# RESEARCH ARTICLE

# Effectiveness of Individual and Group Counseling for Cessation of Tobacco Habit Amongst Industrial Workers in Pimpri, Pune – An Interventional Study

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## Abstract

Background: In India, tobacco consumption is responsible for one of the highest rates of oral cancer in the world, the annual oral cancer incidence is steadily increasing among young tobacco users. Studies have documented efforts taken by physicians, doctors and even dentists, in the form of individual or group counseling to curb tobacco use in smoke or smokeless form. However, which one is more effective, still remains an unanswered question. The aim of the study was to compare the effectiveness of individual and group counseling for cessation of the tobacco habit amongst industrial workers in Pune and to compare quit rates. Materials and methods: An interventional study design was selected for 150 industrial workers which were stratified randomly into three groups (control, individual and group counseling groups) and interventions were provided to individual and group counseling groups over a period of six months, which were then compared with the control group that received brief intervention at the start of the study. Results: There was significant difference in the quit rates of the participants in the individual counseling group (ICG) and group counseling group (GCG) when compared at 6 months with the control counseling group (CCG). In the individual counseling group was 6% while in group counseling group it was 7.5% after six months of counseling. Conclusions: No conclusion could be drawn whether individual or group counseling were better interms of quit rates. Individual and group counseling groups were definitely better than the control group when compared at 3 and 6 months, respectively.

Keywords: Tobacco counseling - individual counseling - group counseling - quit rates - India

## Introduction

In India, tobacco consumption is responsible for half of all the cancers in men and a quarter of all cancers in women. India has one of the highest rates of oral cancer in the world, partly attributed to high prevalence of tobacco chewing. Tobacco-related mortality in India is among the highest in the world, with about 700,000 annual deaths attributable to cancer (Dikshit et al., 2012). The most recent study stated that tobacco deaths in India may exceed 1 million annually since 2010 (Lal et al., 2012).

Studies have documented the efforts taken by the physicians, doctors or even the dentists who could help patients to curb tobacco use in smoke or smokeless form (Gonseth et al., 2010; Albert and Ward, 2012; Carr and Ebbert, 2012; Pai and Prasad, 2012; Venkatesh and Sinha, 2012). However the efforts often fail because of multiple reasons which may be lack of knowledge of ill effects of tobacco use, deeply ingrained cultural habits,

poverty, illiteracy and lack of tobacco cessation advice and support (Murthy and Saddichha, 2010; Bhan et al., 2012; Rosenthal et al., 2013). In spite of the above mentioned barriers, literature states that counseling in any form helps a tobacco addict to quit the habit of tobacco consumption (Duaso and Duncan, 2012; Whittaker et al., 2012; Tsiapa et al., 2013; Vidrine et al., 2013 ).

Individual counseling means intensive counseling delivered by a cessation counselor to the patient in face-to-face encounter who is trained in assisting tobacco cessation with behavior modifications (Gonseth et al., 2010; Rose et al., 2010). The patient is asked and advised about the ill effects of tobacco and counseling takes place in live presence of the counselor (Vidrine et al., 2013). In group counseling methods, 6-8 patients take part and methods like coping and social skills training, contingency management, self control, and cognitive-behavioral interventions are implemented (Mark et al., 2012; Tsiapa et al., 2013). Group counseling offers opportunities to the

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patients to share their experiences and problems which they might have encountered while quitting and the patients might compete with the fellow patients to acquire better results (Stead and Lancaster, 2012).

Literature suggests that individual, group or even few minutes of brief personalized counseling by the dentists are effective ways to make an individual give up tobacco consumption habit (Gonseth et al., 2010; Albert and Ward, 2012; Carr and Ebbert, 2012). This study was carried out at worksite intervention to compare the quit rates between the individual and group counseling group and to know which of the two counseling methods were effective amongst the industrial workers.

