child protection involvement
			Eating disorders
			LBW and SGA
	Child protection involvement		Early cessation of breastfeeding
		Mood episodes in the postpartum	

Jablensky et al. 2005; MacCabe et al. 2007; De Genna et al. 2012; Nguyen et al. 2013; Judd et al. 2014; Blankley et al. 2015; Kimmel et al. 2016; Pare-Miron et al. 2016

APH antepartum hemorrhage, *GDM* gestational diabetes, *IUGR* intrauterine growth retardation, *LBW* low birth weight, *LGA* large for gestational age, *PROM* premature rupture of membranes, *SGA* small for gestational age

Table 2 summarizes the obstetric and neonatal risks associated with severe mental illness during the pregnancy and postpartum. It is often difficult to untangle the effects of the illness and its comorbidities (obesity, diabetes, social adversities, substance use, exposure to violence) and the use of psychotropics on the pregnancy (McAllister-Williams et al. 2017). There is evidence suggesting that some

of the risks highlighted occur in both treated and untreated women with SMI (Boden et al. 2012).

The impact on the child of untreated depression and anxiety is well known (Stein et al. 2014) and can range of developmental problems as well as socio-emotional disorders such as ADHD and affective illnesses. In terms of child outcomes for women with psychotic disorders (particularly schizophrenia), there are additional risks having child protection services involvement and having their children placed in care. It is likely that child protection risk is an interaction between the untreated mental illness, domestic violence, substance abuse, and social instability and lack of adequate support.

As pregnant women cannot be enrolled in randomized control trials, it is vital for clinicians and their patients to be aware of and place context on the sometime conflicting findings based on observational studies. In so far as data available, critical analysis of the literature is needed and requires an understanding of the research design (retrospective versus prospective), including potential confounding factors as well as the statistical tests employed (Einarson 2014). For example, some studies have shown an increased relative risk of septal heart defects with selective serotonin reuptake inhibitor (SSRI) exposure, but the absolute risk remains small. There is also a need to differentiate between an association and causation, and many studies have failed to provide data in support of a biologically plausible mechanism for their findings. Another important aspect relates to whether a finding, even if statistically significant, is of clinically relevance.

A detailed discussion of the safety of psychotropics is beyond the scope of this chapter, and only a brief synopsis is provided here. The reader is advised to consult other texts such as *Psychopharmacology and Pregnancy: Treatment Efficacy, Risks, and Guidelines* (Galbally et al. 2014) and up-to-date reviews.

Studies on the SSRIs as a class often have methodological limitations with conflicting results. While the use of SSRIs during pregnancy has been associated with some negative outcomes, such as increased risk of miscarriage, septal heart defects, prematurity, low birth weight, poor neonatal adjustment, and potential neurodevelopmental problems, it is often difficult to determine whether these outcomes are due to the medication or the underlying illness, or a third set of factors, such as maternal obesity and smoking and alcohol use.

Evidence available suggests that both first-generation antipsychotics (FGA) and second-generation antipsychotics (SGA) are not major teratogens (McAllister-Williams et al. 2017). A recent large and powered study (Huybrechts et al. 2016) into the more common atypical antipsychotics use during pregnancy (quetiapine, aripiprazole, olanzapine, risperidone, and ziprasidone) concluded that antipsychotics exposure during early pregnancy do not increase the risk of major congenital malformations overall.

As SGAs are associated with metabolic risks in general, women who take these medications during pregnancy may be at an increased risk of gestational diabetes (Galbally et al. 2019), excessive gestational weight gain, and gestational hypertension (McAllister-Williams et al. 2017). There is evidence of poor neonatal adjustment and increased in neonatal motor tone, particularly in high doses. Longer-term

data on neurodevelopmental outcomes of antipsychotic exposure during pregnancy are limited but reassuring (Haskey and Galbally 2017).

