

**Harm Reduction Strategies for
Synthetic Cannabinoid Use in the
Wider Wellington Region**

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Abstract

Background: Synthetic cannabinoid use is an increasing cause of morbidity and mortality in New Zealand. In 2017 there were approximately 20 deaths associated with the use of this illegal drug, notably one in Hutt Valley. There has also been an increase in the need for medical treatment and police call outs in the wider Wellington region, both regarding synthetic cannabinoid use. These call outs have mostly been seen in Porirua, where there is more awareness of the problem that synthetic cannabinoids possess. Less is known about the extent of the problem in the Hutt Valley area (1,2).

Aim: The purpose of this project is to explore the understandings and perceptions of synthetic cannabinoids and their use in the wider Wellington region. This report will develop potential recommendations and harm reduction strategies to help reduce the morbidity and mortality associated with synthetic cannabinoid use.

Methodology: There are two major components to this research. The first being a comprehensive literature review, to understand the context and extent of synthetic cannabinoids and their use. The final and main component of data collection was key stakeholder interviews. 14 organisations or individuals were interviewed either in person or via telephone. They were asked eight questions, focused on finding out:

- Who are the highest risk groups for using synthetic cannabinoids?
- How do stakeholders perceive the current rate of use?
- What support systems and infrastructure are currently in place?
- What further harm reduction strategies and recommendations can be implemented?

Results: Most stakeholders perceive that there is a problem with synthetic cannabinoid use in the wider Wellington region. The stakeholders described the demographic of use as young Māori males who are of lower socioeconomic status. It was perceived that the main reason for use was poor mental health and ease of accessibility. Integration of health, support and governmental services as well as health education were the most discussed infrastructures currently in place. Majority of stakeholders believe that more resources, information and support are required to effectively target and support people who use synthetic cannabinoids. Recommendations by the stakeholders to minimise harm were education, change in government policy and community and whāunau development.

Conclusion: This research has provided a platform for future studies to be undertaken regarding synthetic cannabinoids and their use, especially in New Zealand. Five recommendations were developed from this research:

1. Change in Policy and Legislation
2. Improved Health Education
3. Community and Whānau Engagement
4. Evaluation of Resources
5. Further Research

It would also be encouraged that the findings from this research are applied to other recreational drugs that have severe adverse effects, so that harm from emerging illicit drugs can be minimised and contained as quickly as possible.

Introduction

Synthetic cannabinoids are a collection of chemicals that agonise* the cannabinoid receptor (CB1) in the brain. The chemicals work to mimic the effects of marijuana by using the same primary psychoactive component of 9-tetrahydrocannabinol or THC, which interacts with the cannabinoid receptor to produce the marijuana-like high (3). There are a large number of structurally variable cannabinoids, which have been classified by Hudon and Ramsey into eight different subgroups (4). Synthetic cannabinoids are colloquially known as K2 or Spice. The manufacturing process involves spraying the chemicals, which have unknown health effects, onto any smokable plant-based product. This means there is no current method to determine the strength of each batch accurately because there are no quality control standards. Manufactures of synthetic cannabinoids receive a large profit due to low production costs and high mark-up (2).

In 2006, synthetic cannabinoids were originally legal in New Zealand. Once they started causing significant morbidity, the New Zealand government began to recognise the growing issues around synthetic cannabinoid use. As a result, the *Misuse of Drugs Amendment Bill* was introduced in August 2011; this created a *Temporary Drug Class Notice* to ban all available synthetic cannabinoids (5). Soon after, *The Psychoactive Substances Act 2013* was introduced. This became the piece of legislation that banned the sale of synthetics from dairies and convenience stores, as the drug did not meet the requirements to be legally sold (no batches have met the legal requirements thus far). This has resulted in buyers having to purchase the drug internationally and subsequently has made the source and contents of the batch harder to determine. Thus, the quality and efficacy of the product more variable (6).

Synthetic cannabinoids are significantly more potent than ordinary cannabis, partially due to the manufacturing process and the unknown effects the chemicals have in the brain. This is due to the ability of some agonists being able to bind more strongly than ordinary cannabis to cell receptors, thus producing stronger effects (7). Mild to moderate symptoms can include nausea, vomiting, muscle weakness, tachycardia, hypertension and agitation. Severe symptoms include significant cardiac arrhythmias, myocardial infarction, psychosis, respiratory depression, seizures, coma and death (3). A New Zealand study also found an association of the synthetic cannabinoid K2 with suicidality and increased psychotoxicity (8).

Synthetic cannabinoids are highly addictive and people that regularly use the drug have an increased susceptibility to more intense withdrawal symptoms. Some patients have reported that the severity of their withdrawals is one of the main reasons they continue to use synthetic cannabinoids. These symptoms can occur very quickly, some reporting withdrawal symptoms within as little as 15 minutes after the initial drug intake (9). This includes cardiovascular and respiratory symptoms such as tachycardia, chest pain and palpitations. The severity of the withdrawal is proportional to the dose.

* Initiates a positive physiological response

Methodology

For the literature review, five relevant databases were systematically researched. These databases were: *Ovid*, *Google Scholar*, *Scopus*, *Pubmed* and *Proquest*. To ensure accurate representation of the data and minimisation of selection bias, keyword searches were conducted in each database. These keyword searches were focused on answering 3 main questions:

1. Who are the groups at highest risk of using synthetic cannabinoids?
2. What support systems and infrastructure are already in place to combat the rates of use? For example: harm minimisation strategies, public health strategies and other relevant health services.
3. What further interventions can be implemented to minimise harm and prevent use?

The top hits were analysed for relevance via the abstract and then the most applicable papers were read and reviewed.

For the semi-structured key informant interviews, 33 stakeholders were contacted via email to request participation in this research. A variety of organisations and relevant people from the Hutt Valley, Porirua and other general national organisations were contacted. If there was no response, they were sent a follow up email or phone call. By the end the research period, 14 stakeholders had agreed to meet for the interview or conduct one on the phone. The interviews were then transcribed and analysed for key themes. There was a response rate of 42%. The respondents included:

- A Mental Health Nurse
- A Psychiatrist
- A Social worker
- A Counsellor
- A General Practitioner
- A Community based initiative spokesperson
- Three non-governmental organisations (NGOs)
 - Taeaomanino Trust
 - NZ Drug Foundation
 - Whānau Care
- A Public Health Spokesperson
- A Porirua City Council Advisor
- An expert/clinician from Wellington City Emergency Department
- A Ministry of Health Spokesperson - Addictions Team
- A DHB Spokesperson - Addictions Services

Literature Review Findings

Demographics of Synthetic Cannabinoid Use

To determine the populations at risk of using synthetic cannabinoids, data was collected from current literature and hospital Emergency Department admissions attributed to use. A brief summary of the demographics follows:

- Males are more likely to use than females (4,5,10,11)
- The age range varied depending on the study and geographical location, but majority of studies found users to sit between the ages of 19-34 (4,5,10,11). Interestingly, the 18-25 year old age bracket have reported more side effects than anyone over 25 years of age (4).
- The ethnicity of users is highly variable. One local study done in New Zealand between 2011-2015 showed that Māori had a greater burden of use and consequential hospitalisations compared to non-Māori (5).
- Other at-risk populations include the LGBTQIA+ community and members of the military (12).
- The level of education of synthetic cannabinoid users were found to have obtained was, at minimum, high school graduation (13). While another study showed that more than half of synthetic cannabinoid users had completed some form of tertiary education (4).

Socioeconomic Status

There was a conflict of conclusions in terms of socioeconomic status of synthetic cannabinoid users. Some results showed that people of the middle class and employed bracket were the highest users of synthetic cannabinoids (4,14). Whereas other studies concluded that 84.5% of synthetic cannabinoid users were homeless (11). According to another study people of low socioeconomic status were the most prevalent users (10).

A retrospective study conducted in Australia looked at the possible effects that legislative activity would have on the number of calls to the poisons information centre, attributed to synthetic cannabinoid use. Whilst they were mapping out the various cases, they discovered that there were increased exposures in rural areas and the outskirts of a city opposed to the busy CBD and central city. This indicates that synthetic cannabinoids may be used more in lower socioeconomic areas on the fringes of the city, when compared to the inner city scene (10). This is consistent with the New Zealand findings, highlighted by the number of cases in Porirua compared to Wellington City. Porirua is of lower socioeconomic decile than Wellington city (15).

