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# Effectiveness of clinical pharmacist intervention on smoking secession

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## ABSTRACT

This work was carried out in a tertiary-care hospital at Calicut,kerala The patients under study will be included, males, children and even females aging between 17 – 75 years with lungs disease, hypertension, coronary artery disease, Asthma, carcinoma and allergic complaints. The study evaluated the effectiveness of a hospital initiated smoking cessation intervention by a clinical pharmacist that included 3 months of follow up and also analyzed the baseline demographics of smokers. The pharmacist-managed Smoking Cessation program successfully aided approximately more than half its participants to quit smoking at 1 and 3 months. Although higher attendance rates increase cessation rates, steps could be taken in order to effectively maximize the pharmacist's time and minimize patient commitment, while also achieving the best patient outcomes. The most common reasons for quitting smoking were a concern with the current health status and a concern with the future health status.

**Key Words:** Smoking secession, Tobacco, Drug addiction, Drug abuse.

## INTRODUCTION

### Drug Addiction and Drug Abuse:

It is the chronic or habitual use of any chemical substance to alter states of body or mind for other than medically warranted purposes. The United States has the highest substance abuse rate of any industrialized nation. Marijuana is the most commonly used illicit drug. Legal substances, approved by law for sale over the counter or by doctor's prescription, include caffeine, alcoholic beverages, nicotine, and inhalants (nail polish, glue, inhalers, gasoline). People take drugs for many reasons: peer pressure, relief of stress, increased energy, to relax, to relieve pain, to escape reality, to feel more self-esteem, and for recreation. They may take stimulants to keep alert, or cocaine for the feeling of excitement it produces.

### Tobacco use

Tobacco may be smoked (in the form of cigarettes, beedis), chewed (as gutka, khaini, etc) and inhaled as snuff.India is among the world's largest tobacco consuming societies. Tobacco usage in India is also contrary to world trends since chewing tobacco and the bidi are the dominant forms of tobacco consumption, whereas internationally the cigarette is the most prominent form of tobacco use. About 19% of tobacco consumption in India is in the form of cigarettes, while 53% is smoked as bidis; the rest is used mainly in smokeless form. Bidi's tend to be smoked by lower economic classes and have a level of social acceptance in different cultures. Cigarettes and other forms of tobacco are addictive because of the presence of nicotine. Nicotine

blood levels achieved by smokeless tobacco use are similar to those from cigarette smoking.Tobacco smoke contains 4,000 different constituents, including toxic substances such as carcinogens (N-nitroso amines, aromatic hydrocarbons), ammonia, nitrogen oxide, hydrogen cyanide, CO and nicotine.Nicotine is the main component in cigarettes that contributes to addiction, although psychological factors and habituation also play a role. Nicotine acts on specific nicotinic acetylcholine receptors in the brain, stimulating the release of dopamine that is believed to be associated with the acute rewarding effect of nicotine.

"Bidis" or "beedis" are slim, hand-rolled, unfiltered cigarettes. A bidi consists of about 0.2 gram of sun-dried and processed tobacco flakes, rolled in a tendu leaf (Diospyroselanoxylon) or temburni leaf and held together by a cotton thread. The tobacco rolled in bidis is different from that used in cigarettes and is referred to as bidi tobacco.One study found that bidis produced approximately three times the amount of carbon monoxideand nicotine and approximately five times the amount of tar as cigarettes. Thus bidis are known as the "poor man's cigarettes", as they are smaller and cheaper than cigarettes.

## Definition of tobacco dependence:

Tobacco dependence can be defined ''as a cluster of behavioral, cognitive and physiological phenomena that develop after repeated use and typically include a strong desire to smoke, difficulty in controlling its use, persisting in its use despite harmful consequences, increased tolerance to nicotine, and a (physical) withdrawal state.'' The World Health Organization (WHO) International Classification of Diseases 10 (ICD-10) classifies tobacco smoking under ''Mental and behavioral disorders" as F17, mental and behavioraldisorders due to use of tobacco.

## Objectives

- To analyze the baseline characteristics of smokers.
- To identify contributing factors of smokingamong subjects.
- To evaluate the effectiveness of clinical pharmacist's intervention in the program by comparing
    a. Cessation outcomes in test and control using follow up questionnaire
    b. The quit rates in both groups.
    c. Percentage of smokers who reduced cigarette number in both groups.
    d. Degree of awareness of health dangers of smoking in both groups and
    e. By administering a survey questionnaire on the test group.
    f. To prepare guidelines on smoking cessation.

## Methodology:

### Study Design and Setting

This work was carried out in a tertiary-care hospital at Calicut,kerala

### Ethical Consideration

The ethical committee in the institution approved the study process. The ethical committee got provided with the reports and the progress.

### Identification of eligible patients

The patients under study will be included, males, children and even females aging between 17 – 75 years with lungs disease, hypertension, coronary artery disease, Asthma, carcinoma and allergic complaints.

### Eligibility

1. Lungs disease patient
2. Carcinoma patient
3. Asthma patients
4. Peripheral vascular disease patient
5. Addicative patients

### Methodology

Taking complete report from hospital about the patients who are suffering from lungs disease, asthma, pulmonary embolism, carcinoma and allergic conditions.

In the present study the sample comprised 80 subjects who were interviewed in person. The subjects were divided into test and control with a sample size of 40 in each group. There were no significant differences in any of the baseline demographic or medical characteristics of participants in the 2 study arms.

The data analysis of the two populations is divided in to two groups. First, the baseline demographic characteristics of smokers and contributing factors for smoking are analyzed. Secondly the main aim of the study which is the evaluation of effectiveness of clinical pharmacist's intervention on smoking cessation program is analyzed.

