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Research report

Unplanned pregnancies and reproductive health among women with bipolar disorder



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ABSTRACT

Background: The aim of this study was to investigate reproductive health and level of planning of pregnancies among women with bipolar disorder (BDW).

Methods: 63 euthymic women, with bipolar disorder type I, II or not otherwise specified diagnosis, were included and were matched with a control group of 63 healthy women. Demographic and clinical data, structured reproductive health measures and planning level of pregnancies were obtained and compared between groups.

Results: Lower level of planning of pregnancies and higher frequency of unplanned pregnancies were found among BDW. Women with bipolar disorder reported history of voluntary interruption of pregnancies more frequent than women from control group. Current reproductive health care showed no differences between groups.

Limitations: Data based on self-report of participants and retrospective nature of some collected measures may be affected by information bias. The pregnancy planning measure has not been validated in this population before. Demographic and clinical characteristics of the sample study limit generalization of these findings.

Conclusions: Adverse reproductive events, as unplanned pregnancies and elective interruption of pregnancies, may be more frequent among BDW. Clinician must be aware of the reproductive health during treatment of young BDW and take measures to improve better family planning access.

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1. Introduction

Reproductive health, within the framework definitions of World Health Organization, comprises not only the absence of reproductive diseases but also the ability to have a responsible, satisfying and safe sexual life. In this context, the reproductive health includes different aspects of family planning and the access to reproductive health care of subjects (United Nations, 1995). A main goal for health organizations and global sanitary policies is to reach appropriate reproductive health care for different populations since that unsafe sex practices represent one of the main risk factors for disease, disability and death for people around the world (Glasier et al., 2006).

Bipolar disorder, like other severe mental illnesses, is considered a condition with enhanced risk of practicing unsafe sex (Meade and Sikkema, 2005). Particularly, their chronic course and frequent onset on adolescence and young adulthood imply

that many women suffer these affective disorders and receive treatment during their reproductive age. However, research on sexual and reproductive health of this population has not received particular attention. Studies conducted among samples with a broad spectrum of major psychiatric disorders revealed a low use of contraceptive methods (Raja and Azzoni, 2003); higher frequency of reported abortion (Coverdale et al., 1997); higher proportion of women who ever lost a pregnancy (Dickerson et al., 2004), and different degrees of risk for sexually transmitted infections (Meade and Sikkema, 2005). However, the assumption that these findings could describe specific reproductive health risks among people with bipolar disorder could be inaccurate given the evidence of different patterns of sexual behaviors according to diagnostic category (Carey et al., 2004). Unsafe sex practices in BD have been empirically related to manic episodes because of symptoms of hypersexuality, cognitive impairment and substance and alcohol abuse. Nonetheless, some of these symptoms could be present throughout the different mood states of the disease and therefore may affect sexual behaviors and reproductive health care not only during manic episodes. In fact, there is only a published study to date, which specifically

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addressed frequency of contraceptive methods use in euthymic BDW and it showed a suboptimal use of contraception (Magalhães et al., 2009).

Unsafe sex carries health risk for both sexes because of sexually transmitted diseases, but for women also suppose the risk of unplanned pregnancies (UP). Unplanned pregnancies may entail negative health, social, and psychological outcomes for women and children (Gipson et al., 2008). Moreover, UP are a concerning issue among BDW for significant reasons. First, UP may lead to unaware embryo–fetal exposition to drugs with teratogenic risk like most of mood stabilizers. On the other hand, rapid discontinuation of mood stabilizers treatment, a usual behavior when an UP is recognized, prompts greater risks of relapse for BDW (Viguera et al., 2000; Viguera et al., 2007). Finally, higher rates of elective terminations of pregnancies are another possible consequence of UP (Grimes et al., 2006). Although UP among BDW are a matter of concern, they have been not deeply studied.

Then, the aim of this study was to compare level of planning pregnancies and reproductive health among euthymic BDW and a healthy control group. The main hypothesis were that BDW would have higher lifetime prevalence of reproductive events associated with unsafe sex practices as unplanned pregnancies and elective termination of pregnancies, and lower reproductive health care measures compared to healthy women.

