One-year continuous abstinence rate for smoking cessation via telephonic counselling: the Indian scenario

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Abstract

Tobacco control methods differ by country, with telephonic counseling being one of them. The effectiveness of telephone counseling in smoking cessation has been discussed on several occasions. India's tobacco problem is more complex than that of any other country in the world. To begin with, tobacco is consumed in a variety of ways, and India is a large multilingual country with remarkable cultural diversity. In India, the National Tobacco Quitline Service (NTQLS) is a government-run program. Its data from May 2016 to May 2021 were analyzed retrospectively in this cross-sectional study to determine the prevalence and pattern of tobacco use in India, as well as the abstinence rate for smoking cessation. A total of 4,611,866 calls were received by the Interactive Voice Response system (IVR). The number of calls increased from 600 to 5400 per day after the toll-free number was printed on all tobacco products. Smokeless tobacco use was discovered to be more prevalent, with males significantly more likely to use both smoking and smokeless tobacco. At one month and one year after quitting, 33.42% and 21.9%, respectively, remained tobacco-free. The study emphasizes the efficacy of behavioral counseling in increasing abstinence rates. The printing of a toll-free number on tobacco products is an effective strategy for expanding the operation of quit lines. Despite the challenges of cultural diversity and complex tobacco use, India's quit line service has been able to provide counseling to callers with prolonged abstinence and quit rates comparable to the various quit lines around the world.

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Introduction

Smoking is an age old menace and tobacco use is one of the main cause of preventable diseases and mortality occurring as a consequence to these diseases. Tobacco is a causative agent for various diseases like cancer, cardiopulmonary diseases, stroke and coronary heart disease. As per a recent study, smoking is responsible for 7.69 million annual deaths out of which 6.69 million were among current smokers which reflects its devastating effects [1]. Tobacco is consumed in a variety of different ways. Its use is widespread among different age groups as well as different countries of the world. Tobacco can be consumed through smoking such as cigarettes, bidis, hukkah, chillum, cigars and kreteks as well as orally which can be consumed in the form of pan, khaini, gutka, zarda, tobacco paste and even snuff. There are various tobacco control methods adopted by different countries which include: increase the price through higher taxes on tobacco products, enforce bans on the tobacco advertising, promotion and sponsorship, anti-tobacco educational campaigns, counseling, and smoking cessation therapies [2]. Telephonic counseling is one of the tobacco control methods adopted by various countries including India. Some of the countries

like United States of America (USA) has various quit lines divided by states. Tobacco quit lines can either be operated by government or by private service providers. It provides population-wide, confidential, non-judgmental telephone based free of cost counseling, information, and referral service for anyone seeking help for their own or for another person to cease tobacco use. In India, National Tobacco Quitline Service (NTQLS) was established on 30thMay 2016. This Quitline is accessible through a toll-free no. 1800-11-2356 and is operational 6 days a week, (Tuesday to Sunday 8 a.m. to 8 p.m.). It was started on a small scale with limited staff and thereafter expanded with establishment of regional centers in Bengaluru, Mumbai and Guwahati. The main center is located in Delhi which mainly covers the north, central and western regions of India. The calls from southern part of India get directed to the Mumbai and Bengaluru centers which became functional from 16 January 2018 and 11 September 2018 respectively. The north-eastern region of the country gets covered by the Guwahati center which started its functions from 13 September 2018. This has minimized the language barriers which was a challenge for tobacco quit line before the establishment of regional centers in various parts of the country. These centers currently providing services in about 15 languages. The toll-free number of Tobacco Quitline is printed on all tobacco products. It follows WHO protocol of Quitline services with the aim to provide free-of-cost counseling and educational material through e-mails and posts. The quit line counselors offer a brief intervention method of 5 A's: Ask (about the tobacco use), Advise (help them to quit), Assess (brief them about commitment and barriers to change), Assist (callers committed to change) and Arrange (follow up to monitor their progress) [3]. The present study was planned to evaluate the prevalence and pattern of tobacco use and the effectiveness of use of telephonic counselling in India.