## RESULTS AND DISCUSSION

### The baseline demographic characteristics of smokers and contributing factors of smoking

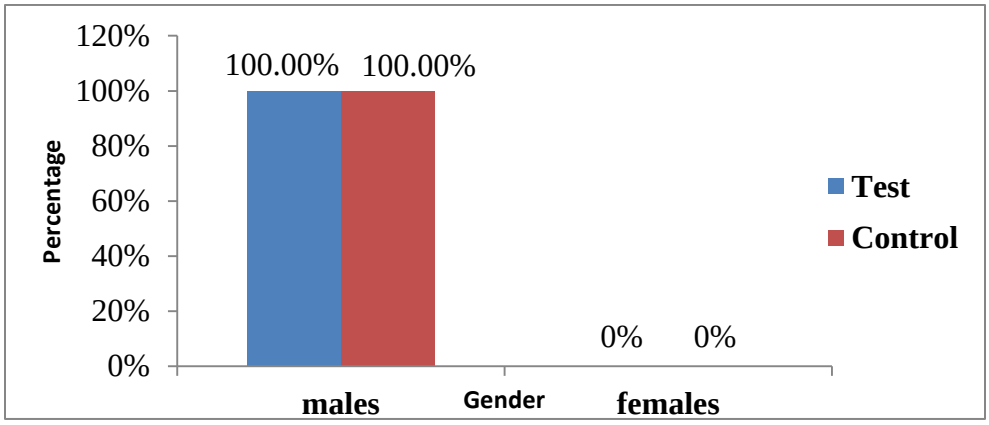
**Table: 1 Subject Characteristics**

| CHARACTERISTICS | MEAN(TEST) | MEAN(CONTROL) |
|---|---|---|
| **Age (years)** | 55.5(18-73) | 48.725(18-73) |
| **Onset of smoking(years)** | 22.45(9-35) | 21.525(9-35) |
| **Number of Cigarettes smoked per day** | 17.35(4-80) | 18.325(4-80) |
| **Pack years** | 24.44(0.9-140) | 24.17(0.9-140) |
| **Number of Years smoked** | 26.45(2-56) | 29.65(2-56) |
| **FTND scores** | 6(0-10) | 4.525(0-10) |
| **Number of previous quit attempts** | 1(0-12) | 1(0-12) |

Subjects in the test group and control group came from a mean age of 55.5 and 48.725 respectively. The mean age of onset of smoking was 22.45 in the test group and 21.525 in the control group. The mean of cigarette smoked per day was 17.35 in test group and 18.325 in control group. The mean pack years of smoking in test and control were 24.44 and 24.17 respectively. The mean of years being a smoker was 26.45 in test and 29.65 in control group. The mean FTND score was 6 in test group and 4.525 in control group. The mean value of no: of previous quit attempts were one in both test and control.

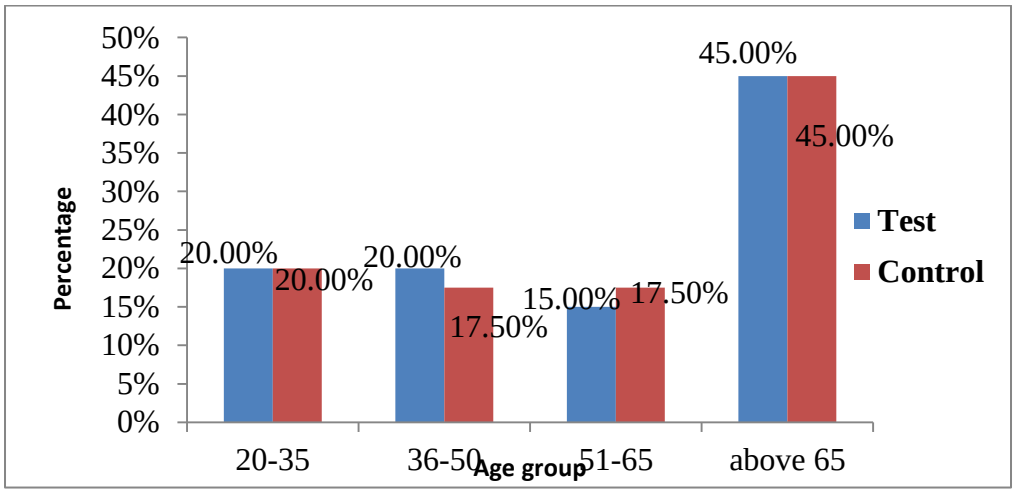
## DEMOGRAPHIC CHARACTERISTICS

**Figure -1: Sex Distribution**



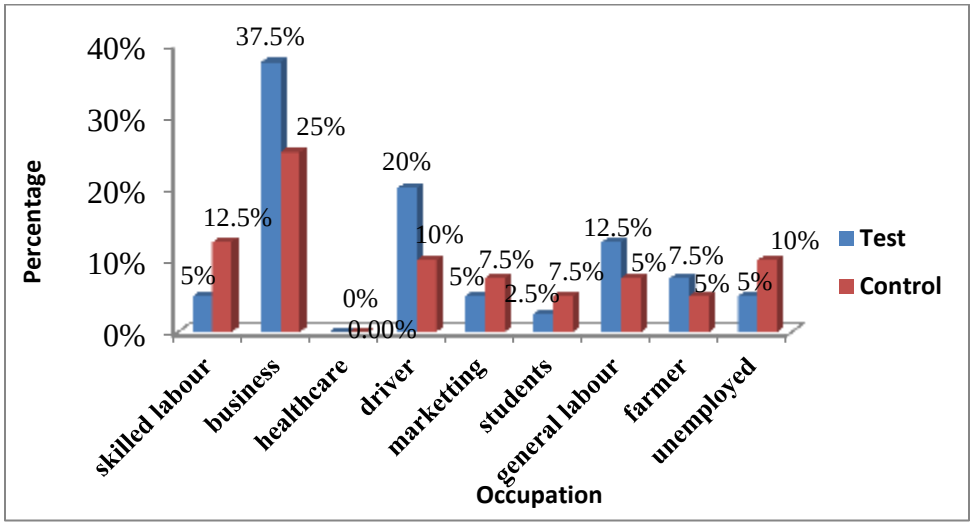

In the study all the participants were male (100.0%) and there were no female subjects in both control and test. This showed the increased rate of smoking among males in the particular area.

**Figure -2: Age Distribution**



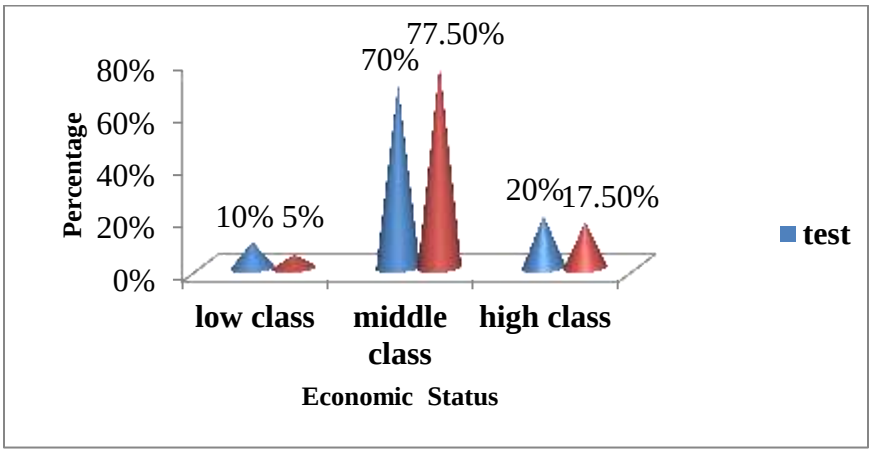

The subjects in the age group above 65 were more (45.0%) both in test and control. The mean age of subjects was found to be 55.5 in test group and 48.725 in the control group. Geriatrics covers the major class of patients in pulmonology department and is more prone to dangers of smoking due to their weak health status and occurrence of more than one disease. The study reinforced the need for cessation interventions in geriatrics.

