

Social status, health status and therapy response in heroin addicts

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الحالة الاجتماعية والصحية والاستجابة للمعالجة لدى المدمنين للهيروين

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خلاصة: أوضحت هذه الدراسة تأثير إدمان الهيروين مقارنةً بغيره من عقاقير الإدمان على الحالة الاجتماعية والتغذوية والصحية لدى المدمنين، مع تقييم مدى استجابتهم لإزالة التسمم به. وقد شملت الدراسة 243 من المدمنين على الهيروين و66 من المدمنين على غير الهيروين. وقد وُجد أن إدمان كل من الهيروين وغير الهيروين كان له نفس التأثير على الحالة الاجتماعية والتغذوية، إلا أن المدمنين على الهيروين كانوا معرضين للإصابة بالتهاب الكبد بي أو سي بمقدار سبعة أضعاف تعرض المدمنين على المخدرات الأخرى. أما المدمنون على غير الهيروين فكانوا أكثر عُرضة للإصابة بانخفاض المناعة الخلوية. وقد كان عدد مرات النكس بعد العلاج يزيد بمقدار الضعف لدى مدمني الهيروين الذين عانوا من أعراض جانبية مزعجة أثناء المعالجة. إن التدخّلات الفعّالة للوقاية من الإدمان ومكافحته مطلوبة بغض النظر عن نمط المخدرات التي يتعاطاها المدمنون.

ABSTRACT This study identified the impact of heroin compared to other drugs of abuse on the social, nutritional and health status of addicts, and assessed their response to detoxification. A total of 243 heroin addicts and 66 non-heroin addicts were included in the study. Heroin and non-heroin addiction had similar impact on social and nutritional status, but heroin addicts were seven times more likely to develop hepatitis B or C infection. Non-heroin addicts were more prone to develop depressed cellular immunity. The number of relapses was twice as high for heroin addicts who experienced more unpleasant symptoms during therapy. Active interventions to prevent and control addiction are needed regardless of the type of drug abused.

Statut social, état de santé et réponse thérapeutique chez des héroïnomanes

RESUME La présente étude a identifié l'impact de l'héroïne par rapport aux autres drogues sur le statut social, l'état nutritionnel et l'état de santé des toxicomanes, et a évalué leur réponse à la désintoxication. Un total de 243 héroïnomanes et 66 non-héroïnomanes ont été inclus dans l'étude. L'héroïnomanie et les autres toxicomanies avaient un impact similaire sur le statut social et l'état nutritionnel, mais les héroïnomanes avaient sept fois plus de probabilités de développer une infection par le virus de l'hépatite B ou C. Les toxicomanes non-héroïnomanes étaient davantage sujets à développer une diminution de l'immunité cellulaire. Le nombre de rechutes était deux fois plus élevé chez les héroïnomanes ayant connu des symptômes désagréables durant la thérapie. Des interventions actives pour lutter contre la dépendance et la prévenir sont nécessaires indépendamment du type de toxicomanie.

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Introduction

Drug abuse is an increasingly serious health care problem. Reliable estimates of the prevalence of drug addiction are difficult to obtain because users are unlikely to admit their addiction and are less inclined to give honest responses. Nevertheless, it is estimated that approximately 15 million people worldwide are at significant health risk as a result of illicit drug use. It is also estimated that one-third of these users inject drugs. Recent figures suggest that drug injection is responsible for 100 000 to 200 000 deaths per year worldwide [1].

In recent years, the medical community of Saudi Arabia has begun to recognize the existence of substance abusers. Specialized rehabilitation facilities have been established in Riyadh, Jeddah and Damam that aim to provide the latest advances in the management of drug addiction. In Jeddah, Al-Amal hospital has been in operation since September 1991 and has adopted an integrated preventive, curative and post-curative follow-up programme.

The literature on drug abuse in Saudi Arabia is still sparse. However, the published data put heroin at the top of the list of drugs abused in Jeddah [2,3]. Abuse of other substances such as alcohol, barbiturates, solvents and anticholinergic drugs has also been reported. Addiction to volatile substances has been reported in 5.3% of schoolgirls [4] and 9.8% of schoolboys [5]. Polydrug abuse has also been reported and almost all combined heroin with another drug and/or alcohol [1-3].

Acute or chronic drug abuse has been linked to many problems. Road traffic accidents, fires and injuries are more prevalent among drug abusers. Chronic drug abuse is also associated with psychological disturbances and behavioural alterations [1,6]. These changes often lead to weight loss,

contributing in turn to the development of malignant and infectious diseases [7-12]. Detoxification therapy has proved to be a major financial burden. The detoxification process is complicated and produces only modest results, as there is a high relapse rate [13,14].

