SUPERVISED VERSUS NON-SUPERVISED URINE TESTING FOR DRUG DEPENDENCE: FIRST PILOT STUDY IN THE MIDDLEAST

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Key Words
Drug dependence, RUMA marker, drug screening, non supervised testing

Abstract

Ordinary supervised urine testing for drug dependence has many problems in accuracy, fighting stigma and patient acceptance. Unsupervised urine testing using the new RUMA marker system is a unique method to overcome all those problems. In our study we try to compare the 2 methods.

Design: this cross sectional study was conducted on 101 drug dependent patients (95 males, 6 females). All of them were asked to drink the marker then after 45 minutes , supervised urine samples were collected and tested by both ordinary methods (kits) and by HPLC and then another sample were collected unsupervisely to measure the acceptance.

Results: RUMA marker testing detected 11% more than the ordinary testing one, 5% of them were adulterated urine, 5% +ve results by Marker and –ve with rapid testing while 1% was false +ve by rapids testing and +ve with marker and HPLC. Regarding satisfaction 38% of patients were satisfied while 62% non-satisfied with supervised urine testing, while 81% were satisfied and 19% non-satisfied with non-supervised urine testing.

Introduction

Historical background

3500 B.C. Earliest historical record of the production of alcohol: the description of a brewery in an Egyptian papyrus.
2300 B.C. Opium use in Egypt spreads to Greece and rest of Europe.
2000 B.C. Earliest record of prohibitionist teaching, by an Egyptian priest. (1)
1800 Napoleon's army, returning from Egypt, introduces cannabis (hashish, marijuana) into France, leading in 1844, to the establishment of 'Le Club de Haschischins" (2,3)
1874 Heroin developed—twice the potency of morphine.(2,3)

Dr. William Silkworth, after World War I became the first to treat alcoholics based on the idea that they suffered from an allergy to alcohol that caused them to lose control of their drinking.(4)

In Roman Empire, physicians sniffed and tested human by-products on their way to diagnosis and fortune-telling.

Leonardo DaVinci was one of the many alchemists who studied compounds and excretions in the hope of turning them into gold.

In the forties U.S. Government wanted a devastating new bomb, so research led to particle accelerators, spectrum analysis, gas chromatography, and radiation identification,

The Defense Department was afraid the wide-scale heroin use among troops in Vietnam would take root in the States. (6)

Psychoactive substance use poses a significant threat to the health, social and economic fabric of families, communities and nations.(7)

Egypt is not a major producer, supplier, or consumer of narcotics or precursor chemicals. Nevertheless, Heroin dependence is increasing among young Egyptians 15 to 25 years and is the main reason for admission in hospitals, according to United Nation Drug Control Program (UNDCP) in Egypt. (8)

Drug dependence has strong relation with stigma. Public stigma which is the reaction that the general population has to people with drug problems. Self stigma is prejudice which people with drug problems turn against themselves while the courtesy stigma.

Family and friends of patients with drug problems are particularly vulnerable to courtesy stigma by association.(9)

The stigma evolves by labeling where people distinguish and label human differences, stereotyping where dominant cultural beliefs are used to group and categorize labeled persons to undesirable characteristics— to negative stereotypes, separation where the labeled persons are placed in distinct categories with observable degree of separation of "us" from "them and lastly the status loss and discrimination follows soon after.(9)

So to fight stigma we should use:
1. Media: films, journals, brochures…etc
2. Treatment facilities: debate
3. Doctor's attitude.
4. Testing methods.(10)

EMERGING TECHNOLOGIES FOR DRUG TESTING
Urine, blood, saliva, hair and sweat.

URINE

Rapid urine drug testing is one of the most popular methods of random drug testing for recent drug use, as they are easy to use and provide fast and accurate results which are cost effective. It is also an affordable choice for random employee testing but somewhat invasive (Stigma), cut-off levels for drugs apply, tampering of sample can occur if it is collected out of sight and in sight. That's why Ruma system was used to differentiate between supervised and unsupervised.(12)

AIM OF THE WORK "OBJECTIVES"

1-To evaluate the efficacy of urine testing using the marker and HPLC in comparison to supervised one using the urine kits.
2-To evaluate patients and family satisfaction regarding the marker procedure.

SUBJECTS & METHODS

Research design

The present study was conducted on 101 drug dependent patients (95 males, 6 females). All of them were asked to drink the marker then after 45 minutes , supervised urine samples were collected and tested by both ordinary methods (kits) and by HPLC and then another sample were collected unsupervisely to measure the acceptance.

Research Setting

Al-Nozha Psychiatric and Addiction Hospital and Alex Health Resort were the main sources for patients recruitment.