**Figure -3: Occupation distribution**



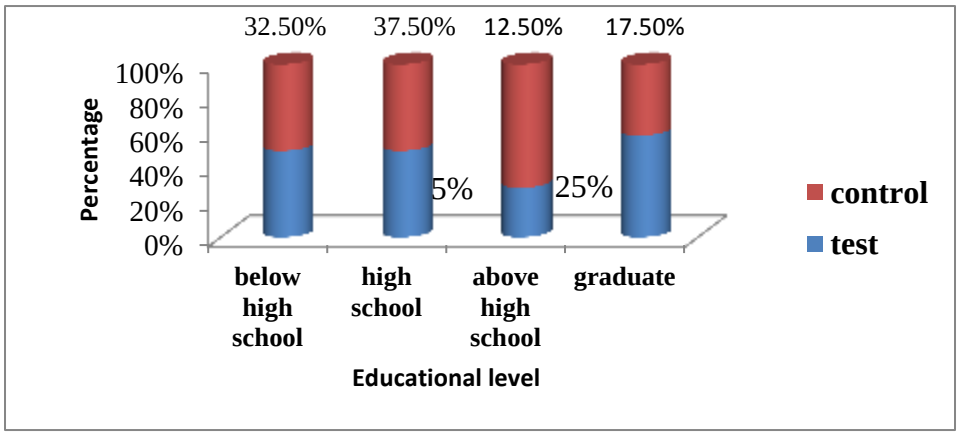

The occupational status for both study groups was studied. Smokers were more in the business group (55.0%) followed by farmers (35.0%) and transportation (32.5%). It shows that the subjects who were more likely to mix socially or work with smokers smoked more and may be smoking due to the stress in their life. This study showed similarity with the study conducted by Pamela.R.Fung, R.N.Stella.

**Figure – 4: Economic Status distribution**



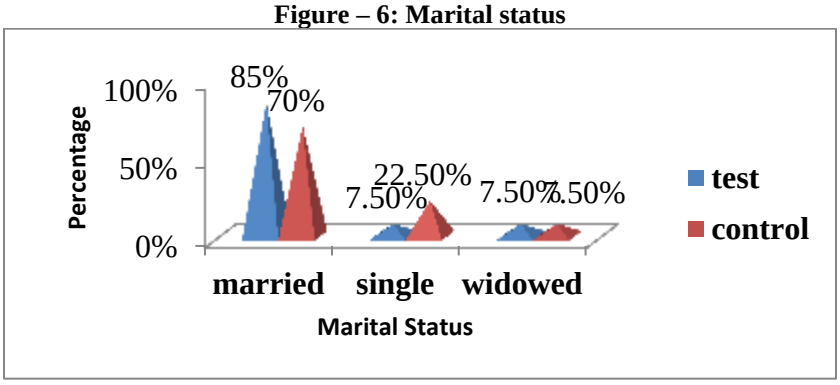

The middle class group was found to be more smoking (73.8%) when compared to other groups. It was about 70% in the test and 77.5% in the control. The high class group was high in test (20%) compared to control (17.5%). The low class group was high in test (10%) compared to control (5%).Majority of the subjects collected came from middle class family followed by high class and low class family. The study showed the prevalence of smoking among common men. The predominance of middle class in this study may be due to their need to improve their cost of living by reducing the expenses that they spend for smoking and associated health problems.

**Figure- 5: Education level distribution**



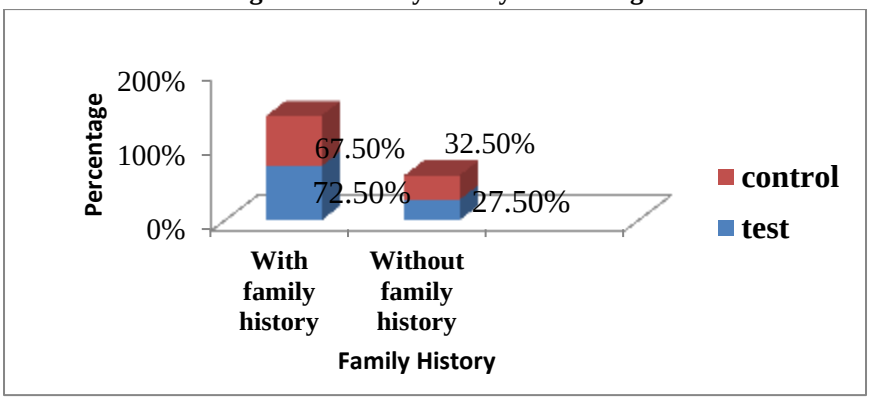

In terms of education level smokers were high (37.5%) in high school level which was equal in both test and control followed by below high school level (32.5%), graduate (21.3%), education after high school (8.8%). It showed the lack of awareness of health dangers of smoking among subjects with low education level and reinforced the cessation intervention in this group.

**Figure – 6: Marital status**



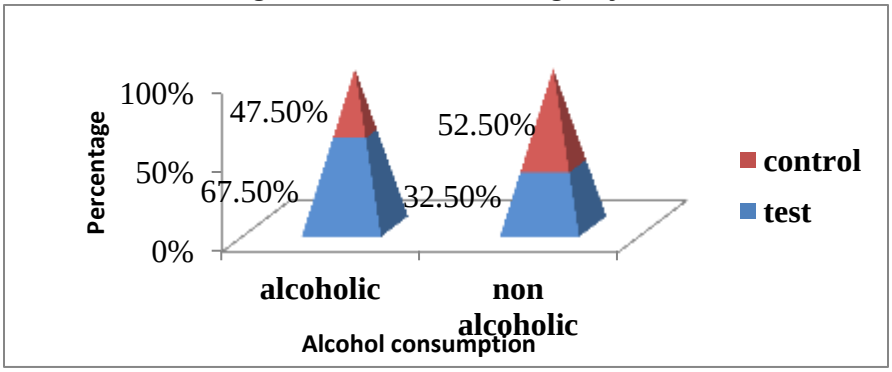

Majority of smokers in the study group were married (77.5%) about 85% in the test group and 70% in the control group when compared to other groups. Majority of subjects were from middle class family and were in the age group above 65 years and were married. And they might be smoking due to their increased responsibility and stress. About 7.5% in both test and control were found to be widowed and 22.5% in control and 7.5% in test were found to be single.

