

Cannabis and psychosis: revisiting a nineteenth century study of 'Indian Hemp and Insanity' in Colonial British India

Original Article

Cite this article: Ayonrinde OA (2020). Cannabis and psychosis: revisiting a nineteenth century study of 'Indian Hemp and Insanity' in Colonial British India. *Psychological Medicine* 50, 1164–1172.

Received: 15 October 2018
Revised: 14 April 2019
Accepted: 23 April 2019

Key words:

Adolescents; cannabis; history; Indian Hemp; marijuana; psychosis

Author for correspondence:

Oyedeji A. Ayonrinde, E-mail: oaa@queensu.ca

Oyedeji A. Ayonrinde

Department of Psychiatry, Queen's University, Kingston, Ontario, Canada

Abstract

Background. In nineteenth-century British India, concern regarding large numbers of asylum patients with 'Indian Hemp Insanity' led to establishment of the Indian Hemp Drugs Commission. The exotic cannabis plant was widely used in pharmacopeia and a source of government revenue. The Commission was tasked with determining the public health risks of cannabis use, particularly mental illness. This analysis of the Commission report seeks to highlight the status of 1892 cannabis research and compare it with current evidence for medical and recreational cannabis use.

Methods. Detailed historiographic review of the Indian Hemp Drugs Commission Report (1892).

Results. In 1892, heavy cannabis use was considered to have been associated with severe mental illness (7.3% of asylum patients; 12.6% of patients with diagnoses). About two-thirds were children and young adults with higher relapse rates. Risk increased with early cannabis use and a family history of mental illness. Cannabis psychosis was found to have a shorter trajectory and better prognosis than other mental illnesses in the asylums. Different cannabis potency and modes of consumption had different effects. Occasional cannabis use was felt to have medicinal benefits for some. Appendices provided symptoms and demographic characteristics of cannabis-induced mental illness.

Conclusion. This important nineteenth-century study observed frequency and dose-related effects of cannabis on mental health, particularly psychotic symptoms in young people with a previous or hereditary risk of mental illness. Pathophysiological observations were consistent with current knowledge. As one of the most systematic and detailed studies of the effects of cannabis of the time it foreshadowed contemporary cannabis issues.

Background

For many centuries, humanity has consumed psychoactive plant products, such as tea, coffee, tobacco, cocaine, opium and cannabis for medicinal and recreational purposes. Traversing geopolitical borders, these substances have had a considerable impact on the economies, legislation, conflict and health of nations. While tobacco and alcohol have had an immense societal impact over many years, arguably, neither has caused a greater social, scientific, cultural, economic and legislative revolution than cannabis (marijuana), in the modern era. Scientific evidence supporting its medicinal benefits (Wilkinson *et al.*, 2016; Abrams, 2018; Allan *et al.*, 2018; McGuire *et al.*, 2018; Stockings *et al.*, 2018a, 2018b) is often tempered with caution regarding the risk of mental illness following frequent heavy use in young people (Di Forti *et al.*, 2009, 2015, 2019; World Health Organization, 2016; National Academies of Sciences, Engineering and Medicine, 2017). In present-day North America, and increasingly globally, dynamic legislative changes reflect emerging evidence of safety and harm and coincide with the growth of a multibillion dollar cannabis industry.

The Indian Hemp Drugs Commission (IHDC, 1894a, 1894b, 1894c)

In the nineteenth century, India was a primary source of cannabis consumed in the British Empire. While the hemp plant was available in temperate climates, and grown for the durable fiber produced, the Indian Hemp plant (*Cannabis indica*) was found to have a much wider range of medicinal and recreational uses. Historians have examined the history of hemp through several lenses: colonialism and power positioning between the British and the local Indian elite, missionary zeal and panic over toxic substances (Mikuriya, 1968; Kalant, 1972; Mills, 2000; Shamir and Hacker, 2001). In his book, *Madness, Cannabis and Colonialism*, Mills (2000) describes the construction of madness and the medico-administrative organization of Indian asylums run in different administrative regions. The revenue gains from the production, sale and levying of cannabis taxes conflicted with claims of adverse health effects

and criminal behavior from cannabis use. This was further compounded by assertions of increasing cannabis-related asylums, police, court and prison expenditure. It was against this backdrop that The Indian Hemp Drugs Commission (IHDC, 1894a, 1894b, 1894c) was promulgated, tasked with determining the relationship between Indian Hemp and the Empire with a focus on health, taxation and legislative issues. The quasi-judicial nature of colonial evidence gathering in the Indian Hemp Drugs Commission (Storm, 2018) and the challenge of interviewing witnesses has also been highlighted (Mikuriya, 1968). In a bold attempt to present national consensus results, some authors viewed the report as a product of paternalistic missionary zeal and moral panic over a high-revenue substance associated with abuse (Kalant, 1972; Shamir and Hacker, 2001). Storm (2018) ridiculed the commission and the process by which it reached its conclusions. While historians caution against diagnostic reconstruction of historical mental disorders into contemporary classificatory systems, the multi-source, detailed descriptions of ailments attributed to cannabis give insights that invite consideration. In this paper, I summarize the operation and findings of the Indian Hemp Drugs Commission (1894a, 1894b, 1894c) as a population study that confronted many of the same concerns facing some countries today as they contemplate or manage the legalization of marijuana.