Materials and Methods

The National Tobacco Quitline Services is a sponsored scheme which is run by the Ministry of Health and Family Welfare. It is devoted to providing telephone-based tobacco cessation counseling. The process initiates when the client dials the toll-free number, during that incoming call (counselling call) counselling is provided to the client. The first call is the initial step for quitting tobacco, this call is made by the caller which indicates their willingness to quit tobacco and on this call the counsellor gives structure to the interventions, which are planned for quitting tobacco and a target date for quitting tobacco is assigned to the caller which is known as Quit date. The quit date indicates the day of quitting tobacco after which subsequent follow up calls are made by the counsellors and educational pamphlets are also provided to them through mails and post. The subsequent calls are proactive calls which are made by the counsellor for a total duration of one year for each caller. The callers are called on their personal number through a landline number according to the guidelines provided by WHO [4]. The first follow up call (P1) is made by the counselor, 1-2 days before the Quit date. This call is for assessing the caller's preparedness to quit and for reminding them about their quit date. The caller is then called for the second follow up (P2) which is on the date of quitting, if the caller has reduced or quitted then he is appreciated and urged to remain quitted. If the client has relapsed in between then the counsellor would provide them counseling to further, try and look for those positive changes that the caller has experienced through quitting. The caller then receives the third follow up (P3) call after 3-7 days of quitting, the callers are asked if they are facing any withdrawal symptoms or any benefit, they could find in themselves after quitting tobacco, if so then they would be appreciated and motivated to maintain their routine. The callers are called for fourth follow up (P4) after 2-3 weeks follow up call of quitting to ascertain that the callers remain quitted. The fifth (P5), sixth (P6) and seventh (P7) follow up call is done after 3 months, 6 months and 9 months respectively ensuring that the caller has remained abstinent to tobacco. The clients afterward receive a final eighth (P8) follow up call after a gap of 12 months of quitting.

Quitline maintains the daily record of its callers by keeping the track of outgoing and incoming calls and the services used to evaluate the cessation rates of the callers. A tool used for the assessment of caller's intensity of tobacco use is Fagerstrom Test for nicotine dependence which describes the nicotine dependence on a scale of 1-5 [5]. The data from May 2016-May 2021 was studied retrospectively and evaluated to check the prevalence and pattern of tobacco use in India who are willing to quit and the use of counseling along with success rate of National Tobacco Quitline Services. Systematic database analysis was used to evaluate the data from last 60 months.

Results

A total of 4,611,866 calls hit the Interactive Voice Response in the duration from May 2016- May 2021. Figure 1 shows the total number of calls, received and made by the counselors. The quit line data showed huge difference in the number of calls that hit the IVR before and after the print of toll-free number on all tobacco products. The data shows more than 600 calls per day before the print and after the print of toll-free number the call flow increased to more than 5,400 calls per day.

Figure 2 depicts the registered calls along with the abstinence and dropout rate of callers after quitting tobacco at 2 weeks, 1 month, 3 months, 6 months, 9 months and 12 months respectively. At one month and one year of quitting 28,680 (33.42%) and 18,799 (21.9%) remained abstinent from tobacco use. The continuous one year quit rate was calculated for the total callers who have registered till May 2020.

Figure 3 represents the state wise status of the calls received from May 2016-May 2021. The maximum number of registered

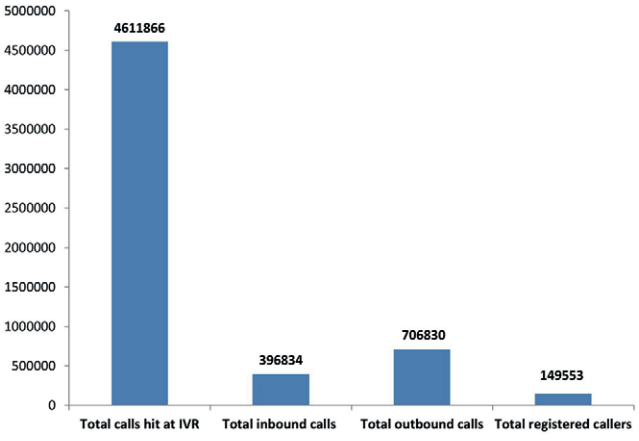

Figure 1. Total number of calls during the period May 2016-May 2021.

callers was from Uttar Pradesh that is 44,910 (30.03%) followed by Rajasthan 35,611 (23.81%) of the total number of registered callers and only 8 calls got registered from Lakshadweep and one from Andaman and Nicobar. Table 1 shows the demographic details of the callers. Consumption of smokeless tobacco was found to be more prevalent with most of the callers were using tobacco since 1–10-year duration. Table 2 shows the details of the tobacco use in callers at the time of registration. Most of the callers did not have any associated co-morbid condition. Only 0.65%, 0.62% and 0.35% of the callers had associated hypertension, diabetes and asthma respectively.

