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The effectiveness of tobacco counseling among construction workers in Jaipur city

Jitender Solanki[1*], Sourabh Chakraborty[2]
[1] Phd Scholar, Department of Public Health, Maulana Azad University, Jodhpur, Rajasthan, India
[2] Visiting Faculty, Department of Public Health, Maulana Azad University, Jodhpur, Rajasthan, India

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Abstract
Background: Tobacco use at the construction sites is very high. Once users are dependent on tobacco, quitting is difficult
Material and Method: A study was carried out to assess the effectiveness of tobacco de-addiction intervention among construction workers. A total of 1200 workers were screened, out of them 800 factory workers (400 smokers study group 400 smokers control group were selected for the study. All the collected data was analyzed using the SPSS (Statistical Package for the Social Sciences) 20 Version. The proportions (% of subjects affected) were calculated for each clinical parameter and the various statistical test of significance were used.
Result: Among the total subjects 633(79.1%) workers was using smokeless form of tobacco and 167(20.9%) workers were using smoking form of tobacco. Out of 633, 6.8% workers used Gutka and 93.2% workers used Zarda. Out of 167 smoking form tobacco users, 34.2% workers used Beedi and 65.8% workers used Cigarette. It was found that there was a significant difference between the mean scores of Fagerstrom/smoking analysis between baseline – 3 months, 6 months and 9 months (t=45.581, 64.911, 20.415; p= 0.000).
Conclusions: Tobacco use is an important public health problem, especially in developing countries like India specially the workers. Specific counseling and intervention programs are needed to reduce the burden of tobacco use related morbidity among these workers community.

Keywords: tobacco, habit, cessation, public health, intervention, construction, workers, smokers, tobacco chewers

Introduction

Tobacco use is considered to be global pandemic and has been recognized as the most important source of preventable morbidity and premature mortality in the world. It is well documented that tobacco use substantially increases the risk of cancer, chronic obstructive pulmonary disease, coronary heart disease and many other medical problems [1].

According to the global Adults Tobacco Survey (GATS) for India 2016-2017, 28.6% (266.8 million) of all adults currently use tobacco products out of which it is estimated that 99.5 million adults currently smoke [2]. One of the challenges in global chronic disease prevention is reducing tobacco use, particularly in developing countries, such as India, with large populations (i.e., more than 1 billion residents) [3].

In the Indian context, tobacco use implies a varied range of smokeless and smoking forms of tobacco available at different prices, reflecting the varying relation with different socio economic and demographic patterns of consumption. Tobacco is also a part of the socio-cultural milieu in various societies, especially in the Eastern, Northern, and Northeastern parts of the country [4].

It has been estimated that, approximately 180 million tobacco related deaths can be avoided, if tobacco consumption among adults can be reduced to 50% by the year 2020 [5]. Motivational Interviewing (MI) is a directive patient-centered style of counselling, designed to help people to explore and resolve ambivalence about behavior change. The concept of motivational interview evolved from experience in treating alcohol abuse, and was first described by Miller in 1983, but may help users to a make a successful attempt to quit. It is a counselling technique for helping people to explore and resolve their uncertainties about changing their behavior. It seeks to avoid an aggressive or confrontational approach. It tries to steer people towards choosing to change their behavior and to encourage their self-belief [6]. More intensive advice may result in slightly higher rates of quitting. It was found that at Construction sites, tobacco use is very high. Once users are dependent on tobacco, quitting is difficult. Nicotine dependence resulting from tobacco use hampers efforts to sustain abstinence from tobacco for a prolonged period or a lifetime. Many users make multiple attempts to quit, often without the assistance that could double or even triple their chances of success.

Therefore, in this study motivational interviewing (MI) treatment approach was used for tobacco cessation among construction workers. The aim of this study was to assess the effectiveness of smoking cessation intervention among workers by motivational interviewing in the construction workers, Jaipur, Rajasthan.

Materials and Methods

A randomized controlled study was carried out to assess the effectiveness of tobacco cessation intervention among construction workers in Jaipur city. The present study covered almost all the 37 construction sites in Jaipur city situated in different locations. Jaipur city was divided into 5 geographical zones – central, north, south, east and west. 5 different construction sites were randomly selected. All the workers were informed about the study in the advance so as to attain maximum

attendance. A total of 1200 workers were screened but on the basis of exclusion and inclusion criteria, out of them 800 factory workers (400 smokers study group 400 smokers control group were selected for the study.

Inclusion criterion

1. Current adult smokers who smoked any tobacco product either daily or occasionally at the time of the study.
2. Workers with at least 1year left to serve.
3. Workers giving informed consent to quit smoking.

