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# Treating Heroin Addiction: Comparison of Methadone Therapy, Hospital Therapy without Methadone, and Therapeutic Community

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**Aim.** To analyze the success of three different treatment modalities for heroin addiction: methadone therapy, hospital therapy without methadone, and therapeutic community.

**Methods.** Ninety heroin addicts from the city of Split, Croatia, were systematically allocated to three groups, with 30 participants each, according to the addiction treatment modality they underwent or treatment that resulted in the longest abstinence. All participants were heroin addicts for at least 2 years before the treatment. The first group was treated by methadone, the second by hospital therapy, and the third in a therapeutic community. The criterion of the treatment success was minimum two-year heroin abstinence after therapy.

**Results.** After methadone therapy, only a single participant abstained from heroin for more than 2 years, but continued to use soft drugs and alcohol. After hospital therapy, none of the participants abstained from heroin. After therapy in a therapeutic community, 9 participants abstained from heroin; 5 of them continued to use soft drugs and/or alcohol. There was a statistically significant relation between heroin abstinence and therapeutic method (chi-square = 16.4236, $p < 0.001$; Fisher's exact test = 14.246, $p < 0.001$).

**Conclusion.** Treating heroin addiction in a therapeutic community may be a better treatment modality than methadone or hospital therapy.

***Key words:*** *heroin dependence; methadone; opioid-related disorders; therapeutic community*

Heroin is the most dangerous drug for the development of addiction (1-3). After only three weeks of heroin consumption, 97% of users develop a strong physical and psychological addiction (4-7). Heroin addiction has severe physical, psychological, and social consequences, and is usually accompanied by various diseases, such as hepatitis or acquired immunodeficiency syndrome (AIDS) (7). Addicts often die not only of overdose, but also of Syndrome X (acute fatal reaction to the intravenous injection of a relatively small dose of heroin) (2,4,7). Abstinence (complete and permanent restraint from drug use) is hard to achieve (8,9). In the initial phase of the treatment, the addict first has to overcome physical abstinence symptoms (metabolic craving for heroin) (10-12), and then learn how to live without drugs (13), even if his or her motivation is not strong enough (14,15). Studies including representative samples of opiate addicts showed that no permanent success greater than 30% had ever been achieved by any therapeutic method, regardless of the quantity of doses and years of addiction (16,17). Other studies reported similar or even poorer results (16-19). Some authors even stated that relapse is a rule and permanent abstinence an exception (19,20). Relapse is often a consequence of deficiency of natural stimulus of opioid receptors in the brain by endorphin-type neurotransmitters (5,21, 22), but is also caused by psychological (e.g., depression) and social reasons (family problems, unemployment, or associating with addicts) (18,21). The most efficient way in helping heroin addicts is still debatable and open to research (23-25).

The problem of addiction is highly pronounced in the city of Split, Croatia (21,26). The Counseling Center for the Prevention and Suppression of Addiction is a place where addicts from Split most often seek advice for the treatment opportunities. In the first years of addiction, they mostly do not have the will-power to accept the treatment. Once having decided to accept the treatment, they usually choose one of the three available methods: methadone therapy, hospital therapy, or therapeutic community. Most of them undergo all three treatments, depending on their motivation and life circumstances. The aim of the study was to compare the success of three commonly used therapeutic methods for treating heroin addicts from Split.

## Patients and Methods

*Patients*

The median age of addicts included in the study was 28 years (range, 20-39 years). There were 77 men and 13 women; the sex ratio of the study participants corresponded to the ratio of men to women in the addict population (26). The median period of heroin consumption was 8 years (range, 2-17 years).

Out of a list of 473 heroin addicts who have been coming to the Split Counseling Center during 1992, every fifth addict from the list was contacted (by telephone, messages, home visits, visits to the clinic or therapeutic community). If an addict could not be included in the study (5 refused to cooperate, 4 were in therapeutic communities, 3 were in prison, 3 did not answer the telephone calls, and 2 moved away) or was not treated by any of the 3 methods investigated (8 addicts), the next person from the list was contacted. The addicts were asked whether their treatment was based on methadone therapy, hospital therapy (without methadone), and/or a therapeutic community. If treated by one of the 3 methods and willing to answer the questions from the questionnaire, they were allocated to one of the 3 groups according to the method of treatment. If treated by 2 or 3 investigated methods, they were allocated according to the treatment that provided the longest heroin abstinence. Thus, each group was composed of 30 addicts, according to the "best" treatment they underwent.

*Data Collection*

The questionnaire contained 3 groups of questions (a total of 240 questions) on general data, addiction, and treatment details. The study analysis did not include all questions on the treatments and treatment results. Eighty two participants were surveyed in the Split Counseling Center, 3 at home, 3 in a therapeutic community, and 2 in a clinic. The survey lasted from June 1995 to February 1997, because a minimum of two-year heroin abstinence after treatment was required. Follow-up of the abstinents lasted until July 2002.