Other trends identified are that adolescents from middle class families, who were using synthetic cannabinoids from an experimental perspective are now intimidated by the drug and have decreased use. In contrast those people from more vulnerable, minority groups, of low income and diminished self-worth are continuing to use the drug. This is because it is cheaper and it provides an escape from the pain of their reality (14).

Reasons for Use

Due to synthetic cannabinoids originally being known as the "legal high," using them allowed people to avoid the criminality associated with illegal marijuana. Some ambiguity on the legality still remains. Synthetic cannabinoids also provide a more affordable drug that has greater availability and can be exploited for its exclusion in regular drug screenings. Synthetic cannabinoids are substantially cheaper than regular marijuana due to a supply and demand problem. Ordinary cannabis is in low supply and therefore relatively expensive compared to synthetic cannabinoids, that are easily produced and as a result, much cheaper and easier to access. Synthetic cannabinoids were originally sold in 2.5g bags which cost between \$15–20 NZD. Natural cannabis costs approximately \$20 per gram in New Zealand (16). An international systematic review justified these findings, discussing how synthetic cannabinoids were found to be popular due to their accessibility, potency, affordability, perception of safety and lack of standardised tests to detect their use (13). The review also found the primary reasons for using synthetic cannabinoids were curiosity, recreational purposes, psychoactive effects and avoiding detection in drug tests (13).

Additional Recreational Drug Use

An international survey conducted in 2013 found that 16.8% of people reported ever using synthetic cannabinoids. Almost all those who have used recently (classed as using synthetic cannabinoids within the past 12 months) reported use of natural cannabis as well, and the vast majority consumed other drugs such as alcohol and tobacco. Within this group 12%-26% also reported use of MDMA, benzodiazepines, cocaine, LSD and hallucinogenic mushrooms (17). This illustrates that people who are using synthetic cannabinoids are also likely to be using other recreational drugs. Another study found that those admitted to an acute in-patient psychiatric unit in Dunedin with self-reported K2 use, had a younger mean age than those admitted for other drug and alcohol dependence issues. A reason for this could be because at the time when the study was conducted, marketing of synthetic cannabinoids was legal and targeted at the younger population (8).

New Zealand Specific Demographic

New Zealand data follows the trends seen internationally in terms of sex and age most associated with use. The highest groups at risk of using synthetic cannabinoids from a 2016 study were: 21 year old males with 57% identifying as NZ European and 33% identifying as Māori (5). Although little is known about the prevalence of synthetic cannabinoid use in the general New Zealand population, more than 10% of the 5,731 respondents in the 2014 Global Drug Survey, reported using legal highs and/or synthetic cannabinoids in the past year. The Ministry of Health estimated that up to 3.5 million packets of synthetic cannabinoids were sold in New Zealand between 2013 and 2014 (16).

Summary of Demography

Studies around the demography of synthetic cannabinoid users have been performed internationally with the intent to understand the populations at risk. The heterogeneity of the demography concluded by these studies, may be accredited in part to the volatile nature of the legislation, accessibility and legality of synthetic cannabinoids and geographical difference, immediately leading up to and during the time that this research took place. The classic image of a person most at risk of synthetic cannabinoid use in New Zealand is typically a young, Māori or European male of low socioeconomic status, who uses other forms of

recreational drugs. However, there are many other populations at risk, this is just one generalisable illustration that should be considered.

Current Infrastructure and Support Systems

The following discussion reviews the literature regarding legislation and public health action that has been implemented to reduce the burden of synthetic cannabinoid use.

Legislative Action

The main legislative action that has occurred to control the issues of synthetic cannabinoid use and sales here in New Zealand, are the *Misuse of Drugs Amendment Bill* (August 2011) and the *Psychoactive Substances Act 2013*. The *Psychoactive Substances Act 2013* covers “any substance, mixture, preparation, article, device or thing that is capable of inducing a psychoactive effect in an individual” (18). This includes the supply and use of synthetic cannabinoids. The law differs from others implemented internationally as producers can manufacture and distribute psychoactive substances, provided the substances have been proven through toxicology and clinical trials to be of ‘low risk’. This approach is referred to as “pre-market regulation” (19). There are a number of challenges associated with the New Zealand legislation. One of the issues being the lower punitive consequences for breaching the *Psychoactive Substances Act 2013* compared to the *Misuse of Drugs Act*. Forensic testing to identify the drug being sold or in possession of, is therefore important to prevent miscarriages of justice (20).

The legislative action that aimed to reduce the availability of synthetic cannabinoids generated an immediate but short-lived reduction in hospital presentations attributed to use (8). The study showed that these changes in legislation were effective in decreasing hospital presentations, with a statistically significant reduction of 10.6 mean-monthly presentations in August 2013, and non-significant reductions of 7.6 mean-monthly presentations in 2011. Despite the legislative changes in 2014, which completely banned synthetic cannabinoids, hospitalisations still occur. This may be indicative of the establishment of New Zealand’s black market for synthetic cannabinoids (5). In 2014 the number of recorded offences in New Zealand for the supply of psychoactive substances was lower than that for other scheduled drugs, such as cannabis, methamphetamine, amphetamine and ecstasy. The number of recorded offences for personal possession was also lower than that for other scheduled drugs, except ecstasy and LSD (20).

In Australia, synthetic cannabinoids were legal until 2011 but legislative action occurred as they became increasingly recognised as posing a health risk. In some states of Australia, the initial approaches to control synthetic cannabinoid supply and production involved scheduling each cannabinoid agonist separately as it came onto the market. This approach has been described as “chasing their own tail”, because once one cannabinoid agonist is banned a new one is chemically engineered and sold legally. Increased media reports of synthetic cannabinoid use and adverse events, prompted legislative changes which many labelled as a “panicked response” that lacked a clear evidence base. This approach was evaluated as unsuccessful because while the availability of the banned drug is reduced, lesser known and understood drugs enter the market and have the potential for greater harm (21).

Further down the track, additional state-based legislation was introduced in Australia, the most notable of which was the amendment to the New South Wales (NSW) Department of Fair Trading in June 2013. This caused psychoactive substances to be banned according to their brand name as opposed to their chemical composition. This piece of legislation makes it a state offence to manufacture, supply or advertise many psychoactive substances. The results of the Cairns et al 2017 study suggested that this legislation was successful as a prevention strategy for synthetic cannabinoid use in NSW as the number of phone calls to the NSW Poison Information Centre reduced from 15 calls in March 2013 to 1-2 calls in June 2015 (10).

Summary of legislative actions

As the data from New Zealand legislation and synthetic cannabinoid use was limited, it was relevant to look at international data that showed the effects legislation had on synthetic cannabinoid use. Legislative changes, both nationally and internationally, showed a reduction in synthetic cannabinoid use and hospital presentations. It is relevant to compare the different legislations in different countries to identify if there is a better approach to preventing synthetic cannabinoid use and its associated morbidity and mortality.

Public Health

A number of public health initiatives are currently being implemented in the USA. One article discusses various campaigns concerning the removal of current misconceptions and myths that surround synthetic cannabinoids, the proactive engagement of retailers and the education of clinicians about detection and surveillance of synthetic cannabinoids. Although legislative action has been taken in many countries to prohibit the distribution of synthetic cannabinoids, its previous legal status and condemned marketing campaigns have falsely assured many individuals that they are safe to use. The local public health response in Washington D.C rolled various campaigns and slogans including “Danger: Fake Weed + U = Zombie” and similar responses were seen elsewhere in the United States such as “Synthetics Kill” and “Don’t Roll the Dice with Spice”. A key component of this campaign involved the distribution of resources and information to parents and teachers, concerning various ways to discuss the dangers of synthetic drugs. The rapid evolution of active ingredients found within synthetic cannabinoids has made it incredibly difficult to establish detection and surveillance programmes. The response to this in Baltimore city (USA) was to call upon clinicians and community leaders to support the cities statement on the dangers of synthetic cannabinoids. Resource cards were made available containing information concerning the dangers of synthetic cannabinoids in emergency rooms across the city (22).

In New Zealand community services such as Community Alcohol and Drug Service (CADS) and Medical Detoxification Service (MDS) help people dealing with synthetic cannabinoids abuse. Hospital services such as Inpatient Units (IPU) are also available for cases where detoxification requires greater medical support (16). These systems are important in management of synthetic cannabinoid use because heavy use can be associated with withdrawal syndromes that involves severe psychological symptoms and can require specialist service care and hospital admission. In an Auckland study, synthetic cannabinoids were more likely to require specialist care and hospital admission than natural cannabis. It was also the third most common substance to require IPU admission (16). This highlights that synthetic cannabinoid use may place an extra, and potentially growing burden on CADS and other tertiary services.