'Intoxicant Drug' taxation

In the 1700s–1800s, Imperial India faced similar dilemmas to those of today where indigenous strains – *Cannabis indica* and *Sativa* – grew wild and were also cultivated. Cannabis products had been smoked, drunk and ingested across the society for centuries. Knowledge of its uses was shared through ancient folklore, cultural ceremonies and Sanskrit text. Several observers wrote about hemp in the medical literature citing its medicinal and toxic effects (IHDC, 1894a, 1894b, 1894c). By the late 1780s, the focus had shifted to its relationship with insanity (IHDC, 1894a, 1894b, 1894c).

The British colonial government imposed 'intoxicant drug' levies on Indian landlords with tighter regulation introduced in 1793, decreeing – 'No person shall manufacture or vend any such drugs' namely *bhang* (an edible form of cannabis), *ganja* (flowering tops of cannabis plant-smoked) or *charas* (a smoked cannabis resin) without a license (IHDC, 1894a, 1894b, 1894c).

In 1798, authorities considered cannabis prohibition; however, they concluded that it did not have 'very violent or dangerous effects of intoxication except when taken to excess.' Furthermore, 'original productions, and artificial combinations' were 'useful in either medicine or otherwise' (IHDC, 1894a, 1894b, 1894c). Instead, further taxation was introduced as a source of revenue and regulation. Temporary prohibition of *charas* in 1800 was subsequently rescinded in 1824, 'as it was found to be not more prejudicial to health than *ganja*.'

Medicinal use and concern regarding 'insanity'

Folk knowledge about Indian hemp had existed for centuries, but it was the English language publications by the British Army Physician, Sir William Brooke O'Shaughnessy (1838, 1843), that inspired interest in the medicinal effects of cannabis across the wider British empire, encouraging scholarly activity, experiments and therapeutic trials across British hospitals with samples shipped to eminent chemists and apothecaries (Ley, 1843, 1844;

Jackson, 1857; Oliver, 1883). High-profile endorsement by Sir Russell Reynolds (1890), Physician to the Royal Household of Queen Victoria on the health benefits of this exotic plant consolidated the earlier endorsement by the General Medical Council and position of cannabis in British Pharmacopeia (1867) in the management of nervous irritation, neuralgia, insomnia, epilepsy, painful and spasmodic affections. This had not been devoid of controversy as some physicians asked for cannabis to be expunged (Headland, 1859). British use of Indian Hemp medicinal tinctures were not without mishap though, as highlighted in the House of Commons (1884) after the death of a 9-year-old boy. However, in India, where consumption was traditional and not limited to apothecary tinctures, concern grew regarding reports of insanity associated with the hemp plant in Indian asylums (IHDC, 1894a, 1894b, 1894c; Baxter-Tyrie, 1897).

In 1870, the Financial Secretary R.B. Chapman observed that 'every lunatic asylum report was full of instances of insanity and crime due to use of ganja.' He contended that 'officers in charge of lunatic asylums were not systematically investigating how the drug produced insanity' (IHDC, 1894a, 1894b, 1894c). Unlike the effects of alcohol, this source of insanity was hitherto unfamiliar to British physicians and asylums. In 1871, investigators observed that 'there is some evidence to show that on rare occasions this drug, usually so noxious, may be usefully taken. There can however be no doubt that its habitual use does tend to produce insanity' (IHDC, 1894a, 1894b, 1894c). In 1891, the Secretary of State for India revisited the concerns regarding the harmful effects of ganja, citing reports in the Indian press. Shortly afterward, a decade of data gathered at the Bengal Lunatic Asylum from 1860 to 1870 were presented to the British House of Commons (Hansard, 1891; IHDC, 1894a, 1894b, 1894c). The Bengal Asylum Report indicated that 34.7–45.4% of patients 'lost intellect from the effects of ganja.'

While opium and spirit consumption was a concern, ganja-related asylum admissions were 30–40 times opium-related and approximately 10-fold spirit-related admissions (Fig. 1).

The rising concern culminated in the establishment of the Indian Hemp Drugs Commission in 1893 (IHDC, 1894a, 1894b, 1894c). The Commission included eight-persons [Financial Commissioner (President; European); Collector (revenue collector and district magistrate; European); Commissioner (regional administrative head; European); Surgeon-major (Professor of Chemistry; European); Raja (traditional Indian ruler); Native Indian administrators and Secretary (European)].

The Commission met from August 1893 through 1894, holding 86 meetings, receiving evidence from 1455 witnesses and visiting 30 cities in eight provinces and Burma. The nine-volume Report (3698 pages) now available online providing detailed information about cannabis use and its effects (<http://digital.nls.uk/74908458>).

The Commission elicited information from five main sources:

- (1) Interviewing witnesses.
- (2) Examination of asylum cases attributed to hemp drugs.
- (3) Scientific investigation into physiological actions of hemp drugs.
- (4) Review of official records and current literature on the subject.
- (5) Observation of the habits and conditions of consumers of hemp in various parts of India.

