

The flip side of “Spice”: The adverse effects of synthetic cannabinoids as discussed on a Swedish Internet forum

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ABSTRACT

BACKGROUND – Synthetic cannabinoids in smoking mixtures (such as Spice) or as raw powder are sold for recreational use as an alternative to herbal cannabis (hashish and marijuana). Although clinical case studies have documented an array of side effects, there is also information available at Internet based drug discussion forums. **AIM** – Our study investigates experiences of side effects from use of synthetic cannabinoids, as described and anonymously shared on Swedish online discussion forums. **METHODS** – A systematic search yielded 254 unique and publicly available self-reports from the Swedish forum flashback.org. These texts were analysed thematically, which resulted in 32 sub-themes, which were combined into three overarching themes. **RESULTS & CONCLUSION** – The experiences of negative side effects were described as (1) Adverse reactions during acute intoxication; (2) Hangover the day after intoxication; (3) Dependency and withdrawal after long-term use. The first theme was characterized by an array of fierce and unpredictable side effects as tachycardia, anxiety, fear and nausea. The acute intoxication reactions were congruent with the side effects published in clinical case studies. The day after intoxication included residual effects of dullness, apathy, nausea and headache. Long-term use resulted in dependency and experiences of being emotionally numb and disconnected. Furthermore, withdrawal was described as sweating, shaking, loss of appetite and insomnia. Both the hangover and the long-term effects have previously been given little scientific attention and need to be investigated further. Drug related Internet discussion forums constitute an overlooked source of information which can aid in the identification of previously unknown risks and effects.

KEYWORDS – synthetic cannabinoids, Spice, internet drugs, research chemicals

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Introduction

Synthetic cannabinoid receptor agonists, with effects similar to those of herbal cannabis (hashish and marijuana), have gained increasing popularity especially among teens and young adults (e.g. Harris &

Brown, 2013). These substances have been on the market for recreational drugs since around 2004, and are easily purchased on the Internet, where they are purported to be a legal alternative to cannabis or are dis-

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guised as incense, etc. (Dresen, Ferreirós, Pütz, Westphal, Zimmermann, & Auwärter, 2010; Harris & Brown, 2013). Before they were introduced for recreational use, most novel cannabinoids with cannabis-like activity had been synthesised by researchers in order to explore their pharmaceutical potential (EMCDDA, 2013). For a historical review of the emergence and abuse of synthetic cannabinoids, see Ashton (2012) and Fattore and Fratta (2011).

Several different synthetic cannabinoids (e.g. JWH-018, JWH-073 or CP-47,497) have been discovered as the psychoactive component in smoking mixtures with such brand names as Spice, K2 and Kronik. In addition, raw and powdery synthetic cannabinoids without herbal additives have appeared on the market (Kikura-Hanajiri, Uchiyama, & Goda, 2011; EMCDDA, 2013). The number of synthetic cannabinoids detected by the early warning system on new drugs (EMCDDA, 2013) increased from 9 in 2009 to 84 in 2013. The emergence of synthetic cannabinoids has also spread outside Europe, including Ukraine, Taiwan, Japan, the USA, Australia and New Zealand (Ashton, 2012; Fattore & Fratta, 2011). A Swedish study (CAN, 2013) that analysed the patterns of Internet drug use showed that 3.6% of students aged 14–15 and 6.8% of students aged 16–17 had used Spice-like smoking mixtures. Furthermore, a Swedish laboratory study (Helander, Beck, Hägerkvist, & Hulthén, 2013) has identified synthetic cannabinoids as the most common substance (36%) in 103 patients admitted to emergency departments with drug intoxications. Despite repeated legal actions in several countries, including Sweden, to ban a number of synthetic cannabinoids,

clandestine chemists keep synthesising new and uncontrolled substances to circumvent existing drug laws (King, 2013).