2. Methods

Sixty-three female outpatient with bipolar disorder diagnosis from Bipolar Disorder Program of Favaloro University were consecutively included in this study if they met the following inclusion criteria: age between 18 and 55 years old; diagnosis of BD type I (BDI), type II (BDII) or no otherwise specified (BDNOS) according to DSM-IV using Structured Clinical Interview for DSM-IV (SCID) (First et al., 1996); and euthymic [defined by Hamilton Depression Rating Scale ≤ 8 (Hamilton, 1960) and Young Mania Rating Scale ≤ 6 (Young et al., 1978)] for at least 8 weeks. Patients were excluded if they have any clinical condition that could affect the ability to comprise instructions and complete study questionnaires. In addition, 63 women without history of psychiatric diagnosis were included as part of control group. They were recruited from same socio-economic population and matched by age and years of education with patients.

The study was approved by the Ethics Committee of Favaloro University and all subjects gave written informed consent for their participation after receiving a complete description of the study. Interviews to BDW and healthy women were conducted by first author according to a standardized order.

2.1. Demographic and clinical assessment

Information about age, years of education, marital status, current stable partnership condition, and religion were collected in all participants. All participants completed the clinical evaluation using Structured Clinical Interview for DSM-IV (SCID) (First et al., 1996) in order to confirm bipolar disorder diagnosis (subjects) or the absence of any major psychiatric diagnosis (control group). All BDW were evaluated with the Hamilton Depression Rating Scale (HDRS), Young Mania Rating Scale (YMRS) and Global Assessment of Functioning (GAF), and additional clinical data was obtained.

2.2. Reproductive health assessment

All participants were assessed for age at menarche and age at menopause (if applicable) to estimate reproductive state

condition. Likewise frequency of gynecological visits with pelvic examination and cervical cytology screening during last 3 years, history of sexual activity with men during last 3 months, and contraceptive method used during last 3 months were assessed. Reported contraceptive method were classified as: (a) condom (the only barrier method reported in study sample); (b) oral hormonal contraceptives (OC) (the only hormonal method reported in study sample); (c) intrauterine devices (IUD); (d) double contraceptive method (simultaneous use of condom and OC or IUD); (e) others (permanent surgical contraception, chemical contraceptive method or natural methods were grouped because its low reported frequency) and (f) none (Ministerio de Salud Argentina, 2012). For analysis of contraception use, only premenopausal and sexually active women were considered.

Besides, lifetime number of pregnancies, age at each pregnancy, lifetime number of pregnancies that did not result in a live birth, and history of electively interrupted pregnancies were assessed in both groups. In addition, subjects and controls with previous history of pregnancies completed the London Measure of Unplanned Pregnancy (LMUP) (Barrett et al., 2004) for every event, no matter the outcome of the pregnancy (live birth, miscarriage, stillbirth or abortion). This structured measure is a self-questionnaire that scores from 0 to 12 and higher scores represent increasing degree of pregnancy planning. The scores were analyzed both as continuous and categorical data using scores suggested by the authors as cut points of three planning categories: planned pregnancy (10–12) ambivalent intention to get pregnant (4–9); and unplanned pregnancy (0–3). The LMUP was translated and adapted from English to Spanish by process of translation and back-translation from original by professional translator.

2.3. Data analysis

Initial data were explored with descriptive statistics. Normality of variables was assessed with Kolmogorov–Smirnov test. Mann–Whitney test was employed for between group comparisons on continuous nonparametric variables. Chi-squared tests or exact Fisher tests were employed to evaluate associations between categorical variables. Spearman correlation coefficients were calculated to explore the relationship between continuous clinical variables and planning level of pregnancies. Adjustments for multiple comparisons were conducted using Bonferroni corrections. All tests were two-tailed. 20.0 version of SPSS (Statistical Package for the Social Sciences) (SPSS, 2008) was used for all statistical procedures.

3. Results

3.1. Demographic and clinical characteristics

The detailed information of main demographic characteristics of BDW and control group is shown in Table 1. There were no differences between both groups in age, years of education and religion. BDW showed trends to significance in lower proportion of women who report to be ever married and to be in a current stable partnership compared to healthy controls.

Data about clinical current state and detailed psychiatric history are shown in Table 1.

3.2. Reproductive health characteristics

Main measures of reproductive health care showed no differences between groups (see Table 2). Among sexually active BDW in reproductive age ($n=49$), reported current contraceptive

Table 1

Clinical and demographical characteristics of women with bipolar disorder and healthy controls (continuous values are expressed as median, interquartile ranges are shown in brackets).