Some research highlighted that it should be urgently prioritised to guide clinical practice and public health efforts to mitigate increasing synthetic cannabinoid consumption and consequences (23). The study also highlighted that people seeking a cannabis-like high will use synthetic cannabinoids rather than cannabis in order to evade urine detection. This prompts further discussion around the current policy guiding natural cannabis products, because the illegality of natural cannabis could be driving synthetic cannabinoid use, especially among those monitored by the criminal justice system (23).

Summary of Public Health

There was limited information on the public health initiatives in New Zealand around synthetic cannabinoids. This led to expanding the research to see what public health campaigns are in place in other countries. This research showed a variety of public health efforts that are being implemented and whether they are effective in reducing synthetic cannabinoid burden. There appears to be no single effective method, leaving the question of how to tackle the burdens of synthetic cannabinoid use at a public health level unanswered.

Further Actions to Reduce Harm

Information gaps and current challenges

Before suggesting ideas, initiatives and further action needed to reduce synthetic cannabinoid harm, the information gaps and challenges surrounding this topic must be addressed. Here is a brief summary of these areas mentioned in the literature review:

- Detection of synthetic cannabinoids using standard urine/blood drug tests is ineffective, as synthetic cannabinoids can be easily altered by making small modifications of the chemical compounds (16,24). This can create greater challenges especially in acute ED situations. It also increases the use by those subject to drug testing.
- Due to the ever-changing nature of the chemical composition of synthetic cannabinoids, quality control is an area of concern (20).
- The existence of multiple variations of synthetic cannabinoids reduces motive to find an antidote (8). Therefore, there are no guidelines for treating synthetic cannabinoid overdose or to reduce the amount of cannabinoid in the body, rather the current method is to treat the adverse effects and symptoms. In addition, this makes long-term management of synthetic cannabinoid addiction and withdrawal very difficult as there is no current substitute to aid quitting (9).
- It should be determined which parts of the healthcare system those who use synthetic cannabinoids are likely to present in, (other than ED) as it could provide the opportunity to support and counsel on addiction and prevention of harm (16).
- Since the populations at risk of use are generally of low socioeconomic status, reaching out to this group is difficult through traditional health services (20).

Further Action

The following discussion addresses and explores current interventions implemented in other countries. It also considers other suggestions of further action that could be adopted in New Zealand to reduce synthetic cannabinoid use.

Surveillance of Synthetic Cannabinoid Intoxication

Substance abuse, being a multi-dimensional issue, can be detrimental across many aspects of a persons' life. An article published in the *World Journal of Clinical Paediatrics* emphasises the need to involve parents and other family members following dangerous intoxication from synthetic cannabinoids. This will assist in ensuring the appropriate cohesion and follow up with a qualified substance abuse professional or programme. These programmes may provide intensive therapy services that can help adolescents apply new behavioural skills to their daily life. It also helps incorporate various components of the individual's life, while targeting particular aspects of the illness (25).

In Texas, United States, a *Synthetic Drug Prevention Toolkit* by the federal office of National Drug Control Policy was created. This resource was created for parents and other people who know of synthetic cannabinoid users to learn about synthetic cannabinoid use more widely, and to help them address usage within their sphere of influence. There have also been awareness campaigns run through websites such as *Synthetic Awareness for Emily*. These websites are aimed at raising awareness and providing educational stories for others to learn from. Organisations have also recognised the need to communicate and share information through interprofessional health conferences (26).

The process of distinguishing a set presentation of symptoms due to synthetic cannabinoid intoxication has been discussed in various studies. However, due to either financial constraint, lack of analytical capabilities, time limitations and variation of chemicals in synthetic cannabinoids, many clinics do not routinely test for recreational drugs including synthetic cannabinoids. As a result, diagnosis is heavily reliant on the individuals' history and presentation. Use of synthetic cannabinoids should be strongly suspected if an adolescent presents with a history of marijuana or other drug use; signs and symptoms consistent with cannabis use; unexplained sudden onset of psychotic symptoms and is in a situation where their urine is routinely monitored for illicit substances, whilst having a history of negative routine toxicology screens (25,27).

While synthetic cannabinoid use among adolescents is not necessarily high, identifying people who use at this age is important to minimise the severity of potential consequences. In addition to finding that synthetic cannabinoid use in adolescents was most strongly related to use of cigarettes, alcohol and marijuana. It was also found that synthetic cannabinoid use was associated with truancy. This suggests that screening techniques for these factors may be a useful harm minimisation tool (27).

An American study highlighted that their main approach to combatting synthetic cannabinoid use, has been changes to legislation. This is comparative to actions in New Zealand. Consideration needs to be taken into what clinicians and health providers can do to reduce harm. The study recommends that synthetic cannabinoid use needs to be more widely recognised as a public health issue and that the development of an adapted and validated "Screening, brief intervention, and referral to treatment" (SBIRT) type tool could be useful when detecting and monitoring synthetic cannabinoid use. The study also suggests more effective allocation of resources to enable people to work directly with those who require treatment. The conclusion of this study suggested that greater surveillance of synthetic cannabinoid use was required in order to enable improved public health measures. The study

highlights that synthetic cannabinoids present a major public health threat and that solutions need to be multifaceted and evidence based (26).

ED Treatment of Acute Synthetic Cannabinoid Use

There are no specific medications for synthetic cannabinoid intoxication; the rationale behind treatment is to address the presenting symptoms. The symptoms are usually self-limiting and will most likely resolve within 4-14 hours. Therefore, when presenting to ED, treatment with intravenous hydration, electrolytes and monitoring should be enough. Whilst monitoring, clinicians should be looking for any reason to intervene with treatment of renal, neurological or cardiovascular morbidities. Individuals who present with anxiety, panic, agitation and arousal as a result of synthetic cannabinoid use may benefit from the administration of Lorazepam, a benzodiazepine. Depending on the severity of intoxication, a clinician may consider inpatient or residential treatment services of which can provide intensive care for the individuals, especially if they are going through the early stages of withdrawal (25).

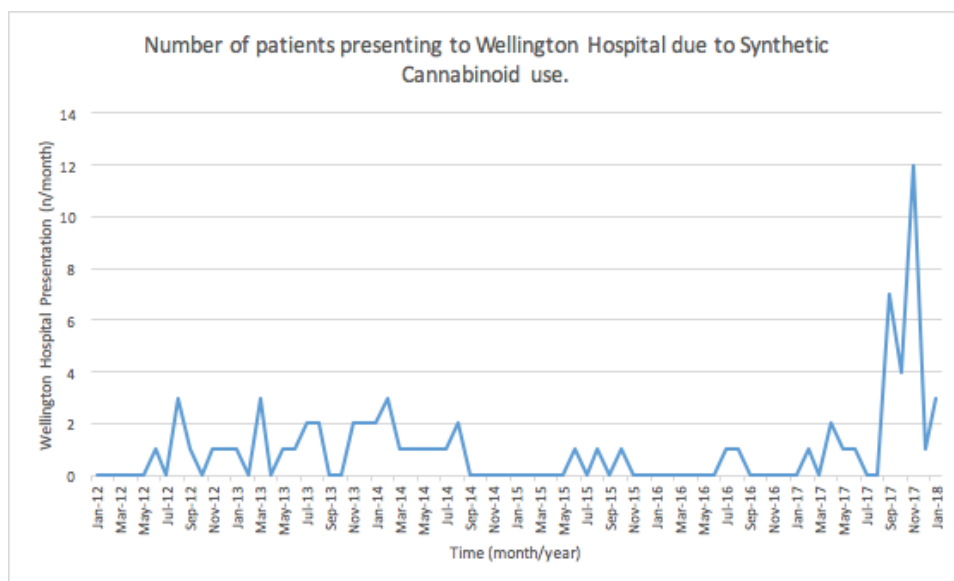
Summary of Further Actions Needed

International and national studies have been obtained, reviewed and relayed in this report to offer suggestions about potential interventions that can be implemented or adopted in New Zealand. The interventions addressed from the literature review include increasing family and community involvement as well as implementing educational aids. Other strategies include determining a typical presentation of synthetic cannabinoid effects, outlining the most at-risk groups to allow easier detection, greater surveillance and more effective methods and guidelines of treatment implemented in ED.

