

IMPROVING THE PROCESS OF CONSUMING MEDICINAL CANNABIS IN AUSTRALIA

DNB311 ID STUDIO 7: CAPSTONE

KAITLYN CARNEY N11263954

EXECUTIVE SUMMARY

The medicinal cannabis industry in Australia faces significant barriers. The purpose of this report and the research included is to understand what barriers associated within medicinal cannabis in Australia and how they affect users prescribed for chronic pain. While there is still stigma following the medicine a decade after it's medicinal legalisation, the number of prescribed users in Australia rapidly increases each year. With this growth the accessory and packaging industry has failed to consider their largest group of users; those with chronic pain. Thus exacerbating their symptoms rather than managing them. This project aims to identify areas of improvement through primary and secondary research to further inform future design implications. These design implications will be drawn key insights identified from interviews with experts and users as well as observations on users.

3672 words

ACKNOWLEDGEMENT

This report acknowledges Aboriginal and Torres Strait Islander peoples as the first inhabitants of Australia and the Traditional Custodians of the lands on which this work was undertaken. Respect and recognition is paid to Elders past, present, and emerging, and to their enduring connection with land, waters, and culture.

AUTHENTICITY STATEMENT

This statement is to certify that to the best of my knowledge, the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received in preparing this report and sources have been acknowledged correctly.

AI USE STATEMENT

I have utilised Generative AI (Claude) only for the layout guidance for the visual design of this report.

Kaitlyn Carney
N11263954
24/08/2026

PROJECT STRUCTURE



Secondary Research

Identifying the problem area

Product Benchmarking

Identifying the gaps in existing market

Primary Research

Interview (Users/Experts) & Observation (Users) conducted

Analysis & Findings

Analyse primary data through code
Highlight gaps & frustration

Discussion

Design implications and problem areas

Opportunities

Identifying design opportunities for intervention

TABLE OF CONTENT

Executive Summary 2
Authenticity and AI Use Statement 3
Project Structure 4

01 THE TOPIC

Introduction 7
Background 8
Benchmarking 10

02 THE RESEARCH

Research 13
Analysis & Findings 15

03 DISCUSSION & DESIGN IMPLICATIONS

Discussion 20
Design Implications 22
Conclusion 23

04 References

References 25
Appendix 27

01

THE TOPIC

INTRODUCTION

In Australia Medicinal cannabis (MC) was legalised in 2016 (Martin et al., 2023). MC is prescribed to patients to relieve chronic pain (rheumatoid arthritis, endometriosis, etc.), treat depression/anxiety, epilepsy and persistent nausea (usually due to side effects from e.g. chemotherapy treatment) (Swift et al., 2005). Although stigma and access barriers are decreasing with industry, cultural and healthcare systems reforms, there are still many barriers that burden patients. Accessing MC as well as the accessories involved for consumption are still challenges driven by prejudice, the law and stigma (Bowley, 2023).

The aim of this project is to explore the usability of current devices used to prepare and inhale MC for users with chronic pain. The largest group of MC users in Australia are those prescribed to manage their chronic pain (65%) (Parvaresh et al., 2025). Chronic pain is a frequent and central symptom of treated conditions such as arthritis, fibromyalgia, epilepsy, multiple sclerosis (MS) cancer and diabetes, current pharmacological interventions tend to be of limited efficacy, with fewer than 20% of individuals reporting pain relief of 50% or more (Henderson et al., 2021). In a study done by Swift et al. (2005), MC was perceived by patients with chronic pain to provide "great relief" overall (86%), and substantial relief of specific symptoms such as pain, nausea and insomnia. Furthermore, it was also perceived as a superior medication in comparison to other more 'traditional' medications as it did not come with undesirable side effects and provided longer relief (Swift et al., 2005).

Refer to Appendix 1 for interpretation



Figure 1: The Supply Process of MC in Australia (only TGA approved product)

BACKGROUND

Overview

While Cannabis has long been persecuted and perceived by the law until recently as an illicit drug, research has proved its therapeutic potential (Swift et al., 2005). It has complex interactions with the central nervous system, which is why it is a successful pain relief medication for conditions such as cancer related wasting and nausea and chronic pain from multiple sclerosis, arthritis and endometriosis (Swift et al., 2005). The stigma and prejudice associated with cannabis is a challenge for users of MC. Since legalisation, approximately one million Australian's now regularly use MC (Scott & Scott, 2025). Revenue has doubled each year over the past five years, it was estimated that in the first half of 2024 the industry generated $402 million in sales (Scott & Scott, 2025). As of 2024, patients have had access to more than 800 different medical cannabis products, through the Therapeutic Goods Administration (TGA) (Mills et al., 2024).

Methods of Use

MC is consumed in multiple forms; the most common methods are smoking/vaporisation (figure 2).
Each method has a slightly different set up and experience, however smoking/vaporisation is not the only option. For users who are more health conscious or have raspatory issues such as asthma, edibles and tinctures are also available (Therapeutic Goods, 2025).

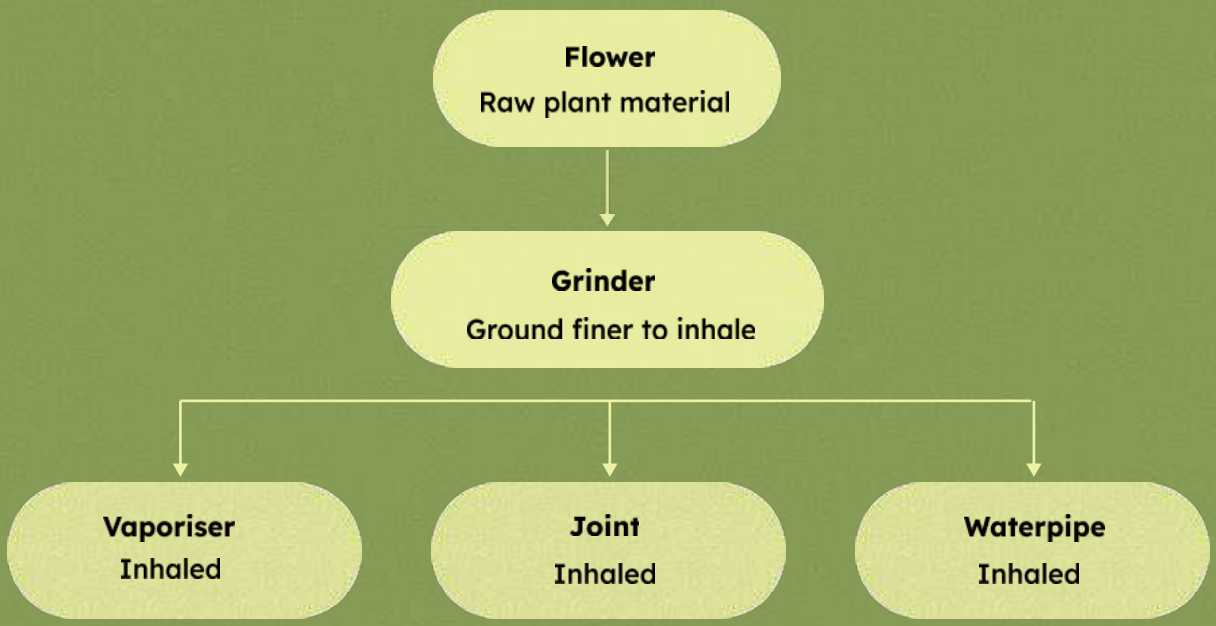


Figure 2: Process of smoking MC flower

Refer to Appendix 2 for more consumption methods/processes

BACKGROUND

Prescribing

In Australia cannabis-based medicines are viewed as unregistered drugs, and classified as a Therapeutic Good. Prescribing requires approval under the **Therapeutic Goods Administration Special Access Scheme-B** *Figure 1* or Authorised Prescriber Scheme (Arnold et al., 2020).