Many of the synthetic cannabinoids are most likely full agonists in cannabinoid receptors, which in comparison with the partial agonist effects of tetrahydrocannabinol (THC) in herbal cannabis seem to result in stronger potency and psychoactive impact (Atwood, Huffman, Straiker, & Mackie, 2010). This also implies that the adverse effects are both different and more extensive than those induced by herbal cannabis. Several reports have documented various and significant side effects of synthetic cannabinoids, including anxiety, paranoia, spasm, tachycardia, pain and dependency (Ashton, 2012; Berbarta, Ramirez, & Varney, 2012; Forrester, Kleinschmidt, Schwarz, & Young, 2011; Green, Kavanagh, & Young, 2003; Gundersen, Haughey, Ait-Daoud, Joshi, & Hart, 2012; Hermanns-Clausen, Kneisel, Szabo, & Auwärter, 2012; Hoyte, Jacob, Monte, Al-Jumaan, Bronstein, & Heard, 2012; Schneir, Cullen, & Ly, 2011; Seely, Lapoint, Moran, & Fattore, 2012). Most reports focus on acute intoxication effects, and are mainly based on clinical case studies from hospital or health care centres. However, medical reports in scientific journals are less likely to reach the attention of Spice-interested adolescents, whose primary source of information when searching for sensitive and health-related issues appears to be the Internet (Borzekowski & Rickert, 2001; Gray, Klein, Noyce, Sesselberg, Cantrill, 2005). The Internet provides easy and confidential access to a wealth of information about drugs and their effects. More specifically, Internet discussion forums act as platforms where knowl-

edge and experiences are shared publicly among users. The importance of the Internet and the media in general as sources of information about Spice drugs has already been pointed out by (among others) Bright, Bishop, Kane, Marsh, and Barratt (2013). Considering that discussion forums are a “reality out there” with relevance to young people, it is important to investigate what potential users encounter when searching for information. It is also meaningful to explore the characteristics of the users’ experience of adverse side effects from their own and self-reported perspectives. Furthermore, it is important to compare the described experiences of side effects with the result from clinical case studies.

This study seeks to investigate the experienced negative side effects ascribed to the use of synthetic cannabinoids by analysing self-reports published anonymously on Swedish online discussion forums.

Method

Data collection

The data source for this study was identified by searching for Swedish online forums where experiences induced by synthetic cannabinoids were publicly discussed. An initial Google search (Swedish) was conducted with keywords reflecting drug experiences. The first 10 hits from every keyword search were further screened for websites with drug-related discussions. Nine websites were found. All searches were done in August 2013.

In the second screening, each website was explored in depth for reports and discussions of the use of synthetic cannabinoids. All but one website were excluded because of lack of reports, defective search function, or hidden and password-pro-

tected content. The website used as the data source was in the end flashback.org, which is Sweden’s largest Internet discussion forum with over 800,000 members and around 2 million unique visitors each week. Flashback was started in May 2000 and is dedicated to discussions in general, not only drugs. Therefore, the next step involved using the local search engine at flashback.org to find experiences of negative side effects induced by synthetic cannabinoids. All but a few of the reports resulting from the local search appeared to be part of a bundled thread of discussion especially designated to collect all reports of negative side effects in one place. This thread was found to be a very good source of data for our study, as it had been collecting reports since February 2008 to August 2013, and contained 1,177 posts on the subject. All 1,177 posts were carefully read and screened to sort out irrelevant discussions or reports involving a combination of drugs. The final word document assembled as data source was 46 pages long and included self-reports from 254 different users. To protect user identity, no user aliases were transferred to the word document.

Participants

The reports were written and published by 254 anonymous users on the online community flashback.org. No information about gender or age was stated, although there were reasons to believe that the users were 18 years or older, since this is the age limit for a user account at flashback.org. However, the age limit can be bypassed by creating a user account with false age statements. Dosage was not always stated, or stated in very non-specific terms. The

route of administration was exclusively smoking. The discussions did not reveal if the users smoked the synthetic cannabinoids in the form of raw powder or as a smoking mixture.

