

# Maternal mental health: a shared care approach

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**Background:** Maternal mental health problems affect up to 20% of women, with potentially deleterious effects to the mother and family. To address this serious problem, a Maternal Mental Health Program (MMHP) using a shared care approach was developed. A shared care approach can promote an efficient use of limited specialized maternal mental health services, strengthen collaboration between the maternal mental health care team and primary care physicians, increase access to maternal mental health care services, and promote primary care provider competence in treating maternal mental health problems.

**Aim:** The purpose of this research was to evaluate the impact of a MMHP using a shared care approach on maternal anxiety and depression symptoms of participants, the satisfaction of women and referring physicians, and whether the program met the intents of shared care approach (such as quick consultation, increased knowledge, and confidence of primary care physicians). **Methods:** We used a pre and post cross-sectional study design to evaluate women's depression and anxiety symptoms and the satisfaction of women and their primary care health provider with the program. **Findings:** Depression and anxiety symptoms significantly improved with involvement with the program. Women and physicians reported high levels of satisfaction with the program. Physician knowledge and confidence treating maternal mental health problems improved. **Conclusions:** Shared care can be an effective and efficient way to provide maternal mental health care in primary health care settings where resources are limited.

**Key words:** anxiety; depression; maternal mental health; shared care

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Mental health problems, particularly depression and anxiety, are rising worldwide (Kessler *et al.*, 2009) and are increasingly burdening individuals, families, and society. Approximately 10%–20% of pregnant and postpartum women experience mental health problems (i.e., depression and/or anxiety during pregnancy or after childbirth) (Gaynes *et al.*, 2005; Bowen *et al.*, 2012). Maternal depression and anxiety do not just affect the woman (Beck, 2006; Leigh and Milgrom, 2008), they can negatively impact the social, emotional, cognitive,

and physical development of the child before and after birth (Sohr-Preston and Scaramella, 2006; Weissman *et al.*, 2006; Oberlander *et al.*, 2007; Evans *et al.*, 2012). Maternal mental health problems also contribute to paternal depression, family stress, poor family function, and increased costs to the health, education, and judicial systems (Goodman, 2004; Muhajarine *et al.*, 2010; Murray *et al.*, 2011).

Many women suffering with maternal mental health problems are undiagnosed or do not seek help and, therefore, do not receive appropriate treatment (O'Hara, 2009; Pearlstein *et al.*, 2009). In addition, studies have shown that family physicians often fail to identify postpartum depression (PPD), and even when pregnant and postpartum women are diagnosed with depression, they are more cautious

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and tend to either not treat or undertreat the disease (Cohen, 2005; Jameson and Blank, 2010).

Mental health service providers have embraced shared care models to address the lack of specialized psychiatric and other mental health services. Shared care includes the collaboration between multidisciplinary health care members, such as psychiatrists, family physicians, and other health care team members providing opportunities to build capacity for more effective mental health care through detailed consultation and treatment plans for follow-up care by primary health care providers (Paquette-Warren *et al.*, 2006; Ungar *et al.*, 2013).

### **The Maternal Mental Health Program (MMHP)**

We developed the MMHP to improve the mental health of pregnant and postpartum women in response to an increased awareness of maternal mental disorders and the lack of specialized mental health services for women during pregnancy and postpartum (Bowen *et al.*, 2008a). A collaborative mental health care model using a shared care approach brought a multidisciplinary team of clinicians (psychiatrist, psychologist, and mental health nurse therapist) together to improve maternal mental health care.

The MMHP is located in a primary health care center, adjacent to other community-based services for women (e.g., public health, family physicians, breastfeeding center, and prenatal and postpartum outreach programs). The location offers an on-site child-care center, bus services, and free parking (Bowen *et al.*, 2008a).

