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Unintended and Unwanted Pregnancies in Women with Major Psychiatric Disorders: A Cross-Sectional Comparative Study

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Abstract

Background: A substantial number of women become pregnant unintentionally, and unintended, but continued pregnancies can cause immense stress, particularly in cases where the pregnancy is unwanted. Failure to adopt may result in the first onset of psychiatric illness in vulnerable individuals or may exacerbate pre-existing mental illnesses. We investigate here unintended and unwanted pregnancy rates in psychiatric disease, epilepsy, and healthy groups, and further assess whether unintended and unwanted pregnancies are associated with discontinuations of medical treatment and newborn complications.

Methods: Enrolled for the study were 95 psychiatric patients, 41 epileptic patients, and 60 healthy controls. The psychiatric group consisted of schizophrenia spectrum disorders, bipolar disorder, and major depressive disorder. All of the participants completed a questionnaire inquiring about the last pregnancy intention and related factors for each pregnancy that culminated in a live birth.

Results: Unintended pregnancy rates were significantly higher in psychiatric patients (63.1%) than in epilepsy patients (20%) and healthy controls (18.7%). Unwanted pregnancy rates were also significantly higher in psychiatric patients (23.6%) than in epilepsy patients (6.7%) and healthy controls (4.7%). The number of unwanted pregnancies was statistically higher in those with longer disease duration.

Conclusions: The unintended and unwanted pregnancies rates among women with psychiatric illnesses, especially those with schizophrenia spectrum disorders, were higher than those of patients with other chronic diseases (epilepsy) and healthy controls. Given the high rates and negative consequences of unintended and unwanted pregnancy, mental healthcare providers should provide information to the patients on family planning.

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INTRODUCTION

Many couples seek to get pregnant and have children. Each year, an estimated 123 million people succeed in this regard, while a substantial number of women – around 87 million –become unintentionally pregnant. For some women and their partners, a pregnancy may be a pleasant surprise, but for others, it may be mistimed or simply unwanted [1].

Women with unintended pregnancies may seek to proceed with the pregnancy and to have the baby. In such cases, the pregnancy may be unintended but welcomed, although some of these women may not feel ready to have a child and may be unwilling to continue with the pregnancy for various reasons. A pregnancy that is not desired by one or both biologic parents is both unintended and unwanted [2]. While some such pregnancies are terminated, others are continued.

A study conducted in 2012 reported that 40% of 213 million pregnancies worldwide were unintended, of which 50% resulted in abortions, 13% were lost to miscarriages, and only 38% were carried to term [3]. According to a TurkStat report in Turkey, in the 5 years preceding the survey, 74% of births were planned, 11% were unintended, and 13% were unwanted, but both carried to full term [4].

Unintended but continued pregnancies can cause immense stress, particularly in cases where the pregnancy is unwanted. Failure to adopt may result in the first onset of psychiatric illness in vulnerable individuals or may

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exacerbate pre-existing mental illnesses, and the potential restrictions on medication during pregnancy leads to difficulties in the treatment of the disease.

Unintended pregnancies among women with chronic illnesses also raise questions about the continued treatment of the illness during pregnancy and the potential damage to the unborn child. Such concerns can sometimes culminate in termination. According to literature, more than half of all pregnancies in women with chronic disease are unintended [5, 6, 7].

Many psychiatric diseases are chronic or recurrent, and therefore necessitate long-term medication. Doctors often advise patients who require ongoing drug treatment to discontinue the treatment when they become pregnant. Various studies have reported that both unintended and unwanted pregnancies have the potential to exacerbate a secondary psychiatric disease due to the sudden discontinuation of drug treatment, with twice or three times increased risk of exacerbated psychiatric disease. [8, 9, 10, 11]. Disease exacerbation may lead to re-hospitalization and higher doses of medication than during remission. Furthermore, multiple drug use can increase the risk of teratogenicity in psychiatric patients [12].

Unintended pregnancies have also been reported to lead to other issues, such as attachment problems, pregnancy-related complications, and the emergence of mental illnesses in formerly healthy people, especially in cases of unwanted pregnancy [13]. The emotional stress felt by mothers during pregnancy has also been reported to have an adverse effect on the development of the baby [14].

Focusing on planning alone is not sufficient, as the desire to have a child must also be explored, given the finding linking unwanted pregnancies with inadequate antenatal care [15, 16, 17]. There have been many studies investigating the negative consequences of unintended and unwanted pregnancies. However, a review of the literature revealed no studies investigating the rates of unintended and unwanted pregnancy, specifically among those with major psychiatric disorders other than bipolar disorder [18, 19, 20]. Chronicity has been reported to be a factor affecting the use of family planning [21], although there have been no studies comparing the unwanted and unintended pregnancy rates of major psychiatric patients with those of patients with other chronic diseases.

The aims of the current study are threefold: (i) to determine unintended and unwanted pregnancy rates in women with psychiatric disorders; (ii) to determine whether the unintended and unwanted pregnancies are associated with the discontinuation of drug treatment, the recurrence of symptoms and occurrence of complications in newborns; and (iii) to investigate the factors (duration of the disorder, number of hospitalization, forensic history, alcohol/substance abuse) affecting unintended and unwanted pregnancies.