Special Access Scheme (SAS): Allows doctors to apply to prescribe an unapproved product to a single patient on a case-by-case basis.
Authorised Prescriber (AP) Scheme: Allows doctors to gain pre-approval to prescribe specific unapproved cannabis products to a class of patients.

An authorised prescribing doctor must follow the TGA's approved steps before prescribing a patient MC (Appendix) (Arnold et al., 2020).

Stigma

Socially/ culturally in Australia, cannabis is still a stigmatised medicine. This pervading stigmatisation causes prescribed users to keep their use hidden as well as spend time educating those who do not approve/understand the use of MC (Sinclair et al., 2022). General practitioners (GPs) also play a role in the stigma barrier. In a study done by Bawa et al. (2022) most GPs (85.3%) had received patient enquiries about MC. Only half (52.3%) felt comfortable discussing MC with patients. One fifth (21.8%) had prescribed a MC product. GPs strongly supported MC prescribing for palliative care, cancer pain, chemotherapy-induced nausea and vomiting, and epilepsy.

Treatment for Chronic Pain

In Australia, one in five adults are estimated to live with chronic pain. Chronic pain presents itself in people with conditions such as MS, arthritis, fibromyalgia and endometriosis (Henderson et al., 2021). People living with such conditions deal with frequent disabling pain/spasms of the body (Waliño-Paniagua et al., 2019). For users with MS, MC reduces not just the chronic pain but also frequency and strength of spasms (Tait et al., 2023). In July 2021 out of 130,000 approvals for MC treatment, 65% were to treat chronic pain (Henderson et al., 2021). MC reduces chronic pain and shows significant meaningful improvements in the overall quality of life for users.

Summary

MC is a growing industry in Australia that struggles to keep up with modernity due to social/cultural stigma and an unwillingness to learn about its medicinal benefits, especially for those living with chronic pain. This research investigates these issues in great detail to find gaps for improvement and design opportunities.

BENCHMARKING

Overview

As identified in ***Figures 1 & 2*** apart of the consumption of MC in its many forms, the medicine may require additional accessories for use. At the root of the challenges users face when consuming MC in their preferred form is how behind Australia is in its technology, accessibility and design on MC products/accessories.

To improve these challenges, benchmarking has been utilised to highlight gaps in the market and narrow the scope for design innovation. From indicators found in secondary research, key factors that are determinates of the MC process/experience have been used as benchmarking categories to grade the existing products/accessories.

Vaporisation Technology

When smoking/vapourising flower (cannabis buds) there are only 4 TGA approved devices, and purchase of them cannot be subsidised (Therapeutic Goods, 2025).

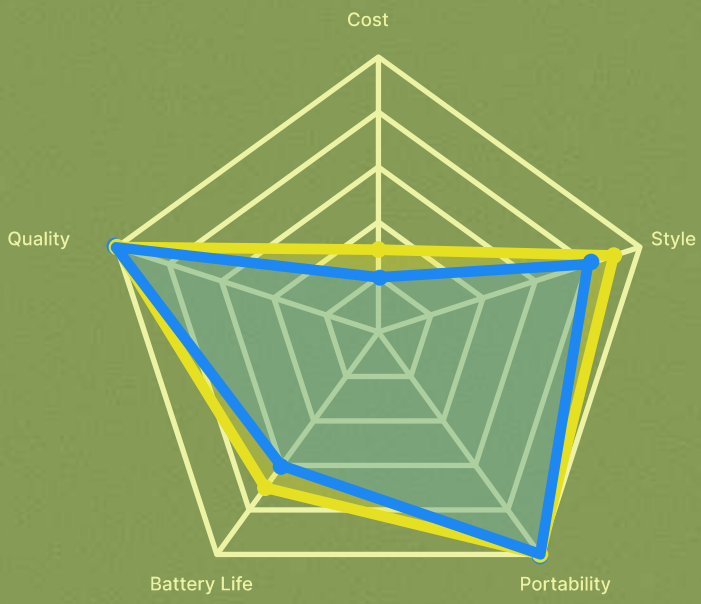


Figure 3

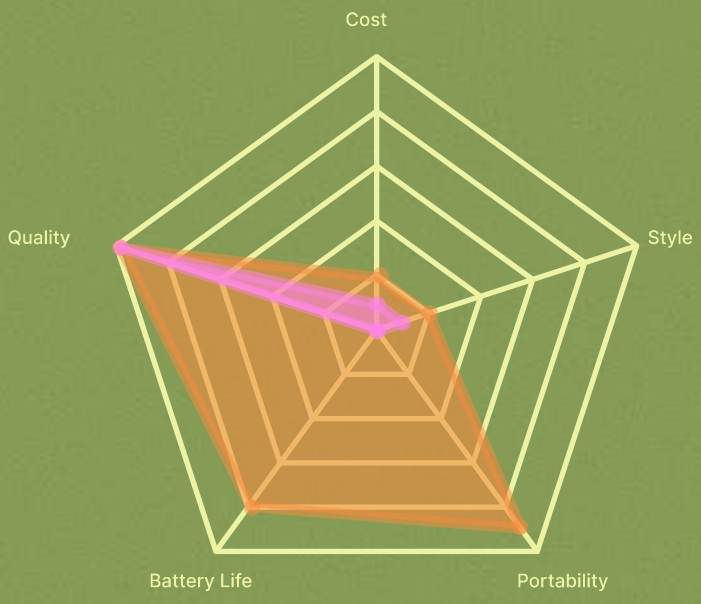


Figure 4

Refer to Appendix () for interpretation

Across the four vaporisers, they all perform very poorly on their costing and are not affordable products. Syqe Air and the Grenco product are the most portable products yet share a weak point of Battery Life, their lowest scoring attribute. The Mighty Med Volcano and Mighty Med Inhaler are of the highest quality, yet least attractive designs. Gaps identified for the clearest opportunities for future design are design aesthetics and battery life.

BENCHMARKING

Accessories

The two main accessories associated with MC consumption are grinders to grind flower and 510 Thread Batteries which are the battery for vape cartridges. 5 types of grinders have been evaluated and scaled, as well as 5 types of 510 Thread Batteries available in Australia. They have been evaluated on a scale to determine gaps in the existing market.

