Safe Cannabis Use: Proposal of Harm Reduction Strategies

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To my family

whose unwavering and constant support

has guided me throughout this journey

Abstract

Harm reduction (HR) strategies aim to minimise the social and physical harm caused by negative behaviours. With the rise in cannabis use, HR policies are essential for managing associated risks and protecting public health. The aims of this study were to assess national and international HR policies related to illicit drug use and propose a HR strategy for managing cannabis use in Malta. Literature review was conducted using the PRISMA guidelines to identify existing HR policies for illicit drug use. The search was performed using HyDi® and Google Scholar® and was limited to peer-reviewed journal articles, published in English between 2015 until 2024. Articles describing HR strategies, their effectiveness, and the impact of drug policy changes on users were eligible for inclusion. A brochure was developed to educate the public on safer cannabis use. Twenty-eight articles were deemed relevant to the study. International HR strategies identified included supervised consumption rooms (n=5), opioid agonist therapy (n=5), take-home naloxone (n=2), needle and syringe programmes (n=3), cannabis social clubs (n=2) and drug checking services (n=3). Strategies to prevent normalization of cannabis use and minimise its harm, such as educational programmes (n=2) and HR guidelines (n=3) were identified. Strategies implemented mainly regulated the use of cocaine (n=1), cannabis (n=9) and opioids (n=9). Nine articles focused on HR across a range of illicit substances. HR strategies, have been effective in reducing the spread of infectious diseases, minimising public disturbances, decreasing overdose fatalities, and promoting safer drug use. Educational programmes, particularly those targeting youths, were successful in raising awareness about the risks of drug consumption. Despite challenges related to confidentiality concerns and stigma, HR strategies demonstrated potential in reducing risks and promoting safer decision-making among users. The brochure developed for this study is a step towards accessible, evidence-based information on safer cannabis use. The brochure aligns closely with international HR strategies by outlining safer use practices and raising awareness

on risks associated with cannabis consumption. Future work should focus on developing targeted public health campaigns, expanding the scope of local cannabis associations, and reforming local policies to address gaps in regulation.

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List of Abbreviations

ARUC	Authority on the Responsible Use of Cannabis
CB1	Cannabinoid Type 1
CBD	Cannabidiol
CHRA	Cannabis Harm Reduction Association
CSC	Cannabis Social Club
EUDA	European Union Drug Agency
HBV	Hepatitis B virus
HIV	Human immunodeficiency virus
HR	Harm Reduction
HRI	Harm Reduction International
NHRC	National Harm Reduction Coalition
NSP	Needle and Syringe Programme
OST	Opioid Substitution Treatment
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SCS	Supervised Consumption Sites
THC	Tetrahydrocannabinol
THN	Take Home Naloxone

Chapter 1

Introduction

1.1 Cannabis

Historically, cannabis was used in religious and ritualistic environments (Rafei et al., 2023). Throughout the years it has been impacted by social, legal, economic and cultural factors, and has become one of the top three most used illicit substance globally (Hodgson et al., 2019; Connor et al., 2021). Recent evidence indicated that cannabis use and dependence is notably higher among adolescents and young adults compared to older populations. This trend has been observed across diverse regions, including European countries, several African countries (e.g. South Africa, Kenya, and Ethiopia), as well as in parts of Asia (Ransing et al., 2021).

The name Cannabis refers to a group of flowering plants in the *Cannabaceae* family, most commonly *Cannabis sativa*, *Cannabis indica*, and their hybrids. The plant is made up of more than 500 distinct chemical compounds, including over 100 cannabinoids which are bioactive substances unique to cannabis (Rock & Parker, 2021). Among these, tetrahydrocannabinol (THC) is the principal psychoactive component responsible for producing the characteristic "high" sought by recreational users. THC exerts its effects mainly by binding to the cannabinoid type 1 (CB1) receptors in the brain's endocannabinoid system. This receptor is responsible for regulating an individual's mood, memory, perception, and appetite (Volkow et al., 2014). The activation of the CB1 receptor alters neurotransmitter release, leading to sensations of euphoria, relaxation, altered time perception, and heightened sensory experiences. Other cannabinoids, such as cannabidiol (CBD), do not produce the intoxication effect which occurs with THC when binding to CB1. This is due to the CBD's lower binding affinity to the CB1 receptor. This absence of intoxicating effects has led to CBD being widely recognised for its therapeutic potential, with established medicinal applications in managing seizures, epilepsy, and alleviating chronic pain (Dabiri & Kassab, 2021).

Cannabis is most commonly consumed by smoking dried flowers, either in hand-rolled cigarettes such as joints or through water pipes known as bongs (Bedillion et al., 2022). Recent years, have also seen the emergence of several alternative methods of administration of cannabis including the inhalation of vaporised cannabis, using either dried flower or cannabis oil, commonly referred to as vaping, as well as the oral ingestion of cannabis-infused products, known as edibles (Romm et al., 2021).

Vaping involves heating cannabis to a temperature sufficient to release cannabinoids and terpenes in the form of an aerosol, without reaching the point of combustion (MacCallum et al., 2023). This can be achieved through dry-herb vaporizers or pre-filled cartridges containing cannabis oil, with the latter often used in portable pen-style devices. Since vaping avoids burning plant material, it typically produces fewer combustion-related toxins compared to smoking, although health risks remain, particularly with unregulated cannabis products as these may contain harmful additives (Chaiton et al., 2021).

Edibles refer to food or beverage products infused with cannabis extracts, usually containing THC, CBD, or a combination of both. Common examples include baked goods, confectionery, drinks, and gummies (Borg, 2020). Following ingestion, cannabinoids are metabolised in the liver before entering the bloodstream, a process that delays the onset of psychoactive effects, but prolongs their duration compared to inhalation methods (Chayasirisobhon, 2020). This difference in onset may influence an individual's choice in mode of use.

Adolescents and young adults in particular, are increasingly engaging in poly-modal consumption, whereby multiple forms of intake are used. (Meacham et al., 2018). The selected method of cannabis consumption significantly influences the onset, intensity and duration of the psychoactive effects experienced by the user (Florimbio et al., 2023). The

route of administration is closely linked to specific health outcomes, with differing risks associated with each method. For example, ingesting edibles eliminates the respiratory irritation and pulmonary damage linked to smoking or deep inhalation during vaping. However, the delayed onset of psychoactive effects following oral consumption may lead users to unintentionally overconsume in an attempt to achieve a more immediate 'high', thereby increasing the risk of adverse effects (Choi et al., 2024).

Over the past two decades, THC concentrations in cannabis products have increased significantly, raising several concerns regarding the associated health risks, particularly for frequent users. Higher THC potency has been linked to an elevated health risks especially in vulnerable groups such as youths and individuals with pre-existing mental health disorders (Stuyt, 2018).

1.1.1 Harm Associated with Cannabis Use

There is a common misconception among the public that cannabis is less harmful than other illicit drugs; as a result, its use has often been normalised. Cannabis consumption is linked to a range of psychological, physical and social harms (Volkow et al., 2014). Regular or heavy cannabis consumption, especially when started at a young age, has been associated with an increased risk of cognitive impairment, anxiety, depression, and psychosis (Volkow et al., 2014). Adolescents are particularly vulnerable due to their ongoing brain development, which can be adversely affected by cannabis' psychoactive components (Camchong et al., 2016). Long-term use can also impair attention, memory, and executive functioning, with some studies suggesting that these deficits may persist even after cessation, particularly for individuals who began using cannabis in their early adolescence (Duperrouzel et al., 2019).

Cannabis smoke contains many of the several harmful chemicals present in tobacco fumes. Physical repercussions include respiratory problems such as chronic bronchitis characterised by persistent cough, phlegm production, and wheezing (Tashkin, 2013). Some studies have suggested an elevated risk of acute cardiovascular events, such as myocardial infarction and arrhythmias, in those who consume cannabis (Dabiri & Kassab, 2021). Evidence remains inconclusive, as many studies are limited by other factors, including concurrent substance use, history of tobacco consumption and pre-existing health conditions along with genetics (Sanchez-Roige et al., 2022; van Amsterdam & van den Brink, 2024).

There are also concerns around an individual's dependency to cannabis and the withdrawal symptoms following cessation. Studies show that approximately 10% of cannabis users develop dependence, with higher rates among those who started using during their adolescent years or consume daily. Cannabis use has been shown to impair one's driving skills and increase the risk of motor vehicle accidents (Preuss et al., 2021). The use of cannabis can also result in several social consequences, including interpersonal conflicts with peers or family members, social withdrawal and reduced participation in supportive networks, as well as a failure to fulfil academic, occupational, or familial obligations. The extent and severity of these consequences vary depending on the country's degree of social stigma attached to cannabis use, the national drug policy framework, and the availability of supportive health and social services (Skliamis et al., 2020).

Social harms also extend to reduced education attainment arising from the negative impact that cannabis use has on academic performance (Hall, 2015). This is not only due to poorer class attendance but also because the use of cannabis decreases motivation, impairs attention, and results in learning and memory problems (Arria et al., 2017).

Additionally, whilst cannabis consumption can reduce a persons' stress in the short-run and thus positively impact productivity, chronic use can, both directly and indirectly create employment challenges (Popovici & French, 2013). Direct impacts on employment include the fact that chronic use of cannabis reduces focus and motivation at the workplace whilst indirectly cannabis use can lead to dismissals especially if the workplace or the country have strict prohibition of use (Pacheco-Colón et al., 2018; Hazle et al., 2020). A major social harm, particularly in regions with strict drug policies is the increased contact with the criminal justice system, as a user may be arrested and charged with drug offences (Hall, 2015) which in turn can further limit education and employment opportunities.

The rise in THC potency in cannabis products has been associated with a corresponding increase in the severity and frequency of adverse health outcomes, including cannabis use disorder, acute psychotic episodes, anxiety, cognitive deficits, and an elevated risk of developing schizophrenia in vulnerable populations (ElSohly et al., 2016; Manthey et al., 2022). Such developments highlight the necessity for cannabis regulation frameworks that consider both the potency of THC in cannabis products and the methods used to consume cannabis.