Exclusion criteria

1. Inmates with acute mental illness (current suicidal ideation/actively psychotic) or mental retardation such that they could not provide informed consent.
2. Medically compromised inmates. (Like respiratory disorders)

Ethical clearance was obtained from the ethical committee of the institute, and the permission to conduct study was obtained from construction site heads.

Oral examination of the study participant was carried out by single examiner. Who was trained and calibrated in the Department of Public Health Dentistry, by a senior faculty member. Training took 2 days, and further 2-3 days for calibration. First, the examination was conducted on the group of 10 participants with a wide range of disease conditions and then twenty preselected individuals were examined twice consistently, with a time interval of at least 30 minutes and the result of both the examination were compared to estimate the extent and nature of diagnostic variability. The intra examiner reliability was found to be kappa value 85%.

Examination and data collection

The structured pre-tested proforma was used. It included the following sections:

- Socio- demographic information
- Personal information regarding tobacco usage practices was also obtained.

Fagerstrom questionnaire to determine level of nicotine addiction: This tool is an adaptation of the original Fagerstrom questionnaire used by the Arizona Smokers' helpline. The tool has been paired to six simple questions. Scoring has also been recorded to assist in tailoring nicotine cessation advice to fit individual needs. The degree of nicotine dependency was assessed by Fagerstrom's test. Depending on the response that each smoker gives to each question, a certain mark is obtained, that may vary from 0–10 points. 0-2 points considered very low dependence, 3-4 low dependence, 5 medium dependence, 6-7 high dependence, 8-10 very high dependence.

Study setting

The workers were examined at the respective construction site where sufficient natural daylight. The natural light was assisted by the torch light in cases where the proper illumination of the oral cavity could not be achieved with the natural light.

The workers were made to sit on a chair with examiner standing behind the chair. A table of the instruments and other armamentarium was placed within the easy reach of the examiner. The examiner examined the subject and called out the scores for each item of examination clearly and the recorder then entered it in the appropriate place in the proforma for each subject examined. The recording assistant was allowed to sit close enough to the examiner.

Study group

Four sessions of intervention was given to the workers. Then study subjects were further divided into four groups of 100 workers in each for the intervention so as to make cessation more effective.

Control group: No intervention was given to workers during the study period and intervention was given at the end of sixth month.

1st session

In this session, intervention was given to study group. The content for discussion included the demographic data, adverse effects of tobacco on physical and psychological state of an individual, through stating prevalence, reasons for death due to tobacco smoking each year. It also included the methods of quitting tobacco smoking and its management.

2nd Session

This intervention was given within 15 days after 1st intervention. In this session study group workers were intervened in their individual groups. The content for discussion included the depicting health risks associated with tobacco smoking. Enhancement of motivation and the role of reinforcement in tobacco use/quitting. The duration of the session was scheduled for 30 - 45 minutes.

3rd Session

This intervention was given after one month of the first intervention. In this session study group workers were intervened in their individual groups. The content for discussion included reflection of previous session discussion. Management of high risk situation and educational material on tobacco use were given. Enhancement of self-efficacy (measuring of one's own competence to complete tasks of quitting tobacco habit) was done by motivating themselves like workers were asked to make a calendar of details of their attempt to quit by self-evaluation. The duration of the session was scheduled for 30 - 45 minutes.

4th session

This intervention was given in the third month. In this session study group workers were intervened in their individual groups. The content for discussion included enhancing their self-efficacy for quitting tobacco, reinforcement for tobacco cessation, and self-evaluation similar to 3rd session was done. The duration of the session was scheduled for 30 - 45 minutes.

Follow up details

1st Follow Up

Follow up was done for both case and control group at the of end of 3rd month using proforma and also Fagerstrom test was done by using Fagerstrom questionnaire and clinical findings were estimated by using WHO indices

Final Follow Up

Follow up was done for both case and control group at the end of 6th month using same proforma and Fagerstrom test was done by using Fagerstrom questionnaire and clinical findings were estimated by using WHO indices.

Statistical analysis

All the collected data was entered in the Microsoft Word Excel Sheet 2007 version and the data obtained was analyzed using the SPSS (Statistical Package for the Social Sciences) 20 Version for the descriptive analysis and statistical tests of significance. The proportions (% of subjects affected) were calculated for each clinical parameter and the various statistical test of significance were used. Paired t-test was used to compare Fagerstrom/smoking analysis mean scores among study and control groups before and after intervention Significance for all statistical tests was predetermined at a probability (p) value of 0.05 or less.

