

History of Medicine

From Modinos' cure to lecithin treatment: Detoxification and withdrawal management in the state-sponsored mass treatment scheme for opium addicts in Assam, 1938–39

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INTRODUCTION

The state-sponsored medical treatment scheme for opium addicts was approved for implementation in Assam by the Congress-led coalition government as part of the Opium Prohibition Campaign in 1939. Launched on 15 April 1939, the Total Prohibition Scheme was confined to the districts of Lakhimpur (south of the Brahmaputra river) and Sibsagar, in the subdivisions of Dibrugarh and Sibsagar (pre-Independence Assam), which were regarded as the areas with the heaviest consumption of opium in Assam.¹ The introduction of the scheme was followed by the cancellation of 10 050 opium passes and the closure of 61 opium shops. Besides, it marked the commencement of a unique experiment in the mass treatment of addicts. The move towards total eradication of opium reflected a culmination of the multiple efforts that had been made and the various approaches that had been adopted towards the regulation of opium. The policy of 'progressive prohibition', which was aimed at creating a government monopoly, beginning with rationing of opium, followed by the restriction of private cultivation and the registration of addicts, and the move towards total eradication were part of a three-pronged strategy for a phased elimination of opium from Assam. The strategy focused on propaganda, vigilance and relief. The total number of registered addicts in the subdivisions of Dibrugarh and Sibsagar was estimated at 6426 and 3724, respectively. Although the total number of registered addicts in the two subdivisions was actually around 11 000, it was presumed that around 1000 addicts would apply for treatment voluntarily over a period of 3 months. On the basis of this estimate, a preliminary phase of treatment was started from 1 to 15 April 1939. The addicts were treated mainly in the hospitals of Dibrugarh and Sibsagar.

THE ADDICT AS A 'PATIENT'

Medicalization of the problem of opium

Some important studies related to addiction were carried out in the 1920s. In January 1923, a joint subcommittee of the League of Nations Health Committee and the Advisory Committee on Traffic in Opium, consisting of Dr H. Carriere (Vice President, Director of the Swiss Federal Public Health Department, Berne), Dr W. Chodzko (delegate of the Polish government to the Office International d'Hygiene), Dr O. Anselimo (German Minister of Health) and Mr J. Campbell (representative of the Government of India on the Opium Advisory Committee), presented a report which said: '... the medical use should be considered the only

Dr Polyvios Modinos (1872–1970)

Dr Modinos was the chief attending surgeon at the European Hospital in Alexandria, Egypt. He accidentally discovered that injecting fluid from a water blister, such as that raised by mustard plaster, could rid a cocaine addict of his addiction. Dr Modinos' clinical trial of blister fluid on morphine addicts yielded positive results; the patients were cured of their craving for the drug ('Water Blister Fluid Cures Drug Addicts' *Popular Sci* 1930;116:34).

legitimate use, all non-medical use should be recognized as an abuse; and that in the opinion of the doctors, opium as a stimulant could not be considered legitimate even in the tropical countries'.² In 1925, John Palmer Gavit, an American journalist, referred in his book³ to Professor Elie Metchnikoff's work, which commented on the relation of narcotic drugs to infectious diseases such as malaria and cholera.⁴ According to Metchnikoff, 'In every case those (animals) treated with the narcotic died, because the leucocytes, on account of the narcotic action of opium, were tardy in coming up.'⁴ Thus, his results confirmed that the presence of opium in the blood makes it impossible for a patient to resist the onset of a disease. Following this revelation, Gavit's claim that there was a direct relationship between the 'almost universal saturation of opium in India and the cholera mortality of 50%' aroused much international interest.⁵

The landmark study carried out by Drs Arthur B. Light and Edward G. Torrance (of the Philadelphia General Hospital and members of the Philadelphia Committee for the Clinical Study of Opium Addiction Research) on opiate addicts showed that

The annual consumption of opium in 1938 was estimated at 35 seers (in the Indian metric system, 1 seer=933.10 g) in the Dibrugarh subdivision and about 26 seers in the Sibsagar subdivision (per 10 000 inhabitants). The subdivisions had a population of 530 178 and 331 052, respectively. These estimated figures were much higher than the League of Nations' standard of 6 seers per 10 000 population.

J. Palmer Gavit (1868–1954), as chief of the Washington Bureau of Associated Press, attended the opium conferences in Geneva. His book, *Opium*, contains a critical review of these conferences and captures the various perspectives on the problem in an international context.

