

**A community based study of Synthetic Cannabinoid use in Co.
Monaghan, Ireland**

**July 2015,
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FOREWORD

Over the past two years, Teach na Daoine Family Resource Centre has received many requests from concerned residents both within the area of Mullaghmatt/Cortolvin and from outside this catchment area for support in dealing with the physical, psychological and social effects of the use of “Herbal” products (Synthetic Cannabinoids).

In the last 12 months alone, our community has lost two of its young people as a direct result of “Herbal” use. In response to this, a series of public meetings and stakeholder consultations were held in late 2014 and out of that process Teach na Daoine commissioned this piece of research to investigate the extent of the problem.

It makes stark reading and outlines the challenges ahead for all within this community, and the County of Monaghan. It is very clear that there is a need for collaboration across a wide range of agencies if we are to affect change on this issue. Teach na Daoine will continue to work with Community, Voluntary and Statutory agencies locally to assist in the implementation of the recommendations contained within this report. We will also advocate for legislative change to address the legal status of these substances.

Teach na Daoine wishes to extend its thanks to the HSE, TUSLA Child and Family Agency, and Cavan Monaghan Drug Awareness for their engagement and support in compiling this report. We also wish to extend our thanks to Dr. Marie Claire Van Hout and Evelyn Hearne who compiled the report in a very short time frame.

Finally, we wish to extend our most sincere thanks to all of the participants who took part in this study. It is our hope that this research will provide valuable insights to assist in the formulation of local responses and will consequently make a positive contribution to the lives of young people, their families and our communities.

Go raibh mile maith agat,

Teach na Daoine Family Resource Centre

EXECUTIVE SUMMARY

The use of psychoactive products containing one or more synthetic cannabinoids (SCBs) being sprayed onto a herbal substrate (dried plant material) remains a serious drug policy and public health concern. For the purposes of this report, these smoking mixtures are referred to as *'Herbal'* products, and contain SCBs and potentially other psychoactive additives.

"Herbal" products cannot be sold for human consumption so they are often sold as incense, potpourri or plant food to get around the law. Of concern is that an ever increasing number of diverse SCBs are available in "Herbal" products, both specified and non- specified in product contents listing. This diversification is designed for circumvention of legislative controls. One of the main challenges for legislators remains the chemical malleability of SCBs. Chemical formulae can be changed if a particular product is banned and a similar substance can be created which mimics the banned product.

Availability, internet retail, shiny packaging, advertising of a stronger 'high' than cannabis, affordability, a lack of clarity on legal status and difficulty in detection in standard urine toxicology tests have fuelled the rise of popularity and use of "Herbal" products. Users appear to be young adults and adolescents, with males appearing more than twice as likely to use "Herbal".

"Herbal" products are generally smoked in cigarette papers with tobacco or via a water pipe/bong or ingested orally as an infusion. Desired effects for users centre on a sense of elation and well-being, an altered perception of reality and empathy but the effects vary in onset and duration of action.

Negative consequences of use reported in this study and others include disturbances in neurological, cardiovascular and gastrointestinal function, cognitive impairment, and psychiatric consequences that may be permanent and/or potentially fatal. Over time all users in this study described a decrease in functioning characterised by a loss of appetite, breathlessness, cardiac conditions requiring medication, skin ablations, tooth decay, lethargy, apathy, tremors and insomnia, which were exacerbated when attempting to cut back on use, and resulted in general neglect of personal hygiene. Difficulties in eating were most common.

Development of dependence in the form of drug tolerance over time, persistence of drug craving, a continuous urge to consume despite adverse consequences, scarce attention to other interests or duties and clear withdrawal symptoms are well documented.

Because such limited knowledge around the exact chemical composition and toxicology of ingredients in "Herbal" products is available, concerns centre on the lack of research on pharmacology, toxicology and health consequences in humans, and appropriate medical approaches for treatment of acute intoxication.

Supportive and symptomatic treatments such as lorazepam, naltrexone or antipsychotics may be efficacious, however further research is required in order for these treatment approaches to be widely adopted. To date, there are no specific antidotes for the consequences of 'Herbal' use which presents serious issues for those seeking help and for clinicians.

LEGISLATIVE AND COMMUNITY CONTEXT

In the Republic of Ireland, the primary legislation controlling drugs are the Misuse of Drugs Act 1977 and the Misuse of Drugs Act, 1984. These are further amended by the Criminal Justice Act 1999, the Criminal Justice Act 2006 and the Criminal Justice Act 2007. The Misuse of Drugs Regulations 1988 (SI 328 of 1988) (as amended) lists the various substances to which existing legislation applies and has two primary purposes which establishes a system of control over certain drugs to protect the public from dangerous or potentially dangerous and harmful substances and also to facilitate safe use of certain controlled drug substances which, although harmful if misused, have medical and therapeutic value.

Under this legislation, unless expressly permitted to do so, it is illegal to possess, supply, manufacture, import or export a controlled substance. Controlled substances are substances which affect the central nervous system by producing a mind altering effect (for example stimulation, depression, hallucinations), and which are either known to be or have the potential to be dangerous or harmful to human health, including their liability for misuse or causing social harm. Many of these substances have abuse and addiction potential, both physically and psychologically.

The control of substances under the Misuse of Drugs Act occurs in cooperation, engagement and compliance with international coordinating frameworks such as the United Nations conventions which provide the international legal framework for addressing the illicit drugs phenomenon. These conventions aim to protect the health of people from inappropriate use of controlled drugs and to ensure that the use of controlled drugs is restricted to medical and scientific purposes. Substances are scheduled in accordance with Ireland's obligations under these international conventions. Ireland has extended the scope of control to include a wider range of substances in the Criminal Justice (Psychoactive Substances) Act 2010 which applies to substances not specifically proscribed under the Misuse of Drugs Acts, but which have psychoactive effects by making it an offence to sell, import, export or advertise such psychoactive substances. This Act aims to prevent misuse of harmful psychoactive substances. Many head shop products became illegal in Ireland on 23 August 2010 when the new Criminal Justice (Psychoactive Substances) Act 2010 was passed.

The Misuse of Drugs (Amendment) Act 2015, an emergency piece of legislation, was enacted following a Court of Criminal Appeal ruling that legislation banning the possession of more than 100 drugs (including certain psychoactive substances) was unconstitutional. The 2015 Act provides that each statutory instrument set out in Schedule 2 of the Act will have statutory effect as if it were an Act of the Oireachtas. This legislative amendment provides that substances which were controlled before the court judgment by means of Government order be added to the Schedule of the 1977 Act, protecting the legal framework in Ireland by re-controlling substances assessed as meriting such control.

Studies on designer psychoactive drugs in the Republic of Ireland to date have largely centred on the pre and post legislative detection of psychoactive substance, and use of the popular synthetic cathinone drug mephedrone. This study is the first of its kind in Ireland.

“Herbal” use has emerged as a major concern for residents and families in the Mullaghmatt area following the deaths of a number of young people as a result of their use. Teach na nDaoine Family Resource Centre (FRC) funded by TUSLA Child and Family Agency commissioned this research study to obtain clarity on the issue and to assist with the formulation of a response.

RESEARCH METHODS

Aims and Objectives

The aims and objectives of the study were to gain an understanding of individual and collective experiences of “Herbal” product use; pathways to misuse or dependence; how dependence is reinforced and maintained; recommendations for improved targeting of community drug campaigns and harm reduction and, finally, recommendations for future service development and drug monitoring in the area.

Design

Eight stakeholders and one parent were interviewed and represented the perspectives of family, drug and community support, mental health, addiction, primary care and council services and law enforcement.

A community focus group consisting of 10 participants representing parents, members of the community, youth and community workers was facilitated.

Three male (aged 17-38 years) and three female (20-42 years) users of ‘herbal’ were interviewed. Five dependent (and current) users of “Herbal” and one dependent (and currently abstinent) user (female) took part in in-depth interviews. User participants completed the Severity of Dependence Screener (SDS) (Gossop et al., 1995) which is a 5-item questionnaire, with scores of over 7 indicating dependence.

Analysis

The in depth interviews and focus group captured illustrative data pertaining to choices and decision making to use “Herbal” products, experience of sporadic and continued use, reinforcers for use, perceptions of risk and abuse potential, harm reduction practices, use of other drugs or medicines, adverse health and social consequences, favoured route of administration, and perspectives on treatment referral, uptake and outcomes. The data was analysed using thematic analysis which located and identified recurrent explicit themes of experiences of “Herbal”.

FINDINGS

'Herbal' products as an Emerging Trend

- Awareness of the current issue was characterized by rising reports of drug use within the community and displacement away from alcohol use.
- Difficulties estimating prevalence and profiles of users stemmed from widespread availability within local communities and other sourcing routes i.e. internet, cross-border drug tourism, and the hidden nature of use in private homes.
- Clustering or pockets of "Herbal" use appeared related to availability and social networks of users, contained among individuals living in more marginalized and deprived areas, and filtering into more mainstream communities.

Profile of users

- All user participants scored over 7 in the Severity of Dependence (SDS) indicating all users interviewed were dependent on "Herbal".
- All user participants were unemployed.
- Three user participants were educated to Junior cert level, two were educated to Primary level, and one educated to Leaving cert level.
- All user participants were single. Three had children.

Legal status and availability of 'Herbal'

- A lack of clarity regarding legal status was observed by stakeholders and community members as confounding efforts to control use. Existing legislation around psychoactive properties in SCB's were observed to create significant law enforcement difficulties.
- User participants described cross border travel, so called *drug tourism*, where they could easily purchase "Herbal" products sold as incense in joke shops.
- User comments centred on the initial affordable price, between 15 to 20 Euro per 1 gram bag. User participants described spending between 60 and 200 Euro per week on "Herbal" products for personal use, with amounts spent increasing over time in response to compulsive use.

Awareness of harm and Consumption of 'Herbal'

- User awareness around the dangers of smoking "Herbal" products was low, and relied on personal experience (often too late), peer user networks, and project staff dissemination.
- All users described exclusive use of "Herbal" and did not consume any other illicit drugs or alcohol. Users reported an incompatibility of "Herbal" products with alcohol. Alcohol consumption was generally low as a result.

Trajectories of use, dependence and withdrawal

- Users described how the perceived effect changes over time, from pleasure to tolerance, and experiences of unpleasant withdrawals. Users became aware of the fast progression toward regular and dependent use when it was too late.
- Acute physical withdrawal symptoms were reported to include chest pains, chest pressure, tachycardia and palpitations, lower extremity pain and spasms, nausea, sweating and vomiting.

- Stakeholders reported psychological symptoms such as anxiety, agitation, anger, paranoia, self-harm, psychosis, and suicidal thoughts during withdrawal periods. These were corroborated by users and parents interviewed.

Negative consequences of use

- Over time all users described a decrease in functioning characterised by a loss of appetite, breathlessness, cardiac conditions requiring medication, skin ablations, tooth decay, lethargy, apathy, tremors and insomnia, which were exacerbated when attempting to cut back on use, and resulted in general neglect of personal hygiene. Difficulties in eating were most common.
- Users also expressed concern about cognitive impairment, ability to concentrate and short term memory loss. Stakeholders were aware of this impairment.

Intentions to Stop and Help-seeking Attempts

- All user participants described intentions to stop using, and how unpleasant physical and mental withdrawal symptoms inhibited achieving abstinence. The fear of stopping use was also grounded in youth psychotic behaviours, suicidal ideation and suicide attempts when in withdrawal.
- Efforts to cease use and successfully self-detoxify are hampered by widespread availability. Users commented that if they were incarcerated, they would be able to stop using. Users also reported previous unsuccessful attempts of using other substances i.e. alcohol and cannabis to assist with withdrawals.

Stakeholder and Community Experiences and Observations

- Services and community members appeared aware of current demands for crisis help-seeking behaviours and expressed concern about long term impacts on services and associated impacts on the community.
- During the last 12 months, mental health, psychiatry and community service uptake by SCB users in crisis has reportedly increased.
- Frustrations were expressed regarding the perceived “dis-ownership of addiction and drug related issues” and the lack of a formulated health service response.
- Concerns were expressed regarding the uptake of users in crisis into mental health services, because psychotic symptoms are deemed secondary to drug misuse and not due to an underlying mental health disorder, compounding difficulties in securing treatment for the young person.

Responses and a Way forward

- An integrated, all-inclusive approach, characterized by community empowerment and inter-agency collaboration were viewed as important steps forward. Stakeholder comments centred on the need for enhanced awareness of the issue, including GP practices, and expedited pathways toward treatment and counselling.
- Users and community members expressed a desire for the provision of residential detoxification in the region with sufficient length of step down care.
- Enhanced support with trained drug counsellors, clear service pathways and the need for youth specific and expedited routes to treatment when the young person indicates a desire to stop are required.

RECOMMENDATIONS

The following key policy and practice recommendations were generated;

Policy

1. Based on current research findings of the harmful nature of “Herbal” products, request clarification from the Minister with responsibility for Drugs on current Legal Status with a view to disseminating locally to facilitate arrests and prosecutions under recently amended Misuse of Drugs Act 1977-2015. Advocate for a further review of legislation on harmful psychoactive substances if required.
2. Review current cross-border policing approaches to address “Cross Border Drug Tourism” in the area.
3. Review Mental Health policies regarding addiction and access criteria to services when psychotic symptoms are deemed ‘secondary to substance misuse’.

Trend Surveillance, Early Warning and Law Enforcement

4. Establish an expert group and an early warning system regarding Novel Psychoactive Substances, locally, nationally and at an EU level to reduce delays in amendments to legislation if/when required.
5. Increase localised monitoring and surveillance of user trends, as it relates to existing products, new products, dealer networks and internet sourcing.
6. Continue to develop CCTV surveillance in local areas to include the monitoring of cameras in local Garda Station.

Education and Prevention

7. Consult with Primary and Secondary schools locally to establish what supports are required to deliver SPHE and/or drug education programs to include Novel Psychoactive Substances, synthetic cannabinoid’s and/or emerging trends.
8. Design and implement harm reduction activity presenting information on products, contents, dangers of use, overdose prevention and management, and detoxification referral for users, and for families in high risk communities. Incorporate Traveller specific elements.

Training

9. Conduct training needs analysis for front line staff (i.e. TUSLA, Primary Care, GP, Gardai etc.) to establish current levels of drugs education, brief intervention skills, ASIST/SafeTalk and referral pathways to identify gaps in existing knowledge and skills.
10. Consult with agencies (i.e. Monaghan ETB, NE-RDATF) to deliver Community Addiction courses that work to reduce stigma associated with addiction.
11. Consult with agencies regarding addiction specific training and employment initiatives i.e. DSP Drug specific C.E. Schemes.

Clinical Responses

12. Review current protocol surrounding pharmacological intervention for withdrawal symptoms associated with SCB presentations to ensure evidence based responses.
13. Develop interagency shared care planning for crisis presentations at Accident and Emergency and health services, with expedited access, adequate follow-up and supports on discharge.

Youth Specific Responses

14. Provide additional resources to develop youth specific addiction responses, including age appropriate in-patient detoxification and step-down facilities, adolescent counselling service and assertive outreach worker to identify and deliver early intervention initiatives.
15. Increase local sports partnership activity in areas where youth leisure boredom is high.

CONCLUSION

This research highlights the concerning rapid development of tolerance, habit forming regular use and experience of acute withdrawal symptoms in users and related negative impact on families and communities.

The study whilst localised and small-scale, highlights the need for further development of clinical awareness and appropriate responses, alongside expedited inter-agency service pathways for drug counselling, crisis support, medical treatment and detoxification intervention for young users and their families. Users seeking help and patients on admittance need to be monitored for withdrawal and symptoms rapidly managed.

Community efforts, via Teach na Daoine Family Resource Centre, to provide family support and education, schools education, harm reduction and information on available care pathways are vital in the early identification of trends in use, misuse and dependence, and for the support of individuals requiring help. However more resources, expertise and cooperation are required for positive outcomes to be realised.