## Materials and Methods

An interventional study design was carried among 150 industrial workers randomized into three groups which consisted of individual counseling (n=50), group counseling (n=53) and the third was the control group (n=47). 150 participants were randomized into three strata (low, medium and high) based on the tobacco dependence and with the use of SPSS Software 10, allocation concealment was done before the intervention started. The intervention was provided for 6 months after which their quit rates were determined. Written permission was taken from industry and consent of study participants was taken prior to start of the study. Ethical approval was sought from the ethical committee of Dr. D.Y. Patil Dental College and Hospital, Pune. Participants who were above 18 years of age and wanted to quit tobacco habit were selected. Others which had frank lesions of oral cancer, and those who were un cooperative and unwilling to participate in the study were excluded. The counselor was trained for counseling and a pre validated, tested educational guide was provided to three groups before intervention was provided. In the control counseling group (CCG), the participants were given a brief advice for 10-15 minutes in a clear, strong and personalized manner to quit habit of tobacco consumption, after which they were followed up to 6 months. In the individual counseling group (ICG), five sessions of counseling were planned over a period of 6 months along with telephonic counseling in which the participants had to call up the counselor if they experienced problems in quitting. In group counseling groups (GCG), five sessions of counseling in 6 months with 45 minutes session discussion were planned in a group of 6-8 participants. The quit rate was determined at 3 and 6 months respectively for the individual and group counseling groups. The protocol followed was of 5 As (Ask, Advice, Assess, Assist and Arrange for follow up) and 5 Rs (Relevance, Risks, Rewards, Roadblocks and Relapse) in the individual and group counseling groups in 5 counseling sessions (Thankappan et al., 2013; Vidrine et al., 2013). Bio chemical validation of abstinence was done at 6 months interval using cotinine test only on participants who had reported of quitting. The outcome assessor who analysed the presence/absence of cotinine in urine and the data analyzer were blinded to group assignment. Chi square test was applied to know whether marital status and literacy was associated with quitting. Friedman test

was applied to see if there was ay significant difference in between counseling sessions in the three counseling groups based on dependency and McNemar test statistics was applied at 1st session and 5th session for the (CCG, ICG and GCG) to know whether the dentists were helpful in stopping the habit of tobacco consumption.

## Results

The present study was undertaken to know the effectiveness of individual and group counseling for cessation of tobacco habit amongst industrial workers in Pimpri, Pune and to determine the quit rates between the individual and group counseling groups. Worksite intervention techniques have proved to be more effective than the clinic based intervention techniques (Fiore and Baker, 2011; Hughes et al., 2011; Pimple et al., 2012a; 2012b). However this study was unique as the counseling was done by a dentist at the worksite. In India, there is widespread use of smokeless tobacco which is the cause of one of the highest rate of oral cancer in the world (Dikshit et al., 2012; Lal et al., 2012). Gupta et al. (2013) stated oral cancer in India assumes epidemic proportions and tobacco consumption (in different forms) is distributed across a range of demographic and socioeconomic levels at individual and household level in India. Hence age, marital status and educational attainment were considered before commencing with the counseling methods.

On the prevalence of tobacco use in the study, approximately 50% of participants used smoke and smokeless tobacco (Table 1). The prevalence of tobacco consumption was similar to that expressed by Gupta et al. (2013). The quit rates were probably affected because of the deeply ingrained cultural habits particularly amongst those from rural areas (Murthy and Saddichha, 2010; Kakde et al., 2012). This has been reflected in studies conducted in India, Nepal, Pakistan and United Kingdom south Asian population where cultural and social factors have led to the decline in promotion of effective smoking cessation practices (Kakde et al., 2012). Many studies are conducted in India and abroad to see whether counseling sessions are useful for modifying the behaviors. But most of the studies in the west have been directed towards the smokers to quit the habit of cigarette smoking but not smokeless tobacco (Carr and Ebbert, 2012; Gonseth et al., 2010; Rose et al., 2010; Duaso and Duncan, 2012; Venkatesh and Sinha, 2012; Tsiapa et al., 2013; Vidrine et al., 2013). However in this study, counseling was directed towards smokers and smokeless tobacco users of which 52% of the total participants were ST users. At the start of counseling sessions, the participants were willing to go through the counseling sessions in order to give up the habit of tobacco.