The expression "soft drugs and/or alcohol" was defined as occasional consumption of marijuana and/or hashish (up to twice a month) and/or moderate drinking of alcohol (up to 2 liters of beer or wine a month).

*Treatment Modalities*

Twenty eight participants from the first group stopped taking methadone after several months of consumption, whereas 2 switched to methadone maintenance. The treatment of Croatian addicts by methadone started in Belgrade in the former Yugoslavia, in 1987; and continued to be carried out in Croatia after 1990 (21,26). In this study, 78 out of 90 participants underwent methadone therapy at some time during their life (Table 1).

**Table 1.** Number of treatments in 30 methadone-treated, 30 hospital-treated, and 30 community-treated heroin addicts

| No. of treatments | Treatment modality | | | |
|---|---|---|---|---|
| | methadone | hospital | therapeutic community | Total |
| Methadone: | | | | |
| 0 | 0 | 3 | 9 | 12 |
| 1-2 | 22 | 19 | 17 | 58 |
| 3-4 | 4 | 4 | 3 | 11 |
| 5-10 | 4 | 4 | 1 | 9 |
| Hospital: | | | | |
| 0 | 4 | 0 | 11 | 15 |
| 1-2 | 15 | 15 | 9 | 39 |
| 3-4 | 11 | 11 | 9 | 31 |
| 5-6 | 0 | 4 | 1 | 5 |
| Therapeutic community: | | | | |
| 0 | 7 | 9 | 0 | 16 |
| 1-2 | 20 | 20 | 26 | 66 |
| 3-4 | 3 | 1 | 4 | 8 |

Hospital therapy at specialized departments for treating addicts includes detoxification and a months-long control of abstinence from heroin (completely "drug-free" or supported by symptomatic therapy), coupled with psychotherapy and various sociotherapeutic activities (22,26). This type of therapy has been carried out in Zagreb since 1970, at the Sisters of Mercy University Hospital (where participants from the second group were treated), and since 1997 at the Vrapče Psychiatric Hospital (21, 26). In this study, 75 participants underwent hospital therapy at some time during their life (Table 1).

Participants from the third group were treated in the therapeutic communities of the "Meeting" Therapeutic Community, Split, with psychotherapy and working activities. "Long-term" treatment ( 2 years) in the therapeutic communities has been available to addicts from Split since 1990 (therapeutic communities in Italy) (22,28,39). Since 1992, therapeutic communities have also been established in Croatia (the "Meeting" Therapeutic Community, Cenacolo, Reto, and Papa Giovanni XXIII) (21,26). In this study, 74 participants were treated in the therapeutic communities at some time point of addiction treatment (Table 1).

*Statistics*

Chi-square test and Fisher's exact test were used to analyze the collected data and assess whether there was a statistically significant relation between the treatment success and therapeutic method.

## Results

*Methadone Treatment*

In the methadone treatment group, there were 25 men and 5 women. The median period of heroin consumption was 8 years (range, 4-17 years). The median duration of treatment was 6 months (range, 1-78 months); duration of treatment of 28 participants who completed the therapy ranged from 1 to 30 months. The median estimated treatment costs were US$279 per person (range, US$47-3,628). The greatest median daily methadone dose was 70 mg (range, 30-140 mg). During the treatment, 4 participants abstained from heroin, whereas 26 relapsed after a median heroin abstinence of 30 days (range, 0-90 days). Two participants remained on methadone maintenance, whereas 28 stopped taking methadone (14 after medical advice and 14 by their own will). The median heroin abstinence after methadone treatment was 0 days (range, 0 days-30 months) (Table 2). In spite of the treatment, 29 participants continued to use heroin. After the treatment, only a single male participant has abstained from heroin use for over 2 years, using soft drugs and alcohol (Table 3).

*Hospital Treatment*

In the group that underwent hospital treatment, there were 26 men and 4 women. The median period of heroin consumption in this group was 8 years (range, 2-17 years). The median duration of the treatment was 2 months (range, 1-4 months). The median estimated treatment costs were approximately US$1,425 per person (range, US$713-2,850). During the treatment, 8 participants abstained from heroin, whereas 22 of them relapsed after the median heroin abstinence of 5 days (range, 0-30 days). Twenty two participants left the hospital upon completion of the therapy (following medical advice), 5 were discharged (mostly because of relapse), and 3 decided to discontinue the treatment. The median heroin abstinence after the hospital treatment was 0 days (range, 0 days-4 months) (Table 2). In spite of the treatment, all participants continued to use heroin (Table 3).