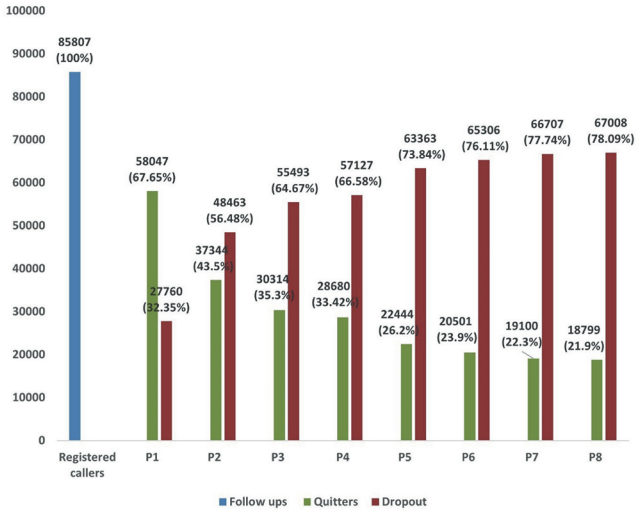

Figure 2. Abstinence rate of registered callers at various time intervals.

Table 1. Demographic details of the callers.

Variables	Value (percentage) n=149,553
Age	
<14 years (childhood)	694 (0.46)
15-24 (youth)	69,330 (46.36)
25-64 (adults)	78,068 (52.20)
65 and above (senior citizens)	1461 (0.98)
Gender	
Male	147,624 (98.71)
Female	1927 (1.29)
Transgender	2 (0)
Education	
1st -10th	61,972 (41.44)
11th-12th	38,206 (25.55)
Diploma	3166 (2.12)
Graduation	33,274 (22.25)
Post-graduation	5721 (3.83)
Professional	1428 (0.95)
Illiterate	5786 (3.87)
Marital status	
Married	71,992 (48.14)
Unmarried	77,359 (51.73)
Widowed	92 (0.06)
Divorced	110 (0.07)
Occupation	
Private sector	38,148 (25.51)
Self employed	68,215 (45.61)
Government sector	4154 (2.78)
Student	28,688 (19.18)
Unemployed	9427 (6.30)
Retired	921 (0.62)
Income per month	
<10000	30,621 (20.48)
11000-30000	71,501 (47.81)
31000-60000	7811 (5.22)
61000+	1916 (1.28)
Nil	37,704 (25.21)

Discussion

Tobacco has been affecting huge mass of population all across the world from past decades. It is consumed in different forms whether smoking or smokeless. Tobacco problem in India is more

Table 2. Caller's background of tobacco usage.

Variables	Value (percentage)
Tobacco use	n=149,553
Smoking	29,180 (19.51)
Smokeless tobacco use	101,141 (67.63)
Smoking and smokeless both	19,232 (12.86)
No. of years of tobacco use	n=149,553
<1 year	9704 (6.49)
1-10 years	105,984 (70.87)
11-20 years	25,935 (17.34)
21-30 years	5465 (3.65)
Above 30 years	2465 (1.65)
Quantity of tobacco used per day	n=149,553
1-10	71,972 (48.12)
11-20	49,508 (33.10)
20 and more	28,073 (18.77)
Smoking quantity	n=29,180
1-10	12722 (43.60)
11-20	9072 (31.09)
20 and more	7386 (25.31)
Smokeless quantity	n=101,141
1-10	54,336 (53.72)
11-20	33,755 (33.37)
20 and more	13,050 (12.90)
Quantity of both smoking and smokeless tobacco	n=19,232
1-10	4914 (25.55)
11-20	6681 (34.74)
20 & more	7637 (39.71)
Alcohol use	n=149,553
Yes	36,286 (24.26)
No	113,267 (75.74)
Expense per month on tobacco	n=149,553
0-500	51,881 (34.69)
500-1000	38,107 (25.48)
1000-5000	53,834 (36.00)
5000 above	5731 (3.83)
Tobacco usage time interval after waking up	n=14,9553
>60 minutes= 0 points	26,111 (17.46)
30-60 minutes= 1 points	13,319 (8.91)
6-30 minutes= 2 points	36,429 (24.36)
within 5 minutes= 3 points	73,694 (49.28)
Number of cigarettes/bidi/sachets smoked/chewed in a day	n=149,553
10 or fewer=0 point	71,112 (47.55)
11-20=1 point	50,366 (33.68)
21-30=2 points	16,901 (11.30)
31 plus=3 points	11,174 (7.47)

complex than probably that of any other country in the world because of the diverse patterns of tobacco consumption such as: smoking, chewing, applying, sucking and gargling. This leads to a large consequential burden of tobacco related diseases and death [6]. The data collected from Quitline is reflective of the prevalence and patterns of tobacco usage among the callers who wish to seek help to quit tobacco. It highlights the effectiveness of behavioral counseling in increasing the abstinence rate of tobacco. Various quit lines all over the world provide different services. The functioning of the various quit lines across the world is summarized in Table 3.