Each witness received 70 framed questions on cannabis including several on insanity (available in the appendix). They came

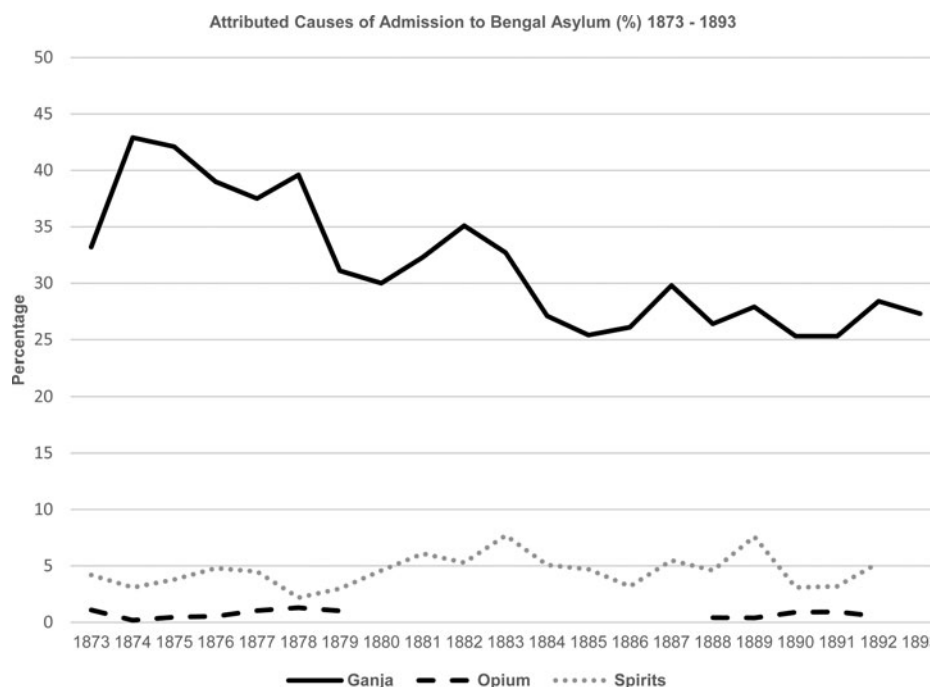


Fig. 1. Attributed causes of admission (ganja, opium and alcohol) to Bengal Asylum.

from diverse backgrounds, including included civil officers, medical officers, private practitioners, traditional health practitioners, cultivators, professional men, missionaries and cannabis-product sellers. These witnesses were divided into three classes:

- superior medical officers, including assistant surgeons
- hospital assistant class
- native practitioners who had not been trained in medical colleges, and who practiced according to native methods.

Additional evidence was also obtained from growers, sellers, users of cannabis-products and patient interviews.

This paper focuses primarily on the specific aims of the Commission and questions relating to mental health (Fig. 2).

While the Commission explored broad cultivation, sale, taxation, criminality and health issues, it is possible several commissioners faced a conflict of interest, including the President, who was involved in the financial administration of the British Raj for which cannabis taxes were a major source of income.

The investigators relied heavily on interpreters. However, a culturally and linguistically matched panel member, Raja Soshi Sikhareswar Roy, an Indian noble from Bengal, highlighted translation and transcription errors on a number of occasions. Furthermore, the commission did not define the exact quantities of cannabis consumed and its judgments of 'excessive, moderate and occasional' use were subjective. With only one established medical member, diagnostic ascertainment was carried out on the proof of verifiable evidence and incidence rates may have been higher or lower. Raja Roy also noted some respondents gave biased answers because they were anxious about the impact of the study on their trade and taxation.

Results

While witness statements gave rich qualitative insight into mental-health effects of cannabis, the Commission's Report expressed frustration over the inconsistency, veracity and

reliability of some responses as well as the lack of clinician inquiry into family history or hereditary predisposition to insanity (Box 1).

The 1892 asylum statistics, however, provided quantifiable data and individual patients' case histories. Following inquiry by a magistrate, the civil surgeon would ascertain the past, personal and family history of the patient, and determine the circumstances to endorse a medical certificate of insanity for admission. Asylum registers documented background history with presumed cause of illness from 1885 forward.

The Indian Census return of 1891 reported four 'insane persons' per 10 000 population (IHDC, Vol. 2, page 218). There were 1344 admissions to all Indian asylums in 1892, of which 222 (16.5%) were attributed to the use of the hemp drug. Following stringent review by the Commission, 98 cases (7.3%) were deemed primarily a consequence of hemp drug use; comprising 12.6% of 775 'known' causes of insanity. Patients without objectively demonstrable antecedents of cannabis use were excluded.

All but one patient was male; 82 Hindus and 16 'Muhammadans' (Muslim), which was similar to the population distribution. Occupations spanned Indian social classes and castes, including students, teacher, constable and priest.

Cases of insanity 'provoked by' Indian hemp were classified as follows:

- Toxic insanity (39.8%)
- Mania (42.9%)
- Melancholia (3.1%)
- Dementia (4.1%) (*dementia praecox)
- Recovered with no mental aberration (10.2%)

The majority of asylum patients with hemp insanity were young adults: 76.5% between 15 and 35 years; 33% aged 21 and 25 years and about 10% between 15 and 20 years. This younger age group also had the highest frequency of relapses; with

45. (a) Does the habitual moderate use of any of these drugs produce any noxious effects—physical, mental, or moral?

(b) Does it impair the constitution in any way?

(c) Does it injure the digestion or cause loss of appetite?

(d) Does it cause dysentery, bronchitis, or asthma?

(e) Does it impair the moral sense or induce laziness or habits of immorality or debauchery?

(f) Does it deaden the intellect or produce insanity?

If it produces insanity, then of what type, and is it temporary or permanent?

If temporary, may the symptoms be re-induced by use of the drug after liberation from restraint?

Are there any typical symptoms?

Do insanes, who have no recorded ganja history, confess to the use of the drug?

(g) In such cases of the alleged connection between insanity and the use of hemp as are known to you, are you of opinion that the use of the drug by persons suffering from mental anxiety or brain disease to obtain relief has been sufficiently considered in explaining that connection?

And do you think there is any evidence to indicate that insanity may often tend to indulgence in the use of hemp drugs by a person who is deficient in self-control through weakened intellect?

