A Closer Look at Depression in Mothers Who Kill Their Children: Is It Unipolar or Bipolar Depression?

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Objective: The purpose of this retrospective study was to investigate the prevalence of bipolar depression and differentiate the factors that could predict bipolar disorder among filicidal depressive mothers.

Method: Among the offenders who were sentenced to undergo treatment at the National Institute of Forensic Psychiatry, Gongju, Korea, for committing filicide or attempting filicide during 1987 to 2006, 45 women were selected whose final diagnoses at discharge were major depressive disorder or bipolar disorder based on DSM-III-R and DSM-IV criteria. Retrospective medical chart review was performed, mainly focusing on the prevalence rate of bipolar depression, including the rate of diagnostic change during admission. We also investigated the characteristic symptoms of depressive episodes that could predict bipolar disorder.

Results: At admission, in only 24.4% of the patients (N = 11) was bipolar disorder diagnosed. However, on the basis of diagnosis at discharge, a bipolar disorder prevalence rate of 73.3% (N = 33) was found. Of the patients with major depressive disorder at admission, 64.7% (N = 22) were subsequently reclassified as having bipolar disorder based on newly observed hypomanic or manic episodes during the admission period. The significant ($p < .05$) depressive symptoms at the time of filicide that could predict bipolar depression were the presence of postpartum-onset depression (95% CI = 1.45 to 160.88), psychotic symptoms (95% CI = 1.94 to 215.81), and nonaltruistic motivation for filicide (95% CI = 1.68 to 133.36).

Conclusion: Our results suggest that mental health professionals should consider the possibility of bipolarity when they examine filicidal depressive mothers with postpartum-onset depression, psychotic symptoms, and nonaltruistic motivation for filicide.

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Although schizophrenia is mentioned as the psychopathology associated with violent crime, Herjanic et al.[1] found that female offenders suffering from affective disorder and neuroses were charged with more serious crimes compared to those with schizophrenia or a personality disorder. Filicide, parental child murder, has been studied for nearly 40 years.[2] Resnick[3] reviewed the literature on filicide and found a high frequency of depression among mothers who commit such a crime. West[4] reported that maternal homicide of small children was the most common type of crime in depressed assailants. Research to explore the character and quality of depression associated with filicide is important because approximately one fourth of the women referred to psychiatric services have a child under the age of 5 years.[5]

Filicidal depression has several common characteristic symptoms based on reported research. Depression with psychotic features is indicated to be associated with filicide most frequently.[2,4–6] Altruistic motivation, that is, motivation to kill the children out of love and to relieve them of intense suffering or a hopeless future, has been reported to constitute almost half the filicides.[3] However, in a considerable portion of offenders, the act of filicide is derived from grandiose or persecutory delusional beliefs specifically seen in psychotically depressed individuals.[3,4,6,7]

In addition, as Papapietro and Barbo[2] mentioned in their commentary, the onset of the filicidal mother's symptoms is subtle and proceeds without notice but then rapidly gives way to florid mood symptoms, usually accompanied by psychotic symptoms and utmost aggressiveness. Stanton et al.[8] found that the women who were

manic before committing filicide had shown a lack of premeditation and had developed delusions within a day before the offense, whereas the depressed women reported thinking about their children's deaths days or weeks beforehand. Each woman with neonaticide presented with childlike behavior and *la belle indifference*.[9] Other features included denial, depersonalization, and dissociative hallucinations.[10]

The depressive features of filicidal mothers mentioned previously, such as psychotic symptoms, aggression, rapid onset, impulsiveness, an objective appearance of not being so depressed, and dissociation, share characteristics that suggest bipolarity. Usually, psychotic symptoms highly suggest bipolar depression. Symptoms of activation (anger, irritability, aggressiveness, hostility, and psychomotor activation) are prominent in bipolar depressed patients.[11]

Differentiation of bipolar depression is important because therapy appropriate for unipolar depression can increase the risk of manic switch, cycle acceleration, and even suicide risk in patients with bipolar disorder.[12] In addition, antidepressants are less effective for treating bipolar depression than major depressive disorder (MDD).[13] Thus, awareness of these distinctions can improve the diagnosis of bipolar depression and provide an opportunity for effective therapeutic intervention[14] and, finally, for prevention of tragic offenses.