The MMHP provides women an initial consultation with a psychiatrist specializing maternal mental health, during which the psychiatrist examines women's mental status, makes diagnosis, prescribes medications, explains diagnosis and medications, answers women's questions, discusses their concerns, and makes referrals to clinical health psychologist, and/or nurse therapist. The clinical health psychologist offers therapy sessions to women; and nurse therapist provides therapy sessions as well, and also connects women with social worker or other support in the community based on women's needs. Women receives support from the MMHP staff through consultations and phone calls when

they have questions or concerns. The program also provides access to a PPD support group, a weekly facilitated educational and peer support group on site, and makes referrals to other education or support programs.

In addition, the MMHP provides in-depth consultation, detailed treatment plans, and support for the referring care provider. Continuing education had been provided at professional conferences, and 'lunch-and-learn' sessions at family practice offices, and with presentations at psychiatry, family medicine, and obstetrics grand rounds (physician research seminars) (Bowen *et al.*, 2008a). The MMHP also provides clinical learning experiences for multidisciplinary mental health care providers and students.

This study aims were to evaluate: (1) the impact of the MMHP on participating women's anxiety and depressive symptoms; (2) women's and referring physician satisfaction with the program; (3) and referring physician knowledge of and competence in treating maternal mental health patients.

### **Methods**

To evaluate the change in women's depression and anxiety symptoms, a pre and post cross-sectional study design was used. Women's and physician/midwife satisfaction were measured in a cross-sectional survey.

### **Inclusion criteria**

All women who attended the MMHP between September 2006 and August 2011, understood English, had consented to participate in research studies associated with the program, and had completed the Intake Questionnaire were invited to participate in the evaluation. All physicians (obstetricians, family physicians, and psychiatrists) and midwives who referred women to the program during the same period were invited to participate.

### **Data collection**

#### *The women's evaluation*

The women attended the MMHP two ways: through self-referral or referral by their physician or midwife. Women who self-referred to the MMHP were interviewed by the Nurse Therapist; if appropriate for the MMHP, they were asked to

get a referral from their doctor, but were added to the list for possible participants right away. The Intake Questionnaire and the arrangements for their initial appointment were mailed to the possible participants. This included the covariates of demographic, medical, obstetric, breastfeeding and baby's status, and modifiable factors (e.g., service utilization, social support). Women either brought the completed Intake Questionnaire to the MMHP or completed while waiting for their appointment. Upon discharge from the MMHP, an Evaluation Questionnaire was sent to the women along with a return-postage envelope.

### Questionnaire

The women's questionnaire addressed program satisfaction and mental health symptoms. Part one was designed to measure women's satisfaction with the MMHP. It consisted of an eight item, five-point Likert-style scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree) that addressed three areas: (1) care received (i.e., *The staff understood my problem, the staff explained my care to me, The person who cared for me was thorough and competent*), (2) location and childcare, and (3) overall satisfaction (e.g., *I would recommend the MMHP to other women like me and The MMHP met my expectations*). It also included three open ended questions.

The second part included sociodemographic, obstetrical, medical, and mental health, treatment, breastfeeding status, and anxiety and depression symptoms.

### Measures

**Depression:** Depression symptoms were measured at intake and evaluation using the Edinburgh Postnatal Depression Scale (EPDS) (Cox *et al.*, 1987). The EPDS is the most common validated measure to screen for both antenatal and PPD (Cox *et al.*, 1987; Murray and Carothers, 1990). This self-report instrument reflects the woman's experience over the past week. It contains 10 items, and each item is scored on a scale from 0 to 3 resulting in a possible total score range of 0–30. A cut-off score of 13 was used as positive screen of depression (Thessedre and Chabrol, 2004; Matthey *et al.*, 2006; Sit and Wisner, 2009).

**Anxiety:** Anxiety symptoms were measured at intake and post program evaluation using the

EPDS Anxiety Subscale. The three-item EPDS Anxiety Subscale (items 3, 4, and 5) detects both antenatal and postpartum anxiety (Ross *et al.*, 2003; Bowen *et al.*, 2008b; Tuohy and McVey, 2008). As with other studies, a cut-off score of 6 was used to examine anxiety (Matthey, 2008).