A recent review on clozapine exposure during pregnancy (Mehta and Van Lieshout 2017) concluded that there remains very limited data to address safety. Clozapine's use during pregnancy may lead to maternal complications such as diabetes, as well as perhaps a moderate increased risk of congenital malformation and poor neonatal adjustment necessitating close obstetric and neonatal management. Monitoring of serum levels and fetal well-being is advisable (Nguyen et al. 2019). It is important to acknowledge that patients who take clozapine have often failed in other therapies, so there are limited alternatives.

Lithium's use during pregnancy is associated with an increased risk of malformation, although the magnitude of this risk may not be as high as previously thought (Patorno et al. 2017; Munk-Olsen et al. 2018). There is a documented increased risk of Ebstein Anomaly, with an absolute risk of 1/1000. It is likely that lithium may also affect other aspects of the pregnancy such as fetal growth, obstetric complications (polyhydramnios), as well as neonatal adjustment difficulties although the extent of the risks and whether they are related to serum levels or not remain unclear (Poels et al. 2018). While the aim would be to maintain the lowest serum lithium level required to maintain psychiatric stability during pregnancy, regular monitoring is required due to fluid shifts across the trimesters (see Table 2). Despite these risks, lithium remains the treatment of choice throughout the pregnancy and the peripartum for women with severe bipolar affective disorder. The limited data on lithium exposure during pregnancy showed no evidence of neurodevelopmental deficits (Haskey and Galbally 2017). Valproate should be avoided in women with reproductive age group as it is considered as a major teratogen (McAllister-Williams et al. 2017).

Electroconvulsive therapy is a necessary treatment for severe postpartum mood disorders associated with psychosis, catatonia, or suicidal and physical health risks. In pregnancy, evidence available suggests that it is a safe treatment (especially in the second trimester), and the risk of adverse effects, such as anesthetics complications, fetal bradyarrythmias, and premature labor, appear low (Anderson and Reti 2009).

As an estimated 50% of pregnancies are unplanned, there is often an urgent need for easy-to-retrieve, reliable, and up-to-date information for both patients and primary healthcare staff. Websites such as https://mothertobaby.org/news-press/birth-defects-prevention-theres-an-app-for-that/ and www.mothersmatter.co.nz provide easy to understand information that is often updated. The provision of written information via printable pamphlets is helpful in the risk-benefit analysis discussion, which can be given to family and other health providers involved.

Dosett and colleagues posed the question in their editorial, No Perfect Choice: "How can we, as physicians, bridge the gap between treatment options we can offer patients and what they are willing to accept?" (Dossett et al. 2017, p. 29). An answer might lie in a therapeutic relationship characterized by flexibility and heuristics. A heuristic can be defined as "a simple procedure that sets out to find adequate though often imperfect solutions to complex questions" (Kahneman 2011, p. 98).

To take the example of bipolar disorders, which are high-risk disorders in the perinatal period, it has been suggested that three pharmacological strategies are employed (Boyce and Buist 2016):

- Medication free with close monitoring – may be suitable for women with a prolonged period of stability, few past episodes, good support network, and low risk of self-harm.
- Partial prophylaxis – the woman remains medication free in the first trimester, but having it (atypical antipsychotics or lithium) reinstated from the second trimester or immediately postpartum.
- Full prophylaxis throughout the peripartum – for women with severe disorders and at high risk of relapse.

Contingency planning is needed in all cases, and any heuristic algorithm has to be adapted with emergent information.

There are many benefits to breastfeeding, not the least of which it enhances attachment and provides a safe source of nutrition for babies born to women in LAMICs. To this end, women with SMI and their clinicians should actively discuss breastfeeding and proactively navigate the complex issues around medication safety, agency and patient preference, guilt, societal and family pressure, and the risks of relapse with sleep deprivation. Many psychotropics are compatible with breastfeeding in the context of an individualized risk-benefit analysis. Lithium has highly variable milk excretion levels, but is not considered to be a contraindication in breastfeeding by some experts. Clozapine is not recommended for use in breastfeeding. Breastfeeding and medication data collection such as *Lactmed* https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm and updated editions of *Medication and Mothers Milk* (Hale 2017) provide a relatively up-to-date safety data on most psychotropics. In all cases of breastfeeding on psychotropics, the baby should be monitored for growth and development.