Result

The present study was conducted to assess the effectiveness of Tobacco de-addiction among Construction workers, Jaipur City.

There were 317 (39.6%) subjects who had age of 15-30 years, 322(40.3%) workers were having age of 31-45 years, 125(15.6%) workers were having age of 46-60 years and 36(4.5%) workers were having age of 61and above years. Gender wise distribution shows that out of 800 workers 676 (84.5%) were males and 124 (15.5%) were females.

A total of 800 factory workers, 633(79.1%) workers were using smokeless form of tobacco and 167(20.9%) workers were using smoking form of tobacco. Out of 633 smokers, 6.8% workers used Gutka and 93.2% workers used Zarda. Out of 167 smokeless tobacco users, 34.2% workers used Beedi and 65.8% workers used Cigarette.

Out of 633 smokeless tobacco users, 0.6% workers used tobacco for less than one year and 99.4% workers used for 1-10 years. Out of 167 smoking tobacco users, 9.2% workers used tobacco for less than one year and 90.8% workers used for 1-10 years**.** Out of 633 smokeless tobacco users, 100% workers used tobacco for 1-5 times in a day. Out of 167 smoking tobacco users, 0.5% workers used tobacco for 1-5 times in a day and 99.5% workers used for 6-10 times in a day. (Table 1)

Table 2, 3, 4 Shows distribution of study population according to Fagerstrom analysis before intervention and after 3 months, 6 months and 9 months

Table 2a, In the study group, a percentage change of +1.2%, 4.6%, 14.4% in Very low dependence, Low dependence, Medium dependence, -16.5% was seen in high dependence category and -3.6 in very high dependence. In control group, a percentage change of 0,-0.5, +1.2, -7.5,+6.8 in Very low dependence, Low dependence, Medium dependence, high dependence category and very high dependence.

Table 2b In study group, a percentage change of +8.4%, 23.4%, 2.6% in Very low dependence, Low dependence, Medium dependence, -29.7% was seen in high dependence category and -4.6 in very high dependence. In control group, a percentage change of -0.5,-0.5, -0.8, 0, +1.8 in Very low dependence, Low dependence, Medium dependence, high dependence category and very high dependence.

Table 2c In study group, a percentage change of +18.8%, +29.2%, -12.6% in Very low dependence, Low dependence, Medium dependence, -30.7% was seen in high dependence category and -4.6 in very high dependence. In control group, a percentage change of -0.5, 0, -1.3, +0.5,+1.3 in Very low dependence, Low dependence, Medium dependence, high dependence category and very high dependence.

Table 5 shows the comparison of Fagerstrom/smoking analysis mean scores among study subjects before and after intervention (Independent t- test). It was found that there was a significant comparison between the mean scores of Fagerstrom/smoking analysis between baseline – 3 months, 3 months to 6 months and 6 months to 9 months (t=45.581, 64.911, 20.415; p= 0.000) among study group.

Table 6 shows the comparison of Fagerstrom/smoking analysis mean scores among control group before and after intervention (Independent t- test). It was found that there was a significant comparison between the mean scores of Fagerstrom/smoking analysis between baseline – 3 months (t=-4.09; p= 0.000) but not significant comparison was seen between 3 months to 6 months and 6 months to 9 months (t=0.861, 0.756; p= 0.415,0.450) .

Table 1: Distribution of workers according to their Smoking status

Smoking Status	No. of workers (n)	Percentage (%)
Smokeless	633	79.1 %
Smoking	167	20.9 %
Smokeless (Type)		
Gutka	43	6.8%
Zarda	590	93,2%
Smokeless (Frequency)		
1-5	03	0.5%
6-10	630	99.5%
Smokeless (Duration)		
0.4-1	58	9.2%
1-10	575	90.8%
Smoking (Type)		
Cigarette	57	34.2%
Beedi	110	65.8%
Smoking (Frequency)		
1-5	167	100%
Smokeless (Duration)		
0.4-1	01	0.6%
1-10	166	99.4%

Table 2: Distribution of study population according to Fagerstrom/smoking analysis before intervention and after 3 months

Fagerstrom/Smoking	Before		After		% Change
	No.	%	No.	%	
Study group					
0-2 Very low dependence	17	2.1	26	3.3	+1.2
3-4 Low dependence	19	2.4	56	7.0	+4.6
5 Medium dependence	120	15.0	235	29.4	+14.4
6-7 High dependence	437	54.6	305	38.1	-16.5
8-10 Very high dependence	207	25.9	178	22.3	-3.6
Control group					
0-2 Very low dependence	10	2.5	10	2.5	0
3-4 Low dependence	10	2.5	8	2.0	-0.5
5 Medium dependence	89	22.3	94	23.5	+1.2
6-7 High dependence	291	72.8	261	65.3	-7.5
8-10 Very high dependence	0	0	27	6.8	+6.8

