

Comparative Study of Sexual Side Effects of Fluvoxamine and Fluoxetine on Patients with Major Depressive Disorder

(Case Study: The Psychaitric Clinic, 22 Bahman Hospital, Mashhad)

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ABSTRACT

This clinical trial aims at comparatively evaluating the side effects of two drugs of Fluvoxamine and Fluoxetine and at discussing effective factors. For this purpose, patients with unipolar major depressive disorder (MDD) are randomly placed in two groups: Fluoxetine (Abidi) with dose 10 and 40mg and Fluvoxamine (Sobhan) with dose 50 to 150-200mg. Arizona scale was filled before, one month and two months after the treatment begins, and clinical improvement of depression in the first and second months was quantitatively evaluated by Beck test. The results indicated that in treatment of patients with major depressive disorder and unipolar disorder, Fluvoxamine had less effect on their sexual desire and satisfaction from orgasm, as well as both the said drugs had positive and equal effect on improving depression.

KEY WORDS: Sexual Side Effects, Fluvoxamine, Fluoxetine, Major Depressive Disorder, 22 Bahman Hospital.

1 INTRODUCTION

The researches suggest that major depression is the most prevalent psychiatric disorder in Iran [1]. According to the revised text of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), major depressive disorder (also known as unipolar depressive disorder) occurs without a history of manic, mixed, or hypomanic episodes, and lasts 2 weeks at least [2]. A patient who is diagnosed with major depressive attack, must at least have four symptoms of a list including changes in appetite and weight, changes in sleep and activity, lack of energy, feeling of guilt, difficulty in thinking and decision-making, or recurrent thoughts of death or suicide as well [2].

Selective Serotonin Reuptake Inhibitors (SSRIs) have been introduced as the front line anti-depressant in the treatment of major depression [3]. Currently, 5 types of these drugs are available: Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, and Citalopram. Since these drugs inhibit serotonin reuptake pharmacodynamically particularly by means of pseudo-synaptic neurons; have little effect on norepinephrine reuptake; and often, no effect on dopamin reuptake, they are called so [4].

Despite clinical usefulness and less side effects than other drugs of the past generation, these drugs have some gastrointestinal side effects including nausea, vomiting, diarrhea, anorexia, indigestion, weight, headache, and Cerebral nervous system complications including anxiety, insomnia, tension, alive dream, extrapyramidal symptoms, and effects on the other organs such as Anti cholinergic hematologic, hemalogical, endocrine, allergical effects and etc [3,4].

The most common side effect of these drugs (50-80%) is sexual dysfunction [4]. The most common complaints include orgasm inhibition. [4] as well as delayed ejaculation, delayed orgasm or anorgasm in women [5], which, unlike the other complications of the SSRIs, the sexual inhibition created by these drugs does not begin in the early weeks, but it continues until the drug is taken [4]. For explanation of sexual dysfunction it can be said that since conducting any analysis and study on sexual behaviors of the individuals has problems, determining the prevalence rate of sexual problems in the society is very difficult. Patients with sexual problems often complain of other symptoms rather than sexual dysfunction. For example, a patient may complain about anxiety, depression, insomnia or the symptoms of diseases in women [6].

In the revised text of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), sexual dysfunction is classified as one of the Axis I disorders. The Syndroms mentioned as sexual dysfunction are associated with each other in terms of sexual physiological response. This response is divided into 4 stages: sexual desire, eroticism (sexual arousal), orgasm, and subsidence. The main feature of sexual dysfunctions is to inhibit one or more stages of the said stages such as disorder of subjective feeling of sexual pleasure or sexual desire and or objective sexual dysfunction. Each of the types of these problems may occur by itself or together with the other ones. Diagnosis of sexual dysfunctions is posed only when these disorders form a main part of the clinical manifestation of the patient. These disorders may be lifetime or acquired, inclusive or situational, and their symptoms be mental, physiological factors or a set of these factors. If one can attribute these disorders completely

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to a general medical disorder, substance abuse, or the effects of drug abuse, the diagnosis of sexual dysfunction due to a general medical disorder or sexual dysfunction associated with substance abuse should be posed [4].

