

## CODEINE CONTAINING COUGH SYRUP ADDICTION IN ASSAM AND NAGALAND

NITEEN S. WAIRAGKAR, J. DAS, S. KUMAR, J. MAHANTA, K. SATYANARAYANA,  
R. K. PHUKAN, M. CHETIA, S. K. GOSWAMI

*The drug abuse monitoring study of Regional Medical Research Center, Dibrugarh, reported 181 and 395 addicts from the states of Assam and Nagaland, respectively in one year. Of these, 48 (26.5%) and 49 (12.4%) cases were contributed by the primary abuse of codeine containing cough syrups. All addicts were males in their early twenties. Most of the addicts were unmarried and educated up to matriculation. The majority of addicts in Assam were Hindus (85.4%) and in Nagaland, Christians (81.63%). Unemployment was predominant in both the groups. The mean age for the first use of codeine cough syrup was 17.44 years (Assam) and 15.77 years (Nagaland). Nagaland had more chronic abusers. Addicts were used the oral route several times a day and friends were the main source of introduction. Mild forms of physical and psychiatric disorders were reported. Easy over-the-counter availability, lesser expenditure, milder withdrawals and ease of consumption without secrecy were some of the reasons for the emergence of this new form of addiction in Assam and Nagaland.*

*Key words: Codeine, over-the-counter cough syrups, addiction.*

### INTRODUCTION

Drugs have been abused by mankind since centuries. In the modern era, newer drugs are being sought for addictive purposes. The addiction of drugs previously perceived as harmless have been documented all over the world. Codeine is one such drug.

Abuse of over-the-counter (OTC) cough suppressants have been reported from Japan (Ishigooka et al, 1991) and abuse of codeine separated from over-the-counter drugs containing acetyl salicylic acid and codeine have been reported from Denmark (Jensen & Hansen, 1993). Codeine is reported to be associated with higher numbers of DAWN medical examiners reported drug misuse deaths in the USA (Davis et al, 1991) and is among the top four abused prescription drugs in the elderly population in Washington (Jinks & Raschko, 1990). Fatalities associated with acute overdose of codeine (Bender et al, 1988), as well as psychiatric disorders (particularly compulsive disorders, besides others) were reported (Senjo, 1989; Ishigooka et al, 1991). Codeine abuse is said to sustain addiction or increase the risk of relapse in patients addicted to other drugs (Stock, 1991). The addictive potential of codeine has been proved experimentally (Suzuki et al, 1991).

As against the documentation of codeine abuse worldwide, there is a paucity of documented reports in India. Hence, a Drug Abuse Monitoring study was carried out to ascertain the drug use pattern in both the states. The primary abuse of codeine containing

cough syrups was analyzed further to assess the magnitude and patterns of this form of drug abuse.

### MATERIAL AND METHODS

The states of Assam and Nagaland in the north eastern region of India constituted the area of study. The Drug Abuse Monitoring study was done with collaborating centers in Assam and Nagaland. The collaborative centers involved Government Organizations (GO) and Non-Government Organizations (NGO) in Assam and Nagaland which were working in the field of drug addiction either as deaddiction centers or counselling centers. In Assam, as per information available at the start of the study, two GOs, three medical colleges and one NGO were actively engaged in the field of drug addiction. Though all of them were contacted, one GO, one medical college and one NGO participated in the study. From Nagaland, three NGOs and four GOs were contacted, out of which two NGOs and three GOs participated in the study.

The proforma adopted from Ministry of Health and Family Welfare's ICMR - AIIMS study was used as an instrument for uniform data collection, on reporting drug addicts on a quarterly basis. The data items were on identification, demographic characteristics like age, sex, religion, marital status, education, school drop out, employment status etc.; drug abuse patterns and variables like primary drug of abuse, frequency, route of administration, age at first use, duration of use and treatment modality variables. A coding manual was provided to the collaborating centers. This activity was monitored

closely by the scientists of the institute. The data collected during a one year period between October 1992 and November 1993 was analyzed. Statistical significance testing was done using standard error of difference between two proportions and z score.

## RESULTS

During the study period, a total of 181 addicts were reported from Assam and 395 from Nagaland. Data was screened for the primary abuse of codeine containing cough syrups. Forty eight (26.5%) of the Assam cases and 49 (12.4%) of the Nagaland cases constituted the study group for further analysis of demographic and drug use variables. Only items on which information was available in all the formats were analyzed.

### Age distribution:

As shown in Table 1, the age group varied from 15 to 35 years. Nagaland addicts showed a significantly higher frequency in the 16 to 20 age group than those from Assam. The Assam group showed a higher frequency in the 21 to 25 age group. Mean age in years was 23.52 for the Assam group and 20.95 in the Nagaland group.

