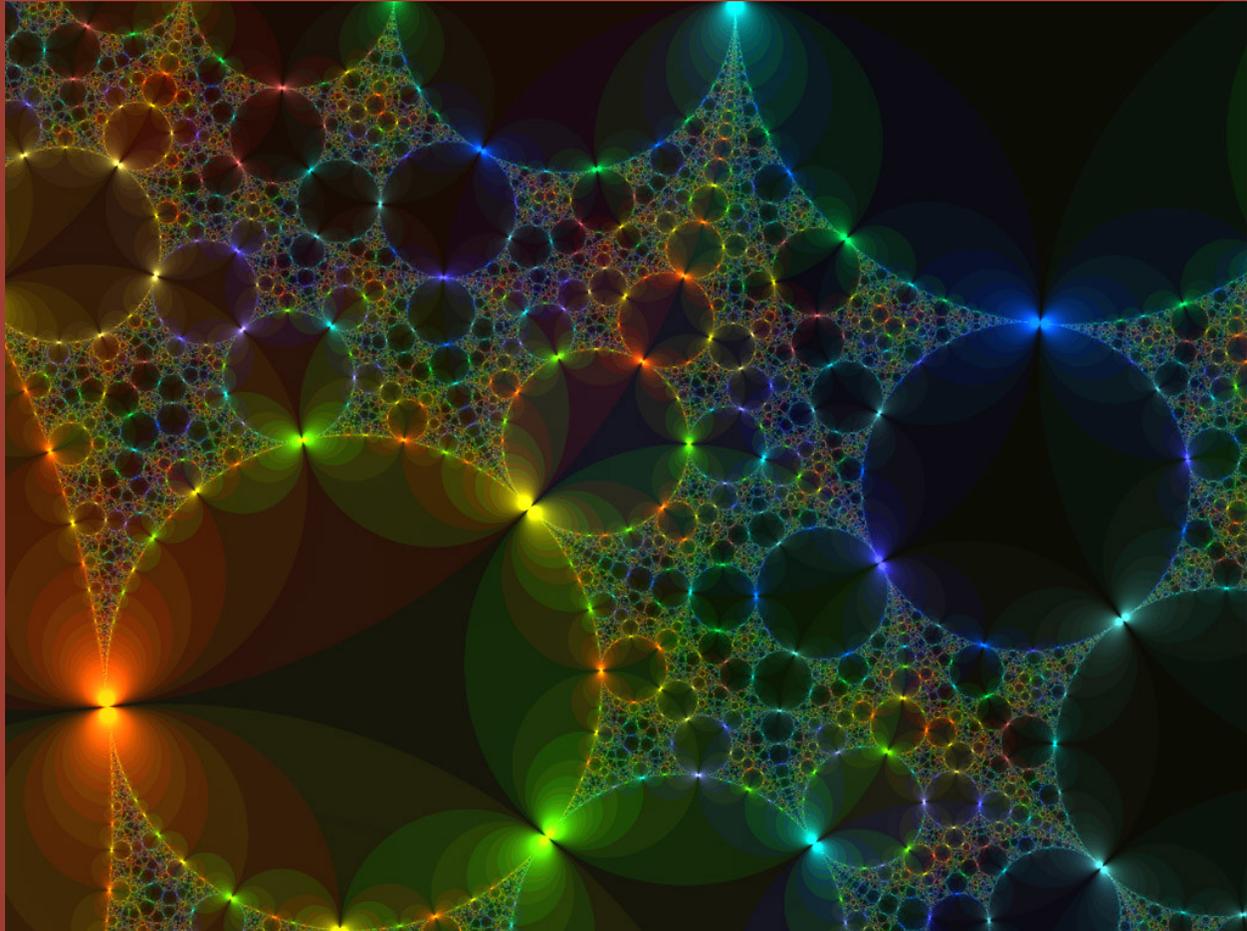


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- News media and psilocybin research: what is the public told?
- A Report of Group Ketamine Therapy Combined with Altered-States Breathwork
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News media and psilocybin research: what is the public told?

Elizabeth O'Connell, RN, BSN; Katya Lavine, BA; Edward Feller, MD

Abstract:

There is a renaissance of research into how psychedelics, including psilocybin, can be a viable treatment for certain psychiatric illnesses. However, psychedelics have a troubled history with the media and public opinion leading to legal restrictions that have limited research for decades. This study is a descriptive analysis of how contemporary psilocybin research is portrayed across a large volume of American print news sources. U.S. print news stories mentioning psilocybin for the fifteen-year period of October 1, 2006, until October 1, 2021, using both Nexis Uni and ProQuest databases were identified. The full text of resulting news items (1121) and identified articles that cited original psilocybin research for the same fifteen-year period for final analysis (46), corresponding to 29 peer-reviewed research publications cited, were all reviewed. From each news item, the following characteristics were extracted: 1. Characteristics of psilocybin as a therapeutic (clinical application, safety claims, potential harm, legal status, mechanism of action); 2. Characteristics of psilocybin research in news items (number of publications cited, limitations, funding sources, safety measures), 3. General characteristics of news items (personal story, author or expert interview, commercial possibilities and costs, history in indigenous cultures). Nearly all articles analyzed (98%) mentioned a specific clinical application of psilocybin, with depression being the most frequently mentioned (74%), followed by anxiety and/or fear (59%), and post-traumatic stress disorder (PTSD) and/or trauma (46%). About half of the articles (48%) included a personal anecdote about psilocybin use, with 100% of the anecdotes having a positive connotation. One-quarter of the analyzed articles (26%) commented on the safety of psilocybin, and 41% mentioned potential harms. The majority (76%) of articles mentioned the legal status of psilocybin. In discussing research, the articles most frequently commented on the study sample size (61%) and least frequently commented on the age, sex, gender, and/or race of the participants in the study/studies (9%). Only one article in our analysis (2%) discussed race and racism surrounding psilocybin use. Despite a minority of articles (9, or 20%) commenting on the commercial potential of psilocybin, attitudes toward the market potential tended to be more negative in earlier articles (2012-2018) and more positive in more recent articles (2020-2021). With the resurgence of research and public interest in psilocybin and its complex history, it is essential to look at how the media portrays this topic and how these narratives might influence perception, policy, funding, and future research. Examining articles from the U.S. news media represents just one area of study. Further research is warranted to examine the evolving discussion of psilocybin and related research in television, radio, social media, and other platforms.