The first Quit line was launched in Australia in 1985. Substantially, the efforts were made by World Health Organization to make it widespread across many countries with the aim of making this service accessible to tobacco users across many countries.

It was observed that the prevalence rate of both smoking and smokeless tobacco was significantly higher among males as compared to females as 98.71% of callers were male and only 1.29% of callers were female. The prevalence of smoking and chewing varied widely between different states and had a strong association with the socio-cultural characteristics. The patterns of tobacco consumption are different across cultures. According to a Global adult tobacco survey (2018) in Nigeria the prevalence rate of tobacco use among men was 8.3% and among women it was 0.4%. It was also found that women who had no formal education history were more prone to both smoking and smokeless tobacco use [26]. However, National survey on drug use and health data from United States showed prevalence of cigarette smoking was highest among the age group 16-17 years i.e., 13.6% and overall, 22.0% of youth cigarette smokers were daily smokers and there was no significant difference between males and females [27]. Female smoking is still a taboo and socially unacceptable in many regions in India. Moreover, men are meant to work outside the boundaries of house thus it becomes accessible for them. Thus, among males smoking remained by far the most common form of tobacco consumption

Figure 3. Geographical representation of the total number of calls received from different parts of India.

and among females chewing of zarda and guthka. was the most common form of tobacco consumption in most parts of the country. Also, both chewing tobacco and smoking tobacco is higher in rural and uneducated populations [6].

The Tobacco Quit lines work to provide counseling, cessation techniques including nicotine replacement therapy (NRT), M cessation, online counseling, quit tips, quit cards etc. and are thus very effective intervention for reduction in tobacco consumption. The Quitline provides motivational interviewing which negates the emotional and habitual part of smoking addiction. The abstinence rate of National Tobacco Quitline Service is 33.42% after 1 month of quitting and 21.91% after 1 year of quitting**.** The Quitline service in New Zealand offers 3 months quitting program with quit rate of 32.9% at 4 weeks [28]. The six-month quit rate of callers using the quit line in Vietnam was 5.1% [29]. A study on telephonic counselling delivered during the first month of quit attempt revealed significantly higher abstinence rates compared with a standard care approach in Malaysia [30]. One review on proactive telephone counseling demonstrated that it increased smoking cessation rates [31]. Hollis et al. found that multisession telephone support (five proactive calls) led to higher quit rates [32]. Wu et al investigated the role of additional telephone follow-up counselling sessions after face-to-face counselling in Beijing and found that it doubled the quit rate [33]. Another randomized control trial on

Table 3. Services provided by Quitline's of different countries.

Quitline (country)	Year of establishment	Time	Services
Quit Victoria [7] (Australia)	1985	Monday to Friday 8am to 8pm Saturday, Sunday and public holidays 9am to 5pm	Telephone counselling NRT (Nicotine replacement therapy)
California smokers helpline [8] (USA)	1992	Monday to Friday 7am-9pm; Sat/Sun 9am-5pm	Telephone counselling Self-help materials Referral to local resources
Nevada tobacco Quitline [9] (USA)	June 1999	Monday to Sunday 4:00 am to 11:00 pm	Telephone counselling NRT (Nicotine replacement therapy)
Mississippi tobacco Quitline [10] (USA)	1999	Monday through Thursday 7am-9pm; Friday 7am-7pm Saturday 9am-5:30pm Sunday Voicemail is available	Telephone counselling Referral to local resources
Me mutu [11] (New-Zealand)	1999	All 7 days 24 hours	Telephone counselling Text message Online registration NRT
West Virginia tobacco cessation Quitline [12] (USA)	July 2000	Monday to Sunday 08:00 AM - 08:00 PM	Telephone counselling NRT
New jersey Quitline [13] (USA)	October 2000	Monday-Friday: 8am-9 pm Saturday 8am-7pm Sunday 8:30am-5pm	Telephone counselling
Colorado Quitline [14] (USA)	October 2001	Monday-Sunday 5am to 11pm	Telephone counselling
Wisconsin tobacco Quitline [15] (USA)	2001	7 days 24 hours	Telephone counselling Referral to local resources
Alaska tobacco Quitline [16] (USA)	January 2002	7 days 24 hours	Telephone counselling
Oklahoma tobacco helpline [17] (USA)	August 2003	7 days 24 hours	Telephone/Online counselling NRT
Ohio tobacco Quitline [18] (USA)	August 2003	7 day 24 hours	Telephone counselling
Michigan tobacco Quitline [19]	October 2003	Monday to Sunday 12-11:59pm	Telephone counselling
Kansas tobacco Quitline [20] (USA)	November 2003	7 days 24 hours	Telephone counselling
Montana tobacco Quitline [21]	May 2004	7 days a week: 5am-11pm, MST with 24-hour voicemail	Telephone counselling Self-help materials Referral to local resources NRT
North Dakota tobacco Quitline [22] (USA)	September 2004	Monday-Thursday 7am-8pm Friday 7am-7pm Saturday 10am-4pm	Telephone counselling Referral to local resources
Maryland tobacco Quitline [23] (USA)	2006	Monday-Sunday 12am-11:59pm	Telephone counselling Text message Online registration NRT
Austrian Quitline [24] (Austria)	May 2006	Monday-Friday 10am-6pm	Telephone counselling
National Tobacco Quitline Service [25] (India)	May 2016	Tuesday-Sunday 8am-8pm Self-help materials Referral to local resources	Telephone counselling