Results and Data Analysis

Analysis of Wellington Hospital ED Data

Wellington Hospital Emergency Department routinely collects data on patients' toxicology when they present. This data was analysed to identify trends. It is collected in a number of ways and stored systematically. When patients present they will usually attribute their symptoms to the use of synthetic cannabinoids and subjectively report this to their medical professional. When a patient is recorded in the system, there is a window that pops up on the screen regarding their recreational drug use, this is a way of screening for synthetic cannabinoid usage. Another method of detection is a specific coding system that helps ensure people who use synthetic cannabinoids are not missed. The data collection method is as accurate as possible but there is still the potential limitation of not all patients reporting their use, causing the data to potentially under-represent the true value.



The Wellington Hospital ED data was analysed to illustrate the demographic that are presenting as a result of overdose or adverse effects due to synthetic cannabinoid use. The graph demonstrates an increasing trend over time, with a spike in 2017. The data also showed that males were 6 times more likely to present than females. The median age of presentation was 22 years and the mean age was 26 years. The most common ethnicity to present was NZ European followed by Māori and then Pacific islanders.

Analysis of Stakeholder Interview Data

Findings from the stakeholder interviews are presented below. The stakeholder organisation or role and interview number are noted in brackets and alongside quotes. Quotes have been used to demonstrate the key findings of the study.

Stakeholder Perceptions

Stakeholders were asked about their organisations' perception of synthetic cannabinoid use. The perceptions varied greatly between stakeholders. The vast majority of stakeholders highlighted synthetic cannabinoids as a problem within the wider Wellington region and a

cause of morbidity and mortality. Two stakeholders referred to it as a public health issue and three indicated it was a growing problem. Synthetic cannabinoid harm however, was considered by multiple stakeholders (n=5) as a small problem within the scope of their practice. A Ministry of Health (MoH) spokesperson said that synthetic cannabinoids were the third most common presentation to addiction treatment. However, the numbers were significantly lower than the most common presentations. Stakeholders highlighted that synthetic cannabinoids are an ongoing concern due to the acute and unpredictable nature of the adverse effects. For example, a Community based initiative spokesperson noted after 2015/16 there was *“such strong decreases of hospital admissions that everyone felt that the Act had worked and since you don’t hear much until the spikes in adverse effects and deaths... until that happened it was out of everyone’s brains and they were focusing on other stuff.”* The stakeholders discussed three key difficulties in managing the problem; lack of understanding by all parties involved; the burden of use including community and health services; and the current regulation and lack of government response to crises.

Synthetic Cannabinoid Problem in the Wider Wellington Region

14 of the 15 stakeholders identified a significant problem in the wider Wellington region in regards to synthetic cannabinoid use, with a particular emphasis on Porirua (n= 6). Stakeholders thoughts, reasons and ideas as to why they believe there is a problem in the wider Wellington region included hospitalisations and deaths (n = 5), gaps in the health and legal system (n = 8), discrepancies between legal and health system approach (n = 2), high accessibility and availability of synthetic cannabinoids (n = 9), inability to regulate synthetic cannabinoids (n = 4), lack of education around the harm (n = 3) and lack of identification of younger users (n = 1).

“Twenty deaths we had up to July this year, they were preventable and they were abnormal.”- NGO (3)

Stakeholders brought attention to a lack of access to services. Recognising that individuals using synthetic cannabinoids may only access counselling or other support services either under court order or by family encouragement. NGO (3) mentioned that court ordered counselling is not effective thus identifying discrepancies between the legal and health system approach. Furthermore, those of lower socioeconomic status are indicated to be higher users of synthetic cannabinoids and they are less likely to have adequate access to primary healthcare which accentuates the problem.

Nine stakeholders mentioned a high level of accessibility and availability of synthetic cannabinoids which can be attributed to a shortage of cannabis and synthetic cannabinoids being cheaper and easier to produce. A counsellor mentioned people using synthetic cannabinoids are *“willing to take everything and anything they can access through their social circle.”* NGO (3) mentioned there are huge market forces driving synthetic cannabinoid use.

Four stakeholders identified the inability to regulate synthetic cannabinoids. Some stakeholders mentioned new substances are constantly created that are difficult to test for.

“People were switching to synthetics because if they were tested, they would pass and wouldn’t lose their job. So I think those were the early drivers for people and I have a suspicion that people weren’t necessarily looking for a different kind of drug or a different kind of drug effect.” - Psychiatrist

Trends in Synthetic Cannabinoid Related Harms

The vast majority of stakeholders were aware of some key features of synthetic cannabinoids related harms (n=13). GP and Regional Public Health (RPH) spokesperson were unaware of trends or did not have enough data, respectively, to comment on the harm trends.

Many of the stakeholders (n=10) reported harms that presented acutely. These presentations included severe symptoms such as psychosis (paranoia, random violence), agitation, “zombie-like” presentations, hyperactive sexual behaviour, seizures, suicidality, heart attacks and arrhythmia. Less severe presentations such as loss of appetite or skin infections were also reported. Psychiatrist noted *“I’m seeing young people who are presenting with really severe psychosis, high levels of disturbance, agitation and often very anti-social and aggressive behaviours. So there seems to be a very specific kind of presentation that we’re seeing in young people who have been using these chemicals consistently.”* Thus emphasising that these kinds of acute presentations are relatively unique to synthetic cannabinoids users.

Another theme that was reported by just under half of the stakeholders (n=7) was that individuals that are chronic users of synthetic cannabinoids suffer from long term health effects. This includes permanent brain damage, poor mental health and cardiac pathologies. *“Things like heart attacks and heart issues, [are] a really big concern for things in the long run.”* (Community Based Initiative Spokesperson). Death was mentioned by over half of the stakeholders (n=8). *“Synthetic cannabinoids is by far... the most serious by a long way because it involved death.”* (Expert/Clinician).

Some stakeholders (n=5) reported addiction and withdrawal as notable. *“[It’s] not just the direct intoxication effect, I’ve also seen first hand myself where people have actually become addicted to synthetic cannabinoids and have described clearly physical and psychological manifestations of withdrawal if they’re not able to use.”* (Psychiatrist).

Use of synthetic cannabinoids also poses serious consequences to an individual’s ability to integrate into society. Over a third of stakeholders (n=6) reported that there were serious social consequences for individuals who use. For example, due to the addictive nature of the drug, relapse appeared to be common and thus contributes to social isolation, occupational and financial problems. All of which have flow on negative effects for these individuals furthering their social deprivation. Harm in this sense is not restricted to the user themselves but has flow on effects to the family of the user. NGO (1) noted that parents who use can cause harm to their children as well. Firstly, by exposing the children to the synthetic cannabinoids and normalising its use. Secondly via trauma especially if the children see their parents physically reacting to the drugs. Synthetic cannabinoids were also reported to affect basic daily functioning.

Several stakeholders noted the variations in batch strength and how this correlated with the severity of harm. This was illustrated by the MoH spokesperson when they said *“within a*

particular batch there are parts that are stronger than others, so they can affect people quite strongly. They can end up with anything from agitation to cardiac arrhythmias, to dying as a result of that.” Severity of harms have also been noted to vary depending on the other medications that people who are using synthetic cannabinoids are also taking, specifically, SSRI’s* (expert/clinician). The expert/clinician also mentioned there are hidden recreational synthetic cannabinoids users who are unharmed and hence not presenting to health services.

Demographic Trends

All spokespersons interviewed identified trends in the demographics of groups seen using synthetic cannabinoids. Many of the stakeholders also mentioned at some point during the interview that further New Zealand-based research is needed and more specifically in the wider Wellington region. The MoH spokesperson mentioned *“with regard to use in New Zealand ... we don’t actually have any real data on that at the moment.”* Stakeholders defined demographics according to the types of people who use synthetic cannabinoids that are presenting to their services. However, there were clear overarching trends in the demographics identified by the stakeholders. These included low socioeconomic status (n = 10), multidrug users (n = 5), Māori (n = 6), Pacific (n = 3), Pākehā (n = 1), Porirua (n = 6), Wainuiomata (n = 2), young people (n = 8), broad age range (n = 7), primarily male (n = 3), pre-existing mental health issues (n = 3), recreational users (n = 1), party goers (n = 1), and those in harder to reach settings (n = 1).