KEYWORDS: Psilocybin, media, public discourse

INTRODUCTION

Mass media depiction of scientific research influences public knowledge and opinion. Currently there is a renaissance of research

into how psychedelics, including psilocybin, can be a viable treatment option in certain psychiatric illnesses ^[1]. Considering that 1 in 5 adults live with mental illness in the United States ^[2], there is considerable interest from

both the public and the financial sector for novel treatments. Accurate representation of current scientific understanding and the limitations of psilocybin as a therapeutic is critical, as historically, psychedelics have a troubled history with the media, public opinion, and the law that hindered psychedelic research for decades.

This study is a descriptive analysis of how contemporary psilocybin research is portrayed across a large volume of American print news sources. The daily average newspaper circulation in the United States is approximately 25 million for both print and digital consumption^[3]. Newspapers reach nearly seventy percent of the U.S. population in a given month^[4]. Previous research has shown that media, like newspapers, can empower the public to make informed health decisions^[5]. However, this requires an accurate, balanced coverage of the available science^[6].

Brief History of Psychedelics in the Media

The serotonergic agonist, psilocybin, is the main psychoactive alkaloid in more than 100 species of mushrooms known colloquially as "magic mushrooms^[7]." It is a classic psychedelic and hallucinogen, along with lysergic acid diethylamide (LSD), mescaline, N, N-Dimethyltryptamine (DMT), and ayahuasca^[7]. For thousands of years, Indigenous and traditional communities have used hallucinogens, like psilocybin, for religious, recreational, and medicinal purposes^[8]. Nevertheless, until the 1950s, there was little interest within mainstream psychiatry in treating mental illness as a biological condition that could benefit from exogenous medicines.

After the discovery of the psychoactive effects of LSD in 1943, followed by the introduction of chlorpromazine, reserpine, and monoamine oxidase inhibitors, there was significant curiosity in understanding both the biology and the chemistry of the brain and research into psychedelics as potential

therapeutics flourished^[9]. By 1961, there were over 1000 published papers with nearly 40,000 participants in LSD research alone^[7]. The American government supported psychedelic research by funding over 130 studies on LSD's ability to treat anxiety, depression, and alcoholism^[10], and possibly conducted covert research into LSD's usefulness in mind-control and espionage^[7].

Inevitably, psychedelics left the controlled environment of the research laboratory and became embedded in the youth and celebrity culture of the 1960s. Early media coverage of psychedelics was largely positive. In 1957, Life magazine published an account of the prominent investment banker, Robert Wasson, along with his physician wife's experiences with "divine" psilocybin mushrooms given to them during a Mazatec ritual in Mexico^[11]. At the height of his acting career in the late 1950s, Cary Grant credited LSD-assisted psychotherapy for his happiness, finally allowing him to heal from a difficult childhood^[12].

A few psychedelic researchers embraced the press and became celebrities too. Timothy Leary and Richard Alpert, both psychologists at Harvard until their dismissal in 1963, blurred ethical and scientific norms in their academic pursuits but gave countless interviews and speeches on the healing and mind-expanding potential of LSD and psilocybin^[13]. In an interview with Playboy magazine in 1966, Leary presented psychedelics as a potential cure for sexual frigidity, impotence, and homosexuality^[14]. His message of "turn on, tune in, drop out" became the drumbeat of the counterculture movement, and psychedelics became a scapegoat for generational conflict, violence, and irrational behavior and were seen as a threat to society's values and institutions^[15]. By the late 1960s, sensational and exaggerated news coverage of psychedelics dominated, and public opinion shifted dramatically. Press reports of widespread psychedelic use among undergraduate

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students, zombie-like users, and possible chromosomal damage to unborn children, reminiscent of the recent Thalidomide scandal, were particularly damaging [16–18].

This moral panic [16] shaped political discourse, and with the rise of Richard Nixon and the birth of the “war on drugs [19],” anti-psychedelic sentiment culminated in 1967, when they were made illegal as Schedule I drugs with “no acceptable medical use and high abuse potential” by the UN Convention on Drugs [20]. Despite early research showing promise in their treatment of non-psychotic mental illness, efficacy and safety standards were yet to be concluded and clinical research stalled under the new restrictions for decades [19,20].

The scientific community and supporters continued their advocacy and belief in psychedelics’ therapeutic potential, and there has been a resurgence of research in the last fifteen years. Much of the current psychedelic research focuses on psilocybin, which is chemically similar to LSD but carries less political and cultural baggage [21]. There is a growing body of evidence that psilocybin is safe, non-addictive, and efficacious in treating end-of-life anxiety, mood disorders, and substance use disorders [22–27]. Contemporary studies have stronger methodology than the research of the 1950s and 1960s, but concerns about study design, including sample size, lack of placebo, and homogeneity of participants, are still evolving [8].