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Chapter One: Synthetic Cannabinoids (SCBs)

Introduction

The recent phenomenon of use of commercially available psychoactive products containing one or more synthetic cannabinoids (hereafter referred to as 'SCBs') sprayed onto a herbal substrate (dried plant material) known as herbal smoking mixtures remains a serious drug policy and public health concern (Vardakou et al., 2010; Fattore and Fratta, 2011; Loeffler et al., 2012; McGuinness and Newell, 2012; Gunderson et al., 2012; Ashton, 2012; Seely et al., 2012a; Castellanos and Thornton, 2012; Bhatti and Wu, 2013; Harris and Brown, 2013; Spaderna et al., 2013; Brents and Prather, 2014). Collectively known as '*K2* or '*Herbal*' products', these emerging drugs of abuse contain SCBs (Tuv et al., 2012; Rosenbaum et al., 2012; Bretteville-Jensen et al., 2013; Fantegrossi et al., 2014; Baumann et al., 2014; Soussan and Kjellgren, 2014). "Herbal" products are generally smoked in cigarette papers or via a water pipe (Deluca et al., 2009), sometimes with cannabis, via inhalation of burning mixtures, or orally as infusion. Powdered variants are also available (Kikura-Hanajiri et al., 2011). An ever increasing number of diverse SCBs are available in "Herbal" products, specified and non-specified in product packaging and ultimately designed for circumvention of legislative controls (Lindigkeit et al., 2009; Vandrey et al., 2012).

The occurrence of use of SCBs was recognised in Europe as early as 2004 when sold as '*legal highs*' or '*herbal highs*' over the internet and in head shops (Bryner 2010; Deluca et al. 2009; Griffith et al., 2010; Zawilska, 2011; Ashton, 2012; Seely et al., 2012a). Some reports suggest SCBs may have originally been manufactured in China (European Monitoring Centre for Drugs and Drug Addiction, 2009; Jack, 2009). Early surveillance and monitoring of trends in SCBs occurred in Europe via the EMCDDA REITOX Early Warning System involving the 27 member states, and the Psychonaut Project (Schifano et al., 2006; Mustata et al., 2009). Synthetic cannabinoid components were detected in products in 2008 (Deluca et al., 2009; Schifano et al., 2009), and traded in the global drug market (Griffith et al., 2010). In 2013, SCBs detected in the Early Warning System had increased from 9 in 2009, 11 in 2010, 23 in 2011, 30 in 2012 and 29 in 2013, with a total of 102 SCBs notified to the EMCDDA by December 2013. By March 2013, this increased by another 5 SCBs. Seizures of SCB bulk powders also increased during this time, with manufacture of SCB products occurring in Europe (Choi et al., 2013; Ogata et al., 2013). Trends in emergent use and retail of SCBs displaced outside of Europe, including the US, Australia, New Zealand, Japan, Ukraine, Russia and Taiwan (McLachlan, 2009; Scalzo, 2010; Grigoryev et al., 2011a:b; Fattore and Fratta, 2011; Seely et al., 2011; Ashton, 2012). European nations legislated to control SCBs in 2009 (EMCDDA, 2009), with other nations (USA, Australia) following suit (Dargan et al. 2011; Kikura-Hanajiri et al., 2011). The following countries currently control "Herbal" and/or other SCBs: Austria, Denmark, Estonia, France, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Romania, Sweden and UK (see www.emcdda.europa.eu) and with other Member States considering appropriate measures (accessed May 13th 2015).

Synthetic Cannabinoids in "Herbal" products

"Herbal" products generally contain 3g of plant material which is purposefully laced with SCBs (Zuba et al., 2011; Kjellgren et al., 2013). SCBs are sprayed onto plant material, and subsequently dried, crushed and packaged as powdered, loose leaf or pre rolled "Herbal"

products (Verster, 2010; Kikura-Hanajiri et al., 2011; Musah et al. 2012a:b; Soussan and Kjellgren, 2014).

Synthetic cannabinoid compounds include the;

- 1) JWH compounds synthesised by John W Huffman in the 1980s, with JWH-018 most characterised to date,
- 2) the CP compounds, a cyclohexylphenol series synthesized by Pfizer in the 1970s, with CP-47,497 and its modified version CP-47,497-C8 most characterised to date,
- 3) the HU-compounds, synthesized in the 1960s at the Hebrew University and,
- 4) the benzoylindoles, AM-694 and RCS-4

(Huffman et al., 2008; EMCDDA, 2009; Lindigkeit et al., 2009; Uchiyama et al., 2009, 2010, 2011a:b; United States Drug Enforcement Administration, 2009; Hudson et al., 2010; Nakajima et al., 2011; Fattore and Fratta, 2011).

These SCBS, such as JWH-018, JWH-073 and CP-47,497, bind and activate the cannabinoid receptors CB1R and CB2R with exceptional potency and efficacy (Gunderson et al., 2012; Seely et al., 2012b; Brents and Prather, 2014).

SCBs consist of seven major structural groups:

- (1) naphthoylindoles (JWH-018, JWH-019, JWH-398, JWH-167, JWH-250, JWH-253, JWH-387 and JWH-073),
- (2) naphthylmethylindoles,
- (3) naphthoylpyrroles,
- (4) naphthylmethylindenes,
- (5) phenylacetylindoles (JWH-250),
- (6) cyclohexylphenols (CP47,497 and homologues of CP 47,497), and
- (7) classical cannabinoids (HU-210, HU-2011)

(Thakur et al., 2005; Dowling and Regan, 2011; Pierre, 2011; Spaderna et al., 2013)

The first generation of 'Herbal' contained CP-47,497-C8, JWH-018, and JWH-073, which on legislative controls were replaced by structurally similar and pharmacologically active compounds (Dargan et al., 2011; Kikura-Hanajiri et al., 2011; Lindigkeit et al., 2009). Products are constantly innovating, with new generation designer cannabinoids emerging such as the aminoalkylindole JWH-073 (Auwärter et al., 2009; Lindigkeit et al., 2009), the hexyl homolog JWH-019 (Dresen et al., 2011), and more recent aminoalkylindoles, JWH-250 (Westphal et al., 2010) and JWH-398 (Hudson et al., 2010). More than ten JWH have been detected in herbal mixtures (Zuba et al., 2011; Uchiyama et al., 2009:2010; Vardakou et al., 2010; Wells and Ott, 2011; Hudson et al., 2010; Dresen et al., 2010). During 2010, other market entries included JWH-015 (in "Topaz"), a methyl derivative of JWH-073 (1-butyl-3-(1-(4-methyl)naphthoyl)indole), a methyl derivative of JWH-018 called JWH-122 (1-pentyl-3-(4-methyl-1-naphthoyl)indole) and AM-694 (1-(5-fluoropentyl)-3-(2-iodobenzoyl)indole) as the first halogenated aminoalkylindole found in an herbal mixture (Ernst et al., 2011). In 2009, the potent synthetic cannabinoid agonist HU-210 was detected in 'Herbal' products in the UK (EMCDDA, 2009).

“Herbal” Product Retail

“Herbal” products are often sold as incense products, meditation potpourris, bath additives, air fresheners, incense, fragrance or potpourri (Zuba et al., 2011; Seely et al., 2012a; Fattore and Fratta, 2011). Marketing as ‘*harmless incense*’ and the presence of the herbal substrate have fuelled the user perception of safety (EMCDDA, 2009, Seely et al., 2012a, Seely et al., 2011; Fattore and Fratta, 2011). A small number of qualitative “Herbal’ user’ studies have been undertaken. Meshack et al., (2013) explored the beliefs and perceived social norms around “Herbal” use with male SCB users, and similar to the telephone interview conducted by Gunderson et al., (2014), reported ease of access, and need for compliance with probation terms as driving ‘Herbal’ use. Participants also assume the product is safe and natural (Every-Palmer, 2011). “Herbal” products are often labeled stating “*not for human consumption*” “*incense*”, or “*for aromatherapy use only*” (Seely et al., 2012a) or “*not suitable for under 18s*” (Spaderna et al., 2013).

Retail outlets include the internet, smart¹ and headshops², convenience stores and petrol stations (Vandrey et al. 2012), with 3 gram packets relatively low priced, widely available and retailing for between 20 and 30 euros (Schifiano et al. 2009; Fattore and Fratta, 2011, Wehrman 2011; Kikura-Hanajiri et al., 2011, Vandrey et al., 2012). Branding is attractive, with exotic brand names and a wide open eye imprint common (Sobolevsky et al., 2010). Products are marketed under different brands denoting potency of expected effect (Auwarter et al. 2009; Chainsaw 2009).

Product nomenclature is ever diverse and dynamic, with popular distribution names including “K2”, “K2 Summit”, “Spice”, “Spice Gold”, “Spice Diamond”, “Arctic Spice”, “Silver”, “Aroma”, “K2”, “Genie”, “Scene”, “Dream”, “Yucatan Fire”, “Smoke”, “Sence”, “ChillX”, “Space Truckin”, “Solar Flare”, “Moon Rocks”, “Kronic”, “Blue Lotus”, “Algerian Blend”, “Aroma”, “Scope”, “Genie”, “Zohai”, “Banana Cream Nuke”, “Highdi’s Almdröhner”, “Earth Impact”, “Spice Mojo”, “Gorillaz”, “Skunk”, “Galaxy Gold”, and “Red X Dawn” to name a few (EMCDDA, 2009; Fattore and Fratta, 2011; Bretteville-Jensen et al., 2013; Kjellgren et al., 2013).

“Herbal” Contents and Constituents

Online retailed products have been reported to contain comparable purity to validated standards in SCBs (Ginsburg et al., 2012). However, significant variability exists within types and amounts of SCBs in “Herbal” products, within batches of products and in packages (EMCDDA, 2009; Hillebrand et al., 2010). Limited knowledge around exact chemical composition and toxicology of ‘Herbal’ ingredients is available (Seely et al., 2012a). Creative chemists continue to synthesise novel SCBs circumventing existing legislative templates (King, 2013).

The constituents in ‘Herbal’ have changed over time, possibly due to manufacturer efforts to circumvent regulatory controls (Ernst et al., 2012; Rosenbaum et al., 2012). More recent developments (May 15th 2015) include the presence of SCBs in cannabis resin type material (for

¹ Smart shops are shops, prominently found in the Netherlands, which sell psychoactive substances in addition to the drug paraphernalia found in head shops.

² A head shop is a retail outlet specializing in paraphernalia used for consumption of cannabis, tobacco, legal highs, legal party powders and New Age herbs as counterculture art, magazines, music, clothing, and home décor.

example 'Bang Solid', 'Afghan'), and in stimulants, hallucinogens and sedatives, MDMA tablets, and E- cigarettes (www.emcdda.europa.eu).

In addition to SCBs in 'Herbal' products, other added chemicals and excipients include amides, esters, benzodiazepines, psychotropic agents such as 'Salvia Divinorum', 'Kratom' (*Mitragyna speciosa*) and cannabis, synthetic opioid *O*-desmethyltramadol and the β 2-adrenergic agonist clenbuterol (Dresen et al., 2010; Uchiyama et al., 2010; Zuba et al., 2011; Arndt et al., 2011; Philipp et al., 2011 a:b:c; Ogata et al., 2013). This blend is particularly dangerous and has caused fatalities (Kronstrand et al., 2011). Masking agents of natural origin added to confuse detection approaches include tocopherol (vitamin E), eugenol, or fatty acids (Dresen et al., 2010).

Other non-cannabinoid substances detected in "Herbal" products include oleamide (in for example 'Aroma') (Dresen et al., 2010; Uchiyama et al., 2010; Every-Palmer, 2011); harmine and harmaline, (Fortunato et al., 2009:2010); myristicin and asarone (Dresen et al., 2010:2011); passion flower (Schneir et al., 2011); benzophenone (HM 40) (Dresen et al., 2010: 2011); beach bean (*Canavalia maritima* or *Canavalia rosea*); blue lotus (*Nelumbo nucifera*) and dwarf skullcap (*Scutellaria nana*) (Burley, 2008); white or blue water lily (*Nymphaea alba* or *Nymphaea caerulea*), Indian Warrior (*Pedicularis densiflora*), Lion's Ear (also known as Lion's Tail or Wild Dagga; *L. leonurus*), Maconha Brava (*Zornia latifolia*), and Honeyweed or Siberian Motherwort (*Leonurus sibiricus*) (Teske et al., 2010); Marshmallow (*Althaea officinalis*) and Dog Rose or Rosehip (*Rosa canina*) (Seely et al., 2011). Herbal components are generally listed as between 0.4–3.0 g of a mixture consisting of several potentially psychoactive plants.

Prevalence of Use and User Profiles

Despite efforts to regulate and raise awareness of abuse potential, use of "Herbal" among adolescents and young adults (EMCDDA 2009; Donnelly, 2010; Johnston et al., 2011; Forrester et al., 2011; Hoyte et al., 2012; Vandrey et al., 2012; Barratt et al., 2013) has increased in popularity over time, alongside the reporting of negative medical, psychiatric and social consequences (Benford and Caplan 2011; Van der Veer and Fiday, 2011; Hoyte et al., 2012; McGuinness and Newell, 2012; Spaderna et al., 2013).

Internet retail, shiny packaging, advertising and marketing of a promise to provide a stronger high than cannabis, availability, affordability, safety and legal perceptions, packaging as incense or tea, and difficulty in detection in standard urine toxicology tests have fuelled the rise of popularity and use of 'Herbal' products (Sopris, 2008; Schifiano et al., 2009; Vardakou et al., 2010; Fattore and Fratta, 2011; Every-Palmer, 2011; Johnston et al., 2011, Vandrey et al., 2012; Ginsburg et al. 2012; Vandrey et al. 2012; Barratt et al., 2013; Spaderna et al., 2013; Winstock and Barratt, 2013; Gunderson et al., 2014). Of note is not only media reporting but the extensive knowledge exchange between interested and experienced users on the Internet in fuelling SCB innovation and displacement (EMCDDA, 2009; Sumnall et al., 2011; Bretteville-Jensen et al., 2013).

According to Seely et al., 'Herbal' users can be categorised into three groups based on prior drug use;

- 1) marijuana smokers;
- 2) casual users seeking to avoid legal consequences;
- 3) naïve drug experimenters.

Users appear to be young adults and adolescents, with reviews estimating average user age of 23 years, with males appearing more than twice as likely to use “Herbal” (Castellanos et al., 2011; Forrester et al., 2011; Hu et al., 2011; Vandrey et al., 2012; Hoyte et al., 2012; Barratt et al., 2013; Papanti et al., 2013). Clinical case reporting indicates intoxication and adverse medical consequences post “Herbal” use in male adolescents, and to a lesser extent, young females (Zimmermann et al., 2009; Bryner, 2010; Mir et al., 2011; Schneir et al., 2011; Young et al., 2011).

Poly substance use is common, with “Herbal” along with cannabis (Barratt et al., 2013; Winstock and Barratt, 2013), tobacco, alcohol, hallucinogens, ketamine, prescription opiates, MDMA, benzodiazepines, amphetamines, cocaine, and *Salvia divinorum* (Schifano et al. 2010; Castellanos et al., 2011; Hu et al., 2011; Vandrey et al., 2012; Vandrey et al., 2012; Winstock and Barratt, 2013).

At present data sources around the issue of “Herbal” centre on rising reported use in US youth user surveys (NIDA, 2012; Wood 2013). Surveys in the US, have reported on 11% of 17/18 year old high school students using ‘Herbal’ (Vandrey et al., 2012), and 7.4% in 15/16 year olds and 7.9% in 17/18 year olds (Johnston et al., 2013). Prevalence of “Herbal” use is also reported among 8% of US college level students, along with concomitant use of other substances such as hookah tobacco, cigarettes and marijuana (Hu et al., 2011). Caviness et al., in 2014 reported on common prevalence in past month in young US adults compared to opioids, cocaine or hallucinogens, with SCB use significantly associated with male gender, not attending school and use of cigarettes, excessive alcohol use, marijuana use (daily and weekly) and other drug abuse.

Low prevalence rates are reported in EU surveys, with lifetime prevalence for adults aged 16-64 years) at 0.2% in 2010/11 and 0.1% in 2011/12 in the UK (England and Wales) (Smith and Flatley, 2011; Office for National Statistics, 2012). In Spain, in 2012 a survey of students aged 14 to 18 years reported low levels of “Herbal” use, at 1.4%, 1.0% and 0.6% reported for lifetime, last year and last month prevalence (Spanish Observatory on Drugs, 2012). In Germany, student survey has indicated (15-18 years) of reported lifetime use of 9% in 2009, and 7% in 2011 and 2012 (Werse et al., 2011: 2012; Bernard et al., 2013). The Global Drug Survey in 2012 reported last year prevalence levels of 3.3% among all UK respondents and 5.0% among regular clubbers in the UK (Guardian/Mixmag Survey, 2012). Internet drug studies in Sweden have reported on 3.6% of students aged 14-15 years, and 6.8% of those aged 16-17 years using “Herbal” compounds (CAN, 2013).