**Figure- 7: Family history of smoking**



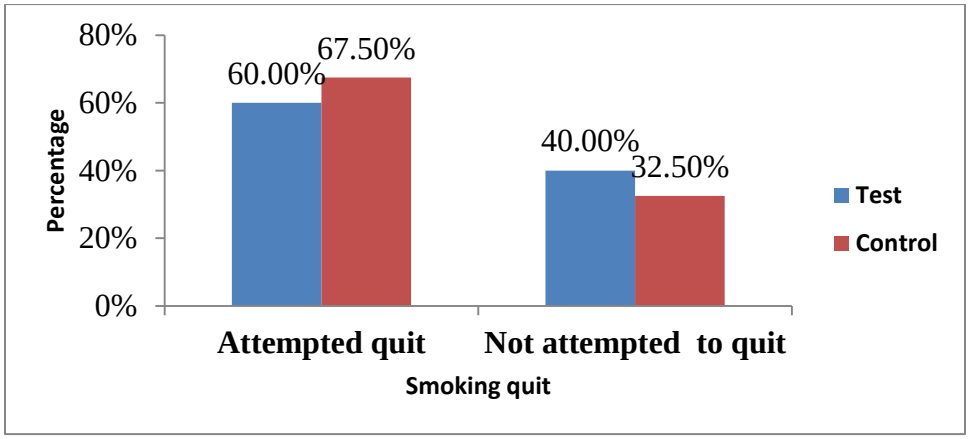

Among the subjects about 70.0% of smokers had a strong family history of smoking which was similar in both control and test group. This showed that significantly higher proportion of smokers grew up in a smoking household, especially where the father or siblings smoked. The study showed similarity with the study conducted by Pamela.R.Fung,R.N.Stella.

**Figure- 8: Alcohol use among subjects**



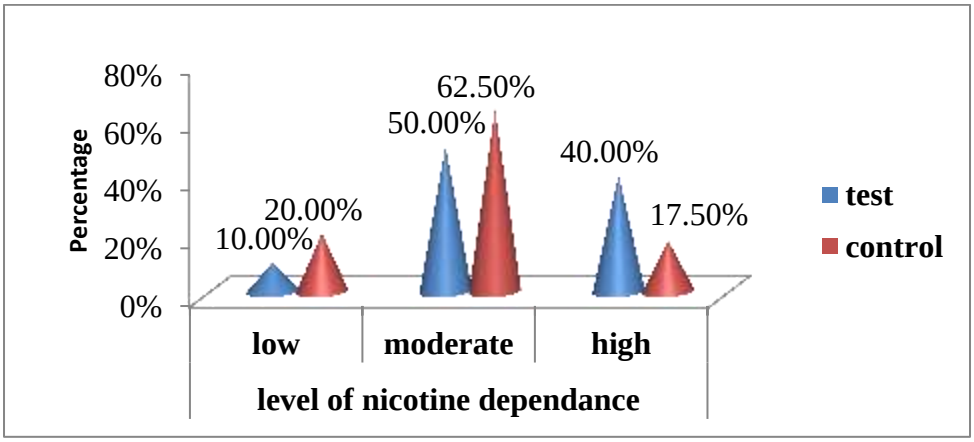
About 57.5% of the subjects were alcoholic which was about 67.5% in the test group and about 47.5% in the control group. The study shows that more than half of the smokers were alcoholic which indicate that alcoholism was common among smokers. Also men were more likely want to smoke if they were drinking. The study showed similarity with study conducted by Joel.A.Simon, Timothy.P.Carmody and also with study conducted by Jeri J.Sias and Ulysses J.Urquidi.

**Figure – 9: Previous quit attempts**



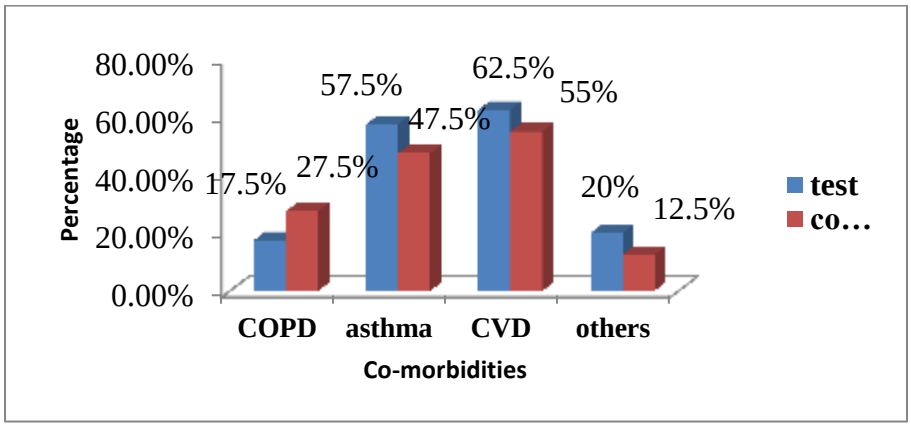

The analysis of previous quit attempts reveals that 36.3% of the subjects had never attempted to quit, while 63.8% had made 1 or more quit attempts. Those who attempted to quit was about 60.0% in the control group and 67.5% in the test group. Subjects who have one or more previous quit attempts have greater chance of quitting smoking in the future.

**Figure -10: Level of nicotine dependence**




Smokers with moderate nicotine dependence was high about 50.0% in the test group and about 62.5% in the control group followed by high nicotine dependence which was 17.5% in the control group and 40.0% in the test group and low nicotine dependence about 10.0% in the test group and 20.0% in the control group. This classification divided smokers as chronic, moderate and light for the purpose of providing more attention to groups of high nicotine dependence when compared to other groups.

**Figure -11: Subjects with co- morbidities**

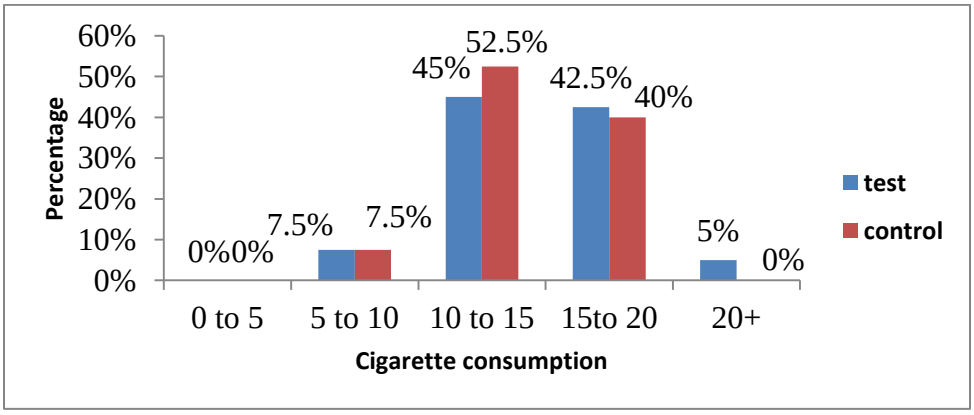



Among the smokers in the study about 22.0% of the subjects had COPD which is about 17.5% in the test and 27.5% in the control, 52.5% suffered from asthma which is about 57.5% in the test and 47.5% in the control, 58.75% suffered from cardiovascular diseases which is about 62.5% in the test and 55.0% in the control and 16.25% suffered from other diseases which is about 20.0% in the test and 12.5% in the control. Other diseases included diabetes, infectious diseases etc. As expected there was high prevalence of respiratory disorders in the study group and this contribute to the worsening and progression of the disease. The study also confirms that smoking is a major factor for CVD. The study showed similarity with the study conducted by Pamela.R.Fung,R.N.Stella.