“I think it might fit with profiles with people who are involved in more serious drug abuse for example those who are chronic cannabis smokers compared to those who smoke occasionally ... My view is that there is a gateway between chronic cannabis use and the use of synthetic cannabis”. – Mental Health Nurse

“I know that in Porirua there is a lot more of a problem, or at least an obvious problem than the Hutt valley, that’s quite clear ... Maybe in Porirua it’s really concentrated in areas so it’s really obvious, whereas in Hutt valley it’s a bit more spread out . . . I know that in Porirua we have really different context, different populations, and so we have different drug use. So for instance Wellington people use far more party drugs, you don’t see as many synthetics being used there, so when like you get a problem with Cathinones being sold as MDMA, that will pop up in Wellington more.” – Community Based Initiative Spokesperson

A significant trend observed was the age of individuals using synthetic cannabinoids. Eight stakeholders discussed users tend to be young people (under 24 years old), emphasising problems with youth who are in high school or at university. A counsellor stated *“Synthetic dealers will sell you \$10 worth of the drug, making it accessible to the very young, as three kids can split up the \$10 payment easily.”* NGO (2) mentioned recent deaths were particularly in younger age groups between 14-19 and added *“dealers are targeting younger people to sell into their own age group ... these youth may feel the need to fit in or they just have nothing to do after school other than turn to these drugs.”* However, seven stakeholders mentioned there is a huge age range of people who use synthetic cannabinoids. The MoH spokesperson

* An SSRI is a selective serotonin reuptake inhibitor which is a commonly prescribed antidepressant

stated “. . . it is certainly not just a youth issue.” and the council advisor mentioned “as young as 11 all the way up to late 50s, 60s”.

Perceived Reasons for Synthetic Cannabinoid Use

When asked why stakeholders believed people are using synthetic cannabinoids, there were again clear overarching themes that emerged. This included: previous legal status (n = 3), mental health issues (13), misconceptions around harm (n = 4), accessibility (n = 11), experimentation (n = 4), highly addictive (n = 6), wider social determinants of health involved (n = 2), sedative effects (n = 2) and to keep the homeless warm at night (n = 1).

Several stakeholders mentioned people may be using synthetic cannabinoids because it was previously legal. A GP commented “*Certainly when it was legal that was a reason and maybe some people who are still using because they used it while it was legal and decided it did what they needed for them.*” However, another stakeholder (expert/clinician) stated that the number of people using synthetic cannabinoids significantly reduced since the introduction of the current legislation.

“We’ve spoken to people and they’ve said it takes them into that zombie state so if they’ve got mental health issues or personal issues then it’s about, getting away from a problem for a wee while.” – Public Health Spokesperson

“Underlying could be things such as hopelessness, and a loss of control in your life which will lead to people trying drugs and alcohol. The social determinants of health apply very much to drug and alcohol use ie poverty.” – MoH Spokesperson

Additionally, the majority of stakeholders (n = 11) discussed the easy accessibility of synthetic cannabinoids being a major contributor to use. Many stakeholders elaborated that synthetic cannabinoids are low cost, and are cheaper than other drug alternatives (such as alcohol). There is a large supply and a shortage of regular cannabis. On top of this, dealers are seeking out people in particular groups to sell to their friends making it even more accessible. An NGO (3) stated “*They are very cheap and relatively accessible and I think that drives a lot of the motivation for use ... if you can do it cheaper than alcohol, with a more potent and dangerous product then synthetic cannabinoids are often an attractive alternative.*”

Four stakeholders think people may have misconceptions around the consequences of synthetic cannabinoid use. A psychiatrist mentioned that some members in the community falsely believe synthetic cannabinoids are “*cannabis-like*” and don’t realise that the harms are much more significant compared to natural cannabis. Another four stakeholders also mentioned experimentation being a major component, as well as the novelty of the drug. NGO (2) mentioned “*they begin by experimenting, then going into social use without any knowledge of about what it is and what it can do to them*”.

Another key theme that was discussed by six stakeholders was that synthetic cannabinoids are highly addictive and can have major effects on individuals without them realising. One stakeholder said that because they were originally legal people may have become addicted and subsequently used illegally due to the legislative changes. Four stakeholders commented

that synthetic cannabinoids are sought after due to their strength and are especially addictive if the first experience is good.

Two stakeholders discussed that the wider social determinants of health underlie the reasons as to why people are using synthetic cannabinoids. One counsellor mentioned use creates a community where they *“can connect with each other, but obviously in really dangerous ways.”*

Current Support Systems and Infrastructure

Thematic analysis revealed three main themes with regards to support and infrastructure currently provided around synthetic cannabinoids. These were health education (n = 8), direct to user services (n = 8) and integration of health, support and governmental services (n = 10). Five smaller themes were also noted, these included; research around synthetic cannabinoids (n = 2), advocacy for users of synthetic cannabinoids (n = 2), tertiary care (n = 2), policy (n = 1) and DHB funding (n = 1).

Eight stakeholders noted that their organisation was in some way involved or aware of education being provided around synthetic cannabinoids. Collation of the interviews revealed a variety of ways in which education around synthetic cannabinoids is currently being used. Despite current education about harm reduction strategies or techniques, it is important to note that all 14 stakeholders suggested that education is one of the interventions that would be valuable for harm reduction.

Examples of education related strategies were mentioned by stakeholders. NGO (1) specifically has ties to a current programme that primarily focuses on educating school children around the right choices to make with regards to drugs and how to identify situations that will influence their lives in positive or negative ways. Another trend found was that there has been an increase in information sharing between agencies as more data related to synthetic cannabinoids and the groups that use them is being gained in informal settings. This was specifically reported by RPH spokesperson, NGO (1), and Community based initiative spokesperson. This process has been noted as a contributing factor which is allowing for greater education to individuals using synthetic cannabinoids, health professionals and communities, especially to inform them of harm minimisation techniques. A further example of current health education techniques with relation to synthetic cannabinoids located in Porirua was also noted. After the deaths in late 2017 there has been an organised community effort to increase positive messaging around synthetic cannabinoids. NGO (1) indicated that this effort was new, but it seems that this form of community wide education would continue and dissemination would increase over the coming months.

The services provided directly to individuals who use synthetic cannabinoids are relatively broad. The analysis includes any service mentioned by the stakeholders that directly targets these individuals or their families. For example, services such as counselling and social workers was mentioned by five stakeholders, (GP, DHB Spokesperson, NGO (1), NGO (2), Counsellor). However, it is important to note that these are general drug and addiction services, and not necessarily related to synthetic cannabinoids. NGO (1) specifically highlighted that their organisation provides one on one counselling, relapse prevention and

wrap around Whānau Ora services. The mental health nurse reported that rehabilitation services, including drug reduction and abstinence support, treatment of comorbidities and withdrawal managements are available for those who use synthetic cannabinoids in the Hutt Valley. However, again it must be noted that these are general drug and alcohol services provided in the wider Wellington region.

*“...a small community lead group was formed... and what that group would like to do is have champions in some of the schools and maybe some of the social service organisations.” –
City Council Advisor on new Porirua-based initiative.*

In regards to integration of health, support and governmental services, six stakeholders outlined the importance of current relationships with relevant social services and community organisations. Some of these stakeholders are also involved with the coordination of these services. The services include incident response coordination, information sharing in communities or between professionals and creating resources. It is clear that this sharing of resources and integration between services is integral for developing an effective response to synthetic cannabinoid use. Another example of integration of services came from the interview with NGO (1). They mentioned being involved in an intervention for drug addicts, working alongside the Department of Probation and Corrections.

It is clear from the interviews that research around the use and effects of synthetic cannabinoids is lacking. However some stakeholders indicated that headway is being made on the research front currently. MoH spokesperson reported in their interview *“we're gathering some information and data on the issue, providing a bit of a case study, with a view to give guidance and advice to other regions where that sort of thing happens. So it's that kind of big picture kind of thing that we're interested.”* Public health spokesperson also mentioned their organisations' involvement with on the ground information gathering, saying: *“If there's... a spike in incidence or presence or calls on 111... affected by synthetic cannabinoids then we might get together... find out number of people that have been affected, see if we know of the community members that are involved.”*

Two stakeholders (NGO (3), City Council Advisor) outlined that their organisations had roles in advocacy for individuals that use synthetic cannabinoids and other drugs. They specifically mentioned the need for advocacy in the community for employment opportunities, education and support for social issues that people at high risk of synthetic cannabinoid abuse suffer with. Two of the stakeholders interviewed (Mental Health Nurse, Psychiatrist) stated that they were involved with tertiary care. This care was for those that came in with acute high end physical or mental health problems or had ongoing serious mental health issues exacerbated by synthetic cannabinoid use.