According to the studies conducted on different drugs of the SSRI group, sexual disorders rate in fluvoxamine were less reported [3], while there are studies do not support this. So, we decided, in a study, to investigate this difference. If this difference is seen significantly, this drug is considered in the area of taking the other SSRIs in patients with sexual dysfunction.

1.2 Theoretical Framework of Research

1.2.1 Major Depression and Bipolar Disorder

Mood disorders consist of a vast group of disorders which morbid mood (pathological) and the derangements associated with it form their dominant clinical features. In some previous editions of Diagnostic and Statistical Manual of Mental Disorders (DSM), these disorders were known as affective disorders, but later the term "mood disorders" was preferred, because this term considers the persistent and stable emotional states, and does not pay attention only to the external (affective) manifestation of transient emotional states. Mood disorders can be described by the term "Syndrome" as best as possible (rather than separate diseases), because these disorders combine a group of signs and symptoms which last for weeks and months; the said signs and symptoms differs clearly from the individual's normal functions, are usually recurrent, and often manifest periodically and cyclically. Mood may be natural, high, or depressive. Individuals usually experience a vast range of mood states, and can control more or less their mood and affective states. In mood disorders, this feeling of control is eliminated and the individual suffers greatly [2]. Key and central features of depression are low mood, pessimistic thinking, and lack of pleasure, low energy, slow and poor concentration, and low self-esteem [6].

1.2.2 Depressive Disorder Definition

Severe pain and discomfort is the most principal sign of depressive disorder. This disorder is a set of the symptoms accompanied with low mood, depressive thinkings, and in more severe cases, biological signs. Depression along with anxiety is the most common psychological complaint from the patients going to the primary care centers, and in many cases, is about depressive psychiatric disorder [6].

1.2.3 General Clinical Features

Grief is a type of natural feeling which health persons experience commonly in response to hardships specially loss of loved ones, and heartbreaking events. This state often is accompanied with anxiety, low energy, general malaise, and insomnia [6].

Appearance

The patient often has a specific appearance. Psychomotor slowness is frequently seen, that includes retardation in mental and motor function. He/she may have agitation which is some feeling of restlessness and may be appeared in the form of inability to find peace together with a restless and agitated activity. Or when the agitation is severe, the patient can not sit down for a long time and walks regularly [6].

Mood

The patient feels miserable. Low mood is usually experienced in the form of a state different from ordinary grief. Circadian variation of the mood is so that the patients specifically are more bad-tempered in the mornings than the late hours of the day. Anxiety and irritability are frequently seen. Lack of interest and pleasure are the most common and important symptoms, although the patient in him/herself does not always complaint about them. Low energy is a specific finding (although when it is accompanied by physical agitation, it is often ignored). The patient feels malaise and lethargy, finds everything hard, and leaves his/her works incomplete [6].

Poor Concentration

Sometimes paramnesia is so intensive that the clinical appearance looks like dementia [6].

Depressive Thoughts

Pessimistic thoughts occur when mood dropout and are accompanied by hopelessly thinking about the past, current and future events [4].

1.2.4 Biological Symptoms

This term is used for expressing insomnia, circadian variation of mood, loss of appetite, weight loss, constipation, decreased sexual desire, and in women, amenorrhea [6].

If the patient suffers only from the episodes of major depression, it is so said that he/she suffers from major depressive disorder or unipolar depression. For the patients with both types of episodes of depression and mania, or only experience manic episodes, bipolar disorder is diagnosed. The patients with bipolar disorder, who have no episodes of depression, are sometimes described by the terms such as "unipolar mania", "pure mania", or "euphoric mania". Hypomania includes an episode of the manic symptoms not conforming to all standards of DSM-IV-TR for manic attack [4].