Analysis

The data were analysed with thematic analysis (Braun & Clarke, 2006; Hayes, 2000) in order to identify themes of recurrent experiences related to negative side effects induced by synthetic cannabinoids. The focus of this study was primarily to identify themes at an explicit level rather than at an implicit or interpretive level. The analysis process was characterised by as much openness and bias-free attitude towards the data as possible, and can be summarised by five phases outlined below.

- Phase 1 involved reading and re-reading all the reports, with as few distorting preconceptions as possible, to become familiar with the content. After a few readings, initial ideas and patterns were noted down without preconditions.
- Phase 2 meant coding all items of data into very basic elements of semantic information without losing their context. For example, the data item *“When I smoke for a week or more my stomach becomes very upset and I lose my appetite completely. When I quit smoking I struggle to eat an apple, I vomit more than I urinate and I have diarrhea every third hour”* was coded for *“Loss of appetite after long-term use”* and *“Experienced sickness with upset stomach, vomit and diarrhea after long-term use”*. Every item in the entire set of data was coded systematically and manually, and

transferred to a new word document. The analysis resulted in a total of 617 coded elements (CE).

- Phase 3 was the process of identifying recurring patterns by sorting, relating and combining the codes into overarching and potential themes.
- Phase 4 meant reviewing and refining the potential themes. In this phase the raw data and codes were repeatedly checked for consistency. The themes were also checked for both internal homogeneity (coherent data within a theme) and external heterogeneity (distinction between themes).
- Phase 5 involved naming and identifying the essence of each theme, which resulted in a written analysis with supporting quotations from the data set.

Throughout the process, a checklist of criteria for good thematic analysis (Braun & Clarke, 2006) was followed carefully in order to ensure a reliable analysis. Each step of the analysis process was given equal attention and the analysis was carried out with as little distorting preconceptualisation about the data as possible. The results of the analysis were repeatedly matched with the original dataset to check for verification and consistency.

Ethical considerations

The experience reports used as data source for this study were published anonymously on a public Internet forum. Even though writers were unidentifiable, user aliases and URLs connected with specific reports were not collected.

Results

A total number of 617 coded elements

Table 1. The 32 sub-themes that emerged from the analysis, sorted by the total number of CEs. The table also shows the prevalence of CEs in each of the overarching themes: (1) Adverse reactions during acute intoxication (AI); (2) Hangover the day after intoxication (DA); (3) Dependency and withdrawal after long-term use (LT).

Sub-theme	Total CE	CE (AI)	CE (DA)	CE (LT)
Sluggish and dull	48	7	30	11
Memory impairment	43	14	9	20
Nausea and dizziness	43	23	10	10
Tachycardia and respiratory difficulties	41	33	1	7
Withdrawal and dependence	35	0	0	35
Disconnected and emotionally numb	30	2	11	17
Fear and paranoia	30	23	2	5
Dehydration and dry mouth	29	17	12	0
Hangover	28	0	28	0
Muscle tension and pain	26	14	4	8
Mood swings	22	0	2	20
Tired	22	3	19	0
Headache	20	7	11	2
Sweating	19	2	1	16
Sleeping problems	18	1	0	17
Loss of appetite	17	0	0	17
Confusion	16	3	11	2
Difficulty concentrating	16	5	10	1
Ghost sensations	14	11	1	2
Rashes and acne	13	0	2	11
Red eyes	13	10	3	0
Spasms and cramps	12	10	1	1
Fever	12	8	3	1
Derealisation	10	4	2	4
Language difficulties	9	2	2	5
Physically numb	8	4	0	4
Reduced motor skill	7	5	2	0
Affected dreams	4	0	0	4
Affected sexuality	4	3	0	1
Hair loss	3	0	0	3
Altered perception of time	3	0	0	3
Coughing	2	0	1	1
Total CE	617	211	178	228