Participants who quit were in the age group of 25-34 years and 35-44 years. 3 participants in individual counseling group and 2 in group counseling group were in the age group of 25-34 years, while 2 participants who were in the age group of 35-44 years were in group counseling group (Table 1). Reason for quitting might be the participants in the younger age group of 25-44 years were more likely to pay attention as compared to other age

groups. Other studies reflected discrepancy existed among the different age groups in responding to cessation process (Cengill et al., 2012; Lim et al., 2013). Lim et al. (2013) stated otherwise that people in the higher age groups were more in the ex smokers category due to reasons like adverse health conditions and a sense of vulnerability.

When the quit rates were compared with the level of education (Table 2), it was found that 7 participants who had quit had at least primary level of education. In individual and group counseling groups, 2 participants had received primary education while 4 received secondary education. 1 participant received higher secondary education in group counseling group. About 85% participants were literate with basic education while 15% of the participants were illiterate. However the level of knowledge about the harmful effects of tobacco was found to be poor. It is likely that poor and less educated people are less aware of the health hazards of tobacco consumption; more likely to find themselves in conditions predisposing them to initiation of smoking and chewing of tobacco; and more likely to have higher degree of fatalism or higher overall risk taking behavior. Thus education might be a predictor for determining the quit rates among the participants (p<0.00). This has been reflected in studies carried out by Pampel et al. (2011), Prabhakar et al. (2012), Pandey and Lin (2013) and Rosenthal et al. (2013) who stated in their studies that people with higher level of education were more likely to perceive the advice and education imparted to them on tobacco quitting as compared to people whose educational status was poor. Previous studies have stated that illiterate people were more likely to consume tobacco products as compared to literate population. Bier et al. (2011) has mentioned the

importance of media literacy based intervention in school curriculum. Pandey and Lin (2013) stated women in Nepal with primary and beyond primary education were 48 and 92% less likely to smoke compared to women with no education, respectively. In this study, which was conducted by the counselor (SS), literacy was significantly associated with quit rates (p<0.00). Thus education was inversely related to tobacco (Gonseth et al., 2010; Lim et al., 2013).

Considering the marital status of participants, it was found that all participants who had quit were married (p<0.00). Studies have demonstrated that the support from the partner always helps in quitting the habit of tobacco. Family and social support has been shown to be an effective intervention for improving other health behaviors, such as dietary changes (weight reduction and medication compliance). It remains a proven fact that single or divorced people take more to tobacco consumption as married men receive social and psychological support from their spouses to quit tobacco (Lim et al., 2010; Lim et al., 2013).

Low, medium and high dependency groups among the smokers were calculated using modified Fagerstorm's criteria. About 40% of the participants were in the low and high dependency groups. Only 20 percent of the participants were in the medium dependent group. For smokers, criteria suggested by Heatherton et al. (1991) was used and for smokeless tobacco users modified Fagerstorm's criteria given by Ebbert et al. (2006) was used. Both the criterias were validated and used in the study. In the control, individual and group counseling groups, when the statistical test was applied to know if there was any significant change in the dependency level from the first session to fifth session, no significant change was noticed in any of the groups. However there was reduction in the high dependency group to medium and low in the control and individual group by the end of six month period. But there was slight reduction in the high dependency group to medium in the group counseling group.