Effects of “Herbal” Use

Desired effects for “Herbal” users centre on sense of elation, wellbeing, altered perception of reality and empathy, generally within a social context (Frattore and Fratta 2011; Kjellgren et al., 2013), and vary in onset of effect and duration of action (Schneir et al., 2011). Subjective and physiologic effects vary (Schifano et al., 2006; Vardakou et al., 2010). Typical acute psychoactive effects of ‘Herbal’ include an energizing, disinhibiting, feeling of well-being, euphoria, calmness, relaxation, mild perceptual alterations, increased creativity, and mild memory and attentional impairments. Perceptual changes centre on migratory flushing or cooling, peripheral numbness, tingling and altered depth perception (Schifano et al., 2009; Benji, 2010). Users report “Herbal” as having less appetite-stimulating properties than cannabis (Winstock and Barratt, 2013)

perhaps due to its capacity to induce nausea and emesis as well as stimulate appetite (Canning et al., 2010; Hermanns-Clausen et al., 2013).

Similar to cannabis, the spectrum of effects can include anxiolysis or anxiety, stimulation or sedation, and euphoria or dysphoria. Psychoactive effects of “Herbal” range from pleasurable elation to alterations in cognitive abilities, anxiety, psychosis, altered vision, hallucinations, excessive fear and motor impairment (Auwärter et al., 2009; Müller et al., 2010; Vardakou et al., 2010; Castellanos et al., 2011; Forrester et al., 2011; Gunderson et al., 2012; Papanti et al., 2013).

Side effects include dry or “cotton” mouth, pupillary changes including miosis and mydriasis, blurry vision and light sensitivity, reddened conjunctiva, cough, hyperthermia, rhabdomyolysis, symptoms suggestive of anticholinergic effects and pulmonary inflammation and injury, tinnitus, agitation, hot flushes, burning eyes, sickness, xerostomia mydriasis and tachycardia (Auwärter et al., 2009; Teske et al., 2010; Banerji et al. 2010; Canning et al. 2010; Sobolevsky et al. 2010; Teske et al. 2010; Forrester et al. 2011; Forrester et al., 2011; Loschner et al. 2011; Schneir et al. 2011; Simmons et al. 2011a:b; Vandrey et al. 2012; Hermanns-Clausen et al. 2013; Alhadi et al. 2013). Occasional inappropriate laughter, xerostomia, and nystagmus are described (Auwärter et al., 2009; Schneir et al., 2011). Duration of effect is variable and can last several hours (Auwärter et al. 2009; Deluca et al., 2009; Benji, 2010; Muller et al. 2010a:b; Canning et al., 2010; Schneir et al., 2011; Hoyte et al., 2012; Young et al., 2012; Schneir and Baumbacher, 2012; Barratt et al., 2013; Winstock and Barratt, 2013). Residual effects can also last hours (Auwärter et al., 2009; Shakes, 2008).

Synthetic cannabinoids, in contrast to phytocannabinoids (for example delta-9-tetrahydrocannabinol or THC found in cannabis), are high potency, high efficacy cannabinoid receptor full agonists (Atwood et al., 2010; Atwood et al., 2011; Huffman and Padgett 2005; Huffman et al., 2005a:b; Lindigkeit et al., 2009; Marriott and Huffman, 2008; Vardakou et al., 2010; Tuv et al., 2012).

Acute effects relating to spectrum and intensity differ between ‘Herbal’ and cannabis (Spaderna et al., 2013). It is not known whether these differences relate to differences between synthetic and phytocannabinoids or to the non-cannabinoid components present in ‘Herbal’ (Spaderna et al., 2013). Despite this, recent surveys indicate that “Herbal” users overwhelmingly favor the effects of cannabis to the synthetic variety (Winstock and Barratt, 2013; Arfken et al., 2014). Generally SCBs exhibit similar side effects to high dose cannabis, but are potentially more harmful (Hermanns-Clausen et al., 2013). Metabolites of some commonly present SCBs in “Herbal” may have antagonist effects at CB1 receptors, which may account for some of the differences between cannabis and “Herbal” (Brents et al., 2012; Brents et al., 2011; Chimalakonda et al., 2012). This body of research is of interest given the conflicting user experiences of cannabis versus “Herbal”, and the marketing of “Herbal” as marijuana substitute (Sobolevsky et al., 2010; Sopris, 2008; Tung et al., 2012; Gunderson et al., 2012).

The ever changing composition of “Herbal” and uneven consistency in the diverse range of products contributes to experiences of undesirable effects and the risk of accidental overdose (Lindigkeit et al., 2009; Uchiyama et al., 2010; Tuv et al., 2012; Seely et al., 2012a). Of grave concern is that ‘Herbal’ and emergent SCB compounds have not been rigorously tested in human clinical trials (Auwärter et al., 2009).

Side-effects of “Herbal” Use

Use of SCBs is a public health concern given reporting of acute CNS and cardiovascular toxicity with severe cardiovascular, gastrointestinal and psychiatric sequelae (Gunderson et al., 2012; Brents and Prather, 2014). Concerns centre on dearth of research on pharmacology, toxicology and health consequences in humans, and appropriate medical approaches for treatment of acute intoxication (Frattore and Fratta, 2011).

Acute psychoactive effects affect neurological function, cardiovascular function, gastrointestinal function, anxiety, altered perception, cognitive impairment, and mood (Spaderna et al., 2013) with adverse effects centring on agitation, dysphoria, psychosis, bizarre behaviour and anxiety. Presence of non-cannabinoid ingredient such as *O*-desmethyltramadol, and ‘Kratom’ (as in the mixture ‘Krypton’) may contribute to fatal outcomes (Kronstrand et al., 2011).

A Swedish study on emergency admissions for acute recreational drug intoxication detected SCB’s (JWH analogues) substituted cathinones (butylone, MDPV, methylone), tryptamines (4-HO-MET), plant based substances (mitragynine and psilocin) and conventional illegal drugs and with mixtures of new and/or conventional drugs in 44% of cases (Helander et al., 2013). Emergency presentations report on patient agitation, panic attacks, tachycardia, nausea, paranoid ideation, and hallucinations (Piggee, 2009; Banerji et al., 2010; Vearrier and Osterhoudt, 2010; Bebarta et al., 2012). The emergence of symptoms in patients presenting for medical attention are unclear in the hours post consumption, and may commence immediately, minutes or hours post use (Sobolevsky et al. 2010; Bebarta et al. 2012).

Severe toxicity following synthetic cannabinoid use is reported in the literature (Lapoint et al., 2011; Simmons et al., 2011a:b). Significant acute intoxication effects of SCBs, include hypertension, emesis (vomiting), agitation/anxiety, seizures, and hypokalemia (low potassium levels), halting speech and avoidant eye contact paranoia, spasm, tachycardia, chest pain, psychiatric symptoms such as anxiety, paranoia, avoidant eye contact, paranoid and grandiose delusions, psychosis and agitation (Green et al., 2003; EMCDDA, 2009; Sobolevsky et al., 2010; Every-Palmer, 2010; Benford and Caplan, 2011; Lapoint et al. 2011; Schneir and Baumbacher 2012; Simmons et al. 2011b; Steve 2011; Tofighi and Lee 2012), and dependency (Hurst et al., 2011; Forrester et al., 2011; Schneir et al., 2011; Ashton, 2012; Bebarta et al., 2012; Gunderson et al., 2012; Hermanns-Clausen et al., 2012; Hoyte et al., 2012; Seely et al., 2012a; McKeever et al., 2015). Agitated delirium lasting for several days has been described (Berry-Caban et al., 2013).

Physical side-effects of use range from nausea to psychomotor agitation, diaphoresis, and palpitations (Zimmermann et al., 2009; Every-Palmer et al., 2010: 2011; Schneir et al., 2011; Castellanos et al., 2011). Gastrointestinal effects include nausea, retching and vomiting, cardiovascular effects include elevated heart rate and blood pressure, tachycardia and hypertension, chest pain, and cardiac ischemia (Canning et al., 2010; Schneir et al., 2011; Seely et al., 2011; Hoyte et al., 2012), with users presenting with panic symptoms, chest pain, arrhythmias or palpitations (Teske et al., 2010; Schneir et al., 2011; Simmons et al., 2011a:b; Bebarta et al. 2012; Cohen et al., 2012; Young et al., 2011; Hermanns-Clausen et al., 2013).

Irregularities may persist following the ‘Herbal’ episode, with some clinical suspicion that ‘Herbal’ may precipitate myocardial infarction and even death (Mir et al., 2011; St. James, 2010).

Metabolic effects such as hypokalemia, hyperglycemia, and acidosis, and autonomic effects, such as fever and mydriasis are reported (Seely et al., 2011; Simmons et al., 2011a). Neurological effects include tremor, ataxia, nystagmus, hypertonicity, hyperflexion, fasciculations, and hyperextension (Benji, 2010; Donnelly, 2010; Canning et al. 2010; Forrester et al., 2011; Cohen et al., 2012; Schneir et al., 2011). Chronic use of SCBs can result in serious cognitive impairment (Zimmermann et al., 2009). Common cognitive impairments relate to attention, concentration, memory, and operating machinery (Musshoff et al., 2013), and may last longer than the intoxication period (Soussan and Kjellgren, 2014). Other clinical case studies point to acute kidney damage (Bhanushali et al. 2013), generalised convulsions (Schneir and Baumbacher, 2011) and ischemic stroke (Fisher, 2010; Freeman et al., 2013).

Perhaps most concerning are reported psychotic symptoms associated with acute and chronic “Herbal” use. This contributes to the debate around the cannabinoid hypothesis of psychosis, for example that exposure to cannabis and cannabinoid agonists is associated with psychosis outcomes through activation of CB1R (Sewell et al., 2010; Radhakrishnan et al., 2012; Spaderna et al., 2013). Concerns are grounded in the linear dose-curve response and youth use of “Herbal” with exposure to cannabis in adolescence potentially contributing to increased risk of psychosis later in life (Radhakrishnan et al., 2012; Sewell et al., 2010). Prevalence of psychotic effects remain unclear (Barratt et al., 2013; Vandrey et al., 2012), despite psychotic reactions to “Herbal” often presenting as common reason for the seeking of medical assistance (Forrester et al., 2011). Psychotic symptoms associated with “Herbal” include auditory and visual hallucinations, perceptual alterations, illusions, paranoia, agitation, aggression, catatonia, depersonalization, and dissociation (Spaderna et al., 2013). These symptoms generally last several hours, although prolonged and persistent episodes have been reported, and in some instances did not remit (Hurst et al. 2011; Van der Veer and Fiday, 2011; Tung et al., 2012; Berry-Caban et al. 2013). Users also describe vivid visual changes described as “*fractals*,” “*trails*,” “*flashes of colour*,” and “*geometric patterns*—” hallucinations different from typical endogenous psychosis (Spaderna et al., 2013).

Loss of consciousness and confused states, panic attacks, suicidal ideation and suicide attempts are reported and contribute to serious concerns (Gay, 2010; Seely et al., 2011; Simmons et al., 2011; Hurst et al., 2011; Van der Veer and Fiday, 2011; Shanks et al., 2012). It is unclear whether “Herbal” precipitates psychosis in users both with and without a history of psychotic disorders (Every-Palmer, 2010:2011; Pierre, 2011; Müller et al., 2010; Hurst et al., 2011; Pierre, 2011). However, we know that long-term “Herbal” users often experience irritability and anxiety, and psychotic episodes (Castellanos et al., 2011; Every-Palmer, 2010, 2011; Schneir et al., 2011).

“Herbal” Dependence

Development of “Herbal” dependence³, drug tolerance over time, persistence of drug craving, continuous urge to consume despite adverse consequences, scarce attention to other interests or duties and clear withdrawal symptomatology in the event of protracted high dose use are documented (Zimmermann et al., 2009; Vardakou et al., 2010; Frattore and Fratta, 2011).

³ See Appendix for the DSM definition of substance dependence.

Long term use infers dependency, with withdrawal symptoms including internal restlessness, urge to consume more drugs, shaking, sweating, anorexia and insomnia, memory impairment, diaphoresis, feeling emotionally numb and emotional disconnect in users, somatic pain, palpitations, insomnia, tachycardia, hypertension, hyperventilation, headache, diarrhea, nausea, vomiting, and depressed mood (Zimmermann et al., 2009; Spaderna et al., 2013; Soussan and Kjellgren, 2014). Withdrawal reactions mostly resolve within a week (Zimmermann et al. 2009; Rominger et al. 2013).

Supportive and symptomatic treatments such as lorazepam or antipsychotics may be efficacious, as there are no specific antidotes for the consequences of 'Herbal' use (Spaderna et al., 2013). Animal models have demonstrated the attenuation of THC's effects by the opioid antagonist naltrexone (Justinova et al., 2004), and may offer some potential in the case of SCBs (Hammerlsey, 2010). A recent study by Rodgman et al., (2014) indicated usefulness of naltrexone in the management of post detoxification cravings from SCBs.

Drug Testing

Continued efforts strive to develop novel analytical methods for detection of SCBs (Beuck et al., 2011; Grigoryev et al., 2011a:b; Hudson et al., 2010; Hudson and Ramsey, 2011; Moran et al., 2011). Recent innovations in development of a GC-MS screening procedure which combines high chromatographic resolution with the existence of well-established libraries also offer promise in detection of psychoactives compounds present in herbal mixtures (Auwärter et al., 2009; Dresen et al., 2010, 2011).

Chapter Two: Legislative and Community Context for the Research

Legislative Controls in the Republic of Ireland and Northern Ireland

In the Republic of Ireland, the primary legislation controlling drugs are the Misuse of Drugs Act 1977 and the Misuse of Drugs Act, 1984. These are further amended by the Criminal Justice Act 1999, the Criminal Justice Act 2006 and the Criminal Justice Act 2007. The Misuse of Drugs Regulations 1988 (SI 328 of 1988) (as amended) lists the various substances to which existing legislation applies and has two primary purposes which establishes a system of control over certain drugs to protect the public from dangerous or potentially dangerous and harmful substances and also to facilitate safe use of certain controlled drug substances which, although harmful if misused, have medical and therapeutic value. Under this legislation, unless expressly permitted to do so, it is illegal to possess, supply, manufacture, import or export a controlled substance. Controlled substances are substances which affect the central nervous system by producing a mind altering effect (for example stimulation, depression, hallucinations), and which are either known to be or have the potential to be dangerous or harmful to human health, including their liability for misuse or causing social harm. Many of these substances have abuse and addiction potential, both physically and psychologically.

The control of substances under the Misuse of Drugs Act occurs in cooperation, engagement and compliance with international coordinating frameworks such as the United Nations conventions which provide the international legal framework for addressing the illicit drugs phenomenon. These conventions aim to protect the health of people from inappropriate use of controlled drugs and to ensure that the use of controlled drugs is restricted to medical and scientific purposes. Substances are scheduled in accordance with Ireland's obligations under these international conventions. Ireland has extended the scope of control to include a wider range of substances in the Criminal Justice (Psychoactive Substances) Act 2010 which applies to substances not specifically proscribed under the Misuse of Drugs Acts, but which have psychoactive effects by making it an offence to sell, import, export or advertise such psychoactive substances. This Act aims to prevent misuse of harmful psychoactive substances.

However, the process by which substances are subjected to legislative control warrants ascertainment of abuse potential and harm in order to warrant control. This process is underpinned by surveillance and monitoring of trends relating to usage, seizures and health effects) in national and international contexts, along with the identification of emerging individual chemical substances and groups of substances within drug user groups. Government orders control a wide range of substances by virtue of generic definitions, in order to inhibit circumvention of legislative controls by creative drug design. Since 1977, nine Government orders have been implemented, with the most recent order in December 2014, following the control of several substances by EU Council decisions. Government orders in 2010 and 2011 controlled substances circulating via headshop retail which included synthetic cannabinoids, BZP derivatives and mephedrone. These controls, coupled with the Criminal Justice (Psychoactive Substances) Act 2010, assisted in achieving greater control, and the (almost) disappearance of head shops in Ireland. Many head shop products became illegal in Ireland on 23 August 2010 when the new Criminal Justice (Psychoactive Substances) Act 2010 was passed. This was followed by the Misuse of Drugs (Amendment) Bill 2015: Second Stage Dail debate in Ireland (March) which provides that substances which were controlled before the court judgment by means of Government order may be added to the Schedule to the 1977 Act, thereby

providing that they will once more be controlled. This Bill aimed to protect the legal framework of Ireland by re-controlling substances which were assessed as meriting such control.