Ultimately, peer-reviewed science is slower than the trends or whims of the public, and the emergence of numerous websites, podcasts, and news coverage that promote psychedelics has prompted researchers to urge caution and avoid the same backlash and prohibition of the past [28]. Considering the problematic history of psychedelics in the media and the vulnerability of drug development to commercial interests [29], insight into how the press depicts the current psychedelic research renaissance is necessary. A previous

study of psilocybin in the media looked at four large regional newspapers for a change in sentiment and found one newspaper to have an increase in positive reporting from 1989 until 2020 [30]. This study is the first descriptive analysis of how contemporary psilocybin research is portrayed across a large volume of American print

METHODS

U.S. print news stories mentioning psilocybin for the fifteen-year period of October 1, 2006, until October 1, 2021, were identified using all available news items in the Nexis Uni database and high circulation news items in the ProQuest database. The search started with Nexis Uni, the successor to the database LexisNexis, a widely used newspaper archive website. Utilizing the front-page search tab for the term ‘psilocybin’ and then applying the following criteria through the available filters: news, October 1, 2006, to October 1, 2021, all individual US states, newspapers, English. These criteria yielded 1106 items which were reduced to 1049 items after applying the internal feature to eliminate duplicates.

Querying the ProQuest database included the high circulation newspapers that did not appear in our NexisUni search as they have a national versus state-specific audience. Such as USA Today, Wall Street Journal, and Washington Post. In ProQuest, publications were identified via title and appropriate date range. Searching within the individual publication for “psilocybin” further filtered the date from October 1, 2006, to October 1, 2021, yielding an additional 72 news items. The first author (EO) reviewed the full text of all the resulting news items (1121) and screened out duplicated items within the same newspaper, articles less than 150 words, non-newspaper publishers, or did not include identifiable psilocybin research from the same fifteen-year period above. Identical

articles of the same length and content printed in different newspapers were included in the list of newspapers, but data was collected only once. Forty-six news items were included in the final analysis (Figure 1), and twenty-nine corresponding peer-reviewed research publications were cited (Figure 2). The following characteristics were extracted from each news item by the primary author (EO) and second author (KL) independently, and differences were adjudicated until consensus was reached.

Figure 1

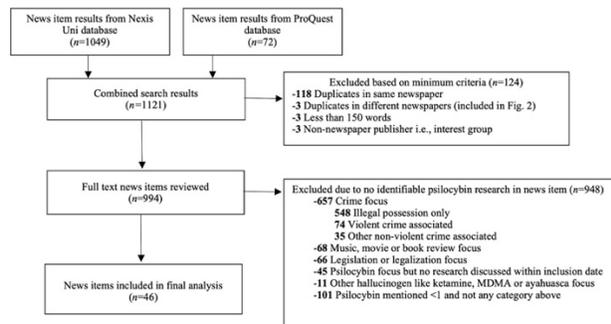


Figure 2 Newspaper Title (n=49)	#
New York Time	11
Washington Post	8
The Bismarck Tribune	4
Wisconsin State Journal	3
USA Today	3
Dayton Daily News	2
Telegraph Herald (Iowa)	2
Wall Street Journal	2
Los Angeles Times	1
Tampa Bay Times	1
Philadelphia Inquirer	1
Providence Journal	1
Deseret News (Utah)	1
Charleston Gazette Mail	1
Spokesman Review	1
The Daily Oklahoman	1
Tampa Tribune	1
Crain's New York Business	1
Stars and Stripes (U.S. Military News)	1
Philadelphia Daily News	1
Charleston Daily Mail	1
Salt Lake Tribune	1

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Figure 3 Research Publications Cited in News Items	Journal	Date	#
Title			
<u>Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later</u>	Journal of Psychopharmacology	7/1/08	4
<u>Drug harms in the UK: a multicriteria decision analysis</u>	The Lancet	11/12/10	1
<u>Pilot Study of Psilocybin Treatment for Anxiety in Patients With Advanced-Stage Cancer</u>	JAMA Psychiatry	1/3/11	3
<u>Psilocybin occasioned mystical-type experiences: immediate and persisting dose-related effects</u>	Psychopharmacology	6/15/11	2
<u>Neural correlates of the psychedelic state as determined by fMRI studies with psilocybin</u>	Proceedings of the National Academy of Sciences	2/7/12	2
<u>Implications for psychedelic-assisted psychotherapy: functional magnetic resonance imaging study with psilocybin</u>	British Journal of Psychiatry	3/1/12	1
<u>Effects of psilocybin on hippocampal neurogenesis and extinction of trace fear conditioning</u>	Experimental Brain Research	2/9/13	3
<u>The entropic brain: a theory of conscious states informed by neuroimaging research with psychedelic drugs</u>	Frontiers in Neuroscience	2/3/14	1
<u>Enhanced Repertoire of Brain Dynamical States During the Psychedelic Experience</u>	Human Brain Mapping	7/3/14	1
<u>Pilot study of the 5-HT2AR agonist psilocybin in the treatment of tobacco addiction</u>	Journal of Psychopharmacology	9/11/14	7
<u>Homological scaffolds of brain functional networks</u>	Journal of Royal Society	12/6/14	1
<u>Psilocybin-assisted treatment for alcohol dependence: A proof-of-concept study</u>	Journal of Psychopharmacology	1/13/15	3
<u>Psychedelics not linked to mental health problems or suicidal behavior: A population study</u>	Journal of Psychopharmacology	3/5/15	1
<u>Classic psychedelic use is associated with reduced psychological distress and suicidality in the United States adult population</u>	Journal of Psychopharmacology	3/29/15	2
<u>Psilocybin with psychological support for treatment-resistant depression: an open-label feasibility study</u>	Lancet Psychiatry	5/17/16	2
<u>Long-term follow-up of psilocybin-facilitated smoking cessation</u>	American Journal of Drug and Alcohol Abuse	7/21/16	1
<u>Survey study of challenging experiences after ingesting psilocybin mushrooms: Acute and enduring positive and negative consequences</u>	Journal of Psychopharmacology	8/30/16	1