In the second session of counseling, (Table 4), participants in the control group made fewer efforts to quit and read the manual less often as compared to those in individual and group counseling groups. Quitters were more enthusiastic in the individual group as compared to other two groups. In the control group as no counseling

**Table 1. Demographic Details of the Participants During First Session**

| | CCG | ICG | GCG | Total |
|---|---|---|---|---|
| | n (%) | n (%) | n (%) | n (%) |
| Tobacco habit | | | | |
| Bidis | 14 (9.33) | 8 (5.33) | 5 (3.33) | 27 (18.0) |
| Cigarettes | 5 (3.33) | 11 (7.33) | 4 (2.66) | 20 (13.3) |
| Bidis and cigarettes | 6 (4.00) | 12 (8.00) | 11 (7.33) | 25 (16.6) |
| Chewing tobacco | 22 (14.60) | 19 (12.60) | 33 (22.00) | 7 (52.0) |
| Age in years | | | | |
| < 25 | 5 (3.33) | 7 (4.66) | 5 (3.33) | 17 (11.3) |
| 25-34 | 12 (8.00) | 14 (9.33) | 19 (12.60) | 45 (30.0) |
| 35-44 | 22 (14.30) | 20 (13.30) | 13 (8.66) | 55 (36.6) |
| 45-60 | 8 (5.33) | 9 (6.00) | 16 (10.60) | 33 (22.0) |

**Table 2. Association of Literacy and Marital Status with Quitting during First Session**

| Literacy | CCG | ICG | GCG | Total | Participants |
|---|---|---|---|---|---|
| | n (%) | n (%) | n (%) | n (%) | who quit (n) |
| Illiterate | 10 (6.66) | 7 (4.66) | 6 (4.00) | 23 (15.30) | 0 |
| Primary | 13 (8.66) | 16 (10.60) | 18 (12.00) | 47 (31.33) | 2 |
| Secondary | 12 (8.00) | 14 (9.33) | 15 (10.00) | 41 (27.30) | 4 |
| Higher Secondary | | | | | |
| | 12 (8.00) | 13 (8.66) | 14 (9.33) | 39 (26.00) | 1 |
| Married | 42 (28.00) | 46 (30.60) | 49 (32.60) | 137 (91.30) | 7 |
| Unmarried | 4 (2.66) | 3 (2.00) | 2 (1.33) | 9 (6.00) | 0 |
| Widowed | 1 (0.66) | 1 (0.66) | 2 (1.33) | 4 (2.66) | 0 |

*p value significant at 5% level of significance (p<0.05), [a]p-value Chi-square test statistics 0.00[a]

**Table 3. Dependency of the Participants in Intervention Groups**

| Dependency rates | 0-2 weeks % | 2-4 weeks % | 4-6 weeks % | 6-3 weeks-months % | 3-6 months% |
|---|---|---|---|---|---|
| CCG (p 0.51) | | | | | |
| Low | 38.3 | 27.6 | 42.5 | 27.6 | 27.6 |
| Medium | 23.4 | 31.9 | 12.7 | 31.9 | 31.9 |
| High | 38.3 | 40.4 | 44.6 | 40.4 | 40.4 |
| ICG (p 0.06) | | | | | |
| Low | 44 | 42 | 40 | 44 | 40 |
| Medium | 18 | 26 | 26 | 24 | 32 |
| High | 38 | 32 | 34 | 32 | 28 |
| GCG (p 0.11) | | | | | |
| Low | 37.7 | 32 | 37.7 | 33.9 | 37.7 |
| Medium | 18.8 | 24.5 | 32 | 24.5 | 20.7 |
| High | 43.4 | 43.4 | 30.1 | 41.5 | 41.5 |

*p value significant at 5% level of significance (p<0.05)

was provided, they were still not motivated enough to quit and still required to read the manual.