## Smoking history and dependence

On average participants reported that they started smoking at the age group of 15-25. The average number of cigarettes smoked per day was 15 cigarettes. Fagerstrom responses showed that nearly 48.8% of participants smoked within 30 minutes of waking. The most important reasons to quit smoking were for personal health (77%). Over 70% were exposed to smoke from other smokers in their homes. The study showed similarity with the study conducted by Jeri J.Sias,Ulysses, J.Urquidi.

**Figure- 12: Distribution of number of cigars consumed per day among the study groups**




The analysis of average consumption of cigarettes smoked per day showed that in test about 45.0% and about 52.5% in the control group smoked about 10-15 cigars per day followed by 42.5% in the test and 40.0% in the control consumed about 15-20 cigars per day and 5-10 cigars per day was consumed by 7.5% in both test and control. More than 20 cigars were consumed by 5.0% in the test group and none in control group.

**Table :2 Reason to start smoking**

| REASONS | TEST (%) | CONTROL (%) |
|---|---|---|
| **Stress, Fun** | 0% | 2.5% |
| **Family circumstances** | 7.5% | 0% |
| **Familycircumstances, Friend's influence** | 10.0% | 7.5% |
| **Family circumstances, Fun** | 0% | 2.5% |
| **Friend's influence** | 25% | 7.5% |
| **Friend's influence, Fun** | 10% | 25% |
| **Fun** | 10% | 0% |

Subjects were asked about the reasons to start smoking and they responded differently and showed that friend's influence and fun contributed more which is about 10% in test and 25% in control. In the test group about 25% reported friend's influence alone as reason to start smoking. This was followed by family circumstances and friend's influence which is about 10.0% in the test and 7.5% in control group. About 2.5% in test group reported stress as the reason. Reason to start smoking should be analyzed among smokers and is an important parameter which can be used as a tool to eradicate smoking among future generation by creating awareness.

## B. ANALYSIS OF THE EFFECTIVENESS OF CLINICAL PHARMACIST'S INTERVENTION

The study shows that among the current smokers who received intensive advice to quit smoking by clinical pharmacist was associated with an increase in quit attempts and readiness to quit in next 3 months.

**Table : 3 Follow up questionnaire**

| SL NO | FOLLOW UP QUESTIONNAIRE | 1ST FOLLOW UP | | | | 2ND FOLLOW UP | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Test (40) (n,%) | | Control(40) (n,%) | | Test(40) (n,%) | | Control(40) (n,%) | |
| | | yes | no | yes | No | yes | no | yes | No |
| 1 | Success of follow up | 39 | 1 | 40 | 0 | 39 | 1 | 40 | 0 |
| | | 97.5% | 2.5% | 100% | 0% | 97.5% | 2.5% | 100% | 0% |
| 2. | Subjects who gained weight | 23 | 16 | 12 | 28 | 29 | 10 | 17 | 23 |
| | | 57.5% | 40% | 30% | 70% | 72.5% | 25% | 42.5% | 57.5% |
| 3. | Subjects who used other tobacco products | 8 | 31 | 8 | 32 | 8 | 31 | 5 | 35 |
| | | 20% | 77.7% | 20% | 79.5% | 20% | 77.7% | 12.5% | 87.5% |
| 4. | Subject's compliance to NRT and Bupropion | 29 | 10 | 27 | 13 | 29 | 10 | 9 | 30 |
| | | 72.5% | 25% | 69.2% | 32.5% | 72.5% | 25.0% | 23.1% | 76.9% |
| 5. | Subjects who experienced withdrawal symptoms | 39 | 0 | 38 | 2 | 39 | 0 | 31 | 9 |
| | | 97.5% | 0% | 97.4% | 2.6% | 97.5% | 0% | 77.5% | 22.5% |

### First follow up

In the test group about 97.5% of subjects and in control group about 100.0% of subjects attended the first follow up. One subject was lost for follow up in test group because of death of the subject. About 57.5% of subjects in test group and 30.0% of subjects in control group had gained weight. This shows the evidence of weight gain among subjects who quit smoking. Subjects who reduced the number of cigarettes smoked were more in the test group (77.5%) than in the control group (47.5%) which showed positive impact of involvement of clinical pharmacist. Subjects who used other tobacco products were 20.0% in both test group and control group. In the test group about 72.5% of subjects and in control group about 69.5% showed compliance to NRT and Bupropion. Subjects who experienced withdrawal symptoms were 97.5% in test and 97.4% in the control group. The compliance to bupropion was an added advantage for

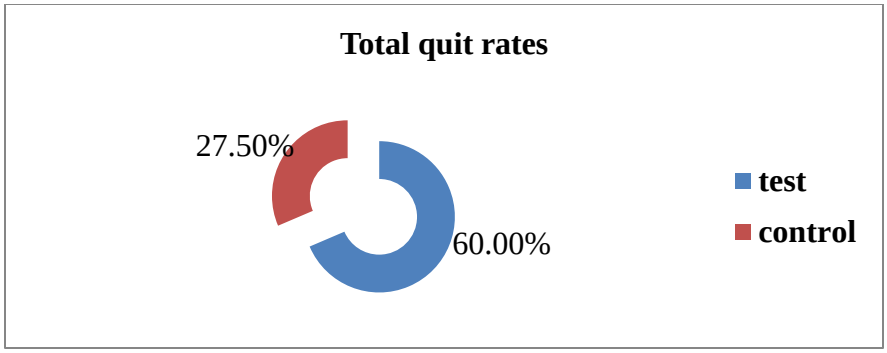
smoking cessation because it reduced the withdrawal symptom, depressed mood among the subjects.

### Second follow up

All the subjects in the test and control (100%) attended second follow up. About 72.5% of subjects in test group and 42.5% of subjects in control group had gained weight. Subjects who reduced the number of cigarettes smoked were 85.0% in the test group and 52.5% in the control group. The percentage shows that more number of smokers in the test group reduced cigarette number consumed when compared to the first follow up. Subjects who used other tobacco products were 20.0% in test group and 12.5% in control group. In the test group about 72.5% of subjects and in control group about 23.1% showed compliance to NRT. The subjects who showed compliance were more in the test than control because they were instructed in deep about the proper use of the nicotine gum and Bupropion. Subjects who experienced withdrawal symptoms were 97.5% in test and 77.5% in the control group.

