



## Novel Psychoactive Substances (NPS): a Study on Persian Language Websites

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(Received 11 Dec 2012; accepted 15 Mar 2013)

### Abstract

**Background:** During the past few years, there has been an increasing recognition that Internet is playing a significant role in the synthesis, the distribution and the consumption of Novel Psychoactive Substances (NPS). The aim of this study was to assess the online availability of NPS in Persian language websites.

**Methods:** The Google search engine was used to carry out an accurate qualitative assessment of information available on NPS in a sample of 104 websites.

**Results:** The monitoring has led to the identification of 14 NPS including herbal, synthetic, pharmaceutical and combination drugs that have been sold online.

**Conclusion:** The availability of online marketing of NPS in Persian language websites may constitute a public health challenge at least across three Farsi-speaking countries in the Middle East. Hence, descriptions of this phenomenon are valuable to clinicians and health professional in this region. Further international collaborative efforts may be able to tackle the growth and expansion of regular offer of NPS.

**Keywords:** Novel psychoactive substances, Internet, Persian language, Online marketing

### Introduction

The third millennium started with fast and unprecedented changes in the communication and information technologies providing an ever-increasing level of access to knowledge bases for masses. Although this may be theoretically beneficial, it is not without its risks. One of the main areas related to health and lifestyles, which has dramatically changed in the last decade is drug addiction and the misuse of novel psychoactive substances (NPS) (1).

The revolution in information and communication technologies has transformed the nature, the

shape and the type of substance misuse. New forms of communication through the Internet has not only altered the nature of this global problem, but also has caused significant change in consumption patterns, production, promotion, distribution and access methods to novel psychoactive substances (NPS) (2).

It has been documented that an increasing number of unregulated websites are dedicated to the promotion and dissemination of NPS (3-5).

Today NPS are an issue of major concern in all societies, since they: a) have potentially destructive

and unknown effects on the health of their users/potential users (5,6); b) these psychoactive drugs are typically proposed as legal drugs and thus perceived as safe by their users(7); c) they are unknown to the mental health and other professional (8). d) there is sparse information on their characteristics in scientific literature (6,7,9); e) these compounds are not considered to be addictive and increasingly accepted as part of lifestyle (6); f) it is quick and easy to access and potentially purchase (9,10).

In the European Union (EU), the ReDNet and Psychonaut Web Mapping projects were able to carry out an online assessment of the websites selling these drugs in eight languages from a number of collaborating countries (the UK, Norway, Belgium, Germany, Hungary, Poland, Italy and Spain) and to identify more than 450 NPS (1,11). However, no similar assessment has been carried out in Persian speaking countries.

In addition, especially in Iran, methamphetamine use has become a significant health and social problem in recent years and only little is known about the NPS and its possible levels of online marketing in this region (12).

For this reason, the main aim of this study was to implement a snapshot monitoring approach of the Persian language websites with respect to NPS. The information about such substances (of either synthetic or herbal origin) may be necessary for drug prevention planning activities.

## Materials and Methods

A qualitative exploratory online search and monitoring was carried out between one to five times per week in the period October 2011-February 2012. Monitoring of Persian websites focused on the observation of a range of online sources, including websites, chat rooms, newsgroups, forums and other web pages that were apparently proposing novel synthetic and herbal drugs of abuse. Google advanced searches were carried out using the Persian language only. In line with recent suggestions relating to most popular NPS in the EU (5), the range of key words here

used included, but were not limited to: 'Salvia divinorum', 'Mephedrone', 'Spice drugs' (e.g. 'JWH-018'), 'Bromo-Dragonfly', 'Methylone', 'Flephedrone', 'MDPV', 'BZP', 'Kratom', 'GBL', 'GHB', 'Butylone', and 'Naphyrone' ('NRG-1'). The above searches identified 104 websites, which were then searched internally for any information related to the use, sale, or availability of novel psychoactive compounds/combinations. The search was then narrowed to the sites specifically aimed at 'NPS purchase' excluding websites focusing on increasing public awareness and education on NPS adverse effects. This finally resulted in 51 websites, which were then monitored regularly during the 5-month duration of the study. Online data were recorded taking into account both the web page unique URL and a screenshot of its relevant sections, with full records having been appropriately stored.

The study was cleared by the University of Hertfordshire School of Pharmacy Ethics Committee, Hatfield, UK (15 December 2010; PHAEC/10-42).

## Results

In the qualitative exploratory research approach used in this study, no statistical analysis was used. The snapshot monitoring of Persian language websites led to the identification of 14 NPS that were allegedly available for purchase online. The identified substances can be classified by nature in four main categories: (a) Herbal; (b) Chemical-synthetic and semi-synthetic drugs; (c) Pharmaceuticals; (d) Others/combinations.

Below are some examples of compounds that were identified during this study according to the above categories:

### Herbal

'Salvia divinorum': this is an increasingly popular, intense and short-acting hallucinogenic plant (11). According to the present observations, this proved to be a very popular product in online shops.