### The physician evaluation

The Physician Questionnaires were distributed at the monthly meetings and grand rounds (physician research seminars) of the Departments of Obstetrics and Gynecology, Psychiatry, and Family Medicine. Only physicians who referred prenatal and postpartum women to the MMHP were asked to complete the questionnaires during these activities. The questionnaires were anonymous, but physicians checked their name off a list of obstetricians, family physicians, and midwives. The remaining physicians on the list were mailed a questionnaire.

**Questionnaire:** The questionnaire was organized into two parts. The first part assessed physician satisfaction with the MMHP. It included a 10 item, five-point Likert-style scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree) and questions about the physician's gender, years of practice, and medical specialty. The second part consisted of three short answer questions regarding the area of the program they liked the most and which parts of program could be improved. Physician satisfaction focused on three areas: (1) accessibility (i.e., *I am familiar with the MMHP, I know how to refer my patients to the MMHP, I am aware that there is a multidisciplinary team I can make referrals to, and The waiting time for my patients was reasonable*), (2) physician knowledge of and competence in treating maternal mental health problems (e.g., *improved knowledge of maternal mental health issues, confidence treating maternal mental health issues, and consultation provides information that allows me to care my patients*), and (3) the MMHP overall (e.g., *I am happy to refer my patients to the MMHP, rating of the MMHP overall and how well the MMHP met expectations*).

### Data analysis

Descriptive statistics were used to characterize sociodemographic, health-related data, anxiety and depression status, and evaluation results. The

Wilcoxon Signed Rank test was used to exam the difference in the mean EPDS and anxiety subscale scores at intake and evaluation. To test the reliability of the women's and physician evaluation questionnaires, the EPDS score, and the EPDS anxiety subscale, the internal consistency estimates of reliability of the items on the questionnaires and scores were conducted by computing coefficient  $\alpha$  (Cronbach's  $\alpha$ ) by factor analysis (Green and Salkind, 2011) through factor analyses. Significance was set at  $P < 0.05$ .

## Results

The MMHP had contact with 433 women; 277 (52.4%) of them completed the Intake Questionnaire, and of these 183 (42.3%) gave written consent to the study. Of these, 99 women (54.1%) completed the Evaluation Questionnaire. A total of 127 physicians referred women to the MMHP and of these 69.3% ( $n = 87$ ) physicians and one midwife completed the Evaluation Questionnaire.

### The women

The average age of the participating women was  $29.6 \pm 5.05$  years old (range 18–42 years old). The women came from different socio-economic backgrounds that is presented in Table 1.

### Obstetric and breastfeeding status

At intake, 52 women were pregnant, 43 were postpartum, and four were preconceptual. The average gestation was 20.3 weeks (SD: 9.04), and the average number of weeks postpartum was 20.1 weeks (SD: 9.04). At intake, 47.7% ( $n = 86$ ) women reported that they experienced complications during their pregnancy, and 59% ( $n = 39$ ) of postpartum women reported complications during labor and delivery. The majority of women (59.5%,  $n = 42$ ) at intake either breastfed their babies or breastfed and used a supplement, but at the time of evaluation only 38.9% ( $n = 36$ ) of women either breastfed or both breastfed and bottlefed.

### Mental health status

The primary diagnoses are presented in Table 2. Most of the women reported a history of depression (74.2%,  $n = 89$ ), nearly 40% ( $n = 68$ ) of them

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**Table 1** Socio-demographic information of participating women