In the third session of counseling (Table 4), in the control group, 64% of the participants tried to quit which was far better than the participants who tried to quit in the second session. All the participants had read the manual by the third session of counseling but only about 28% of the participants set up a quit date in the control group when compared to an overwhelming 60% in individual and group counseling group. In the group counseling group, 60% tried to quit and about 94% read the manual, much higher as compared to the second counseling session. So it can be stated that as the counseling sessions progressed an overall change was seen in the behavior and attempts were made by the participants to give up the tobacco habit when compared with the previous sessions. When the participants were asked whether they tried to quit, the number of participants in the control group fell from 64-45%. However in the individual and group counseling groups, all the participants tried to quit. But when the quit rates were determined only 4 participants from individual and group counseling group each had quit. There was no significant difference in the counseling techniques but there was significant difference between the control group and individual or group counseling group. This meant that control group which received minimal intervention with self educational materials was not able to quit as compared to the participants with individual and group counseling group. The reason for finding less participants quitting in this study are similar to those found by Yong et al. (2012) who stated that lack of time, patient un readiness to change, inadequate patient motivation, inadequate provider motivation and inadequate cessation clinical skills might had resulted in continuation of habit. Moreover, in the study the counselor (SS) was adequately trained but lacked experience. Adequate training of the counselor assumed an important part of the counseling process (Carson et al., 2012). The participants were unwilling to quit the habit of tobacco because of the heavy dependence on tobacco (nicotine addiction) and relapse (Benowitz, 2010).

In fifth session of counseling (Table 5), the participants were asked in the first session and after six months period whether the counseling by dentist helped them. There was negative shift in responses of individual group wherein at the end of six months, 46% felt that dentist cannot help (p=0.00). This could be because the participants from individual counseling group were engrossed in their work and when they were randomly called for the 5th session,

they wanted to get back to their job quickly showing less interest in counseling. Subjective bias could have played a role which might have made them reply in negation. Alber and Ward (2012) stated that dentist can provide instructions and interventions on tobacco cessation. They relate oral findings to the patients and provide advice patients to quit. In addition, dentists are able to assess patients' self-addiction and level of readiness to quit tobacco use. With this information, dentists can assist in helping patients to stop using tobacco by providing appropriate pharmacotherapeutic aids and thus improve their overall oral health (Carr and Ebbert, 2012).

The quit rate in this study were a modest of 6% in individual group and 7.55% in group counseling group. Abdullah et al. (2010) suggested that self help materials, individual and group counseling methods have increased the success rates in smoking cessation which was reflected in this study. Rosenthal et al. (2013) also stated that behavioral therapy such as self-help and brief interventions can be provided by health professionals. It included an assessment of tobacco use, dependence, and motivation to quit; advice on the benefits and methods of quitting; and assistance with quitting, including referrals to other treatment. This was done through 5As and 5Rs in brief intervention methods which were also practiced in this study (Thankappan et al., 2013).

Participants, who quit were tested by use of urine cotinine test kit. Actual nicotine intake was evaluated from urinary cotinine concentration adjusted for urinary creatinine concentration. Balhara et al. (2012) and Hou et al. (2012) also used the same method for presence of nicotine intake. The quit rates were not comparable to any of the studies as the entire protocol followed was custom made according to the convenience of the participants. In the study, the Counselor (SS) did not use nicotine replacement therapy (NRT), as the SS was not trained to do so. Use of NRT could probably have increased the quit rates.

The reason for participants trying to quit more in individual as compared to group counseling group might be because in individual counseling, the message was conveyed to them in a strong, personalized manner and there was one to one interaction during all sessions. However it was not so in this study. In the study, counseling done through the use of trained counselor always helped in the counseling techniques. It was observed that coping and social skills training, contingency management, self control and cognitive-behavioural interventions were delivered efficiently in group counseling as compared to

### Table 4. Questions Asked

| Questions asked | | CCG | | ICG | | GCG | |
|---|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | Yes | No |
| | | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| 2nd session of counseling: | B1. Did you try to quit tobacco habit | 6 (12.76 ) | 41 (87.23) | 33 (66) | 17 (34) | 22 (41.51) | 31 (49.49 ) |
| | B2. Did you read the manual | 37 (78.72) | 10 (21.28 ) | 48 (96) | 2 (4) | 49 (92.45) | 4 (7.55) |
| | B3. Do you realize that tobacco is bad for your health | | | | | | |
| | | 40 (85.11) | 7 (14.89) | 49 (98) | 1 (2) | 50 (94.34 ) | 3 (5.66) |
| 3nd session of counseling: | C1. Did you try to quit tobacco habit | 30 (63.83) | 17 (36.17) | 43 (86) | 7 (14) | 32 (60.38) | 21 (39.62) |
| | C2. Did you read the manual | 47 (100.00) | 0 | 49 (98) | 1 (2) | 50 (94.33) | 3 (5.67) |
| | C3. Did you set a quit date | 13 (27.66) | 34 (72.34) | 30 (60) | 20 (40) | 31 (58.49) | 22 (41.51) |