Table 1  
Age Distribution

Age group (years)	Assam		Nagaland	
	Frequency	%	Frequency	%
11-15	0	0.0	0	0.0
16-20	6	12.5	23	47.0
21-25	33	68.7	23	47.0
26-30	7	14.6	3	6.1
31-35	2	4.2	0	0.0
> 36	0	0.0	0	0.0
	48	100.0	49	100.0

### Sex distribution:

All the codeine cough syrup addicts were males. No female reported primary abuse of codeine.

### Marital status:

The majority of study subjects in Assam (89.58%) and Nagaland (97.9%) were unmarried. None were divorced.

### Religion:

In Assam, the majority were Hindus (85.4%) followed by Christians (8.33%) and Muslims (6.25%). In Nagaland, the majority were Christians (81.63%) followed by Hindus (18.36%). Other religious groups were not represented.

### Educational status:

Only 2.1% of Assam and 2% of Nagaland subjects were uneducated. 54.2% of the Assam group and 91.8% of Nagaland group were educated from the 1st to XII standards ( $Z = 4.6$ ). The Assam group had a predominance of graduates and post-graduates (43.8%) as compared to Nagaland (4%;  $Z = 5.15$ ). Drug related school drop out rate in the Assam addict group was reported to be 68.75% as compared to 75.51% in Nagaland.

### Employment status:

At the time of registration for the study, 62.5% of Assam subjects and 97.9% of Nagaland subjects were unemployed. The majority, i.e., 96.6% of Assam and 100% of Nagaland unemployed subjects had never been employed.

### Age at first use of prime drug of abuse:

The mean age at first use was 15.77 years in Nagaland and 17.44 years in Assam; 2.1% of Assam and 18.4% of Nagaland subjects were between 11 to 15 years, 72.9% (Assam) and 69.4% (Nagaland) were between the ages of 16 and 20 years, and 8.3% (Assam) and 2.1% (Nagaland) were between 26 to 30 years at their first experience with codeine cough syrups. No person was above the age of 30 years at the first use.

### Duration of dependence:

As seen from Table 2, the higher frequency of recent cough syrup addiction (of duration less than 2 years) in Assam was highly significant ( $Z = 3.74$ ) as compared to Nagaland. Nagaland showed a significantly higher frequency of chronic abusers (more than 2 years) ( $Z = 3.84$ ). This coincides well with the higher frequency in the younger group and younger age at first experience in the Nagaland group of addicts.

Table 2  
Duration of Dependence

Duration (years)	Assam		Nagaland	
	Frequency (n=48)	%	Frequency (n=49)	%
Less than	3	(6.2)	1	(2.0)
1-2	12	(25.0)	1	(2.0)
2-3	9	(18.7)	13	(26.5)
3-4	7	(14.6)	10	(20.4)
4-5	7	(14.6)	15	(30.6)
>5	10	(20.8)	8	(16.3)
Not Known	0	(0.0)	1	(2.0)

### Frequency of intake:

The majority of subjects were abusing codeine several times a day (75% Assam, 91.8% Nagaland). A frequency of several times a week was reported by 12.5% of Assam and 6.1% of Nagaland group. Frequency of once a day was reported by 8.3% of Assam and 2% of Nagaland subjects; 4.2% of Assam group reported a frequency of once a week as compared to none in the Nagaland group. The actual amount of codeine consumed in form of syrup could not be ascertained through the present structured data. All addicts consumed codeine containing cough syrups orally only. Most addicts reportedly consumed one bottle of cough syrup (50ml) every day, but some persons reported an increased requirement. Brands of cough syrups containing higher concentrations of codeine were popular amongst the addicts. The majority reported 'friends' as a source of introduction to cough syrups, while some were introduced through the medical use of cough syrups.

### Physical and psychiatric effects:

The physical effects in these addicts appeared to be due to codeine itself. Constipation and dizziness appeared in an intoxicated state; constipation was a chronic problem in these addicts. The withdrawals of codeine containing cough syrups occurred in a manner similar to heroin withdrawals but in a comparatively milder form. Psychiatric problems reported were depression and anxiety neurosis.

### Treatment practices:

Self reporting to the treatment centers constituted a minority in Assam (10.41%); no one self reported for treatment in Nagaland. Non-governmental organizations working in the field of drug addiction, family, friends and relatives appeared to play a major role in bringing addicts to treatment or counselling centers. All 49 addicts were reporting for the first time to treatment centers in Nagaland, while 72.9% of the Assam group were on follow up visits at the time of interview. Non-narcotic analgesics and minor tranquilizers were the main stay in drug treatment in both states. The rest were counselled.