METHODS

Ethical Approval

All the procedures were performed by the ethical standards of the institutional and/or national research committee (31.08.2015/38729, decision no: 486 from Istanbul Bakirkoy Prof. Dr. Mazhar Osman Mental Health and Nervous Diseases Training and Research Hospital Ethics Committee), and with the 1964 Helsinki Declaration and its later amendments, or comparable ethical standards. Written and verbal informed consent was obtained from each participant.

Setting/Research Design

This cross-sectional study included 95 consecutive psychiatric patients, 41 consecutive epilepsy patients, and 60 healthy controls. Psychiatric patients who were in remission were recruited from the inpatient psychiatric unit of a training and research hospital. The epilepsy patients were recruited from an outpatient epilepsy clinic of a faculty of medicine. Epilepsy is a chronic disease that necessitates the use of long-term medication, like other psychiatric diseases. So epilepsy patients were considered an appropriate group for comparison with psychiatric patients. All patients were selected consecutively. Patients who were clinically stable and with no intellectual disability were included in the study. Since the recruited patients have a chronic disease and usually need continuous medication, we did not apply any medication use status criteria. The healthy controls, who had no psychiatric or medical disease history, were recruited from the local community. All participants were ≥18 years old.

Epilepsy patients were diagnosed according to the diagnostic criteria of the International League Against Epilepsy. In contrast, the psychiatric patients were diagnosed based on a Structured Clinical Interview for DSM-5 (SCID-5), and the diagnosis was confirmed. The healthy group was also tested with a SCID-5, and the absence of psychiatric illness was confirmed. The psychiatric group was divided into three subgroups based on their psychiatric diseases: schizophrenia spectrum disorders (SSDs, n=30), bipolar disorder (BD, n=41), and major depressive disorder (MDD, n=24).

In the present study, the psychiatric patients were selected from hospital inpatients, and other psychiatric disorders (anxiety disorder, panic disorder, eating disorder, etc.) tend to be few in this patient group. If we included such patients in our sample, the numbers in their groups would be statistically insufficient, and so more SSD, BD and MDD patients were included in the study.

MATERIALS

All of the participants completed a questionnaire of 42 questions during face-to-face interviews. As each pregnancy that ended in a live birth was to be evaluated

separately, the forms were filled in for each. The following data were obtained from all participants: past medical history, sociodemographic information, the total number of pregnancies, medical treatment during pregnancy, pregnancy outcome, whether the pregnancy was intended, whether the pregnancy was welcomed and health status of the newborn (e.g., congenital disabilities and complications). The meanings of the terms "intended," "unintended," and "unwanted" pregnancy was explained in detail to the participants.

Statistical Analysis

The analysis was carried out using the IBM SPSS 20 (Armonk, NY: IBM Corp.) software package. The sample size was calculated using the G*power program. Calculations were made at 80% strength and 95% power level. The data were presented as mean, standard deviation, median, minimum, maximum, percentage, and number. The normality of the distribution of continuous variables was examined with a Shapiro Wilk-W test when the sample size was <50, and with a Kolmogorov Smirnov test when the sample size was ≥50. For comparisons of two independent groups, an Independent Samples t-test was used when the normal distribution condition was met, and a Mann-Whitney U test was used when not. For the comparison of the two dependent groups, a Paired Samples t-test was used if the normal distribution condition was met and, and a Wilcoxon test when not. For the comparison of continuous variables with more than two independent groups, an ANOVA test was used when the normal distribution condition was met, and a Kruskal Wallis test when not. After the ANOVA test, post-hoc tests were performed using a Tukey test when the variances were homogeneous, and Tamhane's T2 test when not. The Kruskal Wallis test was performed using the Kruskal Wallis one-way ANOVA (K samples) test for post-hoc tests. A Pearson Chi-square test (if the expected count >5), the Chi-square test (if the expected count was 3–5), and Fisher's Exact test (if the expected count was <3) were used for 2x2 comparisons of categorical variables. For comparisons between categorical variables greater than 2x2, a Pearson Chi-square test was used if the expected value was (>5) and a Fisher-Freeman-Halton test was used if the expected value was <5. Post-hoc tests after the Chi-square test were performed using the Bonferroni method. For the multivariate analysis, estimator risk factors between groups were analyzed using a logistic regression analysis with the possible risk factors identified in previous analyses. The statistical significance level was taken as p<0.05.