(CEs) of data about experienced negative side effects emerged from 254 unique self-reports by users on the online discussion forum flashback.org. The CEs were related, subordinated and combined into

32 sub-themes, which are presented in Table 2. The analysis also resulted in three overarching themes: (1) *Adverse reactions during acute intoxication*; (2) *Hangover the day after intoxication*; (3) *Depend-*

ency and withdrawal after long-term use. Some sub-themes were partly related to more than one overarching theme, as the time at which experiences within a sub-theme took place differed. See Table 1 for a full overview. The ten most prevalent sub-themes in each overarching theme are presented in Tables 2–4. Each theme is described below together with representative quotations from the raw data.

Adverse reactions during acute intoxication

This theme, containing a total of 211 CEs, incorporates the users' experiences of side effects during acute intoxication. In general, this phase reportedly lasted until the morning the day after intoxication. Side effects were experienced at both the physiological and psychological level. These reactions were in general experienced on a sliding scale of intensity. Excessive dosing and type/generation of synthetic cannabinoids were mentioned as possible influencing factors.

A very common psychological reaction was fear and paranoia. Users reported intense experiences of panic attacks, disorientation, derealisation and complete loss of control: *"I was so completely struck by panic that I was sure I was going to die."* Others described being afraid and stressed out in a general and unpleasant way. Experiences of excessive suspiciousness and paranoia about imaginary threats were also quite common: *"I believed there were spiders behind me wherever I went."* An additional psychological side effect was concentration difficulties and impaired short-term memory. This was expressed in terms of feeling fragmented and mentally retarded. *"I tried watching Family Guy*

during intoxication, but the whole time I forgot what the episode was about."

The most prominent physiological experience of side effects was tachycardia and respiratory difficulties: *"There was a bolt of lightning in the body and my heart started racing like I was having a heart attack."* Muscle tension and pain around the chest area were also part of the adverse reaction, as well as a few accounts of general pain in different parts of the body. Users also experienced involuntary spasms and cramps, which on occasion were perceived as frightening. Other commonly reported physiological side effects during the acute phase of intoxication were nausea and dizziness. Users described feelings of being sick with aching and upset stomach, diarrhea and sometimes also vomiting. Some users even reported getting unregulated body temperature and fever. Headaches were frequently described, which in some cases appeared to be related to the users' experiences of dehydration and dry mouth. Example: *"The dry mouth was terrible, and during the evening I was feverish and cold sweating, felt very sick so I had to vomit."* Less dramatic side effects included red and dry eyes, which some users experienced as disturbing. Less commonly reported side effects were unpleasant ghost sensations or non-ordinary feelings throughout the body. Example: *"My arms are doughy-like and flabby, and it feels like they are not a part of the body."*

Hangover the day after intoxication

A total of 178 CEs constitute this theme, which subsumes the users' experiences of side effects the day after intoxication. This phase started when the users woke up the day after intoxication. Overall, the find-

Table 2. The ten most prevalent sub-themes in the first overarching theme: adverse reactions during acute intoxication.

Sub-theme	CE
Tachycardia and respiratory difficulties	33
Nausea and dizziness	23
Fear and paranoia	23
Dehydration and dry mouth	17
Memory impairment	14
Muscle tension and pain	14
Ghost sensations	11
Spasms and cramps	10
Red eyes	10
Fever	8
Total CE	163

ings show that users suffered from varying degrees of intoxication hangover and sickness: *“The day after was worse than alcohol hangover, I felt so bad!”* More specifically, hangovers included headache, dehydration and dry mouth. Users also reported having an upset and aching stomach with diarrhea or constipation.

Experiences of feeling sluggish and dull were very common, both mentally and physically, including low motivation and difficulty in engaging in activities such as work or school. Furthermore, users were very sleepy and tired the day after intoxication. Example: *“I was extremely tired, sluggish and slow afterwards. There was also a feeling of nausea and hangover.”*

Users also depicted an inability to concentrate and focus, which seemed to be associated with impaired memory and a general feeling of being absent-minded: *“I was dazed, distracted and dehydrated the day after. I also had difficulties to concentrate in school.”* More severe side effects included experiences of being emotionally numb and zombie-like. This meant feeling

Table 3. The ten most prevalent sub-themes in the second overarching theme: hangover the day after intoxication.