Elie Metchnikoff (1845–1916), a Russian scientist, foreign member of the Royal Society of London and Professor at the Pasteur Institute in Paris, was the first to discover phagocytes, which can engulf and destroy microorganisms in the body. In 1908, he shared the Nobel Prize with Paul Ehrlich for his work on phagocytosis. His best known research work, carried out during his tenure at the Pasteur Institute in Paris, was on immunity in infectious diseases.

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'withdrawal from opiates is not life-threatening and usually not dangerous'—a finding that was misused by policy-makers to withhold medical care for addicts.⁶ In 1928, Charles Terry and Mildred Pellen (of the Bureau of Social Hygiene's Committee on Drug Addictions), in collaboration with the US Public Health Service, produced a classic study of the epidemiology of drug addiction and published an important paper, titled 'The opium problem'. In this paper, they argued that addiction maintenance is the most appropriate treatment for addicts who are not able to sustain abstinence. Their views were viciously attacked and only years later would 'The opium problem' be recognized as among the best treatises ever written on opiate addiction. In Britain, the report of 1926 of the Rolleston Committee, chaired by Sir Humphrey Rolleston, the then president of the Royal College of Physicians in Britain, outlined a system adopting a medicolegal and health approach to the enunciation of drug policies in Britain. This served as the foundation of the British system for treating addiction. It affirmed that addiction is the 'manifestation of a disease and not a mere form of vicious indulgence'.⁷ In the first three decades of the 20th century, medical treatments for narcotic addiction continued to focus on managing the mechanics of withdrawal from narcotics.

In India, Lieutenant Colonel Ram Nath Chopra and his team at the School of Tropical Medicine, Calcutta (now Kolkata) carried out pioneering studies on the opium habit in the country.⁸ They divided drug addicts into three main groups: (i) moderate users, who used the drug for its medicinal properties rather than its euphoria-inducing effects, (ii) those who indulged deliberately for the sake of the euphoria-inducing and aphrodisiac effects, and (iii) those accustomed to using the drug following fatigue and hard work. A series of papers^{9,10} by Colonel Chopra and Colonel R. Knowles contained an analytical study of the opium habit. Their findings had great relevance to our understanding of the progression of the opium habit in Assam. Colonel Chopra's major contribution to the field of addiction studies in India was acknowledged in the 1933 Assam Opium Enquiry Committee Report. The observations made by Colonel Chopra in the studies mentioned above were a harbinger of the emerging politico-medical discourse, which emphasized state participation and medical collaboration in tackling a public health menace effectively. Scientific investigations and studies had confirmed that opium addiction could be treated effectively with the help of medical involvement.¹¹ It was expected that the involvement of the medical community would combine the twin objectives of scientific expertise and rational administration designed to promote social welfare by safeguarding public health. Colonel Chopra lamenting the lack of specialized institutions catering to the medical requirements of drug addicts in India, suggested the establishment of 'abstinence sanatoria' so that addicts could be treated along scientific lines in areas where the incidence of drug addiction was high. Addicts were classified according to the suitable mode of treatment, i.e. sudden or gradual withdrawal.

Colonel Ram Nath Chopra (1882–1973) is regarded as the father of Indian pharmacology. He is respected as a great teacher, keen researcher in Indian indigenous drugs, clinical pharmacologist, and toxicologist, and above all, a visionary.

Professor Karl Bonhoeffer, a prominent German psychiatrist in Berlin, advocated withdrawal of opium by the 'sudden' method. He was elected chair of the Department of Psychiatry and Neurology at the Charite Hospital, Berlin. His studies on alcoholism, *Die Giesteszustandeder Alkoholdeliranten*, opened up new vistas in the treatment of addiction. Although the methods suggested by him were presumably successful in Europe and the USA, they were not tried in India due to the lack of infrastructural facilities to deal with post-withdrawal complications, if any.

The federal narcotic treatment programme of the USA was launched around the 1930s and continued to be implemented until the 1980s. The narcotic farm opened under this programme was designed as a rehabilitation centre for internment and treatment, but came under heavy criticism due to the experiments carried out on the inmates as a part of its drug-testing programme. It had to be shut down.

THE INDIAN DRUG ADDICT

On the basis of his findings on opium addicts and the aetiology of addiction in India, Colonel Chopra was convinced that the 'non-institutional method of treatment' was best suited for conditions in India, where the medical fraternity was ignorant of advances in the field of addiction and its treatment. The country's apathetic attitude was evident in the lack of specially equipped institutions, such as the 'abstinence sanatoria' in the West, which precluded the possibility of institutional treatment of addicts along scientific lines. In addition, Colonel Chopra felt that contemporary addiction medicine, which laid stress on managing the mechanics of narcotic withdrawal.⁸ According to him, the gradual withdrawal method was the most suitable mode for the detoxification of Indian patients.