In this study, we investigated the prevalence of bipolar depression among filicidal depressive assailants and attempted to differentiate the characteristic clinical and offense variables that can predict bipolar depression among these individuals.

METHOD

Subjects

Most offenders whose crimes are presumed to be related to mental illness are initially referred to the National Institute of Forensic Psychiatry (Gongju, Korea; NIFP), run by the Ministry of Justice, for an expert opinion on their criminal responsibility. If they are proved to be guilty but mentally ill or not guilty by reason of insanity, they are usually sentenced to compulsory psychiatric treatment at the NIFP instead of imprisonment.

From the computerized case registry system of the NIFP, all filicidal women who had been admitted to the NIFP from 1987 to 2006 and diagnosed with MDD or bipolar disorder at discharge according to DSM-III-R and DSM-IV criteria[15,16] were enrolled in the present study. Women with other diagnoses including schizophrenia, mental retardation, and personality disorder were excluded from this study.

Assessment

All assessments were performed by retrospective chart reviews. Medical records of the subjects, including written expert opinions regarding the offenders' mental status and comprehensive diagnostic tests, were highly detailed because their medical diagnoses were the critical basis of their criminal responsibility. Descriptions of offenders were supplemented by review of the written records of the police or prosecutors. This information was used primarily to obtain information regarding the crimes, such as method of filicide, demographic characteristics of victims, and sentences.

Reviews of diagnosis at admission and discharge were completed. According to the diagnoses, the subjects were classified into 3 groups: (1) MDD-MDD: the diagnoses of subjects were consistently MDD from admission to discharge, (2) MDD-bipolar disorder (BD): the diagnoses of subjects were initially MDD at admission but changed to bipolar disorder at discharge based on newly observed manic or hypomanic episodes during admission, and (3) BD-BD: the diagnoses of subjects were consistently bipolar disorder from admission to discharge. Depressive symptoms at admission and the characteristics of filicide were also reviewed.

Filicidal motivation was classified into 2 groups based on Resnick's[3] classification with some modification: altruistic or nonaltruistic. Altruistic motivation was to relieve the victim's suffering based on the statement of the offenders. However, in our samples, there have been no true mercy killings as seen in euthanasia. The offender's altruistic motivation is based on an unrealistic overconcern about the child's doom or delusions pertaining to the child's suffering. Thus, these women are presumed to be psychotic at some level.

Nonaltruistic motivation included 3 groups: (1) filicide resulting from the mother following the commanding auditory hallucination or persecutory delusion that her children were "monsters" or "possessed by Satan" (acute psychosis); (2) filicide resulting from unexpected death by impulsive, violent behavior from anger outbursts toward the children (impulsivity); and (3) filicide occurring by a mother who was confused at the time of the offense and in whom a comprehensible motive could not be ascertained (confusion).

Collection and analysis of the data were performed in an anonymous manner. The Ethics Committee of NIFP reviewed the protocol of this study and authorized the study to be conducted. The authors followed the Declaration of Helsinki guidelines.

Statistical Analysis

The χ^2 test or the Fisher exact test was used for categorical data. If there were any variables that showed significant difference among the 3 groups (MDD-MDD, MDD-BD, BD-BD), a pairwise comparison was conducted.