In the interview with NGO (1) DHB funding of addiction services was discussed as a component of the infrastructure already present for people who use drugs, including people who use synthetic cannabinoids. No further detail was given as to what this funding was used for.

Organisation Specific Requirements

The majority of stakeholders (n = 13) agreed that more resources, information and support is required to effectively target synthetic cannabinoid use. The main themes were greater resources in general (n = 8), more information and research (n = 7), increased higher level involvement (n = 4) and increased collaboration and information sharing (n = 4).

Of the eight stakeholders who indicated more resources in general are required, financial and human resource support were particularly noted. The eight stakeholders were from a range of organisational levels including: DHBs, Public Health, NGO, and Clinicians. In many cases non-specific funding and resources were mentioned. However, some stakeholders were more specific. This included many direct to consumer services, such as increased funding and resources to decrease drug and alcohol counselling service wait-lists, increased rehabilitation services and emergency housing. A mental health nurse also noticed a need for more long-term beds.

A General Practitioner illustrated the prevailing perception with, *"Part of the issue, shared with dealing with any of the illicit drug problems, is we've got no stats, no ability to study it efficiently, no ability of quality control."* Many of these stakeholders emphasised the need to explore the scope and harm profiles of synthetic cannabinoids because, *"without that you can't provide...a good harm minimisation message and advice"* (Hutt Valley Community Initiative spokesperson). Many stakeholders also highlighted that more information around which communities to target and how best to help them was required. The DHB spokesperson also indicated that further research to support evidence-based practice within services was necessary. Other areas for research included the biological mechanisms and harm of synthetic cannabinoids (Psychiatrist), and acute treatment of severe synthetic cannabinoid presentations (Expert/Clinician). In contrast to the need for more research, one stakeholder (MoH Spokesperson) asserted there is enough information available, but greater dissemination of the information was needed.

Four stakeholders (NGO (3), Mental Health Nurse, Expert/Clinician and City Council Advisor) emphasised that increased involvement by government, public health and health and social services was necessary to guide an effective response to synthetic cannabinoids. The frustration with the lack of response was noted, *"Need someone at a senior enough level that can actually go, this is a serious issue now, and to be able to talk across those government departments and say were going to combine our resources and do something"* (City Council Advisor). The majority of the stakeholders highlighted how the lack of response was linked to the synthetic cannabinoid issue occurring in more marginalised and lower socioeconomic groups.

Another area that was emphasised by four stakeholders, was the need for greater collaboration and information-sharing between organisations. This was indicated by stakeholders from clinical perspectives through to higher level organisations such as the Ministry of Health. A mental health nurse noted *"there needs to be more of a multi-agency approach, most of these problems aren't solved in isolation."* The stakeholders highlighted issues such as lack of leadership and coordination between services. The need for greater collaboration and information sharing was summarised by a MoH Spokesperson who noted

“better communication to all the different players in the area is essential to work out what to do when these things happen.” Some specific areas where information-sharing could be improved were access to Emergency Department and Police data on synthetic cannabinoid presentations (MoH Spokesperson and Council Advisor).

Further Interventions to Minimise Harm

The most noted recommendation mentioned by all stakeholders was education (n=14). Changes to governmental policy (n=11) and community and whanau development (n=10) were also discussed by a majority. Other interventions include increased resources (n=8), primordial prevention (n= 6) and optimising communication between sectors (n=3).

*“Prevention is always better than cure, education is the key, and its lacking out there”. -
Counsellor*

In regards to education, stakeholders emphasised different methods such as key messages outlining the safe use of synthetic cannabinoids, ideas around bystander response to a crisis (basic first aid) and positive messaging. Many of the stakeholders (n=5) indicated that education needs to be accessible and targeted at vulnerable groups, such as those with pre-existing mental health conditions, youth and higher risk ethnic groups. NGO (1) and Counsellor also said that health education material should be translated into Pacific languages and te reo Māori in order to better reach these populations. It was suggested by a range of stakeholders that targeting these groups could be implemented through going into schools, marae, churches, soup kitchens, other areas where vulnerable people frequent and talking to gangs. One stakeholder (social worker) argued against going into schools because this could peak young people’s interest.

One major educational intervention was raising awareness and the understanding of synthetic cannabinoid products for healthcare workers. The importance of this point was highlighted by NGO (3), *“To get resources out and make sure that clinicians, youth and social workers are aware of these products and are geared up to provide some harm reduction advice to people who might be using them.”* The stakeholders that made these recommendations came from a range of organisational levels, from Ministry of Health to clinical based (Mental Health Nurse and Psychiatrist) and direct community providers (Counsellor and Social Worker).

Stakeholders had a wide range of ideas on changes to legislation that could minimise synthetic cannabinoids harm. The vast majority of stakeholders were unsatisfied with the current legislation and many emphasised harms linked to the current approach.

“We know the Psychoactive Substances Act isn’t working and not having any approved products, that’s definitely an aspect of it....So bringing that act back in to line and having some legal options that are lower harm is definitely going to be better than all the new chemicals that we see flooding in.” – NGO (3)

Almost half of the stakeholders (n=7) argued that greater regulation of synthetic cannabinoid supply and use was necessary and this had not been achieved with the current legislation.

Many stakeholders (n=7) agreed that legal alternatives to synthetic cannabinoids would minimise harm. Five of these stakeholders (NGO (3), Mental Health Nurse, Expert/Clinician, DHB Spokesperson, Psychiatrist) suggested decriminalisation of cannabis or low-risk drugs. But one stakeholder cautioned greater research was required to understand the benefits and risks of this action. Furthermore, one stakeholder (Expert/Clinician) said greater penalties for importing and supplying synthetic cannabinoids would be important to reduce supply. This idea was contested by two stakeholders, Public Health Spokesperson stated it would lead to more incarcerations and growing inequity as Māori and Pacific communities would be most affected.

A legislation change that many stakeholders (General Practitioner, NGO (3) and Expert/Clinician, Counsellor and Psychiatrist) supported was recognising synthetic cannabinoid use as a health problem. The General Practitioner highlighted the idea with, *"The place in which your problem sits is we've been treating drugs as being a justice problem and not a health problem."* Three stakeholders discussed the idea of decriminalisation of possession (Expert/Clinician, Counsellor and Psychiatrist) and two stakeholders mentioned the policy shifts in Portugal, and how this was an interesting consideration for New Zealand going forward. The Clinician/Expert highlighted that people using synthetic cannabinoids are not asking for help from healthcare services due to fear of legal repercussions.

The majority of stakeholders (n=10) emphasised that community and whānau engagement has to be enhanced. MoH Spokesperson said that need *"community buy in"* and another supported this notion by saying *"turning everything around and saying instead of it being health lead and government/legislative led, how about it's community led"* (Clinician/Expert). A number of ideas were discussed including community capacity building; greater outreach activities into schools, churches and gangs; and targeting vulnerable sectors of the community. Culturally specific care was also highlighted by NGO (2), who indicated that organisations need to help Māori to connect with their whānau, iwi, marae and culture as a way of minimising harm in those communities.

Just over half of stakeholders (n=8) highlighted areas where interventions were occurring, but require an increase in resources to be effective. These included more people working in key areas, increased availability of clinical health services and further action to improve accessibility of healthcare for vulnerable populations.

Six stakeholders from a variety of organisations highlighted the need for further interventions focused on primordial prevention. A Ministry of Health spokesperson (6) summarised this point well with *"If you want to address drug use...you need to see the whole person in the context of their life and their community as well."*

A further three stakeholders (NGO (3) and Expert/Clinician, and City Council Advisor) pointed out methods of optimising communication between key services for ongoing harm minimisation. This included streamlined referrals and an early warning system that would alert relevant organisations (Police and Public Health services) when severe Emergency Department presentations were linked to synthetic cannabinoid use.

Barriers to Success

Stakeholders discussed multiple barriers they had recognised as impacting the success of current and future interventions. A wide range of barriers were recognised including inadequate resources (n = 8), underlying personal and social issues of people who use (n = 6), access to services (n = 6), synthetic cannabinoids related factors (n = 5), stigma associated with synthetic cannabinoids use (n = 5), and discrepancies between legal and health system approaches (n = 3).

Inadequate resources included lack of information and underfunding preventing provision of necessary services. More specifically this included addiction and supportive services, withdrawal services and lack financial support to translate materials to Pacific languages and te reo Māori.