1.2 Harm Reduction: Concept and Principles

Harm Reduction (HR) is an approach adopted to lessen the detrimental effects of negative health behaviours, although it is not necessarily intended to result in their permanent elimination (Hawk et al., 2017). HR focuses on assisting individuals in making positive changes to their behaviour, without judgement and helps improve public health.[1]

[1]Rhodes T, Hedrich D. Harm reduction and the mainstream. In: Harm reduction: Evidence, impacts and challenges [Internet]. 10th ed. Luxembourg: Office for Official Publications of the European Communities; 2010 [cited 2025 Feb 14]. p. 19–33. Available from: https://www.emcdda.europa.eu/publications/monographs/harm-reduction_en

Winslow CEA in 1920 defined public health as a discipline aimed at preventing illness, prolonging life, and promoting health through coordinated efforts within the community. In this context, the notion of HR is clearly affiliated to that of promoting and improving public health.[2] HR applies for any action which poses risk to an individual and may therefore be applied across a range of public health domains. Common HR examples include the use of seat belts to minimise injury in vehicle collisions, nutritional HR to fight against obesity, setting the minimum age for intake of alcohol consumption, the use of nicotine patches for smokers, and promoting use of condoms to reduce spread of sexually transmitted diseases (Foy, 2017).[3]

Historically, HR in the healthcare setting can be traced back to the early 1900s with the Narcotic Maintenance Clinics in the Unites States. In the 1980s, during the epidemic of the human immunodeficiency virus (HIV) and hepatitis B virus (HBV), HR gained global prominence through the adoption of needle and syringe exchange programmes (NSP) curbing the spread of infections among people who injected drugs.[4] HR is prominent in the field of substance abuse where it deviates from the perception that drug use equivalates to harm (Hawk et al., 2017). It places the outcomes of substance abuse at the forefront, making them key targets for intervention and avoids labelling drug use as immoral and thus, illegal. Such interventions manifest themselves as policies promoting *"prevention, control, treatment, or care"* (Obot, 2007). While HR does not follow a

[2] European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). *Harm reduction: Evidence, impacts and challenges*. Scientific Monograph Series No. 10. Luxembourg: Publications Office of the European Union; 2010.
[3]National Drug Law Enforcement Research Fund (NDLERF). Interventions for reducing alcohol supply, alcohol demand and alcohol-related harm Final Report. [Internet]. Canberra (Australia): NDLERF; 2015 [cited 2025 Feb 15]. Available from: https://www.aic.gov.au/sites/default/files/2020-05/monograph57.pdf
[4]National Drug Law Enforcement Research Fund (NDLERF). Interventions for reducing alcohol supply, alcohol demand and alcohol-related harm Final Report. [Internet]. Canberra (Australia): NDLERF; 2015 [cited 2025 Feb 15]. Available from: https://www.aic.gov.au/sites/default/files/2020-05/monograph57.pdf

singular formula, the National Harm Reduction Coalition (NHRC) outlines 8 guiding principles in the context of drug use, on which HR policies may be based.[5]

The NHRC suggest that HR practices must acknowledge that, the use of drugs whether legal or illegal is embedded in society and thus, must be tackled accordingly. There are different methods of consuming drugs, with some being deemed safer than others. The NHRC emphasises that the criteria necessary for effective interventions should be based on improving the 'quality of life' of the individuals and the general community, rather than total elimination of substance abuse.

The NHRC calls for an approach which is free from discrimination, making its services available to all drug users and their communities, encouraging the participation of drug users in constructing new HR policies, suggesting that HR interventions be centred on drug users whilst giving them the opportunity to share their experiences amongst each other, and highlighting the fact that HR strategies will not produce uniform results for all drug users since not all individuals are able to tackle their drug-dependence in the same manner.

The NHRC stresses that in no way must HR policies undermine the harm caused by substance abuse. HR strategies are not aimed to promote the use of illicit substances but to minimise the harm caused to those who are suffering from addiction. To achieve favourable outcomes, HR strategies should be dynamic; adapting to the individual's specific situation.[6]

[5] National Harm Reduction Coalition (NHRC). Foundational principles central to harm reduction [Internet]. New York (America): NHRC; 2020 [cited 2025 Feb 16]. Available from: https://harmreduction.org/about-us/principles-of-harm-reduction/

[6] Harm Reduction TO (HRT). What is Harm reduction? [Internet]. Canada: HRT; 2022 [cited 2025 Feb 16]. Available from: https://harmreductionto.ca/what-is-harm-reduction?rq=challenges

1.3 Current Harm Reduction Strategies addressing Illicit Drug Use

A global effort has been made to set up HR in relation to illicit substances. The Harm Reduction International (HRI) first published the 'Global State of Harm Reduction report' in 2008. This biennial report evaluates the current state of HR across the world. In their 2024 publication, it was reported that around 49% of 190 countries with known injecting drug use have active HR services in place. [7]

The 2024 HRI report identified a modest overall increase in the availability of HR services between 2022 and 2024. According to the HRI, the number of countries implementing NSPs rose slightly from 92 in 2022 to 93 in 2024. Similarly, countries implementing drug consumption rooms increased from 16 in 2022 to 18 in 2024. Countries offering opioid substitution therapy (OST) increased from 88 to 94 over the same period. A minor decline was observed in the availability of take-home naloxone programmes, with 34 countries offering such services in 2024 as opposed to 35 countries in 2022.[8]

Although a modest increase in HR services has been observed, the 'Global State of Harm Reduction' report emphasises that this progress does not necessarily translate into improved outcomes for people who use drugs. Despite the formal inclusion of HR principles in national policies, criminalisation and punitive approaches to drug use remain prominent particularly in certain regions such as East Asia and Africa. These measures undermine the effectiveness of HR initiatives and propagate fear, stigma, discrimination, and barriers to essential health services (Sakha et al., 2015).

[7]Cook C. The Global State of Harm Reduction. Matters of Substance 2008 [Internet]. London: HRI; 2008 [cited 2025 Mar 17]. Available from: https://www.hri.global/files/2010/06/21/Cook-MattersOfSubstanceAugust2008.pdf
[8]Harm Reduction International (HRI). The Global State of Harm Reduction 2024 [Internet]. London (United Kingdom): HRI; 2024 [cited 2025 Mar 17]. Available from: https://hri.global/flagship-research/the-global-state-of-harm-reduction/

1.3.1 Harm Reduction Approaches Specific to Cannabis Use

Recent years have seen major shifts in global cannabis policy, with countries relaxing their prohibitive stance on recreational cannabis use. Some countries have moved towards complete liberalisation whilst others have been more conservative and opted for decriminalisation. Knowing the possible harms caused by such changes in regulations, countries have attempted to implement HR strategies to reduce the harm caused by the use of cannabis (Williams & Bretteville-Jensen, 2014; Rabiee et al., 2020).

Current harm HR strategies related to cannabis use include forbidding intoxicated driving in order to reduce cannabis-related vehicle collisions, with random roadside saliva testing serving as a key enforcement tool, raising public awareness of mental health risks linked to cannabis consumption, including conditions such as schizophrenia, and promoting edibles as a safer alternative to smoking to reduce respiratory damage. Public education initiatives can help in addressing knowledge gaps and increasing awareness of cannabis-related harms, which tend to be undermined (Kruger et al., 2020).

1.4 Challenges associated with Implementing Harm Reduction Strategies

There is evidence to support the positive outcomes that can arise with the use of HR strategies (Giesbrecht et al., 2017). Concerns and misunderstandings related to HR might result in obstacles which hinder the effectiveness of HR approaches.

A foremost concern is that HR strategies are not yet the first-line choice of healthcare professionals (Hawk et al., 2017). Practitioners feel uneasy using HR approaches instead of abstinence-only therapy as they fear that it might indirectly encourage drug use (Winer et al., 2022). HR faces considerable political opposition especially in countries whose federal policy is inclined towards punishing drug users, making it difficult to start up HR

strategies (Des Jarlais, 2015; Childs et al., 2021). Funding for HR services has also decreased in recent years, with money instead being pooled into ineffective drug law enforcement (Miovský et al., 2020).

Strict police surveillance around HR service areas has been shown to deter individuals from accessing support, as many drug users fear incarceration or legal repercussions. This environment of heightened monitoring undermines the effectiveness of HR by discouraging interactions with fundamental services aiming to reduce harm and promote public health (Tan et al., 2024). Inadequate financial and political support have made it more complex to maintain high-quality and accessible services for the long-term (Akiba et al., 2024).

Reaching HR services is not always feasible especially in poor countries, rural areas and larger cities where drug users would have to travel long distances in order to reach HR sites. Lack of transportation may dishearten individuals from attending consultations, interrupting their treatment and increasing the probability of relapse (Sakha et al., 2015). Financial constraints further increase this issue, as individuals who use drugs often experience economic hardship, making regular travel to HR facilities unaffordable. In some cases, the cost of the HR services themselves may also serve as a barrier, further limiting access to those who are most in need (Hall et al., 2023).

Individuals who use drugs may feel ashamed or embarrassed to seek assistance. Stigmatisation, both from close relatives and the community, can significantly discourage individuals from accessing support services (Sakha et al., 2015). Internalised stigma may further prevent drug users from making use of HR services, particularly when such internal stigma is heightened by societal stereotypes that portray them as dangerous or

unproductive. The fear of being publicly labelled as a drug user can act as a strong deterrent to engaging with clinics or support networks (Dee et al., 2024).

Service providers working in HR settings may experience "compassion fatigue," which can result in reduced empathy and understanding towards drug users, particularly when repeatedly engaging with the same individuals (Knaak et al., 2019). This emotional strain, combined with heavy administrative responsibilities and the complexity of addressing clients with multiple psychosocial challenges, can lead to burnout among substance use counsellors. Staff shortages and limited resources can negatively impact service delivery, as overburdened practitioners may struggle to maintain performance standards. Other contributing factors such as low wages, minimal employee benefits, and excessive workloads have also been cited as major drivers of workforce attrition within the HR sector. Such conditions may render HR environments less welcoming for clients, potentially deterring engagement (Kruger et al., 2024).