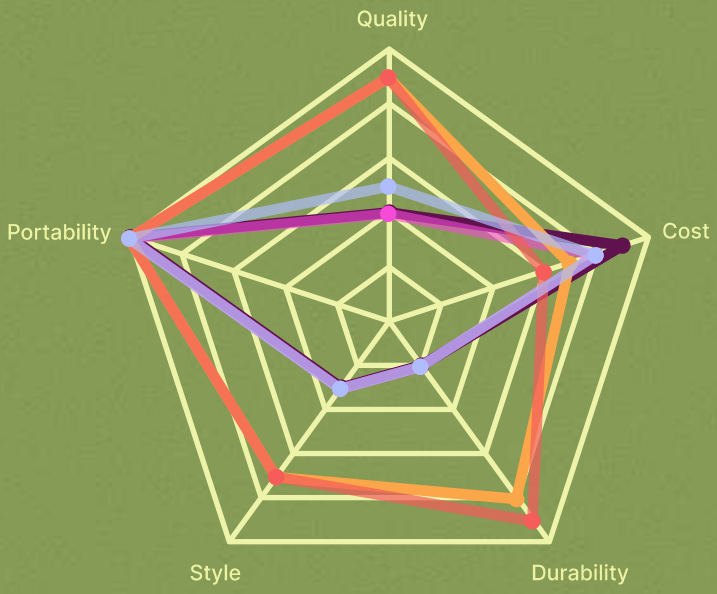


Figure 5

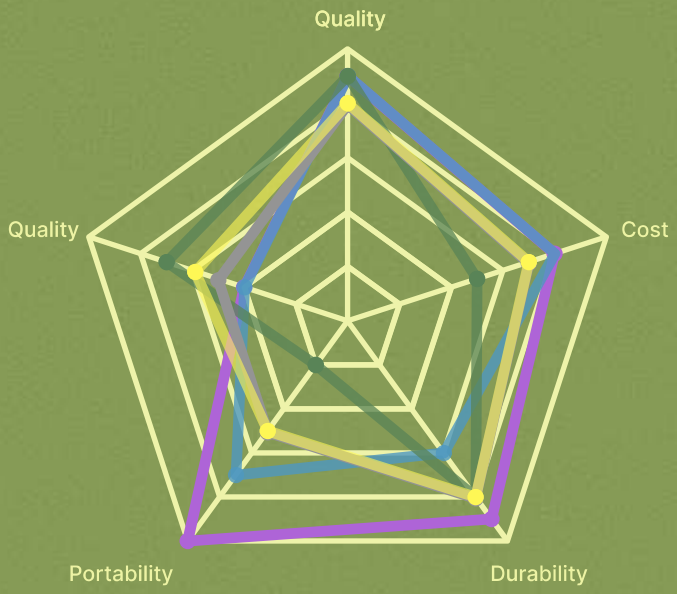


Figure 6

Refer to Appendix () for interpretation

Emerging across both categories there is a clear pattern; no single product excels across all attributes. In grinders, Traditional and Glass models quality leads, however scores poorly on usability. Whereas Electric grinders are the opposite. This highlights a gap for a grinder that combines the convenience of electric with better value and portability. In the 510 thread battery category, portability is not an issue across all five products. Quality, durability and style are notably weaker factors. The weaker quality products are the cheaper options. This indicates a gap for an affordable device that doesn't sacrifice longevity or quality. Together, the biggest design opportunities lie in usability for grinders and in durability/style for cheaper 510 batteries as low-cost options consistently underperform premium competitors.

Summary

The benchmarking highlights three priority design opportunities. Improving usability in grinders, strengthening durability and style in affordable 510 batteries and addressing design aesthetics and battery life in vaporisers. In each category, low-cost options consistently underperform against premium competitors, suggesting significant white space for a product that closes the gap between affordability and quality.

02

THE RESEARCH

METHODS & METHODOLOGY

Overview

To conduct primary research in such a diverse topic, qualitative research was conducted to identify key experiences of patients, gather insights from experts and draw parallels between these findings and secondary research. The two primary research methods of interviews and observation were used.

Two sets of questions for interviews with either a user or expert were designed to capture the broadest scope of experiences, based off secondary research. To further investigate the experiences of users, observations of their MC consumption process was undertaken. These observations focused on area's of the process that exacerbate symptoms to provide contextual personal experiences. To extract the required information as well as critically analyse the findings, the approach of triangulation has been utilised (Bans-Akutey & Tiimub, 2021).

Interviews

Interviews are a way of gathering a more in-depth understanding of preliminary ideas found through secondary research (De la Croix et al., 2018). Structured interviews that consisted of a set of questions for either a user or expert were formed with the intention to help answer the research question. Interviewees were recruited via email after being connected through recommendation of a mutual connection.

Once a prospective interview recruit expressed their eagerness to participate an email was sent outlining a project synopsis, the questions they would be asked, the ethics of the collection of data as well as a consent form they had to sign and send back confirming their choice to participate. Through email correspondence an interview was set and conducted over the phone so it could be recorded and transcribed. Phone was the chosen mode of interview as it is advantageous on time (Block & Erskine, 2012) as multiple interviews had to be conducted in a short time frame, with participants located over the country. Although this method has its advantages, an issue with phone interviews is tht individuals may respond differently over the phone than they may in person (Groves, 1979). The phone provides a level of anonymity which may either minimise or amplify the respondents desire of expression (Block & Erskine, 2012).

The first two initial interviews were of a more structured nature, however since the aim of the interviews are to capture as wide a scope as possible of the experiences, perspectives and observations, a semi-structured approach was taken in the rest of the interviews. A semi-structured interview approach allowed for the conversation to flow more, as it was found that questions to be asked later in the interview were being answered in conjunction to the posed question as there was a lot of interlinking between themes.

METHODS & METHODOLOGY

Method	Recruitment	Participants	Synopsis
Interview	Relational connection	6	INT01U: User prescribed in 2023 for insomnia and chronic pain from connective tissue disorder.
			INT02U: User prescribed in 2020 for insomnia.
			INT03UE: User prescribed in 2020 for chronic pain. A registered nurse/cannabis nurse. Founder of Australian Cannabis Nurses Association.
	Email/Phone directly		INT04U: User prescribed
			INT05E: Prescribing nurse, founding member of Australian Medicinal Cannabis Association
Observation	Follow up after interview	1	INT01U: User prescribed in 2023 for insomnia and chronic pain from connective tissue disorder.

Figure 7: Summary of Primary Research Methods

The spread of participants ***Figure 7*** are both users and experts. INT01U, INT02E or INT03UE is the coding used (INT=interviewee, 0#= the # interview on record, U= User, E= expert, UE= user & expert). A user is a patient of Australian medicinal cannabis, an expert is a health professional that is an advocate and/or prescriber of medicinal cannabis in Australia and in some cases an expert is also a user.

Observations

Observational data is a qualitative method of research that watches what people do. It is a method used to ensure that research participants are truthful in recounting their experiences (Pope & Allen, 2019). One interviewee was able to make time for an observation of their use of their flower grinder.

The observation involved INT01U and was conducted in their home at the time of grinding their medication. A video of them doing this was taken. The observation consisted of them picking up the grinder, twisting it back and forth ***Figure 8*** until they felt they had grinded the flower enough. Checking if there was enough for their dose, choosing to continue grinding, then finished by saying they were complete.



Figure 8: Twisting Grinder

Limitations to the data occur in the cancellation of further observations to be conducted with other interviewees due to last minute cancellations and time restraints to re-schedule.

ANALYSIS & FINDINGS

Interview Findings

Otter.AI was used to transcribe all interviews. All transcriptions were carefully analysed and broken down into a thematic analysis. Themes and codes ***Figure 9*** were developed from recurring patterns in interviews to define the following themes; 'Frustrations with MC sourcing', 'Stigmitisation of cannabis', 'Challenges with dosing and controlling the 'high'', 'Affordability of products and accessories' and the 'Lack of accessible packaging/devices for disabled users'. All five themes emerged from interviews.