Another key theme, highlighted by six stakeholders, was the underlying personal and social issues people who use synthetic cannabinoids have and the implications this has for interventions. Stakeholders (Public Health Spokesperson, Mental Health Nurse, Expert/Clinician, Hutt Valley Community Initiative Spokesperson, NGO (2), and Counsellor) highlighted the complex social and economic situations of those who use, intellectual impairments, co-existing disorders and unexplained lack of insight into severity of addiction as barriers for successful interventions. Cultural beliefs, for example in some Pacific Island cultures where speaking about these issues is uncommon, also affects interventions.

The stakeholders (n=6) also discussed how the effectiveness of interventions was limited by people using synthetic cannabinoids not having or utilising access to services. The stakeholders noted that the groups who primarily use synthetic cannabinoids are less likely to access these services. Some of the reasons noted for lower access to health services included lack of trust in the healthcare system (General Practitioner), GP costs (NGO (2)) and accessibility from certain regions, for example Cannons Creek and Porirua (Psychiatrist).

Five stakeholders also highlighted that synthetic cannabinoid related factors, such as variation in products, high level of addictiveness and lack of regulation were affecting the implementation of harm minimisation strategies. It was noted, *“because these products are quite different it’s hard to come up with a standard approach”* (NGO (3)) and, *“because it is illegal, getting the information is really hard”* (General Practitioner). The difficulty in testing for synthetic cannabinoids and so identifying people who use them was noted as a barrier by Council Advisor. Expert/Clinician said how people *“will have a seizure once or twice a week from synthetic cannabis....we’ve done counselling, brief intervention and stuff, but they just wake up here, stay about 2 hours and walk about, and they’ll be back.”* Expert/Clinician further emphasised this point by noting how people who use synthetic cannabinoids don’t have the *“Woah! Don’t wanna do that again”* moment that is associated with other drugs.

Five stakeholders (NGO 3, NGO 1, and Ministry of Health Spokesperson, City Counsellor Advisor, and Counsellor) also highlighted the stigma associated with synthetic cannabinoid use as a barrier to intervention. This was noted as preventing discussion of drug use, especially in schools. The counsellor highlighted that to decrease stigma around drug use was important to increase social inclusivity and reduce the racial profiling of Māori and Pacific

Islanders. Another stakeholder also highlighted how there is a high level of sensitivity to some of the more unconventional interventions such as 'use cannabis instead' or utilising gangs. This is a potential barrier to effective harm minimisation.

Two stakeholders also highlighted the discrepancies between the legal and health system approaches with a Mental Health Nurse noting, "*addiction services can get full with people who are sent from courts and the police*" and that these people have "*no interest in going to or will only go because the court has told them to.*"

Discussion

Principle Findings and Comparison with Literature

Question 1. Stakeholder Perceptions

It was important for this research to firstly disseminate whether stakeholders believe that there is a problem with synthetic cannabinoid use, especially in the wider Wellington region. Majority of them do perceive that there is a problem in New Zealand, particularly in Porirua. They have partially identified this problem through the morbidity and mortality rates and hospitalizations attributed to synthetic cannabinoid use. A large proportion of the respondents also think that part of the problems New Zealand face around synthetic cannabinoid use are due to gaps in the healthcare system and the ease of accessibility of the drug. This was valuable to identify early in the research as it demonstrates the true need for the data as well as noting potential places where future changes may need to occur.

Question 2. The Demographics of Use

Stakeholders seemed to generally believe that the highest groups of synthetic cannabinoid users were:

- Multidrug users - especially those who are involved with more serious drug use
- Of low socioeconomic status - especially those living on the street, in vulnerable housing situations and those who are unemployed
- Māori and Pacific Peoples
- Younger age group (under 24 years old) - dealers tend to seek out people that are younger so they can sell to their friends
- Wide age range - can be as young as 11 years old up to 50 and 60 year olds, however it's especially common in high school students and university students

The results also show that most respondents attribute use to mental health problems and the ease of accessibility of the drug. They also emphasized how addictive synthetic cannabinoids are and said that this was a cause of the continuous use of the drug. The age group at highest risk is very conflicting. About half of the stakeholders believe that younger age group were the highest users of synthetic cannabinoids whereas the other half believed that there is a wide age range. This made it difficult to come to a conclusion regarding synthetic cannabinoid use in terms of age.

Most of these findings coincide with the literature, demonstrating that most stakeholders or people that are involved with synthetic cannabinoids have similar perceptions to research has found. This is positive because it shows that our professionals are highly aware of what demographic they should be focusing their efforts on. The results regarding reasons for synthetic cannabinoid use were the most variable compared to the literature, as the research data found connected use to affordability and availability opposed to mental health challenges.

Question 3. Support Systems and Infrastructure Already in Place

The three highest discussed topics by stakeholders about what is currently being done to combat synthetic cannabinoid use were; health education, direct to user services and integration. There was also a note about the lack of research in this area.

The health education strategy includes programmes in schools about education on the “right” choices and positive and negative influences. There are also systems that allow sharing of information and provide education for people who use synthetic cannabinoids as well as the health professionals themselves. Health education was also discussed in terms of blunt messaging such as telling a person who uses that they are going to harm themselves or others if they continue to use. In Porirua in particular there has been organised community effort to increase positive messaging.

Direct to user services included things such as counselling and social work. The stakeholders discussed the importance of rehabilitation services for support, reduction and abstinence. These rehabilitation services are able to provide treatment of comorbidities, manage withdrawal symptoms and conduct general assessments of their overall social and mental wellbeing. There is an assessment tool that can be used to identify at-risk individuals to get them put in the programme. However, this is non-specific to those who use synthetic cannabinoids. Once accepted into the programme people who use are supplied with one on one counselling sessions, relapse prevention, Whānau Ora services and sometimes DHB funded residential care. There are also specific addiction treatment community services such as CADS, which is very beneficial for people who use synthetic cannabinoids. Law enforcement was also discussed as a service to prevent the use of synthetic cannabinoids.

There has also been work done to better integrate the various health services to have a more cohesive system. This highlights important processes such as referrals, coordination between services and the RED programme which is a contract with the Department of Corrections that involves speakers talking about particular addiction topics.

The results from the stakeholder interviews coincide with the information from the literature review, that there appears to be consistency in knowing what resources are available to people who use synthetic cannabinoids. However, none of the stakeholders mentioned the impact legislation has had on synthetic cannabinoid use. Whereas studies from the literature review showed that legislation had reduced the burden of synthetic cannabinoids. These legislative effects were seen both in national and international studies.

Question 4. Potential Interventions and Recommendations

As a collective, the various stakeholders came up with an extensive list of potential implementation strategies to minimise harm. The following discussion highlights the main and most applicable points and how these ideas coincide with the literature review. The first thing that the interview results show is that there needs to be more emphasis on resources and research. An example where there needs to be an increase in resources is the availability of inpatient beds and rehabilitation services. There is also the idea of having drug and alcohol counsellors at general practices. More time and effort put into New Zealand-specific research is required.

The stakeholders want to see changes in policy. A change in the legislation is needed to reduce rates and harms of synthetic cannabinoid use. Illicit drug use needs to be recognised as a health problem, opposed to a criminal act. This concept of identifying synthetic cannabinoid use as a health issue is supported by the literature reviewed (26). It is crucial that the revision of the *Psychoactive Substances Act 2013* later in 2018 considers radical changes to the supply, production, importation, use and manufacture of synthetic cannabinoids. For example, decriminalising use and personal possession of synthetic cannabinoids could reduce stigma and barriers to accessing health care for both people who use the drug and affected family members.

Another example of legislative change involves decriminalisation and legalisation of cannabis and its possession, as well as having other legal alternatives to synthetic cannabinoids that are less toxic and safer. There could also be work done to increase the criminal penalties for supply, production and importation of synthetic cannabinoids. However, this type of change in legislation would need to be approached with care because potential repercussions may cause greater harm than good. This is due to the predominant overlap between users and suppliers, where health interventions are more appropriate than incarceration.

Respondents also discussed the need for better health education. This includes education of health professionals as well as targeted health messages to the public especially vulnerable and marginalised groups. This concept concurs with the literature reviewed where family and community involvement is urged to aid in the understanding, identification and harm reduction of synthetic cannabinoid use (25,26). The messages need to include emphasising how to use drugs safely rather than opposing use completely. Other ideas include using schools as a means to target youth as a preventative measure which has been mentioned as an area of importance when minimising the severity of potential consequences and problems associated with synthetic cannabinoid use (27), addressing myths around use, teaching basic first aid in communities and promoting educational films. Another important educational objective is to make sure all resources are translated into te reo Māori and Pacific Island languages.

