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ORIGINAL ARTICLE

Erectile Dysfunction in Patients with Substance Abuse: A Preliminary Report in Bandung, West Java, Indonesia

LUCKY S[1], KEVIN SW[1], ANGKE R[1], LUKE WSC[2], HATTA S[2]

[1]Department of Psychiatry, Faculty of Medicine, Universitas Padjadjaran Dr. Hasan Sadikin General Hospital, Bandung, West Java, Indonesia
[2]Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia

ABSTRAK

Penyalahgunaan dadah (psikoaktif) mempunyai kesan yang buruk, iaitu kesan biologi, psikologi, ekonomi, sosial atau perundangan. Di antara kesan biologi, kesannya terhadap fungsi seksual, terutamanya disfungsi ereksi (ED) pada lelaki tidak diketahui dengan mendalam. Objektif kajian ini adalah untuk menentukan faktor risiko pesakit ED dengan penyalahgunaan dadah di Klinik Program Terapi Penyelenggaraan Methadone (MMTPC), Klinik Hospital Dr. Hasan Sadikin, Bandung, Indonesia. Reka bentuk kajian adalah secara deskriptif dengan reka bentuk keratan rentas dalam kalangan pesakit di MMTPC, Dr. Hasan Sadikin, Bandung, Indonesia. Kami memperolehi data ED melalui soal selidik "International Index of Erectile Function" (IIEF-5) secara swa-lapor. Berdasarkan 30 responden yang datang ke klinik, usia responden adalah antara 24-52 tahun, dengan min usia 40 tahun. Responden dengan bahan penggunaan dadah terlarang termasuk opioid (N = 27, 90%), ganja (N = 18, 60%), amfetamin (metamfetamin dan ekstasi) (N = 10, 33.3%), ubat benzodiazepin (N = 7, 23.3%), alkohol (N = 2, 6.7%) dan lain-lain (antidepresan dan subokson) (N = 2, 6.7%). Disfungsi ereksi berlaku pada 90% responden (n = 27) di mana 64% (n = 19) mempunyai gejala ED ringan, 23% (n = 7) ED ringan-sederhana, 3% (N = 1) ED sederhana, dan 10% (n = 3) tanpa ED. Tiada ED yang teruk dilaporkan. Responden tanpa penggunaan lebih dari satu dadah mempunyai darjah ED yang lebih rendah dengan skor IIEF-5 median 17.0 (IQR: 15.0 - 20.0) berbanding mereka yang mengambil pelbagai jenis dadah (skor Median = 20.0, IQR: 18.5 - 21.0). Responden yang melaporkan penggunaan ganja mempunyai skor IIEF-5 median yang lebih rendah 17.0 (IQR: 15.0 - 20.3), kurang permasalahan ED berbanding mereka yang mengambil pelbagai dadah

Address for correspondence and reprint requests: Hatta Sidi. Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: +603-9145 5555 Email: hattasidi@hotmail.com

(skor Median = 19.5, IQR: 19.0 - 21.0). Kami membuat analisa tambahan untuk mengenalpasti pembolehubah, seperti faktor umur, jumlah dan jenis penggunaan dadah dan tempoh penggunaan dadah serta perkaitannya dengan skor IIEF-5 yang rendah. Ujian pekali Spearman tidak menunjukkan sebarang korelasi yang signifikan antara faktor pembolehubah tadi dengan skor IIEF (p<0.05). Kesimpulannya, permasalahan ED yang tinggi pada pesakit yang menyalahgunakan dadah yang terlarang memerlukan programs terapi khas serta perhatian yang khusus dari pekerja kesihatan semasa sesi perundingan di MMTPC.