Studies on synthetic psychoactive drugs in the Republic of Ireland to date have largely centred on the pre and post legislative detection of psychoactive substances (Kavanagh et al., 2010), and use of the popular synthetic cathinone drug mephedrone (Van Hout and Brennan, 2011a:b:c; 2012; Van Hout and Bingham, 2012). One cross border comparative study was undertaken with Northern Ireland (McElrath and Van Hout, 2011). In Northern Ireland, drugs are classified under the Misuse and Drugs Act, with a series of temporary drug classifications of synthetic drugs taking place since 2012 (for example methoxetamine, methyphenidate derivatives, benzofuran and indole analogues, and NBOMe hallucinogens). At present the UK is considering legislation on legal highs which would make it an offence to produce, supply, offer to supply, possess with intent to supply, import or export psychoactive substances; that is, any substance intended for human consumption that is capable of producing a psychoactive effect.

Setting of the Research

Teach na nDaoine is the Family Resource Centre located within Mullaghmatt, Co. Monaghan, situated in the Electoral Division (ED) of Monaghan Rural and services Monaghan town and its hinterland. It emerged from the Mullaghmatt/Cortolvin Community House Management Committee that was set up in 1998 within the local authority housing estates of Mullaghmatt and Cortolvin. The Family Resource Centre has expanded since the facility opened in 2005 and the catchment area for supports and services has grown by demand to include the wider Monaghan Urban and Monaghan Rural areas. The vision for the centre is and continues to be “to work towards meeting the needs of the area through a community development process of self-help and with engagement from key stakeholders”.

Mullaghmatt/Cortolvin is the largest Local Authority housing estate in County Monaghan and is located on the western edge of Monaghan town. The estate was built in the early 1970's and consists of approximately 260 houses. The estates were built at a time when the conflict was at its height in the North of Ireland. The estates became a place of refuge for many people fleeing the conflict. At present, approximately one third of the population of the estate is of Northern Irish origin. The catchment area of Mullaghmatt/Cortolvin has a deprivation index score of -3.3 compared to the national average of 0.2. The area has a high unemployment rate (26.9% male and 18.1% female), and lone parent households count for 26% of the local population. The area has a higher than average share of low-skilled workers (25.8%) and a significantly lower than average share of a professional skilled workforce. 19.6% of adults in the community have attained only a primary education, while 24% of the population have attained third level education.

With this socio-economic backdrop, “Herbal” use has emerged as a major concern for residents and families in the Mullaghmatt area following the deaths of a number of young people as a result of their use. Teach na nDaoine commissioned this research study to obtain clarity on the issue and to assist with the formulation of a response.

Chapter Three: Research Methods

Study Aims and Objectives

The study aimed to provide:

- A literature review of relevant research and legislation on Synthetic Cannabinoids
- A baseline measure of licit and illicit drug and alcohol use among a group of “Herbal” users i.e. frequency of use; quantity being used, patterns of use; experiences of users; other drugs being used in addition to synthetic cannabinoids, history and patterns of drug and alcohol use.
- Documentation of a profile of “Herbal” users including age, gender, marital status, educational attainment, educational experiences, employment history, parental drug or alcohol use.
- Documentation of the effects of use of “Herbal” based on users experiences of negative effects including physical health, mental health, family conflict, legal issues etc.
- Exploration of why this cohort uses this particular substance exclusively.
- Final reporting of research which can be repeated in order to gauge change and that could inform the development of an effective monitoring and evaluation framework to enable services locally to formulate a response.
- Provision of recommendations based on research findings that could inform Community, Voluntary and Statutory service development.

The objectives of the study were to gain an understanding of individual and collective experiences of “Herbal” use; pathways to misuse or dependence; how dependence is reinforced and maintained; recommendations for improved targeting of community drug campaigns and harm reduction and, finally, recommendations for a road map for future service targeting and drug monitoring in the area.

Study Design

The study design consisted of interviews with ‘dependent’ users (n=6), a community focus group (n=10) and interviews with key stakeholders (n=9). Eight stakeholders and one parent of a user were interviewed and represented the perspectives of family, drug and community support, mental health, addiction, primary care, council services and law enforcement.

User participants completed the Severity of Dependence Screener (SDS) (Gossop et al., 1995) which is a 5-item questionnaire, with scores of over 7 indicating dependence in the past 12 months. For the purposes of this study participant with scores of 7 and above were categorised in the ‘dependent’ user category, and those under 7 in the ‘recreational user’ category.

Three males (aged 17-38 years) and three females (aged 20-42 years) were interviewed. Five dependent (current) users of “Herbal” and one previously dependent (currently abstinent) user took part in interview. All user participants scored over 7 in the Severity of Dependence (SDS) screener, with average score of 13, and with two scoring the maximum score of 15 (one male, one female), two scoring 13 (two males), one female scoring 9 and one female scoring 12. No ‘recreational’ users were interviewed.

All user participants were unemployed with three educated to Junior Certificate level, two leaving school at primary level, and one educated to Leaving Certificate. All were single, and three had children.

The in depth interviews and focus groups captured illustrative data pertaining to choices and decision making to use “Herbal” products, experience of sporadic and continued use, reinforcers for use, perceptions of risk and abuse potential, harm reduction practices, use of other drugs or medicines, adverse health and social consequences, favoured route of administration, and perspectives on treatment referral, uptake and outcomes.

The interviews and focus groups lasted between 30-90 minutes, and were audio-recorded with the participants’ permission.

Photographs of “Herbal” products were also included in order to verify and validate user interview data.

Ethics

The study adhered to ESRC protocols for conducting ethical research. Face to face interviews and focus groups were conducted at the participant’s designated service setting in a private room.

There were no known risks of participating in the study. Participants were encouraged to contact the lead researcher Dr Van Hout via email with any concerns. In the event of the participant becoming uncomfortable or upset, the interview ceased, and the participant was referred to their GP or appropriate service provider.

All interviewees and focus group remained anonymous in any subsequent discussions and in the final report and publications from the study. All data was retained in confidence. All interviews and focus group were coded for anonymity and stored in a locked filing cabinet. Audio files were destroyed post transcription.

Data Analysis

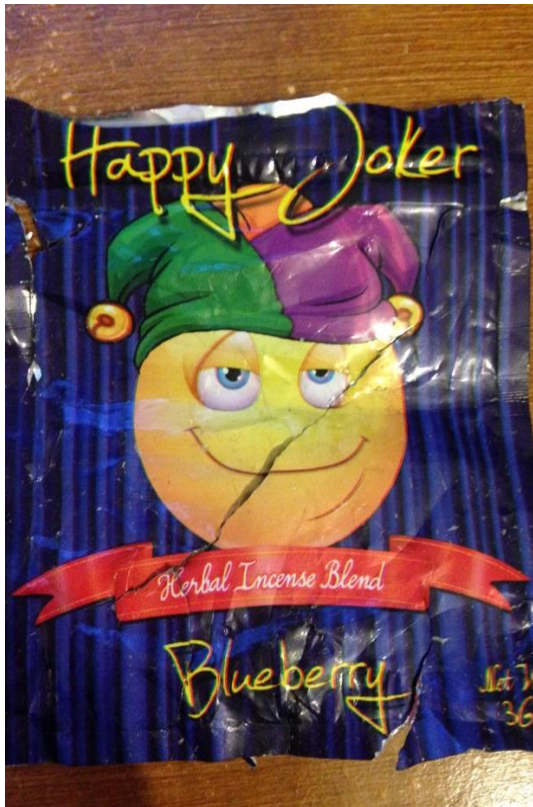
The data consisting of 51,159 words was analysed using thematic analysis (Hayes, 2000; Braun and Clarke, 2006) which located and identified recurrent explicit themes of experiences of “Herbal”. The data was read several times by both members of the team to familiarise with content, with initial patterns identified without preconditions. Each item in the data was coded systematically and manually. Recurrent patterns were sorted into overarching themes, and repeatedly checked for consistency, internal and external homogeneity. A written analysis was devised with supportive illustrative quotations. Results were repeatedly checked by both members of the team to match with the original dataset for verification and consistency.

Validity of the thematic analysis of qualitative data was optimised by the triangulation of perspectives on the issue of “Herbal” use from stakeholders, dependent and recovered users, parent and community members.

Chapter Four: Results

“Herbal” Products in Circulation

A variety of products were described by users and stakeholders in circulation (*Blue Joker, Red Joker, Clockwork orange, Clockwork Reloaded, Happy Joker, Blueberry, Clock Reloaded and Jammin Joker, Juicy Fruits, Cherry Bomb, Black Mamba*) One user described ‘Happy Joker’ as the ‘*The best of a bad bunch.*’ Product commonly contained 5f-AKB48 or 5F-PB-22, or are a combination of both.



Findings: Thematic Analysis of Qualitative Data

3.1 Participant Profile

Three males (aged 17-38 years) and three females (aged 20-42 years) were interviewed. Five dependent (current) users of “Herbal” and one previously dependent (currently abstinent) user took part in interview.

All user participants scored over 7 in the Severity of Dependence (SDS) screener, with an overall average score of 13, and with two scoring the maximum score of 15 (one male, one female), two scoring 13 (two males), one female scoring 9 and one female scoring 12. No ‘recreational’ users were interviewed.

All user participants were unemployed. Three were educated to Junior Certificate level. Two had left school at primary level. Only one was educated to Leaving Certificate. All were single, however three had children.

In addition to users, eight stakeholders and one parent of a current user were interviewed which represented the perspectives of family, drug and community support, mental health, addiction, primary care, council services and law enforcement.

3.2 Emerging Drug Trends in the Community

This theme describes community and stakeholder perceptions of emergent use of “Herbal” products in their community.

Continued use of “Herbal” products appeared to be a legacy of the emergence and disappearance of head shops in 2010. More recently however, awareness of this issue was characterised by rising reports of drug use in the community, displacement away from excessive alcohol use and related public nuisance, and a reduction in levels of anti-social behaviour.

‘One of the things we sort of accidentally spotted is that we would have had over the years a fairly strong culture of abuse of alcohol in this area. And there would have been anti-social behaviour related to that, a lot of people complaining “they’re drinking outside me house” at 4 or 5 o clock in the morning, stuff like that. By and large that has near enough disappeared in this area. It seems to be the case is that most people, most young people, not so young either too, are smoking herbal, in their own houses and that’s their escape.’ (Stakeholder Participant)

Stakeholder and community participants described the identification of clustering or ‘pockets’ of “Herbal” use in certain estates and localised areas, which appeared related to widespread availability and social networks of users.

‘What I find if there does seem to be clusters, it has something to do with availability and accessibility as well’. (Stakeholder Participant)

‘Where I am living is a dealing and drop off point in the town, and I just see a constant stream of people every single day, and unfortunately after XXX death there was a bit of activity to try and mitigate, in terms of the guards being up and walking around, but that has really stopped. Its blatant, it’s obvious, it’s totally out in the open, its running riot as far as I can gather. (Community Participant)

Indicators of this emerging trend also centred on anecdotal community reporting and health and primary care service engagement with users in crisis. Other indicators centred on familial use of “Herbal” products reporting of user possession, littering of herbal product paraphernalia and incidences of youth deaths by suicide speculated to be linked to use of synthetic cannabis.

‘I know there are people smoking it, young people. I’ve had one mother who was smoking it along with her children, I think she was taking more than them. Then we’ve had one or two suicides as well, so I suppose that’s what I know about it really. I see the packets lying around.’ (Stakeholder Participant)

During the last 12 months, mental health, psychiatry and community service uptake had increased, perhaps triggered by the first youth suicide in the area, heavy and dependent use of synthetic cannabis products and difficulties for users to cease use, and the related negative individual, familial and community consequences.

‘We’ve probably provided service to maybe 20 individuals predominantly male, predominantly under the age of 25 all with apparently serious issues around synthetic cannabis. A lot more so than normal cannabis and the things that they’re telling us seems to indicate that it has much greater potential for addiction and a lot harder for them to control their intake, and much more of a propensity to trigger or exacerbate mental health issues and it seems to be a serious issue.’ (Stakeholder Participant)

3.3 Profile of “Herbal” Users

This theme describes community, stakeholder and user perceptions of “Herbal” users.

Stakeholder participants were generally of the view that clustering of use of “Herbal” was contained among individuals living in marginalised and deprived areas, and filtering into more mainstream communities. One stakeholder observed the clustering of use among the settled Traveller⁴ and Traveller community.

‘Some of the users are telling me that they’re smoking this stuff just to escape, coz they see themselves as unemployable. They don’t see themselves as being able to hold down a job, or they don’t see themselves as having any kind of great future. There’s lots of other issues that compound this... poverty, lack of opportunity for education, maybe a bad experience in school, maybe not having any education or qualifications, so there’s many layers, never even mind talking about the addiction issues and how that’s affecting their mental health and their stability.’ (Community Participant)

A strong majority of users were described by stakeholders as unemployed, with low level education, not engaging in training, with experience of family dysfunction and illicit drug activity in their community, and with a history of excessive alcohol use. Many stakeholders cautioned around the potential for use across all social strata over time.

‘The overriding issue is by and large seeing themselves as unemployable. Certainly 95-96% of the users absolutely have issues in regard to education, dropping out of school early, having no formal qualifications, and even from an early age even before they would have engaged in certainly this type of drug, would have seen themselves as unemployable, a typical response to people who engage in illegal drugs.’ (Stakeholder Participant)

⁴ The name “Travellers” refers to a nomadic Irish ethnic group. Irish Travellers are a people with a separate identity, culture and history, although they are as fully Irish as the majority population. Source Paveepoint.

Age profile of users was described by stakeholders as ranging from as young as 13 or 14 years, up to early forties. In terms of gender, opinions were mixed, with some stakeholder participants describing a gender balance, and others commenting on predominance of male dependent use within the 16-25 age category. Emergent outliers in the form of increasing female and older users up to age 40 years were observed.

'We've had the oldest we've had is around 42. Most of them have been younger so maybe between 18-25 age bracket, mostly males.' (Stakeholder Participant)

This was corroborated by one user commented who said;

'I'd say 70% of XXXX [estate] that, the oldest who smokes it in the park is the wee lads mother, and the oldest that smokes it is about 42. It doesn't go past 42 years of age that's about it.' (User participant)

Comments centred on the difficulties in estimating prevalence and accurate profile of users (with exception of those engaging with services) firstly given widespread accessibility within local user communities and via other sourcing routes (dealers, internet, local markets, cross border drug tourism) and secondly its covert hidden nature by virtue of consumption in private homes.

'A determinant in relation to that is probably accessibility and availability, and it's quite readily available. And it wouldn't be commonly known that they're using so there would be a significant covert element to it as well, so it takes them out of the public eye, the public domain and it's accessible to them.' (Stakeholder Participant)

'Working out here XXXX and seeing this new product come on the market opened my eyes about a lot of what was going on. I soon realised that the closing of the head shops was probably one of the most important things that was done in recent years. But yet still didn't solve the problem. Because we have a border in this country, eh a couple of miles up the road where we are located on the border, its freely available on the markets and that, so there's a whole issue around the law both sides of the border here.' (Community Participant)

Users were easily recognisable by their appearance.

'The presentation would be very drowsy, weight loss, appearance is very scruffy, quite clear to see, recognisable, or someone who's taking it it's very easy to see that. Maybe dark bags underneath their eyes and their appearance scruffy and their hair greasy, that seems to be the profile of how someone on this drug would present themselves.' (Stakeholder participant)

'As a local resident its quite obvious and more than anything its quite scary to see the physical and mental deterioration of people in the local community. There are some people, that I've noticed the most is the significant weight loss and I understand if you're putting these chemicals into your body and they are having this detrimental physical effect, what is it doing to your brain. How far can these people can push their bodies before they die?' (Community Participant)

3.4 Access and Availability of "Herbal" Products

This theme illustrates community, stakeholder and user perspectives on availability and use of "Herbal" products.

Stakeholders appeared aware of the diversification of herbal synthetic products, user perceptions of safety inferred by legal status, changes in chemical structure and concerns around the unknown effects of new market entries, and with a particular concern for associated addiction, mental health and related harms (see later thematic sections).

