

## CLINICAL STUDY

# Gender difference in the treatment outcome of patients served in the mixed-gender program

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**Abstract:** The aim of the study was to determine whether the treatment outcome differs for males and females in the mixed-gender methadone maintenance program.

A prospective non-randomized study was performed to evaluate the efficiency of the treatment over a period of 6 months. In this study, 91 patients (60 male and 31 female) were included and the groups were compared by the variables such as relapses, frequency of relapses, type of substance used and the manner of drug use. The results showed that 16 (51.6 %) female addicts had 147 relapses and 23 (38.3 %) male addicts had 118 relapses, but these differences were statistically not significant. Women made a significant relapse 43.7 % more than men 21.7 %, with heroine alone. The injectable drug abuse dominates in both genders, i.e. 56.2 % of female examinees and 69.6 % of male examinees injected the drugs, but this difference was not statistically proven. Conclusion: Gender has an influence on the response to the treatment. The outcome of the treatment measured through the drug use differs in the substance used. Women use more heroine than men, who in turn use more combinations of different drugs and legal psychoactive substances during the treatment (Tab. 7, Ref. 31). Full Text (Free, PDF) [www.bmj.sk](http://www.bmj.sk).

Key words: gender differences, treatment outcome, methadone maintenance treatment.

Because most treatment programs were originally developed for men, during the recent years the researchers have more frequently cited the need to understand how women use treatment services and to assess how effective are the various substance abuse treatment approaches for women.

Many researches of gender differences among substance abusers have discussed the fact that the gender contributes for the differences in the treatment outcomes (1). Although there are treatment programs adapted for the women with substance abuse problem, only a few studies study the outcome of the treatments adapted for women (2). So far, the instruments, which are sensible to gender difference, measure only the severity of the problems and do not evaluate the treatment efficiency in the studies (3). The small number and the limited data for the treatment outcome in female patients is owed to the attitudes, which oppose the existence of treatments specific and adapted to the gender, as well as to the relatively small number of female patients, i.e. the too small specimen for a statistic analysis (4). According to Tonneato et al, although some studies do study the treatment outcome, they do not exhibit the results of the outcome according to the gender (5).

The studies that have looked at the treatment outcome connected to gender measured the outcome through drug use or criminal behavior. The studies that have examined drug use during or after treatment and assessed whether women had better treatment response than man, found out that either there was no significant difference between the two genders (6, 7, 8) or that women had more favorable outcome than men (9, 10). These results are only reported in examining drug use, and not in examining type of drug use when the results differ in different type of drugs. For example, some studies showed that females use less cocaine, but there are not gender differences in abuse of other drugs (11). In another study, the results showed that men use more alcohol and marihuana, but there is no gender difference for cocaine, crack, and heroine (12). There are studies, which study the response to different types of treatment and gender based program. In such a study, Gerstein et al showed that female patients had a poorer outcome than men (13) in the short termed residential programs, but not in other programs.

Conflicting findings on treatment outcome with respect to gender are due to different methods of studying gender difference, use different measures, and use different follow-up time frame. Such differences impede an ability to arrive at clear conclusion about the differential effects of treatment for men and women. In the studies on the treatment outcome, frequently a part of the patients drop out due to different reasons, and thus the follow-up is not completed for everyone. If we don't know precisely who drops out and they are not followed up later, than the conclusion for gender differences is not true. As far as the

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**Tab. 1. Age.**

Age	n	Average	Median	Min.	Max.	Standard deviation
Women	31	31.26	32.00	18.00	44.00	5.71
Men	60	30.83	30.50	23.00	40.00	3.49

t-test for independent samples = 0.44, p=0.67

**Tab. 2. Nationality.**

Nationality	Women		Men	
	n	%	n	%
Macedonians	29	93.55	49	81.67
Albanians	–	–	5	8.33
Serbs	2	6.45	2	3.33
Rest	–	–	4	6.67
Total	31	100	60	100

Pearson chi-square = 8.26, df=1, p=0.042

measure of the drug use is concerned, when the measure of the outcome the drug use is employed, the majority of the outcome studies use self-report measures and only a few use the urinalysis test results. The nature of the follow-up time is different as well, some studies use the follow-up period when individuals are still in treatment, and other use follow-up period after treatment and it ranges from 5 months to 5 years after treatment (1, 7, 10–13).