Ethical Issues: Obtaining Informed Consent

Snellen and colleagues (2014) provide a succinct summary of the ethical principles relevant to the prescription of psychotropics during pregnancy, including the historical struggle between *beneficence*, which is to do good or act for the benefit of another (which is sometimes used to justify paternalism and authority of the doctor), and *autonomy*, the patient's right to self-determinism, including the right to make unwise decisions. Local laws and ethical guidance aside, the nuanced and real-life application of the process of obtaining informed consent, which is central to the practice of psychiatry, is often challenging. It requires the assessment and processing of *competence*, *voluntariness*, adequate *disclosure* of risks, *understanding*, and *joint decision-making* (Snellen et al. 2014).

In relation to perinatal mental health, four other aspects are important. Firstly, the mother must make a decision that will have effect on her child, and she may forgo her

needs in service of those of the child. Secondly, there is a lack of established safety data, and often discussions around risks are speculative. Thirdly, while these ethical principles emphasize the rights of an individual, many pregnant and postnatal women from LAMICs live together with their extended family, where there may be rigid roles and hierarchies and where collectivistic decision-making occurs. Finally, given the relapsing nature of chronic psychosis, patients may have intermittently impaired capacity. Using a preventative ethics model with the aim of assisted decision-making, anticipating potential peripartum difficulties, such as having a birth plan which includes staff and equipment support, and appropriate notification of relevant psychiatric and obstetric staff of acute issues (Acera Pozzi et al. 2014) will be needed. It has also been proposed that a substitute judgment, that is, patient preferences expressed during periods of psychiatric stability, and an identified surrogate decision-maker, be used in case the patient has impaired capacity (McCullough et al. 2002).

Pregnancy Care

Imagine a woman with SMI on medication discovering an unplanned pregnancy. She would have searched the Internet for information on the potential toxicity of medication or just assumes the worse. Upon hearing confusing, sometimes pejorative comments from families and even healthcare professionals, she would cease her medication. Her partner may be supportive but not attuned to her anxiety or distant and dismissive. She would have to wait to get an appointment with the general practitioner or an obstetrician. She may need to commute a long distance to get to her antenatal care. In the meantime, her anxiety would be heightened, and she would be besieged with guilt about the impact of medication already taken on her unborn child or her illness relapsing because she has ceased her medication. At her first antenatal appointment, she would worry that if she discloses her illness, staff might not think she is capable of caring for her child and notify child protection services. What ought to be a natural and even celebratory process can be filled with angst and despair.

In high-income countries where there are available resources, early intervention using integrated models of care, in the forms of specialist multidisciplinary stand-alone antenatal clinics or a psychiatric liaison service embedded in the obstetric service, will be needed in managing pregnant women with SMI (Galbally et al. 2010; Nguyen et al. 2013; Judd et al. 2014). Given the high rates of medical comorbidities for pregnant women with SMI, it is necessary to envisage antenatal care for women with SMI to have similar approaches to well-established services for medically high-risk pregnancies, such as the Maternal-Fetal Medicine Specialty (Galbally et al. 2017).

Enhanced Multidisciplinary Antenatal Care

The principles of enhanced antenatal care for a pregnant woman with SMI and her family can be summarized as *comprehensive*, *consistent*, and *collaborative* which

are the basis of good care for any pregnant woman (Health 2018) or for that matter any person suffering from a mental illness (Patel and Hanlon 2018).

Women with SMI are at risk of obstetric and neonatal complications yet often present late in their pregnancies and have fewer antenatal appointments (Miller and Finnerty 1996). Phillips and colleagues (Phillips 2017) in their study found that pregnant women with SMI often perceive not getting enough information about the first antenatal appointment or conversely can be overwhelmed by information. Their anxiety can be further compounded by a lack of clear guidance on addressing their mental health needs during pregnancy care, or being exposed to conflictual information, possibly reflecting uncertainty or lack of knowledge from staff (Dolman et al. 2013).