'People are actively in the throes of usage before they realise the extent and severity of what their dealing with. They don't know. Unfortunately that's part of the problem, the way it's being promoted and advertised particularly online, it is to the naked eye or the uninformed eye - they would believe it's very safe and it's not going to create any difficulties. Even the packaging the way its market would suggest that. And then the way it changes, as you know yourself the chemical profile changes, the name changes, the packaging and all changes. So they can regenerate all the time, and very effectively.' (Stakeholder participant)

Legal status was observed by stakeholders and community members as confounding efforts to control use.

'It's quite visible it's in everybody's face, and there seems to be a perception that there's nothing that the criminal justice system can do about it.' (Stakeholder participant)

'I wouldn't approve of Irish drug law the way it is at the minute, I believe its detrimental because it drives drug use underground and my immediate initial reaction when I heard about herbal cannabis was, perhaps this was a healthy alternative to traditional cannabis, because it has that "herbal" attached to it. Not knowing an awful lot about it - that was my initial impression.' (Community Participant)

One user commented that 'Herbal' products should not be legal in Ireland.

'It shouldn't be legal man, it should be illegal. It shouldn't be allowed it is terrible, its killing us all.' (User participant)

User awareness around dangers of smoking these products were low, and reliant on personal experience (often when too late) and peer user networks, and if accessing services on project staff dissemination.

'I haven't really been told what they are, I just experienced it myself so I am just going with what I went through.' (User participant)

'People started going to the markets and started getting their hands on this stuff, and when this stuff did hit, they didn't realise it was as addictive as what it was, people were going and buying and not realising, like myself, not realising how addictive it was.' (Community Participant, former user)

Online sourcing of information and bulk purchasing via web retailers, in local market retail and door to door delivery was also described. One participant described the use of car *'blaring loud music like the ice-cream man'* as indicating presence of dealers in the estate. Others described cross border travel (so called 'drug tourism') where users could purchase "Herbal" sold as incense in *'joke shops'*.

'Sourcing networks are locally obviously, they will tell you that there are dealers around XXXX [town] that are easily accessible. XXX market is a market on the border area that people were selling it as incense. And the internet, it is easily accessible by all account.' (Stakeholder participant)

Some comments centred on its affordable price, ranging between 15 and 20 euro per 1 gram bag. User participants described spending between 60 and 200 euro per week on “Herbal” products for personal use. Some described receipt of “Herbal” ‘on tick’, with large debts accruing over short timeframes, and amounts spent of increasing over time, in response to compulsive use.

‘About 200 euro a week, I get 190 euro a week from here [course] a week. By the time I leave here, I have about 4 euro left. That’s how bad it is. I could just smoke it during the day, evening, night time, every hours of the morning.’ (User participant)

‘I could use 3 or 4 bags a day. And they give it out on tick, these dealers like. And so you could go to them and say “throw us a bag”, and they’d say “oh that’s alright, dead on [name]”. And that could go on until you run up a bill of maybe 3 or 4 hundred euro, it is crazy’. (User participant)

Some users described spending their parent’s money as well as their own social benefit. Family enabling by virtue of mothers providing basic needs support (food, clothes, home) was equally described as exacerbating spending patterns and continued use.

‘Sometimes the family pay because they want them not to be stealing. What I notice is most of the mothers will not pay for the drug, but they will pay for everything else. So they pay for the runners and the food and clothes and so on, and try and keep them body and soul together. And of course then they have all their dole money for the drugs. They are effectively paying for it, I say to them “don’t do that”, but sure if they don’t buy them the clothes, they won’t change them or if they don’t buy them food, they won’t eat.’ (Stakeholder participant)

Many users described personal neglect in order to buy “Herbal” products.

‘I don’t even get paid so that’s my mother’s money you know. That’s coming out of their pocket too, it’s hard on them too.’ (User participant)

‘Maybe near 200 euro some weeks, if I could get it then it was got, I got it. I have often seen myself starving and buying it’. (User participant)

Alternative income generation and diversification into dealing of “Herbal” products among young unemployed was observed by stakeholders and community members and was viewed to fuel continued availability, social reinforcement of use and clustering of ‘pockets of user networks’ within certain estates.

‘These guys are in it for money, these young unemployed guys are making 300 euros on a Tuesday and about 280 on a Thursday. 600 euros, where they gonna get it? Like they’re not gonna get a job like that in XXXX [county] you know.’ (Stakeholder participant)

‘What the people realised was a lot of these so called dealers that I would know of, young people I would know, are addicts themselves, they’re selling to keep their own habit going. They’re as much a victim to me, they’re all victims’. (Community Participant)

3.5 Motives and Reinforcers for Use of “Herbal” Products

This theme describes the perspectives of users around their motives for experimentation and reinforcers for use of “Herbal” products.

All users reported smoking of the “Herbal” product as chosen route of administration with no reports of insufflation or injecting. Two users reported using a bong, with the remainder rolling up with no additives or very little tobacco added. Some users described favouring the rollups due to the potency of the bong, others favoured the bong.

‘Through the bong, it’s the only way I do it. Tobacco? No I smoke it pure and that’s the worst way of doing it. When you’re getting that full hit of everything.’ (User participant)

Availability appeared first and foremost as driver for introduction and use.

‘Some of the users that we talked with say and its very simple “it’s the only one that they’re selling”. It’s the only one that they’re selling, and it is cheap in the sense’. (Stakeholder participant)

Boredom and peer socialisation was mentioned by all user participants as driving initial experimentation and continued use, along with its capacity for intoxication. This was also observed by the parent participant.

‘Boredom, pure boredom, nothing to do. Sitting at home doing nothing all day. Sure it’s no difference like sitting at home smoking, sure you’re doing nothing anyway, just lying about’. (User participant)

‘It’s just boredom, pure and simple, but it’s the younger ones that are seeing all this, the older ones is leading by example. They are watching it. Plus they also see the impact that it has on the whole house. That won’t matter to them, coz they’ll see they [older sibling] got away with it so they’re gonna get away with it’. (Parent participant)

Family dysfunction and socialisation of use between siblings and parents were also viewed by stakeholders as further facilitating access, experimentation and social contexts for home use.

‘There are a number of families who would have heavy users where the functional family has collapsed and basically there is none’. (Stakeholder participant)

First-time experiences were described as intensely enjoyable despite experiencing nausea and vomiting. All users reported desire to repeat the experience again.

‘High as a kite, put it that way. Felt brilliant, I thought it was just the best feeling I’ve ever had. No feeling better in the world when you have it. No feeling better. You are just feel so happy, so “up there”. No feeling like it, when you compare everything and everyone.’ (User participant)

‘The first time I says to my friend, “this is a load of shit, I’m getting nothing out of it”. And then I stood up coz we were outside sitting on a bench and when I stood up my legs wobbled, it just hit me like that! Then I turned around and said “oh god that’s deadly stuff”. That was it then. (User participant)

In addition to intoxication for pleasure, some users reported use of “Herbal” to relieve anxiety and low mood.

‘I would be a worrier. It would make it better, it freezes it, if you know what I mean. (User participant)

‘Calm, like when I do have it. Calm relaxing happy, that’s really it. (User participant)

‘I feel happy, I feel relaxed, I feel calm, I feel the world is on my side. But if I haven’t got it I feel the world is against me. I sweat, I can’t eat, I can’t think straight. Yet when I get

that smoke everything changes. I'm up real high but if I haven't got it I'm down as low as you can get'. (User participant)

One user described use of herbal as quelling voices in their head.

I imagine there are times when I hear voices in my head telling me to do these things, telling me suicidal thoughts, like take an overdose or walk out in front of a lorry, it comes. But when I smoke the herbal it seems to keep that voice down a bit, dies the voice down a bit, it seems to kill the voice.' (User participant)

3.6 Patterns and Trajectories of Use

This theme illustrates user dosage, patterns, and experiences of effect within “Herbal” use trajectories.

“Herbal” were described as stimulating described ‘warm, happy feelings’, which occurred within 2-10 seconds, receded over 7-20 minutes depending on user naivety and length of time using the product, and were replaced by feelings of agitation and restlessness during the comedown.

'Happy feelings. Warm feelings, feel brilliant, but then when that feeling goes away, bad. Start feeling angry, pissed off, fighting, calling people names, breaking windows, doors, TVs, it's just not good. (User participant)

Differences in effect were observed within products with some products yielding a dissociative effect and others psycho-stimulant.

'You get different wee bags, one affects you different to another. Like you could be chilled out with that one , you know relaxed. And that one you know your head could be racing.' (User participant)

'The 'Clockwork' seem to be the one is causing the most damage. The 'Red Joker' seems to be the milder, I get this from the kids themselves they're the experts. They switch from one to another.' (Community Participant)

When using fears of having a heart attack, or not walking up when incapacitated were common.

'You feel like a heart attack, that you are just gonna die all of a sudden....When my father tries to wake me up he cant. I'm in a very very deep sleep like.' (User participant)

Comments centred on how the effect lasted longer in initial timeframes of use, and shortened considerably over time.

'About 15-20 minutes and that's it, then you do it all over again, all over again, all over again.' (User participant)

'When I first took it, it'd last an hour maybe an hour and a half. See now 10 or 15 minutes it be gone.' (User participant)

Users described how the perceived effect changed over time, from pleasure to user realisation of tolerance, and experiences of unpleasant withdrawals.

'It is not the same buzz now. No definitely not, it's a shit kinda buzz. It's the addiction, I don't want it for the buzz, I need it now. Something inside me needs it. I need to get something done with myself.' (User participant)

One participant described using over the course of 3 days, but generally patterns of use centred on regular daily smoking. Others only smoked at night (often in response to withdrawals) and were able to attend training activities during the day. Three users described using alone, and the remainder in small groups, almost always indoors in private homes.

'I would do it on my own too, like I would often see me going into the house saying "I can't wait to get in here" just to be on me own, just to get a bit on me own, just that little bit of comfort.' (User participant)

User participants described using between 1 and 4 grams per day, with volume of use increasing quickly following first-time experimenting, and characterised by compulsive re-dose consumption despite recognition of loss of control associated harms. Participants did not report increasing dose but described increasing frequency of use. Redosing was described as occurring every 20 minutes within the "Herbal" smoking episode.

'I use 3 gram a day. That'll do me just one day and like a 1gram bag sure is gone in an hours' time. That's how bad it is like. I just keep at it. I won't stop until it is gone. I know for a fact it's killing me like. But I won't stop it, I just can't.' (User participant)

Experiences of overdose centred on fear of death, intense chest pain and intoxication, and were reported by two participants.

'About a week ago, I got 3gram, sat in the room, started doing bongos or whatever. I must have done 12 or 13 in a row. And next thing I just sat back and thought "what did I just do?" My chest and my heart was beating real fast, I was sweating, everything started spinning around me. I tried to stand up, couldn't, could not stand up. I thought "oh here it goes". Everything just went around me, blurry, and I was going in and out, in and out.' (User participant)

3.7 Displacement from Alcohol and Natural Cannabis

This theme describes how "Herbal" products appear to have displaced use of alcohol and cannabis in dependent users.

All user participants described sole use of "Herbal" at the time of the study, and did not consume any other illicit drugs or alcohol. One user had no prior experience of illicit drugs but described an addiction to pharmaceutical opioids prior to using synthetic cannabis. Users described replacing of one addiction with another.

'I don't bother with the drink. I tell you what there was a time ago, where I would take drink and I'd take it quite often. But you see when I got into smoking that herbal, if I never seen alcohol again I couldn't give a damn. You see it takes you from one substance to another, like takes you from the drink to the smoke like.' (User participant)

'I had a problem with alcohol about 5 years ago. So then I went from one addiction and I walked straight into another one. This one here is a lot harder to get off than the alcohol.' (User participant)

All with exception of one user participant described incompatibility of "Herbal" products with alcohol. Alcohol consumption was generally low as a result.

'I drink about maybe three times a year. But when I drink I black out. I think it's the herbal as well, blending in the two of them together..' (User participant)

Some stakeholders were aware of that alcohol use and risky drinking on the street and in pubs has been replaced by smoking of “Herbal” products in private homes.

‘There was something going on in the subcultures we just weren’t aware of.we had become very aware that this [“Herbal”]was very prevalent in the community and that the good number of users, which was the interesting thing, who were formerly heavy users of alcohol, didn’t seem to be using alcohol anymore, or by and large hadn’t been using alcohol anymore.’ (Stakeholder participant)

‘Talking to some of the serious users, they would say that and also people who have knowingly abused alcohol, they would be saying that “alcohol isn’t the game now. You wouldn’t be bothered with that stuff” they’d be saying and “this is the stuff, this is the place to go”. (Stakeholder participant)

Many users described prior experience of use of natural cannabis, and displacement toward “Herbal” use during periods of lack of availability of cannabis.

‘To my knowledge, young people started using it, they thought it was like a joint of cannabis, they did not realise until much later how addictive it was and how dangerous it was and that it affects you physically, mentally’. (Community Participant)

Consistency and quality of the product was a factor in user decision-making, with reports of poor quality cannabis stimulating herbal use.

‘You see it is from one to another. It was hash, it was weed, and then something else came along, it was handy you know. As I said it was a quick high, couple drags and you are away. As I said the hash was in flow, and the weed. And you could get weed this minute and it be good stuff you get it tomorrow it could be bad. But with herbal it seems to be genuine. You’ll get your high any time with herbal.’ (User participant)

“Herbal” albeit recognising that herbal products varied in their psycho-stimulant/dissociative effect) also differed in its effect in comparison to natural cannabis.

‘Nothing compared, weed is nothing compared with it. Strength-wise everything, weed is nothing compared. It is worse. When you are stoned [on herbal] you’re not relaxing, you’re jumping you are flinching, like those kinda movements [flinching and jerking movements], it is not good.’ (User participant)

‘A lot of them would suggest that they get a cannabis lie feeling, that sort of stoned sensation. It seems to go beyond that to some extent I suppose, a lot of them would complain that it was quite anxiety evoking, and panic evoking. And there would be a lot of sort of motor restlessness, fear, and significant paranoia as well -on occasion that would lead to aggression, be it verbal hostility or physical hostility.’ (Stakeholder participant)

Further comparisons to natural cannabis centred on the potency of effect incurred from “Herbal” products, and the patterns of excessive compulsive consumption relating to its short lived effect.

‘The herbal feels a thousand times better, the high. You know the quick high. But then I did smoke it for a little while and thinking “how the fuck could a quick high be good”. (User participant)

‘20 quid’s worth of weed would last 3 days. Herbal, a 20 bag of herbal I’d have it gone by this time tomorrow.’ (User participant)

'Quickest high of them all would be the herbal. A couple of drags of the herbal and cuckoo land you know, but the weed you could sit there all day.' (User participant)

'Talking to some of the users and they're saying "not interested in alcohol, not interested in dope". Like one fella says "if you smoke major, dope is like going to silk cut". You have to smoke 20 of them before you get any kick, whereas this stuff here [herbal] gets you up in the air real high.' (Stakeholder participant)

3.8 Withdrawal and Dependence

This theme describes the development of and dependence on "Herbal" products, and the intense difficulties experienced by users in trying to wean themselves and cease use.

Many users described thoughts about use of "Herbal" first thing in the morning, with one user walking up in the middle of the night to smoke. This thought-process was observed to occur quite quickly following initial patterns of use.

'First thing in the morning, last thing at night, If I haven't got it at night time I won't sleep, and nobody else will. I'll just keep the whole house up.' (User participant)

'Coz every 2-3 hours, you'd wake up the same way if you were awake walking around like smoking one every couple of hours. It is like in a routine, it has your head in a routine like.' (User participant)

Participants were aware of this fast progression toward regular and dependent use.

'They prioritise the herbal stuff above everything else and the patterns of use seem to be chronic, literally wake up in the morning – 24/7.' (Stakeholder participant)

'Very bad for the health. If you told me I'd be dead tomorrow morning from that herbal, I still couldn't give it up. That herbal still has an awful hold on me. You might have people coming in here to you saying "I took it yesterday, I can do without it today" that's a lie.' (User participant)

'The tolerance levels seems to go very quick, from a couple of pulls to a cigarette to a packet to four packets. It is unbelievable nobody realised how addictive this stuff was.' (Community Participant)

Acute physical withdrawal symptoms were reported by users to include chest pains, chest pressure, tachycardia and palpitations, lower extremity pain and spasms, nausea, sweating and vomiting.