1.2.5 Categorizing Mood Disorders According To DSM-IV-TR

According to the revised text of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), major depressive disorder (also known as unipolar depressive disorder) occurs without a history of manic, mixed, or hypomanic episodes. The major depressive attack must last 2 weeks at least. A patient who is diagnosed with major depressive attack, must at least have four symptoms of a list including changes in appetite and weight, changes in sleep and activity, lack of energy, feeling of guilt, difficulty in thinking and decision-making, or recurrent thoughts of death or suicide as well [2].

1.2.6 DSMIV Criteria for Major Depressive Attack

At least 5 of the following symptoms must be simultaneously seen in a two-week period, and be a sign of a change in the previous function. At least one of the symptoms must be (1) depressive mood or (2) indifference and no joy.

Note: the symptoms which are clearly caused by a general medical condition or also deliriums and illusions inconsistent with mood, are excluded.

1.2.7 Normal Sexual Desire

Different factors are important in determining sexual desires such as anatomical, physiological, psychological factors, and the culture in which the individual lives, his/her relationships with the others and growth experiences during his/her lifetime. These desires include perceptions of masculinity and femininity and all thoughts and feelings and behaviors associated with sexual satisfaction and reproduction such as a person's attraction to another person [6].

Normal sexual desire includes feeling of sexual desire, the behavior which causes the person's pleasure and his/her partner, and the stimulation of primary sexual organs is accompanied by the intercourse. There is no improper feeling of guilty or anxiety in it and is not by force [6].

1.2.8 Evaluation of Sexual Dysfunction

The patients with sexual problems often complain about other symptoms rather than the symptoms relating to sexual function because they are too ashamed of direct expression of their sexual problems. For example, a patient may complain about depression anxiety, insomnia, and or the symptoms of diseases in women. Therefore, posing brief and useful questions on the patient's sexual function is very important when he/she complains about non-specific, mental or physical symptoms [6].

1.2.9 Abnormal Sexual Desires and Sexual Dysfunctions

In the revised text of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), sexual dysfunction is classified as one of the Axis I disorders. The Syndroms mentioned as sexual dysfunction are associated with each other in terms of sexual physiological response. This response is divided into 4 stages: sexual desire, eroticism (sexual arousal), orgasm, and subsidence. The main feature of sexual dysfunctions is to inhibit one or more stages of the said stages such as disorder of subjective feeling of sexual pleasure or sexual desire and or objective sexual dysfunction. Each of the types of these problems may occur by itself or together with the other ones. Diagnosis of sexual dysfunctions is posed only when these disorders form a main part of the clinical manifestation of the patient. These disorders may be lifetime or acquired, inclusive or situational, and their symptoms be mental, physiological factors or a set of these factors. If one can attribute these disorders completely to a general medical disorder, substance abuse, or the effects of drug abuse, the diagnosis of sexual dysfunction due to a general medical disorder or sexual dysfunction associated with substance abuse should be posed [4].

1.3 LITERATURE REVIEW

Prevalence and effect of antidepressants-induced sexual dysfunction in three European countries: sexual dysfunction is a prevalent side effect, but often unknown, induced by antidepressants. In a study conducted by Williams et al in the United States, prevalence and effect of antidepressants-induced sexual dysfunction in three European countries were discussed. This paper, published in 2010 in the *Psychopharmacology* journal, was a cross-

sectional study on 704 adults in Germany, Spain and Netherlands. All patients began with receiving a selective serotonin reuptake inhibitor or a serotonin-adrenaline reuptake inhibitor. The individuals with sexual dysfunction were exited from the study. Drug-induced sexual dysfunction was scored by ASEX test. Finally, 46.4% of men and 52.1% of women were diagnosed with drug-induced sexual dysfunction. Sexual dysfunction is a phenomenon which is often occurred during the treatment by antidepressants, and is accompanied by drastically decreased quality of life and negative effects on the mood and interpersonal relations [8].