Kata kunci: Bandung, disfungsi ereksi, Indonesia, Jawa Barat, penyalahgunaan bahan terlarang

ABSTRACT

Substance abuse (psychoactive) has multiple adverse effects, i.e., biological, psychological, economic, social or legal. Among the biological effects, little is known about its impact on sexual function, especially erectile dysfunction (ED) in men. The study's objective was to determine the patient's risk factors of ED comorbid with substance abuse at the Methadone Maintenance Therapy Program Clinic (MMTPC), Hospital Dr. Hasan Sadikin Clinic, Bandung, Indonesia. This was a cross-sectional study among patients at the MMTPC, Hospital Dr. Hasan Sadikin Clinic, Bandung, Indonesia. We obtained the ED data using the self-reporting International Index of Erectile Function (IIEF-5) questionnaire. Based on 30 respondents who attended the clinic, the age of the subjects ranged from 24-52 years, with a mean age of 40 years. The respondents with substance abused included those misusing opioids (N= 27, 90%), cannabis (N = 18, 60%), amphetamines (methamphetamines and ecstasy) (N= 10, 33.3%), benzodiazepine drugs (N= 7, 23.3%), alcohol (N= 2, 6.7%) and others (antidepressants and suboxone) (N= 2, 6.7%). ED occured in 90% of the respondents (n=27) where 64% (n=19) had mild, 23% (n=7) mild-moderate, 3% (N=1) moderate ED, and 10% (n=3) without an ED. There was no severe ED in the subjects of this study. Respondents without multiple drug abuse had a lower degree of ED with a median IIEF-5 score of 17.0 (IQR: 15.0-20.0) compared to those taking multiple substances (Median score = 20.0, IQR: 18.5-21.0). Respondents who reported cannabis use had a lower median IIEF-5 score of 17.0 (IQR: 15.0-20.3), i.e., lesser ED than those with multiple drug substances (Median score = 19.5, IQR: 19.0-21.0). We performed additional analyses to identify variables, i.e., age, total type of drugs used, and duration of use in years associated with lower IIEF-5 scores and none of thosee variables showed a significant correlation with the IIEF-5 score (Spearman's correlation coefficients >0.05). In conclusion, a high incidence of ED in substance abuse patients undergoing methadone maintenance therapy programmes requires special attention from healthcare workers during the consultation in MMTPC.

Keywords: erectile dysfunction, Indonesia, substance abuse, West Java

INTRODUCTION

Substance use disorders have become a significant part of the world's burden disease. The most used substances are alcohol, nicotine, opioids, marijuana, amphetamine/ecstasy, cocaine, etc. Increased use of psychoactive substances will also increase unfavorable biological, social, or legal effects. Little is known among the physical impact on sexual function (Vijay et al. 2016).

Sexual dysfunction affects countless men and women throughout their lives. Sexual dysfunction includes several problems such as erectile dysfunction (ED), premature ejaculation (PE) or delayed ejaculation in men, pain associated with sexual intercourse, low libido, and reduced response to sexual intimacy (Kumsar et al. 2016; Singh Sethi et al. 2017).

Psychoactive substances affect a person's sexual behavior and capacity to function sexually, such as displaying intimacy, problems with sexual desire, and inadequate sexual performance. Patients use these substances to hide psychological or emotional issues or ignore the physical difficulties of sexual dysfunction. Many drug abusers feel that their sexual performance improves after substance use. However, their partners often report the opposite (Rhoden et al. 2002).

Research by Kumsar et al. (2016) showed a statistically significant difference in sexual function in the control group and the substance abuser group based on the report of an International Index of Erectile Function (IIEF) questionnaire for male subjects. Singh Sethi et al. (2017) revealed a significant correlation between the length of time using opioids and the IIEF questionnaire components, namely erectile function (r=-0.285, p=0.003), sexual desire (r=-0.285, p=0.003) and overall satisfaction (r=-0.327, p=0.001) in the Indian male population.

The purpose of this study was to determine the associated factors of ED among patients with substance abuse at the Methadone Maintenance Therapy Program Clinic, Dr. Hasan Sadikin General Hospital, Bandung, Jawa Barat, Indonesia.

MATERIALS AND METHODS

This was a cross-sectional study. The respondents were male patients with substance abuse who came to the Methadone Maintenance Therapy Program Clinic (MMTPC), Dr. Hasan Sadikin General Hospital, Bandung, West Java, Indonesia. Since the sample population was limited, i.e. 50 people, we use total sampling for the respondents. All respondents who met the inclusion criteria (male, sexually active, and were willing to participate in the study by signing informed consent) would be included. Patients with comorbidities such as diabetes mellitus, hypertension, dyslipidemia, and chronic liver disease were excluded. The data on ED was obtained from the International Index of Erectile Function (IIEF-5) questionnaire, which consists of 5 Likert-scale questions with a score of 1-5. From the IIEF scores, findings of a total score of 22-25 indicates no ED. A total score of 17-21 indicates mild ED. A total score of 12-

