



# Washington State Liquor and Cannabis Board

## Data Brief

# Cannabinoid Hyperemesis Syndrome

November 2024

## LCB Research Program

The Research Program at the Washington State Liquor and Cannabis Board (LCB) is a non-partisan, transparent resource focused on public health and safety outcomes related to the products, policy, and regulation of alcohol, cannabis, tobacco, and vapor products.

## Purpose

After hearing public health concerns about cannabinoid hyperemesis syndrome (CHS), LCB leadership requested to learn more on this topic. This brief provides an overview of existing scientific evidence on CHS. It also provides a novel analysis examining CHS among people living in Washington who have used cannabis within the past year.

This document does not represent an official position of LCB.

## Written by:

Nick Glodosky, PhD, Research Analyst

## Reviewed by:

Sarah Okey, PhD, Research Program Manager

Tyler Watson, PhD, MPH, Research Specialist

## Contact

For further information about the Research Program and its work, please visit: [lcb.wa.gov/research\\_program](http://lcb.wa.gov/research_program).

For specific questions about this brief, please email the Research Program at [lcbresearch@lcb.wa.gov](mailto:lcbresearch@lcb.wa.gov).

## Introduction

Cannabinoid hyperemesis syndrome (CHS) is characterized by intense nausea, abdominal pain, and cyclical vomiting after heavy cannabis use.<sup>1-3</sup> It is diagnosed when an individual meets the following criteria:

- Used cannabis at least four days a week for at least one year;
- Experienced three or more episodes of nausea, pain, and vomiting; and
- Symptoms that disappear after six months of cannabis cessation.<sup>1</sup>

CHS is not common, however the exact number of people who have experienced this syndrome is unknown.<sup>2</sup> Current estimates from emergency department surveys suggest that CHS occurs in 2.75 million people in the U.S. annually.<sup>1</sup> Some reports indicate CHS is occurring more often.<sup>1-3</sup> However, it is unclear to what extent this increase is due to more frequent cannabis use or due to increased recognition of CHS by medical professionals.<sup>2</sup> Currently, it is not well understood why some individuals experience CHS but others do not.

Some medications and hot showers can provide temporary relief from CHS symptoms. However, the most effective and long-term treatment is to stop using cannabis.<sup>1-3</sup>

## CHS in Washington State

Given the limited knowledge about CHS in the general population, the LCB Research Program examined the prevalence and risk factors of CHS among a sample of Washington residents using the 2023 International Cannabis Policy Study (ICPS).<sup>4</sup> The ICPS survey asked participants: “Have you ever experienced cannabinoid hyperemesis syndrome (repeated, severe vomiting from marijuana use)?” and “Did you experience cannabinoid hyperemesis syndrome in the past 12 months?”

Results included 1109 participants who reported past-year cannabis use, of which

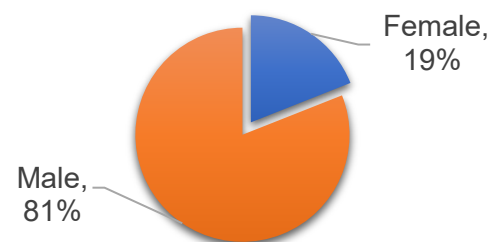
about 8% experienced CHS sometime in their life and about 6% experienced CHS sometime in the past year.

## Identified Risk Factors

We further examined which factors predict increased likelihood of experiencing CHS in the past year. Key results are below:

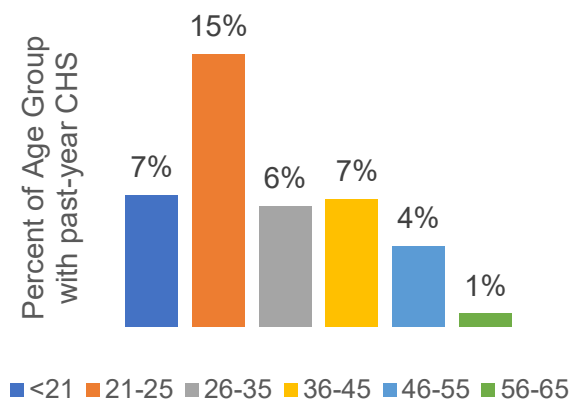
- Males (81%) were more likely to report past-year CHS than females (19%) (Figure 1).

