Drug and Alcohol Dependence 185 (2018) 112–119

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Similarities and changes between 15- and 24-year survival and retention rates of patients in a large medical-affiliated methadone maintenance treatment (MMT) center

Einat Peles[a,c,d,*], Shaul Schreiber[a,b,c,d], Anat Sason[a], Miriam Adelson[a]

[a] Dr. Miriam and Sheldon G. Adelson Clinic for Drug Abuse, Treatment and Research, 1 Henrietta Szold Street, Tel-Aviv 64924, Israel
[b] Department of Psychiatry, Tel Aviv Sourasky Medical Center, Weizmann St. 6, Tel-Aviv, Israel
[c] Sagol School of Neuroscience, Tel-Aviv University, Tel-Aviv, Israel
[d] Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

ARTICLE INFO

Keywords:
Methadone maintenance treatment
Opiate abuse
Retention
Survival
Cocaine
Cause of death

ABSTRACT

Background: Environmental and social trends and patients' characteristics may affect predictors for methadone maintenance treatment (MMT) outcome.
Methods: We have expanded our previous study of predictors for MMT outcome (from 619 to 890 patients) and the study period (from 15 to 24 years). Survival and retention in MMT since admission to the MMT clinic (6/1993–6/2016) and until death or study closure (6/2017) were compiled and analyzed.
Results: Of 890 patients ever admitted (10,146.9 person-years (py)), 237 passed away (116 while in MMT). The mortality rate did not differ between those who stayed or left (2.6 vs. 2.1 per 100 py, $p = 0.1$), but it was lower among those who stayed ≥1 year during any admission (2.1 vs. 3.3 per 100 py, respectively, $p = 0.004$). Age < 40 years, no hepatitis C or B, no HIV, and no benzodiazepine abuse after one year predicted longer survival (multivariate analyses). No opiate or benzodiazepine abuse after one year, methadone dose ≥100 mg/d, no DSM-IV-TR Axis II diagnosis only, and no direct hospital referral predicted longer retention. Cocaine abuse predicted poor retention and survival among 271 patients admitted during the extended part of the study period.
Conclusions: Predictors for retention (associated with MMT outcome) and mortality (associated with pre-treatment comorbidity) after 24 years were similar to those after 15 years. Cocaine abuse as a predictor of both poor retention and poor survival in the later period may reflect the escalating trend for cocaine abuse and should be studied if related to other unmonitored substances.

1. Introduction

Opiate addiction is a chronic relapsing brain disorder characterized by a high mortality rate (Bargagli et al., 2001; Preti et al., 2002; Sanchez-Carbonell and Seus, 2000) due to several possible complications such as drug overdose, infectious disease (mainly HIV, hepatitis B, and hepatitis C), and criminal behavior (Niveau et al., 2002). Maintenance treatment with methadone (MMT) (NIH Consensus Statement, 1998) and lately also with buprenorphine (Bart, 2012) is the most effective therapeutic approach to narcotic addiction. Maintenance treatment is strongly associated with harm reduction, a decrease in death rate, a reduction of opiate abuse, as well as a reduction of other complications. Retention, one of the most common and accepted measurements of maintenance treatment outcome, is still superior in MMT (for review see Mattick et al., 2004). Its relation to long-term survival is less studied. The death rate in this population is still higher than that of the general population. Recent systemic review and meta-analyses on the mortality of substitution (methadone and buprenorphine) treatment patients (Sordo et al., 2017) covered 19 eligible cohorts with a follow-up of up to 15 years (Peles et al., 2010). That 15-year follow-up study (Peles et al., 2010) was performed in our MMT clinic in Tel Aviv, and the current work expanded it to 24 years of follow-up with the aim of comparing the retention and mortality rates between the patients who had been admitted during the early study period with those admitted during the later period. In addition to evaluating the effectiveness of our services, we sought to determine whether the characteristics of the patients admitted to MMT have changed over time.

* Corresponding author at: Adelson Clinic for Drug Abuse, Treatment and Research, 1 Henrietta Szold Street, Tel Aviv 64924, Israel.
E-mail address: einatp@tlvmc.gov.il (E. Peles).

https://doi.org/10.1016/j.drugalcdep.2017.11.034
Received 18 September 2017; Received in revised form 26 November 2017; Accepted 28 November 2017
Available online 07 February 2018
0376-8716/

2. Methods

The study was approved by the Tel Aviv Sourasky Medical Center (TASMC) IRB (Helsinki committee) [217-7/05].

2.1. Study population

The clinic is located within TASMC, a large, municipal university-affiliated medical center (1500 beds). The clinic is the only one in Israel that is routinely accredited by CARF International. Between June 25, 1993 and June 24, 2016, all 890 patients who were ever admitted to MMT were followed for up to 24 years until June 24, 2017.

A part of this cohort has already been studied (619 patients admitted between 1993 and June 24, 2007) and followed-up until 2008 (Peles et al., 2010). The current study extends the 15-year follow-up (Peles et al., 2010) to 24 years, and includes an additional 271 patients admitted between June 26, 2007 and June 24, 2016. The current study includes a comparison between the 619 patients from the first study and 271 patients admitted since its closure.