<u>Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial;</u>	Journal of Psychopharmacology	12/30/16	13
<u>Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial</u>	Journal of Psychopharmacology	12/30/16	12
<u>Psilocybin for treatment-resistant depression: fMRI-measured brain mechanisms</u>	Scientific Reports	10/13/17	2
<u>Horizontal gene cluster transfer increased hallucinogenic mushroom diversity</u>	Evolution Letters	2/27/18	1
<u>The abuse potential of medical psilocybin according to the 8 factors of the Controlled Substances Act</u>	Neuropharmacology	6/5/18	2
<u>Psychedelics Promote Structural and Functional Neural Plasticity</u>	Cell Reports	6/12/18	1
<u>High dose psilocybin is associated with positive subjective effects in healthy volunteers</u>	Journal of Psychopharmacology	6/27/18	2
<u>Predicting Responses to Psychedelics: A Prospective Study</u>	Frontiers in Pharmacology	11/2/18	1
<u>Survey of subjective "God encounter experiences": Comparisons among naturally occurring experiences and those occasioned by the classic psychedelics psilocybin, LSD, ayahuasca, or DMT</u>	Plos One	4/23/19	1
<u>Psilocybin acutely alters the functional connectivity of the claustrum with brain networks that support perception, memory, and attention</u>	NeuroImage	5/23/20	1
<u>Effects of Psilocybin-Assisted Therapy on Major Depressive Disorder: A Randomized Clinical Trial</u>	JAMA Psychiatry	11/4/20	4
<u>Trial of Psilocybin versus Escitalopram for Depression</u>	New England Journal of Medicine	4/15/21	3

News media and psilocybin research: what is the public told?

Characteristics of psilocybin as a therapeutic:

Psilocybin's clinical applications mentioned in the news item were recorded, including depression, anxiety or fear, trauma, addiction etc. The news item was assessed for if and how it describes psilocybin's safety profile, including potential harm from use. Additionally, the mention of the legality of psilocybin was also noted. Lastly, screening was conducted for any discussion of the psilocybin's mechanism of action, including changes to the default mode network, electrical activity, neuroplasticity, and use of the 5-HT_{2A} serotonin receptor.

Characteristics of psilocybin research in news item:

Each news item's discussion of research limitations such as age, race, and gender of participants, sample size, control group, or placebo was evaluated. Description of administration settings, including a safe environment and screening protocols that are standard in current psychedelic research, and funding sources were all noted.

General characteristics of the news item:

Other more general characteristics were recorded, including mention of a personal story, the subjective individual response to a psychedelic or psilocybin experience, and an interview with a study author or psychedelic expert. Additionally, discussions concerning financial gains or commercial possibilities for psychedelics, high costs of treatment that could hinder future access, and psychedelics' role and history in indigenous cultures were noted.

Figure 4 Characteristics of Psilocybin as a Therapeutic	Number	Percent
Clinical Application		
Depression	34	74
Anxiety or Fear	27	59
Post-Traumatic Stress Disorder or Trauma	21	46
Non-specific mention of ‘addiction’	16	35
Alcohol Use Disorder	14	30
Nicotine Dependence	11	24
Opiate (2), Cocaine (2), Methamphetamine Use Disorders (1)	5	11
Obsessive Compulsive Disorder	5	11
Cluster Headaches	2	4
Other: Anorexia (2), Chronic Pain (2), Inflammation (1), Autism (1), Migraines (1), Memory/Learning (1)	8	17
No specific disease discussed	1	2
Safety Claims		
No addictive potential	12	26
No serious or long-term side effects	6	13
Use of term “not toxic”	4	9
Non-lethal	3	7
No mention of safety	34	74
Potential Harm		

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Psychosis in patients with pre-disposition or schizophrenia	9	20
Psychosis without mention of pre-existing conditions	4	9
Anxiety or Fear	7	15
“Bad Trip”	7	15
Vulnerability to suicide or violence	4	9
No known safe dose or misidentification of mushroom	4	9
Flashbacks	3	7
Cardiac complications	1	2
No specific harm discussed	27	59
Legal Status		
Mentions ‘illegal’, ‘controlled’, or ‘Schedule I’	35	76
No mention	11	24
Mechanism of Action		
‘Default Mode Network’ or change in electrical activity	10	22
Increased plasticity or connectivity	6	13
Serotonin 5-HT _{2A} receptor agonist	3	7
No specific mechanism discussed	31	67
Number of Publications Cited		
1	26	57
2	10	22
3 or more	10	22

Characteristics of Psilocybin Research in News Item		
Limitations Mentioned		
Sample size	28	61
Control group or placebo	10	22
Age, race or gender of participants	4	9
Safety Measures		
Controlled environment	17	37
Screening of participants	9	20
Funding Source Mentioned		
	13	28
General Characteristics of News Item		
Includes Personal Anecdote		
Positive experience	22	48
Negative experience	0	0
Interview Included		
Author	10	22
Expert	9	20
Both	14	30
No interview	13	28
Commercial Possibilities		
Positive financial market	6	13
No future financial market	3	7