Figure 1. Percent of individuals who experienced past-year CHS by sex.



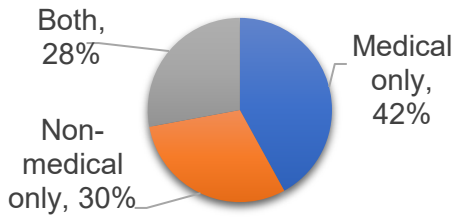
- Younger people were more likely to report CHS than older people. The average age of those who experienced past-year CHS was 34 years (Figure 2).

Figure 2. Age distribution of individuals who experienced CHS in the past year.



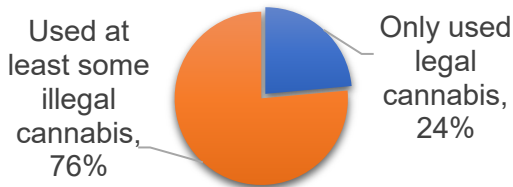
- Those who reported using cannabis for only medical purposes (42%) were more likely to report CHS than those who used for only non-medical reasons (30%) (Figure 3).

Figure 3. Percent of individuals who experienced past-year CHS by medical vs non-medical purposes for use.



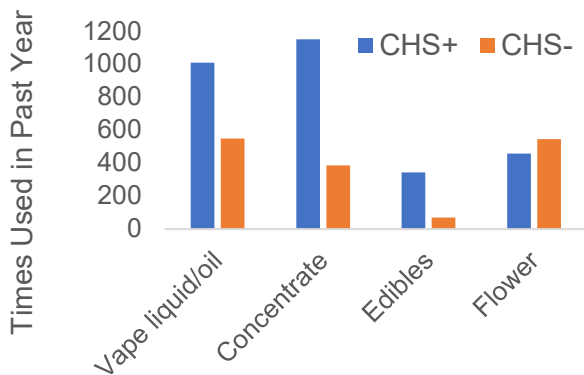
- Those who used any amount of cannabis from illegal sources were more likely to experience CHS (76%) than those who used cannabis only from legal sources (24%) (Figure 4).

Figure 4. Percent of individuals who experienced past-year CHS by use of legal cannabis products.



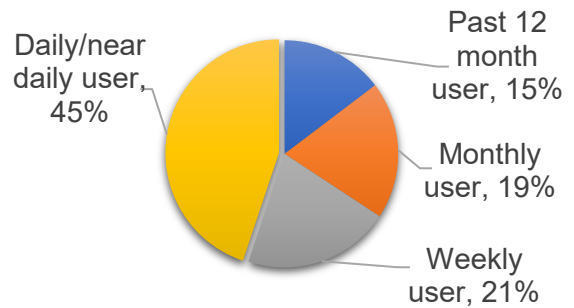
- Those who vaped, used concentrates, or ate edibles more often were more likely to experience CHS than those who used them less often. There was no difference in flower use frequency between those experienced CHS and those who did not (Figure 5).

Figure 5. Product use frequency by CHS status.



- Finally, people who used cannabis more often were more likely to have experienced CHS in the past year. However, this finding was no longer significant after accounting for sex and cannabis use from illegal sources. This suggests these other factors may play a larger role or co-occur with use frequency in this syndrome (Figure 6).

Figure 6. Cannabis use frequency of individuals who experienced CHS in the past year.



Supplements 1 and 2 describe the analytic approach and provide specific estimates on findings.