Sub-theme	CE
Sluggish and dull	30
Hangover	28
Tired	19
Dehydration and dry mouth	12
Headache	11
Confusion	11
Disconnected and emotionally numb	11
Nausea and dizziness	10
Difficulty concentrating	10
Memory impairment	9
Total CE	151

apathetic, dissociated and disconnected from life: *“The next day I feel lobotomised, and nothing is fun or boring.”*

Dependency and withdrawal after long-term use

The following theme comprises 228 CEs and incorporates the users’ experiences of side effects after long-term use of synthetic cannabinoids. The analysis showed that users habitually smoked synthetic cannabinoids for several days up to several months without breaks, which demonstrated that long-term use occurred. The major negative side effects during this period were mentioned by the users as addiction and withdrawal: *“The side effect for me was unfortunately and solely a strong addiction. / A dependency appeared as soon as I tried to relax or sleep.”* Many experienced restlessness, unease and an urge for more drugs. The intensity and nature of withdrawal varied among individuals. Many described general distress and slight shakings, as well as a mind occupied solely by taking more drugs. Furthermore,

withdrawal was characterised by intense mood swings. Users described rapid shifts between emotional states such as depression and aggression. They also reported having a short temper and being easily agitated. Example: *“Used it daily and my temper went up and down and I also became sad and depressed for nothing.”* Basic human functions such as appetite and sleep seemed to get disturbed. Reported experiences showed that users withdrawing from long-term use had trouble tasting food, lost their appetite and suffered from insomnia. Exaggerated sweating was also a common symptom. *“This is what I experienced: failed appetite, shaking, heavy sweats, sleeping problems and red dots on my body.”*

According to the reports, some side effects attributed to long-term use were not necessarily related to symptoms of withdrawal. For example, both short-term and long-term memory were negatively affected. Users also described feelings of sickness with aching or upset stomach. Other symptoms were connected to experiences of skin problems in the form of a rash or acne: *“I smoked for several days and my skin became very dry and I developed a red rash on the face.”* Users also experienced a more or less constant state of drowsiness where motivation was absent and both mental and physical activity was slower than normal. In addition, some individuals experienced a hazy existence marked by apathy and sometimes even depersonalisation. Example: *“It’s like losing the magic of life, the thing that makes me feel animated, soulful and having a personality.”*

Discussion

This study has investigated the experienced negative side effects ascribed to the use of synthetic cannabinoids. Self-reports written by 254 anonymous users from the online discussion forum *flashback.org* were analysed thematically, which resulted in three overarching themes characterising the users’ experience: (1) *Adverse reactions during acute intoxication*; (2) *Hangover the day after intoxication*; (3) *Dependency and withdrawal after long term use*. The themes emphasised that different side effects occurred at various stages of the overall experience.

During the acute phase, the most severely described and commonly experienced side effects were fear, nausea, tachycardia and respiratory difficulties. These experiences sometimes appeared together, creating a downward spiral with increasing and panic-like discomfort. Other and less commonly depicted side effects marking the acute phase were dehydration, memory impairment, pain, spasms and fever. Many experiences were depicted as fierce and appeared to be unpredictable in terms of when they occurred. A well-known fact about drugs in general is that the effects are highly affected by expectations (set) and the circumstances surrounding the use (setting) (Metzner, 1998). There are probably other explanations for the numerous and intense side effects. For example, adverse effects are known to be dose-dependent (Ashton, 2012), which the users also mentioned in the reports. The high potency levels of powdery synthetic cannabinoids smoked directly or blended into herbal smoking mixtures are of serious concern because of the risks associated with synthetic cannabinoids (EMCDDA, 2013). In addition,

Table 4. The ten most prevalent sub-themes in the third overarching theme: dependency and withdrawal after long-term use.