Estimating prevalence and effect of antidepressants-induced sexual dysfunction in two European countries: Williams et al (2006) conducted a study on 502 adults in France and England. All the individuals suffered from depression and had taken serotonin reuptake inhibitor or norepinephrine-serotonin reuptake inhibitor for the past three months. Then, Arizona scale was filled for investigation of these individuals' sexual function. During this study, 26.6% of the French samples and 39.2% of the English ones were found to suffer from drug-induced sexual dysfunction. Among them, about 34.2% were men and 35.5% women. There was no clear pattern of drug-induced sexual dysfunction in a specific drug. Prevalence of drug-induced sexual dysfunction was like the previous studies. These drugs had negative effects on the quality of life, mood, and relations with the partner [12].

Selective serotonin reuptake inhibitors: different effects of sexual inhibition by fluvoxamine and paroxetine after long-term medication. Waldinger et al, in a study in 2002, published in *Psychopharmacology* journal, investigated 48 men who were treated by fluvoxamine and paroxetine for two weeks. Then the sexual function tests were conducted on these individuals. In the fluvoxamine group, the parameters of sexual acts were inhibited to some extent, except for the ejaculation which was not delayed. But in the paroxetine group, all sexual acts even ejaculation were intensively inhibited. Result: paroxetine (not fluvoxamine) causes delayed ejaculation. This should be considered in the individuals who suffer from depression and are treated by these drugs [16].

Waldinger et al (1998) in a study in the Netherlands on 60 men with premature ejaculation, in the double-blind placebo study, compared 4 drugs of fluoxetine, fluvoxamine, paroxetine, and sertraline in terms of their effect on sexual function, and concluded that, unlike 3 other drugs, fluvoxamine did not delay premature ejaculation significantly [17].

Gonzales Montejo et al, in a study in Spain in 1997, investigated sexual dysfunction induced by the SSRIs (fluoxetine, fluvoxamine, paroxetine, and sertraline). Their study was a prospective multicenter study. Through a predetermined questionnaire about decreased sexual desire, effect on orgasm, lack of incidence of orgasm, delayed ejaculation, inability to ejaculate, sexual inability, and general sexual satisfaction, the subjects were evaluated. The patients who were treated as normal in terms of sexual function were participated in the study. They concluded that there is a significant difference between the different SSRIs so that paroxetine delays the orgasm more than fluoxetine, sertraline and fluvoxamine do. The men were more than the women, and showed more sexual dysfunction, while the severity of disorder in the women was more than the men [18].

Nemeroff et al, in a double-blind multicenter study, compared fluvoxamine and sertraline in the treatment of the outpatients with major depressive disorder, and concluded that the disorder of ejaculation and decreased sexual desire is significantly more ($p < 0.05$) in sertraline than in fluvoxamine [19].

2. Conceptual Framework of the Research

2.1 The Research's Goals

2.1.1 General Goals

Comparison of the sexual side effects of two drugs of fluoxetine and fluvoxamine in the patients with major depressive disorder.

2.1.2 Major, Applied, Minor, and Behavioral Goals of the Project

Evaluate sexual side effects in the patients with major depression treated by fluoxetine

Evaluate sexual side effects in the patients with major depression treated by fluvoxamine

Compare sexual side effects in the group treated by fluoxetine and fluvoxamine

Compare sexual side effects in the fluoxetine-treated group suffered from depressive disorder, depending on the sex

Compare sexual side effects in the fluvoxamine-treated group suffered from depressive disorder, depending on the sex

Compare sexual side effects in the two fluvoxamine and fluoxetine groups, depending on the sex

Compare sexual side effects in the patients with major depressive disorder.

2.1.3 The Research's Questions

Are the sexual side effects of fluvoxamine less than that of fluoxetine?

Are the sexual side effects of each of these drugs different in both sexes?

2.2 Conceptual Model of The Research

Definition	Unit	Type of Variable (Role)	Scale
1. Sexual desire disorder	Qualitative-dependent	-	Nominal
2. Sexual arousal disorder	Qualitative-dependent	-	Nominal
3. Impaired orgasm	Qualitative-dependent	-	Nominal
4. Age	Qualitative-dependent	Year	Proportional
5. Sex	Qualitative-dependent	Year	Proportional
6. Marital status	Qualitative-dependent	-	Nominal
7. Education	Qualitative-dependent	Year	Rating
8. Job	Qualitative-dependent	-	Nominal

Information Analysis Method: descriptive statistics was provided by the median, average, standard deviation (SD), and through the tables and graphs, and the analytical statistics was performed by means of the logistic regression.