1.5 Cannabis Regulation in Malta

In 2018, the Maltese Parliament legalised cannabis for medicinal purposes, permitting its access to Maltese residents, upon the presentation of a prescription by a locally registered medical practitioner as regulated by the Drug Dependence (Treatment not Imprisonment) Act (Cap. 537).[9] Subsequently, in 2021, Malta became the first European country to decriminalise the recreational use of cannabis for adults aged 18 years and over, under

[9] Government of Malta. *Drug Dependence (Treatment not Imprisonment) Act* [Internet]. Chapter 537 of the Laws of Malta; 2014 [cited 2025 Mar 18]. Available from: https://legislation.mt/eli/cap/537/eng/pdf

the provisions of the Authority on the Responsible Use of Cannabis Act (Act No. LXVI of 2021).[10,11]

Under current legislation, a person of 18 years or older may be in possession of not more than 7g of cannabis, which amount is deemed to be held solely for personal use. Possession exceeding 7g, but below 28g, may result in an administrative fine ranging between €50 and €100. The law strictly prohibits the recreational use of cannabis in public areas imposing a fine of €235 in case of violations. The consumption of cannabis, both in a public or private setting, is forbidden in the presence of persons under the age of 18 years, an offence which carries a fine ranging between €300 and €500.[9,12]

The Act also established the Authority on the Responsible Use of Cannabis (ARUC), tasked with regulating and overseeing the non-profit cultivation and distribution of cannabis through registered cannabis associations. ARUC is responsible for issuing licences for cannabis associations, monitoring compliance to issued regulations, promoting HR, and ensuring that cannabis use remains confined to safe, private, and adult-only settings.[13]

1.5.1 Cannabis Harm Reduction Associations

Following the decriminalisation of cannabis, Malta has set up Cannabis Harm Reduction Associations (CHRAs) with the aim of eliminating the illegal cannabis market. Colloquially referred to as ‘cannabis clubs', CHRAs are non-profit organisations licensed by the ARUC, whose focus is on minimising harm caused by the circulation and

[10] Bąkowski P. Recreational Use of Cannabis Laws and Policies in Selected EU Member States [Internet]. 2023 [cited 2025 Mar 18]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/749792/EPRS_BRI%282023%29749792_EN.pdf
[11] Government of Malta. *Authority on the Responsible Use of Cannabis Act* [Internet]. Act No. LXVI of 2021 [cited 2025 Mar 18]. Available from: https://legislation.mt/eli/act/2021/61/eng
[12] Cannabis laws in Malta [Internet]. 2023 [cited 2025 Mar19] Available from: https://cannabisclubs.mt/laws/
[13] Authority on the Responsible Use of Cannabis (ARUC). Official Website [Internet]. [cited 2025 Mar 19]. Available from: https://aruc.mt/

consumption of poor-quality cannabis. These organisations sell cannabis products which would have been tested for pollutants, including synthetic substances and bacterial contaminants. CHRA is required to assist the ARUC in promoting HR services, providing information about safe cannabis use and responsible cultivation without promoting the use of cannabis. Currently, there are 17 operational CHRAs across Malta.[14]

It is important to note that, despite the increase in cannabis use, the CHRA has a limited membership base that does not meet the rising demand. Clients must pay a membership fee to join the CHRA, which may act as a barrier for some individuals who might be seeking access. The legislative framework only allows the distribution of dried cannabis flowers or seeds to members of CHRAs and thus, the availability of other quality-controlled modes of use is limited. It is also important to note that whilst the purchase of cannabis products should be done in-person, on-site use is prohibited. Upon dispensing cannabis products should be sealed in tamper-evident and child-restraint packaging with appropriate labelling that includes health cautions. Promoting CHRAs through advertisement including social media is strictly forbidden.[15]

1.5.2 Current Status of Cannabis Use

The *'Drug Situation and Responses in Malta'* report (2024), issued by the Ministry of Social Policy and Children's Rights, reveals that cannabis was the main substance of use for 14% of the individual's seeking treatment for drug addiction in 2023, compared to 9% of the individuals in 2003. This increase in percentage reflects the ongoing rise in cannabis use, particularly among individuals who already use other drugs. The report

[14] Grima T. Understanding Malta's Cannabis Harm Reduction Associations (CHRA) [Internet]. D Vape Store. 2025 [cited 2025 Mar 20]. Available from: https://cannabisclinicsmalta.com/blogs/news/understanding-maltas-cannabis-harm-reduction-associations-chra?srsltid=AfmBOoox_2cwKcG7uAnm7mv_6ymSO5DwexUDBUA7nj0eFXVhnJ1MQZvM

[15] ARUC Licensing Guidelines – ARUC [Internet]. Aruc.mt. 2023 [cited 2025 Mar 21]. Available from: https://aruc.mt/licensing-guidelines-2/

evaluates the trend in cannabis hospital admissions. Emergency admissions due to cannabis-related issues saw a dramatic increase of approximately 155% between 2016 and 2017. Admissions continued to increase but at a slower pace until 2019, from which point a decline was noted until 2021. This downward trend was overturned between 2021 and 2022, with a 344% rise in admissions, which was followed by a further 35% increase between 2022 and 2023. Whilst data indicates an increase in cannabis-related admissions; it does not specify the exact reasons for hospitalisation such as whether it was due to acute intoxication, mental health issues, or other cannabis-related health concerns. This lack of specificity limits the ability to fully understand the health burden of cannabis use in the local scenario and hinders the development of targeted HR and public health interventions.[16]

1.6 Aims

This study aimed to assess existing national and international policies and procedures associated with the use of substances of abuse and to develop a HR measure in relation to cannabis use.

[16] The Drug Situation and Responses in Malta 2024. [Internet]. Europa.eu. 2024 [cited 2025 Mar 20]. Available from: https://www.euda.europa.eu/drugs-library/drug-situation-and-responses-malta-2024_en

Chapter 2

Methodology

2.1 Study Overview

This study was carried out to explore existing HR strategies associated with illicit drug use and to identify cannabis-related HR strategies suitable for the Maltese context. The study focused on a qualitative literature search reviewing existing local and international literature related to HR strategies for illicit drug use, both internationally and locally. The outcomes of this literature review led to the development and validation of a HR brochure designed with the aim of educating the general public about safer cannabis use. Feedback from a validation panel supported the finalisation of the brochure, which was subsequently prepared for dissemination through community pharmacies.

2.2 Ethics Approval

The study was registered with the Faculty Research and Ethics Committee prior to commencement with the application ID of MED- 2024-00071 (Appendix 1).

2.3 Literature Search on Harm Reduction

Literature search was conducted to better understand drug use and its implications for public health, with the purpose of examining HR strategies primarily in relation to illicit drug consumption, exploring attempted HR approaches involving cannabis, and reviewing the current regulatory systems for cannabis use in Malta. The search engines used were mainly Google Scholar® and HyDi®. Open access and peer-reviewed articles published between 2015 and 2024 were reviewed. Legislative documents and policy reports were consulted to provide accurate and up-to-date information on the regulatory framework for cannabis use in Malta.

2.3.1 International and Local Harm Reduction Policies with Illicit Drug Use

Literature review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method to compile a collection of information about existing HR policies associated with illicit drug use across countries (Page et al., 2021). Focus was placed on identifying (i) internationally implemented HR policies associated with the use of illicit drugs and (ii) the success of such HR strategies.

The search was initially carried out using HyDi®. As HyDi® yielded no articles on local HR strategies, Google Scholar® was used to identify relevant Malta-specific studies. Open and closed access, peer reviewed journal articles, published in English were utilised. Results were filtered using the following options: 'Full text online' and 'English'. Only journal articles published between the years 2015 and 2024 were used. The keywords applied for the identification of international HR polices were the following: 'harm reduction policies'; 'risk reduction'; 'cannabis' and 'illicit drugs'. The keyword 'in Malta' was later included to extract articles specific to local HR strategies.

Publications related to (i) HR strategies and their effectiveness and (ii) changes in drug policies and their impact on drug users were considered for this study. Due to the limited existing literature available for HR strategies in Malta, articles on drug policies across European countries with mention to drug policies in Malta, and grey literature including reports issued by the European Union Drug Agency (EUDA) were also taken into consideration. Articles identified as eligible for this study were categorised according to author and date (Appendix 2).

2.4 Review of Findings

HR policies applicable in different countries were identified and compared. Study settings including the country in which the HR policy was implemented, participant

characteristics such as age and drug use history were considered. Social and cultural factors were also evaluated, including the financial background of individuals accessing HR services, the role of family support, and the stigma associated both with drug use and with the utilisation of HR services. Additional contextual consideration included the legal or prohibitive stance of the country, which significantly influenced the ease of acceptance and overall effectiveness of HR interventions. These factors were analysed to determine the relevance and applicability of international HR strategies to the Maltese setting. An educational brochure aimed at encouraging safer cannabis use was developed based on the identified gap in current local HR strategies.

2.5 Development and Validation of a Cannabis Harm Reduction Brochure

A brochure was developed for dissemination across community pharmacies in Malta with the objective of educating the general public about HR strategies for safer cannabis use. The brochure was developed using *Canva*® and included a concise introduction to the concept of HR, evidence-based tips for safer cannabis use as well as general information on cannabis including the relevant local legislation regulating its use.

To ensure the brochure's clinical accuracy, relevance and clarity, a validation panel was established. The panel consisted of 2 academic pharmacists, 2 practicing community pharmacists and 1 layperson. Panel members were contacted via email and provided the brochure in *.png format*. The selected panellists were asked to evaluate the material in terms of content accuracy, comprehensiveness of HR messaging, readability, and suitability for the intended audience. Following the validation process and incorporation of suggested revisions, the finalised brochure was distributed across three participating pharmacies to support informed, safer cannabis use within the community.

Chapter 3

Results

3.1 Screening Outcomes from Literature Searches

A total of 1,073 articles were identified from the Hydi® database, and 41 articles were identified through Google Scholar®. Of these, 28 articles were deemed relevant for this study (Figure 3.1).