Category	Code	Highlight Count	Quote Example
Frustrations with sourcing MC	Expensive	5	it's **expensive** because it's not covered under the pharmaceutical benefit scheme (INT02U)
	Cost	8	But then **cost** to the normal person, the norm, you know, dispensing, the consultations themselves, the follow-ups, then the medication, and they've got a, most pharmacies don't adapt very easily (INT05E)
	Delivery	3	they'll often complain about the **delivery** route, especially if it's herb (INT03UE)
	Sourcing	2	**Sourcing** the the medication. There's no GPs in. There's one GP in Rocky that does it, and it's practically impossible to get into seeing (INT02U)
Stigmatisation of Cannabis	Stigma	27	I also feel **stigma** within like family relationships and friendships, a lot of the time as well (INT01U)
	Smell	6	Both of them emit a really strong **smell** (INT01U)
Challenges with dosing and controlling the 'high'	Pain	23	very passionate about **pain** because I live with **pain**, and I am very passionate about stigmatised medicine (INT03UE)
	Dose	11	We now do, and you see nurses **dosing** it up all the time (INT05E)
	Wastage	6	**wasting** more herb, not getting sort of the effects that you would expect out of it, you know, when you're using it in a previous way (INT03UE)
Affordability of product and accessories	Cost	8	the small handheld starts at $550, and the tabletop is around 1100, um, so that **cost** of device is immediately a barrier. They're gonna keep smoke and joints, which is then not harm reduction (INT05E)
	Device	12	ongoing problem around consumption. It would be around herb use,. It's more around the **devices** we have available (INT03UE)
Lack of accessible packaging/devices for disabled users	Expensive	5	we've got such poor options with the mo. You know, the mine is good, but it's **expensive** (INT03UE)
	Consumption	25	The next problem with **consumption** is the oil that the you know that the oil leaks (INT03UE)
	Disabled	7	Nothing is made with adaptability and usability in mind for **disabled** (INT05E)
	Accessible	9	I mean, just **accessibility**, if you got contractions, really bad, um, arthritis (INT05E)
	Open	5	getting the bottle **open**, and then we've got, you know, it's a tannin
	Pain	23	because of my **pain** in my hands and my like sort of lack of mobility and dexterity, it's pretty hard to like have that repeated movement or even use the grinder (INT01U)

Figure 9: Interview Codes

Frustration with MC Sourcing

Both users and experts had a lot to say about the many frustrations involved with sourcing their prescription. It starts with the cost of booking a consultation (which has to be booked everytime) for a script. Paying for delivery of medicine if living rurally. Paying for smoking accessories (vaporiser, battery). INT02U spoke on rural/remote areas, there are very little prescribing GPs, therefore extra costs of telehealth or third party organisation.

> *"There's one GP in Rocky that does it, and it's practically impossible to get into seeing. So I was going through alternate leaf, which means I'd have to order Medication through a pharmacy in Brisbane" - INT02U*

ANALYSIS & FINDINGS

Stigmatisation of Cannabis

It was expressed by INT02U (who works in health/mining) that they experience a lot of stigma from colleagues. Refusal by GPs to even consider MC as a treatment. INT05E shared how they watched a palliative care patient be denied MC when admitted to a different hospital that did not consider MC a medicine. Thus causes a rapid decline in the patients health, distressing both them and their family.

"There's one GP in Rocky that does it, and it's practically impossible to get into seeing. So I was going through alternate leaf, which means I'd have to order Medication through a pharmacy in Brisbane" - INT02U

"So I don't feel stigma with the general public. I would only ever feel stigma amongst my medical colleagues." - INT03UE

"to people who, Don't fully understand it medically, also because I am in the health field and study a health degree. I find that it sometimes comes up in conversations that in like uni or at work. Will have very negative views on it." - INT04U

Challenges with Dosing

INT05E explained MC to be a medicine that has to be trialed with, dosage wise as it is not a óne size fits all' scenario. For the elderly in particular who's usual consumption method is oral oil, measuring such doses is very difficult due to the size of the objects involved (bottles, syringe), causing inaccurate dosing as well as wasting of medicine by spilling.

"You know, you might not need a whole pastille, so you're going to have to cut them. So that's dexterity again." - INT05E

"they have troubles with swallowing, measuring the tiny doses, leaking. I never, ever hear the end of leaking bottles." - INT05E

ANALYSIS & FINDINGS

Affordability of Product and Accessories

Across the interviews, participants consistently described the MC product themselves as well as approved devices to be a barrier. INT03UE pointed out that more users would use the medical devices if they were more affordable. INT05E described disadvantaged patients who are already financially vulnerable as 'left behind'.

"and I've since moved over to a mighty, and like the mighty is quite good, but it's expensive." - INT03UE

"the small handheld starts at $550, and the tabletop is around 1100, um, so that cost of device is immediately a barrier. They're gonna keep smoke and joints, which is then not harm reduction, is it?"- INT05E

Lack of Accessible Packaging/ Devices for Disabled Users

Multiple participants raised their concern over MC packaging and devices to not be designed with disabled user in mind. Child-resistant bottle caps and oil droppers are the worst nightmare for a user with hand tremors, arthritis and contractures. This was framed by INT05E to be a physical barrier for disabled users on top of their already ongoing struggles

"because of my pain in my hands and my like sort of lack of mobility and dexterity, it's pretty hard to like have that repeated movement or even use the grinder" - INT01U

"it's very difficult to maneuver up their child locks because they've got to be, and patients can't get the lids off, and then there's the dexterity of getting a little syringe, a tiny pip in, and being, if you've got tremor, if you're Parkinson's" - INT05E

The next problem with consumption is the oil that the you know that the oil leaks, that it's viscous - INT03UE

ANALYSIS & FINDINGS

Observation Findings

Observation 1 was conducted at INT01U home. The observation recording did not begin until symptoms of pain started to become present and MC consumption was required to ease the pain. The only part of their process that caused them experience was grinding the flower, therefore that was the filmed observation. They made point of when pain occurred in their grinding process. The observation was broken down and put through a thematic analysis to note the significant events.

Figure 10 is a visualisation of the users experience, key insights of the observation are mapped onto a journey experience map. The users high and lows of the experience are plotted with time stamps and notes of key insight. Unfortunately due to time constraints and unforeseen circumstances, a second and third observation of INT01U and INT02U were meant to be conducted however fell through.

The observation confirmed the lack of accessibility of grinders for grinding MC, and that improvements must be made to ease the process for users with disability. ***Figure 11*** highlights the areas in INT02U hand that experience stress due to the pain points of the action.

Key Observations



Figure 10: User Journey Map of INT01 Observation of Grinding Cannabis Flower



Figure 11: Observation pain highlights

03

DISCUSSION & DESIGN IMPLICATIONS

DISCUSSION

The relationship between secondary and primary research was examined to identify and understand the relevant gaps, insights and limitations of the process of preparing MC for users with chronic pain. The main factors affecting chronic pain users are;

- Stigmatisation of Cannabis
- Affordability of Product and Accessories
- Lack of Accessible Packaging/Devices for Disabled Users
- Challenges with Dosing
- Frustration with MC Sourcing

What all of these factors have in common is a lack of awareness and care for MC users with disability, which is oxymoronic as this medicine is prescribed to treat pain, however, involves a process that exacerbates symptoms for some.