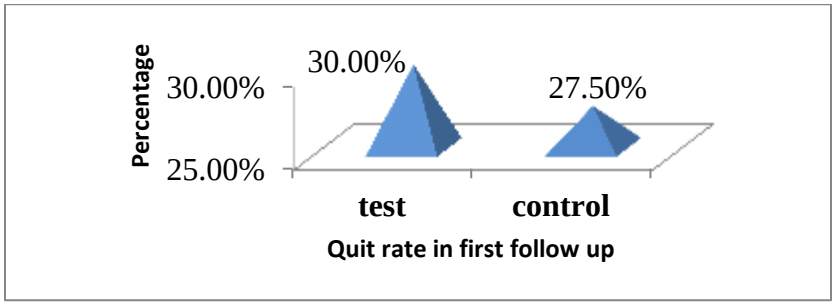
### Quit rates

**Figure -13: Total quit rates**



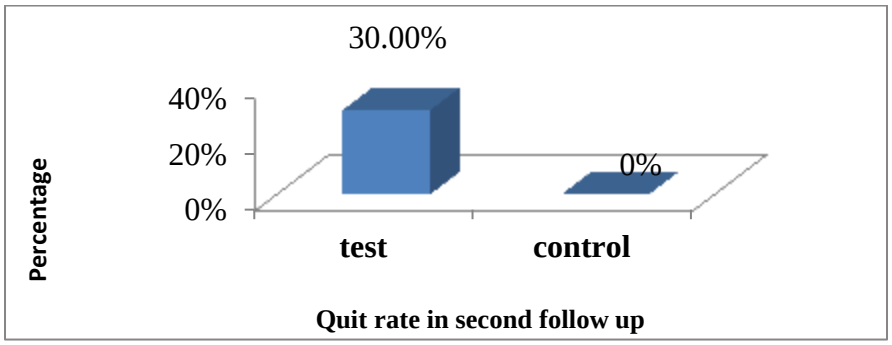

The quit rates among the subjects showed that 60.0% continue to abstain from smoking in the test and 27.5% in the control group at the end of third month of the study. The study shows that a brief survey questionnaire that assess smoking habit and intent to quit and provides prompts for cessation advice can lead to increased rates of smoking cessation advice and patient smoking cessation compared with no intervention. The study found that a hospital initiated smoking cessation intervention with intensive counseling and nicotine therapy increased smoking quit rates compared with a hospital initiated minimal/no counseling with nicotine therapy. The study showed similarity with the study conducted by Joel.A.Simon and Timothy P.Carmody.

**Figure -14: Quit rate in first follow up**




In the first month follow up conducted for the 39 subjects in the test group, 30.0% and in the control group about 27.5% had abstained from smoking. This showed the influence of intensive counseling to quit smoking and awareness made in them about the need for follow up.

**Figure -15: Quit rate in second follow up**



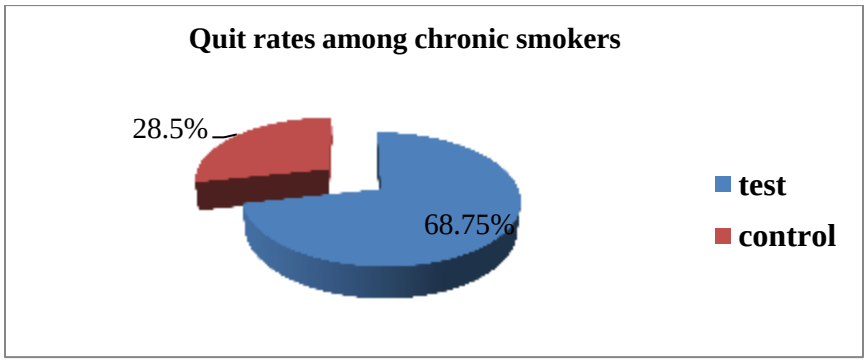

In the second month follow up conducted for the 39 subjects in the test group another 30.0% had abstained from smoking which showed the impact of counseling after first follow up and NRT therapy among smokers. In the control group none of the subjects abstained from smoking. Most of the subjects in the control group were followed up through telephone because of their absence in the clinic for second follow up. Since they have got minimal advice about the importance of follow up and were least bothered to attend second follow up. The majority of the subjects in test came for second follow up and rest of them were contacted through telephone.

**Table: 4 Distribution of smokers based on intensity of smoking**

| Study Group | Distribution of smokers | | |
|---|---|---|---|
| | Light | Moderate | High |
| **Test** | 4 | 21 | 15 |
| | 10.0% | 50.0% | 40.0% |
| **Control** | 8 | 26 | 7 |
| | 20.0% | 62.5% | 17.5% |
| **Total** | 11 | 43 | 21 |
| | 15.0% | 56.3% | 18.8% |

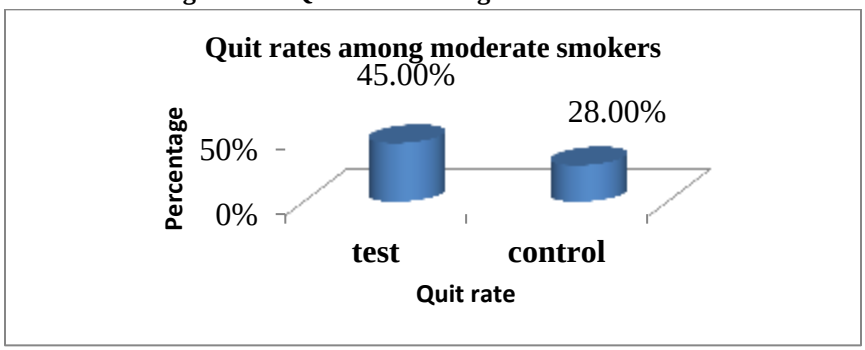
The classification which divided smokers as chronic, moderate and light was done for the purpose of providing more attention to groups of high nicotine dependence when compared to other groups. Chronic and moderate smokers represent the majority of the study group and were associated with disorders of any kind due to smoking. Light smokers accounted the least in both the population.