'Pains and aches come in if you haven't got it. Pains in me legs, pains in me chest, in me back, pains in me head, pains in me eyes, me eyes go all blurry, it is just that bad. Bad pains across me chest, me whole chest, my heart thumping everyday 100 mils an hour. Flat out thumping non-stop. Then your hands start to sweat, from me heart or whatever, I have to keep me hand on me heart. Like I thought yesterday morning I was talking a heart attack, pains across me chest.' (User participant)

'Getting up every day, it was like you had to go and get your bag of stuff, like if I hadn't got that bag of stuff I wouldn't get out of bed. Your humour, like you don't have it, you're sweating. Like I seen when I wasn't having it my hands would sweat, my face would sweat, it was a nightmare like.' (User participant)

These symptoms were described as easily addressed by administration of "Herbal".

'If I haven't got it I get the sickness in my stomach, the sweating starts, the weakness starts, the sweating starts through the body, the sickness comes then you get the cold'

shiver through you, but as soon as you get a smoke of the herbal you are back to normal. Back to health again. Which you're not back to health because your insides couldn't be but you feel level you do'. (User participant)

Concerns were voiced by some stakeholders who were aware of psychological health symptoms such as anxiety, agitation, anger, paranoia, self-harm, psychosis, and suicidal thoughts, during timeframes of withdrawal. This was corroborated by the users themselves and the parent interviewed.

'They are frequently reporting paranoia, anxiety, to the point of psychosis and delusions, whether there's an underlying health issue I don't know. But it seems to have triggered those kind of responses in people who wouldn't have a history. But it is difficult because most of them are the typical age of onset for something like schizophrenia, so you don't really know what's going on. Sleep disturbance, anxiety, depression, and suicidal ideation, really common like thoughts of self-harm, voices around telling them to harm themselves,' (Stakeholder participant)

'You don't know what way they're coming in. They tried to hide it from me but I knew from them coming in and they fly off the handle if they haven't got it, you know like the mood swings, and it is like treading on eggshells half the time.' (Parent participant)

'If you don't have it you feel down, angry. Just bad all the time. Fighting with your family over money that they haven't got. Angry, if I don't have it, I'm like an antichrist, I'll roar, I'll shout I'll kick doors, break windows, Just do anything to get it.' (User participant)

'Extremes of agitation as well really restless, and particularly restless when they're in between use, or when endeavouring to stop using, they find it extremely difficult to make a concerted effort to actually stop, initially that sort of agitation and that restlessness. Very strong desire, compulsion to use the substance again'. (Stakeholder participant)

Over time all users described general decrease in function characterised by loss of appetite, breathlessness, cardiac conditions requiring medication, skin ablations, tooth decay, lethargy, apathy, tremors and insomnia, which were exacerbated when attempting to cut back on use, and resulted in general neglect of personal hygiene,. This was supported in some users, stakeholder and community participant interviews. Difficulties in eating were most common.

'If there was a dinner put out here in front of me now, I'd just look at it and take one forkful and say get that away from me, or puke. It is just that serious. Haven't had a dinner in three or four weeks. I can't eat like me stomach is that bad. I just puke all the time. It's rotten'. (User participant)

'They can't eat something in their stomach, it's strange I said "what is it like what does it feel like?" and they said "we get pain, they can't eat no appetite!" when they try to eat for some reason, it does something terrible to them because they physically can't eat. Like one young person I know of was treated in XXXX for anorexia, even though he wasn't anorexic but that's what started it. And you can tell nearly by looking at someone what stage they're at. (Community Participant)

Apathy was also a defining characteristic and with associated negative aspects.

'My attitude is just ridiculous, I'm lazy, don't wanna do nothing.' (User participant)

'It makes them very apathetic. The level of use means that they wouldn't be able to work, certainly not with paranoia, sleep disturbance, anxiety all that kind of stuff. They

seem to stop eating or they don't eat properly anyway. They stay in all the time, they don't wanna go out and mix. Close the curtains. And they don't look after themselves very well, they're not clean most of them, and dishevelled, hoodies, loose baggy pants, skinny stomachs, worried mothers, that's usually what I see'. (Stakeholder participant)
'.....and there's no more personalities. They're just entities now, they're physically existing, they're nothing on the inside, it's just a body and there's nothing.' (Community Participant)

Two users reported concern for cognitive impairment, ability to concentrate and short term memory loss. Some service stakeholders were aware of this impairment.

'Short term memory is significantly impaired and they wouldn't really have recollections of what would happen in the short term, but the longer term memory was more intact'. (Stakeholder participant)

All users expressed regret on using "Herbal" products given the unpleasant withdrawals experienced.

'It's just a bad dirty drug; I wish I'd never smoked it to be honest with you. Wish I had stayed on weed'. (User participant)

'Herbal is a curse. I wish I could never see it or smoked it or smelled it or anything. It's a curse on everybody in this town to be honest. Even me own friends like they smoke it they sell it too, they say it's a curse'. (User participant)

3.9 Efforts to Deal with Self-Detoxification

This theme describes user experiences of self-detoxification.

Some users appeared aware of personal dependence, and described efforts not to use during the day by attending training initiatives and avoiding boredom.

'Working. Keeping me head occupied. But if I am just sitting in and I start thinking about it, that's it then I'll just need to go get it. That's my only problem.' (User participant)

All users described intentions to stop using, and how occurrence of unpleasant physical and mental withdrawal symptoms inhibited achieving abstinence. Some stakeholders and parent participant were aware of this.

'I just can't. I just have no willpower.' (User participant)

'There seems to be some kind of withdrawal symptoms, where all those symptoms are getting worse when they do try to stop. That just kind of locks people into it'. (Stakeholder participant)

'It is very very severe when you're coming off that. Herbal is the worst thing.' (Parent participant)

Efforts to cease use and successfully self-detoxify are hampered by widespread availability within estates.

'You'll not stop it, not unless something else is done. But for people to stop it themselves, I don't think so coz they haven't enough willpower. I tell ya there isn't enough willpower around here to help them, there's not.' (User participant)

For all user participants attempts to self-detoxify in the home periods of between one and four days were unsuccessful.

'I would love to stop, I'd love to. I stress out too much, I stress out. I have really turned around and said "oh yeah I stopped it for a day or 2" but the most I've really stopped it for is a day, or most of a day, or like before going to bed that day id have had one.'
(User participant)

Two users commented that if they were incarcerated, they would be able to cease use. The recovered (former dependent) participant described a self-detoxification attempt when in prison characterised by diarrhoea, insomnia, restlessness, agitation, and sweating, and which was concluded within three weeks but with lasting difficulty with sleeplessness.

'Diarrhoea, can't sleep, walking the floors, waking every half hour. Wanting a smoke like. Like it took me a good eight weeks to just get my sleep back to normal like and it took me I'd say a good four weeks when I was in the prison, for me to be "me", if you get me.' (User participant)

One user described using alcohol to assist withdrawals.

'I'd use a good bit of it [alcohol] to try not smoke anything. I try drink to get off smoke but then I can't do that no more either like.' (User participant)

One user described attempts to return to use of cannabis, which was viewed as a lesser of two evils, and more manageable.

'I am trying to get back on the weed, you know. I don't want this shite because, with the weed, I could smoke a joint of weed now and I wouldn't want another one for two hours, Weed, you can eat properly, you can sleep properly. Herbal not at all. I know one of the dealers, he's trying to get as much weed in as possible because he doesn't want the boys on herbal.' (User participant)

Two user participants described suicidal feelings around efforts to disentangle from addiction.

'I just hate it, dirty curse. So hard to get off it, so hard to do anything. I dunno what I am gonna do. I don't know how I'm gonna get off it, or how I'm gonna do it. The only way I can think of getting offit is just one way. There's only one way of getting off herbal and that's taking yourself out of this life.' (User participant)

'I don't wanna hurt meself, but it's gonna come that far. It's gonna happen. I don't wanna die, I'm only 25 I'm too young to die. But the way it's all coming in around me, it just takes a lot out of you. Some mornings I just wake up feeling so down, you just wouldn't care if you walked out in front of a lorry, it'd make you feel good.' (User participant)

The fear of stopping was grounded peer experiences of youth psychotic behaviours, suicidal ideation and suicide attempts when in withdrawal.

'I feel some of the young people I work with there's one or two in particular I'm trying to work with, now it's their decision it has to be them to make the decision to stop, but there seems to be a fear of stopping. There's one or two people around here that people claim have gone mad when they tried to stop.' (Stakeholder participant)

Experiences of bereavement of peer users who had committed suicide were described by four users, and were observed to contribute to fear around coming off the drug.

'I lost a brother last year over herbal, lost a best friend over herbal as well. He hung himself, he was 22. Then me brother he was 29, he died in a fit last year. It is all herbal. Herbal is the biggest part of it. Like I know it's the herbal that killed them, but I can't stop.' (User participant)

'I had a cousin that died 3 months ago and I think it boiled down to herbal, but I can't swear that, but the herbal could be a lot got to do with it.' (User participant)

3.10 Help Seeking and Enhanced Service Pathways

This theme illustrates the user, parent, stakeholder and community perspectives on how to deal with the issue of “Herbal” use in the area in a proactive and concerted manner.

Existing legislation around psychoactive properties of “Herbal” were observed to create law enforcement difficulties.

'As a community response unit, the Gardaí are supposed to be there to maintain order, regardless of whether it's legal or illegal.' (Community Participant)

'The problem is bigger than here, this is something that needs statutory intervention because we can sit here, we can do this, we can do that, we need a higher power, I suppose political representatives that can go there in the Dail and place some kind of bill or some kind of legislation that will either come up with the idea of allowing certain drugs to be legal, that will allow for regulations to happen so they can be used freely and socially acceptable like alcohol, or else a ban on these legal highs that we have there.' (Community Participant)

Awareness around new market entries and dynamics in drug markets appeared to highlight the need for enhanced surveillance and monitoring of trends.

'We'd be very aware that when this stuff goes off the market as it will do some time, it will be replaced with something else. So the need for a community to have that skill in dealing with addictions is something that we need to build on I suppose.' (Stakeholder participant)

Other comments centred on continued and developed CCTV monitoring for certain areas where clustered use of “Herbal” use is evident.

'Look one of the things that may come out of this piece of work hopefully is that we have 12 cameras in this area. That's like 12 guards on duty, so we're not maximising this by any stretch of the imagination.' (Stakeholder participant)

Services and community members appeared aware of current demands for crisis help seeking behaviours and concerns for longer term impacts on mental health services and associated impacts on the community.

'We will have people, young people, with serious psychiatric difficulties living in our community on a long term basis over the next number of years. There is a number of very chronic users and unfortunately there is a street bet that they won't be living by Christmas.' (Stakeholder participant)

'I think from the community's end I think the community is exhausted. We have had two deaths of two young people in a very short period of time, the first male suicide in 30 years, shock, horror, stunned. Then four months later another one....And the older community were saying "why won't these young ones just listen?" And they don't want to examine the issue of addiction.' (Stakeholder participant)

'There are people unemployed, they can't get out of bed in the morning, because this stuff wakes them up every two hours during the night, to collect their dole money. They should be on sick benefit, because they are sick, very sick. Very ill, it is an illness, a very serious illness. A lot of them haven't got medical cards. Even to access help, their whole way of life just gone, they live to get money to buy this stuff because it gets such a grip on them. Also, the long-term health effects are horrendous. We'll never know what the long term effects are going to be but the community really feels they've been let down, by all the government agencies, nobody is doing anything. (Community Participant)

Frustrations were voiced with regard to the situation and lack of formulated service response.

'I would have to say that we experience a lot of..., people aren't pleased with what we have to offer.' (Stakeholder participant)

'There's a lot of frustration and they're frustrated with us and with all the services. I think because we can't necessarily stop someone or break this compulsive pattern of use, that's been a real source of frustration.' (Stakeholder participant)

'And in a tight knit community that's much worse, and in a tight knit community that feels like they've been dumped upon by services for years and years, there's no faith in the services'. (Community Participant)

Community frustrations around what to do and stigma relating to addiction, and fears around negative labelling of estates, labelling as drug addicts and children's socialisation into use were voiced. Community empowerment and advocacy warrants investment.

'Since this has become public, I'm getting a sense from some of the younger people, that I think they're trying to hide the fact that they're using this a lot more now, I think there was a sense maybe before XXXX died, before there was public anger about the issue, I think the younger people would have been inclined to admit to it more because it was legal, because there wasn't such a stigma attached to it all, and I think there has been a stigma developing, however I don't think it's changed the levels of usage. I think the young people are trying to tell us that they're not using, or they're off it, or whatever it might be, when the reality doesn't seem to back that up. (Community Participant)

'There's also child protection issues, very young children and their parents are taking this stuff, they're exposed to this stuff, and they're walking around picking it up off the street. Sometimes parents and children are fighting over it. Fighting over who needs it the most. [Response from the focus group participant] Like one of the children at the centre one time, the guards said to report all these things and the child said "how do you expect me to report my mommy and daddy." (Community Participants)

Community empowerment and advocacy warrants investment.

'I would have said that the community needs to be educated because we're kind of afraid to approach what we don't understand, so that's one of the issues around here. So I think education is probably the best way for the local community to address this issue further, because people are so ignorant and they won't tolerate these druggies because they don't really understand them. (Community Participant)

Efforts to access services in some instances were deemed complicated by lack of recognition and stigma related to drug addiction, and with community health supports at times requiring specialist training in addictions and presence of drug counsellors.

'It's the social acceptance, the taboo of using drugs, there's a significant taboo and you find that with parents the whole thing is very much stigmatised,' (Stakeholder participant)

Families were deemed to also try to deal with the issue internally, and highlighting the need for enhanced community outreach, low threshold access to support and treatment, and family education. For young people identified with psychosis, supports were in place in the form of 'COPE' program which is Care and Overcoming Psychosis Early.

...what you find is the family try and solve the problem themselves. Sometimes they don't know. And they don't know specifically what the person is using because there is a covert element to it as well. But you will often find in relation to it they will try to solve the problem, they wouldn't necessarily seek help from services, they wouldn't seek help from people outside the family, until it sort of reached crisis situation,.... We need to develop family focused workable prevention strategies. They need to be working with the family, sort of family skills training, even parenting and so on.' (Stakeholder participant)

'What I would argue would be low threshold access. And probably that is best achieved through an outreach approach, where there's individual's actually in the community you know. And they potentially would advocate for the person and they would be the link between maybe primary and secondary services, and so on. I think that's vitally important.' (Stakeholder participant)

'Ideally you should outreach to those people, that aren't going to engage. Addictions, it is well-known, that there should be outreach.' (Stakeholder participant)

An integrated all inclusive approach characterised by community empowerment and inter-agency approaches were viewed as important steps forward. Community advocacy warrants investment.

'The community is the one at the forefront, they're the initial contact so they're vital.formulation of agreed protocols. So if a situation arises or they come to the initial point of contact, that these individuals themselves know what we do, who we can source, how we source them and how we go about it. And that should be available to everybody and I suppose that would go again with education and so on, and training and so on. I mention as well about regional task force involvement. I think it is important to them as well, take your policymakers and people that are involved to that level, that need to be privy to what's going on locally, and they need to endeavour to help us and well as local responses you know.'

A two-pronged approach incorporating prevention and early identification and management was viewed by stakeholders as important and warranting further development in harm reduction tactics providing information around product legality, risks and harms, overdose prevention tactics, counselling for those wishing to stop and what to do in the case of agitated withdrawal for all affected parties. Harm reduction efforts had taken place in the form of leafletting in identified areas (see appendices).

'Drug education and harm reduction is in this area non-existent, except for the pieces we do. To get to this particular substance and to get people information about this substance, you've seen the leaflet – we dropped that out to every house, we give it to young people, we talked to a good number of the users.' (Stakeholder participant)

Stakeholder comments centred on the need for enhanced primary care awareness of the issue when presenting, and expedited pathways toward medical treatment and counselling.

'General Practice is a vital cog in all of this you know, I think they're intrinsic to anything really because they're the first point of contact often.' (Stakeholder participant)

Shared care systems were viewed as offering success.

My understanding in relation to the response locally was from a mental health perspective, was that you were talking shared care with the local general practitioner and I know there was, if required a pharmacological intervention where the person was put on medication for a short period of time, the person was put on chlordiazepoxide [Librium] to negate withdrawal symptoms, and the other was olanzapine probably to negate any psychotic symptoms, to help reduce agitation, like I know olanzapine and a drug called Risperdal, that's an anti-psychotic, but wasn't given specifically for psychosis, it was given because there's a tendency for this impulsivity as well, poor decision making and just acting out and aggression and so on. (Stakeholder participant)

'From a clinical perspective, clinical care plans, group work psychosocial support and access to residential treatment as well as and if required.' (Stakeholder participant)

Issues relating to suicide attempts and difficulties in mental health certification or arrest under the Mental Health Act were viewed by parents and some stakeholders as compounding difficulties in securing treatment for the young person in question. Other difficulties centred on the uptake of users in crisis into the mental health services under the referral of dual diagnosis, when likely psychotic symptoms are deemed secondary to drug misuse, and not due to an underlying mental health disorder.