### Summary

Current research on CHS is limited. CHS is uncommon but is also a potential risk for those who use cannabis. When examining CHS prevalence among a sample of Washington residents, analyses found that individuals were at greater risk of CHS if they were younger, male, using cannabis for only medical reasons, and used cannabis from illegal sources. More frequent use of vape liquid/oil, concentrates, or edibles also predicted greater risk.

Although these results provide insight into who is more likely to report experiencing CHS in the past year, results should be interpreted with caution. In this analysis, few people reported experiencing CHS, possibly because CHS is relatively rare or because it is not well recognized. More research is needed to learn about the cause(s) of CHS and why certain populations are more likely to experience this syndrome.

## References

1. Angulo MI. (2024). Cannabinoid Hyperemesis Syndrome. *JAMA*, 332(17):1496. doi:10.1001/jama.2024.9716
2. Stjepanović D, Kirkam J, & Hall W. (2024). Rare but relevant: Cannabinoid hyperemesis syndrome. *Addiction*. doi:1.1111/add.16693
3. Sorensen CJ, DeSanto K, Borgelt L, Phillips KT, Monte AA. (2017). Cannabinoid Hyperemesis Syndrome: Diagnosis, Pathophysiology, and Treatment-a Systematic Review. *J Med Toxicol*, 13(1):71-87. doi: 10.1007/s13181-016-0595-z
4. Hammond D. (2023). International Cannabis Policy Study. [Washington Results](#).

## Supplement 1. Analytic Approach

Experiencing CHS in the past 12 months was used as the outcome variable (0 = no, 1 = yes). A binary logistic regression was conducted. Post-stratification sample weights were used to reflect the population of Washington more accurately regarding age, sex, ethnicity, education, and smoking status using Washington State census data. Predictors included biological sex (0 = male, 1 = female), age, medical vs. non-medical cannabis use (1 = medical use only, 2 = recreational use only, 3 = both), cannabis use frequency (1 = past 12-month user, 2 = monthly user, 3 = weekly user, 4 = daily/almost daily user), and the percent of cannabis that participants reported using from legal sources in the past 12 months.

Due to sample size restrictions and correlations between different methods of use, follow-up analyses were conducted to individually examine the influence of flower, liquid drops, oil or liquid capsules, oil or liquid for vaping, edibles, drinks, concentrate, hash or kief, tinctures, and topicals on the likelihood of experiencing CHS. Use of these different product types were measured as the number of times participants reported using them in the past 12 months.

Supplement 2. Table with Estimates

Predictor	Estimate	SE	t-value	p-value	OR 95% CI	
Intercept	<b>5.12</b>	<b>0.93</b>	<b>5.50</b>	<b>&lt; .0001</b>		
Sex (Male = 0, Female = 1)	<b>-1.38</b>	<b>0.35</b>	<b>-3.90</b>	<b>.0001</b>	<b>0.13</b>	<b>0.51</b>
Age	<b>-0.08</b>	<b>0.02</b>	<b>-4.52</b>	<b>&lt; .0001</b>	<b>0.90</b>	<b>0.96</b>
Legal Source	<b>-0.03</b>	<b>0.005</b>	<b>-6.35</b>	<b>&lt; .0001</b>	<b>0.96</b>	<b>0.98</b>
Recreational use only (vs. Medical use only)	<b>-2.11</b>	<b>0.48</b>	<b>-4.40</b>	<b>&lt; .0001</b>	<b>0.05</b>	<b>0.31</b>
Both recreational and medical use (vs. Medical use only)	<b>-2.47</b>	<b>0.46</b>	<b>-5.38</b>	<b>&lt; .0001</b>	<b>0.03</b>	<b>0.21</b>
Past 12-month user (vs. daily/near daily user)	-1.00	0.59	-1.68	.094	0.12	1.18
Monthly user (vs. daily/near daily user)	-0.73	0.45	-1.63	.104	0.20	1.16
Weekly user (vs. daily/near daily user)	-0.23	0.47	-0.48	.628	0.31	2.01

*Note: Statistically significant predictors are bolded.*