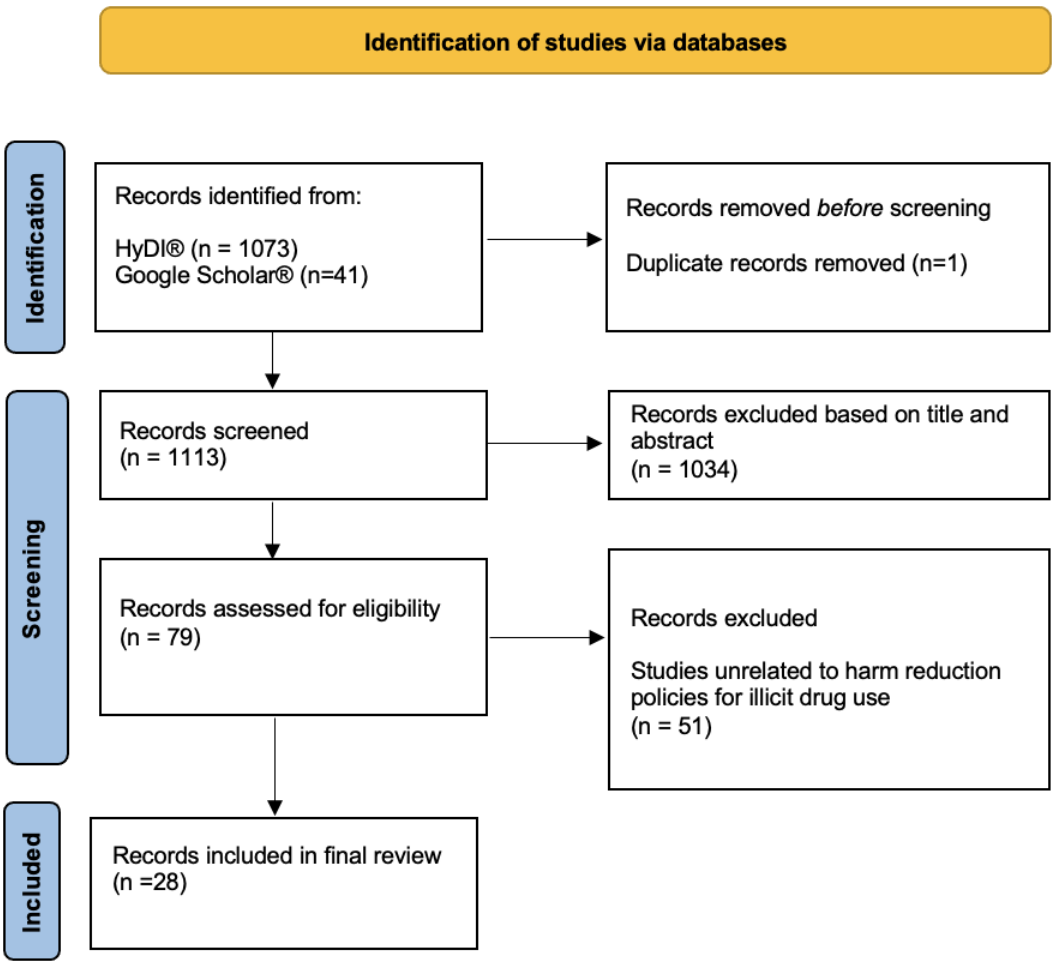

Figure 3.1 PRISMA scheme for international and local harm reduction strategies

The majority of the studies identified focused on the harms caused by illicit drug use (n=26), analysed the effectiveness of HR strategies to control negative drug behaviour (n=24) and suggested means for improvement (n=10). In addition, some of the studies investigated the willingness of drug users to make use of HR services, taking into account

the several challenges they face (n=6). These studies also suggest that such barriers encountered by drug users may reduce the success of HR efforts. The purpose of HR in the reviewed studies primarily focused on strategies for managing illicit drug use, apart from cannabis social clubs (CSCs), which addressed HR specifically for cannabis consumption. A section was also included on the Maltese regulatory framework for cannabis use, with particular focus on the work of the ARUC and CHRAs, to provide context for the local setting.

3.2 International Harm Reduction Strategies associated with Illicit Drugs

Literature searches resulted in a collection of different HR strategies implemented across the globe. Canada followed by the United States of America, have emerged as the most frequently referenced countries in the selected studies, with these countries being mentioned in 10 and 4 articles respectively. Other countries identified as having adopted HR strategies included Uruguay (n=1), India (n=2), Mexico (n=1), Israel (n=1), Spain (n=1), Portugal (n=1), France (n=2), Vietnam (n=1) and Australia (n=3).

The reviewed articles were carried out across varying settings. Twelve studies were conducted amongst drug users with the aim to identify the risks of drug use on public health and assess the benefits of setting up HR services. Seven articles investigated the perception of drug users regarding the concept of HR and explored their willingness to make use of such services. Five articles focused on evaluating the effectiveness of existing HR services whilst one article analysed the implications of governmental policies regulating cannabis use. With respect to the age demographics of drug users, the majority of articles (n=27) examined drug misuse among individuals without restricting the age of participants, with only 1 study specifically focusing on drug use amongst adolescents.

Most of the HR strategies that were identified aimed to limit drug use harms by offering assistance and guidance to drug users. These included set ups such as supervised consumption rooms and supervised inhalation sites (n=5), both of which providing a clean, safe, medically supervised environment for drug users to make use of drugs whether by inhalation or injection. Similarly, the establishment of cannabis social clubs (CSCs) (n=2) was noted, offering controlled spaces for cannabis use amongst registered members, was noted. Drug checking services (n=3), mainly available in festivals or clubs were also identified. These point-of-care services offer individuals the means to verify the composition and pharmacological effects of the drug they would have purchased. HR was also put into practice through apps to monitor drug use patterns (n=1).

Other HR strategies included take-home naloxone programmes (n=2) heroin assisted treatment (n=2) and opioid agonist therapy (n=3) where opioid dependence is managed by prescribing substitution drugs, such as methadone or buprenorphine. Articles also analysed educational programmes set up by the government (n=1) or non-profit organisations (n=1), HR guidelines for cannabis use (n=2) as well as needle and syringe programmes (n=3) providing free sterile syringes for people who inject drugs.

3.2.1 Supervised Consumption Sites

Supervised consumption sites (SCS) allow for the monitoring of drug users whilst they consume drugs. The sites described in the selected articles allowed for both inhalation and injectable drugs although studies suggested that the occurrence of supervised injecting was more common. Across the 5 articles, SCS were consistently shown to be effective in minimising overdose-related harms. SCS were emphasised as valuable hubs for disseminating health information, educating individuals, and facilitating access to broader HR or treatment services (Groves, 2018).

The establishment of such spaces often require lengthy and time-consuming procedures as described by Patterson et al., (2018) and Cortina et al., (2018). Cortina et al., (2018) highlighted the fact that although SCS are available in British Columbia and Ontario they are only legal under provincial law but are not exempt from federal drug laws, thus creating uncertainty about their legal status. Wallace et al., (2019) presented the idea of developing temporary overdose prevention sites to address public health emergency as an alternative to permanent SCS in order to overcome the stringent and bureaucratic legal approval processes.

Prior to the availability of SCS in France, a strategy attempted in France consisted of training sessions promoting safer injecting led by two non-governmental organisations (Jauffret-Roustide et al., 2023). These training sessions involved drug users injecting drugs in the presence of a trained worker and a volunteer. The two personnel were tasked with monitoring the actions of the drug user in order to identify any negative practices. Following each session the three individuals would then discuss any risks that the drug user was noted to be exposed to, as a result of the individual's injecting behaviour. Such method enabled the identification of unsafe techniques that could lead to blood borne infections or increased risk of overdose. Monitoring during use also allowed for tailored guidance which may be better understood by the users themselves. Jauffret-Roustide et al., (2023) highlighted that HR should be a compromise between informing individuals and recognising their ongoing need to use.

3.2.2 Cannabis Social Clubs

Although only a limited number of studies have examined CSCs, findings highlight their growing relevance and potential impact. CSCs are private non-profit organisations that provide a protected space where users may purchase and make use of cannabis on-site, together with other users whilst socialising. In order to access such facilities, users must

be members of the organisation. CSCs also offer a safe source for the purchasing of cannabis, thus ensuring that the product is both of good quality and of legal standard.

Two studies were identified in relation to CSCs. Gagnon et al., (2023) explored the role of CSCs in reaching cannabis users, emphasising their potential in engaging vulnerable populations was examined. In this study conducted in Spain, it was identified that most members frequented CSCs for a short term, averaging a period of 22 months. Approximately 80% of the members were male while women, though underrepresented, tended to maintain longer memberships and used cannabis less frequently. Older adults and medical users also had longer memberships and higher purchase rates, indicating their preference for safer, regulated use. The majority of the members only procured small amounts of cannabis, with those purchasing more than the average, often doing so for therapeutic purposes. Additionally, Gagnon et al., (2023) supported the notion of CSCs as important social spaces, attracting members for interaction and support. There was no clear correlation between membership duration and increased cannabis use, supporting the idea that CSCs may contribute to HR. Factors such as accessibility, cost, and ongoing legal ambiguity continue to influence both membership and attendance patterns.

In the other study identified, Obradors-Pineda et al., (2021) carried out a survey across 15 CSCs in Catalonia. Notable gaps were identified in the provision of essential HR services. Key shortcomings included the absence of routine dissemination of risk-related information, limited access to structured health support for general members and the lack of laboratory testing of cannabis products used within the clubs. These findings suggest that despite the potential of CSCs as community-based HR settings, many lack vital resources which are needed to support informed and safer cannabis use.

3.2.3 Drug Checking Services

Two of the selected articles discussed drug checking services implemented outside of festival venues (Groves, 2018; Mema et al., 2018). Both articles described systems in which substances could be tested on voluntarily bases by partygoers or drug users, with real-time results being displayed on screens (n=1) or anonymously made available on the event website (n=1). Both studies highlighted the fact that when presented with unknown or harmful drug content, users often opted to discard the substances altogether.

It was also noted that such services are particularly common in European countries although they are also available in the United States. Drug testing is frequently carried out by non-profit organisations, very often requiring collaboration with event organisers to ensure efficient and effective functioning. In some cases, collaboration with local healthcare systems and the police force may result in additional benefits, contributing to broader public health surveillance through the identification of emerging drug trends as well as potentially dangerous substances in circulation (Groves, 2018).

One other article discussed the effectiveness of Fentanyl test strips in preventing overdose. This study analysed drug users' behaviour after testing their substance for the presence of fentanyl. The study identified that drug users were more likely to change their drug behaviour (for example, not using, injecting slower or snorting instead of injecting) if their substance tested positive for fentanyl (Peiper et al., 2019). Fentanyl test strips were distributed by a non-profit organisation underscoring the pivotal role such organisations play in HR. Non-profit organisations facilitate access to HR services especially where government initiatives are underdeveloped or constrained by limited resources (O'Gorman & Schatz, 2021).

3.2.4 Opioid Substitution Therapies

Three articles examined the use of OST as HR strategies for managing opioid dependence. Two articles involved the distribution of methadone (n=2), while 1 article assessed the use of injectable diacetylmorphine to treat opioid dependence. Burgos et al., (2018) assessed the costs associated with providing OST specifically methadone in Mexico. Kermode et al., (2020) evaluated the effectiveness of OST in India, specifically public methadone clinics, although buprenorphine is also available nationally. Bardwell et al., (2023) focused on the availability of injectable opioid agonist treatment in rural British Colombia. All 3 studies highlighted the benefits of OST in managing opioid dependence and overdose risk.

The study by Burgos et al., (2018) compared OST offered by private and public organisations, finding only minimal variation in charges between the two and thus indicating similar pricing models. While prices were affordable for upper middle-class income earners, the study highlighted that many opioid-dependent individuals come from low-income backgrounds. As a result, even relatively affordable OST may still be financially inaccessible to those most in need. The study also indicated that OST in Mexico remained cheaper than in higher income countries such as China or across Europe. Burgos et al., (2018) also noted that OST clinics, especially private clinics, are often subject to police raids. Such raids cause treatment disruptions, which are in turn associated with a greater probability of relapse. It was concluded that revised drug policies along with enhanced police training, can minimise mistreatment towards drugs users and encourage them to either initiate or continue their treatment.

Kermode et al., (2020) obtained data from surveys and questionnaires distributed amongst clients of methadone clinics with the aim of identifying whether OST succeeded in assisted drug users in improving their mental and physical health, social behaviour and

the overall likelihood of overcoming drug dependence. Results were positive and encouraged the expansion of such HR strategies. Key factors affecting the duration of participation at methadone clinics and the reasons for dropouts were also identified, with the latter being mainly related to the extent of family support and the lack of knowledge about methadone. These barriers hinder OST effectiveness.