Variables	Number ( $n$ )	%
Age (years)		
$\leq 20$	6	6.1
21–30	52	52.5
$> 30$	41	41.4
Education level		
<High school	6	6.8
=High school	12	13.6
Some post-secondary	25	28.4
Post-secondary	48	54.5
Missing	8	8.1
Employment status		
Yes	54	62.8
No	32	37.2
Missing	13	13.1
Family income		
$< \$20\,000$	12	14.5
$\geq \$20\,000$ to $< \$40\,000$	14	16.9
$\geq \$40\,000$ to $< \$60\,000$	16	19.3
$\geq \$60\,000$	32	38.6
Rather not say	9	10.9
Missing	16	16.2
Financial concerns		
Yes	43	55.8
No	34	44.2
Missing	22	22.2
Marital status ( $n = 88$ )		
With partner	74	84.1
Without partner	14	15.9
Missing	11	11.1
Ethnicity ( $n = 86$ )		
Caucasian	74	86.0
Aboriginal	12	14.0
Missing	13	13.1

**Table 2** Primary diagnoses for participating women

Primary diagnoses	Number ( $n$ )	%
PPD	13	13.1
Antenatal depression	10	10.1
Major depression disorder	13	13.1
Major depression episode	3	3.0
Anxiety disorder	34	34.3
Bipolar disorder	19	19.2
Others (i.e., adjustment disorder, eating disorder)	7	7.1
Total	99	100

PPD = postpartum depression.

had a self-reported history of PPD, and 29.2% ( $n = 72$ ) of them reported a history of antenatal depression. In all, 34 women (34.7%) had a second

**Table 3** Attending program/group information

Program and group	Number (n)	%
PPD support group	9	33.3
Mood and anxiety program	6	22.2
Antenatal relaxation program	5	18.5
Bipolar disorder education program	2	7.4
Panic disorder education program	3	11.1
Adult counseling	2	7.4
Total	27	100

PPD = postpartum depression.

mental health diagnosis and six (6.1%) had a third mental health diagnoses.

#### Service utilization within the MMHP

A majority of the women ( $n = 86$ , 87%) used the MMHP services three times or more. Most of the women ( $n = 82$ , 83%) saw the nurse therapist for counseling, support, and/or referral; 79% ( $n = 78$ ) of women visited a psychiatrist (consultation and/or psychotherapy); and 20 (20%) saw the psychologist (assessment and/or counseling). A total of 71 (72%) women saw two members of the MMHP team and only nine (9%) women saw all three members of the team. A total of 49 (50%) women were referred to other programs or groups, and 55.1% ( $n = 27$ ) of them attended the programs or groups as referred (see Table 3).

### Changes in symptoms

#### Depression symptoms

The mean intake EPDS score: 14.97 ( $n = 99$ , SD: 5.97), was significantly higher than the mean evaluation EPDS score, 9.13 ( $n = 99$ , SD: 5.71) ( $P < 0.001$ ). The Cronbach's  $\alpha$  for the EPDS at intake and evaluation were calculated to be 0.87 and 0.89, respectively, indicating high internal consistency.

#### Anxiety symptoms

The mean intake EPDS anxiety subscale score: 5.90 ( $n = 99$ , SD: 2.04), was significantly higher than the mean evaluation EPDS anxiety subscale mean score 3.86 ( $n = 99$ , SD: 2.36) ( $P < 0.001$ ).

### Women's satisfaction with the MMHP

Women's satisfaction with the MMHP was identified in three areas: (1) care received,

(2) location and childcare, and (3) overall satisfaction. A Cronbach's  $\alpha$  of 0.86 of the questionnaire indicates high internal consistency.

#### Care received

The majority of women (83.3%,  $n = 82$ ) reported the staff understood their problem, 76.0% ( $n = 75$ ) said the staff adequately explained their care to them, and 87.6% ( $n = 87$ ) believed that the person who cared for them was thorough and competent. Women replied to the item: the one thing I liked the most about the MMHP: 'Knowing I had support and help when I needed,' 'Caring and understanding staff,' 'The time to talk one on one, and it was safe to talk ...no one judging,' and 'I absolutely loved the support.'