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Costs affecting accessibility	3	7
Role and History in Indigenous Cultures		
Mentioned	7	15
No Mention	39	85

RESULTS

Of the 46 news articles included in the final analysis, 45 articles (98%) mentioned a specific clinical application of psilocybin. 34 articles (74%) mentioned depression, 27 articles (59%) mentioned anxiety or fear, 21 articles (46%) mentioned post-traumatic stress disorder (PTSD) or trauma, 16 articles (35%) mentioned the term ‘addiction’ in a non-specific way, 14 articles (30%) mentioned alcohol use and or alcohol addiction specifically, 11 articles (24%) mentioned nicotine, tobacco, and or cigarette smoking, five articles mentioned addiction specifically pertaining to opiates, methamphetamine, or cocaine use. Five articles mentioned obsessive-compulsive disorder (OCD). Less frequently mentioned were cluster headaches (two articles), anorexia (two articles), and chronic pain (two articles). Other topics mentioned in one of the 46 articles included inflammation, autism, migraines, and memory/learning.

Twelve of the 46 news articles in the final analysis (26%) included a claim about the safety of psilocybin, and 19 of the 46 news articles (41%) included a claim about the potential harm of psilocybin. Of the 12 articles that discussed the safety of psilocybin, all 12 (100%) mentioned the lack of addiction potential of psilocybin (overall, 26% of the 46 articles, in the final analysis, mentioned the non-addictive nature of psilocybin). Six articles (13%) mentioned the lack of serious or long-term side effects of psilocybin, four articles (9%) mentioned the term “non-toxic” in reference to psilocybin, and three articles (7%) referenced psilocybin as non-lethal. Thirty-four articles (74%) did not refer to the safety of psilocybin. Regarding mention of potential harms of psilocybin, nine articles (20%) mentioned the potential for psychosis in a patient with schizophrenia or another pre-existing mental illness, and four articles (9%) mentioned the potential for psychosis regardless of pre-existing conditions.

Additionally, seven articles (15%) mentioned anxiety or fear, seven articles (15%) mentioned the term ‘bad trip,’ four articles (9%) mentioned vulnerability to suicide and or violence, four articles (9%) mentioned no known safe dose and or misidentification of mushroom, three articles (7%) mentioned flashbacks, and one article (2%) mentioned cardiac complications. Twenty-seven articles (59%) made no mention of the potential harm of psilocybin.

Regarding the legal status of psilocybin, 35 articles (76%) of the articles included in the final analysis mentioned the terms “illegal,” “controlled,” or “schedule 1.” Eleven articles (24%) did not refer to the legal status of psilocybin. Twelve of the 46 articles included in the final analysis (26%) referenced a possible mechanism of action of psilocybin, including the Default Mode Network and change in brain electrical activity (10 articles, 22%), altered plasticity or connectivity (six articles, 13%), and serotonin 5-HT_{2A} receptor agonism (three articles, 7%). Thirty-one articles (67%) did not mention the specific mechanism of psilocybin.

Regarding the discussion of research in the news articles, 26 of 46 in the final analysis (57%) cited one peer-reviewed publication published in the U.S. during the fifteen years from October 1, 2006, until October 1, 2021. Ten articles (22%) cited two or more publications, and ten articles (22%) cited three or more publications. Twenty-eight articles (61%) mentioned a specific sample size in the study/studies referenced, ten articles (22%) mentioned the presence or absence of a control group in the study or studies referenced, and four articles (9%) discussed topics of age, sex, gender, and or race of the participants in the study or studies. Seventeen articles (37%) discussed the presence of a controlled environment during the study, such as a room with certain decorations or the presence of a guide/facilitator with the participant for the duration of the study. Nine articles

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(20%) discussed the screening process of the study/studies, such as specific inclusion or exclusion criteria for participants. Thirteen articles (28%) mentioned the funding source of the cited study/studies.

In nearly half of the news articles (22, or 48%), a personal anecdote about psilocybin was included. 100% of these personal anecdotes were positive, and none of the 46 articles in the final analysis included a negative personal anecdote. Most articles (33, or 72%) also included an interview with either a study author or an expert in the field, with 14 articles (30%) including interviews from both study authors and experts. A minority of the articles (six or 13%) discussed a potentially positive financial future of psilocybin, and three (7%) mentioned the issue of cost as a factor in the accessibility of psilocybin. Finally, only seven articles in the final analysis (15%) mentioned the role and history of psilocybin in Indigenous cultures.

DISCUSSION

With the resurgence of interest in psychedelics in the last decade, it is important to track public discourse and discussion of these substances, given both their complex history and their potential promising role in the treatment of a variety of mental illnesses. Even though we looked specifically at news articles citing psilocybin research, our initial search yielded 1121 U.S. print news articles mentioning psilocybin from October 1, 2006, through October 1, 2021. Notably, in the majority of these articles (n=657), psilocybin was mentioned not in the context of research but concerning crime and was occasionally associated with violent crime (n=74). Other contexts in which psilocybin was mentioned include creative capacities such as reviews for movies, books, or music (n=68). Thus, our study focused exclusively on news articles citing psilocybin research, but these articles represented only 4% of all articles in our

initial search. It is important to ground our discussion in this greater context, and further research is warranted to characterize media representation of psilocybin beyond articles citing peer-reviewed research.