RESULTS

Included in the study were 95 psychiatric patients with 203 live births, 41 epilepsy patients with 105 live births, and 60 healthy controls with 150 live births. The sociodemographic characteristics of the participants are presented in Table 1a/b. There was no statistically significant difference among the groups in terms of the number of pregnancies and births (p = 0.501 and p=0.071, respectively). The unintended pregnancy rates were 63.1% in psychiatric patients, 20% in the epileptic patients, and 18.7% in the healthy controls. The unintended pregnancy rates were statistically significantly higher in psychiatric patients than in the epilepsy patients and the healthy controls (p<0.001) (Figure 1). The epilepsy patients recorded statistically significantly higher unintended pregnancy rates than the healthy controls (p<0.001). The unwanted pregnancy rate in the psychiatric patients was 23.6%, compared to 6.7% in the epileptic patients and 4.7% in the healthy controls. No statistically significant difference was noted in the unwanted pregnancy rates of the healthy controls and the epilepsy patients (p=0.708), although the rates of unwanted pregnancies were statistically significantly higher in the psychiatric patients than in the epileptic patients and the healthy controls (p<0.001), as shown in Figure2.

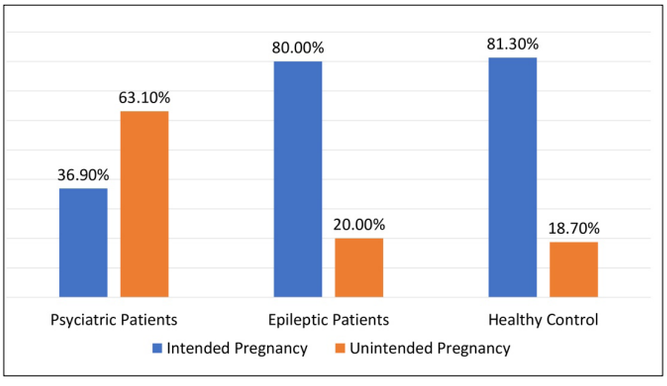

Figure 1. Unintended and intended pregnancy rates. The unintended pregnancy rates were statistically significantly higher in psychiatric patients compared to epilepsy patients and healthy controls (p< 0.001) .Epilepsy patients had statistically significantly higher unintended pregnancy rates than healthy controls (p< 0.001).

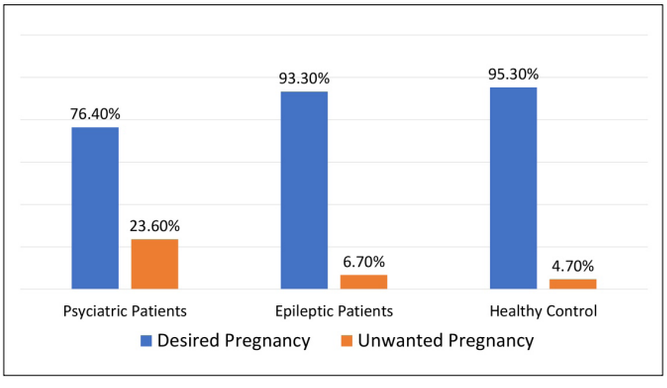

Figure 2. Unwanted and desired pregnancy rates. There was no statistically significant difference in unwanted pregnancy rates between the healthy controls and epileptic patients (p=0,708). The rates of unwanted pregnancies were significantly higher in patients with a psychiatric illness than in epileptic patients and healthy controls (p < 0.001)

Table 1a. Description of the study participants

		Valid N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Psychiatric Patient	Age	95	47	23	70	39,62	10,443	,716	,257
	Duration of education (years)		15	0	15	6,49	3,277	,358	-,169
	Duration of work (years)		30	0	30	4,79	7,515	1,878	2,718
	Number of pregnancies		7	1	8	2,71	1,707	1,457	1,940
	Number of births		7	1	8	2,17	1,302	1,956	5,427
Epileptic Patient	Age	41	18	24	42	33,49	4,308	,015	-,407
	Duration of education (years)		12	3	15	8,20	4,057	,560	-1,281
	Duration of work (years)		16	0	16	2,68	5,164	1,721	1,584
	Number of pregnancies		6	1	7	3,02	1,294	1,263	2,570
	Number of births		3	1	4	2,56	,923	,213	-,830
Healthy Control	Age	60	31	24	55	36,57	6,466	,599	,280
	Duration of education (years)		19	0	19	7,72	4,361	,406	-,221
	Duration of work (years)		23	0	23	1,42	4,071	3,660	14,907
	Number of pregnancies		12	1	13	3,10	1,811	3,019	14,489
	Number of births		6	1	7	2,55	1,171	1,089	2,393

Table 1b. Description of the study participants

	Psychiatric Patient (N:95)	Epileptic Patient (N:41)	Healthy (N:60)			
	Mean (SD) ; Median (min- Max)	Mean (SD) ; Median (min-Max)	Mean (SD) ; Median (min-Max)	Chi-square	p	Post-hoc
Age	39,62 (10,44) ; 39 (23-70)	33,26 (4,50) ; 34 (24-42)	36,56 (6,52) ; 36 (24-55)	12,357	0,110	Psychiatric- Epileptic
Duration of education (years)	6,49 (3,27) ; 5 (0-15)	8,19 (4,00) ; 5 (3-15)	7,76 (4,38) ; 6,5 (0-19)	4,578	0,190	
Duration of work (years)	4,79 (7,51) ; 1 (0-30)	2,62 (5,11) ; 0 (0-16)	1,45 (4,10) ; 0 (0-23)	19,667	p<0,05	Psychiatric- Epileptic, Psychiatric- Healty
Number of pregnancies	2,71 (1,70) ; 2 (1-8)	3,02 (1,27) ; 3 (1-7)	3,12 (1,82) ; 3 (1-13)	6,303	0,501	Psychiatric- Epileptic, Psychiatric- Healty
Number of births	2,17 (1,30) ; 2 (1-8)	2,55 (0,91) ; 2 (1-4)	2,56 (1,17) ; 2 (1-7)	10,483	0,071	Psychiatric- Epileptic, Psychiatric- Healty