The aim of this study was to determine whether the treatment outcome differs for males and females in the mixed-gender methadone maintenance program.

### Materials and methods

The study has been carried out in the Daily hospital of Psychiatric Hospital Skopje for prevention and treatment of abuse and addiction to drugs and other psychotropic substances. A prospective study has been performed on the efficiency of the treatment in a period of consecutive 6 months of methadone maintenance. The prospective follow up was realized by a weekly check up, which contains one or more procedures that are necessary in order to diagnose the use of substances: a physical check up for the presence of fresh skin changes caused by the injection of the substance; a report by the patient for use of a substance, a report for use of a substance by a family member involved in the treatment, if any; a urine control for the use of substances; observation of the patient for at least 3 hours at the Daily Hospital after the supervised taking of the methadone maintenance dosage. The efficiency of the treatment was estimated through the use of drug within the period of the prospective follow up in consecutive 6 months.

The study included 91 patients with the Syndrome of opiate addiction who are on the methadone treatment. The selection of specimens was not randomized, and the independent variable for inclusion was the gender (male or female). With an intended

choice, 2 examined groups were formed, the first comprising 60 male patients, whereas the second consisted of 31 female patients. Only patients who had issued a prior written consent for their participation in the study were included.

The trans-gender population was not included in the study.

A file was opened for each patient, if all data of the check ups and analyses made during the consecutive 6 months were duly noted.

The examined groups were mutually compared by the variables included in the patient file: relapses, frequency of relapses, type of substance, by which the relapses were made and the manner of drug use, as well as certain socio-demographic data and the amount of methadone dosage. The statistic tests Mann-Whitney U test, t-test for independent samples, chi<sup>2</sup> test and difference two proportions were used. The levels of probability for achieving the zero hypotheses in accordance with the international standards of the biomedical sciences were 0.05 and 0.01.

### Results

The study analyzed 91 patients with the Syndrome of opiate dependency included in the methadone maintenance treatment, the 31 (34.1 %) of which were females, whereas the 60 (65.9 %) were males.

The women included were on average 31.5±5.7 years old; one half of them were younger than 32 years; the youngest one being 18 years and the oldest one being 44 years.

The men included were on average 30.8±3.5 years old; one half of them were younger than 30.5 years; the youngest one being 23 years and the oldest one being 40 years.

With the t-test for independent samples we tested the difference in the average age between female and male examinees, and for the level of p>0.05 it was statistically insignificant, i.e. the examinees did not differ significantly in relation to the age (Tab. 1).

As far as the ethnic structure is concerned, the Macedonians dominated by 93.5 % at the female examinees and by 81.7 % at the male ones, Serbian nationality had the rest of the 6.5 % female examinees, whereas there were no Albanians.

The men were represented by 8.3 % of Albanians, 3.3 % Serbians, and the rest of the 6.7 % male examinees belonged to other ethnic groups. The cross-tabulation of the distribution of male and female examinees in the relation to their ethnic belonging had confirmed the statistically significant difference (p<0.05) (Tab. 2).

**Tab. 3. Methadone dosage in ml.**

Methadone dosage in ml	n	Average	Median	Min.	Max.	Standard deviation
Women	31	7.31	8.50	0.75	12.00	3.91
Men	60	7.57	8.00	0.50	12.00	2.92

t-test for independent samples = -0.38, p=0.71

**Tab. 4. Relapses during the course of 6 months.**

Relapses during the course of 6months	Women		Men	
	n	%	n	%
There are not	14	45.16	31	51.67
There are	16	51.61	23	38.33
dropped-out	1	3.23	6	10.0
Total	31	100	54	100

Chi-square=0.73, df=1, p=0.39, Mann-Whitney U test, U=928.5, Z=-0.012, p=0.98, Difference two proportions p=0.25