Analysis of variance (ANOVA) was used for the analysis of continuous data among the 3 groups. Thereafter, a

Table 1. Demographic and Clinical Characteristics of Filicidal Depressive Mothers at Admission

Characteristic	MDD (N = 12)	Bipolar Disorder (BD) (N = 33)		p
		MDD-BD (N = 22)	BD (N = 11)	
Age at offense, mean ± SD, y	31.9 ± 4.1	33.3 ± 6.2	35.4 ± 9.4	.472
Education, mean ± SD, y	11.1 ± 3.6	11.9 ± 2.2	11.5 ± 4.6	.774
Marital status, N (%)				.244
Married	12 (100.0)	21 (95.5)	9 (81.8)	
Divorced	…	1 (4.5)	1 (9.1)	
Remarried	…	…	1 (9.1)	
Age at onset, mean ± SD, y	27.9 ± 4.9	26.8 ± 5.9	28.2 ± 10.3	.839
Postpartum onset, N (%)	4 (33.3)	17 (77.3)	7 (63.6)	.045[a]
Previous treatment, N (%)	7 (58.3)	12 (54.5)	9 (81.8)	.347
No. of depressive episodes, mean ± SD	1.7 ± 0.8	1.8 ± 1.2	2.1 ± 1.5	.687
Psychotic symptoms, N (%)	5 (41.7)	19 (86.4)	11 (100.0)	.002[a]
Psychomotor activity, N (%)				.759
Retarded	8 (66.7)	16 (72.7)	9 (81.8)	
Agitated	4 (33.3)	6 (27.3)	2 (18.2)	
Psychiatric family history, N (%)[b]	3 (25.0)	12 (54.5)	8 (72.7)	.211
Suicide attempt history, N (%)	11 (91.7)	16 (72.7)	5 (45.5)	.054
Premorbid personality, N (%)				.463
Extroverted	5 (41.7)	9 (40.9)	7 (63.6)	
Introverted	7 (58.3)	13 (59.1)	4 (36.4)	
Index admission duration, mean ± SD, mo	26.9 ± 8.6	32.6 ± 15.6	31.6 ± 8.8	.445
WAIS-R[17] score, mean ± SD	85.5 ± 19.1	90.1 ± 8.7	95.6 ± 21.5	.376
Initial medication, N (%)				< .001
Antidepressants only	8 (66.7)	14 (63.6)	2 (18.2)	
Antidepressants + antipsychotics	4 (33.3)	3 (13.6)	…	
Mood stabilizers + antidepressants and/or antipsychotics	…	5 (22.7)	9 (81.8)	

[a]Pairwise comparison: postpartum onset, MDD-MDD < MDD-BD = BD-BD; psychotic symptoms, MDD-MDD < MDD-BD = BD-BD.
[b]Some patients had missing data for this variable.
Abbreviations: MDD = major depressive disorder, WAIS-R = Wechsler Adult Intelligence Scale, Revised.
Symbol: … = no data.

Scheffe post hoc analysis was completed with variables that showed statistically significant differences among the 3 groups.

Multivariate logistic regression analysis computing the presence of a final diagnosis of bipolar disorder as the dependent variable was performed to assess which variables were significantly associated with developing a manic or hypomanic episode using a candidate set of potential predictors, which showed significant difference in the χ^2 test or ANOVA. The significance level was set at $p < .05$. The statistical process was conducted using SPSS version 15.0 (SPSS Inc., Chicago, Ill.).

RESULTS

Demographic and Clinical Characteristics of Offenders

Forty-five filicidal women were enrolled in the study. At admission, 11 (24.4%) were diagnosed as having bipolar disorder, and 34 (75.6%) were diagnosed as having MDD. However, 22 (64.7%) of 34 MDD patients were rediagnosed as having bipolar disorder (MDD-BD) during their admission, and, thus, 12 (26.7%) were diagnosed with MDD (MDD-MDD) and 33 (73.3%) with bipolar disorder (MDD-BD, BD-BD) at discharge. Among the 33 patients with a final diagnosis of bipolar disorder, 26 (78.8%) had bipolar I disorder and 7 (21.2%) had bipolar II disorder.