The objective of this study was to compare the social, nutritional and health status of heroin and non-heroin addicts, and to identify differences in the response to detoxification therapy between the two groups.

Methods

Study population

Data were collected using a structured questionnaire from patients admitted for detoxification to Jeddah's Al-Amal hospital over a 6-month period in 1996. All patients admitted during that period were followed to the end of the detoxification therapy. Patients were classified into two groups according to whether they abused heroin only (heroin addicts) or were addicted to substances other than heroin such as volatiles substances, amphetamines or alcohol (non-heroin addicts). A third group of polydrug abusers, combining heroin with other drugs, was excluded from the study in order to isolate the impact of heroin abuse alone. The social, nutritional and health status of the two groups on admission was compared. Detoxification therapy was also evaluated in both groups.

Social status was assessed using three parameters: low educational level (below university), unemployment and marital break-up. Nutritional status was assessed using: the triceps skin-fold (TSF) thickness, which reflects total body fat; mid-arm muscle circumference (MAMC), which indicates muscle protein; serum al-

bumin as a measure of visceral protein; and total lymphocyte count (TLC) to indicate visceral protein and cellular immunity. MAMC was calculated from the mid-arm circumference (MAC) with the formula:

$$\text{MAMC (cm)} = [\text{MAC (cm)} - 0.314] \times \text{TSF (mm)}$$

TLC was calculated from complete peripheral blood count with the formula:

$$\text{TLC (mm}^3\text{)} = \% \text{ lymphocyte} \times \text{white blood cell count}$$

TSF and MAMC were considered depleted if values were below the standard for the normal population (TSF < 12.5 mm and MAMC < 25.3 cm) [15]. Serum albumin was considered depleted if it was < 3.5 g/dL [7,16]. TLC was considered depleted if the value was < 1500/mm³ [7,16].

Health status was assessed using aspartate aminotransferase (AST), gamma-glutamyl transferase (GGT), total bilirubin, and the presence of chronic diseases on admission. Elevated values were defined as AST > 40 IU/L, GGT > 60 IU/L and bilirubin > 17 mmol/L [17]. Hepatitis B surface antigen (HBsAg) markers, serum hepatitis C virus (HCV) and human immunodeficiency virus (HIV) antibodies were also assayed.

Jeddah Al-Amal hospital offers a detoxification programme that includes medication (according to withdrawal symptoms), psychological support (of individuals, groups and families), physical activity, bio-feedback, and educational, religious and vocational assistance [18,19]. The success of detoxification therapy was evaluated from the history of previous relapse and presence of symptoms related to nutritional condition during the current therapy (nausea, vomiting, constipation and/or loss of

appetite). Post-therapy nutritional progress was evaluated by changes in body weight and serum albumin.

Data entry and analysis were performed using SPSS. The chi-squared test was used to detect significant associations and the Fisher exact test was used whenever the chi-squared test results were not applicable. The Student *t*-test was used to detect significant differences between two means and the paired *t*-test to detect significant differences in means before and after detoxification therapy for each group.

Results

A total of 243 heroin addicts and 66 non-heroin addicts, all men of Saudi nationality hospitalized for detoxification in Jeddah Al-Amal Hospital, were enrolled in the study. Heroin and non-heroin addicts were comparable for mean age and duration of addiction. For the 243 heroin addicts, mean age \pm standard deviation was 30.3 ± 0.4 years; for the non-heroin addicts it was 29.4 ± 1.0 years. The mean duration of addiction for heroin addicts was 5.8 ± 0.2 years and for non-heroin addicts was 4.6 ± 0.8 years. Non-heroin addicts abused either volatiles (23 cases, 34.8%), amphetamines (25 cases, 37.9%) or alcohol (18 cases, 27.3%). Most heroin addicts (67.8%) preferred intravenous administration to inhalation (5.9%). A combination of both routes was reported by 26.3% of heroin addicts. Non-heroin addicts took the drug orally and/or by inhalation depending on the substance abused.