Sub-theme	CE
Withdrawal and dependence	35
Memory impairment	20
Mood swings	20
Disconnected and emotionally numb	17
Sleeping problems	17
Loss of appetite	17
Sweating	16
Sluggish and dull	11
Rashes and acne	11
Nausea and dizziness	10
Total CE	174

deceptively labelled smoking mixtures without information about the specific psychoactive content (Seely et al., 2012) could also explain the dosing difficulties and experiences of unpredictable side effects. Adverse reactions can also be linked to a variation of synthetic cannabinoids in different batches or generations of smoking mixtures as well as to the quantity mixed into the blend (EMCDDA, 2013). The emergence of new synthetic cannabinoids is not easily controlled by legislation. On the contrary, it is sometimes even assumed to accelerate the rate at which clandestine chemists produce and market new substances with yet again unpredictable effects (King, 2013). Experiences of pain, nausea, vomiting and cramps appear to be more connected with synthetic cannabinoids than herbal cannabis (Hermanns-Clausen et al., 2012). This can be explained by the suggested function of synthetic cannabinoids as high-affinity agonists of the CB₁ receptor (Atwood et al., 2010), compared with the partial agonist effect of herbal cannabis. The experiences of acute adverse reactions, as described on

the Internet forum, have previously and thoroughly been documented in studies based on clinical data (e.g. Forrester et al., 2011; Hoyte et al., 2012), which support the notion that self-reports published on the Internet were truthfully retold experiences.

The phase after acute intoxication included experiences of hangover, mainly expressed as general sickness in combination with feelings of being physically and mentally sluggish and dull. Nausea, headache, dehydration, constipation and upset stomach were also mentioned. These residual symptoms have received only limited scientific attention before (e.g. Winstock & Barratt, 2013) and appear to resemble alcohol hangover as described by Swift and Davidson (1998). In general, the day-after effects were depicted as hard, in comparison to herbal cannabis, which is known to produce few or moderate residual effects (Chait & Perry, 1994; Chait, Fischman, & Schuster, 1985). Synthetic cannabinoids' stronger potency (Atwood et al., 2010) may explain the apparent discrepancy in terms of hangover symptoms. The severity of synthetic cannabinoid hangover was further demonstrated by experiences of emotional numbness, apathy and dissociation from life. Some users, however, experienced the same effects less dramatically – being absent-minded and sleepy. Synthetic cannabinoids are often marketed as “legal highs” (EMCDDA, 2013), which obviously can lead potential users into thinking that they are harmless. Such expectations can, as the study has showed, be misleading.

The notion that synthetic cannabinoids are safe and innocent is further falsified by the long-term side effects, which were

primarily experienced as dependency and withdrawal. This has been documented previously only in a few studies (e.g. Spaderna, Addy, & D'Souza, 2013; Winstock & Barratt, 2013; Zimmerman, Winkelmann, Pilhatsch, Nees, Spanagel, & Schulz, 2009). General symptoms of withdrawal included restlessness and an urge for more drugs, which reportedly kept several users in a state of dependency. More specifically, users described a whole set of reactions to withdrawal, including sweating, shaking, loss of appetite and insomnia. Other side effects generally related to long-term use appeared as fixation or being stuck in a more or less constant state for as long as the users kept the habit of smoking. For example, memory impairment was, after long-term use, depicted as a personality trait rather than an intoxication effect. Also, the reports showed that users became disconnected from life and emotionally numb on a daily basis. However, the influence of personality on dependency and withdrawal should not be underestimated. A review of herbal cannabis withdrawal symptoms (Smith, 2002) showed that the overall research is highly ambiguous, which is believed to reflect the influence of non-substance-specific factors like personality.