It was also important to identify what the stakeholders believe will be or are currently barriers to these various strategies being successful. Barriers could include resources, time, money, access to healthcare, factors about synthetic cannabinoids themselves, stigma, as well as discrepancies between the legal and health system. If changes are going to be made to reduce harm of synthetic cannabinoids, these barriers need to be kept in mind.

Evaluation of Study Design

Due to the nature of this study a potential limitation was that it was not possible to talk to and interview people who use synthetic cannabinoids. It would have been invaluable to this research to gain their perceptions and understand what they believe would be the best way to help them. Unfortunately, due to the ethical requirements around interviewing patients, this was unable to be done. However, this could be an area for future research regarding synthetic cannabinoids.

Other limitations to our study were mainly due to the short time frame and the number of authors. The team worked tremendously hard to minimise bias in all aspects of the research, but this was especially difficult when there were so many different people involved, as everyone has slightly different ways of doing things. For example, not everyone who conducted interviews strictly stuck to the set questions, this introduced a potential for interviewer and recall bias. Some also accidentally asked leading questions because they were trying to make the situation more comfortable and casual, this also may have led to biased results. There was also more than one-person coding transcripts from interviews and identifying themes which had the potential to introduce bias.

Due to the short five-week period, there wasn't enough time to follow up more than once on most contacted stakeholders. Many of the potential interviewees took too long to reply, which meant that many of them couldn't be interviewed and their perception was not taken into account. The interviewing team spent majority of their time waiting for email responses rather than actually conducting interviews. Therefore, not only was the time frame a limitation to the research, the small number of stakeholders that were interviewed was another limitation because it minimised the size of the population and therefore decreased the significance and generalisability.

One interview was not recorded and so although it was conducted, it could not be analysed leading to that stakeholders' perceptions to be excluded from our results.

The strengths of this study design were that due to the qualitative approach, real world perspectives from professionals in this area were able to be obtained. This allowed our results to be a medium for stakeholders; for their views to be expressed as a collective and act as a mechanism for change regarding synthetic cannabinoid use. Additionally, topics and ideas not initially considered were brought to attention during data collection and were able to be addressed in this report. The literature review was conducted in the most efficient way to minimise selection bias and thoroughly search each relevant database to find the most applicable studies. The interviews were transcribed to ensure continuity between results and analysis. Although the sample size of stakeholders was small, various organisations were contacted to ascertain a broad and accurate perspective.

Key Recommendations

The goal of these recommendations is to overall decrease the morbidity and mortality associated with synthetic cannabinoid use.

1. Change in Policy and Legislation

The main change in policy and legislation required is making synthetic cannabinoid use a health problem, rather than a criminal act. The findings from the stakeholder interviews suggest that an example of this could be legalising or decriminalising natural cannabis use and possession. This would provide a safer alternative to synthetic cannabinoids while mitigating the burdens of addiction. As seen in the methadone programme this course of action can substantially minimise harm. Potential revision of the National Drug Policy should also be considered. This policy did not come up in the literature review or the stakeholder interviews, however, it is relevant when regarding health and wellbeing of parties associated with synthetic cannabinoids

2. Improved Health Education

Improving health education encompasses many different avenues. It includes education of clinical and community healthcare workers around synthetic cannabinoids, targeted health messages for marginalized and vulnerable groups, addressing myths, reducing stigma, increasing mental health awareness and incorporating te reo Māori as well as Pacific Island languages. The messages should be positively focused. For primordial and primary prevention strategies these messages could be aimed at secondary schools. Secondary prevention ideas could include directing information to people who use synthetic cannabinoid around the use and health effects and the services available to them.

3. Community and Whānau Engagement

Working with communities that have high rates of synthetic cannabinoid use is a vital part of developing a positive relationship. Ultimately, this will lead to a more successful outcome in reducing synthetic cannabinoid associated morbidity and mortality. Helping communities can be achieved by educating and informing communities in a way that is appropriate to them; a tailored approach is recommended. The most effective places this could be applied include: schools, churches, bars, pubs and marae. In New Zealand, an important cultural aim should be to aid in reducing the implications of historical trauma. This can be done by helping people reconnect with their whakapapa through iwi, hāpu, marae and whānau affiliations.

4. Resources

Resources should be concentrated on health promotion and primordial prevention such as increased health education as mentioned above. This relies on policy makers focusing on the determinants of health to help tackle the inequities associated with synthetic cannabinoid use. There also needs to be an increase to number of primary care interventions including the accessibility of general healthcare as well as drug and alcohol addiction services, rehabilitation programmes and mental health services. A crucial aspect of this involves ensuring the continuity of care for people who use synthetic cannabinoids. This prompts for better communication, collaboration and streamlined referrals between the various health services.

5. Further Research

There is limited New Zealand data around synthetic cannabinoids and the consequences around their use. Some conflicting findings between stakeholder perceptions and our literature review demonstrate the importance of this. One potential study that should be undertaken is interviewing people who use synthetic cannabinoids themselves, to ascertain their perspective and what they believe will be the most helpful intervention for them. An “Early Warning System” is currently being implemented in Auckland, which aims to notify all relevant services of new drug trends and provide advice when dangerous drugs are found (Duff 2017). This should be further investigated for its effectiveness and rolled out in other hubs around New Zealand. Goals of developing an antidote or more effective treatments for adverse effects and overdosing should be developed. Safer and less potent alternatives to synthetic cannabinoids should also be encouraged to minimise harm. These should also be evaluated for effectiveness.

Conclusion

Synthetic cannabinoids have recently become an area of increasing concern as they have caused significant morbidity and mortality for many New Zealanders. This research has provided a platform for future studies to be undertaken regarding synthetic cannabinoids and their use, especially in New Zealand. The main findings from our study show that there need to be changes made higher up in society, including governmental influence around legislation and resources, for there to be any improvement in the use of synthetic cannabinoids and minimisation of their harm. It would also be encouraged that the findings from this research are applied to other recreational drugs that have severe adverse effects, so that harm from emerging illicit drugs can be minimised and contained as quickly as possible.

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Appendixes

Standardised Stakeholder Email

To whom it may concern,

We are a group of fourth year medical students from the University of Otago. As part of our studies, we are undertaking a Public Health research project about the effects of Synthetic Cannabinoids in the Wellington area. More specifically, we are interested in hearing from major stakeholders in the area that are involved with the support, justice and rehabilitation related to all things Synthetic Cannabinoids.

Thus, if possible we would be keen to meet up with someone from your organisation that would be most suitable to interview.

We look forward to hearing from you in this respect.

Kind regards

4th year medical student public health team

Template for Stakeholder Interviews

Hello, I'm _____; I arranged to meet with you now to talk about your thoughts on the effects of synthetic cannabinoids in the greater Wellington region. Before we start, I'd like to show you an information sheet and a consent form, and check to see whether you have any questions about the interview. Please take a few moments to read through this.

(Provide the respondent with the information sheet and the consent form and allow time for respondent to read in full).

You'll see that we're doing this work as part of a project for the Public Health module for 4th year medicine. As a participant in the research, you have the right to ask questions at any time, to decide you would prefer not to answer some questions, and to withdraw from the research at any time.

Do you have any questions before we start? Is it alright if I start audio recording now? My colleague would also take some written notes too, would that be okay?

(If yes, begin recording and ask respondent to sign the Consent Form).

6. What is your role within this organisation?
7. How long have you been working for this organisation
8. What is your organisation's perception of synthetic cannabinoid use?
9. Who is using synthetic cannabinoids? Are there any trends in the demographics of groups that you see using synthetic cannabinoids?
 - a. In your opinion, why do you think that are using it?

- b. Do you think there is a problem in the wider Wellington region? Why?
10. Are there any trends in the harm associated with synthetic cannabinoid use?
 11. What support systems/infrastructure does your organisation provide relating to synthetic cannabinoids?
 - c. What further information, resources and support does your organisation need to know to more effectively combat these issues?
 12. What further interventions can be put in place to minimise harm?
 - d. Prevention
 - e. Key messaging
 - f. Harm reduction
 - g. Education
 13. Do you have any further comments/suggestions you would like us to know?
- Invite participants to attend our report presentation and thank them for their time.

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