Note. Kruskal Wallis test for compare and Kruskal Wallis 1-way ANOVA (K samples) test for post-hoc tests.

Table 1c. Description of the study participants

	Psychiatric Patient		Epileptic Patient		Healthy Control	
Type of relationship	N	%	N	%	N	%
Married, living in the same house	63	66,3	41	100	59	98,3
Married, living in a separate house	9	9,5	-	-	1	1,7
Divorced	19	20	-	-	-	-
Widow	4	4,2	-	-	-	-
Finanncial support	N	%	N	%	N	%
Self (working)+ Husband	-	-	8	19,5	5	8,3
Self (working)	21	22,1	-	-	1	1,7
Husband	54	56,8	31	75,6	51	85
Family	13	13,7	2	4,9	1	1,7
Social welfare	7	7,4	-	-	-	-
Husband + Family	-	-	-	-	2	3.3

In the psychiatric subgroups, the numbers of live births were as follows: schizophrenia spectrum disorders (SSD, n=30 live births=56), bipolar disorder (BD, n=41 live births=92), and major depressive disorder (MDD, n=24 live births=55). There was no statistically significant difference in the unintended pregnancy rates of the different psychiatric subgroups (p=0.677), while unintended pregnancy rates were higher in patients with SSDs (Figure3). About unwanted pregnancy rates in the psychiatric subgroups, there was no statistically significant difference among the subgroups (p=0.700), although the rate of unwanted pregnancy was higher in patients with SSDs (Figure4).

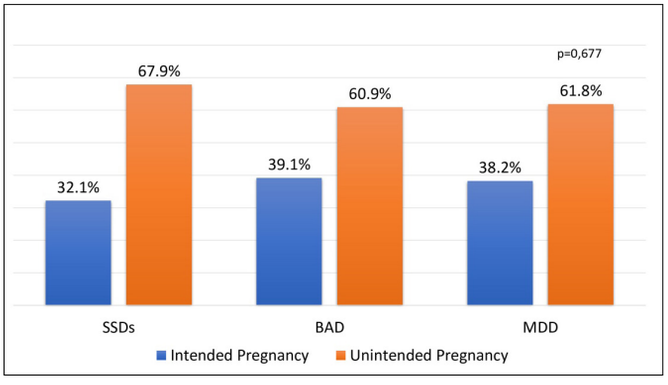

Figure 3. Unintended and intendedpregnancy rates in the psychiatric subgroups. SSDs: Schizophrenia Spectrum Disorders, BD:Bipolar Disorder, MDD: Major Depressive Disorder

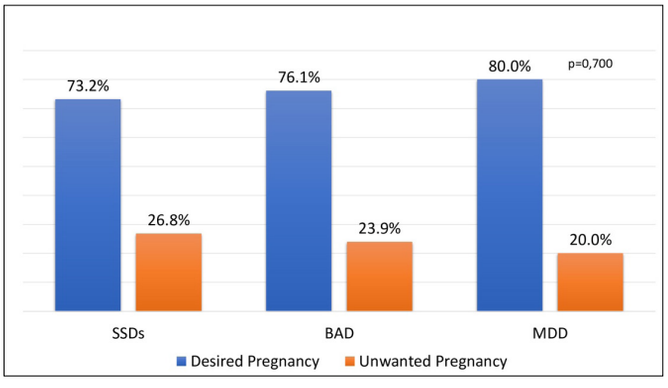

Figure 4. Unwanted and desired pregnancy rates in the psychiatric group. SSDs: Schizophrenia Spectrum Disorders, BD:Bipolar Disorder, MDD: Major Depressive Disorder

The rates of pregnancies that were both unintended and unwanted were also evaluated. The rates of pregnancies that were both unwanted and unintended were statistically significantly higher in patients with psychiatric illness than in the epileptic patients and the healthy controls (p<0.001), while there was no statistically significant difference in the psychiatric subgroups (p=0.471) (Figures 5,6)