Our study shows that using synthetic cannabinoids can be unpredictable and more harmful than vendors initially intimate. The results showed that the experienced negative side effects of synthetic cannabinoids, as described by 254 anonymous users on Internet discussion forums, were characterised by extensive adverse reactions during acute intoxication; hangover the day after intoxication; and dependency and withdrawal after long-

term use. The experiences of hangover, dependency and withdrawal need to be investigated further, as these effects have previously not obtained much scientific attention.

Although not investigated in this study, we cannot ignore that synthetic cannabinoids also induce positive effects, which may overshadow the negative effects. Nevertheless, other studies about "legal highs" (Kjellgren, Henningsson, & Soussan, 2013; Kjellgren & Jonsson, 2013; Kjellgren & Soussan, 2011) have concluded that the content of the experience (pleasant or unpleasant) does not significantly affect the users' motivation for further and repeated use. This indifference to negative effects can be important to take into account in efforts on drug prevention and information.

An obvious weakness of our study is that there was no way of controlling the circumstances surrounding the drug use (dosage, type of drug, concomitant drugs, etc.). Another shortcoming was that subjective posts of discussion could not be verified to contain accurately retold experiences. However, the self-reported experiences of side effects during acute intoxication correspond with those in previous medical reports. In any case, the discussions are a publicly available reality that individuals are confronted with when searching for information about synthetic cannabinoids. We would like to suggest that self-reports published on Internet discussion forums constitute an overlooked source of information. They should be used for further research, especially for investigating the effects of more or less unknown Internet drugs where no other sources of information are available.

Since adverse effects were assumed not

to have a deterrent effect on users, it would also be reasonable to analyse Internet forum self-reports for a deeper understanding of the motivation and purpose of using synthetic cannabinoids. Investigating the overall experience (not only acute intoxication), including hangover, dependency and withdrawal, is needed for effective drug prevention and harm-reduction projects.

Declaration of interest None.

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Nordic Centre for Welfare and Social Issues

CONFERENCE ANNOUNCEMENT

The biannual **Nordic Alcohol and Drug Researchers' Assembly** will be held in **Stockholm, Sweden on August 27th – 29th 2014** at Ersta konferens, Södermalm in the centre of Stockholm.

The aim of the Assembly is to gather Nordic researchers and others working with alcohol and drug related issues to discuss research on trends and development in consumption, prevention and treatment. This year the key-note presentations will have the following **thematic focus**:

1. Use of research in policy-making. How is research disseminated to policy makers? How do policy makers get to know and use research? Does the research produced address the relevant questions on the local level of decision-making?
2. Lobbying and the position of research: Shifts in the view of the state and public administration have enabled multi-stakeholder participation in political decision-making in the field of alcohol. In addition the alcohol industry is becoming increasingly critical towards research, questioning its objectivity and attempting to undermine the value of research in decision-making. How should research and researchers face up to such criticism? What is the position of research and researchers in decision-making today?
3. Evidence-base and evaluation research. Today's development of prevention and intervention methods are characterised by project-based method development and a demand for evidence-base. The definition of evidence-base in methods and interventions has been criticized for measuring short-term effects only, and for a narrow definition of effect/non-effect. Who conducts evaluation and what are the standards? What are the effects of evaluation on method development for researchers, politicians and decision-makers and further activities?

In connection to the Assembly the popular scientific web site PopNAD and Norden i fokus (Nordic Region in Focus) will host an open event discussing current trends in national drug policies.

INFORMATION ON ABSTRACTS AND PARTICIPATION

We welcome abstracts related to the thematic focus areas as well as other relevant topics. Abstracts can be written and presented in English, Norwegian, Swedish or Danish. The abstract should be no more than 400 words.

The maximum number of participants is 70. Participants with abstracts are prioritised.

The **deadline for registration and submission of abstracts is 25.04.2014.**

Notification of accepted abstracts will be given on 02.06.2014. Register for the conference at www.nordicwelfare.org/nadra2014

You will find further information on the webpage.

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