16 indicates mild-moderate ED, total score of 8-11 indicates moderate ED, and a total score of 5-7 indicates severe ED (Rhoden et al. 2002). Substance use information was obtained from interviews and secondary clinical data from medical records. Quek et al. (2002) found that the IIEF-5 was a valid and reliable instrument to assess the erection function. Using the test-retest to test reliability and Cronbach's alpha for internal consistency, a high degree of internal consistency was observed for each of the 15 items and five domains (Cronbach's alpha value=0.56 and higher and 0.74 and higher, respectively). Test-retest correlation coefficient for the 15 items and domains scores showed no significant changes. Intraclass correlation coefficient for 15 items and domains were high (ICC=0.59 and above). Queuk et al. (2002) concluded that the Mal-IIEF-15 is suitable, reliable, valid, and sensitive to clinical change in the Malaysian population. We collected the data and processed it with a statistical analysis program. ED

Table 1: The characteristics of the study sample

	Mean ± SD	**Median (Min. – Max.)**
Age (in years)	40 ± 5	40 (24 – 52)
Duration of substance use (in years)	14.70 ± 6.83	15.0 (3 – 30)
IIEF-5 score	18 ± 3	19 (9 – 23)
	Frequence (n)	**Percentage (%)**
Education		
Senior High School	21	70.0
Diploma Degree	2	6.7
Bachelor Degree	7	23.3
Job		
Employee	10	33.3
Entrepreneur	19	63.3
Professional	1	3.4
Status		
Married	22	73.3
Unmarried (widow, single)	8	26.7
Class of substance		
Opioid	27	90.0
Cannabis	18	60.0
Amfetamin	10	33.3
Benzodiazepine	7	23.3
Alcohol	2	6.7
Others	2	6.7
Number of substance use		
1 type	12	40.0%
2 types	6	20.0%
3 types	6	20.0%
4 types	6	20.0%
Smoking		
Yes	29	96.6
No	1	3.4

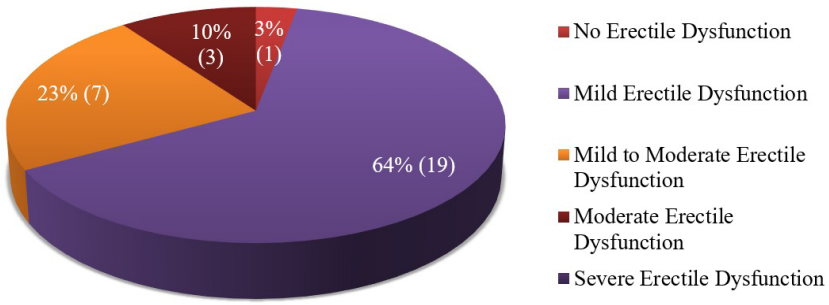


Figure 1: Erectile dysfunction on study sample based on IIEF-5

in the sample study is presented in the form of a percentage.

RESULTS

Thirty patients at the clinic met the inclusion criteria and participated as our respondents. The respondents' age ranged from 24-54 years old, with a mean age of 40. Twenty-one (70%) respondents graduated from high school, two graduated with a diploma, and seven graduated with bachelor's degrees. Ten respondents worked as employees, 19 respondents worked as entrepreneurs, and 1 sample was a professional. A total of 73.3% (n=22) of all the respondents were married, and eight other respondents were not married (either widowers or single but having sexual partners). Substances abused included opioids (heroin, or *putaw*) as many as 27 (90%) respondents, 18 (60%) respondents used cannabis, 10 (33.3%) used amphetamines (methamphetamine, ecstasy, or *inex*), 2 (6.7%) respondents used alcohol, and other 2 (6.7%) respondents used other substances (antidepressants and suboxone). A total of 60% of the respondents used more than one substance i.e. 20% used two types of substances, 20% used three and 20% used four types of substances. The average duration of using these substances was 14.7 $\pm$ 6.83 years. A total of 29 (96.6%) respondents were smokers. The characteristics of the respondents are illustrated in Table 1.