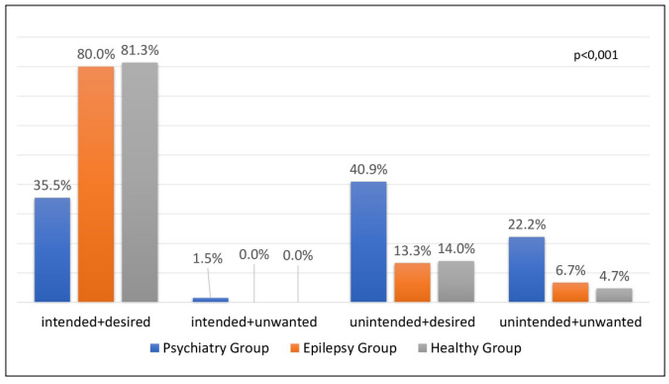

Figure 5. Both unwanted and unintended pregnancy rates

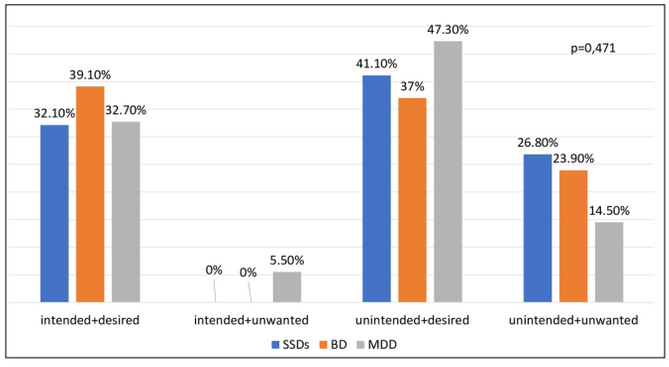

Figure 6. Both unwanted and unintended pregnancy rates among psychiatric subgroups. SSDs: Schizophrenia Spectrum Disorders, BD:Bipolar Disorder, MDD: Major Depressive Disorder

Data on the medical treatments applied during pregnancy, and the recurrence of symptoms associated with psychiatric disease in pregnancy was obtained for only 24.6% of the pregnancies that resulted in live births (Fifty of 203 live births). Treatment was continued during pregnancy only in 40% of those that carried to live birth (34% only during the first trimester, and 6% into first and second trimester). None of the patients continued taking their medication in the third trimester (Figures 7a-7b). There were no patients with ongoing regular treatment in the psychiatric patient group, and so the unintended or unwanted pregnancy rates and the treatment compliance could not be compared. None of the patients who reported a recurrence of symptoms during pregnancy had continued taking their medication regularly during their pregnancies. The pregnancies were unintended in 11 (68.8%) of the 16 patients who reported a recurrence of psychiatric symptoms during pregnancy. Newborn complications and prematurity were more common among the mothers with psychiatric illnesses who had an unintended and unwanted pregnancies than in those of the mothers with psychiatric illnesses who had intended and desired pregnancies, while there was no statistically significant difference among the subgroups (Table 2a/b).

Only one mother with schizophrenia reported a congenital anomaly *(pes equinovarus)* in the baby. The pregnancy had been unintended but desired, but the mother did not continue her medication during pregnancy.

Table 2a. Complications and maturity of newborns of mothers with a psychiatric disease

	Intended		Unintended			
	Count	N %	Count	N %	Chi-square	p
There isn't complication	70	93,30%	112	87,50%	1,735	0,188
There is complication	5	6,70%	16	12,50%		
	Intended		Unintended			
	Count	N %	Count	N %	p	
Full-term	72	96%	120	93,80%	0,717	
Premature birth	3	4%	8	6,30%		
Postterm birth	0		0			

Note. Results of live births (N:203) of patients with psychiatric diseases (n:95) were evaluated. Data were statistically analyzed by Fisher's exact and Chi-square test.

Table 2b. Complications and maturity of newborns of mothers with a psychiatric disease

	Desired		Unwanted			
	Count	N %	Count	N %	Chi-Square (yates)	p
There isn't complication	141	91,00%	41	85,40%	0,693	0,405
There is complication	14	9,00%	7	14,60%		
	Desired		Unwanted			
	Count	N %	Count	N %	p	
Full-term	147	94,80%	45	93,80%	0,724	
Premature birth	8	5,20%	3	6,30%		
Postterm birth	0	0,40%	0			

Note. Results of live births (N:203) of patients with psychiatric diseases (n:95) were evaluated. Data were statistically analyzed by Fisher's exact and Chi-square test.

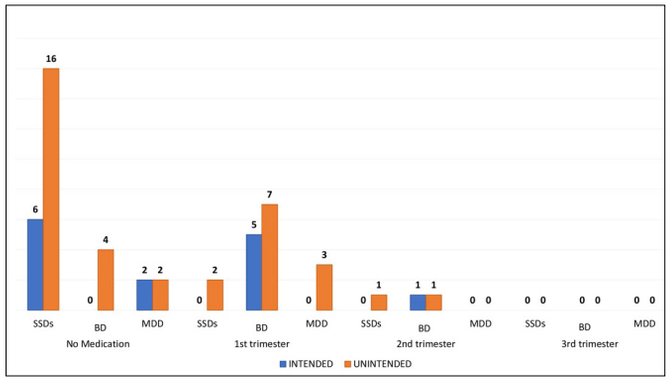

Figure 7a. Medication use in pregnancy and unintended pregnancy. SSDs: Schizophrenia Spectrum Disorders, BD: Bipolar Disorder, MDD: Major Depressive Disorder