	Women with BD (n=63)	Healthy controls (n=63)	Test/p-Value
Age	33 (28–33)	33 (29–37)	Z = -0.369 ^a ; p=0.71
Years of education	16 (15–17)	17 (14–17)	Z = -1.226 ^a ; p=0.22
Ever married/living with a partner	57.1%	71.4%	$\chi^2=2.800^b$; d.f.=1; p=0.09
In current stable partnership	61.9%	77.8%	$\chi^2=3.768^b$; d.f.=1; p=0.05
Religion			$\chi^2=2.315^b$; d.f.=2; p=0.31
None	39.7%	47.6%	
Catholic	54%	50.8%	
Others	6.4%	1.6%	
Clinical subtype (% type I)	33.3%		
Axis I comorbidity	30.2%		
Age at onset	18 (15–23)		
N° of previous affective episodes	8 (5–15)		
History of hospitalization	36.5%		
History of substance use disorder	28.6%		
YMRS Score	1 (0–2)		
HDRS Score	2 (1–4)		
GAF Score	85 (75–90)		

Abbreviation; BD: Bipolar disorder; YMRS: Young Mania Rating Scale; HDRS: Hamilton Depression Rating Scale; GAF: Global Assessment of Functioning.

^a Mann–Whitney.

^b Chi-square.

Table 2

Reproductive health characteristics of women with bipolar disorder and healthy controls (continuous values are expressed as median, interquartile ranges are shown in brackets).

	Women with BD (n=63)	Healthy controls (n=63)	Test/p-Value
In reproductive age	88.9%	95.2%	$\chi^2=1.738^a$; d.f.=1; p=0.18
Postmenopausal women	11.1%	4.8%	$\chi^2=1.738^a$; d.f.=1; p=0.18
Sexual activity with male (last three months) ^b	89.1%	91.5%	$\chi^2=0.194^a$; d.f.=1; p=0.66
Use of any effective contraceptive method (last three months) ^c	90.7% (n=49)	91.8% (n=45)	Fisher's exact test ^d ; d.f.=1; p=1.00
At least one gynecologic screening revision (last three years)	93.7%	95.2%	Fisher's exact test ^d ; d.f.=1; p=1.00
Ever been pregnant	52.4%	58.7%	$\chi^2=0.514^a$; d.f.=1; p=0.47
Number of times been pregnant	1 (0–2)	1 (0–2)	Z = -0.450 ^e ; p=0.652
Ever have a pregnancy that did not end with a live birth ^f	51.5%	48.6%	$\chi^2=0.057^a$; d.f.=1; p=0.81
Ever lost a pregnancy ^f	12.1%	37.8%	$\chi^2=6.039^a$; d.f.=1; p=0.014
Ever voluntarily interrupted a pregnancy ^f	42.4%	13.5%	$\chi^2=7.372^a$; d.f.=1; p=0.007

Abbreviation; BD: Bipolar disorder.

^a Chi-square.

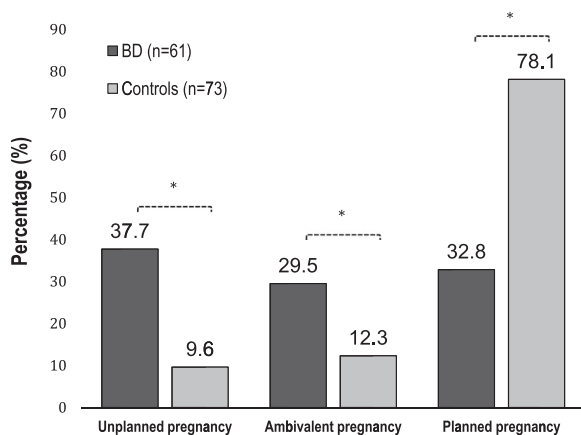
^b Calculated among subjects who were in reproductive age.

^c Calculated among subjects sexually active in reproductive age.

^d Fisher's Exact Test.

^e Mann–Whitney.

^f calculated among subjects who ever been pregnant.



Graphic 1. Distribution of all pregnancies according planning level among women with bipolar disorder and healthy control women. BD: Bipolar disorder; *: $p < 0.05$ after Bonferroni correction for pairwise comparisons.

method was: condoms (57.1%; $n=28$); OC (8.2%; $n=4$); IUD (12.2%; $n=6$) or double contraceptive methods (12.2%; $n=6$); others (2%; $n=1$); and none (8.2%; $n=4$).