Give an account under each of these points of any cases with which you are acquainted.

46. Discuss the same question in regard to the habitual excessive use of any of these drugs.

47. Does the habitual moderate use of any of these drugs appear to be a hereditary habit or to affect in any way the children of the moderate consumer?

Fig. 2. Commission questions regarding Indian Hemp and insanity (Question 45).

61.6% occurring between 15 and 35 years and 46.2% of relapses between 21 and 30 years. Nearly 8% of teenagers (15–20 years) relapsed.

A larger number of cannabis-related cases (61.2%) recovered while in the asylums with enforced abstinence compared with recovery of cases that were not attributed to hemp use (34.7%) whose illness persisted (Figs. 3 and 4).

There were no specific 'premonitory' or pathognomonic symptoms of hemp insanity compared with other types of insanity (Table 1). However, some distinction was made between 'acute ganja intoxication' and 'ganja drunkenness,' or 'continued immoderate use over a lengthened period of time.' Acute ganja intoxication was marked by the extreme vehemence of the mania, 'infuriated aspect, glaring and glistening eyes and red injected conjunctiva with shouting, vociferation, singing, pacing and sometimes aggression and running amok.' The short-duration attack was often followed by perfect recovery and the patient oblivious of what took place. 'Insanity from long-continued,

Box 1. Sample witness statements (Indian Hemp Drugs Commission, Evidence of Witnesses, 1894b)

'The smoking of these preparations affects the nervous system directly, and is hence more injurious than eating or drinking. In the latter case the drug is slowly introduced through the digestive system, and exerts its effect slowly. Smoking is more deleterious to the nervous system, and gives rise to emaciation and other well-known symptoms including insanity, sooner than drinking or eating the same drugs...consumed in equal quantities.' 'When ganja is smoked to excess, impotence results often in eight to ten years.'- British Civil Surgeon (Vol. 1; p. 446)

'Regarding the well-known loss of memory caused by habitual smoking of ganja there is a Bengali proverb: He who smokes ganja forgets even his own father's name.'- British Civil Surgeon (Vol. 1; p. 447)

'I know of people who when very young, about 17 or 18 years old, contracted the habit of smoking ganja, and within a short time they become inveterate ganja smokers. After some four years or so they became insane temporarily.'- Indian Teacher of Medical Jurisprudence (Vol. 1; p. 448)

'It deadens the intellect and produces insanity only in those who are predisposed to it or whose nervous system is weak and excitable....' (Evidence of Witnesses from Bengal and Assam; p. 352)

'Majority of habitual consumers become permanently insane, never to be cured. Some become temporarily so, and become sane on breaking off the habit. Symptoms are apt to be re-induced on resuming the habit.'- Indian Medical Practitioner (Vol. 1; p. 452)

immoderate use of ganja was, however, subject to relapses even after lengthened periods of freedom from symptoms.' The Commission concluded that, with the exception perhaps of the shorter duration, determination of cause depends wholly upon history with 'no typical brain lesions peculiar to hemp drug insanity, though definite lesions are doubtless present in chronic cases.'

With respect to the alleged mental effects of different quantities and frequency of cannabis use, the Commission came to the following conclusions (IHDC, 1894a, 1894b, 1894c):

- (1) 'The occasional use of hemp in moderate doses may be beneficial; but this use may be regarded as medicinal in character.'
- (2) 'The moderate use of hemp drugs produces no injurious effects on the mind. It may indeed be accepted that in the case of specially marked neurotic diathesis, even the moderate use may produce mental injury.' This observation suggested that in mentally vulnerable individuals, even moderate use may trigger mental health difficulties.
- (3) Excessive use indicates and intensifies mental instability. It tends to weaken the mind. It may even lead to insanity. Two factors only are necessary for the causation of insanity, which are complementary: (a) heredity and (b) stress. It appears that the excessive use of hemp drugs may, induce insanity.

Furthermore, it was observed that some parts of the country grew stronger ganja than others and proposed 'stronger forms'

REPORT

OF THE

INDIAN HEMP DRUGS COMMISSION,

1893-94.



President:

The Hon'ble W. MACKWORTH YOUNG, M.A., C.S.I., First Financial Commissioner,
Punjab.

Members:

1. Mr. H. T. OMMANNEY, Collector, Panch Mahals, Bombay.
2. Mr. A. H. L. FRASER, M.A., Commissioner, Chhattisgarh Division, Central Provinces.
3. Surgeon-Major C. J. H. WARDEN, Professor of Chemistry, Medical College, and Chemical Examiner to Government, Calcutta; Officiating Medical Storekeeper to Government, Calcutta.
4. Raja SOSHI SIKHARESWAR ROY, of Tahirpur, Bengal.
5. KANWAR HARNAM SINGH, Ahluwalla, C.I.E., Punjab.
6. LALA NIHAL CHAND, of Muzaffarnagar, North-Western Provinces.

Secretary:

Mr. H. J. McINTOSH, Under-Secretary to the Government of Bengal, Financial and Municipal Departments.



Fig. 3. Report of the Indian Hemp Drugs Commission.

should be discouraged from sale and prohibited to allow weaker ganja in the market. Alternatively, ganja could be left to oxidize for a year to reduce its potency before sale. Vendors with a license were discouraged from adulterating cannabis with other drugs. Given the deleterious effect on young people, it was suggested that retail vendors should not sell Indian hemp products to children under 16 years of age. With overwhelming evidence, it was also recommended that cannabis products should be restricted from sale to 'insane' persons or those under the influence of hemp (ganja, bhang or charas) at the time of purchase.