What stood out the most from literature review as well as interviews was how behind Australia's MC industry is. MC is still not viewed as a pharmaceutical medicine (by the law and health professionals), hence why it is still regulated by the TGA. Furthermore, the law seems to be hindering the process rather than making it more accessible for users. INT05E touched on recent vape laws affecting the selling of 501 batteries for THC cartridges, now users are forced to source illegally online or go through a lengthy, secondary process with a doctor just for a battery.
Within the scope of secondary research there is nothing that exists examining the efficacy of accessory products that are used to consume/administer MC. Most literature examines the attitudes towards cannabis as a medicine as well as its efficacy as a medicine. There is a clear correlation between this and the lack of existing products that are designed with accessibility in mind.

DISCUSSION

Benchmarking highlighted the elementary design of existing products as well as the unaffordability of them. Form design of vaporisers, grinders, 501 battery pens do not consider the largest consumption demographic of MC (chronic pain users) and do not show signs of design for ergonomic use. Furthermore, the starting price of such products are $100, ranging all the way to over $1000. When added to the existing price of the medicine itself ($100+) as well as shipping for remote users and consultations costs (as raised by interviewees) MC is not an affordable medicine when it should be.

Primary research firmly corroborated the absence of user-friendly design for those with disability, especially that affects the hands (tremors arthritis, etc.). Users expressed their frustration with grinders and experts shared how difficult the packaging and equipment for pastilles and oral oils are, especially for the elderly. Furthermore, the vitality of correct dosing was highlighted by an expert. As MC is not like a traditional where ‘one pill every four hours is the stock standard for every user. Consistency and accuracy of measuring doses is vital to ensure the user does not over consume and become ‘too high’.

The study has limitations that should be acknowledged. These being observational data and users with chronic pain. Only one observation was conducted due to the untimely cancellation of a prospective interviewee who was to be an observed user too. Due to the time constraints of this research a re-schedule could not be made. Out of the 5 interviewees, only 3 were treating symptoms of chronic pain. However, a benefit of interviewing users treating symptoms other than chronic pain provided a broader scope of the issues involved in the MC industry.

Overall, MC has proven to be a very underdeveloped industry in many aspects. It’s regulations and policies cannot keep up with how fast modern society moves forward There are no companies designing or manufacturing accessories/ products that aim to ease the consumption process of MC for disabled patients. The packaging of MC products does not consider users with dexterity issues. These findings suggest that there are many areas of the industry that need improvement and one of the more significant areas of the industry is the design of MC accessories and packaging.

DESIGN IMPLICATIONS

Overview

The findings of the research highlight the need for accessibly designed accessories and packaging within the MC industry. Interviews and observation really highlighted the importance of accessible design considerations as MC is such a dexterity reliant consumption process, which is the main area of focus for future design intervention. For an industry that is reliant on its users it does not cater to its largest demographic of users; those with chronic pain. The following design implications stated are to ensure users with chronic pain can access an easier, more affordable and pain-free consumption process of MC.

Minimising Symptom Exacerbation

The goal of MC is to relieve pain. The current preparation process especially for smoking and vaporising causes pain in the hands of users are current products used to grind herb are small and the actions required to grind it exacerbate pain and make the experience painful. By designing an experience that does not exacerbate pain, users are less likely to procrastinate prescribing when required.

Prioritising Grip & Ergonomics

The pain in hands especially for those with arthritis, moves to different areas of the hands. Thus, affecting grip and grip stamina for actions such as grinding herb. Ergonomic considerations are vital in ensuring a positive experience for users. This ensures the beginning of their consumption process is pain-free.

Rethink Dexterity Strength Reliant Packaging

Interviews revealed the strain child-proof packaging puts on users with dexterity issues. While these safety measures are used for a valid reason, they are not helpful to elderly users. It is important that they can access and administer their medicine themselves when required.

Address Affordability

There are already so many additional costs associated with the prescribing and consumption of MC. These additional costs have also been highlighted as re-curing and will continue to be so under the current framework. To not add to this stressor, affordability must be a key consideration to the design.

Accurate & Consistent Dosing

MC is not like traditional prescription medicine where ‘one pill every four hours’ is the standard for everyone. Therefore, each user’s experience is specific to their individual tolerance and needs. Users are given a recommended dose and told to experiment within their limits, therefore consistency and accuracy in dosing is vital for safe use.

The consideration of these design implications provide opportunities to explore for design to ease the process of the consumption of MC for users with chronic pain.

CONCLUSION

This research set out to understand the barrier associated with MC and its users, specifically those with chronic pain. A consistent theme emerged from secondary and primary research: the Australian MC industry is very behind in many ways and that has cause its largest user group to be consistently overlooked.

Stigmatisation, affordability, inaccessible packaging and devices, dosing challenges and sourcing frustration were the five key factors identified in this study. These key factors affect the industry most vulnerable users the most. Grinding herb, open childproof packaging and measuring doses accurately all demand fine motor control and grip strength that many living with chronic pain struggle with. The medicine that is meant to be managing their pain should not be exacerbating it.

Benchmarking and interviews confirm existing products are not ergonomically designed nor affordably priced. The lack of literary review on this subject confirms this is an unexplored space.

While the study's scope was limited by a small chronic pain specific interview sample and a single observation. The insight gathered was sufficient enough to draw conclusions. These findings informed the five design implications – minimising symptom exacerbation, prioritizing grip and ergonomics, rethink dexterity- reliant packaging, address affordability and accurate and consistent dosing. These form a practical foundation for future design intervention. Ultimately, the research affirms a genuine, unmet opportunity to design MC accessories and packaging for users with chronic pain to improve their daily experience.

04

REFERENCES

REFERENCES

Arnold, J. C., Nation, T., & McGregor, I. S. (2020). Prescribing medicinal cannabis. Www.Nps.Org.Au, 43(5). https://doi.org/10.18773/austprescr.2020.052

Bans-Akutey, A., & Tiimub, B. M. (2021). Triangulation in Research. Academia Letters, 2(3392). https://doi.org/10.20935/al3392

Bawa, Z., McCartney, D., Manocha, R., & McGregor, I. S. (2022). Knowledge, experiences, and attitudes of Australian general practitioners towards medicinal cannabis: A 2021–2022 survey. BMC Primary Care, 23(1). https://doi.org/10.1186/s12875-022-01946-x

Block, E. S., & Erskine, L. (2012). Interviewing by Telephone: Specific Considerations, Opportunities, and Challenges. International Journal of Qualitative Methods, 11(4), 428–445. Sagepub. https://doi.org/10.1177/160940691201100409

Bowley, C. (2023). Barriers to accessing to medicinal cannabis. In news.griffith.edu.au. https://news.griffith.edu.au/2023/01/17/barriers-to-accessing-to-medicinal-cannabis/

Cheng, K., Harnett, J., Davis, S., & Smith, L. (2024). Conversations about cannabis: The supply process in Australia. Advances in Integrative Medicine. https://doi.org/10.1016/j.aimed.2024.01.001

De la Croix, A., Barrett, A., & Stenfors, T. (2018). How to…do research interviews in different ways. The Clinical Teacher, 15(6), 451–456.