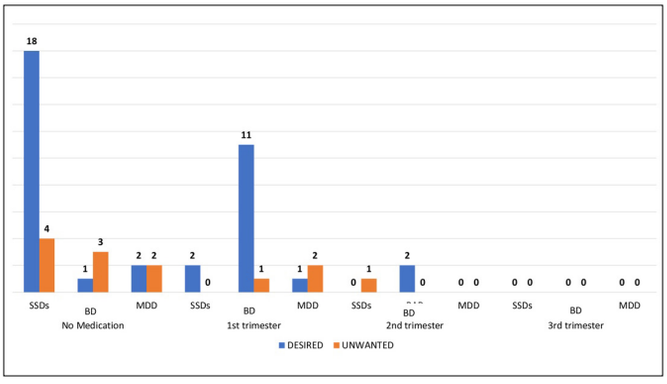

Figure 7b. Medication use in pregnancy and unwanted pregnancy. SSDs: Schizophrenia Spectrum Disorders, BD: Bipolar Disorder, MDD: Major Depressive Disorder

The forensic history of the patients, alcohol/substance use, treatment compliance, attempted suicide, and attempted harmful behaviors towards the baby are presented in Table 3a/b. When the relation of pregnancies with these conditions was examined according to planning and desire status, statistical significance could not be determined. The factors thought to predict unwanted or unintended pregnancies in psychiatric patients are evaluated in Table 4. The number of unwanted pregnancies was statistically significantly higher ($p< 0.05$) in those with longer disease duration.

Table 3a. Relationship of some factors with unintended pregnancies

		Intended		Unintended			
		Count	(N %)	Count	(N %)	Chi-Square	p
Alcohol abuse	No	71	94,70%	123	96,10%		0,852
	Social drinking	4	5,30%	4	3,10%		
	Abuse	0		1	0,80%		
	Dependence	0		0			
Substance abuse	No	75	100%	128	100%	N/A	N/A
	Dependence	0		0			
Forensic history	Not have a forensic history	57	76%	91	71,10%	0,576	0,448
	Have a forensic history	18	24%	37	28,90%		
Suicidal behavior	No	75	100%	125	97,70%		0,298
	Yes	0		3	2,30%		
Treatment compliance	N/A	20	26,70%	18	14,10%	7,563	0,023
	Non-compliant	33	44%	80	62,50%		
	Compliant	22	29,30%	30	23,40%		
Attempted to harm baby	No attempt	75	100%	128	100%	N/A	N/A

Note. Results of live births (N:75) were evaluated.Data were statistically analyzed by Fisher's exact and Chi-square test.

Table 3b. Relationship of some factors with unwanted pregnancies

		Desired		Unwanted			
		Count	(N %)	Count	(N %)	Chi-Square	p
Alcohol abuse	No	148	95,50%	46	95,80%		0,66
	Social drinking	7	4,50%	1	2,10%		
	Abuse	0		1	2,10%		
	Dependence	0		0			
Substance abuse	No	155	100%	48	100%	N/A	N/A
	Dependence	0		0			
Forensic history	Not have a forensic history	109	70,30%	39	81,30%	2,216	0,137
	Have a forensic history	46	29,70%	9	18,80%		
Suicidal behavior	No	153	98,70%	47	97,90%		0,557
	Yes	2	1,30%	1	2,10%		
Treatment compliance	N/A	30	19,40%	8	16,70%	1,23	0,541
	Non-compliant	83	53,50%	30	62,50%		
	Compliant	42	27,10%	10	20,80%		
Attempted to harm baby	No attempt	155	100%	48	100%	N/A	N/A

Note. Results of live births (N:155) were evaluated. Data were statistically analyzed by Fisher's exact and Chi-square test.

Table 4. Evaluation of factors thought to predict unwanted and unintended pregnancies in psychiatric patients

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Unintended Pregnancy	Age	0,006	0,016	0,175	1	0,676	1,007	0,976	1,038
	Duration of the disorder (years)	-0,002	0,022	0,01	1	0,92	0,998	0,956	1,041
	Total number of hospitalizations	0,039	0,042	0,829	1	0,363	1,039	0,956	1,13
	Forensic history	0,279	0,341	0,669	1	0,413	1,322	0,678	2,578
	Treatment compliance	-0,131	0,167	0,611	1	0,434	0,878	0,632	1,218
	Constant	0,19	0,67	0,081	1	0,776	1,21		
	-2 Log likelihood		Cox & Snell R Square				Nagelkerke R Square		
	213,587		0,041				0,061		
Unwanted Pregnancy	Age	-0,017	0,019	0,783	1	0,376	0,983	0,947	1,021
	Duration of the disorder (years)	0,055	0,024	5,039	1	,025*	1,056	1,007	1,108
	Total number of hospitalizations	0,008	0,041	0,034	1	0,853	1,008	0,93	1,091
	Forensic history	-0,513	0,423	1,471	1	0,225	0,599	0,262	1,371
	Treatment compliance	-0,118	0,205	0,331	1	0,565	0,889	0,594	1,329
	Constant	-0,975	0,803	1,473	1	0,225	0,377		
	-2 Log likelihood		Cox & Snell R Square				Nagelkerke R Square		
	265,035		0,012				0,016		