#### Location and childcare

Most of the women (56.6%,  $n = 56$ ) felt that the location was convenient. Many ( $n = 60$ , 60.8%) did not answer the question of 'childcare,' some of which were not applicable (pregnant or children in daycare), while 27% of women ( $n = 27$ ) believed that the childcare services met their needs. Women who did use childcare stated, 'childcare provided was very helpful,' and 'childcare was critical and dearly needed.'

#### The MMHP overall

In all, 88 women (89%) would recommend the MMHP to women like themselves, and 75.8% ( $n = 75$ ) of women believed that the MMHP met their expectations. Women wrote; 'It was a great resource I would not have made such positive change otherwise,' 'The teamwork with all the disciplines-psychiatrist, nurse, family doctor,' 'seeing everybody on the same day, great accessibility,' 'The expertise for my issues in pregnancy,' 'The expertise in postpartum depression,' and 'This program is fabulous. I have two older children and experienced PPD after giving birth to both of them. I sought help early on (when I was 5 months pregnant), and I feel as though getting help then helped me enjoy my baby which I had never experienced before. I will refer the program to who may need it. Thank you for helping me enjoy my sweet baby!' For the prompt, 'The one thing I would change about the MMHP,' women stated that a follow-up phone call from the MMHP would be helpful, they wanted more counseling, and suggested more publicity for the program, particularly in rural areas.



## The Physicians

Of the 136 physicians who referred women to the MMHP, 64.7% ( $n = 88$ ) returned the questionnaires. Of these 88 physicians, 80.7% ( $n = 71$ ) were family physicians, 15.9% ( $n = 14$ ) were obstetricians, two were psychiatrists (2.3%), and one was a midwife (1.1%) (the midwife attended the family physician meetings and was therefore included with physicians for data collection and analyses).

### Satisfaction

Physician satisfaction with the MMHP was identified in three areas: (1) accessibility, (2) physician comfort and skill treating maternal mental health problems, and (3) the MMHP overall. The questionnaire had high internal consistency with a Cronbach's  $\alpha$  of 0.91.

### Access to the MMHP

Most of physicians (77.8%,  $n = 68$ ) were familiar with how to refer their patients and which services the program provided. A majority (62.7%,  $n = 55$ ) of physicians thought that the waiting time for their patients to receive care from the MMHP was reasonable (median waiting time for the MMHP patient was four weeks). In response to the question: 'What are your expectations of a program for maternal mental health patients?' a majority of physicians (60.9%,  $n = 59$ ) commented positively on the accessibility: they commented that the program provided a quick referral response, quick assessment, and timely access. Physicians wrote: 'Expediently seen' and 'It is great to have the program, and the consultation is quite acceptable.'

### Knowledge of and competence in treating maternal mental health problems

Overall, physicians believed that the MMHP had improved their knowledge of maternal mental health (55.3%,  $n = 49$ ), felt more confident treating maternal mental health problems (63.5%,  $n = 56$ ), and thought that the MMHP consultation provided enough information to allow them to care for their patients (73.5%,  $n = 65$ ). Some physicians, particularly those who had been in practice less than two years, expressed a need for more support from the MMHP in terms of direction and guidance for treating their patients in their care. Physicians wrote: 'Give direction to

family physicians,' 'Provided appropriate antenatal and postpartum counselling,' and 'Expert assessment and effective treatment plan.'

### The MMHP overall

The majority of physicians were satisfied with the program (71.5%,  $n = 66$ ) and the program was a valuable resource for them (76.8.0%,  $n = 67$ ). Physicians wrote: 'My experiences with the program has been positive,' 'Please keep the program going,' 'A great component for our medical residents,' and 'Excellent idea – present information in grand rounds (physician research seminars)'. Physicians believed that improving communication between the program and referring physicians would enhance the quality of the program. The physicians wanted to see the entire assessment and treatment of their patients during their participation in the MMHP (e.g., the psychologist, nurse therapist, and other programs attended by their patient, not just the psychiatry consultation). They indicated that there was a need for ongoing support for patients and their families such as education, counseling, and follow-up in the community.