*Treatment in Therapeutic Communities*

In the group treated in the therapeutic communities, there were 26 men and 4 women. The median period of heroin use in this group was 7 years (range,

**Table 2.** Characteristics of 90 heroin addicts divided into three groups according to the addiction treatment modality they underwent

| Characteristics | Treatment group | | |
|---|---|---|---|
| | methadone | hospital | therapeutic community |
| No. of subjects | 30 | 30 | 30 |
| Sex (male/female) | 25/5 | 26/4 | 26/4 |
| Age (years; median, range) | 28 (24-39) | 29 (20-39) | 27 (20-32) |
| Years of heroin abuse (median, range) | 8 (4-17) | 8 (2-17) | 7 (3-11) |
| Months of treatment (median, range) | 6 (1-78) | 2 (1-4) | 6 (1-30) |
| Treatment costs (US$, median, range)* | 279 (47-3,628) | 1,425 (713-2,850) | 2,000 (333-10,000) |
| Heroin abstinence during treatment (days): | | | |
| yes/no | 4/26 | 8/22 | 30/0 |
| no abstinence during treatment (median, range) | 30 (0-90) | 5 (0-30) | – |
| Treatment (No. of subjects): | | | |
| completed | 14 | 22 | 8 |
| discontinued | 14 | 3 | 20 |
| discharged | 0 | 5 | 2 |
| still treated | 2 | 0 | 0 |
| Heroin abstinence after treatment: | | | |
| yes/no | 1/29 | 0/30 | 9/21 |
| no abstinence after treatment (median, range) | 0 days (0 days-30 months) | 0 days (0 days-4 months) | 1 month (0 days-42 months) |

*The treatment costs per 100 mg methadone were US$2.2 (the price from a drug-store); per hospital day were US$23.8 (26); and per month in a communitiy were US$333.3 (the price paid from the Government budget per addict in a therapeutic community).

**Table 3.** Comparison of abstinence achieved by the three therapeutic methods for heroin addiction

| Abstinence* | Treatment (No. of subjects) | | | |
|---|---|---|---|---|
| | methadone | hospital | therapeutic community | Total |
| No | 29 | 30 | 21 | 80 |
| Yes: | 1 | 0 | 9 | 10 |
| using soft drugs and/or alcohol† | 1 | 0 | 5 | 6 |
| not using any drugs or alcohol | 0 | 0 | 4 | 4 |
| Total | 30 | 30 | 30 | 90‡ |

*The criterion of the treatment success was a minimum of two years of heroin abstinence after therapy.
†Defined as occasional consumption of marijuana and/or hashish (up to twice a month) and/or moderate drinking of alcoholic beverages (up to 2 liters of beer or wine a month).
‡There was a statistically significant correlation between heroin abstinence and therapeutic method; chi-square = 16.4236, p 0.001; Fisher's exact test = 14.246, p 0.001; df = 2.

3-11 years). The median duration of the treatment was 6 months (range, 1-30 months). The median estimated treatment costs were approximately US$2,000 per person (range, US$333-10,000). During therapy, all participants abstained from drugs and alcohol. Twenty participants discontinued their treatment, 8 left the community upon the completion of the treatment program, and 2 were discharged before completing the treatment because of aggressive behavior or not returning on time from the verification (drug testing). The median period of heroin abstinence after treatment in the therapeutic community was 1 month (range, 0 days-42 months) (Table 2). In spite of the treatment, 21 participants continued to use heroin. Due to treatment, 9 male participants have abstained from heroin use for over 2 years, 5 continued to use soft drugs and/or alcohol, and 4 abstained from taking any drugs or alcohol (Table 3).

*Comparison of the Treatments*

There was a significant correlation between heroin abstinence and therapeutic method (chi-square = 16.4236, $p < 0.001$; Fisher's exact test = 14.246, $p < 0.001$). Compared with other therapeutic methods, treatment in the therapeutic community produced abstinence in more participants.

Thirty four out of 80 relapsing participants reported that they had discontinued their abstinence because of the (mostly psychological) need for heroin. Twenty-one reported that heroin offered them an escape from problems, 11 said that it caused satisfaction, and 9 that it was a solution to boredom. Two participants took heroin again because of their social environment (everyone they knew took drugs), whereas 3 could not state any reason at all.

Follow-up of 10 participants who achieved heroin abstinence has continued until July 2002 (5 years and 5 months after completion of the survey), with all 10 of them remaining drug-free.

## Discussion

Treating heroin addiction in a therapeutic community showed to be a more effective treatment modality than methadone or hospital therapy.