The mean ± SD ages of the study sample were 31.9 ± 4.1, 33.3 ± 6.2, and 35.4 ± 9.4 years in the MDD-MDD, MDD-BD, and BD-BD groups, respectively. Among the patients, 28 (62.2%) had been in contact with psychiatrists before the filicide. Fourteen (63.6%) of the MDD-BD subjects had a history of unopposed antidepressant therapy. The mean ± SD durations of admission to the NIFP were 26.9 ± 8.6, 32.6 ± 15.6, and 31.6 ± 8.8 months in the MDD-MDD, MDD-BD, and BD-BD groups, respectively.

As shown in Table 1, no significant differences were found among the 3 groups in demographic and clinical characteristics at admission other than the presence of postpartum-onset depression and psychotic symptoms. Both postpartum-onset depression ($p < .05$, χ^2 test) and psychotic symptoms ($p < .01$, χ^2 test) were more prevalent in the BD-BD and MDD-BD groups than in the MDD-MDD group. However, there was no significant difference between the MDD-BD and BD-BD groups.

Characteristics of Offense

Table 2 summarizes the characteristics of offense. There was a significant difference in the presence of multiple victims among the 3 groups ($p = .038$, χ^2 test). Forty-five mothers murdered 64 children (32 girls, 32 boys), and 18 mothers killed multiple children. In a pairwise comparison, the MDD-MDD and MDD-BD groups had a

Table 2. Offense and Related Clinical Characteristics of Filicidal Depressive Mothers at Admission

Characteristic	MDD (N = 12)	Bipolar Disorder (BD) (N = 33)		p
		MDD-BD (N = 22)	BD (N = 11)	
Reaction immediately after offense, N (%)				.797
Overt remorse for the offense	7 (58.3)	10 (45.5)	5 (45.5)	
Marked dissociative reactions	5 (41.7)	12 (54.5)	6 (54.5)	
Suicide attempt after filicide, N (%)[a]	4 (33.3)	10 (45.5)	2 (18.2)	.505
Motivation for filicide, N (%)				.032[b]
Altruistic	7 (58.3)	5 (22.7)	1 (9.1)	
Nonaltruistic	5 (41.7)	17 (77.3)	10 (90.9)	
Acutely psychotic	2 (40.0)	12 (70.6)	6 (60.0)	
Affectively impulsive	…	3 (17.6)	1 (10.0)	
Confused, cannot recall	3 (60.0)	2 (11.8)	3 (30.0)	
Gender of victims, female, N (%)	8 (42.1)	20 (60.6)	4 (33.3)	.193
Age of victims at the time of offense, mean ± SD, y	5.1 ± 4.1	3.9 ± 3.8	6.3 ± 6.6	.269
Multiple victims, N (%)	7 (58.3)	10 (45.5)	1 (9.1)	.038[b]
Method of filicide, N (%)				.742
Hitting	1 (8.3)	1 (4.5)	2 (18.2)	
Thrown from height	2 (16.7)	2 (9.1)	1 (9.1)	
Drowning	1 (8.3)	1 (4.5)	1 (9.1)	
Suffocation	6 (50.0)	14 (63.6)	4 (36.4)	
Burn, fire	…	2 (9.1)	…	
Cutting or stabbing	2 (16.7)	2 (9.1)	3 (27.3)	
Results of mental examination, N (%)				.700
Guilty but mentally ill	5 (41.7)	6 (27.3)	3 (27.3)	
Not guilty by reason of insanity	7 (58.3)	16 (72.7)	8 (72.7)	
Sentence, mean ± SD, y				.944
Prison	1.1 ± 1.9	1.3 ± 2.6	1.1 ± 1.6	

[a]Some patients had missing data for this variable (N = 31).
[b]Pairwise comparison: altruistic motivation, MDD-MDD > MDD-BD = BD-BD; multiple victims, MDD-MDD = MDD-BD > BD-BD.
Abbreviation: MDD = major depressive disorder.
Symbol: … = no data.