Regarding obstetric history, there were no differences between groups in the proportion of women that were pregnant at least once in lifetime. Between women that reported have been pregnant ever, there was no difference in frequency of women with history of pregnancies that did not end in a live birth. On the other hand, the proportion of women who reported having had elective interrupted at least one pregnancy was statistically higher in BDW group (BDW=42.4% vs. controls=13.5%; $\chi^2=7.372$; d.f.=1; $p=0.007$). Spontaneous loss of pregnancies (all miscarriages) were more frequently reported among healthy controls (BDW=12.1% vs. controls=37.8%; $\chi^2=6.039^a$; d.f.=1; $p=0.014$).

Besides, level of planning of pregnancies and age of women at each pregnancy were compared between both groups. When scores of LMUP of all pregnancies were analyzed as a continuous variable, a statistically significant low score in the planning level of pregnancies among BDW was found [BDW: Median=6

(interquartile range=2–10) vs. controls: 11 (10–12); Mann–Whitney $z = -4.937$; $p < 0.001$). Moreover, UP were statistically more frequent in BDW when categorical analysis was performed. Conversely, controls showed more planned pregnancies than BDW (Graphic 1). Likewise, when analysis considering the sequential order of pregnancies was conducted, a lower level of planning of first pregnancy [BDW: Median=5; (interquartile range=2.5–9.5) vs. Control: 10 (6–12); Mann–Whitney $z = -3.493$; $p < 0.001$] and second events were found among BDW [BDW: Median=5 (interquartile range=2.5–10) vs. Control: 11 (11–12); Mann–Whitney $z = -3.653$; $p < 0.001$]. Regarding comparisons on age at pregnancy, BDW were significantly younger at second event [BDW: Median=27.5 years (interquartile range=24.5–32) and Controls: 30 years (28.5–33.5); Mann–Whitney $z = -2.419$; $p = 0.015$]. But also difference in age between groups showed trends to significance at first pregnancy [BDW: Median=24 years (interquartile range=20.5–29.5) vs. Control: 27 years (25–31); Mann–Whitney $z = -1.891$; $p = 0.059$]; and third pregnancy [BDW: Median=27 years (interquartile range=27–31) and Control: Median=30 years (28.5–34.5); Mann–Whitney $z = -1.870$; $p = 0.061$]. Fourth and fifth reported pregnancies were not compared because their extremely low frequency in both study groups.

Finally, association between selected clinical and demographic features (type of bipolar disorder, number of episodes, age at onset of illness, history of substance use disorder, history of ever been married) and planning level of pregnancies was explored without any significant findings (all $ps > 0.05$). The association between history of elective interruption of pregnancy and those features mentioned above were also tested and did not show statistical significance (all $ps > 0.05$).

4. Discussion

Although some data have been published regarding reproductive health of BDW, to the best of our knowledge this is the first study that specifically addressed the level of planning of pregnancies in this population. The main findings of the present study are both a lower planning degree of pregnancies and a higher lifetime prevalence of unplanned pregnancies in BDW compared to control group. In our sample, near 80% of pregnancies were planned among healthy control women but 33% were intended in BDW group. Conversely, one third of pregnancies were unplanned among BDW while just 7% occurred within control women group. This finding was in accordance with recently published report from a naturalistic follow-up study in adolescents with bipolar disorder in which unplanned pregnancies were identified in 30% of the cohort (Heffner et al., 2012). Although in our sample most pregnancies had not occurred during adolescence, BDW got pregnant earlier than healthy women. In fact, compared with healthy controls there was a consistent trend toward a younger age for the first three pregnancies in BDW, which may be also presumably related with their lower planning of pregnancies.

Unplanned pregnancies may be a triggering event that causes potential serious consequences for those women affected, their offspring and families, and health systems. For BDW, UP may include early pregnancy exposition to teratogenic drugs that suppose some risk of miscarriage or long term sequelae to descendants, as well as the possibility of illness relapse for pregnant women because of stabilizing treatment abrupt discontinuation (Viguera et al., 2000). On the other hand, there is some evidence of adverse neonatal outcome among unintended pregnancies in different populations (Shah et al., 2011), and their consequences may exceed obstetric or neonatal risks. Repercussions on mental health of women, social stigma, health of children, and high economic burden are possible results of UP (Gipson et al.,