ED occurred in 90% of the respondents (n= 27) of which 64% (n= 19) had mild ED, 23% (n= 7) mild-moderate ED, 3% (n= 1) moderate ED, and 10 % (n= 3) no ED. There was no severe ED in the samples of this study. The proportion of ED levels is illustrated in Figure 1.

We performed additional analyses to identify variables associated with lower IIEF-5 scores. As the sample size was small and the data were not normally distributed, we conducted non-parametric tests. Spearman's correlation coefficients were calculated between the IIEF-5 score and other continuous variables, i.e. age, total type of drugs used, and duration of use in years. None of the analyses showed a significant correlation with the IIEF-5 score (Table 2).

We examined the distribution of IIEF-5 score across categorical and ranked variables using the Mann-Whitney U test and Kruskal-Wallis test,

Table 2: Spearman's correlation coefficients between IIEF-5 score and other continuous variables

Variable	Correlation coefficient	p-value
Age	-0.023	0.902
Total type of drugs	-0.323	0.082
Duration of use (years)	-0.126	0.509

respectively. Results for three variables were significant, i.e. frequency of sexual intercourse, multiple drug abuse/dependence and cannabis use (Table 3).

Respondents with the highest frequency of sexual intercourse, i.e. ≥three times/week, had the lowest median IIEF-5 score of 16.0 (IQR: 11.5-18.5), followed by the median score of 17.5 (IQR: 14.8-19.0) for the frequency of sex of <1 time/month, 19.0 (IQR: 1.0-21.0) for the frequency of sex of 1-2 times/week, and 21.5 (IQR: 21.0-22.8) for the frequency of sex of 1-4 times/month. The differences in IIEF-5 scores between the frequency of sex of ≥3 times/week and 1-4 times/month, as well as between <1 time/month and 1-4 times/month, were statistically significant. These results revealed that respondents with no or lesser degree of ED attempted more sexual intercourse than their peers who are having moderate ED (Figure 2).

Respondents without multiple drug abuse/dependence had a lower median IIEF-5 score of 17.0 (IQR: 15.0-20.0), i.e. lower ED than those with comorbidity (Median score=20.0, IQR: 18.5-21.0). Respondents who reported cannabis use had a lower median IIEF-5 score of 17.0 (IQR: 15.0-20.3) than those with multiple drug abuse/dependence (Median score=19.5, IQR: 19.0-21.0).

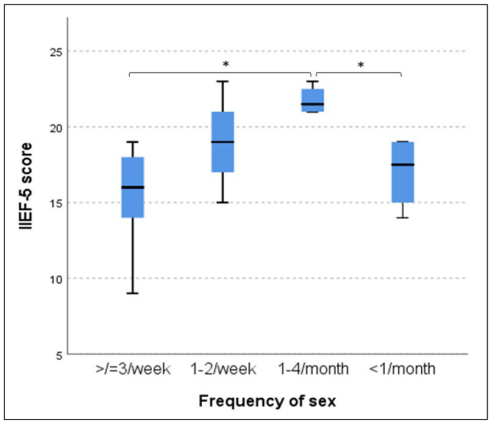
DISCUSSION

Male sexual dysfunction, such as

Table 3: Distribution of IIEF-5 score across categorical and ranked variables

Variable	p-value	Test
Marital status	0.590	Kruskal-Wallis
Frequency of sex	0.008*	Kruskal-Wallis
Frequency of use	0.783	Kruskal-Wallis
Smoking	0.467	Mann-Whitney U
MDA/D^	0.040*	Mann-Whitney U
Cannabis use	0.039*	Mann-Whitney U
Opioid use	0.072	Mann-Whitney U
Benzodiazepine use	0.069	Mann-Whitney U
Stimulant use	0.169	Mann-Whitney U
Alcohol use	0.777	Mann-Whitney U
Another drug use	0.331	Mann-Whitney U

*Statistically significant; MDA/D^ = Multiple drug abuse/dependence



*p<0.04, adjusted by the Bonferroni correction for multiple tests.

Figure 2: The respondents with no or lesser degree of ED attempted more sexual intercourse than their peers who are having moderate ED

ED, is a health problem that needs further recognition and evaluation. Male sexual dysfunction, especially ED, is widespread and chronic in the progression of its illness and affects almost all people with substance abuse in the world. Sexual dysfunction (SD) is one of the negative side effects of substance use. SD can cause low self-esteem, signs of depression, decreased quality of life, and trigger a recurrence of drug-using that can affect sexual activity.