Table 3. Multivariate Logistic Regression of the Strongly Predictive Variables for Bipolar Disorder

Variable	Coefficient	SE	Wald	df	p	Odds Ratio	95% CI
Postpartum depression[a]	2.725	1.202	5.140	1	.023	15.256	1.447 to 160.875
Psychotic symptoms[a]	3.018	1.202	6.300	1	.012	20.447	1.937 to 215.810
Nonaltruistic motivation[a]	2.707	1.115	5.892	1	.015	14.987	1.684 to 133.361

[a]$p < .05$.

higher frequency for multiple victims than did the BD-BD group. There was also a significant difference in the motivation of filicide among the 3 groups ($p < .05$, χ^2 test). Altruistic motivation for filicide was more prevalent in the MDD-MDD group than in the MDD-BD and BD-BD groups. However, no significant difference was found between the MDD-BD and the BD-BD groups.

No significant relationship was found between the motivation of filicide and multiple victims (Spearman's $\rho = -0.08$, $p > .05$). The frequency of suicidal attempt after filicide did not differ by the diagnosis ($p > .05$, χ^2 test). Sixteen (35.6%) of the subjects had attempted suicide immediately after the filicide episode. Among them, 4 were MDD-MDD, 10 were MDD-BD, and 2 were BD-BD patients.

Gender of the victims was not associated with the mother's diagnosis. The mean ± SD age of the victims was 4.7 ± 4.5 years. Two mothers killed or attempted to kill offspring who were in their twenties. Victims were divided into 2 groups based on their age: preschoolers (< 7 years) and schoolers (≥ 7 years); there was no significant difference in the diagnosis of the mothers between the 2 groups. In the 3 groups of mothers, suffocation was the most common method of murder.

Predictors of Bipolar Disorder in Filicidal Patients

The presence of postpartum-onset depression, psychotic symptoms, and nonaltruistic motivation for filicide were significant predictors of bipolar outcome in filicidal patients (Table 3). The –2 likelihood of the logistic regression model was 27.7 ($p < .0001$). Depressive patients who reported any psychotic symptoms were 20.4 times more likely (95% CI = 1.94 to 215.81), those with postpartum-onset depression were 15.3 times more likely (95% CI = 1.45 to 160.88), and those with nonaltruistic motivation were 15.0 times more likely (95% CI = 1.68 to 133.36) to have bipolar disorder than those patients who did not show any distinct psychotic symptoms, those without postpartum depression, and those with altruistic motivation, respectively.

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DISCUSSION

A diagnostic change from unipolar depression to bipolar disorder occurred in 64.7% (22 of 34) of our cases: 16 (72.7%) changed to bipolar I disorder, and 6 (27.3%) changed to bipolar II disorder. This result shows a higher rate of diagnostic change compared with previous studies reporting the incidence of bipolar illness in patients initially identified as having unipolar depression. Switch rates were 10.2% to 45.0% in previous studies.[18–22]

The samples of existing follow-up studies for diagnostic conversion from MDD to bipolar disorder have been composed of community or general clinical populations. Compared with these studies, our samples were all patients who had serious legal problems. The reason that the patients in our samples who had committed filicide had higher diagnostic conversion rates from MDD to bipolar disorder when compared with those of existing studies may be due to the different sample populations. The relationship between bipolar disorder and legal problems was established previously.

In 1 study by Calabrese et al.,[23] more subjects who screened positive for bipolar disorder were jailed or convicted of crimes other than drunk driving than those who were negative for bipolar disorder. The researchers insisted that legal problems may prove to be useful predictors for the risk of bipolar disorder among patients currently being treated for major depression.[23] In another study, Calabrese et al.[24] suggested that the question, "Have you ever had any legal problems?" may prove beneficial in identifying an increased risk of bipolar disorder among patients who remain depressed after taking at least 1 antidepressant, although the validity and reliability of this question need to be tested.