2008; Tsui et al., 2010). But UP also represent morbidity and mortality risks because of their association with unsafe abortion, a common event in countries in which voluntary termination of pregnancies is an illegal or inaccessible practice (as it is in the country in which this study was conducted) (Grimes et al., 2006). In this way, we found a significantly higher proportion of BDW with history of voluntary interruption of at least one pregnancy as 42% reported these events while 14% of control women underwent abortion. The finding of a higher prevalence of electively interruption of pregnancies has been already proved in a broad sample of women with severe mental disorder when compared to a healthy control group (Patients: 40% vs. Controls: 14%) (Coverdale et al., 1997). Concordant with these findings, a preliminary data from a study performed in our country among women with recurrent affective disorders showed that 55% of BDW reported history of abortion (Marinelli et al., 2012). We did not assess the reasons of pregnancy electively interruption in each group of women. Clearly this finding requires more research to understand its causes and ultimately to prevent the potential consequences of these events in health of women.

On the other hand, we found no difference regarding contraception use among sexually active women and good standards of gynecological care between both study groups. These findings are encouraging because they show that during euthymic period BDW have no differences in reproductive health care compared to healthy women. Although one previous study have showed a suboptimal use of contraception in BDW (Magalhães et al., 2009), our results might be related to the fact that we excluded of data analysis women who reported not being sexually active. In addition, features of our sample as high-education level or a relatively high level of psychosocial functioning among BDW, (Table 1) could also explain better access to medical care or high awareness of reproductive health care. The finding of an adequate reproductive health care may be understood as something contradictory to the results of more frequent unplanned pregnancies in our study. But it is possible to speculate that reproductive health care were worse in the early stages of the disease in young BDW, and then improve in adulthood. A non-exclusive alternative is that the levels of reproductive health care worsen during affective episodes of the disease because of sexual risk behaviors like having sex under effect of substances or alcohol, or contraception misuse predisposing BDW to get UP. However, these hypothesis are currently speculative and might be the focus of further studies.

Finally, regarding other measures of obstetric history we did not find differences in number of women who reported have ever been pregnant, or in number of pregnancies by subject compared to women with no history of psychiatric disorder. Few studies evaluated these issues and they showed a lower proportion of women with pregnancies (Coverdale et al., 1997; Dickerson, et al., 2004) and lower number of pregnancies (Dickerson et al., 2004) among women with different psychiatric diagnosis. May be our findings are related to the fact that our sample is composed only by BDW with clinical-demographic characteristics mentioned above. More research about these obstetric outcomes is needed.

The lower rate of spontaneous loss of pregnancies among BDW compared to control group was an unexpected finding of our study. We can hypothesize that some voluntarily terminated pregnancies might have resulted in miscarriages if they had continued. It has been demonstrated that miscarriage rates can be influenced by abortion rates (Eskild et al., 2009). Thus the high frequency of abortions reported by BDW in our sample may have affected the miscarriage figures of this group. Another explanation is related to the planned condition of pregnancies in control group like a factor that might increase early awareness of pregnancies. It has been proposed that home test could heighten early pregnancy diagnosis and therefore self-reported miscarriage rates by making

women aware of pregnancy losses that would otherwise have gone unnoticed or attributed to being “late” (Lang and Nuevo-Chiquero, 2012). Finally, a third and non-exclusive explanation is that the trends toward getting pregnant at older ages among women of control group might have increased pregnancy loss rates.

Some limitations of this study must be taken into account. First, some measures were self-reported and collected retrospectively, so they may be affected by recall bias. The nature of our study could not allow us to find if UP were more frequent within affective episodes or during euthymia. New research works with prospective designs must be developed to confirm or contrast our findings. Our second limitation was LMUP has not been validated in Argentinean population before. Nevertheless, the comparison with a matched controlled group support the reproductive health data emerging from this study. Another limitation was related to small sample size, which not allowed us to perform a subanalysis of data regarding clinical features and their relation with the reproductive measures considered. Finally, our research was developed within a sample of well-educated, urban, highly functional, middle and upper middle class BDW and it cannot be generalized to broader populations of women with such diagnosis. Replication in larger heterogeneous samples will be required to confirm our findings.

Putting all the findings together, it seems that BDW in treatment have good standards of reproductive health care during euthymic period. But the high frequency of unplanned pregnancies in the past and the more frequently reported abortion support data coming from other studies and emphasize the occurrence of sexually risky behaviors during early periods of the disease. Clinician must be aware of the reproductive health and take measures to improve better family planning access when treating young BDW in order to prevent these serious events.

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Conflict of interest

None.

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