*denotes statistical significance (p<0.05)

DISCUSSION

To the best of our knowledge, this is the first study investigating unwanted and unintended pregnancy rates in patients with major psychiatric disorders, and to make a comparison of these rates with those of another chronic disease. Unintended and unwanted pregnancy rates were found to be statistically significantly higher in the psychiatric groups than in epilepsy and healthy control groups.

In the present sample, the unintended pregnancy rate was 63.1% of the total in the psychiatric patients, compared to 18.7% in the healthy control group. The fact that unintended pregnancy rates are higher in psychiatric patients when compared to healthy controls is a striking finding. The unintended pregnancy rates in the general population are considerably higher, being reported at 45% in the United Kingdom [22], 45% in the United States [23], and 38% and 23.2% in different studies in Turkey [24, 25]. These rates may seem high, as no distinction is made between women with diseases and healthy women in general population studies. According to our study, the reason for these higher rates is probably the inclusion of the data of those with psychiatric diseases for which unwanted pregnancy numbers are available. Taking into account the data garnered from the present study and the above explanation, in studies comparing psychiatric disorders and healthy controls, the rate of unintended pregnancies in healthy controls has been reported in different studies as 15.04% [18] and 9.6% [19].

One of the objectives in the present study was to examine whether unintended pregnancies in psychiatric patients are related to a chronic disease with continuous treatment. To this end, a comparison was made with epilepsy patients, who require a similar course and continuous use of medicine. The rates of unintended pregnancy in the psychiatric and epileptic patients were 63.1% and 20%, respectively. The unintended pregnancy rate in patients with epilepsy was also statistically significantly higher than that of the healthy population ($p < 0.001$). Women with chronic conditions who require continuous medication should pay particular attention to contraception. That said, there have been studies reporting contrasting findings [26, 27, 28]. In a study comparing the use of contraceptive methods between women with and without chronic illnesses, the use of contraceptive methods was found to be lower among those with chronic illnesses [21]. In a 2014 study comparing the rate of uptake of contraception-related services by women with and without chronic illnesses reported rates of 33.5% for women with chronic illnesses and 41.1% for women without chronic illness [26]. In a related study, 33% of patients with chronic psychiatric disorders reported not using any contraception, despite not wanting to become pregnant [29]. The findings related to women with chronic medical conditions are also worthy of note. Despite the presence of a chronic medical condition, contraception compliance was not as expected. In a study of patients with systemic lupus erythematosus, 59% of the respondents had not received counseling on birth control in the past year [30]. These findings show that contraceptive use is not at the desired level in those with chronic diseases. In the present study, however, although the unintended and unwanted pregnancy rates were significantly higher in both the psychiatric and epileptic patient groups when compared to the healthy controls, it is remarkable that the rates were quite high in psychiatric patients. As such, high rates of unwanted pregnancy would not appear to be associated with the chronicity of psychiatric diseases. One possible explanation for this poor compliance with contraception may be the cognitive side effects of the medical treatment or chronic disease, even in the absence of active disease symptoms. It can be concluded from this that even during periods of remission in psychiatric diseases, there may be permanent disorders in cognitive function and decision making, and an inability to return to former functionality [31, 32, 33]. This may also explain why unintended pregnancy rates are higher in those with epilepsy, which is a chronic disease.

In the present study, we also investigated the rate of unintended pregnancy in the psychiatric disease subgroups and found unintended pregnancy rates of 60.9% in women with BD, 61.8% in those with MDD, and 67.9% in those with SSDs.

Concurring with our findings in women with BD, in a recently published study from Turkey, the total rate of unintended pregnancies was reported as 49.52%, with 15.04% reported in the healthy controls [18]. Higher rates of BD have also been reported in studies in other countries [19, 20]. A review of the literature revealed no specific researches on unintended pregnancy rates among SSDs and MDD patients.

In a study of family planning use conducted in Turkey, only 40% of schizophrenic patients had discussed the issue of family planning with their husbands, with rates of 50% recorded in patients with bipolar disorder and 90% in healthy controls [34]. According to literature, schizophrenia patients are more reluctant than those with other psychiatric diseases and healthy controls to discuss family planning due to such disease-related symptoms as social isolation and negative emotions, as direct consequences of the disease [34]. A Turkish study of the effects of psychiatric diseases on women's lives found both schizophrenia and BD patients to be significantly less likely than depressed patients and healthy controls to use contraceptive methods [28]. The prevalence of contraception use among patients with BD at nominal levels has been observed in recent studies [35], and the findings of these studies support the importance of discussing family planning methods with all major psychiatric groups, but primarily SSD and BD patients.