The shock of sudden withdrawal would be too much for many of the addicts and even those with strong will-power, determined to get rid of the habit. It would make the most willing and determined of them to lose confidence and they would end by refusing to go through the treatment. We have often heard inveterate opium eaters remark that they would rather endure hell than the abstinence syndrome.⁸

Colonel Chopra cited minimal discomfort as a major advantage of the gradual withdrawal method. Another advantage was that post-withdrawal insomnia, an extremely distressing condition, was much less frequent. It was believed that this would encourage other addicts to seek treatment and also help prevent relapse. Moreover, with slow withdrawal, it generally took about 3–6 weeks to effect a cure in the case of most Indian addicts. In a paper published in 1931,¹² Colonel Chopra remarked that there was also a certain 'psychic element' involved in opium addiction and the production of withdrawal symptoms. He reached this conclusion because he had come across some persons who were addicted to large doses of opium (20–100 grains a day) and had been sent to jail, where their supply of opium had inevitably been stopped. However, they had not suffered from the marked abstinence symptoms that some of the others did. Thus, he stressed that proper attention was to be given to the psychological rejuvenation of the patient. Building a congenial patient–doctor relationship was imperative for the recovery of the patient. Colonel Chopra also pointed out that while trying to rid addicts of their opium habit, substances such as gentian and nux vomica, in pill form, could largely or totally replace the drug without the patients realizing it.

The Assam Opium Enquiry Committee Report 'failed to find any facts which could substantiate the statement that Indians had a greater degree of tolerance to opium and were less susceptible to its ill-effects... The habit once formed is as difficult to break among Indians as among any other people... (The habit) undoubtedly leads to physical, mental and moral deterioration and we have ample proof of it in the series of cases we have studied.'¹³ The findings of Colonel Chopra were included in the Assam Opium Enquiry Committee Report, which upheld the efficacy of

the policy of gradual eradication of the opium habit by reduction and rationing. Highlighting the inefficacy of the incarceration of opium users, it stressed the need to cure opium addiction in hospitals, where addicts could be properly 'policed'. Complete rehabilitation was ruled out. It was decided to confine the scheme to the treatment of withdrawal symptoms.

Addicts were obliged to personally attend treatment centres and no addict was to be treated at home. In addition to the government and local board staff already working in dispensaries in the subdivision, additional doctors were engaged temporarily, including in hospitals in tea gardens. There were a total of 149 doctors working in the prohibition area. Every centre had a doctor at hand and addicts attending the outreach centres received medical aid from the doctors.¹⁴ During the preliminary period, 31 treatment centres and 3 outreach centres were opened in the Dibrugarh subdivision, while 23 treatment centres and 32 outreach centres were opened in the Sibsagar subdivision. These included all public health, local board and medical dispensaries and hospitals in the area, 8 each in Dibrugarh and Sibsagar. Treatment centres were also opened by medical officers of the tea gardens in their tea estates—72 in Dibrugarh and 28 in Sibsagar. The total number of sites set up to make treatment available to addicts was 189. During the preliminary period, the temporary doctors recruited for the prohibition treatment scheme were given a short course of training. All doctors who were in regular charge of dispensaries also underwent this training and the tea gardens were invited to send their doctors for the course. The training sessions were conducted by Colonel Chopra at Dibrugarh and Sibsagar. The course lasted for 2–3 days, and consisted of clinical demonstrations of withdrawal symptoms and of the treatment which was to be followed. However, civil surgeons were given the discretion to modify the procedure as per local exigencies.

During the preliminary phase of the scheme, there was considerable demand for treatment in all parts of the prohibition area. The Public Health Department, with the help of the Excise Department and voluntary local prohibition committees, surveyed the area under total prohibition.

GLUCOSE–LECITHIN THERAPY FOR WITHDRAWAL

The treatment that was adopted in Assam was arrived at by a process of exclusion. Due consideration was given to the number of persons who would have to be treated, the duration of treatment that would be practicable and the conditions under which the work would have to be done. All substitution treatment therapy was rejected, as it was costly, involving hospitalization of the addict; was liable to abuse; and could lead to the formation of a new addiction. Two methods of treatment were experimented with: (i) vesicatory serum therapy of Modinos, and (ii) glucose–lecithin therapy.¹⁵

The civil surgeons who experimented with the treatment of drug addicts by the Modinos detoxification method were convinced of the efficacy of this treatment in the jails and hospitals of Assam. Extensive trials of the Modinos treatment were already being conducted among drug addicts in Burma, following its approval by the health section of the League of Nations in 1932. The trials,

covering 353 opium addicts confined to prison in Burma, were conducted under the supervision of jail superintendents and the treatment was hailed as a valuable method of withdrawal and 'denarcotization'. However, contrary to claims of cure, it appeared to provide only temporary relief. Further, the injection of autogenous serum was not considered suitable and was regarded as a difficult and painful treatment.