**Figure – 16: Quit rates among different class of smokers**



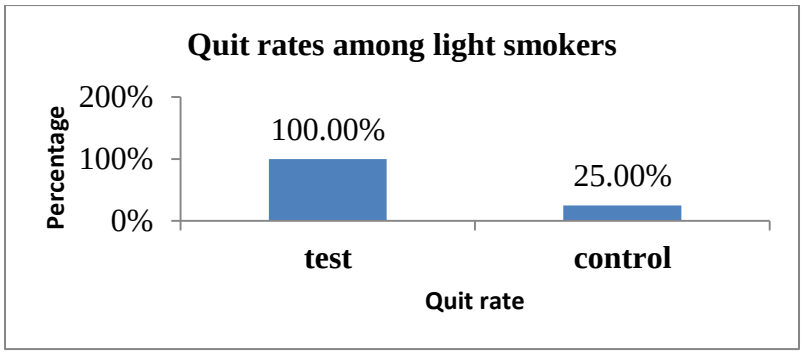
Among the chronic smokers about 28.5% in the control group and 68.75% in test group quit smoking. Chronic smokers are a challenge to the counseling pharmacist because they are highly dependent on nicotine and need special attention, intensive counseling and close follow up. The identified chronic smokers in the test group were followed up more frequently rather than waiting for first and second follow up. The close follow up made the task easier and helped to quit smoking in the second follow up which was significantly more in the test group when compared to control group.

**Figure -17: Quit rates among moderate smokers**



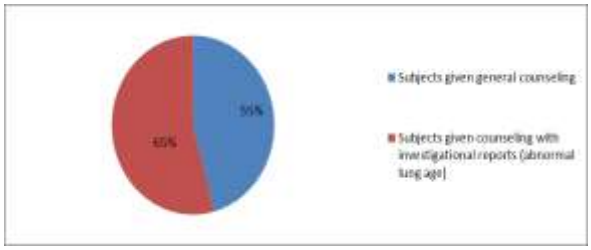

Quit rate in moderate smokers showed that 45% of the test group and 28% of the control group quit smoking. This revealed the effectiveness of involvement of clinical pharmacist. They were not closely followed as chronic smokers but were strongly advised for follow up visits and were given intensive counseling.

**Figure -18: Quit rates among light smokers**




Among the light smokers about 25.0% in the control group and 100.0% in the test group quit smoking. This showed how much effective was the counseling among light smokers.

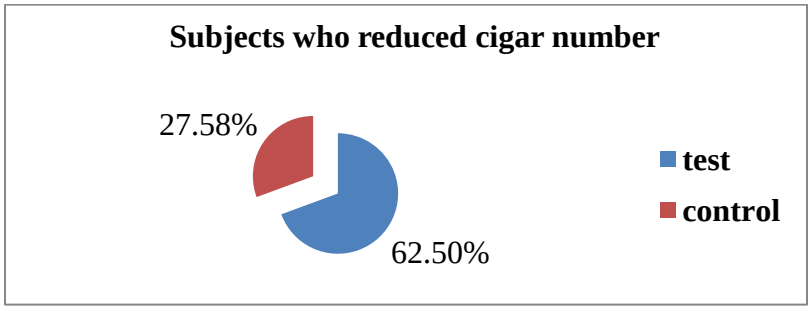
**Figure -19: Effect of Investigational Reports in Counseling**



In the test group more than half of the subjects were counseled with the support of investigational reports such as abnormal lung age and rest of the subjects were given general counseling. The result shows that about 52.38% of the subjects given general counseling and about 68.40% of the subjects given counseling with investigational reports quit smoking for the three month study. Lung age is an important parameter in PFT which was very much useful for the counseling session. Only the lung age of the subjects who were willing to perform PFT was calculated. In the control group subjects who were subjected to PFT, lung age were not calculated. The study shows that the presence of any co-existing lung condition and explanation of the condition with investigational reports like abnormal lung age was associated with greater absistence rate. The study showed similarity with the study conducted by Pamela R. Fung[21].

## Percentage of Smokers Who Reduced Cigarette Number:

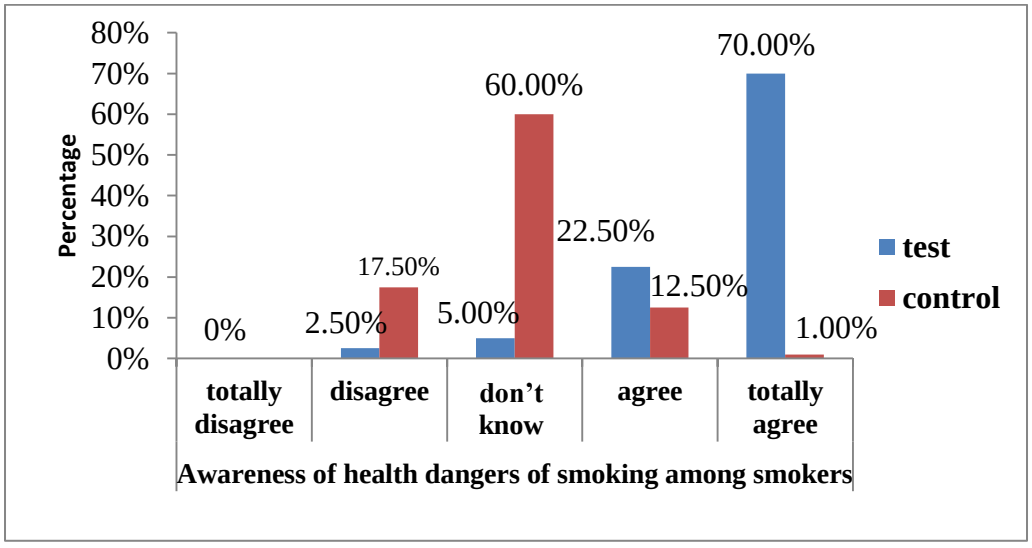
**Figure -20: Smokers who reduced cigarette number**




In the study about 62.5% of subjects in the test group and 27.58% in the control group had reduced their cigarette consumption. Individuals who fully comply with treatment and those who had strong willpower were able to able to quit smoking and reduce the number of cigarettes smoked. The smokers who reduced cigarette numbers had a great chance of quitting smoking completely in the future.

## Percentage of awareness among smokers

**Figure -21: Awareness of health dangers of smoking among subjects**



The percentage of awareness of health dangers of smoking were high in test group after the counseling session when compared to control group who did not attended the counseling session. About 70.0% in the test totally agreed to the facts in the questionnaire after the counseling session. Increased awareness rate about different harms which smoking can create to the body among the subjects was a factor predictive of high absistence rate from smoking. The counseling session had helped a lot to create awareness about the dangers of smoking among the subjects in the test group.

Interestingly, the study revealed that very little relationship between the absistence rate and the use of quitting aids such as NRT. Possible reasons may include varying adherence to the use of NRT when prescribed. Furthermore NRT may have been preferentially used by those with higher nicotine dependence. The study showed similarity with the study conducted by Pamela R.Fung.