**Tab. 5. Number of relapses during the course of 6 months.**

Number of relapses in 6 months	Women		Men	
	n	%	n	%
1	4	25.0	2	8.7
2	1	6.25	3	13.04
3	1	6.25	3	13.04
4	-	-	4	17.39
5	-	-	3	13.04
6	2	12.5	-	-
7	1	6.25	-	-
9	-	-	3	13.04
10	1	6.25	2	8.7
11	1	6.25	1	4.35
13	1	6.25	-	-
14	-	-	1	4.35
16	1	6.25	1	4.35
18	1	6.25	-	-
25	1	6.25	-	-
26	1	6.25	-	-
Total	16	100	23	100

Mann-Whitney U test, U=149.0, Z=0.7, p=0.48

**Tab. 6. Substance by which the relapse was made.**

Substance by which the relapse was made	Women		Men	
	n	%	n	%
Heroin	7	43.75	5	21.73
Benzodiazepines	3	18.75	5	21.73
Marihuana	1	6.25	1	4.35
Amphetamine	-	-	1	4.35
Benzodiazepines + methadone	3	18.75	5	21.73
Benzodiazepines + marihuana	-	-	1	4.35
Benzodiazepines + alcohol + marihuana	-	-	1	4.35
Heroin + benzodiazepines + marihuana	1	6.25	1	4.35
Heroin + benzodiazepines + methadone	1	6.25	1	4.35
Heroin + marihuana	-	-	1	4.35
Heroin + benzodiazepines	-	-	1	4.35
Total	16	100	23	100

Mann-Whitney U test, U=106.5, Z= -2.21, p=0.027

The average dosage of methadone received by the examinees of female gender amounted to 7.3±3.9 ml; one half of the female addicts received a dosage bigger than 8.5 ml; the smallest dosage of methadone was 0.75 ml. and the biggest was 12 ml.

The male examinees received methadone in the average dosage of 7.6±2.9 ml; one half of the male addicts received a dosage bigger than 8 ml; the smallest dosage of methadone was 0.5 ml. and the biggest was 12 ml. The tested difference in the average dosages of methadone between the examinees of both groups was statistically insignificant (p>0.05). The two groups did not differ by the average daily dosage of methadone (Tab. 3).

Regarding the appearance of relapses, our study showed that 16 (51.6 %) female addicts and 23 (38.3 %) male addicts who were within the methadone maintenance treatment had again taken certain psychotropic substance in this analyzed period of 6 months.

But this difference in the distribution of the examinees of female and male gender regarding having/not having relapses in the last 6 months was statistically insignificant (p>0.05), i.e. the gender did not have any significant influence on the appearance of the relapses. During the course of the methadone therapy, 1 (3.23 %) female addict and 6 (10 %) male addicts dropped out of the program due to certain reasons.

The Mann-Whitney U test did not reveal a statistical significance between female and male examinees regarding having/not having relapses and in drop outs (p>0.05).

The difference between the percentage of dropped-out female and male examinees was also not confirmed statistically (Tab. 4).

The number of relapses with female and male examinees during the course of 6 months is shown in the Table 5. On the distribution of the female addicts, 25 % of the examinees with only 1 relapse dominate the group. In the frequency of the registered relapses, 12.5 % of female examinees experienced 6 relapses, and then those with 2, 3, 7, 10, 13, 16, 18, 25 and 26 relapses in 6.2 % of the female examinees. On the distribution of the male addicts, 17.4 % of the examinees with 4 relapses dominate the group.

**Tab. 7. Manner of abuse.**

Number of abuse	Women		Men	
	n	%	n	%
Injecting	9	56.25	16	69.56
Without injecting	7	43.75	7	30.44
Total	16	100	23	100

Chi-square=0.73, df=1, p=0.29

In the frequency of the registered relapses, 13 % of male examinees experienced 2, 3, 5, and 9 relapses. 8.7 % of the male examinees had only one relapse, but the same number of examinees had 10 relapses. Around 4 % of male examinees were registered with 11, 14 and 16 relapses. These registered differences in the number of relapses between the female and male examinees during the last 6 months were insufficient to be confirmed statistically ( $p > 0.05$ ).