Bardwell et al., (2023) investigated the effectiveness of injectable OST in rural areas. The identified OST services were provided on-site at SCS. One clinic was also identified to offer take home doses. The study assessed the accessibility of OST for rural drug users. A major challenge identified in such situations was the distance to OST clinics. Homeless participants living in shelters often found OST more accessible due to their proximity, whereas those residing in tents or in the outskirts of town reported difficulty in reaching clinics, particularly when experiencing withdrawal or intoxication symptoms. Some individuals chose to relocate closer to the clinics to improve their ease of access. An additional issue included the need for witnessed ingestion. This necessitated participants to visit the clinic several times a day, hindering them from holding other commitments, such as educational courses or employment. Positive relationships between the clinics' personnel and service users created a welcoming environment which encouraged continued treatment.

Good Samaritan Policies have also been implemented in various countries to support the work of HR facilities offering such services. These policies provide legal protections to individuals who request emergency medical assistance during an overdose, reducing the fear of arrest or prosecution and encouraging timely intervention. By fostering a supportive legal environment, Good Samaritan Policies help reduce fatal overdoses (Atkins et al., 2019).

3.2.5 Take-Home Naloxone

Naloxone has also been utilised as an overdose prevention. Two of the selected studies evaluated the effectiveness of naloxone distribution programmes. Lei et al., (2022) analysed such initiatives in Canada, where take-home naloxone (THN) kits were provided for free through a range of networks including health clinics, medical sites, nonprofit organisations, HR facilities, shelters and upon an individual's release from prison. Lei et al., (2022) attributed the feasibility of expanding naloxone distribution to the removal of the drug from the prescription list, which allowed broader access. Initially, naloxone kits were distributed solely to individuals who were at risk of overdose, but over time, eligibility was extended to include those prone to witness an overdose, including relatives and friends of drug users. This expansion significantly improved coverage, particularly in high-risk areas.

Similarly, Crowell, (2019) analysed the strengths and limitations of THNs. The study noted that while distribution efforts were effective, their impact could be undermined by a lack of knowledge on naloxone administration. It therefore emphasised the need for improved training not only for drug users but also for those responsible for distributing naloxone, including pharmacists and other frontline workers. Mental health support was recommended to assist individuals affected by overdose experiences, which can be traumatic and result in significant psychological impacts.

3.2.6 Needle and Syring Programmes

NSPs have been among the earliest HR strategies implemented globally (Windle, 2015; Groves, 2018; Saloner et al., 2018; Atkins et al., 2019; Jauffret-Roustide et al., 2023). Primarily aimed at reducing the transmission of HIV and other blood-borne infections, NSPs have long been recognised as a cost-effective and accessible intervention, particularly following the HIV epidemic. In addition to preventing disease transmission,

these programmes also offer educational support that can reduce the risk of fatal overdoses. However, as noted by Bonny-Noach et al., (2023), while NSPs are effective for individuals who inject drugs, they fall short in addressing the needs of non-injecting drug users, such as those who use cannabis, amphetamine-type stimulants, or hallucinogens. To overcome such challenges, very often NSPs have been provided in HR facilities such as consumption rooms of health clinics.

3.2.7 Educational Programmes and Harm Reduction Guidelines

Educational programmes (n=2) have also been implemented in some countries with the aim of educating the general public about the harms associated with drug consumption. In France the *Expériences Animées* programmes utilised animated short movies to educate students on the use of illicit substances and addictions aiming to stir away youths from making use of illicit drugs (Martin-Fernandez et al., 2020). Such programmes were particularly put into practice in schools, specifically targeting young individuals, since youths may have a greater interest in substance use. Similarly, following the legalisation of cannabis, Uruguay issued educational document aiming to educate the public on the risks of cannabis use. These documents provided recommendations on how to make use of cannabis safely and were issued to the general public, with the intention of reaching groups who were already making use of cannabis, irrespective of their age. Data has earmarked such strategy to be effective, with a positive increase in drug users' awareness of potential harms being noted (Barata et al., 2022).

In Canada a set of HR guidelines to help manage cannabis harms have been developed by Fischer et al., in 2011. It is noted that these recommendations have been issued significantly prior to the cannabis legalisation in Canada, which occurred in 2018. Fischer et al., (2011) based these guidelines on evidence in literature about the health risk of cannabis consumption. These recommendations recognize that harms increase with the

consumption of higher doses and with increased frequency of use and thus advocate for potency and limited use. Fischer at al., (2011) also reflect on the consequence of conducting certain daily activities, such as driving or operating machinery, whilst being under the influence of drugs. Other discussed recommendations include selecting safer methods of consumption, such as vaporisation or edibles over smoking, in order to reduce respiratory harm, avoiding synthetic cannabinoids which increase adverse effect risks, and avoiding the combined use of cannabis with tobacco or alcohol to reduce compounded health risks. Additionally, the guidelines promote abstinence during pregnancy. Fischer et al., (2011) also assesses which age group is at the highest risk when making use of cannabis. These guidelines are subjected to continuous analysis and updates to ensure that they remain relevant and continue to address emerging and evolving patterns of cannabis use (Fischer et al., 2022).

Promoting individual efforts to adhere to HR principles involves actively engaging and educating the public on managing cannabis consumption. Technology has been increasingly utilised to implement HR strategies through mobile applications; delivering accessible, real-time education and support aimed at empowering individuals to make safer choices and reduce cannabis-related harms. One example identified in the study by Moreno et al., (2021) is the *Check Your Cannabis* mobile application, which was developed in Canada, in 2019. This app serves as a digital health screener allowing users to assess potential harms and better understand the implications of their personal drug use patterns. By providing user specific feedback, this app functions not only as a self-assessment tool but also as an educational resource that raises awareness about the risks associated with cannabis use (Moreno et al., 2021).

3.3 Local Harm Reduction Strategies associated with Illicit Drug Use

The literature search conducted through Hydi® did not yield any article addressing HR strategies for illicit drug use in Malta. On the other hand, the literature search carried out using Google Scholar® yielded 2 articles which referred to local drug use. However, no study from Google Scholar® specifically discussed HR strategies implemented in Malta.

One article retrieved via Google Scholar® provided minimal insight on the perception of Maltese students towards medical cannabis use as opposed to Russian students. In this study, Siddiqui et al., (2022) highlighted a greater openness among Maltese students, attributing this attitude to the legalisation of cannabis use. The other article identified, briefly mentioned current local cannabis regulation noting that while possession and consumption of cannabis has been legalised for recreational purposes, restrictions regarding commercial supply and distribution are in place (Matheson & Le Foll, 2023). Both articles only offered limited references to Maltese context and provided minimal detail.

More comprehensive information on local HR strategies was obtained through grey literature, particularly from the EUDA's Malta Country Drug Report which was published in 2019.[17] The report noted that local HR is mainly focused on minimising harm associated with infectious diseases resulting from drug use. Such HR strategies included the provision of testing and counselling services for infectious diseases such as HIV and HBV, and the free distribution of needles and syringes. These HR services are offered at the sexual health unit in Mater Dei Hospital, the substance misuse outpatient unit in St Luke's Hospital and within the prison facility. Additionally, the EUDA identified a HR centre intended specifically for women who inject drugs. Set up by

[17] EMCDDA. Malta, Country Drug Report 2019. [Internet]. Lisbon (Portugal). EMCDDA; 2019 [cited Apr 21]. Available from:https://www.euda.europa.eu/publications/country-drug-reports/2019/malta_en

Caritas, this centre offers shelter and therapeutic services for women who are struggling to overcome drug dependence whilst also offering protection from domestic violence and sexual exploitation. Despite these initiatives, the EUDA notes a significant gap in HR strategies for drug use. EUDA points out that Malta lacks key HR interventions such as THN programmes, heroin assisted treatment and a drug consumption room.

A HR strategy identified during the search was the *TFAL Favur Ambjent Liberu* (T.F.A.L. 5) campaign implemented by the ARUC in collaboration with the Foundation for Social Welfare Services. This program delivers interactive educational sessions to Year 5 students, making use of PowerPoint presentations, online games, and an accompanying workbook. The T.F.A.L 5 campaign does not solely focus on drug use but takes a broader approach addressing 5 key modules including building self-esteem and coping skills, managing peer pressure and decision-making, introducing the concept of addiction and responsible medicine use, understanding drugs and their risks, as well as promoting the safe use of technology and awareness of gambling. Modules addressing addiction, decision making and drug use, provide students with age-appropriate knowledge about legal and illegal substances, the risks associated with their use, and the importance of making safe, informed choices. Together, these modules aim to strengthen life skills and promote and raise early awareness about substance use and related risks.[18]

The ARUC has also issued *Directive on Harm Reduction Practices* in 2024, outlining the responsibilities of licensed CHRAs in implementing effective HR measures. Under this directive, CHRAs are required to organise thematic workshops, talks, or other HR-focused activities at least twice a year for their registered members, addressing topics such as health and cannabis use, cultivation techniques, and social justice issues.

[18]Foundation for Social Welfare Services (FSWS). T.F.A.L. 5 - FSWS [Internet]. 2024 [cited 2025 Apr 22]. Available from: https://fsws.gov.mt/sedqa/t-f-a-l-5/

Associations must also provide access to educational materials that promote responsible cannabis use, including resources on risk reduction strategies, drug policy reform, and relevant legal or regulatory developments, supporting HR efforts. Booklets, papers, graphics, and other materials designed to encourage safer consumption practices should be readily available to members. To further reinforce responsible use awareness, a minimum of five ARUC-approved HR or social justice messages must always be displayed at the association's distribution site. This directive represents an important step in institutionalising HR within Malta's cannabis framework.[19]

3.4 Safe Cannabis Use: Harm Reduction Brochure

The brochure developed as part of this study was designed to address the lack of accessible information on HR with the use of cannabis noted during the research process. Its primary aim was to provide the Maltese public, particularly cannabis users, with easy access, to accurate, current, and practical information on safer cannabis use.

The brochure included a concise section explaining the concept of HR, helping readers especially cannabis users understand HR principles and its relevance. A brief overview of local cannabis legislation was also included to ensure that individuals were informed of current laws regarding cannabis use, along with their responsibilities as users under Maltese law. This component aimed to reduce the risk of legal repercussions by clarifying the boundaries of lawful use. The HR tips presented were adapted from the guidelines proposed by Fischer et al., (2011) and relevant literature aimed at identifying health risks associated with cannabis use (ElSohly et al., 2016; Chayasirisobhon, 2020; Preuss et al., 2021; Choi et al. 2024). These tips focused on strategies to minimise harm in day-to-day

[19]Authority for the Responsible Use of Cannabis (ARUC). Directive on Harm Reduction Practices. [Internet]. (Malta): ARUC; 2024 [cited 2025April 22]. Available form: https://aruc.mt/wp-content/uploads/2024/07/Directive-2-of-2023-v2.02.pdf

activities, such as moderating frequency of use, avoiding high-THC products, and reducing risks associated with using different methods of consumption. A small section was dedicated to informing readers about the health impacts of cannabis use, as well as any changes in health, noted when using cannabis, that may warrant professional referral.