Groves, R. M. (1979). Actors and questions in telephone and personal interview surveys. Public Opinion Quarterly, 43(2), 190. https://doi.org/10.1086/268511

Henderson, L., Kotsirilos , V., Cairns, E., Ramachandran , A., Peck, C., & McGregor, I. (2021). Medicinal cannabis in the treatment of chronic pain. In Australian Journal of General Practice. https://www1.racgp.org.au/ajgp/2021/october/medicinal-cannabis

Hoffman, R. (2025). 5 Reasons Why You Should Never Use Plastic Grinders. Herb.Co. https://herb.co/learn/5-reasons-why-you-should-never-use-plastic-grinders

Martin, S., Jansen, S., Toole, A., & Ward, A. (2023). Exploring access to medicinal cannabis through general practitioners in Australia. In Australian Journal of General Practice. https://www1.racgp.org.au/ajgp/2025/march/exploring-access-to-medicinal-cannabis-through-gen

Mills, L., Arnold, J. C., Suraev, A., Abelev, S. V., Zhou, C., Arkell, T. R., McGregor, I. S., & Lintzeris, N. (2024). Medical cannabis use in Australia seven years after legalisation: Findings from the online cannabis as medicine survey 2022–2023 (CAMS-22). Harm Reduction Journal, 21(1). https://doi.org/10.1186/s12954-024-00992-1

Mtewa, A. G., Tadele Mekuriya, Alele, P. E., Igoli, J. O., & Fanuel Lampiao. (2024). Cannabis and khat in Drug discovery. Elsevier.

Mtewa, A. G., Tadele Mekuriya, Alele, P. E., Igoli, J. O., & Fanuel Lampiao. (2024). Cannabis and khat in Drug discovery. Elsevier.

Parvaresh, L., Mills, L., Gholami, J., Jansen, L., Jamshidi, N., Baker, K., Tremonti, C., Tracy, M., Dunlop, A., & Lintzeris, N. (2025). Clinicians' attitudes and knowledge of medicinal cannabis in opioid dependence treatment clinics in New South Wales, Australia. Journal of Cannabis Research, 7(1). https://doi.org/10.1186/s42238-025-00315-6

REFERENCES

PharmOut. (2024). What is the difference between GACP and GMP? [Website]. In Pharm Out. https://www.pharmout.net/what-is-the-difference-between-gacp-and-gmp/

Pope, C., & Allen, D. (2019). Observational methods. Qualitative Research in Health Care, 67–81. https://doi.org/10.1002/9781119410867.ch6

Scott, R. J., & Scott, I. A. (2025). Medicinal cannabis: Is current use clinically justified? Internal Medicine Journal, 55(9), 1433–1444. https://doi.org/10.1111/imj.70094

Sinclair, J., Armour, S., Akowuah, J. A., Proudfoot, A., & Armour, M. (2022). "Should I inhale?"—Perceptions, barriers, and drivers for medicinal cannabis use amongst Australian women with primary dysmenorrhoea: A qualitative study. International Journal of Environmental Research and Public Health, 19(3), 1536. https://doi.org/10.3390/ijerph19031536

Swift, W., Gates, P., & Dillon, P. (2005). Survey of australians using cannabis for medical purposes. Harm Reduction Journal, 2(1), 18. https://doi.org/10.1186/1477-7517-2-18

Tait, M.-A., Costa, D., Campbell, R., Norman, R., Warne, L. N., Schug, S. A., & Rutherford, C. (2023). Health-related quality of life in patients accessing medicinal cannabis in Australia: The QUEST initiative results of a 3-month follow-up observational study. PLOS ONE, 18(9), e0290549–e0290549. https://doi.org/10.1371/journal.pone.0290549

Therapeutic Goods. (2025). Guidance for the use of medicinal cannabis in Australia: Overview. In Therapeutic Goods Administration (TGA). https://www.tga.gov.au/resources/explore-topic/medicinal-cannabis-hub/medicinal-cannabis-guidance-documents/guidance-use-medicinal-cannabis-australia-overview

Waliño-Paniagua, C. N., Gómez-Calero, C., Jiménez-Trujillo, M. I., Aguirre-Tejedor, L., Bermejo-Franco, A., Ortiz-Gutiérrez, R. M., & Cano-de-la-Cuerda, R. (2019). Effects of a game-based virtual reality video capture training program plus occupational therapy on manual dexterity in patients with multiple sclerosis: A randomized controlled trial. Journal of Healthcare Engineering, 2019, 9780587. https://doi.org/10.1155/2019/9780587

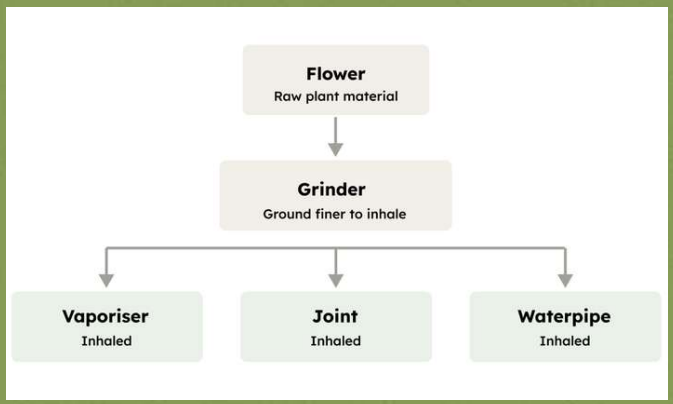
APPENDICES

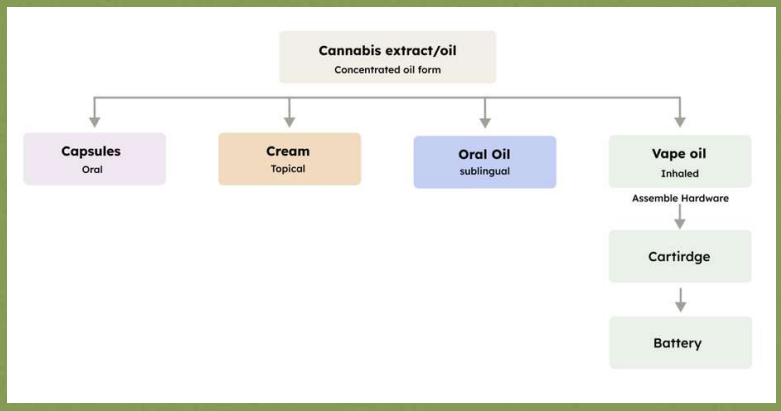
Appendix 1: Definitions of the governing bodies of MC in Australia

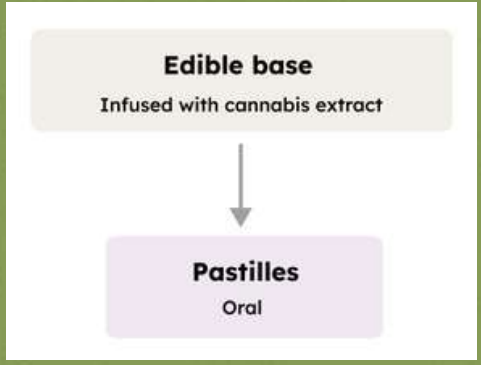
Organisation	Activity
Good Agricultural and Collection Practices (GAPC)	Responsible for the cultivation, collection, harvesting, cutting and drying of MC.
Good Manufacturing Practises (GMP)	Has overlap in responsibility of cutting and drying MC. However, also responsible for taking extraction from plants, concentrating substances and processing those into dosage form as a medicinal product.
Therapeutic Goods Administration (TGA)	Responsible for regulating the supply, import, export, manufacturing and advertising of therapeutic goods.