Finally, 'opening of new shops should follow consultation with municipal members and local inhabitants, as shops will afford a

greater facility for consumption and enable obnoxious drugs to reach new converts' (Table 2).

Discussion

The study was unique in the broad scope of information gathering across the spectrum of cannabis growers, sellers and consumers as well as health and law enforcement observations. Such a nation-wide study would be difficult to replicate currently.

The Indian Hemp Drugs Commission Report contained a rigorous analysis of the relationship between 'Indian Hemp and Insanity.' Cannabis plants were observed to yield different strains

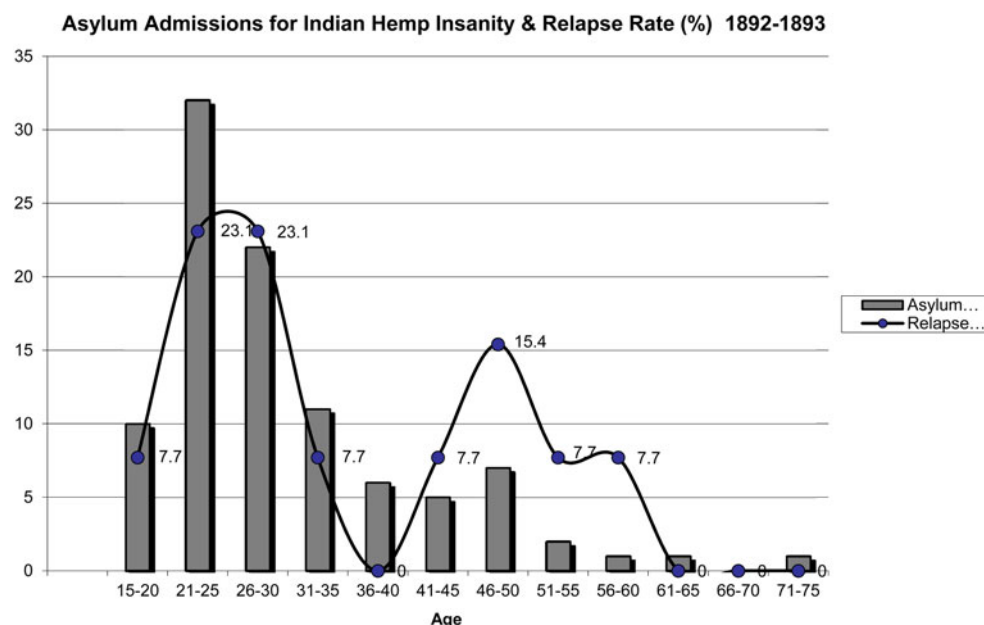


Fig. 4. Admission and relapse ages of asylum patients with Indian hemp insanity ($n = 98$).

Table 1. Ranked symptoms and their frequency (%) in 'Indian Hemp Insanity' ($n = 98$)

Incoherence of language (57%)	Poor self-care (46%)
Violence (36%)	Sleepless (31%)
Destructiveness (29%)	Homicidal (25%)
Delusions (24.5%)	'Noisy' (24%)
Obscene language (22%);	Indecent (21%)
Sad/crying (14%)	Quarrelsomeness (13%)
Suicidal (12%)	Laughter (12%)
Muttering (12%)	Restless (12%)
Talkativeness (9%)	Uncommunicativeness (7%)
'Silentness' (7%)	Exaltation (7%)
Excited (4%)	'Childish' (4%)
Roaring (3%)	Dancing (2%)
Absurd postures (1%)	

Wording as documented in the Commission report.

and characteristics of wild growing plants, cultivated crops, different regional and climatic conditions.

With the benefit of contemporary knowledge, the nineteenth century concern regarding the risk of impaired mental health at the time was not unfounded. Stringent criteria found rates of Indian Hemp insanity in 7–13% of patients. Symptoms suggested acute intoxication, affective disorder and possible schizophrenia (dementia praecox). Observations of brief or enduring features in different individuals are worthy of note, particularly the younger age of symptom onset and frequency of relapses in cannabis using youth. Cannabis use disorder in youth and young adults had a higher incidence and prevalence than older persons. It was also associated with higher rates of relapse and rehospitalization often in the context of reinstating cannabis use. With

enforced abstinence, close to 60% cannabis use patients made a recovery in hospital. Observations also identified differences in the pharmacodynamics and pharmacokinetics of different smoked and ingested cannabis products.

Predating current systematic reviews, synthesized knowledge (WHO, 2016; National Academies of Sciences, 2017) and the descriptive psychopathology leading to the diagnosis of schizophrenia (1901), the discovery of dopamine (1952) (Carlsson and Carlsson, 2006, 2014) and the psychoactive cannabinoid; delta-9-tetrahydrocannabinol (THC) in 1964 (Gaoni and Mechoulam, 1964), the study combined folk and traditional medical, spiritual and social knowledge with contemporary science. Modern recognition of psychosis, and dopamine receptors were important landmarks (Arvid Carlsson, 2019a, 2019b) in the development of effective antipsychotic medications. While acknowledging the limitations of applying historical research methods to current clinical presentations, many of the report's conclusions and recommendations foreshadowed future scientific discoveries and some still seem relevant today. For instance, there are different grades of cannabis potency with different THC-related psychoactive properties (Di Forti *et al.*, 2009; Cascini *et al.*, 2012; ElSohly, 2016; Freeman and Swift, 2016). Lower psychoactive potency cannabis products, and ratios of other cannabinoids, particularly cannabidiol are currently being investigated for potential medicinal uses (Health Canada, 2018). Frequent and heavy use of cannabis increases the risk of psychosis and schizophrenia, particularly in young people (Casadio *et al.*, 2011; Marconi *et al.*, 2016; McHugh *et al.*, 2017; Freeman *et al.*, 2018). This observation has been replicated in different countries and cultures (DiForti, 2019). Furthermore, longitudinal studies have replicated the psychosis vulnerability of young cannabis users (Andreasson *et al.*, 1987; Arseneault *et al.*, 2002; van Os *et al.*, 2002; Clausen *et al.*, 2014). Relapses of psychotic symptoms among individuals with Indian hemp insanity were noted to be more prevalent with reinstated or continued cannabis use following an early psychotic episode a finding evidenced in the modern era by Schoeler *et al.* (2016a, 2016b). While psychosis has been reported