Ethical Considerations: all the information of the patient was kept confidential, and the patients who suffered from sexual dysfunction were treated properly, as well as the patients were asked to give written informed consent.

3. METHODOLOGY OF RESEARCH

Type of the study and the reason for selecting it: Randomized clinical trial.

The research population and inclusion criteria – exclusion criteria: the patients with major depression going to the Psychiatric Clinic of 22 Bahman Hospital

3.1 Inclusion Criteria

1. Unipolar major depression diagnosed based on DSM criteria by psychiatrist.
2. Having fifth grade literacy at least.
3. Being married.
4. Having 20 to 50 years old.
5. Having no sexual dysfunction at first according to the patient.

3.2 Exclusion Criteria

1. The patients who did not continue the treatment.
2. The patients who developed medical complications, and we had to stop the treatment.
3. The patients who did not respond to the treatment after one month.
4. The patients who, during the treatment, were diagnosed with bipolar depression or another disorder.
5. Having sexual dysfunction at first according to the patient.

3.3 The Research Sample, Sample Volume, Sampling Method If Needed

The research sample: included the patients with major depression going to the psychiatric outpatient clinic of 22 Bahman Hospital.

The sample volume: 150 people in two 75-person groups.

3.4 Sampling Method: Available

3.5 Information Gathering Method

1. Demographic questionnaire including age, sex, family history, marital status.
2. Arizona scale [7].

3.6 Implementation Methods

In a randomized clinical trial, all the patients with unipolar major depressive disorder were randomly divided into two groups by using random number tables, after giving enough explanations and obtaining their written informed consents. The first group was taken fluoxetine (Abidi) and the second group fluvoxamine (Sobhan). At the beginning, they were diagnosed with major depression by the psychiatrist. The patients in the fluoxetine group began with taking the drug with initial dose of 10 mg, and after two weeks, the dose increased to 20 mg, and after four weeks, to 40 mg at most if necessary. In the fluvoxamine group, they began with initial dose of 50 mg, and after two weeks, it increased to 100 mg, and after four weeks, to 150-200 mg at most. Arizona scale [7] was refilled at the beginning, one month, and two months after the treatment began. Improvement of depression in the first

month and second month was quantitatively evaluated by Beck test (21 items) [20]. Finally, the information obtained was analyzed by the SPSS software and the related statistical tests.

4. Data Description and Analysis

4.1 Sex Distribution

The Table of Sex Distribution Between Two Groups Treated By Fluvoxamine and Fluoxetine

Drug Sex	Fluvoxamine		Fluoxetine		Total	
	No.	%	No.	%	No.	%
Male	25	33.3	25	26.7	45	30
Female	50	66.7	55	73.3	105	70
Total	75	100	75	100	150	100
Test Statistic	Pearson Chi-Square = 0.794					
Probability value	P-Value = 0.373					

According to the above table, there was no significant difference between the two fluvoxamine and fluoxetine groups in terms of sex.

4.2 Age Distribution

The Table of Age Distribution Between Two Groups Treated By Fluvoxamine and Fluoxetine

Drug	Min	Max	Average	SD	Test Statistic Probability Value
Fluvoxamine	20	47	30.2	7.4	T = 0.526 P-Value = 0.599
Fluoxetine	20	47	29.6	7.4	
Total	20	47	29.9	7.4	

According to the above table, there was no significant difference between the two fluvoxamine and fluoxetine groups in terms of age.