Information from PharmOut (2024) and Therapeutic Goods (2025)

Appendix 2: Process of MC consumption under various methods







APPENDICES

Appendix 3: Data used for Figure 3 & 4 Graphs

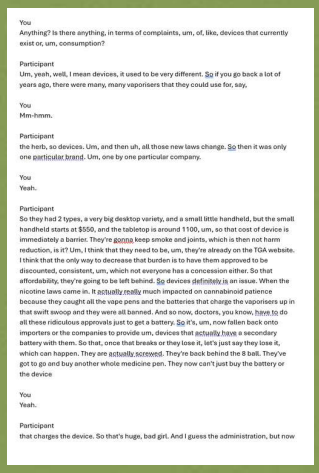
	SyqeAir	MightyMed	MightyVolcano	Grenco	510 Thread Battry
Quality	10	10	10	10	7
Cost	2	2	1	3	10
Durability	7	8	8	7	2
Style	8	2	1	9	5
Features	8	8	8	8	3
Technology	9	9	9	8	3
Temperature control	10	10	10	10	5
Battery life	6	8	NA	7	4
Maintanance costs	NA	5	4	5	8
Potability	10	9	0	10	10

Appendix 4: Data used for Figure 5 & 6 Graph

	Traditional	Glass	Electric	Novelty	Manual Handle	510 Thread battery
Quality	9	9	9	8	8	7
Cost	8	8	5	7	7	10
Durability	9	6	8	8	8	2
Style	8	8	7	8	6	5
Portability	10	9	2	5	6	10
Grind quality	9	7	10	8	8	NA
Usability	4	4	8	5	6	

APPENDICES

Appendix 5: Raw Transcript of interviews



You
Anything? Is there anything, in terms of complaints, um, of, like, devices that currently exist or, um, consumption?

Participant
Um, yeah, well, I mean devices, it used to be very different. So if you go back a lot of years ago, there were many, many vaporisers that they could use for, say,

You
Mm-hmm.

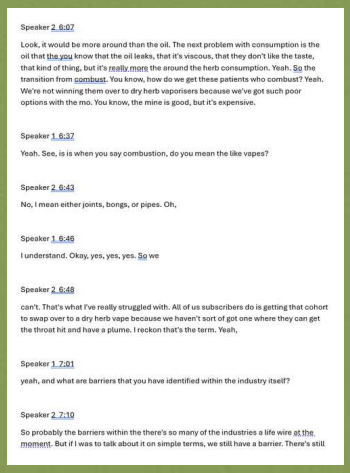
Participant
the herb, so devices. Um, and then uh, all those new laws change. So then it was only one particular brand. Um, one by one particular company.

You
Yeah.

Participant
So they had 2 types, a very big desktop variety, and a small little handheld, but the small handheld starts at $550, and the tabletop is around 1100, um, so that cost of device is immediately a barrier. They're gonna keep smoke and joints, which is then not harm reduction, is it? Um, I think that they need to be, um, they're already on the TGA website. I think that the only way to decrease that burden is to have them approved to be discounted, consistent, um, which not everyone has a concession either. So that affordability, they're going to be left behind. So devices definitely is an issue. When the nicotine laws came in. It actually really much impacted on cannabinoid patience because they caught all the vape pens and the batteries that charge the vaporisers up in that swift swoop and they were all banned. And so now, doctors, you know, have to do all these ridiculous approvals just to get a battery. So it's, um, now fallen back onto importers or the companies to provide um, devices that actually have a secondary battery with them. So that, once that breaks or they lose it, let's just say they lose it, which can happen. They are actually screwed. They're back behind the 8 ball. They've got to go and buy another whole medicine pen. They now can't just buy the battery or the device

You
Yeah.

Participant
that charges the device. So that's huge, bad girl. And I guess the administration, but now



Speaker 2 6:07

Look, it would be more around than the oil. The next problem with consumption is the oil that the you know that the oil leaks, that it's viscous, that they don't like the taste, that kind of thing, but it's really more the around the herb consumption. Yeah. So the transition from combust. You know, how do we get these patients who combust? Yeah. We're not winning them over to dry herb vaporisers because we've got such poor options with the mo. You know, the mine is good, but it's expensive.

Speaker 1 6:37

Yeah. See, is is when you say combustion, do you mean the like vapes?

Speaker 2 6:43

No, I mean either joints, bongs, or pipes. Oh,

Speaker 1 6:46

I understand. Okay, yes, yes, yes. So we

Speaker 2 6:48

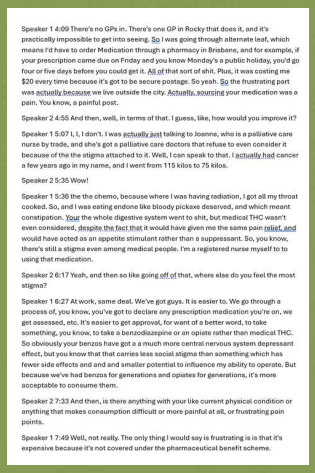
can't. That's what I've really struggled with. All of us subscribers do is getting that cohort to swap over to a dry herb vape because we haven't sort of got one where they can get the throat hit and have a plume. I reckon that's the term. Yeah,

Speaker 1 7:01

yeah, and what are barriers that you have identified within the industry itself?

Speaker 2 7:10

So probably the barriers within the there's so many of the industries a life wire at the moment. But if I was to talk about it on simple terms, we still have a barrier. There's still



Speaker 1 4:09 There's no GPs in. There's one GP in Rocky that does it, and it's practically impossible to get into seeing. So I was going through alternate leaf, which means I'd have to order Medication through a pharmacy in Brisbane, and for example, if your prescription came due on Friday and you know Monday's a public holiday, you'd go four or five days before you could get it. All of that sort of shit. Plus, it was costing me $20 every time because it's got to be secure postage. So yeah. So the frustrating part was actually because we live outside the city. Actually, sourcing your medication was a pain. You know, a painful post.

Speaker 2 4:55 And then, well, in terms of that. I guess, like, how would you improve it?

Speaker 1 5:07 I, I, I don't. I was actually just talking to Joanne, who is a palliative care nurse by trade, and she's got a palliative care doctors that refuse to even consider it because of the the stigma attached to it. Well, I can speak to that. I actually had cancer a few years ago in my name, and I went from 115 kilos to 75 kilos.

Speaker 2 5:35 Wow!

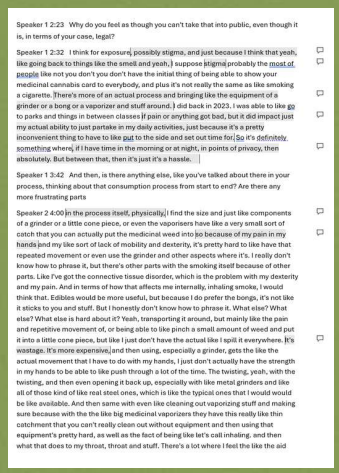
Speaker 1 5:36 the the chemo, because where I was having radiation, I got all my throat cooked. So, and I was eating endone like bloody pickaxe deserved, and which meant constipation. Your the whole digestive system went to shit, but medical THC wasn't even considered, despite the fact that it would have given me the same pain relief, and would have acted as an appetite stimulant rather than a suppressant. So, you know, there's still a stigma even among medical people. I'm a registered nurse myself to to using that medication.