individual counselling groups. Minimal advice was given to the participants in control group as compared to the different behavioral programs based on different theories and methods from behavioral psychology which were used in group counseling groups. Hence the results obtained in the form of quit rates were better in the group counseling groups than in control group. The Public Health Service (PHS) clinical guidelines for treating tobacco use and dependence in primary care settings provide evidence-based, practical methods of behavior motivational methods for dental professionals to incorporate into their practices (US Department of Health and Human Services, 2010). According to Thankappanet et al. (2013) and Vidrine et al. (2013), dental professionals must design their approach based on the patient's readiness or willingness to quit which can help to improve the quit rates.

In this study, at each stage of five counseling sessions done, the participants way of thinking and feelings about the tobacco habit changed and counseling sessions helped them move on to the next stage. However, it was noticed that, in the control group, no quitting was achieved and only 6% and 7.55% participants in the ICG and GCG respectively reported quit rates after 6 months period. This method is promoted by Ministry of Health and Family Welfare, India for the tobacco control program in Preventive Oncology Department of Tata Memorial Cancer Hospital, Mumbai, India. Studies have been conducted to explore the changes that occurred in patients with different methods of counseling like Nicotine Replacement Therapy (NRT), telephonic counseling, Brief Motivational Interviewing (BMI) etc. by Rigotti (2012). It was found that there was significant increase in the participants' subjective involvement in individual counseling group due to the BMI but not in group counseling group. Similar to this study, Gosenth et al. (2010) followed this model and found that 6% had stayed away from smoking; they were in the maintenance phase after 6 months while the rest again fell back into relapse phase. In comparison, even after five sessions of counseling, the quit rate was around 8% in group counseling group and 6% in individual counseling group. Although the motivational level was quite high among the participants during the first few stages of counseling, it dropped after 3 months. It might be due to less motivation of the participants in the control group who received only minimal intervention as compared to the individual and group counseling group. This barrier has also been stated in other studies which proposed education and other motivational enhancement interventions which help less motivated patients to incrementally increase their commitment to quit. The relapse in this study went on increasing even after repeated counseling sessions.

There were multiple reasons for the modest quit rates. Participants in the individual counseling groups were asked to contact the counselor (SS) for problems encountered by them while quitting, whether they wanted any assistance on how to deal with relapse and so on. In this study the participants made calls to the counselor (SS) in relation to their dental problems but no calls were made for the problems they faced during counseling. This indicates that their motivation was low and their priorities differed. Studies have revealed that telephone counseling and use of modern technologies act as adjuncts to quitting (Abroms et al., 2011; Whittaker et al., 2012). Due to their quasi-anonymous nature, telephone counseling might have appealed to those who were reluctant to seek help provided in a group setting, helping them overcome what can be a significant psychological barrier. Moreover, technology savvy participants could avail new softwares for quitting tobacco (Abroms et al., 2011). In this study the quit rate achieved could have been much higher was there telephonic calls made by the participants as seen in another study (Whittaker et al., 2012).

Another reason was, in the group counseling group, emphasis was stressed on buddy selection in Group counseling therapy (Fiore et al., 2000; May et al., 2006). The purpose was to confirm that partner support in the form of buddy selection might add as an adjunct in quitting. However, it was not practiced by the participants who may have resulted in the modest quit rates. Reasons identified were, they were not able to come with their buddy due to change in their work shifts at different sessions. Although the counseling was done in the work place, the counselor (SS) had no control on the participants after the counseling sessions were over. Smoke free environment could not be maintained by the counselor (SS) where the participants worked which might have interfered with counseling methods. For the counseling techniques to be effective, smoke free environment in the offices should be emphasized.