The respondents in this study were patients with a history of substance abuse (some respondents had not stopped using the substance), such as opioids, cannabis, amphetamines, benzodiazepines, and others who were currently receiving methadone substitution therapy. Our findings reported that 90% of the respondents experienced ED, which was higher than previous studies, such as the study of Kumsar et al. (2016), which found 72.3% of the respondents experiencing ED. Teoh et al. (2017) reported 67%, and Bang-Ping (2009) found that 36.4% of substance abuse patients suffered from an ED.

In this study, respondents with mild ED were 64%, mild-moderate ED 23%, and moderate ED 3%. We found different findings compared to the study by Kumsar et al. (2016). Kumsar et al. (2016) reported 16% of the respondents with mild ED, 15% moderate ED and 42% severe ED. Another study by Teoh et al. (2017) showed the rate of ED was mild, mild-moderate, moderate and severe at 26.1%, 30.4%, 7.0% and 17.2%, respectively. In our study, we observed that patients who were having frequent sexual intercourse either has not or taking only one substance compared to their counterparts who were taking more substances. This situation is understandable from the biological perspective as multiple drugs may affect the central nervous system (CNS) that regulates sexual desire, sexual arousal, and orgasm. The CNS involvement may also reduce the focus and interest of his partner as the drugs taking effect to the system causing dysphoria, euphoria, intoxication, and psychopathology like a hallucination.

Most of the respondents, i.e. 90.0%, had a history of using opioids alone or together with other group substances such as cannabis, amphetamines, alcohol, and others. The same findings were found in the study of Sethi et al. (2017), where opioid users also concomitantly with alcohol, cannabis, nicotine and amphetamines. Methadone as substitution therapy for opioid dependence is also known to

have side effects of sexual dysfunction.

We hypothesized the sexual dysfunction in men with substance abuse is probably due to the multifactorial determinants and regulated by the biopsychosocial aetiological factors. From the biological perspective, the plasma testosterone showed a consistent decrease in individuals taking opioids and methadone compared to control groups (Vijay et al. 2016; Saberi Zafarghandi et al. 2016). Other hypotheses such as inhibition of alpha-adrenergic activity by opioids can directly affect accessory sex organ function, as well as physiological factors such as sedation, euphoria, and confusion. Changes in the lifestyle after taking drugs, for example, being preoccupied with drugs rather than intimacy with the sexual partner may interfere with sexual desire and performance (Vijay et al. 2016; Singh Sethi et al. 2017). Cannabis or marijuana affects sexual dysfunction through the active substance's effect on the CNS and cardiovascular system (Vijay et al. 2016).

In this study, 96.6% of the respondents were smokers. Smoking is common in patients with substance abuse. Smoking contributes to ED by increasing oxidative stress level and inflammatory markers that lead to vascular changes (Lugoboni et al. 2017). This study shows that substance abuse patients receiving methadone therapy had a high incidence of ED. Clinicians are advised to screen for sexual dysfunction in male patients taking substance abuse and receiving methadone therapy. Hormone replacement therapy and other pharmacological treatments may be considered to help these patients, while psychological interventions for the patient and counseling programs for couples may be helpful. Substitution of methadone with buprenorphine may also be considered. The results of a meta-analysis by Yee et al. (2014) found a 4-fold higher incidence of sexual dysfunction in patients receiving methadone than in those receiving buprenorphine.

The study generalisability of the findings was limited by the small sample size, no control group, no record of dosage, and all the samples were chronic substance users. We need additional research with larger sample size, a control group, and acute users studied with a multicenter setting to have more substantial results and discussion for further intervention.

CONCLUSION

In conclusion, ED is prevalent among patients with substance dependence and abuse. Co-morbidity with other substances besides opioids, like marijuana and/or amphetamine, may worsen the ED due to multiple effects on the CNS. It is pivotal to address this important conundrum during routine clinical follow-up in the clinic. The role of the spouse in helping with patient's sexual dysfunction, such as helping the patients to stay away from drugs, enhancing the intimacy and romance, encouraging sexual stimulation, or with the help of pharmacological agents like phosphodiesterase type 5 inhibitor, may help patients and their

partners to have a meaningful sexual functioning and high quality of life.

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