Inclusion criteria

1-The primary diagnosis for seeking treatment and hospitalization is drug dependence not another Axis I psychiatric disorder or else.
2-Both sexes of addicts were included.
3-Urine sample for drug dependence should be available.
4-Both parents or at least one of them should be available.

Exclusion criteria

1-Patients who refused to drink markers.
2.When both biological parents are not available.

RESULTS

Socio-demographic characteristics of the studied patients

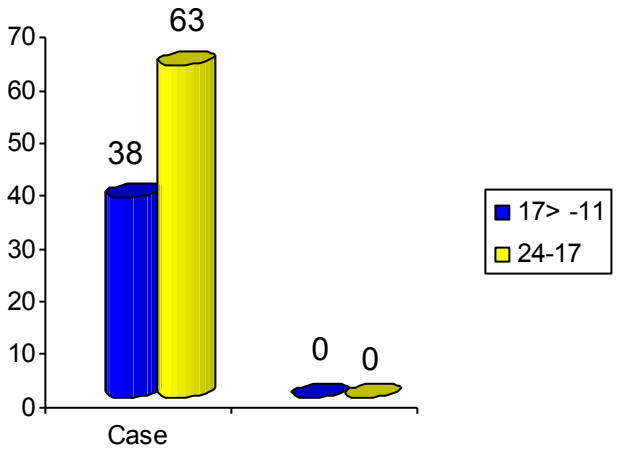

Fig (1) Personal characteristics of the sample

63 of the sample between 17 and 24 years while 38 between age 11 and 17 years.

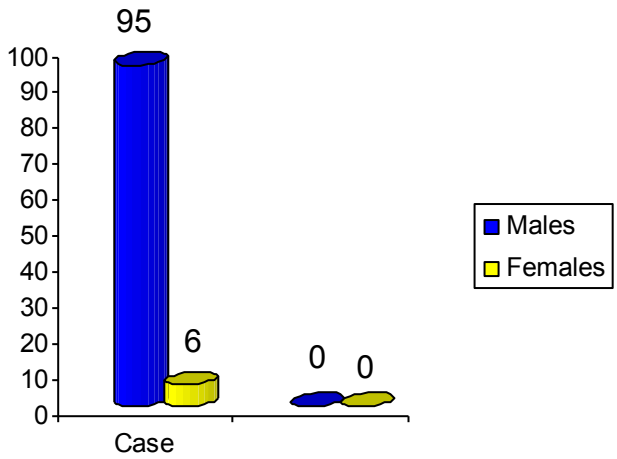

Fig (2) Personal characteristics of the sample

95 were males while 6 were females.

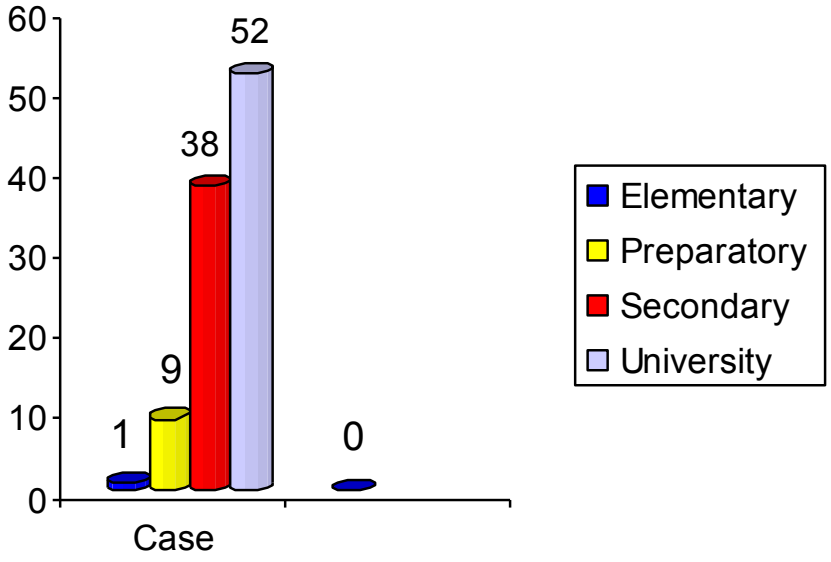

Fig (3) Level of education of the sample

Regarding level of education 52 patients were in their university study or were graduated from a university, 38 finished their secondary school study, 9 patients finished preparatory school while 1 patient only stop education after elementary education.