4.3 Education Distribution

The Table of Education Distribution Between Two Groups Treated By Fluvoxamine and Fluoxetine

Drug Education	Fluvoxamine		Fluoxetine		Total	
	No.	%	No.	%	No.	%
Completed 5th grade, primary school	12	16	18	24	30	20
Completed middle school studies, and below	12	16	16	21.3	28	18.7
Below high school diploma	12	16	9	12	21	14
High school diploma	26	34.7	25	33.3	51	34
Above high school diploma	13	17.3	7	9.3	20	13
Total	75	100	75	100	150	100
Test statistic	Mann-Whitney = 2370.5					
Probability value	P-Value = 0.087					

According to the above table, there was no significant difference between the two fluvoxamine and fluoxetine groups in terms of education.

4.4 Data Analysis

The drug sexual side effects:

The Table of Relationship Between Medication and The Score of Arizona Subtest In Terms Of Medication Month

Group		Min	Max	Average	SD	Test Statistic Probability Value
At the beginning	Fluvoxamine	1	4	2.36	0.80	Mann-Whitney u=2670 P-Value = 0.563
	Fluoxetine	1	4	2.41	0.81	
After one month	Fluvoxamine	2	4	3.09	0.76	Mann-Whitney u=2056.5 P-Value = 0.002
	Fluoxetine	2	4	2.72	0.67	
After two months	Fluvoxamine	1	5	3.07	0.84	Mann-Whitney u=2295.5 P-Value = 0.040
	Fluoxetine	1	5	2.79	0.95	

According to the above table, there was no significant difference between the two fluvoxamine and fluoxetine groups in Arizona substest I at the beginning, but after 1 and 2 months, this difference is significant.

In this study, 58 individuals who entered the study at first were removed from the study because of their reluctance to continue. In addition, 6 individuals were diagnosed, during the treatment, with bipolar depression, and 24 were exited from the study because of drug intolerance. Finally, 150 patients with major depression going to the Psychiatric Clinic of 22 Bahman Hospitan, and to a private clinic, were investigated in two groups treated by fluvoxamine and fluoxetine. The results obtained are as follows.

5. DISCUSSION AND CONCLUSION

In this study, we studied comparatively 150 patients with major depressive disorder and unipolar disorder. The average age of the fluvoxamin group (50 women and 25 men) was 30.2 years old and of the fluoxetine group (55 women and 20 men) 29.6 years old. The individuals' specifications including education, job as well as their scores from Beck test and Arizona scale at the beginning of the treatment, one month and two months after it was taken through interviews.

Major depressive disorder is among the most common psychitric problems [1], and serotonin reuptake inhibitors have been recognized as the front line antidepressants [3].

In this study, we attempted, while evaluating sexual side effects of this drugs on the patients suffered from depression, to discuss the effect of sex, age, being married, education, and job on the level of the complications created, as well as to compare the sexual side effects level by both fluoxetine and fluvoxamine.

Sexual side effects induced by the Selective Serotonin Reuptake Inhibitors (SSRIs) are properly proved. According to the study conducted by Csoka et al (2008), the SSRIs can have long-term effects on all aspects of the cycle of sexual functions [11]. Madeo et al, in a study in 2008 on 48 men treated by the SSRIa, found that all sexual standards decreased in these men [12]. Kennedy et al (2000), reported sexual dysfunction in those individuals taken the SSRIs to be 30-70% [16]. In the study conducted by Wiliams et al (2006) on 502 adults, 26.6% of the French samples and 39.2% of the English ones surveyed in this study, suffered from drug-induced sexual dysfunction, after three months taking serotonin reuptake inhibitors [14].

In the study conducted by Lee et al (2010) on 101 patients, they experiences considerable amount (46.5%, n=47) of sexual inability [8].

Philip et al (2000) also compared the effects of SSRIs with its alternative type (Moclobemide) and reported that the patients taken the SSRI had sexual dysfunction 10 times more (21.6%) compared to 1.9% [15].

In 2000, in a study conducted by Clayton et al on 1101 patients (4534 women and 1763 men), the SSRIs resulted in more sexual dysfunction than other drugs (4-6 times more) [13].

In our study also, the sexual side effects were seen among the patients taking fluoxetine and fluvoxamine so that the general score of Arizona scale was more in the individuals taking fluvoxamine than fluoxetine (P-Value=0.002).