In the Modinos detoxification method, the patient was to receive injections for about 5 weeks, under strict observation in a hospital. His consent was required for an incision to be made and an injection of serum to be produced from his blood. The process was excruciating and many patients resisted the treatment. Moreover, whereas the estimated number of addicts in Assam was around 40 000, only a few of the 193-odd dispensaries had provision for indoor patients. In addition, owing to the risk of septic infections and other complications, which could discredit the scheme and raise opposition to its continuance, Modinos treatment was discontinued after a few trials. The only treatment that appeared to suit the conditions prevalent in Assam was the use of lecithin and glucose, both to counteract the effects of opium on the system and for the treatment of other symptoms. Colonel Chopra had studied this method in detail in connection with his study on the treatment of drug addiction in India.

The treatment consisted of a three-phase intervention: (i) detoxification, (ii) withdrawal management, and (iii) recovery. The dosages of lecithin and glucose depended on the severity of the symptoms. Lecithin could be administered at a dosage of 10 g twice or thrice daily, while glucose was to be administered orally in solution or by intravenous injection (25% solution), once or twice a day. It was claimed that the process of detoxification served to 'hasten the elimination of morphine from the system', and the withdrawal symptoms could then be managed suitably.¹⁶ Throughout the period of treatment, addicts were encouraged to report to the treatment centres voluntarily. On admission, they were subjected to a complete medical examination, which included recording their detailed medical history, as well as their name, age, sex, religion, occupation, social status and income, the amount of opium consumed, duration of the habit, reason for the habit, and details of their general health, state of heart, lungs, bowel, kidneys, urine and mental condition. Depending on the above, the patient was subjected to specific and symptomatic treatment, under constant observation and control. Patients with signs of toxæmia ('weak pulse, yellow eyes, furred tongue and dry skin') were immediately put on isotonic saline intravenously, along with a dose of diffusible cardiac tonic mixture. For the 'elimination of opium through the intestinal tract', the patient was administered a dose of calomel, ranging from 1 g to 3 g, and some sodium bicarbonate at night. This was followed by a dose of magnesium sulphate to help restore the functioning of the liver. However, magnesium sulphate was discontinued if the patient had diarrhoea and he was then fed milk or curd. Lecithin was administered in the form of pills from the second day, for a period of 5–7 days. One pill thrice a day, along with one or two ounces of glucose a day, was believed to ameliorate the withdrawal symptoms.

Symptomatic treatment was given for withdrawal symptoms that usually appeared within 36 hours. Nausea and vomiting were managed with sodium bicarbonate. In severe cases, 10 drops of adrenaline hydrochloride solution (1 in 1000) were given under the tongue every 2 or 4 hours for relief. The most common complaint following withdrawal was diarrhoea, which was treated with minimal doses of opium, in the form of Dover's powder,

In 1931, Dr Ma Wen Chao, a Chinese anatomist, and his team at the Peiping Union Medical College made a revolutionary discovery for the treatment of opium addicts and other narcotics. They concluded that during the withdrawal period, there was a deficiency in the protein content, especially 'neuroprotein', and patients put on a diet rich in protein had a speedy recovery. In 1932, Ma conducted experiments on 143 opium smokers who were allowed to smoke opium, but were also administered around 20–30 g of soybean lecithin, thrice a day after meals. He found that the patients had a decreased craving for opium within 4–22 days.

spread over 3–4 days. Chronic diarrhoea was treated with bismuth salicylate, pulvis cretae aromaticus, the dose varying from 10 g to 15 g. Restoratives such as brandy, spirituous ammonia aromaticus and digifortis strychnine were used to relieve low blood pressure, a feeble pulse and a sinking sensation. To relieve insomnia, paraldehyde and sulphonal or chloral hydras were administered, while general weakness was sought to be alleviated by the use of tonics such as iron, strychnine and small doses of quinine.¹⁷ Other ‘intercurrent diseases’, such as asthma, abdominal discomfort and dyspepsia, were treated symptomatically.