## DISCUSSION

Codeine abuse in form of cough syrups appeared to be different in both the states. The Nagaland group appeared to be younger than the Assam group; however, the study group itself was younger as compared to studies from abroad and no one was above the age of 35 years. The unmarried status of the majority also reflected the younger age of the subjects. The fact

that no female addicts were reported in the study group might be due to the influence of Indian traditional society. The religious pattern of the addicts seemed to follow the religious pattern of the community in both the states. Younger age at first use of codeine cough syrups, more years of dependence on cough syrups in Nagaland reflected the chronic nature of problem, whereas it seemed to be a problem of recent origin in Assam.

The oral route of consumption was comparable to the Japanese study (Jensen & Hansen, 1993); the injectable route reported in Denmark was not found in our group. Consumption was dependent on the concentration of codeine in cough syrups and brands with a higher concentration and easy availability seemed to be popular. Abuse of cough syrups might be due to their addictive potential, easy availability over the counter, lesser expenditure involved, milder forms of withdrawals and also due to the ease in consuming cough syrup without the need for privacy. Physical side effects were due to codeine itself. Milder forms of psychiatric problems were reported as compared to Japanese studies (Senjo, 1989; Ishigooka et al, 1991). Due to the paucity of specialized treatment centers in these states, treatment seemed to be limited to non-narcotic analgesics and counselling.

Thus over-the-counter cough syrups containing codeine emerge as a new form of addiction in Assam and Nagaland. However, due to the limitations of the study format, all the psycho-socio-cultural correlates of this form of addiction could not be studied. The possible preventive measures should include health education about the addictive potential of codeine containing cough syrups, restricting over-the-counter sale of cough syrups and scrupulous monitoring by doctors of treatment with cough syrups. Further epidemiological studies are needed to explore this phenomenon.

### ACKNOWLEDGEMENTS

*Authors are thankful to following persons for their help: Dr.D.Mohan, Dr. Rajat Ray, AIIMS, New Delhi; Dr.V.Nagi, Naga Hospital, Kohima; Dr.Lanu Aier, Civil Hospital, Dimapur; Mr. NuH, Mr. Dilli Soloman, N.G.O., Dimapur; Dr. MoA Jamir, Civil Hospital, Tuensang, Nagaland; Dr. I.Chuba Toshi, Civil Hospital, Mokokchung, Nagaland; Dr. P.K.Choudhuri, AMC, Dibrugarh; Office bearers and staff of 'Ashwash', Guwahati, Assam; Dr. V.K.Srivastava, Director, RMRC, Dibrugarh, Assam.*

## REFERENCES

- Bender, F.H., Cooper, J.V. & Dreyfus, R.** (1988) Fatalities associated with an acute overdose of glutethimide (Doriden) and codeine. *Veterinary and Human Toxicology*, 30, 4, 332-3.
- Davls, H., Baum, C. & Graham, D.J.** (1991) Indices of drug misuse for prescription drugs. *International Journal of Addiction*, 26, 7, 777-95.
- Ishigooka, J., Yoshida, Y. & Murasaki, M.** (1991) Abuse of "BRO No": a Japanese O.T.C. cough suppressant solution containing methylephedrine, codeine, caffeine and chlorpheniramine. *Progress in Neuropsychopharmacology and Biological Psychiatry*, 15, 4, 513-521.
- Jensen, S. & Hansen, A.C.** (1993) Abuse of codeine separated from over-the-counter drugs containing acetylsalicylic acid and codeine. *International Journal of Legal Medicine*, 105, 5, 279-281.
- Jinks, K.J. & Raschko, R.R.** (1990) A profile of alcohol and prescription drug abuse in high risk community based elderly population. *Drug Information in Clinical Practice*, 24, 10, 971-5.
- Senjo, M.** (1989) Obsessive compulsive disorders in people that abuse codeine. *Acta Psychiatrica Scandinavica*, 79, 6, 619-20.
- Stock, C.J.** (1991) Safe use of codeine in recovering alcoholic or addict. *Drug Information in Clinical Practice*, January, 25, 1, 49-53.
- Suzuki, T., Otani, K. & Misawa, M.** (1991) Differential sensitivity to physical dependence on morphine and codeine in three inbred strains of mice. *Japanese Journal of Pharmacology*, 57, 4, 455-462.

Niteen S. Wairagkar\* MD, Senior Research Officer, Regional Medical Research Center (R.M.R.C.), N.E. Region (I.C.M.R.), Post Box 105, Dibrugarh, Assam 786 001; J. Das MD, Consultant Psychiatrist, 'Ashwash', Chandmari, Guwahati; S. Kumar PhD, Assistant Director; J. Mahanta MD, Dy. Director and Officer In charge, R.M.R.C., Dibrugarh; K. Satyanarayana MBBS, MSc, PhD, Director, R.M.R.C., Bhubaneswar; R.K. Phukan MSc; M. Chetia BSc; S.K. Goswami BSc, PGDCA, R.M.R.C., Dibrugarh.

\*Correspondence