'General practitioners ring in and try to refer somebody in that is probably not a dual diagnosis, but is in withdrawal or is having problems that way, so we would offer advice, and advice on medications and what to give when in the withdrawal state, but we don't necessarily see people obviously if they haven't got a mental health problem.' (Stakeholder participant)

'There's a dis-ownership of addiction and drug related issues by mental health services, so that's challenging.' (Stakeholder participant)

Current dependent user participants described intentions to seek help and requests for help despite fears around detoxification. Community members were aware of the need for drug counselling support.

'Long term we need counselling, even if you are off this stuff, it doesn't, even with support, it's not gonna go away overnight.' (Community Participant)

'They desperately, desperately need help. No more than anybody else with a mental illness, a physical illness, desperate. And there's nowhere to go. Parents are trying to get them somewhere, there's nowhere to take them absolutely nowhere.' (Community Participant)

Enhanced support with trained drug counsellors, visibility of detoxification service pathways and how detoxification practices work are deemed necessary.

'I was looking hoping to get in somewhere to get help with this one because I can't get off this one at all.' (User participant)

'I know it's up to each individual to actually make the step and come off it themselves but if there was more help available to do that, more education, to explain more of what will happen when you come off it, and how long the detox will take, all that has to be explained.' (Parent participant)

Users and community members expressed desire for residential detoxification provision in the area and with sufficient length of step down care.

'They need somewhere they can detox safely with a nurse or doctor or medical professional or somebody. And then after that week when they're detoxed then they can come out, then they can start going to narcotics rehabilitation. They need to be somewhere for a week where they don't have kids going "Take a bag, take a bag", you know. "One bag won't kill ya" and they having 6 or 7 bags in their system as it is. (Community Participant)

'What's more important is that it's an immediate response. An emergency response. Its on-going support. First to recognise it's an emergency – we need this help, we're crying out for it. We need the funding, we need the will to do this, we want them admit there is a crisis, there is a crisis in this area, need the funding, need the medical expertise, we don't know what like if we try to detox young people or children, we could be doing them serious harm we could be doing it wrong, we don't know. There's a lot of people talk about community detox "it's too dangerous for that. It's too strong stuff" all we can do is the best, experts medically qualified people first of all to look after their physical and mental health and hope it'll not kill them getting off this stuff. (Community Participant)

Some stakeholders expressed the need for youth specific and expedited routes to treatment when the young person indicates desire to stop.

'To get away from it I need to be put into a clinic. Away completely away'. (User participant)

'I'd have to go to a dry out centre. I'd have to get out of the estate like. There's no point going for a day or two, I'm not that strong, I'd have to go away for a while like. And be cleared and then you could face society then.' (User participant)

'And there needs to be a faster response. Ideally you should have dedicated stabilisation units for this kind of thing, particularly geared towards younger people. But in the meantime like where else but psychiatry.' (Stakeholder participant)

Chapter Five: Discussion

This study examined user, service stakeholder, community and family experiences of “Herbal” use on their communities. Stakeholders and the community voiced concern about the ‘*moving target*’ of designer herbal synthetic products, widespread availability exacerbated by flaws in existing legislative controls, user perceptions of safety inferred by its sale as incense, normalised peer use and legal status. The research whilst localized to certain communities in the North East of Ireland, underscore the increasing concerns around the dynamic nature of the synthetic drug market, and diverse range of serious health effects in the case of “Herbal” products.

Clustering of use within certain estates and localities appeared driven by peer and familial socialisation into use of “Herbal”, a lack of clarity regarding the legal status of products, ready availability (via local dealers, markets, cross border drug tourism, door to door delivery and the internet), affordable price, and factors relating to youth boredom, unemployment and low educational attainment. Key indicators were increased service demands, littering of product paraphernalia, user displacement away from excessive public drinking and toward hidden use of “Herbal” in private homes, and the resultant reduced anti-social behaviour relating to alcohol.

A variety of products were in circulation (*Blue Joker, Red Joker, Clockwork orange, Clockwork Reloaded, Happy Joker, Blueberry, Clock Reloaded and Jammin Joker, Juicy Fruits, Cherry Bomb, Black Mamba*) Smoking was the only route of administration (bong, rollups) and with little additives such as tobacco. This is reciprocated in the literature (Deluca et al., 2009). There were no reports of recent powdered variants (Kikura-Hanajiri et al., 2011). Market driven pricing was evident with 1 gram bags selling for between 15 and 20 euro. However, despite affordability, spending patterns increased severely over time and with related negative repercussions for personal welfare and family relationships. Diversification into dealing of “Herbal” products among young unemployed was observed to fuel continued availability, social reinforcement of use and clustering of user networks within certain estates.

Users when progressed toward dependent use were easily recognisable by their neglected appearance. Age profile of users ranged from as young as 13 or 14 years, up to early forties, and with some inferences toward majority young male use of this drug in the 16-25 year category. This is supported by other “Herbal” studies presenting data on users as young adults and adolescents, with average user age of 23 years, with males more than twice as likely to use “Herbal” (Castellanos et al., 2011; Forrester et al., 2011; Hu et al., 2011; Vandrey et al., 2012; Hoyte et al., 2012; Barratt et al., 2013; Papanti et al., 2013), and significantly associated with male gender, not attending school and use of cigarettes, excessive alcohol use, marijuana use (daily and weekly) and other drug abuse (Caviness et al., 2014). Clinical case report literature also indicates greater presentations by male adolescents, and to a lesser extent, young females (Zimmermann et al., 2009; Bryner, 2010; Mir et al., 2011; Young et al., 2011; Schneir et al., 2012).

Awareness of harms associated with use in general was low, with regard to the contents, toxicity and dangers in consuming “Herbal”. Reasons for experimentation and continued use in this small study were described by users as centring on boredom and widespread availability via a variety of socialisation and sourcing mechanisms, potency of effect, as well as perceptions relating to legality inferring safety (see also Wilkins et al., 2007). Internet retail, marketing comparisons to cannabis, availability, affordability, safety and legal perceptions, attractive

packaging and price are reported as influencing decision-making (Schifano et al., 2009; Vardakou et al., 2010; Fattore and Fratta, 2011; Every-Palmer 2011; Vandrey et al., 2012; Barratt et al., 2013; Spaderna et al., 2013; Winstock and Barratt, 2013; Meshack et al., 2013; Gunderson et al., 2014). Marketing as '*harmless incense*' has contributed the user perception of safety (EMCDDA, 2009, Seely et al., 2012a, Seely et al., 2011; Fattore and Fratta, 2011). Studies have shown that users initially believe the product is safe and natural (Every-Palmer, 2011). Similar findings emerged in this research.

In contrast to literature describing the association between concurrent and sequential use of illicit drugs and alcohol with "Herbal" (Barratt et al., 2013; Winstock and Barratt 2013; Schifano et al. 2010; Castellanos et al., 2011; Hu et al., 2011; Vandrey et al., 2012; Vandrey et al., 2012; Winstock and Barratt, 2013; Caviness et al., 2014), none of the users in this research used other drugs and very little alcohol whilst using "Herbal". All with one exception had prior experience of alcohol and illicit drugs. Also, all with exception of one user participant described incompatibility of "Herbal" products with alcohol. Alcohol consumption was generally low as a result.

Users reported prior experience of cannabis, and described market displacement toward "Herbal" use during periods of lack of availability of cannabis, and due to affordable pricing of "Herbal". Factors influencing users to move away from use of cannabis toward herbal also centred on the potency and consistency of synthetic herbal products. In addition, "Herbal" products are marketed as natural cannabis substitutes (Sobolevsky et al. 2010; Sopris 2008; Tung et al. 2012; Gunderson et al. 2012). Acute effects relating to spectrum and intensity differ between herbal and natural cannabis (Bretns et al., 2012; Bretns et al., 2011; Chimalakonda et al., 2012; Spaderna et al., 2013). Users in this study commented on the short lived effect, compulsion to use and re-dose with herbal products in comparison to the longer lasting effects of cannabis. In contrast to studies which indicate herbal synthetic users prefer the effects of natural cannabis to the synthetic variety (Winstock and Barratt, 2013; Arfken et al., 2014), users in this study exclusively chose "Herbal" products over cannabis.

First-time experiences were reported as intensely pleasurable characterised by euphoria, calmness, relaxation and feeling of well-being despite nausea, and with a desire to repeat. The effect was short lived lasting up to 15 minutes, with re-dosing common, with between 1 and 3 gram consumed in one smoking session. Once all contents were smoked, happy and calm feelings receded and were replaced by feelings of agitation and restlessness. Whilst the reported effects were similar to other studies (Schnier et al., 2011; Fattore and Fratta, 2011; Kjellgren et al., 2013), solitary use was favoured and with majority use occurring in private homes. This contributed to difficulties in services estimating prevalence of use.

Differences in effect were observed by participants within products, with some products yielding a dissociative effect and others psycho-stimulant. Subjective and physiologic effects reportedly vary depending on content (Schifano et al., 2006: 2009; Benji, 2010; Vardakou et al., 2010). Nausea and emesis were described by these users in contrast to the appetite stimulation commonly reported by cannabis users (Canning et al., 2010; Hermanns-Clausen et al., 2013). In addition to its pleasurable effect, some users also reported using for relief from hearing internal voices, and for relief of anxiety and low mood. Frequency of use increased over time to become regular daily smoking.

The study is supported by earlier netnography work presenting user reactions during acute intoxication, hangover the day after intoxication, and dependency and withdrawal from long term use (Kjellgren et al., 2013; Spaderna et al., 2013; Soussan and Kjellgren, 2014). Acute physical withdrawal symptoms included internal restless, urge to consume more drugs, chest pains and pressure, tachycardia and palpitations, lower extremity pain and spasms, nausea, sweating and emesis. These symptoms were described by users of this study as easily addressed by further consumption of “Herbal”. There appeared to be a blurring between comedown and withdrawal in user experiences over time., contributing to a compulsive pattern of use and associated negative consequences.

Acute toxicity was reported, similar to available literature (Lapoint et al., 2011; Simmons et al., 2011; Helander et al., 2013), and characterised by fear of death, dissociation, intense chest pain and intoxication, which were reported by two participants. Loss of consciousness and confused states, panic attacks, suicidal ideation and suicide attempts were described in this study and reciprocated in other studies (Gay 2010; Seely et al., 2011; Simmons et al., 2011; Hurst et al. 2011; Van der Veer and Fiday, 2011; Shanks et al. 2012). Most concerning were the reporting of user suicidal ideation and feelings of self-harm, and sibling and peer suicide during times of withdrawal or restricted use, and user and community fears around psychiatric effects of this new synthetic drug. Emergency hospital presentations have described case presentations with severe agitation, panic attacks, tachycardia, nausea, paranoid ideation, and hallucinations (Piggee, 2009; Banerji et al., 2010; Bebarta et al., 2010; Vearrier and Osterhoudt, 2010). It is unclear whether these symptoms emerge immediately, minutes or hours post consumption, and may commence immediately, minutes or hours post use (Bebarta et al. 2012; Sobolevsky et al. 2010).

Users in this study reported psychiatric effects underpinned by intoxication and withdrawal and exacerbated in periods of attempts to restrict use. Agitated delirium lasting for several days has been reported in other studies (Berry-Caban et al. 2013). We know that psychotic reactions to “Herbal” such as auditory and visual hallucinations, perceptual alterations, illusions, paranoia, agitation, aggression, catatonia, depersonalization, and dissociation (Castellanos et al., 2011; Every-Palmer, 2010:2011; Schneir et al., 2011; Spaderna et al., 2013), are often the common reason for the seeking of medical assistance (Forrester et al., 2011), and with episodes prolonged and persistent, and sometimes never remitting (Hurst et al. 2011; Van der Veer and Fiday 2011; Tung et al., 2012; Berry-Caban et al. 2013). This was observed to complicate admissions to mental health versus detoxification services. Debates continue around whether use of herbal synthetic cannabinoids precipitates psychosis in individuals with and without a history of psychotic disorders (Every-Palmer 2010:2011; Müller et al., 2010; Hurst et al. 2011; Pierre, 2011).

Withdrawal reactions when actively detoxifying are reported to mostly resolve within a week (Zimmermann et al. 2009; Rominger et al. 2013). In contrast, the recovered user in this research who had achieved successful self-detoxification (whilst incarcerated) reported up to three weeks for acute withdrawal symptoms to subside, and longer thereafter to feel fully normal. Psychotic symptoms, along with awareness of peer suicides, and the development of suicidal ideation and self-harm reported in this research contribute to a fear of detoxification, and stimulated help seeking from Mental Health Services when in crisis. Unsuccessful attempts at self-detoxification were reported by others and were generally between one and four days, with some users using alcohol, cannabis to manage withdrawals, and attempting to restrict use by

attending training activity during the day. Detoxification efforts were further hampered by widespread social cues for use and availability, alongside fear of psychosis and self-harm.

Whilst research suggests the presence of three distinct groups of users (for example marijuana users, casual users seeking to avoid detection, and naïve drug experimenters), this study highlights the addictive nature of “Herbal” products, where many users were described as quickly adopting dependent use patterns. No recreational users were available for participation in the research. Dependent use was characterised by intense thought processes around seeking, using and sourcing the drug, and evidence by the high SDS scores of participants. Many users described thoughts about use of “Herbal” first thing in the morning, with one user walking up in the middle of the night to smoke.

Consequences of long term use centred on general decrease in function characterised by loss of appetite, breathlessness, cardiac conditions, skin ablations, tooth decay, lethargy, apathy, tremors and insomnia, all exacerbated when attempting to cut back on use, and general neglect of personal hygiene,. Concern for cognitive impairment, ability to concentrate and short term memory loss were voiced, (similar to extant literature, Musshoff et al. 2013), and often lasting longer than the intoxication period (Kjellgren and Soussan 2014). One user reported cardiac abnormality as result of use, with studies suggesting that “*Herbal*” may precipitate myocardial infarction and even death (Mir et al. 2011; St. James 2010).

Continued monitoring and surveillance of drug trends and drug activity is warranted based on the findings of this research. Community efforts to act as medium for family support and education, harm reduction and detoxification care pathway dissemination offer additional approaches to early identification of trends in use, misuse and dependence, and the support of individuals requiring help. Further development of appropriate clinical responses is equally needed, alongside the expedited inter-agency pathways for drug counselling, crisis support and detoxification intervention for users and their families.

Chapter Six: Conclusion & Summary of Key Findings

Use of SCBs in herbal smoking mixtures is a public health concern given reporting of acute CNS and cardiovascular toxicity with severe cardiovascular, gastrointestinal and psychiatric sequelae (Gunderson et al. 2011; Brents & Prather, 2014). Despite efforts to regulate, use of SCBs among adolescents and young adults has increased in popularity over time. The ever changing composition of herbal smoking mixtures and uneven consistency in the diverse range of products contributes to experiences of undesirable effects and the risk of accidental overdose (Uchiyama et al. 2010a,b; Seely et al. 2012). Concerns centre on dearth of research on pharmacology, toxicology and health consequences in humans, and appropriate medical approaches for treatment of acute intoxication and management of detoxification (Fattore & Fratta, 2011; Rodgman et al., 2014).

Key findings are as follows;

'Herbal' as an Emerging Trend

- Awareness of the current issue was characterized by rising reports of drug use within the community, displacement away from alcohol use and a reduction in anti-social behaviour.
- Difficulties estimating prevalence and profiles of users stemmed from widespread availability within local communities and other sourcing routes i.e. internet, cross-border drug tourism, and due to the hidden nature of use in private homes.
- Clustering or pockets of "Herbal" use appeared related to availability and social networks of users, contained among individuals living in more marginalized and deprived areas, and filtering into more mainstream communities.

Profile of user

- All user participants scored over 7 in the Severity of Dependence (SDS) indicating all users interviewed were dependent on "Herbal".
- All user participants were unemployed. Three were educated to Junior cert level, two were educated to Primary level, and one educated to Leaving cert level.
- All user participants were single. Three had children.