Table 2. Summary of key findings

Frequency	Potency/strength	Effect	Contemporary interpretation
Occasional use	Moderate doses	Medicinal in character	Infrequent use of low to moderate potency cannabis may have medicinal effects in some conditions
Moderate use		• Overall, no injurious effect on mind • Mental injury in individuals with marked neurotic diathesis	• Moderate use of cannabis may not be harmful • Can cause mental harm to individuals with a predisposition to mental illness
Excessive use		Intensifies mental instability Weakens the mind May lead to insanity Risk increased with heredity and stress	Frequent or heavy use of cannabis increases the risk of psychosis particularly under stressful conditions and in individuals with a family history of mental illness
	Stronger forms of cannabis discouraged		Higher potency cannabis and use with other psychoactive substances increases the risk of mental illness
		No sale to children under 16 years old	Higher risk of psychosis in younger consumers
		No sale to 'insane' individuals or persons experiencing cannabis intoxication	Cannabis use can worsen or perpetuate a current psychotic illness

to increase vulnerability of cannabis use (Minozzi *et al.*, 2010; Carney *et al.*, 2017) chronological accounts from subjects, families and witnesses were insufficient to determine prodromal psychosis preceding cannabis use.

It was prudent of the Commission to recommend restricting the sale of cannabis to young people, under 16 years with their greater risk of severe mental illness and higher rate of relapse. Current recommendations extend the age limit to between 18 and 25 years (WHO, 2016; National Academies, 2017). Furthermore, the suggestion that cannabis use should be discouraged in individuals with a personal or family history of mental illness is in keeping with contemporary advice (Fischer *et al.*, 2017; Tibbo *et al.*, 2018; DiForti, 2019). Legislative suggestions regarding the opening, location and licensing of cannabis shops with municipal consultation are also relevant to current debates regarding regulating the ease of access and reducing the risk of misuse.

Early intervention, harm reduction and the use of antipsychotic medication (Zammit *et al.*, 2008; McHugh *et al.*, 2017) may alter cannabis psychosis trajectory, however, this nineteenth-century evidence, generated in the absence of current treatment modalities, reveals the natural history of the relationship between cannabis and mental illness.

Awareness of cannabis harms in youth were inconsistent though as argued by an editorial (Davison, 1896) attributing the harmful effects of smoking to use at a 'tender age' and deep inhalation rather than the effects of opium or cannabis used. The findings of the Commission highlight the importance of stakeholder engagement in population studies and the implementation of primary prevention strategies. Historical observations also highlight the importance of Early Psychosis Intervention services in mental health care.

Conclusion

Revisiting the historical evidence from 1892, renews interest in the natural history of cannabinoids and the brain as well as an

appreciation for research advances in genetics (Sherva *et al.*, 2016; Verweij *et al.*, 2017), neuroimaging, endocannabinoids, psychosis and antipsychotic treatments. However, it also reminds us that in the smoked, ingested and infused history of cannabis lies the need for more research and greater scientific understanding.

Author ORCIDs.  Oyedeji A. Ayonrinde, 0000-0002-8799-4225

Financial support. None.

Conflict of interest. None.

References

- Abrams DI (2018) The therapeutic effects of Cannabis and cannabinoids: an update from the National Academies of Sciences, Engineering and Medicine report. *European Journal of Internal Medicine* 49, 7–11.
- Andréasson S, Allebeck P, Engström A and Rydberg U (1987) Cannabis and schizophrenia. A longitudinal study of Swedish conscripts. *The Lancet (London, England)* 2, 1483–1486.
- Arseneault L, Cannon M, Poulton R, Murray R, Caspi A and Moffitt TE (2002) Cannabis use in adolescence and risk for adult psychosis: longitudinal prospective study. *BMJ (Clinical Research Edition)* 325, 1212–1213.
- Arvid Carlsson – Nobel Lecture. NobelPrize.org. Nobel Media AB (2019a) Friday, 19 April 2019. Available at <https://www.nobelprize.org/prizes/medicine/2000/carlsson/lecture/>.
- Arvid Carlsson Biographical (2019b) <https://www.nobelprize.org/prizes/medicine/2000/carlsson/biographical/>.
- Baxter-Tyrie CC (1897) A case of poisoning by *Cannabis indica*. *The Lancet* 150, 1452.
- British Pharmacopeia (1867) General Council of Medical Education and Registration of the United Kingdom. Spottiswoode and Co.; p. 68.
- Carlsson A and Carlsson ML (2006) A dopaminergic deficit hypothesis of schizophrenia: the path to discovery. *Dialogues in Clinical Neuroscience* 8, 137–142.
- Carney R, Cotter J, Firth J, Bradshaw T and Yung AR (2017) Cannabis use and symptom severity in individuals at ultra high risk for psychosis: a meta-analysis. *Acta Psychiatrica Scandinavica* 136, 5–15.
- Casadio P, Fernandes C, Murray RM and Di Forti M (2011) Cannabis use in young people: the risk for schizophrenia. *Neuroscience and Biobehavioral Reviews* 35, 1779–1787.