In the study by Wiliams et al (2010), finally 46.6% of the men and 52.15 of the women suffered from drug-induced sexual dysfunction [7].

In a study Kennedy et al (2000) conducted, men experienced more drug-induced sexual dysfunction than women (P<0.05), but there was no difference between orgasm disorder and sexual arousal disorder between men and women [16].

In the study Lee et al conducted in 2010, they investigated 101 patients (46 men and 55 women). In this study, age and sex had no little effect on the results [8].

In our study also, there is significant difference between two fluvoxamine and fluoxetine groups in terms of sex, age, education, and job (P-Value>0.05).

In the study by Madeo et al (2008) on 48 men, during the treatment by the SSRIs, delayed ejaculation was seen more than the other sexual dysfunctions, while these drugs (citalopram and fluoxetine) had no clear effect on penis erection [10]. In the study by which Waldinger et al (2002) compared sexual side effects of fluvoxamine and paroxetine on 48 men, they reported that fluvoxamine had no effect on delayed ejaculation, but inhibited the other sexual parameters to some extent [14].

In the study by Corona et al (2009), delayed ejaculation was reported 7 times more among the patients taking the SSRIs [10]. While in our study there was no significant difference between the effect of drug on the substests 1 and 2 of Arizona scale (sexual stimulation strength and sexual arousal) at the beginning of the treatment, there was significant difference after 1 and 2 months.

For the substests 4 and 3 (erection, lubrication, and orgasm) there was no significant difference and for the substest 5 (satisfaction from orgasm) there was no difference at the beginning and after one month, and after two months there was significant difference.

According to Kennedy et al (2000), there was no difference between four types of antidepressants in men, while in women, sexual dysfunction induced by Sertraline and paroxetine was more ($P < 0.3$) [16]. While comparing fluoxetine and citalopram, Maedo et al also reported more sexual dysfunction induced by citalopram [10]. In the study conducted by Waldinger et al (2002) on 48 men, they found that there was difference between two selective serotonin reuptake inhibitors (paroxetine and fluvoxamine) on sexual dysfunction, and that fluvoxamine itself improved sexual function. On the other hand, for sexual dysfunctions, although the SSRIs begin to be taken from the first month of the treatment, after some months they culminate clearly.

Kennedy et al (2000) found that there is no difference between four types of antidepressants in men, while in women, sexual dysfunction induced by sertraline and paroxetine was more ($P > 0.3$) [16]. While comparing fluoxetine and citalopram, Maedo et al also reported more sexual dysfunction induced by citalopram [10]. In the study conducted by Waldinger et al (2002) on 48 men, they found that there was difference between two selective serotonin reuptake inhibitors (paroxetine and fluvoxamine) on sexual dysfunction, and that fluvoxamine had less effects [14]. In the study by Lee et al, occurrence of sexual dysfunction among the antidepressants was different, that was reported to be caused by different mechanism [8]. In our study also, at the beginning there was no significant difference between the sexual side effects of two drugs fluoxetine and fluvoxamin, but after one and two months, this difference was significant.

In this study conducted between two groups of the individuals taking fluoxetine and fluvoxamine, it was found that both drugs had sexual side effects, that is statistically significant ($P = 0.0001$). In addition, this effect in the two drugs was different (P -Value = 0.0001). There was no difference between the effects of these two drugs on sexual dysfunction (subtests 1-5 and general score of Arizona scale) at the beginning of the treatment, but after one month and two months, this difference was significant in the subtest. Moreover, these two drugs all improved the patients' depression, and they did not differ significantly in this respect (P -Value = 0.861). Age, sex, job, and education also had no significant effect on sexual dysfunction and improvement of depression (P -Value < 0.05).

5.1 Suggestions

1. We suggest that, in the next studies, the treatment should last more.
2. We suggest that, in the next studies, sexual dysfunction among other SSRIs should be discussed and compared with other types of depression.

5.2 Limitations

1. In this study, the treatment of the patients lasted only for 2 months.
2. In this study on the patients, only sexual side effects of the two drugs were compared.

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