Table 3: Distribution of study population according to Fagerstrom/smoking analysis before intervention and after 6 months

Fagerstrom/Smoking	Before		After		% Change
	No.	%	No.	%	
Study group					
0-2 Very low dependence	17	2.1	84	10.5	+8.4
3-4 Low dependence	19	2.4	206	25.8	+23.4
5 Medium dependence	120	15.0	141	17.6	+2.6
6-7 High dependence	437	54.6	199	24.9	-29.7
8-10 Very high dependence	207	25.9	170	21.3	-4.6
Control group					
0-2 Very low dependence	10	2.5	8	2.0	-0.5
3-4 Low dependence	10	2.5	8	2.0	-0.5
5 Medium dependence	89	22.3	86	21.5	-0.8
6-7 High dependence	291	72.8	291	72.8	0
8-10 Very high dependence	0	0	7	1.8	+1.8

Table 4: Distribution of study population according to Fagerstrom/smoking analysis before intervention and after 9 months

Fagerstrom/Smoking	Before		After		% Change
	No.	%	No.	%	
Study group					
0-2 Very low dependence	17	2.1	167	20.9	+18.8
3-4 Low dependence	19	2.4	253	31.6	+29.2
5 Medium dependence	120	15.0	19	2.4	-12.6
6-7 High dependence	437	54.6	191	23.9	-30.7
8-10 Very high dependence	207	25.9	170	21.3	-4.6
Control group					
0-2 Very low dependence	10	2.5	8	2.0	-0.5
3-4 Low dependence	10	2.5	810	2.5	0
5 Medium dependence	89	22.3	84	21.0	-1.3
6-7 High dependence	291	72.8	293	73.3	+0.5
8-10 Very high dependence	0	0	5	1.3	+1.3

Table 5: Comparison of Fagerstrom/smoking analysis mean scores among study subjects before and after intervention. (Paired t- test)

Variables	Fagerstrom/smoking analysis	S.D.	t value	p- Value	Significance
Baseline-3 months	1.21	0.532	45.581	0.000	Significant
3 months-6 months	0.97	0.298	64.911	0.000	Significant
6 months-9 months	0.55	0.541	20.415	0.000	Significant

($p \leq 0.05$ – Significant)

Table 6: Comparison of Fagerstrom/smoking analysis mean scores among control group before and after intervention. (Paired t- test)

Variables	Fagerstrom/smoking analysis	S.D.	t value	p- Value	Significance
Baseline-3 months	-0.065	0.317	-4.09	0.000	Significant
3 months-6 months	0.015	0.367	0.861	0.415	Not Significant
3 months-6 months	0.01	0.264	0.756	0.450	Not Significant

($p \leq 0.05$ – Significant)

Discussion

The present study investigates the effectiveness of motivational interviewing (MI) treatment approach was used for tobacco cessation among construction workers of Jaipur, Rajasthan.

The overall prevalence of tobacco use (smoking form) in our study was 20.9 % which is lower than that in Karnataka (29.6%), Uttar Pradesh (34.6%),[7] and as well as national average of 30.2%.[8] In our study, prevalence of tobacco use was 84.5% among men which is higher than reported by Sinha *et al*. (71%),[9] Gupta *et al*. (52.6%),[10] National Family Health Survey (NFHS)-3 report (61.1%), [2] and in rural area of UP (51%) [7]. In our study, prevalence of tobacco use was 15.5% among women which is again higher as compared to rural area of UP (9.2%) [7]; but lower as compared to Maharashtra (15%-20%) [7] and also reported by Gupta *et al.* (17.7%) [10].

In our study, most of the workers were using smokeless form of tobacco as compared to the smoking form. The hypothesis that tobacco usage would manifest a higher prevalence of oral health problems than those who have never used tobacco was supported for most of the indicators used in this study in the present study, it was observed that lesser the dependency to nicotine more is the chance of quitting which was found to be statistically significant. This fact has been substantiated by evidence from other studies as well which had also shown high quit rates [11-13].

The quit rate achieved in this study was comparatively high that is 12.2 % after 9 months of intervention when compared to a study conducted in Bihar state and Rural Kerala of India where identified volunteers were trained to give community cessation activities resulting in 4% quit rate [14, 15].A possible reason for high quit rates could be the rigorous approaches used in smoking cessation interventions. This reason could have had a complimentary effect to the study hypothesis.

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