Also notable is the relative absence of discussion on the cultural and historical roots of psilocybin. Despite seven of 46 articles (15%) acknowledging this history, only one article^[31] made significant mention of Indigenous religious traditions surrounding psychedelics and the potential harms of not acknowledging this history. That same article was also the only article that acknowledged issues of racism, accessibility, and inequity in the field of psychedelic medicine: “White people and Black people are equally likely to use illegal drugs, a 2009 Human Rights Watch report found, but Black people are arrested for drug offenses at much higher rates than White people. George, who is black, spoke directly to these inequities at the climax of her talk. While White people might see psychedelic use as edgy or controversial, there is little legal risk in White use of these substances^[31].” Not only did the vast majority of articles in our study fail to acknowledge this inequity, but none of the 29 cited publications referenced by the news articles discussed how a long history of legal injustices and medical harm to Black and non-white communities may influence access to, and consequences from, psilocybin use.

Additionally, only four articles (9%) in our analysis mentioned the race, age, sex, and or gender of research participants representing a major limitation in both psychedelic research and public understanding of its limitations. A 2018 study found that in studies of psychedelics between 1993-2017, 82% of participants were non-Hispanic white, 2.1% identified as Latino/a, and 2.5% identified as Black^[32]. To our knowledge, no studies thus far have performed similar analyses for participant age, sex, and or gender. Including a more diverse study population is critical in

fully understanding the outcomes of psilocybin and other psychedelic use.

On a related note, only a small minority of articles in our analysis (three or 7%) addressed issues of cost and accessibility related to psilocybin and other psychedelics. Experts recommend taking psilocybin in the company of a trained facilitator in a curated environment, a process that takes time and money. Furthermore, due to the illegal status of psilocybin in the US, some news items included personal anecdotes from individuals from the US flying to locations such as Jamaica for undoubtedly costly “retreats” in which psilocybin is administered^[33]. The implication, which most of the articles failed to discuss, is that psychedelics are currently more accessible to wealthy, white individuals. This is not only due to the cost, but also to the fact that white individuals are less likely than Black and non-white individuals to endure consequences for taking an illegal substance^[34]. The fact that a potentially significantly efficacious breakthrough treatment for mental illness would be most accessible to wealthy, white patients could further exacerbate health inequities in the US.

Unsurprisingly, more articles (nine or 20%) discussed the overall commercial potential of psilocybin than issues of individual cost and accessibility (three or 7%). Of the articles that discussed the commercial potential of psilocybin, those written earlier in the 15 years studied, tended to have a more negative outlook on the market. Dr. John Halpern of McLean Hospital in Mass. said in 2012, "There's no money in it. [...] 'What drug company is going to invest millions in a substance widely available in our flora and fauna^[35]?'” Articles from 2016 and 2018 in the New York Times echoed Halpern’s sentiment: “Big Pharma has not demonstrated significant interest in psychedelics, and it's not hard to see why: Psychedelic therapy is a rather square peg to fit into the round hole of psychopharmacology as we now know it^[36, 37].”

However, articles from 2020 and 2021 tended to take a more optimistic stance. “Investors have been encouraged by the changing politics, a shift inspired in part by the nation's accelerating embrace of recreational marijuana and by public weariness over America's endless war on drugs,” wrote Andrew Jacobs of the New York Times in May 2021^[38,39]. Indeed, it is plausible that the increasing legalization of recreational cannabis in the last few years has shifted the discourse on the potential financial market of psychedelics.

Although all print articles from major U.S. news sources mentioning psilocybin in a 15 year period were reviewed, this does not represent the entire picture of media and or public representation of psilocybin. Information was not obtained about psilocybin communicated via television, radio, YouTube, or social media. Given that approximately one-third of Americans state they get their news from Facebook^[40], this represents a significant limitation of this study. Additional research on social media representation of psilocybin is warranted to understand further and characterize trends, particularly in more informal and less regulated methods of information sharing. Additionally, while the focus of this research was on psilocybin exclusively, it is important to consider our findings in the growing body of literature on media representation of other psychedelic drugs such as ayahuasca, DMT, and LSD.

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A Report of Group Ketamine Therapy Combined with Altered-States Breathwork

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INTRODUCTION

Psychedelic medicines, such as psilocybin, MDMA, and ketamine, can occasion a wide variety of subjective experiences. Common to many of them is the experience of boundlessness and interconnectedness. This interpersonal phenomenon has been utilized throughout the millennia to enhance psychospiritual well-being and unity in social groups. Participants of group psychedelic experiences report increases in long-term levels of well-being [1,2].

Since the emergence of psychedelics in the 1960s, group psychedelic experiences have almost exclusively occurred in underground settings under the radar of law enforcement. After the prohibition of psychedelic medicines in the 1970s, research into their use essentially stopped until the 21st century. As such, group settings have not been well-described [3].

The psychedelic prohibition ushered in non-medicinal forms of altered-states therapy, popularly seen in Holotropic Breathwork [4] and the Wim Hof Method [5], which use a pattern of deep, rhythmic, diaphragmatic breathing to induce non-ordinary states of consciousness (NOSC). Furthermore, breathing exercises have been shown to decrease anxiety states and improve well-being, even without the induction of NOSC, by up-regulation of the parasympathetic nervous system [6-8].

Today, ketamine has been increasingly used for treating mental health disorders, such as depression and PTSD. While not a classic serotonergic psychedelic, ketamine shares many experiential similarities to psilocybin and LSD in that ketamine produces feelings of boundlessness, loss of self,

interconnectedness, and other domains as are common to mystical-type experiences.

As the quality of the psychedelic experience correlates with therapeutic success [9], practitioners are seeking methods to improve the experience of ketamine therapy. This article describes—to our knowledge—the first report of a group ketamine session facilitated by supra-ventilatory breathwork.