- Cascini F, Aiello C and Di Tanna G (2012) Increasing delta-9-tetrahydrocannabinol (Δ -9-THC) content in herbal cannabis over time: systematic review and meta-analysis. *Current Drug Abuse Reviews* 5, 32–40.
- Clausen L, Hjorthøj CR, Thorup A, Jeppesen P, Petersen L, Bertelsen M and Nordentoft M (2014) Change in cannabis use, clinical symptoms and social functioning among patients with first-episode psychosis: a 5-year follow-up study of patients in the OPUS trial. *Psychological Medicine* 44, 117–126.
- Davison JL (1896) Editorial. The cigarette habit. *The Canada Lancet* 28, 166.
- Di Forti M, Morgan C, Dazzan P, Pariente C, Mondelli V, Marques TR, Handley R, Luzzi S, Russo M, Paparelli A, Butt A, Stilo SA, Wiffen B, Powell J and Murray RM (2009) High-potency cannabis and the risk of psychosis. *The British Journal of Psychiatry: The Journal of Mental Science* 195, 488–491.
- Di Forti M, Marconi A, Carra E, Fraietta S, Trotta A, Bonomo M, Bianconi F, Gardner-Sood P, O'Connor J, Russo M, Stilo SA, Marques TR, Mondelli V, Dazzan P, Pariente C, David AS, Gaughran F, Atakan Z, Iyegbe C, Powell J, Morgan C, Lynskey M and Murray RM (2015) Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study. *The Lancet Psychiatry* 2, 233–238.
- Di Forti M, Quattrone D, Freeman TP, Tripoli G, Gayer-Anderson C, Quigley H, Rodriguez V, Jongsma HE, Ferraro L, La Cascia C, La Barbera D, Tarricone I, Berardi D, Szöke A, Arango C, Tortelli A, Velthorst E, Bernardo M, Del-Ben CM, Menezes PR, Seltén J-P, Jones PB, Kirkbride JB, Rutten BP, de Haan L, Sham PC, van Os J, Lewis CM, Lynskey M, Morgan C, Murray RM and EU-GEI WP2 Group (2019) The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study. *The Lancet Psychiatry* 6, 427–436.
- ElSohly MA, Mehmedic Z, Foster S, Gon C, Chandra S and Church JC (2016) Changes in Cannabis potency over the last 2 decades (1995–2014): analysis of current data in the United States. *Biological Psychiatry* 79, 613–619.
- Fischer B, Russell C, Sabioni P, van den Brink W, Le Foll B, Hall W, Rehm J and Room R (2017) Lower-risk Cannabis use guidelines: a comprehensive update of evidence and recommendations. *American Journal of Public Health* 107, e1–e12.
- Freeman TP and Swift W (2016) Cannabis potency: the need for global monitoring: letters to the editor. *Addiction* 111, 376–377.
- Freeman TP, van der Pol P, Kuijpers W, Wisselink J, Das RK, Rigter S, van Laar M, Griffiths P, Swift W, Niesink R and Lynskey MT (2018) Changes in cannabis potency and first-time admissions to drug treatment: a 16-year study in the Netherlands. *Psychological Medicine* 48, 2346–2352.
- Gaoni Y and Mechoulam R (1964) Isolation, structure, and partial synthesis of an active constituent of hashish. *Journal of the American Chemical Society* 86, 1646–1647.
- Headland FW (1859) Remarks on the proposed British Pharmacopoeia. *The Lancet* 73, 434–436.
- Health Canada (2018) Information for Health Care Professionals: Cannabis (marihuana, marijuana) and the cannabinoids (October 2018) Available at <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/information-medical-practitioners/information-health-care-professionals-cannabis-cannabinoids.html>.
- House of Commons (1884) *Hansard. House of Commons Debate*. Warton. 26 March 1884, vol. 286 cc801-11801.
- House of Commons (1891) *Hansard London*, Papers relating to the consumption of ganja and other drugs in India' in British Parliamentary Papers, vol. 66, p. 3.
- Indian Hemp Drug Commission Reports (1894a) Available at <http://digital.nls.uk/74908458>.
- Indian Hemp Drugs Commission (1894b) Evidence of Witnesses. Vol. IV, p. iii, SIMLA.
- Indian Hemp Drugs Commission (1894c) Enquiry as to the connection between hemp drugs and insanity. Vol. II. Appendices. SIMLA.
- Jackson TH (1857) Uncertain action of *Cannabis indica*. *British Medical Journal* 1, 15.
- Kalant OJ (1972) Report of the Indian Hemp Drugs Commission, 1893–94: a critical review. *International Journal of the Addictions* 7, 77–96.
- Ley W (1843) Observations on the *Cannabis indica* or Indian hemp. *Provincial Medical Journal and Retrospect of the Medical Sciences* 5, 487–489.
- Ley W (1844) The medicinal properties of Indian hemp. *The Lancet* 43, 153.
- Marconi A, Di Forti M, Lewis CM, Murray RM and Vassos E (2016) Meta-analysis of the association between the level of Cannabis use and risk of psychosis. *Schizophrenia Bulletin* 42, 1262–1269.
- McGuire P, Robson P, Cubala WJ, Vasile D, Morrison PD, Barron R, Taylor A and Wright S (2018) Cannabidiol (CBD) as an adjunctive therapy in schizophrenia: a multicenter randomized controlled trial. *American Journal of Psychiatry* 175, 225–231.
- McHugh MJ, McGorry PD, Yung AR, Lin A, Wood SJ, Hartmann JA and Nelson B (2017) Cannabis-induced attenuated psychotic symptoms: implications for prognosis in young people at ultra-high risk for psychosis. *Psychological Medicine* 47, 616–626.
- Mikuriya TH (1968) Physical, mental, and moral effects of marijuana: the Indian Hemp Drugs Commission Report. *International Journal of the Addictions* 3, 253–270.
- Mills JH (2000) *Madness, Cannabis and Colonialism: The 'Native Only' Lunatic Asylums of British India, 1857–1900*. Basingstoke: St. Martin's Press.
- Minozzi S, Davoli M, Bargagli AM, Amato L, Vecchi S and Perucci CA (2010) An overview of systematic reviews on cannabis and psychosis: discussing apparently conflicting results. *Drug and Alcohol Review* 29, 304–317.
- National Academies of Sciences, Engineering, and Medicine (ed.) (2017) *The Health Effects of cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research: Report*. Washington, DC: The National Academies Press.
- Oliver J (1883) On the action of *Cannabis indica*. *British Medical Journal* 1, 905–906.
- O'Shaughnessy WB (1843) On the preparations of the Indian Hemp, or Gunjah. *Provincial Medical Journal and Retrospect of the Medical Sciences* 5, 363–369.
- Reynolds JR (1890) On the therapeutical uses and toxic effects of *Cannabis indica*. *The Lancet* 135, 637–638.
- Schoeler T, Monk A, Sami MB, Klammer E, Foglia E, Brown R, Camuri G, Altamura AC, Murray R and Bhattacharyya S (2016a) Continued versus discontinued cannabis use in patients with psychosis: a systematic review and meta-analysis. *The Lancet Psychiatry* 3, 215–225.
- Schoeler T, Petros N, Di Forti M, Klammer E, Foglia E, Ajnakina O, Gayer-Anderson C, Colizzi M, Quattrone D, Behlke I, Shetty S, McGuire P, David AS, Murray R and Bhattacharyya S (2016b) Effects of continuation, frequency, and type of cannabis use on relapse in the first 2 years after onset of psychosis: an observational study. *The Lancet Psychiatry* 3, 947–953.
- Shamir R and Hacker D (2001) Colonialism's civilizing mission: the case of the Indian Hemp Drug Commission. *Law & Social Inquiry* 26, 435–461.
- Sherva R, Wang Q, Kranzler H, Zhao H, Koesterer R, Herman A, Farrer LA and Gelernter J (2016) Genome-wide association study of Cannabis dependence severity, novel risk variants, and shared genetic risks. *JAMA Psychiatry* 73, 472.
- Stockings E, Campbell G, Hall WD, Nielsen S, Zagic D, Rahman R, Murnion B, Farrell M, Weier M and Degenhardt L (2018a) Cannabis and cannabinoids for the treatment of people with chronic noncancer pain conditions: a systematic review and meta-analysis of controlled and observational studies. *Pain* 159, 1932–1954.
- Stockings E, Zagic D, Campbell G, Weier M, Hall WD, Nielsen S, Herkes GK, Farrell M and Degenhardt L (2018b) Evidence for cannabis and cannabinoids for epilepsy: a systematic review of controlled and observational evidence. *Journal of Neurology, Neurosurgery, and Psychiatry* 89, 741–753.
- Storm J (2019) *Marijuana and Lunacy: The Magnificent Failure of the Indian Hemp Drugs Commission – Cannabis Digest* [online]. Available at