In addition, making a request for the mental status examination for an offender's criminal responsibility is not an automatic process in Korea. An examination is usually requested when previous psychiatric history or deviant, abnormal features are found in offenders during the criminal investigation. Thus, it is possible that, in this process, the patients with bipolarity were more selected than those with only pure depressive symptoms who were regarded as normal in that situation.

Associations between bipolar outcome and several independent variables were also examined. Among those variables, bipolar disorder was significantly associated with the presence of psychosis. This finding is strongly consistent with prior studies attempting to identify risk factors associated with unipolar to bipolar conversion. In a study by Akiskal et al.,[20] 42% of switchers to mania were reported to have psychotic symptoms, whereas the rate was 15% in nonswitchers. Goldberg et al.[18] reported that 80% of the patients who switched to mania had psychotic symptoms as compared with 6% of the nonswitchers.

In another study,[25] psychotic symptoms were the strongest indicator for bipolar disorder, followed by a family history of mania and an early age at onset of depression among the patients who were currently being treated for major depression. Dividing between psychotic and nonpsychotic offenders is a useful method of organization for mental health professionals. This division allows a distinction between offenders who suffered from depression and psychotic illness and those who are unable or unwilling to raise their children because of poverty, lack of social support, and parental ineptitude.[26] All are situations that require different interventions by mental health professionals and the criminal justice system.[26]

In addition, the relatively high rates of psychotic features could explain in part the high rates of mixed states,[27] especially the depressive mixed state that may be associated with socially deviant behavior. If the depressive state becomes contaminated by brief bursts of energy, excitation, and lapses in impulse control, as occurs in hypomania, dire results could arise.[28] Dilsaver and Akiskal[28] also reported that the dysphoric or mixed presentations actually predominated rather than euphoric, classic manic, or hypomanic presentations in their samples, one third of whom had been referred from the First-Time Offenders Program. Those mixed states could be underdiagnosed in our samples because structured interviews or established symptom rating scales for mixed states were not applied for diagnostic assessment. In addition, there are no operational diagnostic criteria for mixed states in the DSM-III-R, which was used in this study until it was revised into the DSM-IV.

More postpartum-onset depression was found in the MDD-BD and BD-BD groups compared with the MDD-MDD group. Postpartum-onset depression has also been thought to be associated with bipolar depression.[29] Sichel[30] reported that an important and frequently misdiagnosed presentation in the postpartum period is the depressed phase of a bipolar diathesis, which may be confused with postpartum depression.

Postpartum depression is a well-established risk factor for bipolar illness.[31] Postpartum psychiatric illness is clearly a treatable risk factor for filicide. If postpartum depression or psychosis is diagnosed, the safety of the mother and her children should first be assured with intensive outpatient psychiatric treatment or admission and possibly the temporary placement of children with an alternative caregiver.[32] In this process, it is important for clinicians to monitor the postpartum depressed woman closely because she may be in the depressive phase of bipolar disorder.

Regarding motivation, nonaltruistic motivation for filicide, including acute psychosis, impulsive anger outburst, and confused mentality, was more prevalent in the patients with a final diagnosis of bipolar disorder. Perlis et al.[33] reported that anger attacks, defined as spells of anger

with autonomic and behavioral outbursts, might be more prevalent among bipolar patients. Anger attacks respond to antidepressants in MDD.[34] However, antidepressants were reported to induce or increase irritability and anger in patients with bipolar depression, especially when mixed.[35,36] Benazzi and Akiskal[37] reported that a strong relationship between irritable-hostile depression and numerous noneuphoric concurrent hypomanic symptoms suggests that its treatment may first (or concurrently) require mood-stabilizing agents, and not antidepressant monotherapy, to reduce a possible worsening of irritability, including anger outbursts. These results suggest a clinically important message.