**Table 5. Quit Rates at 3 Months (4th session) and 6 Months (5th session).**

| Questions asked | CCG | | ICG | | GCG | |
|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No |
| | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| D1. Did you find solutions to your problem | 23 (48.94 ) | 24 (51.06) | 43 (86) | 7 (14) | 49 (92.45) | 4 (7.55) |
| D2. Did you try to quit | 21 (44.68) | 26 (56.32) | 50 (100) | 0 | 53 (100) | 0 |
| D3. Did you quit | 0 | 47 (100) | 4 (8) | 46 (92) | 4 (7.55) | 49 (92.45) |
| E1. Did you try to quit tobacco habit | 0 | 47 (100) | 4 (8) | 46 (92) | 4 (7.55) | 49 (92.45) |
| E2. Did you quit | 0 | 47 (100) | 3 (6) | 47 (94) | 4 (7.55) | 49 (92.45) |
| E3. Can dentist help you stop the habit of tobacco consumption | | | | | | |
|   First session of counseling | 44 (93.61) | 3 (6.39) | 44 (88) | 6 (12) | 14 (26.42) | 39 (73.58) |
|   Last session of counseling | 34 (72.08) | 13 (27.92) | 27 (54) | 23 (46) | 46 (86.79) | 7 (13.21) |
| | - | 0 | | 0 | | 0.125 |

*p value significant at 5% level of significance (p<0.05): [a]Chi-square test statistics for comparison between individual and group counseling groups, [b]Chi-square test statistics for comparison between individual and control counseling groups, [c]Chi-square test statistics for comparison between group and control counseling groups, [e]McNemar Test

Participant's reluctance to undergo counseling sessions and being un cooperative from the fourth session onwards were other barriers that were identified in other studies (Prakash et al., 2012). Some other barriers encountered were patients were not given reimbursements, lack of time and their casual attitude towards counseling (Prakash et al., 2012). Rosenthal et al. (2013) stated that the participants should be highly motivated and interested to achieve high quit rates. Having said that, doctors should also be highly trained in counseling methods (Carson et al., 2012). Studies have stated that lack of skills and interventional training might have been a co factor in reduced number of quit rates (Raupach et al., 2012; Venkatesh and Sinha et al., 2012; Strayer et al., 2013). They are modified healthcare provider practices and doing counseling cessations more often in the clinics, easy access to the medications and more availability of utilization of telephonic counseling methods. Some of the other reasons encountered were

The study had some inherent limitations. There might have been contamination in three groups during their working hours leading to exchange of thoughts between the three groups. However, the same industry for different counseling groups were selected as the participants had similar levels of literacy. Another limitation of the study was that the cotinine test kit was one step immunoassay which could not detect cotinine, if nicotine content in the body fell below 200ng/ml. Moreover nicotine stayed in the body for 3-4 days of tobacco consumption and cotinine had a half life of 17 hours after which it degraded in the body and could not be detected after 17 hours of tobacco consumption. So the cotinine test was not sensitive to test if the participants had quit use of tobacco for more than 17 hours. Hence we had to rely on subjective responses as well.

## Discussion

In conclusion, tobacco cessation was quite low among the individual and group counseling groups. However the individual and group counseling sessions have certainly made difference as the participants were made aware of the harmful effects of tobacco, coping strategies to deal with the relapse and overall change in knowledge, attitude and beliefs of the participants. No conclusion could be drawn whether individual or group counseling was better as the quit rates in individual counseling group was 6% while in group counseling group was 7.54% after six months of counseling. There was no significant difference in the quit rates of the participants in the individual counseling group and group counseling group when compared at 3 months and at 6 months respectively. But individual and group counseling groups were definitely better than the control counseling group when compared at 3 and 6 months respectively.

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