## RESULT OF THE SURVEY CONDUCTED BY ADMINISTERING A QUESTIONNAIRE AMONG THE TEST GROUP TO EVALUATE THE EFFECTIVENESS OF COUNSELING

The survey questionnaire was analyzed for the percentage of patients responded for yes or no questions and showed that

**Table: 5 Survey Questionnaire**

| SL NO | QUESTIONS | YES (n&%) | NO (n&%) |
|---|---|---|---|
| **1** | Have you ever visited a smoking cessation clinic before? | 7, 15.3% | 33, 84.61% |
| **2** | If yes, whether there was the involvement of a clinical pharmacist? | 0, 0% | 39, 100% |
| **3** | Do you feel a pharmacist as more accessible than a physician? | 31, 79.48% | 8, 20.51% |
| **4** | Do you feel the interaction with a pharmacist more convenient than a physician? | 32, 87.1% | 5, 12.8% |
| **5** | Did you feel the tips as helpful to quit smoking/reduce the cigarette number smoked? | 29, 74.35% | 11, 25.64% |
| **6** | Did you feel the booklet helped you to know about the dangers of smoking? | 39, 100% | 0, 0% |
| **7** | Did you feel the directions given by the pharmacist for the proper usage of NRT as more useful? | 33, 89.7% | 4, 10.25% |
| **8** | Do you feel the location of counseling session was accessible and comfortable? | 25, 64.10% | 15, 38.46% |
| **9** | Do you feel counseling as an added advantage to quit smoking/reduce the no: of cigarettes smoked? | 30, 76.92% | 9, 23.07% |
| **10** | Will you recommend our counseling services to a friend? | 35, 94.8% | 2, 5.12% |

The questionnaire was distributed among the 39 subjects who attended the second follow up. The result point out that about 15.3% of the subjects have visited a smoking cessation clinic before and there was not any involvement of a clinical pharmacist in those clinics. About 79.48% and 87.1% in the group felt pharmacist as more accessible and interaction with a pharmacist more convenient than a physician. In the study about 74.35% felt that the quit smoking tips used during the counseling session as useful to help them quit smoking/reduce the number of cigarettes smoked. The entire subject group felt booklet was an asset to gain knowledge about the health dangers of smoking. About 89.7% of subjects felt the directions for the proper usage of NRT given by the clinical pharmacist as more useful. Only 64.5% of the subjects felt the location of counseling session as more accessible and comfortable. For 76.4% of the subjects counseling was an added advantage to quit smoking/reduce the number of

cigarettes smoked. In the study 94.8% reported that they will recommend the counseling services to their friends who needed the service.

From the analysis of follow up questionnaire also it was revealed that 77.5% in the test group self-reported that they felt pharmacist helped them to quit smoking or reducing the number of cigarettes smoked. The study showed similarity to the study conducted by Karen SuchanekHudmon, Alexander V.Prokhorov.

Finally, all the results point out the need of a smoking cessation clinic in an accessible site inside the hospital and also recommend the active participation of a specially trained clinical pharmacist. Also subjects responded that they will recommend smokers they knew to the clinic. It will become an opportunity to make a tobacco free environment and thereby ensure the improvement of public health.

The analysis of the baseline demographics shows the absence of female gender in both groups which may be due to the characteristic culture of the geographic area of the study. The majority of the study population comprised of smokers with age group above 65 years. Geriatrics is more prone to dangers of smoking due to their weak health status and always presented with more than one disease. Increased number of chronic smokers in the study indicated the need of high attention for the particular group. Most of the smokers were married, had only high school education and were from a middle class family with a positive family history of smoking. Family background is a prominent factor that promotes smoking. Majority of the smokers had occupational status as business. My study also indicated that majority of smokers showed with respiratory and cardiovascular disorders. This reflects the ill effects of smoking. The reason to start smoking reported by the smokers were friend's inspiration, fun, to relieve stress etc.

The study concluded that majority of smokers were able to quit due to intensive counseling by a clinical pharmacist. Unlike most other clinicians, pharmacists are easily approachable for the public and advice from them does not require an appointment. As such pharmacist have the opportunity to reach and assist underserved populations. Because identifying tobacco users is a crucial step in the treatment of tobacco use and dependence, systemic changes in the pharmacy practice environment are necessary if pharmacists are to assume a more significant role in the provision of cessation services. For example, routine use of pharmacy computer system software to document smoking status could screen for potential smoking-medication interactions and serve as a prompt for the pharmacist to engage in cessation activities. Since training increase cessation counseling interventions efforts should be made to provide comprehensive, evidence based training to practice pharmacist through continuing education programs and to students through required pharmacy school work.

## CONCLUSION

The study evaluated the effectiveness of a hospital initiated smoking cessation intervention by a clinical pharmacist that included 3 months of follow up and also analyzed the baseline demographics of smokers. The pharmacist-managed Smoking Cessation program successfully aided approximately more than half its participants to quit smoking at 1 and 3 months. Although higher attendance rates increase cessation rates, steps could be taken in order to effectively maximize the pharmacist's time and minimize patient commitment, while also achieving the best patient outcomes. The most common reasons for quitting smoking were a concern with the current health status and a concern with the future health status.

Smoking cessation for current smokers is a healthcare imperative. We hypothesized that a hospital based smoking cessation program involving intensive counseling by a clinical pharmacist and support along with nicotine replacement therapy would provide an effective intervention for smoking cessation.

In summary the results of this prospective study indicates that hospital based smoking cessation with the active participation of clinical pharmacist is very effective. Both social and psychological factors are associated with a greater chance of insistence. Intensive counseling with appropriate pharmacotherapy is feasible in the hospital setting and should be offered to all patients who are current smokers.

### Recommendations

Since hospitalized smokers present with high levels of nicotine dependence, high tobacco intake, early age at smoking initiation, and high number of cigarettes smoked per day, they require a systematized approach to smoking cessation during hospitalization in order to guarantee successful smoking cessation. In order to optimize such an approach, a comprehensive program should be developed in the institution, focusing on the following:

- training physicians, nurses, and other health care workers who have close contact with patients
- providing medication to assist in smoking cessation
- implementing strategies aimed at smokers, with special attention to hospitalized smokers
- Such a program should continue after discharge.
- Special smoking cessation clinic set for the purpose and active participation of a clinical pharmacist to run the clinic.
- Make use of specially trained clinical pharmacist in de-addiction clinics in the hospital. This may be helpful in the unchallenging service of a clinical pharmacist and also can save the valuable time of the physician.
- Should implement the guidelines for smoking cessation in the hospital and update it periodically.
- World No Tobacco Day should be celebrated every year with collaboration of hospital and community pharmacist to make the public aware about the dangers of tobacco use, the business practices of tobacco companies, what WHO is doing to fight the tobacco epidemic and what people can do to claim their right to health and healthy living and to protect future generations.

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