Treating bipolar disorder with medication appropriate for unipolar disorder could lead to detrimental results in patients. Previous studies have reported that many patients with bipolar disorder are initially treated for major depression. Based on our results, the potential for change in diagnosis of patients who committed filicide from MDD to bipolar disorder is high, especially if they have had previous psychotic symptoms, postpartum depression, and nonaltruistic motivation for killing.

Unopposed antidepressant therapy in the filicidal offenders who have high potential for bipolarity can have tragic results, leading to recidivism by iatrogenic aggravation of mood symptoms. In fact, among 22 patients whose diagnoses were finally changed to bipolar disorder, 17 (77.2%) had been treated with unopposed antidepressants with or without antipsychotics. In the remaining 5 (22.7%), mood stabilizers were used mostly for controlling impulsivity or behavioral problems. Psychiatrists have the responsibility to make an effort to seek precise diagnosis and treatment based on state-of-the-art knowledge.

As shown in the Results, among our patients, 62.2% had been in contact with psychiatrists before the filicide complaining of their depression. Such cases are tragic examples of lost opportunities that could have prevented the death of children at the hands of their biological mothers. The high prevalence of altruistic motivation for homicide is a unique characteristic of filicide compared with other homicides committed by patients with mental disorders. Many depressed mothers cannot abandon their children even when they plan the suicide. Thus, the suicide of mothers is frequently accompanied by the filicide based on an altruistic motivation.[38]

In our samples, 16 (35.6%) of the subjects had attempted suicide immediately after committing filicide. It could be helpful for psychiatrists and mental health professionals to be alert to the filicidal risk of all depressed mothers seriously considering suicide and to directly ask the mother a question about the fate of her children after she dies to assess the risk of filicide.[3] If mothers express fears about harming their children and overconcern about their children's health, it could be an indication for hospital admission.[3]

It is also reported that psychiatric diagnoses are frequently made after the homicide, when women may develop depression in reaction to commission of the filicide.[39] Thus, diagnoses after the offense may not necessarily reflect the women's psychiatric status before the filicide.[39] Actually, even though a mixed state was strongly suspected at the time of offense in a few offenders in our sample, the diagnosis seemed to be strongly influenced by the state of the women at the interview after the offenses. Psychiatrists should keep this finding in mind when they see patients who killed or attempted to kill their children. This could also be helpful in differentiating bipolar depression from unipolar depression.

This study has some limitations. First, only patients referred for forensic evaluation and finally sentenced to undergo obligatory psychiatric treatment were included. It is reasonable to hypothesize that these patients have more serious mental illness than the patients who are not referred for evaluation.[6] Thus, it is difficult to generalize our findings to all the filicidal patients with MDD in the broader population because it may be overrepresented with people who are likely to change to bipolar disorder.

Second, the data were collected through retrospective chart review. An ideal study design would be prospective, but this has obvious ethical and practical limitations, which may be the main reason that investigations of predictors and clinical characteristics of filicidal depression have used retrospective or naturalistic designs. We have tried to collect variables that existed in all cases to increase the data quality. Third, the small sample size is another limitation. The estimated confidence intervals of odds ratios were wide due to this small sample size.

CONCLUSION

Given the results of our study showing the high rates of bipolarity in mothers who kill their children, psychiatrists and mental health professionals should consider the possibility for bipolar disorder when they examine filicidal depressive mothers. If the filicidal depressive patients have the presence of postpartum-onset depression, psychotic symptoms, and nonaltruistic motivation for filicide, they should be more carefully monitored with concern for the high potential for a diagnostic change to bipolar disorder. Therapy for unipolar depression can increase the risk of the manic switch, cycle acceleration, and anger outbursts of bipolar disorder. This distinction can provide an opportunity for appropriate therapeutic management and prevention of tragic offenses.

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Editor's Note: We encourage authors to submit papers for consideration as a part of our Focus on Women's Mental Health section. Please contact Marlene Freeman, M.D., at mfreeman@psychiatrist.com.