Legal status and availability of 'Herbal'

- A lack of clarity regarding legal status was observed by stakeholders and community members as confounding efforts to control use. Existing legislation around psychoactive properties in SCB's were observed to create significant law enforcement difficulties.
- User participants described cross border travel, so called *drug tourism*, where they could easily purchase "Herbal" products sold as incense in joke shops.
- User comments centers on the initial affordable price, between 15 to 20 Euro per 1 gram bag. User participants described spending between 60 and 200 per week on "Herbal" products for personal use, with amounts spent increasing over time in response to compulsive use.

Awareness of harm and Consumption of 'Herbal'

- User awareness around the dangers of smoking "Herbal" products was low, and relied on personal experience (often too late), peer user networks, and project staff dissemination.
- All users described exclusive use of "Herbal" and did not consume any other illicit drugs or alcohol. Users reported an incompatibility of "Herbal" with alcohol. Alcohol consumption was generally low as a result.

Trajectories of use, dependence and withdrawal

- Users described how the perceived effect changes over time, from pleasure to user realization of tolerance, and experiences of unpleasant withdrawals. Users became aware of the fast progression toward regular and dependent use when it was too late.
- Acute physical withdrawal symptoms were reported to include chest pains, chest pressure, tachycardia and palpitations, lower extremity pain and spasms, nausea, sweating and vomiting.
- Stakeholder reported psychological symptoms such as anxiety, agitation, anger, paranoia, self-harm, psychosis, and suicidal thoughts during withdrawal periods. These were corroborated by users and parents interviewed.

Chronic outcomes

- Over time all users described a decrease in functioning characterised by a loss of appetite, breathlessness, cardiac conditions requiring medication, skin ablations, tooth decay, lethargy, apathy, tremors and insomnia, which were exacerbated when attempting to cut back on use, and resulted in general neglect of personal hygiene. Difficulties in eating were most common.
- Users also expressed concern about cognitive impairment, ability to concentrate and short term memory loss. Stakeholders were aware of this impairment.

Intentions to Stop and Help-seeking Attempts

- All user participants described intentions to stop using, and how unpleasant physical and mental withdrawal symptoms inhibited achieving abstinence. The fear of stopping use was also grounded in youth psychotic behaviours, suicidal ideation and suicide attempts when in withdrawal.
- Efforts to cease use and successfully self-detoxify are hampered by widespread availability. Users commented that if they were incarcerated, they would be able to stop using. Users also reported using other substances i.e. alcohol and cannabis to assist with withdrawals.

Stakeholder and Community Experiences and Observations

- Services and community members appeared aware of current demands for crisis help-seeking behaviours and expressed concern about long term impacts on services and associated impacts on the community.
- During the last 12 months, mental health, psychiatry and community service uptake by SCB users in crisis has reportedly increased.
- Frustrations were expressed regarding the perceived “dis-ownership of addiction and drug related issues” and the lack of a formulated health service response.
- Concerns were expressed regarding the uptake of users in crisis into mental health services under the referral of a dual diagnosis, because psychotic symptoms are deemed secondary to drug misuse and not due to an underlying mental health disorder, compounding difficulties in securing treatment for the young person.

Responses and a Way forward

- An integrated, all-inclusive approach, characterized by community empowerment and inter-agency approaches were viewed as important steps forward. Stakeholder comments centred on the need for enhanced Primary Care awareness of the issue, including GP practices, and expedited pathways toward medical treatment and counselling.
- Users and community members expressed a desire for the provision of residential detoxification in the region with sufficient length of step down care.
- Enhanced support with trained drug counselors, clear service pathways and the need for youth specific and expedited routes to treatment when the young person indicates a desire to stop are required.

Chapter Seven: Recommendations for Policy and Practice

The research highlighted the concerning rapid development of tolerance, habit forming regular use and experience of acute withdrawal symptomatology in users and related negative impact on families and communities. The study whilst localised and small-scale, highlights the need for further development of primary care and clinical awareness and appropriate responses, alongside the expedited inter-agency service pathways for drug counselling, crisis support and expedited medical treatment and detoxification intervention for young users and their families. Users seeking help and patients on admittance need to be monitored for withdrawal and with significant symptoms rapidly managed (Levin et al. 2010). Community efforts to act as medium for family support and education, schools education, harm reduction and the dissemination of information on available detoxification care pathways are also deemed vital in the early identification of trends in use, misuse and dependence, and the support of individuals requiring help.

The following key policy and practice recommendations were generated;

Policy

16. Based on current research findings of the harmful nature of “Herbal” products, request clarification from the Minister with responsibility for Drugs on current Legal Status with a view to disseminating locally to facilitate arrests and prosecutions under recently amended Misuse of Drugs Act 1977-2015. Advocate for a further review of legislation on harmful psychoactive substances if required.
17. Review current cross-border policing approaches to address “*Cross Border Drug Tourism*” in the area.
18. Review Mental Health policies regarding addiction and access criteria to services when psychotic symptoms are deemed ‘secondary to substance misuse’.

Trend Surveillance and Early Warning and Law Enforcement

19. Establish an expert group and an early warning system regarding Novel Psychoactive Substances, locally, nationally and at an EU level to reduce delays in amendments to legislation if/when required.
20. Increase localised monitoring and surveillance of user trends, as it relates to existing products, new products, dealer networks and internet sourcing.
21. Continue with CCTV surveillance in local areas.

Education and Prevention

22. Consult with Primary and Secondary schools locally to establish what supports are required to deliver SPHE and/or drug education programs to include Novel Psychoactive Substances, synthetic cannabinoid’s and/or emerging trends.
23. Design and implement harm reduction activity presenting information on products, contents, dangers of use, overdose prevention and management, and detoxification referral for users, and for families in high risk communities. Incorporate Traveller specific elements.

Training

24. Conduct training needs analysis for front line staff (i.e. TUSLA, Primary Care, GP, Gardai etc.) to establish current levels of drugs education, brief intervention skills, ASIST and referral pathways to identify gaps in existing knowledge and skills.
25. Consult with agencies (i.e. Monaghan ETB, NE-RDATF) to deliver Community Addiction courses that work to reduce stigma associated with addiction.
26. Consult with agencies regarding addiction specific training and employment initiatives i.e. DSP Drug specific C.E. Schemes.

Clinical Responses

27. Review current protocol surrounding pharmacological intervention for withdrawal symptoms associated with SCB presentations to ensure evidence based responses.
28. Develop interagency shared care planning for crisis presentations at Accident and Emergency and health service level, with expedited access, adequate follow-up and supports on discharge.

Youth Specific Responses

29. Provide additional resources to develop youth specific addiction responses, including age appropriate in-patient detoxification and step-down facilities, adolescent counselling service and assertive youth outreach worker to identify and deliver early intervention initiatives.
30. Increase local sports partnership activity in areas where youth leisure boredom is high.

Acknowledgements

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Appendices

Criteria for Substance Dependence

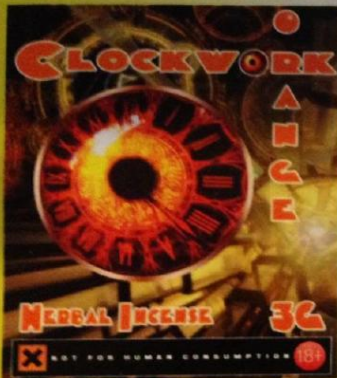
Substance dependence is defined as a maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring any time in the same 12-month period:

1. **Tolerance**, as defined by either of the following:
 - (a) A need for markedly increased amounts of the substance to achieve intoxication or the desired effect
 - or
 - (b) Markedly diminished effect with continued use of the same amount of the substance.
2. **Withdrawal**, as manifested by either of the following:
 - (a) The characteristic withdrawal syndrome for the substance or
 - (b) The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms.
3. The substance is often taken in larger amounts or over a longer period than intended.
4. There is a persistent desire or unsuccessful efforts to cut down or control substance use.
5. A great deal of time is spent in activities necessary to obtain the substance (such as visiting multiple doctors or driving long distances), use the substance (for example, chain-smoking), or recover from its effects.
6. Important social, occupational, or recreational activities are given up or reduced because of substance use.
7. The substance use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance (for example, current cocaine use despite recognition of cocaine-induced depression or continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

DSM-IV criteria for substance dependence include several specifiers, one of which outlines whether substance dependence is with physiologic dependence (evidence of tolerance or withdrawal) or without physiologic dependence (no evidence of tolerance or withdrawal). In addition, remission categories are classified into four subtypes: (1) full, (2) early partial, (3) sustained, and (4) sustained partial; on the basis of whether any of the criteria for abuse or dependence have been met and over what time frame. The remission category can also be used for patients receiving agonist therapy (such as methadone maintenance) or for those living in a controlled, drug-free environment.

Source: Cited directly from the American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Fourth Edition. Washington, DC: American Psychiatric Association, 2000.

HERBAL HIGHS



Get the facts!
Know the risks!

- New synthetic drugs like Clockwork Orange are neither 'natural' nor 'herbal.' They are made from artificially produced chemicals.
- The contents of synthetic cannabinoid brands may vary from week to week and usually contain more than one psychoactive ingredient.
- 1 in 5 samples seized in the UK actually contained a controlled (illegal) substance carrying the same penalties as other illegal drugs.
- These substances are very powerful and far more dangerous than ordinary cannabis.
- Use can cause depression, paranoia, psychosis, and in some cases, use has resulted in deaths.
- The long term effects of these substances are unknown and the short term effects are often dangerous and unpleasant.
- Prolonged use can result in 'withdrawal' where problems temporarily worsen.



Harm Reduction Advice

- Smoking in pipes or bongs makes it harder to control your intake and can make use more dangerous.
- Using with alcohol or other drugs puts you at even more risk.
- The psychoactive chemicals are often unevenly spread across the leaves making it difficult to control how much you take.

Caution: Synthetic Cannabinoids are new, untested and there is no way of using them safely. The best advice is to steer well clear of them.

If you've been using clockwork orange and need help, or know someone that does...

- You can contact the local addiction service for confidential advice and support on 047 75804 (Monaghan) or 049 437 9160 (Cavan).
- If you're experiencing paranoia, depression or having suicidal thoughts you can also contact your GP for help.
- If you feel you might harm yourself you can also go to accident and emergency.

If you're worried about your use, or experiencing any of the problems mentioned above, speak to someone you trust. Get support and ask for help from family or friends. Symptoms usually stop 7 to 14 days after you stop smoking.

Consent Form

Please complete this form after you have listened to an explanation about the research.

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

I understand that if I decide at any time before the interview that I no longer wish to participate in this project, I can notify the researcher involved and withdraw from it immediately without giving any reason.

Please tick
or initial

Yes	No

I understand that I can ask for my interview data to be withdrawn from the study any time before the summary findings are published in the final report.

Yes	No
Yes	No

I consent to my interview being audio recorded.

I understand that confidentiality and anonymity will be maintained and my identity will not feature in any publications

Yes	No

Participant's Statement:

I agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I understand what the research study involves.

Signed

Date

Investigator's Statement:

Confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the participant.

Signed

Date

Severity of Dependence Scales (SDS)

Circle the answer that best applies to how you have felt about your use of 'Herbal' over the last twelve months.

1. Did you ever think your use of 'Herbal' was out of control?

<i>Never or almost never</i>	<i>0</i>
<i>Sometimes</i>	<i>1</i>
<i>Often</i>	<i>2</i>
<i>Always</i>	<i>3</i>

2. Did the prospect of missing 'Herbal' make you very anxious or worried?

<i>Never or almost never</i>	<i>0</i>
<i>Sometimes</i>	<i>1</i>
<i>Often</i>	<i>2</i>
<i>Always</i>	<i>3</i>

3. How much did you worry about your use of 'Herbal'?

<i>Not at all</i>	<i>0</i>
<i>A little</i>	<i>1</i>
<i>Often</i>	<i>2</i>
<i>Always or nearly always</i>	<i>3</i>

4. Did you wish you could stop?

<i>Never or almost never</i>	<i>0</i>
<i>Sometimes</i>	<i>1</i>
<i>Often</i>	<i>2</i>
<i>Always</i>	<i>3</i>

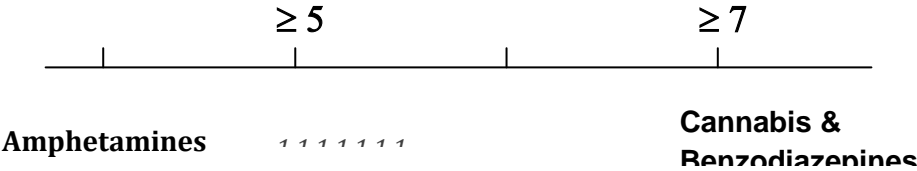
5. How difficult would you find it to stop or go without 'Herbal'?

<i>Not difficult at all</i>	<i>0</i>
<i>Quite difficult</i>	<i>1</i>
<i>Very difficult</i>	<i>2</i>
<i>Impossible</i>	<i>3</i>

SCORE___

SDS: Interpretation of Scores

Originally developed for assessing psychological dependence on heroin, studies have indicated that the SDS is a valuable tool for assessing psychological dependence on other illicit drugs. The research to date, has suggested cut-offs for measuring psychological dependence on various illicit drugs, as indicated below.



SDS Screener has been used in a previous study to distinguish between casual and dependent users of Herbal (Gunderson et al., 2014). For the purposes of this study categorised participant score of 7 and above in the 'dependent' user category, and those under 7 in the 'recreational user' category.

Interview Questions

Age

Gender

Highest level of education

Employment status

Marital status

SDS Score

What substances do you use at the moment?

Can you describe your use of alcohol in the past 12 months?

Can you describe your use of Cannabis in the past 12 months?

Can you describe your use of 'Herbal' in the past 12 months?

Why do you use 'Herbal'?

Prompts (legal high, friends, cannabis replacement, quality of high, relieve irritability associated with cannabis withdrawal, for drug testing evasions/avoiding positive urine screens)

How much do you use?

Prompts Initial dose, redose within episode

How does 'Herbal' compare to Cannabis?

Do you need to use the same amount for a similar high?

How often do you use 'Herbal'?

Do you use any other substances when taking 'Herbal'?

How much do you spend per week on 'Herbal'?

Do you plan your use of 'Herbal'?

Where do you use 'Herbal' and with whom?

Can you describe your first experience of 'Herbal'?

Can you describe your use of 'Herbal' after your first time?

How do you take 'Herbal'?

Prompt (vaporised, bong, rollup, pipe); Mixed with tobacco

Can you describe the effect when you take 'Herbal'?

Prompts (feelings, time distortion, altered perceptions)

How long does the effect take to come on, and how long does one dose last?

Do you redose? What is the longest time you have taken 'Herbal' over?

Can you describe negative effects you have experienced when using 'Herbal'?

Prompts (hunger, headache, tachycardia and respiratory difficulties, Nausea and dizziness, Fear and paranoia, Dehydration and dry mouth, Memory impairment, Muscle tension and pain, Ghost sensations, Spasms and cramps, Red eyes, Fever, anxiety, chest palpitations, panic, fatigue, nausea, vomiting, trouble thinking, body pain)

How do you deal with overdose?

What are the effects of 'Herbal' after the 'Herbal' episode?

Prompts (depression, psychosis, depression, suicidal ideation Sluggish and dull, Hangover, Tired, Dehydration and dry mouth, Headache, Confusion, Disconnected and emotionally numb, Nausea and dizziness, difficulty concentrating, Memory impairment)

Have you felt the effect of 'Herbal' decrease over time and needed to increase the dose?

Have you ever felt withdrawal symptoms from 'Herbal'?

Prompts Withdrawal and dependence, Memory impairment, Mood swings, diisconnected and emotionally numb Sleeping problems, Loss of appetite, Sweating, Sluggish and dull, Rashes and acne, Nausea and dizziness

Have you ever tried to stop but couldn't?

Are you aware of the health consequences of using 'Herbal'?

Where would you go for help if you needed it?

Consent Form

Please complete this form after you have listened to an explanation about the research.

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

Please tick
or initial

I understand that if I decide at any time before the interview that I no longer wish to participate in this project, I can notify the researcher involved and withdraw from it immediately without giving any reason.

Yes	No

I understand that I can ask for my interview data to be withdrawn from the study any time before the summary findings are published in the final report.

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Date

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Signed

Date

Interview Themes: Service Stakeholder

Use of synthetic cannabinoids as recent trend

Profile of users

Sourcing networks

Impact of use on individual, family and community

Service responses, needs and strategies for management

Drug education and harm reduction

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