Designed with accessibility in mind, the brochure employed reader-friendly language and visual aids to enhance engagement. By combining legislative information with practical HR strategies, the brochure aimed to empower individuals to make informed choices while minimising potential health and social harms. The finalised brochure is presented in Appendix 3.

3.5 Revision of Harm Reduction Brochure Post-Validation

The feedback gathered from the validation panel was thoroughly reviewed and used as a guideline for refining the content and design of the developed HR brochure (Appendix 3). Both the academic (n=2) and community pharmacists (n=2) found the brochure to be comprehensive however, both academic pharmacists, one community pharmacist and the layperson noted the need for further clarification in the HR advice provided. Revisions were therefore mainly aimed at improving the clarity and readability of the brochure for a general audience.

Recommendations provided by the academic pharmacists mainly focused on ensuring completeness of the content. These recommendations included specifying actions which lead to potential harms (n=2) and the inclusion of additional relevant information (n=1). Feedback from community pharmacists provided changes to ensure the brochure was suitable for individuals visiting the pharmacy. Amendments recommended included simplifying sentence structures (n=2) and enhancing the clarity of the HR tips being put forward (n=1). Modifications suggested by the layperson offered valuable perspective

regarding the ease of understanding including less use of academic jargon and improvement to the visual layout such as the spacing used and the alignment, placement and organisation of information.

Chapter 4

Discussion

4.1 Necessity for Harm Reduction for Cannabis Use in Malta

The results of the literature review highlighted a significant international effort to reduce drug-related harms through a variety of HR strategies. Countries such as Canada, Spain, France, and Uruguay have become the pioneers of identifying innovative and evidence-based approaches, including cannabis social clubs, drug-checking services, educational campaigns, and HR guidelines to tackle risks associated with cannabis use. For Malta, which has recently undergone cannabis reform, these findings offer both an exemplary model to follow as well as a note of caution.

There remains a notable gap in HR strategies specifically targeting cannabis use in the Maltese context. While recent local reforms have led to the legalisation of cannabis for recreational purposes and to the establishment of the ARUC, the lack of local literature and data suggest that official HR initiatives targeting cannabis are still limited or non-existent. The two academic articles identified via Google Scholar® offered minimal insight into Maltese HR practices and highlighted the fact that although cannabis possession has now been decriminalised, regulation targeting cannabis-related education, drug commercialisation, and safety remains limited.

4.2 Adapting International Harm Reduction Approaches to Local Realities

Addressing these gaps requires adapting proven international strategies to Malta's unique legislative framework, cultural attitudes, and resource capacities. Models such as CSCs, voluntary drug checking, and targeted public education have shown effectiveness abroad and could be tailored to strengthen local HR efforts. The following section examines how these interventions might be implemented in the Maltese context.

One of the clearest examples of internationally applied HR strategies for cannabis users is the implementation CSCs as seen in Spain. Research has highlighted the importance of providing drug users with safe and regulated spaces for consumption, as cannabis users consistently report a need for non-stigmatizing environments where they can use without fear of legal repercussions or social discrimination. CSCs can provide this desired environment, whilst also offering a community-based system for cannabis users to access cannabis (Obradors Pineda et al., 2021; Gagnon et al., 2023).

Undeniable similarity exists between the goals of CSCs and those of SCS which have been globally attributed for their effectiveness in protecting people who use drugs. While SCS typically focus more on drugs having a high overdose risk, the principles of safety, supervision, and access to health services can be adapted to fit the cannabis context. It is vital that if these types of clubs are to be set up in Malta, they do not merely replicate existing international models but instead be modified and expanded to address any existing limitations. For example, one notable shortcoming observed in Spanish CSCs is the lack of structured health interventions, such as systematic testing of cannabis for pollutants (Obradors Pineda et al., 2021). Ensuring the quality and safety of cannabis products should be a fundamental pillar of any CSCs. Initiatives to counteract this limitation might include the implementation of mandatory quality control measures and the development of lab testing protocols, ensuring quality cannabis is being retailed, and thus, not only safeguarding consumers but also establishing trust in the regulatory system (Pusiak et al., 2021).

CSCs have the potential to address a key gap in Malta's current HR framework by providing designated social spaces for cannabis consumption. While locally CHRAs are legally established and operational across the country, their scope does not extend to on-site consumption. Under existing legislation, cannabis users are prohibited from smoking

cannabis in the presence of other individuals, including within or near CHRA facilities. This restriction poses a challenge for individuals who prefer or benefit from a communal and supportive environment when consuming cannabis. Without such supportive, regulated spaces, users may be pushed towards solitary or illegal use, which can exacerbate social isolation, hinder safe practices, and increase exposure to risks such as unregulated products or unsafe consumption environments (Belackova et al., 2016; Gangon et al., 2023).

One must also consider the limitations within CHRAs, such as the restriction of selling only cannabis seeds for cultivation or dried cannabis flower for consumption. This excludes other modes of use, such as edibles or cannabis oils, thereby limiting access to a broader range of regulated and potentially safer cannabis products. CSCs themselves often face restrictions in providing edibles, as these products fall into legal grey zones or are subject to stricter regulatory requirements. While some CSCs may allow members to prepare edibles themselves using cannabis sourced through the club, this occurs informally and is not recognised as an official service (Pardal & Decorte, 2018; Obradors Pineda et al., 2021). Expanding CHRAs' services to include diverse forms of cannabis could address these limitations by providing a controlled environment where users have access to quality-assured, regulated products in multiple forms, which can be safely consumed within a supportive social setting. Such an approach not only broadens access to safer consumption methods but also reinforces the HR goals of CHRAs by reducing reliance on unregulated markets and promoting responsible use practices (Pardal et al., 2020).

The lack of publicly available information on the type of THC testing being carried out within CHRAs limits opportunities for identifying areas of improvement. Current protocols issued by the ARUC specify the permissible THC content of cannabis products

placed on the market; however, they do not indicate which analytical methods should be used, although testing is required to be conducted in laboratories operating under Good Manufacturing Practices.[20] Without standardised testing methods, there is a risk of inconsistencies in results, which may undermine product quality assurance. Establishing clear, standardised THC testing procedures, and ensuring that appropriate analytical methods are used, would strengthen consumer protection and enhance public confidence in the regulatory system (MacCallum et al., 2023).

The development of regulated CSCs would provide an environment, offering not only access to tested, quality-controlled cannabis but also a structured space where consumption can occur responsibly and under supervision. CSCs should not be viewed as replacements for CHRAs but rather as complementary extensions that broaden HR options. By integrating social consumption spaces into Malta's broader HR strategy, CSCs can reduce the risks associated with public use, promote safer consumption practices, and strengthen community support amongst users, whilst potentially reducing social harm especially due to societal stigma (Decorte et al., 2017).

Screening and early intervention actions are also essential components of cannabis HR. Implementing such initiatives allows for the identification of individuals who may be at risk of problematic cannabis use or experiencing adverse effects, enabling timely support through counselling, treatment, or referral to specialised services. By integrating these initiatives into healthcare and community settings such as pharmacies, early detection is facilitated, helping to prevent escalation into more severe substance use disorders. For instance, brief interventions delivered in SCS have proven effective in reducing harms

[20] Authority for the Responsible Use of Cannabis (ARUC). Directive 4-2, Standards for Service of Excellence Offered by the Public Administration to the Public and to Public Employees. [Internet]. (Malta): ARUC; 2022 [cited 2025 April 20]. Available from: https://publicservices.gov.mt/en/people/Pages/Directives.aspx

caused by harmful practices during drug use (Jauffret-Roustide et al., 2023). These structured conversations can be utilised to raise awareness about the risks associated with cannabis use and motivate behaviour change within a supportive, non-judgmental environment. Embedding screening and brief interventions into routine medical setting such as hospitals, in schools or workplace setting ensures broader reach and earlier assistance for individuals who may not seek help otherwise (Avalone et al., 2024).

The use of drug testing has been effective in assisting individuals in making informed decisions when using drugs.[21] Drug checking may be utilised by cannabis users to identify any pollutants in their supply before consuming it. Implementing voluntary drug checking services within CSCs may also provide several advantages. These include protecting users' health by allowing them to make informed choices as they enhance their knowledge about what they are consuming and increasing awareness of potential contaminants. The results obtained from drug testing may be documented and utilised to collate valuable public health data on circulating substances, sharing it effectively with government health entities. Regular testing could help monitor shifts in THC or cannabinoid content in locally consumed cannabis and potentially detect the emergence of novel or dangerous compounds in a timely manner (Obradors-Pineda et al., 2021).

Beyond voluntary testing, the implementation of randomised drug testing could serve as a useful tool to identify individuals under the influence of cannabis, particularly in specific environments such as workplaces or public safety environments. Screening and early intervention programs are vital components of cannabis HR, focusing on identifying individuals at risk of problematic use or experiencing adverse effects. These initiatives

[21] Larweh H & Nestadt D.Strengthening Public Health Surveillance of Illicit Drug Supplies through the Power of Community Drug Checking Programs [Internet]. Opioid Principles. [cited 2025 May 20]. 2024. Available from: https://opioidprinciples.jhsph.edu/drug-checking/

provide timely support through counselling, treatment, or referrals to specialized services, helping to prevent the escalation of cannabis-related harms. When integrated within healthcare or community settings, such programs facilitate early detection and intervention, reducing the likelihood of more severe substance use disorders. Randomised testing can help ensure compliance with regulations aimed at preventing individuals from engaging in certain activities such as driving themselves or others, working at heights or in construction sites, or operating heavy machinery or power tools, thereby reducing the risk of accidents and promoting safer consumption practices (Khashaba et al., 2017). Such measures may also assist in keeping cannabis users accountable for their consumption patterns.

Awareness of the possibility of being tested for substance use often motivates users to be more cautious about when and where they consume cannabis. This not only protects the individuals themselves, by minimising risks such as driving whilst under the influence of drugs, but also safeguards the general public from potential harm caused by the user's impaired behaviour (Camron et al., 2022).