Studies have found that among publicly funded maternity services, women with SMI often struggle with not having the same midwife allocated to them throughout the pregnancy (Hauck et al. 2013; Phillips and Thomas 2015). In a retrospective study of pregnant women with SMI attending a specialist clinic in Western Australia, factors such as continuity of care with the same midwife and obstetrician can personalize the care encounter and engender trust and understanding without stigma (Hauck et al. 2013). The consistency in care allows for sharing of information, collaborative development of management plans and support networks, as well as utilizing the local resources available (Health 2018).

There is evidence that women with schizophrenia have lower rates of undergoing the oral glucose tolerance test (OGTT) (Ben-Sheetrit et al. 2018), which is particularly concerning as both SMI and antipsychotic treatment separately have been shown to increase the risk of metabolic dysfunction including diabetes. Psychiatric treatment during pregnancy potentially increases the patient's attendance with antenatal care (Ben-Sheetrit et al. 2018) further highlighting the obstetric-psychiatric bridge. To this end, it is important to address the low rates of psychiatric treatment for pregnant women with psychiatric disorders (Vesga-Lopez et al. 2008), and strategies to address any health disparity, stigma, and the lack of collaboration between obstetric and mental health services will be needed. Beyond optimizing antenatal attendance, women with SMI often present with complex needs and tools such as the Camberwell Assessment of Needs for Mothers (Howard et al. 2008) are useful in capturing the multifaceted needs of these at-risk women.

In Western Australia, a specialist antenatal clinic provides a "one-stop shop" for pregnant women with SMI. The weekly antenatal clinic comprises a multidisciplinary team of designated obstetrics, midwifery, psychiatry, mental health nursing, and social work staff, who provide care for pregnant women, in liaison with their primary care and their usual mental healthcare providers (Nguyen et al. 2013). Hospitals that do not have dedicated perinatal services include women with SMI, as part of a *complex care team*, as a way of acknowledging their needs, and their cases can be discussed and planned for in a multidisciplinary setting.

A pregnant woman with SMI is encouraged to (and should be supported to) access specialist care as soon as the pregnancy is discovered, ideally before 10-week gestation (NICE 2016). The first antenatal appointment can be crucial as it sets the tone for the women's whole pregnancy care and therefore needs to be an opportunity

for a comprehensive assessment, all the while emphasizing engagement, collaboration, and woman-centric approaches (Health 2018). While the literature remains inconclusive about the ideal number of antenatal visits to constitute good or adequate pregnancy care in LAMICs, perinatal mortality may be increased with reduced visits. For women with SMI who may lead chaotic lives, strategies to maximize antenatal attendance (text reminder, assertive follow-up of nonattendance, enlisting assistance from families and local care networks) will be needed.

The role of fathers and partners cannot be overestimated. A supportive partner can modulate outcomes for the mother and baby and therefore should be encourage to engage with antenatal care, aside from situations of intimate partner violence, in which sensitive approaches need to be employed. Frayne and colleagues (2014) found that men who are partners of pregnant women with SMI experience psychosocial difficulties (SMI, substance abuse, previous history of domestic violence) and yet may have unrealistic appraisals of impending fatherhood. A study from Ethiopia showed that male partner attendance at antenatal care correlated positively with women complying with pregnancy investigations and counseling about complications (Forbes et al. 2018). Thus antenatal care services for pregnant women with SMI need to be father and partner-inclusive, with particular attention to those expecting their first child.

An example of the steps in the enhanced antenatal care is outlined in Table 3.