Speaker 2 6:17 Yeah, and then so like going off of that, where else do you feel the most stigma?

Speaker 1 6:27 At work, same deal. We've got guys. It is easier to. We go through a process of, you know, you've got to declare any prescription medication you're on, we get assessed, etc. It's easier to get approval, for want of a better word, to take something, you know, to take a benzodiazepine or an opiate rather than medical THC. So obviously your benzos have got a a much more central nervous system depressant effect, but you know that that carries less social stigma than something which has fewer side effects and and and smaller potential to influence my ability to operate. But because we've had benzos for generations and opiates for generations, it's more acceptable to consume them.

Speaker 2 7:33 And then, is there anything with your like current physical condition or anything that makes consumption difficult or more painful at all, or frustrating pain points.

Speaker 1 7:49 Well, not really. The only thing I would say is frustrating is is that it's expensive because it's not covered under the pharmaceutical benefit scheme.



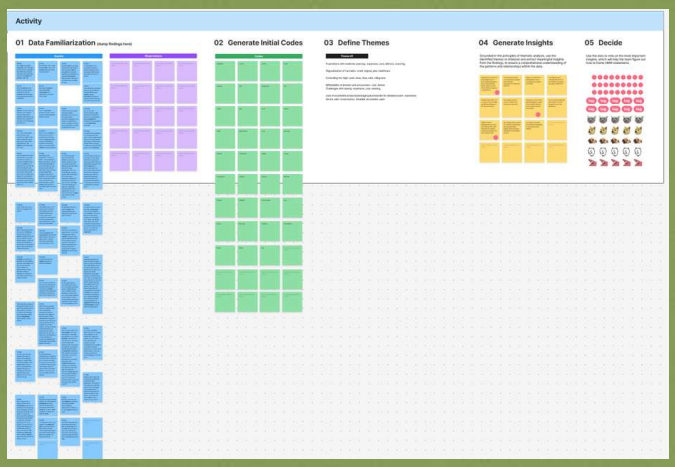
Speaker 1 2:23 Why do you feel as though you can't take that into public, even though it is, in terms of your case, legal?

Speaker 1 2:32 I think for exposure, possibly stigma, and just because I think that yeah, like going back to things like the smell and yeah, I suppose stigma probably the most of people like not you don't you don't have the initial thing of being able to show your medicinal cannabis card to everybody, and plus it's not really the same as like smoking a cigarette. There's more of an actual process and bringing like the equipment of a grinder or a bong or a vaporizer and stuff around. I did back in 2023. I was able to like go to parks and things in between classes if pain or anything got bad, but it did impact just my actual ability to just partake in my daily activities, just because it's a pretty inconvenient thing to have to like put to the side and set out time for. So it's definitely something where, if I have time in the morning or at night, in points of privacy, then absolutely. But between that, then it's just it's a hassle.

Speaker 1 3:42 And then, is there anything else, like you've talked about there in your process, thinking about that consumption process from start to end? Are there any more frustrating parts

Speaker 2 4:00 In the process itself, physically, I find the size and just like components of a grinder or a little cone piece, or even the vaporisers have like a very small sort of catch that you can actually put the medicinal weed into so because of my pain in my hands and my like sort of lack of mobility and dexterity, it's pretty hard to like have that repeated movement or even use the grinder and other aspects where it's. I really don't know how to phrase it, but there's other parts with the smoking itself because of other parts. Like I've got the connective tissue disorder, which is the problem with my dexterity and my pain. And in terms of how that affects me internally, inhaling smoke, I would think that. Edibles would be more useful, but because I do prefer the bongs, it's not like it sticks to you and stuff. But I honestly don't know how to phrase it. What else? What else? What else is hard about it? Yeah, transporting it around, but mainly like the pain and repetitive movement of, or being able to like pinch a small amount of weed and put it into a little cone piece, but like I just don't have the actual like I spill it everywhere. It's wastage. It's more expensive, and then using, especially a grinder, gets the like the actual movement that I have to do with my hands, I just don't actually have the strength in my hands to be able to like push through a lot of the time. The twisting, yeah, with the twisting, and then even opening it back up, especially with like metal grinders and like all of those kind of like real steel ones, which is like the typical ones that I would would be like available. And then same with even like cleaning out vaporizing stuff and making sure because with the the like big medicinal vaporizers they have this really like thin catchment that you can't really clean out without equipment and then using that equipment's pretty hard, as well as the fact of being like let's call inhaling, and then what that does to my throat, throat and stuff. There's a lot where I feel the like the aid

Appendix 6: Thematic Analysis of Interviews



Appendix 7: Table of Codes for Interview

Category	Code	Highlight Count	Quote Example
Frustrations with sourcing MC	Expensive	5	it's **expensive** because it's not covered under the pharmaceutical benefit scheme (INT02U)
	Cost	8	But then **cost** to the normal person, the norm, you know, dispensing, the consultations themselves, the follow-ups, then the medication, and they've got a, most pharmacies don't adapt very easily (INT05E)
	Delivery	3	they'll often complain about the **delivery** route, especially if it's herb (INT03UE)
	Sourcing	2	**Sourcing** the the medication. There's no GPs in. There's one GP in Rocky that does it, and it's practically impossible to get into seeing (INT02U)
Stigmatisation of Cannabis	Stigma	27	I also feel **stigma** within like family relationships and friendships, a lot of the time as well (INT01U)
	Smell	6	Both of them emit a really strong **smell** (INT01U)
Challenges with dosing and controlling the 'high'	Pain	23	very passionate about **pain** because I live with **pain**, and I am very passionate about stigmatised medicine (INT03UE)
	Dose	11	We now do, and you see nurses **dosing** it up all the time (INT05E)
	Wastage	6	**wasting** more herb, not getting sort of the effects that you would expect out of it, you know, when you're using it in a previous way (INT03UE)
Affordability of product and accessories	Cost	8	the small handheld starts at $550, and the tabletop is around 1100, um, so that **cost** of device is immediately a barrier. They're gonna keep smoke and joints, which is then not harm reduction (INT05E)
	Device	12	ongoing problem around consumption. It would be around herb use,. It's more around the **devices** we have available (INT03UE)
Lack of accessible packaging/devices for disabled users	Expensive	5	we've got such poor options with the mo. You know, the mine is good, but it's **expensive** (INT03UE)
	Consumption	25	The next problem with **consumption** is the oil that the you know that the oil leaks (INT03UE)
	Disabled	7	Nothing is made with adaptability and usability in mind for **disabled** (INT05E)
	Accessible	9	I mean, just **accessibility**, if you got contractions, really bad, um, arthritis (INT05E)
	Open	5	getting the bottle **open**, and then we've got, you know, it's a tannin
	Pain	23	because of my **pain** in my hands and my like sort of lack of mobility and dexterity, it's pretty hard to like have that repeated movement or even use the grinder (INT01U)

APPENDICES

Appendix 8: Raw Observation Snap Shots






Appendix 9: Thematic Analysis of Observations