For randomised drug testing to be effective, it must be paired with appropriate and proportionate consequences, such as warnings or fines, intended to discourage non-compliance, whilst protecting the individuals from "cruel or inhumane treatment" (Csete et al., 2016). Without a clear and enforceable framework that addresses the charges or penalties imposed as a result of a positive test result, the process would likely lose its credibility and impact. It is crucial that that enforcement does not become punitive as this could undermine HR principles or infringe on individual rights (Otiashvili et al., 2016).

Another form of HR which may be implemented locally is educating the general public about cannabis use and its harms. France's *Expériences Animées* programme, which uses

short, animated clips to engage youth in discussions about drugs, is as a promising low-cost and reproducible model (Martin-Fernandez et al., 2020). In Malta, where educational efforts around drug use, including cannabis, are traditionally prohibition-focused, such interventions could help reframe the conversation with youths in a more balanced, evidence-based, and in non-judgmental manner. Educational campaigns targeting safer cannabis consumption should be tailored to multiple audiences of different age groups, including youth, parents, new adult users, and tourists. Campaigns should be delivered through diverse channels such as social media platforms, influencer partnerships as well as integrated into school curricula. The use of visually engaging materials, such as posters, infographics, and short video clips, can be particularly effective in capturing the attention of today's audiences, especially in a social media-driven world where visual content is dominating information consumption (Jackson et al., 2018; Evans et al., 2020).

The 'Lower-Risk Cannabis Use Guidelines' by Fischer et al., (2011) further demonstrate how public education can play a central role in achieving effective HR. Follow-up research has examined their effectiveness (Fischer et al., 2022), showing that while awareness of the guidelines can increase knowledge and influence safer behaviours, their actual implementation often depends on the particular person's motivation and perception. Caulkins and Kilborn (2020) raise the important consideration that, since these are voluntary rather than legally binding measures, compliance may be inconsistent, particularly among high-risk or frequent users. For Malta, where cannabis regulation is relatively new, these guidelines could be adapted into targeted campaigns through CHRAs, ensuring that they are age-appropriate, culturally relevant, and backed by consistent evidence-based information (Decorte et al., 2017). Their voluntary nature would require strong community engagement strategies, and creative delivery methods even through social media. Additionally, to maximise adherence and impact it would be

best for the guidelines to be integrated into healthcare services provided to drug users (Khan et al., 2022).

Literature shows that Uruguay was the first country to legalise the production, supply and non-medical use of cannabis by adults. The issuance of educational documents on drug risks by the Uruguay government has also proved effective in increasing users' attention to the risks associated with drug use. Uruguay's national campaigns have also helped to manage and reduce the misuse of this substance. A key feature of Uruguay's model is the mandatory registration of cannabis users with the national cannabis regulatory authority, with the requirement to specify their chosen source of purchase. This system allows for close monitoring of consumption channels and ensures that cannabis sold meets strict quality standards (Barrata et al., 2021). This partially reflects the Maltese context with respect to CHRAs, which also require membership for legal cannabis access and conduct quality control, including THC content testing. While, similar to Uruguay, cannabis users in Malta may purchase cannabis through membership in a CHRA, local users remain anonymous, and the government has no direct role in managing these licensed supply chains (Barrata et al., 2022). CHRAs in Malta operate under a maximum membership cap, limiting the number of people who can join a specific association. Local reforms must be carried out for CHRAs to be made available to a larger cohort to be able to overcome the illicit market. [22]

4.2.1 Addressing Barriers to Harm Reduction in the Maltese context

In rural British Columbia, Bardwell et al., (2023) evaluated the success of injectable opioid agonist treatment based on how effectively it reaches all areas of the country. Long distances limited the availability of such service especially amongst vulnerable groups

[22] ARUC Licensing Guidelines – ARUC [Internet]. Aruc.mt. 2023 [cited 2025 Mar 21]. Available from: https://aruc.mt/licensing-guidelines-2/

(Bardwell et al., 2023). Accessibility to HR services varied significantly between countries and has been considered as a challenge for many. Malta's small geographical size and the availability of free public transport offer a significant advantage when it comes to overcoming these barriers. This should not however undermine the efforts made to ensure that HR services are not limited to central areas of the island but are appropriately distributed and accessible to cannabis users across the country, including Gozo.

Stigmatisation and fear of judgment have consistently been barriers to effective HR implementation across various international settings. Despite a decrease in the Maltese negative perception towards recreational cannabis use especially following decriminalisation, similar stigmatising attitudes may persist among certain members of society (Sciberras, 2023). Considering Malta's small size and its closely-knit society, the fear of stigmatisation is heightened by concerns over confidentiality breaches. Drug users may be apprehensive of being recognised when accessing HR services, thereby increasing the fear of social labelling. Such factors can deter individuals from seeking and utilising vital support services. To counter this, Malta must invest in anti-stigma campaigns targeting both the general population and more specifically, healthcare professionals. Campaigns should include testimonials from users, family members and service providers to provide real life situations which can help in dismantling harmful stereotypes and instil a sense of understanding. Emphasising the importance of compliance with the General Data Protection Regulation to safeguard personal data amongst staff members is also essential (Mocydlarz-Adamcewicz, 2021). This applies not only to the handling and management of users' information but also the risk of unauthorised disclosure of information outside of working hours or when healthcare professionals or service

providers leave their role. Such practices would ensure that users feel safe and at ease when asking for assistance or requesting support at HR facilities (Ranta et al., 2024).

In his study Crowell, (2019) identified inadequate training as a significant obstacle to effective implementation of THN services. His study recommended comprehensive training for both users and service providers to ensure naloxone is administered correctly and confidently in overdose situations, thereby enhancing the overall effectiveness of HR interventions. Analysing challenges in HR set ups, Knaak et al., (2019) discussed the negative impact on the quality of service being provided due to empathy fatigue among HR workers who repeatedly encounter the same individuals without observing progress. In Malta, where the HR workforce is relatively limited, and the likelihood of encountering the same users multiple times is increased due to the country's small size, it is essential to ensure proper staff support is provided through structured training, fair remuneration, and regular supervision. Strengthening collaborations between public and private service providers, along with the involvement of trained volunteers, may also help distribute responsibilities more effectively and prevent burnout (Di Pietro et al., 2024).

Canada provides a positive example of policy reform, where the elimination of naloxone from the prescription list greatly increased access and enhanced the effectiveness of overdose responses (Lei et al., 2022). Legal frameworks must be amended in favour of HR objectives to ensure their successful implementation. In contrast, federal policies in the U.S. often undermine HR by criminalising drug use rather than addressing it as a health issue (Des Jarlais, 2015). Similarly, Burgos et al., (2018) observed that OST clinics, particularly private ones, are frequently targeted by police searches, which deters drug users from accessing these facilities due to fear of legal repercussions. This disruption often leads to premature discontinuation of treatment, which is associated with

a higher risk of relapse. Brugos et al., (2018) concluded that re-evaluating punitive drug policies and providing better training to law enforcement and police authorities could help reduce the mistreatment of drug users. Malta's recent legislative shift toward decriminalisation offers an enabling environment for HR strategies; however, continued legal clarity is needed in regulations surrounding cannabis possession, cultivation, and transportation. Drug policies must be clearly defined to prevent confusion or unintentional criminalisation (Greer & Ritter, 2019; Moskalewicz et al., 2021).

An essential component of successfully adapting these HR models in Malta is the active engagement of all relevant stakeholders.[23] Collaboration between government bodies, law enforcement, healthcare providers, cannabis users, and community organisations is vital to ensure that policies and services are practical, effective, and culturally appropriate. Involving cannabis users in the design and implementation of HR services ensures that interventions meet their real needs, builds trust, and helps reduce stigma. Providing healthcare and social service professionals with comprehensive training will enhance the quality and impact of these interventions. Additionally, public education initiatives should extend beyond users to include families and the broader community, in order to foster greater societal acceptance and in turn lower barriers to service access (Allen et al., 2023).

As cannabis reform becomes a reality in Malta, this research highlights the critical need for a structured, health-based approach that prioritises HR as more than a hypothetical notion. While changes in legislation indicate progress, international evidence makes it

[23] Harm Reduction International. The Global State of Harm Reduction 2020 [Internet]. London: Harm Reduction International; 2020 [cited 2025 May 25]. Available from: https://www.hri.global/global-state-of-harm-reduction-2020

clear that if it is to be truly effective, this must be accompanied by practical, accessible, and well-supported HR strategies.

4.3 Potential Harm Reduction Strategies for Cannabis use in Malta

Malta is currently standing in a unique position; it has the opportunity to adapt these international lessons to its own scale and setting. In contrast to other countries, Malta's small geography, free public transport, and centralised public health system provide distinct advantages in reaching users. However, challenges such as social stigma, staff burnout, limited specialised services, and a cultural legacy of prohibition must be actively addressed. As the country continues to work on its post-legalisation framework, Malta has the opportunity to be at the forefront of the move beyond legislative reform, and set an exemplary practical, evidence-informed HR methods tailored to a small nation's needs.

The following HR strategies are proposed to enhance safe cannabis use and protect public health in the local context.

Table 4.1:Recommended Harm Reduction Strategy; Educational Campaigns

Recommended Harm Reduction Strategy; Educational Campaigns	
Harm Reduction Strategy	Safer Cannabis Consumption Campaigns
Objective	Educating the public on safer cannabis consumption; promoting informed and responsible cannabis use to reduce health risks
Description	Educational campaigns focusing on: - Promoting better practices for consuming cannabis (e.g. the setting, dosage and frequency) - Understanding differences in onset and potency across various consumption methods - Educating users about the risks associated with high-THC cannabis products - Preventing overconsumption and accidental intoxication. Educational campaigns may be initiated by governmental health institutions, or nonprofit organisations such as the ARUC. Information may be disseminated through schools, community centres, pharmacies, healthcare settings, and cannabis associations. The use of billboards, posters, leaflets and social media may assist in promoting educational campaigns.

The development of '*Cannabis Use: Safe & Informed Choice'* brochure developed as part of this research project, serves as an example to potential cost-efficient educational campaigns which may be easily implemented across the Maltese island. The brochure provides accessible and reliable information in a tone that avoids instilling fear or moral judgement, offering instead a practical, user-centred approach to cannabis education.

Table 4.2:Recommended Harm Reduction Strategy; Drug Testing for Cannabis

Recommended Harm Reduction Strategy; Drug Testing for Cannabis	
Harm Reduction Strategy	Implementation of Randomised Drug Testing
Objective	To enhance safety, ensure accountability, and mitigate the risks associated with the impaired behaviour of individuals under the influence of cannabis
Description	Randomised drug testing for cannabis should: - Enhance public safety including in communal areas and the workplace - Hold users accountable for their cannabis consumption behaviour with appropriate repercussions (e.g. fines) for misuse. A legal framework should be developed specifying the levels of THC concentration which are acceptable for certain activities (e.g., driving or using machinery) and define legal consequences for violation.