- <https://cannabisdigest.ca/marijuana-lunacy-magnificent-failure-indian-hemp-drugs-commission/> (Accessed 17 April 2019).
- Tibbo P, Crocker CE, Lam RW, Meyer J, Sareen J and Aitchison KJ** (2018) Implications of Cannabis legalization on youth and young adults. *Canadian Journal of Psychiatry* **63**, 65–71.
- van Os J, Bak M, Hanssen M, Bijl RV, de Graaf R and Verdoux H** (2002) Cannabis use and psychosis: a longitudinal population-based study. *American Journal of Epidemiology* **156**, 319–327.
- Verweij KJH, Abdellaoui A, Nivard MG, Sainz Cort A, Ligthart L, Draisma HHM, Minică CC, Gillespie NA, Willemsen G, Hottenga J-J, Boomsma DI and Vink JM** (2017) Short communication: genetic association between schizophrenia and cannabis use. *Drug and Alcohol Dependence* **171**, 117–121.
- Wilkinson ST, Radhakrishnan R and D'Souza DC** (2016) A systematic review of the evidence for medical marijuana in psychiatric indications. *The Journal of Clinical Psychiatry* **77**, 1050–1064.
- World Health Organization (WHO)** (2016) *The Health and Social Effects of Nonmedical Cannabis Use*. Geneva, Switzerland: World Health Organization.
- Zammit S, Moore THM, Lingford-Hughes A, Barnes TRE, Jones PB, Burke M and Lewis G** (2008) Effects of cannabis use on outcomes of psychotic disorders: systematic review. *British Journal of Psychiatry* **193**, 357–363.