In the present study, information was obtained about drug use during pregnancy and the recurrence of symptoms associated with psychiatric disease in pregnancy from only 24.6% of those with pregnancies resulting in a live birth. Only 6% of the psychiatric patients continued to use drugs in the second trimester, and none continued to use drugs in the third trimester. None of the psychiatric

patients who experienced a recurrence of symptoms in pregnancy reported regular drug use. The pregnancies were unintended in 68.8% of the patients who reported a recurrence of psychiatric symptoms during pregnancy. In previous research, only 38% of pregnant women prescribed atypical antipsychotics and 19% who were prescribed typical antipsychotics were reported to have continued taking their medication in the third trimester, with the remainder reporting that they had stopped treatment [36]. In depressed mothers, an exacerbation of illness occurred in 50–75% with the sudden interruption in drugs, and more than 40% reported having to resume the treatment [37]. In the present study, considering the low rate of drug use in patients during pregnancy, it can be assumed that the unintended pregnancies were an important reason for the discontinuation of drug treatments.

In the present study, unwanted pregnancy rates, in particular, were inquired, assuming that pregnancy follow-ups and the care given to the baby may be affected. Higher rates of unwanted pregnancy were reported in the psychiatric population than in the controls, being 23.6% in the psychiatric patient group, 6.7% in the epileptic patient group, and 4.7% in the healthy control group. The number of unwanted pregnancies was statistically significantly higher ($p < 0.05$) in those with longer disease duration. In a study in Russia, it was reported that 23% of pregnancies were desired but untimely, while 19% were unwanted pregnancies [38]. Among the individual factors, studies have considered the role of pregnancy intention in the use of antenatal care. Accordingly, a number of studies have assessed the relationship between antenatal care and pregnancy intention, and have found that women with unintended pregnancies tend to delay the initiation of antenatal care and make inadequate antenatal care visits [15,16, 39, 40]. In the present study, we made no specific inquiry into the use of antenatal care services, although, through an indirect route, we can get an idea of how unwanted pregnancies affect pregnancy follow-up by looking at pregnancy outcomes and neonatal complications. In the present study, neonatal complications and prematurity were observed more frequently in the infants of mothers with psychiatric illnesses with unwanted and unintended pregnancy than in the babies of mothers with psychiatric illnesses and with intended and desired pregnancies, although there was no statistically significant difference between the subgroups. Considering this data, we concluded that unwanted pregnancy might result in poor antenatal care. This condition may have contributed to adverse pregnancy outcomes and newborn complications.

Our study has some limitations. To begin with, the study data are based on verbal expressions, while historical data may be affected by the memory factor. The psychiatric stability of the respondents was unknown during pregnancy (unintended or unwanted, etc.), as the study was based on retrospective information obtained from the patients themselves. Since some questions could not be answered by all participants, these items were evaluated only for the respondents. The patients should have been asked whether or not they had been informed about the consequences of medication discontinuation.

Furthermore, we applied no standardized measurement for pregnancy intention. We intended to learn whether the pregnancies of the respondents were planned or intended, and so we did not feel the need to use any scale. In the present study, the psychiatric patients were selected from hospital inpatients, and other psychiatric disorders (anxiety disorder, panic disorder, eating disorder, etc.) tend to be few in this patient group. If we included such patients in our sample, the numbers in their groups would be statistically insufficient, and so more SSD, BD and MDD patients were included in the study.

In conclusion, unintended and unwanted pregnancy rates are very high in psychiatric patients, while the discontinuation of medical treatment during pregnancy is very high in the presence of unintended pregnancy. In epilepsy, another chronic disease, such rates are also high, although there is a significant difference between the rates of both disease groups. This difference cannot be explained only by the chronicity of the disease, and long-term psychiatric diseases are likely to have a negative impact on decision-making systems.

The need for counseling on pregnancy planning in the psychiatric patient group is demonstrated by the findings of the present study. In particular, the information should be given by maternal health care providers such as psychiatrists and psychiatric nurses about the importance of planning and the appropriate timing for women of the reproductive age with mental disorders. Pregnancy planning can thus help reduce the negative impact of mental illness on a woman, her unborn baby, and the rest of the family by providing them with the opportunity to discuss treatment and to finalize a management plan in advance of pregnancy [41]. In addition, we suggest that it would be useful to apply programs that support both the patient and the family while continuing the treatment of patients with unintended and unwanted pregnancies. Moreover, maternal health care providers should provide appropriate counseling to women with unintended pregnancies to encourage them to complete the recommended package of antenatal care services.

On the other hand, as part of preconception care, healthcare providers should diligently screen for psychiatric disorders among women of reproductive age to detect and apply the appropriate management of such conditions. Given the high rates of unintended and unwanted pregnancy, not only mental health providers, but also policy-makers, educators, social workers, and primary healthcare providers should be made aware of the risk factors associated with unintended pregnancy in psychiatric patients to ensure the availability of targeted screening and prevention programs, and early referrals to specialized health care professionals.

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