Randomised drug testing may be implemented in workplaces, especially those involving safety-sensitive roles such as transportation, construction, or healthcare. Employees may be randomly tested using urine or saliva samples to detect recent cannabis use (Akanbi et al., 2020). These tests should be conducted by certified laboratories or trained on-site personnel. Tests should be carried out randomly to prevent predictability and discourage substance use prior to testing. In addition, law enforcement agencies and traffic control authorities may employ random roadside testing to identify drivers under the influence of cannabis or other impairing substances, using oral fluid or saliva tests for immediate detection (Wennberg et al., 2023). The frequency of testing varies depending on the context, ranging from monthly in workplaces to consistent unscheduled roadside tests or risk-based testing on the roads.

Table 4.3:Recommended Harm Reduction Strategy; Reform of Cannabis Harm Reduction Associations Services

Recommended Harm Reduction Strategy; Reform of Cannabis Harm Reduction Associations Services	
Harm Reduction Strategy	Expanding Services of Cannabis Harm Reduction Associations
Objective	To reduce CHRAs limitations to better meet the ongoing demands
Description	Improving CHRAs effectiveness by - Expanding membership limits by recruiting more professionals and volunteers to support services - Creating tiered membership options to cater to different levels of need and affordability - Providing a range of quality-controlled mode of cannabis consumption (e.g. edibles) - Developing peer-to-peer support programs where individuals with past experiences can guide and mentor others. The ARUC licensing guidelines should be continuously updated to reflect current local needs to ensure that policies and regulations remain relevant and effective.

Reforming CHRAs is critical to strengthening Malta's HR framework. Expanding the range of regulated cannabis products beyond dried flower and seeds, improving operational standards including investing in structured HR training would enhance service quality and build user trust. Without adequate reform, associations may face gaps in the services provided, undermining their objectives. Maintaining a community-led, non-commercial approach, CHRAs can reduce cannabis users' reliance on the illicit market, promote safer use, and ensure that public health goals remain central to Malta's evolving cannabis strategy.

Table 4.4:Recommended Harm Reduction Strategy; Reform of Legal Policies

Recommended Harm Reduction Strategy; Reform of Legal Policies	
Harm Reduction Strategy	Legal Policy Reforms for Sustainable HR Implementation
Objective	To continuously update legal policies with recreational use of cannabis
Description	Actions carried out to ensure updated legal policies include - Ongoing, evidence-based refinement of legislation related to recreational cannabis use - Clarifying and removing legal grey areas that may unintentionally criminalise users - Reviewing punitive policies and enforcement practices that could undermine HR goals (e.g., interactions between police and cannabis users or associations) Involving the civilians, healthcare providers, and cannabis user groups in policy reform discussions ensures policies remain realistic and effective.

Legal policy reform is essential to ensure the long-term effectiveness of HR strategies related to cannabis. Clear and consistent regulations help minimise discrepancies in enforcement, which might otherwise undermine public trust and discourage individuals from engaging with or accessing HR services. Shifting towards a public health–oriented approach that prioritises clarity, proportionality, and fairness, Malta can foster an environment in which HR services, including CHRAs, operate effectively and users feel safe engaging with them. This alignment between law, policy, and practice is central to building a coherent and sustainable HR framework (Ritter et al., 2018).

4.4 Limitations of the Study

Articles identified during the literature search did not provide sufficient detail regarding the specific requirements necessary for the implementation of certain HR strategies. As a result, it was difficult to assess the full feasibility of adapting these strategies to other

settings, such as within the Maltese context. While the aim was to examine HR strategies that have been implemented in practice, a number of the referenced sources, proposed or recommended interventions rather than evaluated actual, ongoing initiatives.

The search for literature on HR strategies implemented specifically in Malta yielded minimal results. Most of the available information came from grey literature, rather than peer-reviewed academic studies. This posed challenges in obtaining reliable, detailed, and context-specific insights. Limited local data on the specific harms related to cannabis use in Malta presented a notable barrier to develop targeted HR strategies. Without clear evidence on the nature and extent of cannabis-related harms within the local population, it is difficult to tailor HR interventions effectively to meet the needs of the Maltese context. This lack of local data may also reflect, or contribute to, a general lack of interest in addressing cannabis-related harms, particularly where the substance is perceived as relatively harmless by the general public.

4.5 Recommendations for Future Work

To support the development of effective HR strategies for cannabis use in Malta, future research should focus on building a clearer understanding of local cannabis consumption patterns and the associated harms. This includes analysing the percentage of the population that uses cannabis, identifying primary sources of cannabis (such as personal cultivation, social clubs, or illicit markets), and examining the age of frequent users as well as the demographics of users to better identify groups which are at risk. Additionally, efforts should be made to enhance the documentation of risks linked to cannabis use, such as driving under the influence, mental health complications, or accidents in the workplace, to determine the specific harms that may require targeted interventions.

Further research should also assess public perceptions of HR approaches and cannabis education to guide the development of culturally appropriate strategies. Evaluating the impact of recent legal changes on cannabis use behaviour, particularly among adolescents and first-time users, would offer valuable insight into evolving trends. Future work may also explore the feasibility of implementing HR tools such as drug checking services and educational campaigns. Conducting local based studies to trial these interventions could provide essential evidence on their effectiveness and inform national policy. Generating detailed, local-specific data is essential for the creation of practical and relevant HR strategies that reflect the country's social and public health realities.

4.6 Conclusion

Findings from this study demonstrate that established HR interventions such as THN programs, supervised consumption models, and CSCs have shown considerable success when implemented with strong public engagement, continuous training, and social support. Moreover, education-focused programmes, like France's *Expériences Animées*, show promise in reframing youth perceptions of drug use in a non-judgmental and informative way.

The brochure developed through this study constitutes a crucial step in embedding HR principles within the national context, where HR initiatives are still limited. The existence of laws, regulations, or strategies is of limited value if they are not known, understood, or adopted by the public. While modest in scope, the brochure establishes a foundation for broader educational and outreach efforts, demonstrating the central role that accessible information plays in promoting HR strategies and ensuring that policies translate into effective behavioural changes and meaningful public impact.

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Appendices

Appendix 1

FREC Approval

L-Università ta' Malta

Rachel Callus <rachel.callus.20@um.edu.mt>

The status of your REDP form (MED-2024-00071) has been updated to Acknowledged

1 message

form.urec@um.edu.mt <form.urec@um.edu.mt> 13 March 2024 at 07:32
To: rachel.callus.20@um.edu.mt

Dear Rachel Callus,

Please note that the status of your REDP form (MED-2024-00071) has been set to *Acknowledged*.

This status change was accompanied by the following explanation/justification: *Dear applicant, Your research ethics application has been received. This does not mean that your application has FREC ethical approval and may be subject to an audit review. The FREC number generated by submission for records only cannot be used as proof of ethical approval. As indicated in the Research Ethics Review Procedures, submissions which have no self-assessment issues are kept for record and audit purposes only, so research may commence. Kindly note that FREC will not issue any form of approval as the responsibility for the self-assessment part lies exclusively with the researcher. Please note that SCPD generally requires review. If you have any questions or doubts or require any further clarification you can contact the MED FREC secretary. Regards, MED FREC*

You can keep track of your applications by visiting: https://www.um.edu.mt/research/ethics/redp-form/frontEnd/.

This email has been automatically generated by URECA. Please do not reply. If you wish to communicate with your F/REC please use the respective email address.*

Appendix 2

Articles identified through Literature Search

Author, date	Country	Drugs included in policy	Harm reduction Strategy implemented	Date implemented
Windle, 2015	Vietnam	Opioids Injected drugs	Methadone Maintenance programme Needle & Syringe programme	2008 2012
Fischer et al., 2017	Canada	Cannabis	Lower-risk Cannabis use Guidelines	2011
Bardwell et al., 2018	Vancouver	Illicit substances	Drug user organisations	1999
Burgos et al., 2018	Tijuana, Mexico	Opioid	Opioid Substitution Therapy	n/a
Cortina et al., 2018	Vancouver	Crack Cocaine	Supervised Inhalation Sites	n/a
Groves, 2018	Netherlands Sydney	Party drugs Injected drugs	Drug checking/adulterant screening Needle & Syringe programmes Medically supervised injection centres	1990s 1986 2001
Saloner et al., 2018	USA	Opioids Illicit substances	Naloxone Distribution programmes Needle & Syringe programme	n/a
Patterson et al., 2018	British Colombia	Illicit substances	Supervised injection Site/Supervised Consumption Site	2017/2018
Mema et al., 2018	British Colombia	Illicit substances	Drug checking services	2003
Atkins et al., 2019	USA	Illicit substances	Good Samaritan Policy	2019
Bourque et al., 2019	Lethbridge, Alberta, North America	Illicit substances	Supervised inhalation sites	2018
Peiper et al., 2019	Southeastern USA	Opioid	Fentanyl test strips	2017
Chadda, 2019	India	Illicit substances	Drug treatment clinics, Education programmes	n/a
Crowell, 2019	British Colombia	Opioids	Take Home Naloxone	2012

Wallace et al., 2019	Canada	Illicit substances	Overdose Prevention Sites	2016
Kermode et al., 2020	India	Opioids	Opioid substitution therapy with buprenorphine /methadone	2007/2012
Martin-Fernandez et al., 2020	France	Cannabis	Educational Programmes: Expériences Animées	n/a
Moreno et al., 2021	Canada	Cannabis	*Check your Cannabis* digital health screener	2019
Obradors-Pineda et al., 2021	Catalonia	Cannabis	Cannabis Social Clubs	1990s
Barata et al., 2022	Uruguay Portugal	Cannabis	Cannabis club Publication of educational documents	c. 2013
Fischer et al., 2022	Canada	Cannabis	Updated Lower-risk Cannabis use Guidelines	2022
Lei et al., 2022	British Columbia	Opioids	Take Home Naloxone	2012
Siddiqui et al., 2022	Europe	Cannabis	Perception on Cannabis use	n/a
Bonny Noach et al., 2023	Isreal	Opioids	Needle & Syringe programmes Opioid Assisted Treatment Methadone Maintenance Treatment	1970s
Bardwell et al., 2023	Canada	Opioids	Tablet injectable opioid agonist therapy	2020
Gangon et al., 2023	Canada	Cannabis	Victorian Cannabis Buyers club	1996
Jauffret-Roustide et al., 2023	France	Illicit substances	Education A*ux risques liés à l'injection'*	2010s
Matheson & Le Foll, 2023	International	Cannabis	Impact of Recreational Cannabis Legalisation	n/a

Appendix 3

Cannabis Use: Safe & Informed Choice

Brochure

Back Panel

Cannabis Use: Safe & Informed Choice

Brochure

Centre Panels