Figure 1 shows the social status of heroin and non-heroin addicts. The percentage of heroin addicts with a poor educational level (45.3%) was lower than in non-heroin addicts (53.0%). Heroin addicts showed higher percentages of unemployment

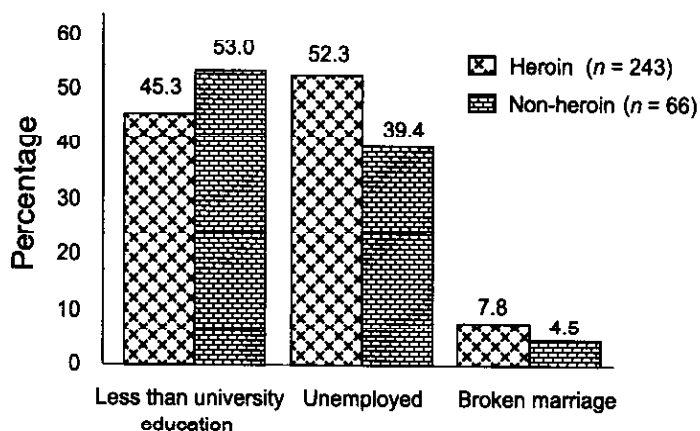


Figure 1 Social status of heroin and non-heroin addicts hospitalized for detoxification in Al-Amal Hospital, Jeddah

Table 1 Nutritional and health status on admission of heroin and non-heroin addicts admitted for detoxification in Al-Amal Hospital, Jeddah

Variable	Heroin addicts (n = 243)		Non-heroin addicts (n = 66)	
	No.	%	No.	%
<i>Nutritional status</i>				
Reduced TSF thickness	94	38.7	28	42.4
Reduced MAMC	63	25.9	19	28.8
Depleted TLC*	56	23.0	30	45.5
Depleted albumin	6	2.5	3	4.5
<i>Health status</i>				
Elevated AST	93	38.3	23	34.8
Elevated GGT	23	9.5	4	6.1
Elevated bilirubin	18	7.4	5	7.6
Hepatitis B*	53	21.8	2	3.0
Hepatitis C*	104	42.8	4	6.1
Tuberculosis	7	2.9	2	3.0

*P < 0.05.

TSF = triceps skin-fold.

MAMC = mid-arm muscle circumference.

TLC = total lymphocyte count.

AST = aspartate aminotransferase.

GGT = gamma-glutamyl transferase.

(52.3% versus 19.4%) and marital break-up (7.8% versus 4.5%). However, these differences were not statistically significant.

A high percentage of both groups had poor nutritional status (Table 1). A larger proportion of the non-heroin addicts had depleted TSF, MAMC and serum albumin than the heroin-addicted group but the differences were not statistically significant. However, 45.5% of non-heroin addicts had depleted TLC compared to 23.0% of heroin addicts; this difference was highly significant ($P < 0.05$).

The percentage of heroin addicts showing elevated AST and GGT was higher than the non-heroin addicts, but results were not statistically significant (Table 1). Both groups were comparable for elevated bilirubin. Hepatitis B and C infections were markedly more prevalent among the heroin than the non-heroin addicts (Table 1). Heroin addicts were about seven times more likely to develop hepatitis B and C infections and the differences for both infections were highly significant ($P < 0.05$). At least 75.0% of the patients with hepatitis B and hepatitis C injected heroin intravenously. Tuberculosis was diagnosed equally frequently in both groups.

Both groups had a comparable mean duration of therapy (11.4 ± 0.3 days for

heroin addicts and 11.5 ± 0.5 days for non-heroin addicts). Relapse was reported by 190 (78.2%) heroin addicts compared to 31 (47.0%) non-heroin addicts ($P < 0.05$) (Table 2). These results suggest that heroin addicts were at about twice the risk of relapse than non-heroin addicts. In addition, the proportion of heroin addicts reporting disagreeable symptoms during the detoxification therapy, such as nausea, vomiting, constipation and/or loss of appetite, was significantly higher than non-heroin addicts ($P < 0.05$).

Both groups were comparable in terms of mean body weight and serum albumin level on admission (Table 3). Mean body weight increased significantly after therapy in each group ($P < 0.05$). An average weight gain of approximately 3 kg was observed in each group. Mean serum albumin did not change significantly after therapy in either group. There was no significant difference in post-therapy mean body weight or serum albumin between the two groups.

Discussion

Although Islam prohibits the use of alcohol and narcotic drugs, young people may find adapting to the restrictions and demands of Saudi society difficult because of increased

Table 2 Previous treatment relapse and experience of unpleasant symptoms during detoxification therapy of heroin and non-heroin addicts

Variable	Heroin addicts (n = 243)		Non-heroin addicts (n = 66)	
	No.	%	No.	%
Previous relapse**	190	78.2	31	47.0
Symptoms*	39	16.0	4	6.1

Symptoms included nausea, vomiting, constipation and/or loss of appetite.