### Synthetic

- A) 'Mephedrone' and other synthetic 'cathinones': This study identified several 'cathinone' derivatives including: 'methydone', 'flephedrone', 'naphyrone', 'butylone' and 'mephedrone'. These were widely available to purchase on Persian websites. 'Mephedrone' is a psychoactive research chemical that elicits stimulant and empathogenic effects similar to amphetamines, 'methamphetamine', cocaine and MDMA (13). Packaging and product descriptions of these commercial products often described 'mephedrone' as plant 'feeder', 'bath salt', or not for human consumption (11).
- B) 'Bromo-Dragonfly': 1-(8-bromobenzo[1,2-b;4,5-b']difuran-4yl)-2-aminopropane hydrochloride or simply 'B-Fly', is a powerful, long lasting, LSD-like, hallucinogenic drug, which has been associated with a number of recent intoxications and fatalities in number of countries (7). It was also available for sale online on Persian websites.

### Pharmaceuticals

Tramadol hydrochloride): Tramadol is centrally acting, synthetic opioid analgesic used in the treatment of moderate to severe pain in adults (14). The prescribing information for tramadol shows that the molecule may induce a level of dependence of the morphine-type and it is reported as having a high potential for abuse (15). Using tramadol as a recreational drug may be preferred because it is the only opioid that cannot be detected by the standard urine drug-tests (16). Dependence on tramadol has been reported to be a major social problem in some of the Persian language countries (17).

### Combinations

'Spice' (JWH-018'; JWH-250'; JWH-073'; JWH-200'): drugs of abuse such as the spice products were allegedly sold online as herbal incense in Persian websites. The listed ingredients of these products may indicate the presence of bioactive herbs

or compounds (18). These herbal smoking blends were offered to customers as legal substitute to cannabis although their chemical analysis identified powerful synthetic cannabimimetics (9).

In the examined NPS advertisements' websites molecules were typically promoted with special offers such as: "we only offer the purest of these products at 99.94%..."; "...The quality is excellent with white crystal and very little odor..."; "We are whole sellers of research chemicals..."; "We supply worldwide with secure shipments..."; "...Delivery takes a maximum of 48 hours..."; "We are reliable supplier of chemical matters with long-term experience...".

According to 'search the source' of websites, it was indicated that NPS products might be imported from China, UK, USA, Cameroon, Nigeria and Tanzania to Iran.

### Discussion

During the past few years there has been an increasing recognition from both the United Nation Office on Drugs and Crime (UNODC) and the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) that Internet is now playing a main role in shaping the NPS market (5, 19). Indeed, advent of NPS and the capacity for marketing them online has changed the face of the drug scene remarkably and rapidly.

The present study is the first preliminary survey on Internet marketing of NPS providing an overview of its current state in Persian language websites. To the best of our knowledge, the present research exercise has also provided for the first time a snapshot monitoring of Persian language for web-related information relating to the online marketing of NPS in the region. Consequently with the appropriate knowledge of those NPS which are available to potential Persian speaking consumers and who are presumably living across Iran, Afghanistan and Tajikistan, both health professionals and health agencies can carry out an accurate assessment of possible drug-induced medical and psychiatric consequences.

In recent years the use of Amphetamine Type Stimulant (ATS), specifically methamphetamine and synthetic drugs have been growing fast leading to an ever increasing threat to health and social well-being of communities both at production, trafficking and abuse levels (20). Apart from a growing tendency among Iranian youth for the abuse of ATS, there is a documented and significant increase in the number of internet users in this country. Iran is ranked 13th among the top 20 countries with the highest number of internet users in the world and it is estimated that around 36,500,000 (46.9% population) people use the web (21). Iran faces one of the world's most serious addiction problems (22). Drug abuse represents a malicious social phenomenon with widespread psychological, familial and economic negative consequences, which could be exacerbated by the new marketing and availability of NPS online.

This is of great public health concern when considering that a large number of young people from Persian language countries specially Iranians aged between 15-24 years use the Internet and may be potentially exposed to biased information relating to psychoactive compounds (21).

The results of this study are consistent with similar studies previously carried out in the EU that broadly have shown the emergence and online selling of NPS (5,8,9,11). Following the global extension of NPS and its online marketing, it appears that incidence and emergence in the Middle East, and especially in Iran, may be an issue of increasing concern. Interestingly, unlike the online selling of NPS in the EU, most of Persian websites investigated in this study were apparently making NPS available in occult and concealed manners, so they have been hidden the materials in the public and legal websites such as real estates or general supplies. This is likely to be the result of the strict control of the anti-drugs organization in Iran and hence sellers have been trying to 'hide themselves' behind other, more legitimate, websites to escape the law. However, Internet drugs' vendors transcend different countries' laws, making it difficult to take action against those engaging in illegal practices (9). Finally, it has to be

mentioned that very little is known about NPS among health professionals in the Middle East.

A possible limitation of the present study could be given by the fact that only the available websites and fora were monitored here. Furthermore, no attempt to actually purchase and/or analyze what was allegedly offered for sale to web customers was carried out in this study.

## Conclusion

One could however conclude that a constant level of web monitoring activities with respect to drug-related issues is a necessary step to better understand the level of the diffusion of NPS. For this reason, better national and international collaboration levels may be needed to tackle this novel and fast growing phenomenon.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

## Acknowledgement

The authors declare that there is no conflict of interest.

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