CASE INFORMATION

The participants met in a small pioneer-style adobe house in Southern Utah. Lying on the floor with mats and blankets, each self-administered 200mg oral ketamine troches. The breathwork facilitator led the group through a series of deep breathing exercises for 25 minutes, culminating in a supra-ventilatory pattern. The supra-ventilatory pattern alone can occasion a slightly altered state of consciousness.

The session lasted approximately 90 minutes. Afterward, the group engaged in a period of self-disclosure.

Participant 1

A 37-year-old male previously treated with intravenous ketamine therapy for depression described the group ketamine+breathwork session as more ‘lucid’ than an IV session. Coming into the session, he had been troubled by political tribalism, and the ketamine experience allowed him to see the artificial divisions as well as experience a sense of connectedness to others. He described a deep feeling of acceptance and compassion. He was able to self-guide the experience more easily than in previous treatments.

Another insight for him was the idea of being a thermostat versus a thermometer. In most group settings, he lets others set the mood. In this group experience, he could set his own temperature and not let the conversations of others determine his mood.

This participant felt that the breathwork session created an anxiety-free state prior to the ketamine peaking and that he was at less risk for a ‘bad trip.’

Participant 2

A 44-year-old male mental health professional previously treated with ketamine once via a 150mg troche without breathwork described the group ketamine+breathwork as an ineffable experience. “The vernacular is lacking to be able to describe the whole experience,” he said.

He said that the breathwork allowed him to relax into the experience. It was a gradual and natural process and made for an easy transition into the psychedelic state. “The experience gave a sense of unifying with the people that were there.” He described feelings of gratitude and closeness.

This participant felt like the breathwork allowed him to go deeper into the experience with less anxiety. “I think this could help people ease into trauma-focused therapy,” he said. “It lowers your guard.”

Participant 3

A 50-year-old male healthcare provider previously treated with ketamine IV, intranasal, and 250mg troche said the breathwork placed him into a very calm state while the ketamine was coming on. He described the ketamine+breathwork experience as being as deep as his previous IV session but that he was better able to control his body as the IV session produced a profound out-of-body experience. The breathwork placed the experience in a very joyful and peaceful place.

He also said the ketamine+breathwork experience allowed him to recover more quickly than IV ketamine. The experience allowed him to change his lens of perspective, especially since he had set intentions previously. The positive mental effects lasted at least one week, during which he felt he was ‘buzzing.’

DISCUSSION

Ketamine is usually administered intravenously or intramuscularly in a physician’s office. However, therapists have begun using ketamine troches (lozenges) to facilitate in-depth psychotherapy. This case report describes the use of ketamine troches in a group setting while being led through rhythmic deep-breathing exercises.

The participants all agreed that deep rhythmic breathing enhanced the session and likely potentiated the troche, enabling a lower dose of oral ketamine to produce a deep, psychedelic state.

Based on previous studies, deep breathing has been shown to lower anxiety and improve mood. Preceding a ketamine experience with breathwork seems to improve the mindset of the participant and may provide an optimal setting in which to conduct ketamine therapy.

CONCLUSION

Ketamine troches at doses of 200mg and, when combined with deep breathing exercises, may be able to occasion an experience that approximates an IV infusion. Deep rhythmic breathing may lower anxiety and improve the mindset of participants. Additionally, a group experience of ketamine+breathwork is well-tolerated, may result in increased well-being, and may lower the out-of-pocket costs of ketamine therapy.

A Report of Group Ketamine Therapy Combined with Altered-States Breathwork

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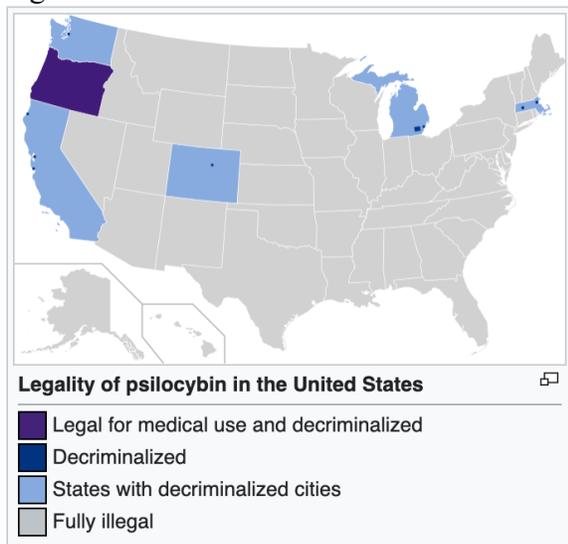
Right To Try Laws and Psychedelics

Tyler Kjorvestad, MD

The recent Supreme Court decisions regarding the Second Amendment ^[1] and the overturning of *Roe v. Wade* ^[2] have generated significant and vigorous debate. Undoubtedly gun rights and abortion access are at the forefront of the cultural zeitgeist. Within the Psychedelic legal sphere, one piece of legislation may offer an expedited way forward.

Currently, many different approaches are being taken regarding the legal status of psychedelics. In a small number of cities across the country, steps toward decriminalization are underway. Conversely, the work of MAPS and other Psychedelic Research groups has, for the first time in nearly five decades, the potential for re-medicalization of these substances squarely within the realm of the possible. Aside from decriminalization and medicalization, efforts at full drug legalization are being pursued but seem to be the most inchoate, with only the state of Oregon passing legislation to legalize psychedelics.