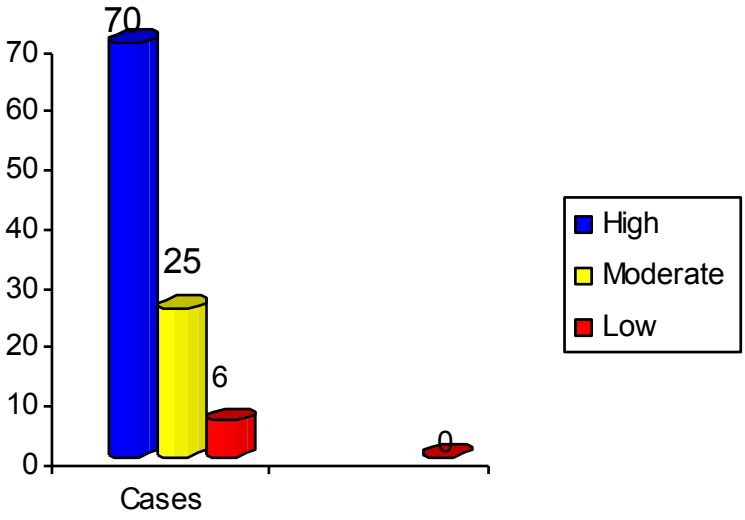

Fig (4) Socioeconomic status of the sample

Most of them were from high socioeconomic status, 25 belong to middle one and 6 patients belong to low socioeconomic status.

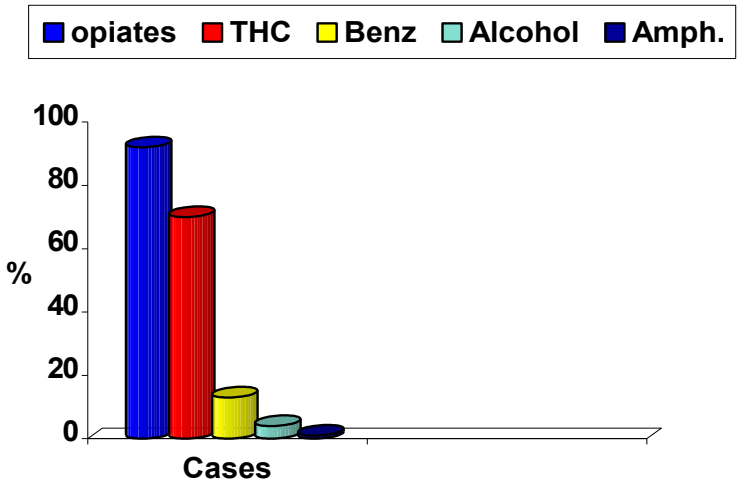

Fig (5) Drugs of dependence in the test sample

The vast majority the main drug of dependence were opiate (heroin and tramadol) in most of them the secondary drug of dependence was hashish while some uses benzodiazepines.

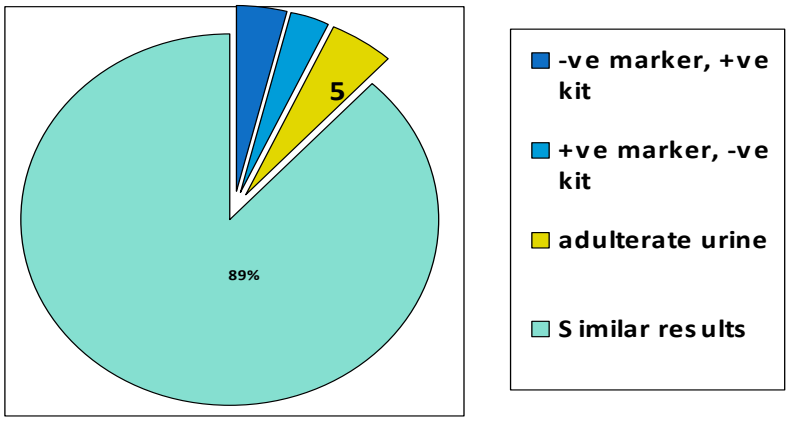

Fig (6) Results obtained by Kits and marker analysis

In 89% the results were almost similar between marker non supervision system and the ordinary kit supervision system, while in 5% whom found to be negative by kit were proved to be adulterated by using the marker. In another 5% whom found to be negative by ordinary kit were found to be positive by marker and the ELISA test, while in one patient was found to be positive by ordinary kit and was found to be negative by marker and the ELISA.