When introducing the methadone program, the main goal of Dole-Nyswander was social and personal rehabilitation of addicts (27,28) rather than drug relief, as it became in the following years. Methadone therapy is mostly taken in an out-patient setting, with the dose gradually reduced during several weeks or months (22,26-38). With recommended 80-100 mg daily doses (40,41), methadone proved to be a drug that successfully reduced the abuse of heroin, but did not solve the problem of addiction (22). According to US National Institute on Drug Abuse research, methadone treatment reduces heroin consumption by 70%, criminal activity of addicts by 57%, increases employment by 24%, and reduces the risk of infection with human immunodeficiency virus (HIV) and hepatitis C virus (HCV) (21). According to Drug Abuse Treatment Outcome Study, methadone treatment results in 68.5% abstinence from heroin after a year (42). The European Union countries are faced with an increased consumption of methadone as a result of an increasingly liberal approach. The conditions for undergoing methadone therapy

are as follows: over 18 years of age; heroin addiction, according to International Classification of Diseases; and personal request for the treatment (43). Today, more investigators than ever believe that a complete solution of the problem of heroin addiction cannot be expected from methadone treatment and put emphasis on "harm-reduction" (21,42,43). This is in accordance with the results of the present study: after methadone treatment, only 1 out of 30 participants has abstained from heroin use for more than 2 years, but continued to use soft drugs and alcohol.

Treatment of addicts at specialized hospital departments consists of suppression of abstinence symptoms and a several months long drug addiction treatment program. Addicts abstain under control of a team of professionals and take part in various psychotherapeutic and sociotherapeutic activities. Some receive symptomatic therapy. Most authors agree that detoxification (22,44), along with at least a three-month treatment (45) is only the first step in addiction treatment. The results of this study corroborate this notion.

Treating addicts in therapeutic communities has been confirmed to be the best and most efficient drug-free treatment method of closed type, effective in reducing drug intake and relapse of criminal behavior rate (22,39,46,47). Addicts have to stay in the communities for at least 3 months (28,45,48). Recommended length of stay is either 3 to 6 (46) or 6 to 12 months (22,49). Resocialization after treatment is also important to maintain abstinence (22,47,49). The negative aspects of the therapeutic communities are long duration of stay and demanding program, which 70% addicts find unacceptable (21). More than half of addicts give up during the first 3 months (28). The Italian experience from 1995-2000 showed that, out of 367 addicts who came to the Cenacolo Therapeutic Community, 102 (27.8%) completed the program and 95 out of those 102 (25.9% of the initial group) abstained from heroin. The report did not state the duration of abstinence (21). Hubbard (28) reported that 28% of the clients who underwent treatment for at least 3 months abstained from heroin and used alcohol and/or marijuana one year after treatment. Two years after treatment, the results were better, although slightly, but 3 to 5 years after treatment they were worse than in the first year. Gossop et al (39) showed that 33.6% of the clients in 23 English residential treatment communities abstained from heroin for one year after the beginning of therapy. Stinchfield and Owen (50) reported that 53% of participants treated according to the Minnesota model continued to abstain one year after the treatment. According to Drug Abuse Treatment Outcome Study, as many as 64.7% of participants in 11 US cities abstained from heroin for a year after the treatment (42). The results of this study are similar: after the treatment in the therapeutic communities, 9 out of 30 participants have abstained from heroin use for more than 2 years, with 5 using soft drugs and/or alcohol and 4 not using any drugs or alcohol. Completing the treatment seems to be the key predictor of permanent abstinence in both men and women (51).

The study could not include greater number of participants due to the peculiarity of the addict population. But it was already a success to find and motivate 90 (out of 115 sought) participants to cooperate. At present, it appears that treatment of heroin addiction should be organized according to the following general strategy:

1) The hospital should be the site of treating physical crisis, offering physical and psychological support and building motivation for a long-term closed-type treatment.

2) Methadone should be therapeutically prescribed only if extremely necessary for a) suppressing the abstinence crisis in addicts whose health is significantly impaired, b) preventing abstinence crisis of the fetus (newborns) of pregnant addicts (52), or c) strictly controlled maintenance of abstinence in longtime addicts, severely ill, unsuccessfully treated several times, or addicts without the desire for complete abstinence (53-55). We must bear in mind that methadone is a drug, and that its consumption should reduce the harm caused by taking heroin (56).

3) Therapeutic communities should be more available to addicts and help them enter the treatment program, complete it, and return to everyday life as normal as possible.

Heroin addiction is a chronic, progressive, and relapsing illness. The results of its treatment should be compared with the results of treating other chronic diseases, such as asthma, hypertension or diabetes (22). Complete abstinence is an ideal; it is very difficult and often impossible to achieve. Therefore, each relapse should encourage the search for a new, more acceptable treatment (57-61). Every day without heroin may help reduce crime and spread of diseases and problems that accompany heroin abuse, and should be considered a gain for the addict, his family, and the society as a whole (28). Every untreated addict is more expensive for the society than the treated one (even by the most expensive treatment – the community) and investing in such treatment is not only necessary, but entirely justified.

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