Figure 1 ^[3]



All three options of decriminalization, medicalization, and legalization carry inherent trade-offs. The quickest option to implement is decriminalization. However, city decriminalization laws directly conflict with the federal and some state drug laws already on the books. Decriminalization relies on the federal or state government deciding not to investigate or prosecute individuals for those specific drug-related offenses—this disposition to prosecute or not can radically change from election cycle to election cycle and administration to administration ^[4]. Additionally, in a decriminalized environment, there are issues of economics and quality control. Selling a federally illegal substance creates numerous issues regarding economic transactions and banking. In states where cannabis is legal, several small business owners have documented the difficulty of getting bank accounts, and this will be even more difficult, if not impossible, concerning psychedelics ^[5]. If a substance is only decriminalized, one cannot reasonably set up a small business from which to distribute a substance. The federal government has also taken steps to cut off State Medicaid funding to states that have legalized federally illegal substances like cannabis ^[4]. Likewise, safely manufacturing a psychedelic substance and ensuring that no cross-contamination occurs is of the utmost importance. Quality control is essential in light of the increasing number of opioid overdoses and the number of individuals obtaining what they believe is a non-opioid-based substance only to tragically discover later that it is contaminated with an opioid such as fentanyl ^[6]. The lack of quality control can also feed into previously held stereotypes surrounding the safety of psychedelics. If an individual were to take a psychedelic substance laced with an alternative drug like a

stimulant or opioid and have an adverse event, the psychedelic substance would likely receive at least some of the blame. If frequent enough, these adverse events and accompanying negative press attention would significantly undermine all the work that organizations like MAPS have done to rehabilitate and legitimize the image of psychedelics.

Medicalization efforts, primarily led by MAPS, have been the most consistent and fruitful legal interventions employed by psychedelic groups. However, while it appears that drugs like psilocybin and MDMA are within two to five years of being approved by the FDA for specific indications, the specific prescribing requirements and ability to use the psychedelic substances off-label remains undefined ^[7]. Suppose the medical bureaucracy imposes severely burdensome regulations regarding psychedelic use. In that case, these substances may be restricted to only those with a significant enough symptom burden and the economic means to afford these treatments.

Lastly, complete or partial psychedelic legalization could address the economic and quality control issues encountered in decriminalization while simultaneously providing more affordable and widespread access to a large population. However, the legalization of psychedelics faces numerous cultural and legal challenges, unlike cannabis which has been successfully legalized in several states ^[8]. The stench of the 1960s and 1970s still lingers with psychedelics. Even considering that most of the concerns raised about psychedelics were unsubstantiated, broaching the topic of national legalization would be perilous. While the opinion of psychedelics has steadily been changing, the sentiments across the country have varied widely based on location ^[9, 10]. These regional differences would likely result in a patchwork of legalized states and potentially even further stratification into specific cities and counties within those states that elect to pursue

legalization. These legalization efforts would produce a cultural map similar to alcohol, where there are dry and wet counties across many states.

Even if the legal barriers are removed, the cultural sentiment will still dictate the wide-scale adoption or prohibition of psychedelic substances. Efforts to highlight the benefits of psychedelic-assisted psychotherapy are currently underway, but one avenue of significant underutilization is right to try laws. Right to try laws allow individuals "with life-threatening diseases or conditions who have tried all approved treatment options and who are unable to participate in a clinical trial to access certain unapproved treatments ^[11]." A federal right to try bill was passed and signed into law in 2018, and currently, 41 states have passed some version of a right to try law ^[12]. Patients eligible for the right to try must meet the following criteria ^[11]:

- Been diagnosed with a life-threatening disease or condition.
- Exhausted approved treatment options and is unable to participate in a clinical trial involving the eligible investigational drug (this must be certified by a physician who is in good standing with their licensing organization or board and who will not be compensated directly by the manufacturer for certifying).
- And has provided, or their legally authorized representative has provided, written informed consent regarding the eligible investigational drug to the treating physician.

The selected drug must also meet specific criteria including ^[11]:

- A Phase 1 clinical trial has been completed.
- Has not been approved or licensed by the FDA for any use.
- An application has been filed with the FDA or is under investigation in a clinical trial that is intended to form the primary

Right To Try Laws and Psychedelics

basis of a claim of effectiveness in support of FDA approval and is the subject of an active investigational new drug application submitted to the FDA.

- Has active development or production is ongoing, and that has not been discontinued by the manufacturer or placed on clinical hold by the FDA.

Psychedelic substances have already shown significant promise in treating anxiety and depression in individuals with a life-threatening illness or terminal cancer. The positive benefits have been repeatedly demonstrated across different locations, patient populations, and psychedelic substances [13-15]. Depressive and anxiety spectrum disorders are common among patients with life-threatening or terminal conditions [16]. Still, these diagnoses would often not meet the inclusion criteria for most psychedelic clinical trials. Expanding the use of psychedelic substances to a broader population would provide additional clinical information outside those commonly reported in efficacy-based clinical trials. Outside of the medical benefits that psychedelics would provide to patients suffering from these end-of-life disorders, positive results in this population could also help persuade psychedelic skeptics and opponents toward supporting further psychedelic research or at least not taking active steps to prevent research or FDA approval. Engendering goodwill toward psychedelics or at least reducing the apprehension around them will be particularly important as these substances begin to be reintroduced to popular culture, especially for psychedelic advocates and supporters who wish to avoid a negative backlash like the one seen in the 1970s.

Right to try laws represent an underutilized legal pathway to expand access to psychedelic substances while efforts toward medicalization are ongoing. Right to try laws present a safer alternative to decriminalization by ensuring that patients receive

pharmaceutical-grade compounds under reasonable quality control, thereby reducing the likelihood of harmful adverse reactions. Furthermore, if used appropriately, right to try laws provide the opportunity to improve and enhance the perception of psychedelics culturally, which could pay long-term dividends in future legalization efforts.

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