The inclusion criteria for admission to MMT and for the current study were being > 18 years of age and diagnosed with an opiate addiction according to the criteria similar to those of the U.S. Federal Regulations for entering methadone treatment (i.e., DSM-IV-TR criteria of dependence on multi-self-administrations of heroin for one year or more) (American Psychiatric Association, 2000) and at least one institutional withdrawal failure. The participants arrived at the MMT clinic either on their own accord or following referral from the affiliated TASMC or other sources. The MMT patients' 24-year mortality and retention rates were calculated.

Vital status was determined based on the Israel National Population Registry that records all deaths in the country. Twenty-two patients could not be identified and followed-up due to a missing or incorrect national I.D. number and their data were excluded from mortality/survival analyses. The 868 patients had a total of 10,146.8 person years (py) of follow-up (mean 11.7 ± 6.7 years and a total of 5176.8 py under observation (in MMT) (mean 5.8 ± 5.9 years).

2.2. The MMT program

New patients are admitted to the MMT ambulatory setting directly from the street or are referred from other medical or non-medical facilities (Table 1). Each patient has a personal physician specialized in addiction medicine (a special 2-year program of the Israeli Ministry of Health). Most of these addiction-medicine specialists were already specialists in other fields of medicine (e.g., in internal medicine, neurology, or psychiatry). They are responsible for careful methadone induction, stabilization, and follow up with the patient. Each patient regularly attends individual psychosocial therapy sessions as well as diverse group therapy meetings (described in detail in Peles et al., 2006a; Adelson et al., 2017). All patients undergo a thorough psychiatric evaluation as part of the intake process. Psychiatric consultation is available during treatment and, if needed, patients are referred to psychiatric or medical treatment (only methadone medication is provided in the clinic).

Patients drank their individually adjusted daily dose of methadone in the clinic but could "earn" the privilege to receive up to 2 weeks "take-home" methadone doses with good conduct and prolonged drug abstinence. Clinic regulations have remained clear, strict and consistent over the years (for details see Peles et al., 2010). Between 1993 and 2016 only a few staff members have changed. According to the clinic chair-women, the clinic staff are socialized to maintain a compassionate attitude and to accept that addiction is a medical disease which can be treated in part by an adequate dose of methadone. This attitude keeps quality of staff good and stable. The clinic has been CARF International accredited since 2008, even though this is not required in Israel.

Generally, the clinic has reached its full capacity (330 and later 350 patients) since 2002, and the waiting list to enter the MMT reached 1–1.5 years (with the exception of HIV-positive patients and pregnant women, who are admitted without delay). However, there has been no waiting list since mid-2013 until the current study closure, which could possibly reflect a general reduction in heroin usage in Israel (Rosca et al., 2015).

Table 1
Mortality rate by patients who stayed in or left MMT, reason for leaving, and admission source.

	Total	Studied*	Deaths	py	Mortality rate	*p* value
	n	*n*	*n*		Deaths/100 py	
All	890	868	237	10146.9	2.33	
At 1st admission						
Stayed < 1 year	220	207	66	2285.3	2.89	0.06
Stayed ≥1 year	670	661	171	7861.6	2.18	
At any admission						
Stayed < 1 y	206	194	64	1933.7	3.31	0.004
Stayed ≥1 year	684	674	173	8213.0	2.11	
In MMT	420	420	116	4409.1	2.63	0.1
Left treatment	470	448	121	5737.8	2.11	
In MMT	343	343	96	3299.7	2.90	0.06
In (readmit)	77	77	20	1109.4	1.80	
Early period	619	603	207	8762.4	2.36	0.7
Late period	271	265	30	1384.5	2.17	
Reason for leaving**						
Dropped out	246	236	66		2.2	
Arrested/jailed	109	108	20		1.4	
Expelled	60	55	21		2.6	
Transferred to other MMT	43	38	9		1.8	
Referred to rehabilitation	22	22	7		2.7	
Hospitalized	15	15	11		8.8	
Moved	16	15	3		1.4	
Finished MMT	35	35	3		0.5	
Admission source						
Hospital	76	73	34		4.0	
Emergency room	22	21	6		2.2	
Other medical facility	45	45	11		1.7	
Other MMT	80	78	19		2.2	
Self/friends/family	544	533	135		2.3	
Jail	26	26	7		2.0	
Other	91	87	24		2.2	
Unknown	6	5	1		1.1	

* Excluding 22 patients who were lost to follow-up.
** Including 77 patients who were readmitted.

2.3. Study variables

Demographic data were collected from the patients' charts that routinely included the modified Addiction Severity Index (ASI) questionnaire (McLellan et al., 1984). The variables included are presented in Tables 1 and 2.

2.4. Urine toxicology and methadone

Observed random urine samples were routinely collected, and the results were analyzed for opiates, cocaine metabolite (benzoylecgonine), benzodiazepines (BDZ), cannabis, and amphetamines using enzyme immunoassay systems (DRI® and CEDIA®) (Hawks, 1986). A patient was classified as being "positive" (abuser) for each drug on admission to MMT or after one year in treatment if at least one urine sample for the drug was positive during the first month of treatment or during month 13, respectively. If patients left treatment before 13