Table 4. Quit rates of the Quitline's of various countries.

S. No.	Author	Year/Journal name	Quit line and caller/Country	No. of calls	Quit rate/Comments
1.	Zhu *et al.* [39]	1996/Journal of consulting and clinical psychology	Smokers calling Quitline/United States of America (USA)	6	12 months continuous quit rate was 26.7%
2.	Borland *et al.* [40]	2002/Addiction	Smokers calling Statewide Quitline service/Australia	Variable as per caller's need	3 months quit rate 24%. Difference in point prevalence of smoking declined to 6% by 12 months of follow up
3.	Zhu *et al.* [34]	2002/New England Journal of Medicine	Smokers calling California smokers Helpline/USA	7	12 months abstinence rate 9.1%
4.	Rabius *et al.* [41]	2004/Health Psychology	Smokers calling Telephonic counselling service American Cancer Society/USA	5	3 month quit rate 20% for young smokers and 15% for older adults
5.	Mc Alister *et al.* [42]	2004/Tobacco control	Smokers calling Telephonic counselling service American Cancer Society/USA	5	12 months continuous quit rate 20.7%
6.	Gilbert *et al.* [37]	2006/Addiction	Smokers calling National Telephone Calling Service UK/United Kingdom	5	Six months continuous quit rate at follow up of 12 months
7.	Hollis *et al.* [32]	200 7 /Tobacco control	Smokers calling Oregon Tobacco Quitline/USA	5	12 months quit rate 14%
8.	Ferguson *et al.* [38]	2012/British Medical Journal	Smokers (non-pregnant) calling English Health Service Smoking Helpline/England	6	6 months quit rate 18.2%
9.	Sims *et al.*	2013/Nicotine and Tobacco Research	Young adult smokers (18-24 years) calling Wisconsin Tobacco Quitline/USA	4	One month quit rate at 6 months of follow up 14.3%
10.	Nohlert *et al.* [43]	2014/Tobacco Induced Diseases	Smokers calling Swedish National Tobacco Quitline/Sweden	2	Six months continuous quit rate at follow up of 12 months 21%
11.	Cummins *et al.* [44]	2016/American Journal of Preventive Medicine	Pregnant smokers calling State Quitline/USA	3	Six months quit rate 14.4%

California smokers helpline also found that additional telephonic counselling sessions approximately doubled abstinence rates [34]. Previously, there was mixed evidence about whether increasing the number of calls altered quit rates, but recent review showed that quit rates are higher for smokers receiving multiple sessions of proactive counselling [35-38]. Table 4 shows the quit rates of various quit lines.

At National tobacco Quitline the counselors provide useful tips and quit advice that help the callers to resist slips and relapse and maintain a prolonged abstinence rate. The counsellors follow the 4 weeks quitting protocol and monthly follow ups till a period of one year. Though quit lines come with a number of benefits they have their own limitations in the form of limited counselling time, access through phone, line congestion and cultural barriers. Since India is country with cultural diversity the establishment of satellite centers is an effort to overcome the cultural barrier.

Conclusions

The Quit line service provides effective counseling to the callers all across the country thereby reducing the prevalence of tobacco use through telephonic counselling. This paper highlights the importance of tele-counselling in tobacco cessation even in countries like India with cultural diversity and also calls attention to proactive calls in maintaining the abstinence from tobacco use.

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