In the period of 6 months, 16 female examinees had 147 relapses, whereas 23 male examinees had 118 relapses, which suggest a higher frequency in the female examinees.

The substance, i.e. the combination of substances, by which the relapse was made in the female and male addicts in the program of methadone maintenance can be analyzed in Table 6. The heroine is a dominant psychotropic substance between women, i.e. 43.7 % of female examinees had made relapses in the last 6 months with heroine; 18.7 % of women made the relapse with benzodiazepines, and the same number with a combination of benzodiazepines and marijuana; etc. as listed in the table. Between the male examinees, the same percentage of addicts (21.7 %), in the last 6 months made relapses with heroine, with benzodiazepines, and with a combination of benzodiazepines and methadone. The rest of the psychotropic substances and their combinations listed in the table as substances, by which the relapse was made, are present in 4.3 % of male addicts. The Mann-Whitney U test for the level of significance of  $p < 0.05$  confirmed the difference between the female and male examinees regarding the substance, by which the relapse was made during the last 6 months. Women, significantly more than men, made relapse with heroine only, whereas men significantly more used heroine in a combination with other substances, as well as benzodiazepines in a combination with other substances (Tab. 6).

In the female and male examinees, who made relapses, the injecting manner of drug abuse dominated, i.e. 56.2 % of female examinees and 69.6 % of male examinees injected the drugs at the time of relapses. The higher percentage of men who injected was not sufficient to be statistically proven. The gender of the examinees had no significant influence for the injecting manner of drug abuse at the time of relapses ( $p > 0.05$ ) (Tab. 7).

## Discussion

Studies, which examined the use of drug during or after the treatment and examined whether female or male have better re-

sponse to treatment, have found that either there is no significant difference between the two genders (6–8) or that women give a better response to treatment than men (9, 10).

Such results are reported only when the use of drugs was examined in general, and not when the specific types of drugs used were examined. Then the results differ regarding the type of drug. Also in our study, the difference regarding the gender of the patients who during the treatment had or did not have relapse, was not proven. The difference in the number of the dropped-out female and male examinees was not statistically proven as well.

The highest number of studies, which measured the frequency of drug use or the severity of the use, employed ASI and did not find gender differences (9, 14–19), which is in accord with our results, which did not show a statistical significance of the frequency of the relapses in the two genders although the total number of relapses in females was bigger. Only a small number of studies found out that men had more severe drug use consequences than women do (20) i.e. woman had more severe drug use than men (6).

Regarding the specific types of drug, which was used, a high number of studies showed a higher abuse or dependency of marijuana between men (14, 21, 22) and only few found out that there is no gender difference in the use of marijuana (23, 24).

In the studies, which were made in a population which uses cocaine, the majority did not find gender differences in the use of cocaine (11, 25, 26), but there are studies, which showed a higher use of cocaine in women (6, 23, 24).

There exist different results on the abuse of heroine. Some studies found out that women use heroine more frequently (11, 24, 27, 28), as in our study, others that men use heroin more (14, 21) or found no gender difference (22, 25, 29).

In our study, women had relapses only with heroine more than men, whereas more men took heroine in combination with other substances, as well as the benzodiazepines in combination with other substances. In our study, the polydrug use in the prospective follow-up of the consecutive 6 months was more frequent in the male examinees.

In literature, the results on the polydrug use are different. Some studies did not find gender difference (9, 19, 30), but there are studies, which showed a higher participation of polydrug use in the female gender (27, 28), or in the male gender (21, 31).

Regarding the manner of drug abuse in the recidivisms, although the percentage of men who inject was greater, it was not sufficient to statistically prove the difference and connection to the gender.

## Conclusions

The gender has an influence on the response to the mixed gender methadone maintenance treatment.

The outcome of the treatment measured through the drug use differs in the used substance.

Women use more heroine than men, who use more combinations of different drugs and combinations of legal psychoactive substances during the treatment.

The question, whether the gender specific program will improve the response to treatment of women, remains open.

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