An important aspect of pregnancy care for women with SMI is *pre-birth planning*. Many authorities recommend the development of advance care plans for all pregnant women with SMI (Health 2018). These care plans should include the patient's identifying details, their support person and treating obstetrician and psychiatrist, as well as the nature of the illness, including relapse signatures and details of the treatment such as medication regime. Special instructions, such as tapering lithium or breastfeeding and sleep support, can also be included. The care planning forums are particularly important for women who present late in their pregnancy care. Factors such as inadequately treated illnesses (lack of insight and non-compliance) or illness-related dysfunction such as homelessness or destitution or a combination thereof may play a role in the late presentations. It can also reflect a resurgence or exacerbation of anxiety (reactivation of trauma or tokophobia) or as an attempt to avoid care due to fears of child protection services involvement.

It is advisable to be proactive about child care capabilities for pregnant women with SMI, which is seen as an interplay between individual vulnerabilities and the availability of support. The complex care meetings should comprise risks assessments as well as strength-based and solution-focused approach (Turnell and Edwards 1999). A map of the child's and family circumstances is formulated, and ideally a decision about the extent of child protection involvement is made by 36 weeks gestation. Any plan for supervision or statutory action needs to be communicated to the hospital and the woman and her family in a timely manner (Harrison and O'callaghan 2014).

In LAMICs, the adult psychiatry service may be the focal point of delivery for all forms of care. This is challenging for women as they have to consult at various settings and often feel anxious to disclose about psychiatric illnesses to the

Table 3 Pregnancy and postpartum care women with SMI

Care procedure	Timing
Inform treating mental health professional and attend primary care for review	Confirmation of pregnancy
Dating scan	6–10 weeks
First antenatal appointment	
Formulation of a *care plan* – collaboration between obstetric and mental health services, primary care, the patient, and her family	10–12 weeks
EPDS, CAN-M	
B12, folate, ferritin, vit D, TFTs, fasting BSL, U&Es, LFTs, and ECG	
Subsequent antenatal appointments	
Social work review	
First-trimester U/S scan	13 weeks
High-resolution fetal anatomy scan	19–20 weeks
Monthly antenatal appointments to 32 weeks then fortnightly or weekly thereafter	
OGTT	28 weeks (earlier for women on atypical antipsychotics)
Growth U/S scan	32–34 weeks
Repeat EPDS	
Pre-birth planning discussion and birth plan	28–34 weeks
Tour of the delivery ward and introduction to staff	Near delivery
Other Interventions	
Psychiatric reviews (if available) at each antenatal visit or close liaison between obstetric and mental health services	Throughout pregnancy
Monitor weight gain (if on antipsychotics) at each appointment	
Dietetics review as needed	
Monthly lithium levels up until	
36 weeks then weekly	
Identify women at high risk of relapse – e.g., bipolar 3–5 days hospital stay – assist with breastfeeding, sleep, and mother-crafting. Monitor mental state	
Elective admission to MBU for high-risk women	Post-delivery
Monitor infant PNAS, tone, blood sugar level	
Postnatal 6-week check	

Adapted from King Edward Memorial Hospital (KEMH 2018) and Mercy Hospital (Galbally et al. 2010) Australia.

obstetrician. Therefore, it is essential that the case manager or psychiatrist initiates a multidisciplinary pre-birth planning (Brockington et al. 2011). Another barrier to care is that non-biomedical explanatory models are common in women with a history of psychosis including postpartum psychosis and cultural and social factors unique to childbirth appear to influence these models (Thippeswamy et al. 2015).

Help-seeking patterns are varied, and there is significant delay in seeking treatment with the most common reason being lack of resources (Thippeswamy et al. 2018).

Birth Plans

Individualized birth plans done in a collaborative and timely manner can foster trust and confidence among patients and staff alike. Important aspects include consistent messages from staff, clarify expectations, review consent issues, and plan for the availability of a support person. Regular liaison between obstetrics, psychiatry, and midwifery is needed to plan for adequate analgesia (such as early epidural), as well as pharmacological options for acute symptoms during delivery (Acera Pozzi et al. 2014). For women with history of borderline personality disorder, complex trauma, or tokophobia, a tour of the delivery suite and introduction to staff, as well as planning around managing dissociation risk (acknowledging distress and grounded techniques, mindfulness, and relaxation training), may be of benefits (Choi and Seng 2016; Austin et al. 2017).