Special attention was given to diet. During the detoxification phase, when the appetite was almost nil, the patient was fed well-cooked rice with milk, along with large doses of glucose (about one ounce per day), 2 or 3 times daily. This was believed to act effectively on patients suffering from jaundice and it was considered helpful in overcoming symptoms of shock and collapse. The use of intravenous injections of glucose was restricted to chronic cases. Once the withdrawal symptoms had eased, the patient was put on a balanced diet consisting of eggs, milk, fish, mutton, chicken, beans, fruit, butter and *ghee*, in addition to the regular meal of rice, pulses, vegetables and curd.

The most important of the changes in the method of treatment was the general adoption of intravenous injections of glucose, in addition to the oral administration of glucose. The normal dose of injectable glucose was reduced from 25 ml to 10 ml. Stock mixtures were used for the treatment of symptoms. It was at first thought that intravenous injections, or any kind of injections for that matter, would be unpopular and end up being an obstacle to the success of the treatment. The first supplies of glucose were obtained from a German pharmaceutical company, Merck. Later, the scheme began to use a solution of glucose, prepared and tubed locally at the Pasteur Institute in Shillong. Meanwhile, Messrs Smith Stanistreet and Company of Calcutta were also approached for the local manufacture of lecithin, at Colonel Chopra’s initiative. This not only ensured a steady supply, but also stimulated local enterprise and generated interest in various parts of the country.

The administration of intravenous injections was restricted to hospitals and regular dispensaries, where addicts could be kept under observation and control. It was found that during the preliminary period of treatment, when intravenous injections started to be administered, addicts clamoured for these injections since they provided them with such immediate relief from their symptoms. Once it was found that it was possible and feasible to use the method safely under the conditions prevailing in the prohibition area, most centres were given permission to use it. The duration of the treatment was around 10 days. Though the normal practice was to examine the urine to determine the level of morphine, this could not be done in Assam as the necessary reagents could not be obtained. Had it been possible to conduct such a test, it would have facilitated a comparison between the condition of those who had undergone specific treatment and those who had got over their withdrawal symptoms without any specific treatment. The official records reported the positive results of the treatment and its efficacy in the management of withdrawal symptoms and associated reactions as follows:

*The patient develops a distaste for the drug ...the craving for the drug disappears and the patient’s whole outlook improves. His appetite improves; he gains weight, with a great improvement in general health. The patient becomes more active and begins to take greater interest in himself and his surroundings.*¹⁸

CONCLUSIONS

Apart from being a major public health initiative, the mass treatment scheme marked the acceptance of addiction as a ‘psychological problem’. There was much debate on whether the treatment should be on the lines of the ‘narcotic farms’ or de-addiction clinics. As addiction came to be defined increasingly within the ‘scientific constructs of sickness and health’,¹⁹ opium addicts began to be seen as ‘diseased’ persons who needed to be taken care of in hospitals or special institutional set-ups. In such settings, they could receive treatment and ‘total care’, including rehabilitation. However, those who framed the prohibition treatment scheme in Assam displayed a certain streak of realism, keeping in view the local conditions, lack of infrastructural facilities and absence of trained manpower. The scheme was aimed neither at rehabilitating the addict, nor benefiting the state by transforming the addict—a societal liability, as he was considered then—into a ‘useful citizen’. The objective of the scheme was to remove addicts ‘from the streets’ and protect people from their pernicious activities, such as spreading addiction and providing a market for illicit drugs. Needless to say, the scheme set out to relieve addicts from withdrawal symptoms and prevent any untoward symptom. Most importantly, it provided a new lease of life to the addict. The provincial government’s campaign to build a system of care for opium addicts marked a shift in the treatment of alcoholism and narcotic addiction. Much debate ensued on whether an addict was a social deviant or a person suffering from a medical condition. Biological views of addiction fell out of favour and were replaced by psychiatric and criminal models, which placed the source of addiction within the addict’s character and argued for the control and sequestration of the addict.

An official note on the results of the mass treatment scheme expressly declared that the short-term objective of seeking voluntary submission for treatment had been accomplished. However, it was not claimed that the addicts had been cured in the true sense of the term.

*The treatment scheme had attempted to relieve the addict from the withdrawal symptoms which he might suffer when his opium was taken away from him, to prevent any untoward symptoms arising which might be serious, to start the addict afresh by renewing the vitality which had been weakened by the addiction and generally giving a new tone to the body so that he may be in a position to resist the temptation of finding relief from his mental instability in opium and to encourage him, instead, to face his problem and to fight it in the open.*¹⁵

The establishment of narcotic farms would mean the adoption of a treatment regimen involving incarceration and rehabilitation. The addicts would have to be segregated for an indefinite period of time if people were to be protected from their pernicious activities, such as spreading addiction.

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