* $P < 0.05$.

** $P < 0.001$.

Table 3 Change in mean body weight and serum albumin in heroin and non-heroin addicts admitted for detoxification in Al-Amal Hospital, Jeddah

Variable	Heroin addicts (n = 243)		Non-heroin addicts (n = 66)	
	Mean	s	Mean	s
Weight (kg)^a				
Before	62.9	0.8	60.7	1.7
After	65.6	0.7	63.9	1.7
Albumin (g/L)				
Before	48.6	0.7	51.6	1.4
After	47.9	0.7	49.6	1.4

^aThere was a significant increase in mean body weight after therapy ($P < 0.05$) in each group but pre- and post-detoxification mean body weights did not differ significantly between the two groups.
s = standard deviation.

exposure to the international media via television and satellite. Frequent travel and the increased expansion of a consumer market, coupled with a steady reduction in per capita income over the past decade, may contribute to the general frustration of the younger generation. Moreover, psychiatric disorders are socially stigmatizing and tend to be concealed, which explains the scarcity of relevant literature from this part of the world [20]. All these factors have played a role in the emerging problem of addiction in our community.

Heroin was preferred by the majority of addicts in Jeddah [2-7], in contrast to the situation in Riyadh [4], the capital of Saudi Arabia, where most addicts abused alcohol and sedatives. This difference could be due to differences between the two cities in terms of culture, education, income and employment. Residents of Jeddah are mostly self-employed and more open to international media and culture than residents of Riyadh.

Heroin addicts were at higher risk of unemployment and marital break-up than non-heroin addicts but the difference was

not statistically significant. Unemployment was reported by about half the heroin addicts, which confirms previously reported data from Saudi Arabia [2] and contrasts with the 82.0% reported from Western countries for heroin addicts with comparable mean age and duration of addiction [21]. In the present study, 7.8% of heroin addicts reported marital break-up and this is comparable to the figures previously reported from Saudi Arabia and Western countries [2,3,21].

This appears to be the first study to assess the nutritional and health status of drug addicts in Saudi Arabia. A high proportion (at least one-third) of both heroin and non-heroin addicts showed depleted TSF and MAMC. There was no significant difference in body fat depletion between heroin and non-heroin addicts. A previously reported higher prevalence of skeletal muscle depletion in heroin addicts [23] was not confirmed in this study.

Both groups were comparable for serum albumin depletion. Non-heroin addicts showed a significant TLC depletion, reflecting depressed cellular immunity and

reduced visceral protein. TLC depletion alone is not necessarily indicative of malnutrition but could be due to other factors depending on the patients' psychological status, and further research is recommended to clarify this observation. A higher percentage of heroin addicts showed elevated AST and GGT but the differences were not significant. Heroin addicts were at significantly higher risk of hepatitis B and C infection, which is at least partly explained by the preferred intravenous route of administration among heroin abusers. A correlation between hepatitis C infection and drug addiction has previously been reported in the country [21].

The majority of patients (69.1%) reported a history of at least one previous detoxification therapy. This high relapse rate is comparable with previously published figures for Saudi Arabia [18,19]. The rate of relapse was twice as high for heroin addicts. Furthermore, 16.0% of heroin addicts reported nausea, vomiting, constipation and/or loss of appetite during therapy compared to 6.1% of non-heroin addicts. Detoxification therapy had a comparable impact on mean body weight and serum albumin level in heroin and non-heroin addicts. These results suggest that in detoxification therapy, heroin addicts show apparent recovery but subclinically they need more intensive treatment than non-

heroin addicts to reduce the high relapse rate.

The results suggest that heroin addiction has comparable effects on social status, body fat and muscle protein as addiction to other substances, but it puts patients at higher risk of hepatitis B and C infection and their complications. Non-heroin addicts are more at risk of depressed cellular immunity and reduced visceral protein, reflected in the proportion showing a depleted lymphocyte count. Thus, the duration of therapy and long-term management of heroin addicts need more evaluation as these addicts do not appear to achieve complete recovery.

The scope and number of complications and long-term consequences related to drug abuse merit consideration. Optimal treatment regimens that facilitate abstinence and prevent relapse deserve further research. Moreover, continuous extensive health education programmes should be implemented and targeted to all population categories. We agree with previous authors [4,24,25] that health education programmes at school and university levels are mandatory to improve knowledge and increase young people's awareness of addiction. As previously proposed [25], the media can play a dynamic role in dissemination of information to the entire population.

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