Postpartum Care

Immediate Post-delivery

In high-income countries, there may be constraints to optimal postpartum care by activities related funding, which tends to focus on the obstetric aspects of care at the exclusion of mental health needs. For women with SMI, particularly those with severe mood disorders, the immediate postpartum represents a high period of risk in terms of psychiatric morbidity, particularly among first-time mothers. Navigating breastfeeding, mother-crafting, and maintaining adequate sleep, all the while fighting off the sedative effects of medication, can be a real challenge for a new mum with SMI, one that requires input from the family and sensitive, caring staff. There is a strong need for advocacy to counter the push to discharge patients early due to the patients being obsterically cleared. Given the accumulated literature on the impact of psychotropics and poor neonatal adjustment and risk of special care nurse admission, the involvement of the pediatrician is also warranted (Frayne et al. 2017). The baby will need to be carefully monitored for side effects of medication such as poor neonatal adjustment, extrapyramidal side effects, and hypoglycemia. Taken together, it is advisable for new mothers with SMI, particularly first-time mothers, to have a 3–5 days stay in hospital post-delivery, unless they have good support at home and there are available outreaching child health and mental health services.

Postpartum Psychosis

Around 1 in 1000 women will develop a psychotic episode soon after giving birth (usually within the first few weeks postpartum). Those with unmedicated bipolar I

are at high risk, but the disorder can occur de novo, suggesting a confluence of risk factors including genetic vulnerabilities unmasked by sensitivity to hormonal changes, sleep deprivation and circadian disruption, and immunological changes associated with childbirth (Bergink et al. 2016). While a prodrome, if present, can be non-specific (insomnia, irritability, mood fluctuation), postpartum psychosis can have a very rapid onset and is often seen as a psychiatric emergency. The hallmarks of the disease are rapid mood fluctuation or mania, which is often accompanied by disorganization; obsessive thoughts, often related to the baby; disorientation; confusion; derealization; and depersonalization (Bergink et al. 2016). Inpatient treatment, with appropriate pharmacotherapy, such as the stepwise benzodiazepines, antipsychotics, and lithium algorithm (Bergink et al. 2015) or ECT and surrogate care for the baby in the acute phase will be needed. Prevention strategies which include psychoeducation, continuous or partial medication prophylaxis, and enhanced pregnancy and delivery management with optimization of sleep in the immediate postpartum may be of benefits with at-risk patients (Bergink et al. 2016).

Suicide and Infanticide

Whether the motives are known or not known, suicides are lonely acts born from the kindling of vulnerabilities ignited by desperate circumstances. The impact of suicide is widespread, from the devastation on family and friends to the admixture of guilt and anxiety on the part of the clinicians and services. Even though the rates of suicide are comparatively lower during pregnancy and postpartum period, compared to other non-perinatal period, a history of self-harm and having a severe mental disorder in the postpartum period is reported to increase the risk of suicide (Lysell et al. 2018; Mota et al. 2019)

The Confidential Enquiries into Maternal Deaths (CEMD) in the United Kingdom had brought maternal suicide to the forefront of understanding, irrevocably shifting the focus from preventable obstetric-related deaths to optimizing the mental health and welfare of pregnant and postpartum women (Oates 2003). Indeed, in the years since the 1997–1999 report, when suicide was identified as the leading cause of maternal death, consecutive reports have repeatedly highlighted the number of women who died by suicide after a pregnancy. As of the 2018 report (now called Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK – MBRRACE-UK), maternal suicide is the third largest cause of death within 42 days of the end of pregnancy and the *leading* cause of death within 1 year of the end of the pregnancy (Knight et al. 2018).