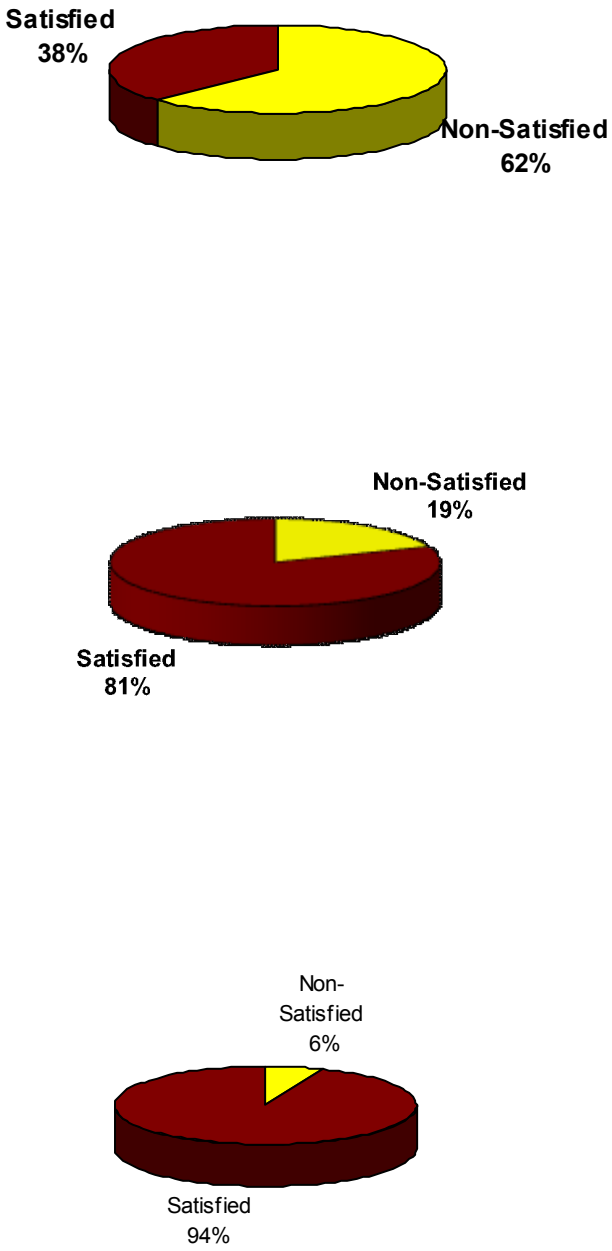

Fig (7) Patients satisfaction between Supervised and Unsupervised Urine Testing

Regarding patient satisfaction 62% were not satisfied with the supervised testing while 38% were satisfied, but when we use the non-supervised Marker system the percentage of satisfaction were dramatically raise to 81% while 19% were non-satisfied.

Regarding family satisfaction 94% were satisfied with the non-supervised testing while 6 were non-satisfied.

DISCUSSION

This study is the first to be done in the whole Middle East regarding the use of the Marker in unsupervised testing. Our aim was to evaluate the efficacy of the marker in detecting the trial of urine adulteration by the ordinary supervision system without marker.

Our results showed that conventional urine screening clearly underestimates the rate of concomitant drug abuse in non-supervised group. It is of particular interest to show that in our study we found that 5% try to adulterate the urine which shows comparable results with a study done by Alho and Simojoko, 2010 which shows that 2% tried to adulterate the urine. The reason of low percentage of trying to adulterate in these 2 studies might be related to different factors:
First might be the patients are keen about the relationships with their doctors as all of these screens were in outpatient basis. Second as both of those studies are out patients ones so the patients know that the results will be deliberately studied under ultimate care and sophistication to show the difference. Third in our study all the samples were collected from the outpatient clinic while the patients didn't know in advance that the sample will be collected from them so they didn't well prepare for manipulations. A great difference have been shown in a comparison with a study by Schneider and et al. 2008 which showed that one third of patients have indication of urine manipulation showing the false assumption that they are drug free.

Another Study examined the effects of using orally applicable markers in the prison of Cologne [(14)]. The ratio of inmates tested for drug use with positive and negative results was identified with and without use of the markers. Furthermore, the forms and shares of manipulation were analyzed that may previously have led to a false negative assessment. These referred most of all to dilution of the sample as well as delivery of another person's urine. Through the application of the markers and other analytical procedures the number of verified manipulations increased in total from < 1 %to approx. 15 % of all analyzed urine samples .

However, there is a difference in the results for detainees based on whether the detainees may hope for an advantage by their urines testing negative. The pressure on the detainees to gain advantages during imprisonment through manipulation and to give the impression of good conduct is naturally higher for inmates with short-term sentences than for those with long-term or life sentences.

The reason of this high percentage may be due to the high incidence of personality disorders which are enormously present in prisoners.

CONCLUSION

In all examinations the ratio of test persons that were tested positive increased under application of the marker procedure. This may suggest that there is an estimated number of undetected cases of deception that visual inspection was not able to expose

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