## Discussion

This evaluation suggests that a MMHP using a shared care approach can improve maternal anxiety and depression symptoms; especially in women with the most severe symptoms on intake.

Participating women and referring physicians viewed the MMHP as a valuable resource that was easily accessible for women who would not otherwise receive specialized treatment during this vulnerable time. Accessibility is an issue in health care for patients, and practitioner, the Canadian Psychiatric Association recommends that the waiting time to access to a psychiatrist after a family physician referral should be no more than four weeks (Canadian Psychiatric Association, 2006). The median waiting time for seeing a psychiatrist for the MMHP patients was four weeks, in comparison with five and half weeks in the province of Saskatchewan, and seven weeks nationally (Esmail, 2009); however, some physicians wanted their patients to have more immediate access to the MMHP, which might indicate that some patients needed help right away. In order to improve accessibility to the program within the current level of

resources, prioritizing urgent cases, and improving communication with referring physicians are the key.

In this study, women were at different stages of gestation and weeks postpartum; therefore, the reduction of anxiety and depression symptoms occurred at different times and may be more attributable to engagement in the MMHP. While some may question that mental health symptoms will dissipate over time. Some researchers have suggested that for large percentage of women, depression levels are highest during the first few months postpartum and decrease significantly soon after (Campbell and Cohn, 1997; Heron *et al.*, 2004), but others studies have shown no significant change in depressive levels after the early postpartum period (Beeghly *et al.*, 2002; Horowitz and Goodman, 2004). In addition, there are a significant number of women whose PPD continues well beyond the early postpartum period (Horowitz and Goodman, 2004; Mayberry *et al.*, 2007).

Both women and physicians suggested that more support, education, counseling, and more follow-up with women before and after completing the program are desirable. The MMHP nurse therapist and the psychologist also refer women to different programs (education, counseling, and support); however, the waiting time for individual counseling took up to six months. It was also suggested that a social worker needs to be added to the team to connect women with community resources, particularly financial support.

Most referring physicians reported feeling more confident and comfortable treating maternal mental health patients through consultation and communication with the MMHP while newer physicians felt that they needed more support from the MMHP in terms of direction, guidance, and education. As Kates *et al.* (2011) have noted, regular structured education training, and discussion sessions between referring physicians and the program are helpful.

This evaluation suggests shared care MMHPs are effective in reducing symptoms and the simplicity of the approach points to increased feasibility for implementation in other centers, particularly in rural or remote areas where access to specialized mental health services is a challenge to access and equity in health care.

Further study could implement a randomized control trial to establish association between the program and symptom relief. Loss of follow-up is

problematic in scientific research involving human subjects. It could also include more in-depth qualitative study through individual interviews or focus groups to help better understand women's and physician's experience of the program. It would also be useful to study alternative methods of providing shared care consultations through ehealth innovations and remote-presence technologies.

## Limitations

Just over 50% of eligible women consented for their information to be used in the study and were then approached for the evaluation component; this may have been due to administrative changes at the onset of the program. In addition, it is acknowledged that without a control group, one cannot attribute all of the symptom improvement to the program itself. However, it is difficult and unethical to have a control group for local women when they and their physicians know here is a resource available to help them within a few weeks. We planned to have a control group of women who were waiting for participation in the MMHP, but the average waiting time was four weeks from the time of intake to being consulted and this was too short of a time to engage the woman in the study and was not long enough to compare with treated women.

## Conclusions

This evaluation demonstrates a shared care approach can ease maternal anxiety and depression symptoms, while also satisfying the needs of women and physicians. Shared care consultations and treatment plans provide an opportunity for increasing knowledge and skills of primary health care providers such as physicians and midwives, recognizing that new practitioners may need increased support.

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### Conflicts of Interest

There are no known conflicts of interest.

### Ethical Standards

Ethical approval was obtained from the Research Ethics Board of the University of Saskatchewan and the Saskatoon Health Region.

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