Women with postpartum psychosis, with or without depressive illnesses, are particularly vulnerable to suicide as well as infanticide, usually in the context of altruistic delusions. That is, the commission of infanticide by the psychotic woman in the context of a belief of saving their child from a fate worse than death. Brockington reported a case series of maternal suicide and filicide that are both shocking and defy empathic understanding which further emphasizes the disruption of severe mental illness on the maternal mind (Brockington 2017). Much like the

management of postpartum psychosis, it can be argued that suicides and infanticides in women with SMI in the perinatal period can be prevented if strategies aimed at both the individual (identification of those at risk, medication prophylaxis, follow-up care) and services and commissioners (coordination, liaison, crisis care) are employed (Bergink et al. 2016; Knight et al. 2018). Many countries are now incorporating amendments in their legal systems and approaches in handling mothers who have committed filicide including assessment of mental health status of the mothers, including a perinatal psychiatrist as an expert witness, and understanding the context of mental illness and filicide/infanticide.

The Need for Mother and Baby Units (MBUs)

The development of mother and baby units (MBUs) around the world is a powerful statement in psychiatry, that as Winnicott pointed out: there is no such thing as a baby or a mother, there is only both. MBUs serve as a measure that restores and enhances parenting and attachment, while acute psychiatric treatment takes place. Resource permitting, it can also be an opportunity to prevent psychiatric morbidity such as elective admissions for high-risk patients. Evidence suggests that MBUs are effective in terms of clinical outcomes for the mother as well as parenting outcomes (Christl et al. 2015), and thereby these services should be part of a continuum of care from preconception to parenting for women with SMI.

The MBUs' model of care often utilizes a multidisciplinary approach with specialist psychiatry and nursing input, mother-crafting support, monitoring child development, involving fathers and extended family, and networking with other services such as child protection and community mental health services. Therapy is also provided in many MBUs and ranges from restoring maternal competencies and enhancing parent-infant interactions to attachment and in-depth psychotherapeutic care. There can be a variation in the diagnostic makeup of women who are admitted with their babies to MBUs around the world, with a predominance of depression and anxiety in some countries and acute psychosis and catatonia in others (Chandra et al. 2015; Christl et al. 2015). This may reflect a number of differences including geography, availability of dedicated services, and socioeconomic factors. In the only unit in LAMIC in India, the emphasis of the reestablishment of breastfeeding takes on additional significance given hygiene issues and non-affordability of formula feeding (Chandra et al. 2015).

There is an inherent conflict in the need to maintain a therapeutic relationship in women with SMI and the duty to prevent harm for the children of those same patients. While the main aim of MBUs is to maintain the continuity of and enhancing the mother-infant relationship, on occasions, infants at risk will necessarily be separated and be placed out of home. The MBU may allow time for these difficult decisions to be made. In France (Glangeaud-Freudenthal et al. 2013), the rate of infant separation post-admission to the MBUs were 15%, while in India, no infant was separated from their mother. Unique to this latter unit, a female family member is often co-admitted. The cultural paradigm is therefore important in determining

care as the Indian Mental Health Care Act, 2017, Sec. 21 clause 2 states that "A child under the age of three years of a woman receiving care, treatment or rehabilitation at a mental health establishment shall ordinarily not be separated from her during her stay in such establishment." The section also details the procedures that the psychiatrist needs to follow if there is an indication for separation of the child from the mothers. By necessity, this is a major step in developing perinatal services for mothers with mental ill-health, which has, at its center, the promotion of the mother-infant relationship.

Child Welfare, Attachment, and Development

While infant separation can only occur in the postpartum period, there is an impetus to identify women at risk and put in place a child protection framework prior to delivery. For women with SMI, the needs of parenting can be summarized as *basic care, safety, emotional warmth, encouragement of learning, the provision of a stable family base* and care in the context of *culturally acceptable* norms (Brockington et al. 2011). It can be argued that parenting capabilities is assumed to be present unless proven otherwise. In cases where child protection services are involved, there are often risk factors present such as poor symptom control and lack of insight, comorbid substance abuse, domestic violence, and lack of support. Studies have shown that compared to the general population, mothers with severe mental illness are almost three times as likely to have involvement with child protection services (Park et al. 2006), and approximately 50% of mothers with schizophrenia lose custody of their children either temporarily or permanently (Seeman 2012). Not all child protection involvement results in statutory action or child removal, which is an important discussion with the woman and her family whenever a referral is initiated. There is evidence of effectiveness for "wraparound" services or family-driven system of care (Seeman 2013) in families impacted by severe mental illness (Kessler and Ackerson 2005). The content of these "wraparound" services vary, but elements of success appear to involve case management, substance abuse counseling, liaison between mental health and other services, parenting classes, parent support groups, co-parenting support addressing attachment, and judicious use of the time limited admissions to the Mother and Baby Units if available.

The postnatal care of women with SMI and their babies will need to include a focus not just on enhancing attachment but the need to attend to the socioeconomic circumstances. The support needs to be practical, emotional, and financial. High socioeconomic status is a protective factor, although one that cannot be easily addressed by health staff. Parent education, home-visiting programs, and individualized video feedback to enhance maternal sensitivity are all promising effectiveness in terms of intervention (Stein et al. 2014). In LAMICs settings, while much of the focus is on the acute care of the illness, it is important to review the challenges and difficulties faced by mothers in their extended family and community settings after they have been discharged from hospital. Clear communication and liaison will be needed with providers of the physical healthcare of the child, to integrate

immunization and prevention of infections, parenting support, and mental health monitoring for the mother. Children of parents with psychotic disorders, especially schizophrenia are at risk of intellectual disability (Di Prinzio et al. 2018) and therefore developmental tracking and appropriate early intervention are needed.

In terms of therapy, pregnancy until 3 years postpartum (also referred to as the first 1000 days) is a crucial period for socio-emotional development in the life of a child. Children of parents with SMI are likely to have attachment disruption, such as disorganized attachment. Mother-infant therapy can be seen as a potential preventive intervention to break the intergenerational transmission of parent-infant relational disruptions. While little research is available in this area, adapting from programs such as Circle of Security (Marvin et al. 2002) and Watch, Wait, and Wonder (Muir et al. 1999) may be useful, provided that the therapy occurs as part of "An integrated model of perinatal and infant clinical intervention" (Judd et al. 2018, p. 4) addressing the woman's illness control and individual and systemic strengths and vulnerabilities and infant development.

Contraception

Women with mental illness tend to have higher rates of no contraception use or usage of less effective methods compared to the general population (Hall et al. 2015). Many women are concerned about the effect of hormonal contraception on their mental states, but summative evidence suggests that the use of oral contraceptives, levonorgestrel-releasing intrauterine devices, and depot medroxyprogesterone acetate do not have major negative mood effects (Hall et al. 2015). Given the issues around potential non-compliance, postnatal women with SMI should be reviewed for suitability for use of long-acting reversible contraception (LARC). Other than mitigating potential decompensation with the unwanted pregnancy, family planning also represents an opportunity for optimizing mental and physical health as well as strengthening intimate relationships (Acera Pozzi et al. 2014). A finding from a retrospective study showed that a significant proportion of women with schizophrenia had a relapse in the month around their estimated conception date, highlighting a need for inpatient mental health units to carry out pregnancy testing in admitted women of childbearing age and to proactively discuss contraception (Harris et al. 2018). An opportunity for a contraception discussion would also need to focus on other physical health issues, including screening for sexually transmitted infections, cancer screening, and other aspects highlighted under the section on preconception care in this chapter.

Conclusions

Severe mental illness during pregnancy and postpartum period can have significant impact on mother and infant health. It is important to recognize at the earliest opportunity and provide comprehensive, collaborative, and consistent care during

pregnancy and perinatal period. Women with preexisting mental illness should be counseled about planning for pregnancy and motherhood. Preconception counseling provides an opportunity to mitigate many modifiable risk factors and provide better care. Perinatal services are not uniformly available across the world, and LAMI countries are lagging behind in providing the comprehensive maternal mental health services. Future directions would need to capitalize on evolving paradigms of care, equitable resource distribution, and integrating robust research in the physical and mental health programs.

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