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Assessment of smoking dependency and social desirability among smokers attending hospital in Bangalore (India) - A cross sectional study

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Abstract

Background: Social desirability is tendency of individuals to project favorable images of themselves. Social desirability bias is important in smoking-related questionnaires, since smoking is increasingly socially undesirable behavior. According to this logic, social desirability response bias leads some smokers to claim that they do not smoke when interviewed.

Objectives: To assess smoking dependency and social desirability among smokers and to find relationship between them.

Method: A pilot study was conducted to determine a total 150 participants(smokers). After obtaining consent, participants were asked about their smoking habit and grouped in two.1)the smokers who accept they smoke.2)the smokers who do not accept they smoke. Both groups were analyzed for the social desirability (Crowne-Marlowe social desirability scale 1960). Only 1st group (the smokers who accept they smoke) was analyzed for smoking dependency (Fagerstorm test). Descriptive and inferential analysis (chi-square test) were done.

Results: Among 150 sample,104(69.33%) reported that they smoke, 46(30.66%) of them denied. High amount social desirability score was found in the group of smokers who denied their smoking habit with mean value of 28.29±9 and frequency of 46(30.66%). Only 23(22.11%) from the group of smokers who accepted they smoke,had high social desirability with mean values of 23±6. This was found to be statistically significant ($p<0.01$*). It was found that 53(50.96%) had high dependency for nicotine, out of which 39(73.58%) had lower social desirability scores ($p<0.01$*).

Conclusion: In this study, there was high amount of social desirability score in the group who denied about smoking. It was also found that high dependency of smoking had low amount of social desirability.The social desirability of an individual can lead misinterpretation of problem. There will be difficulty in examining/diagnosing community or individual, which can lead to inappropriate treatment/poor prognosis.

Keywords: Social desirability, smoking dependency, smokers.

Introduction

Measuring health through surveys is challenging because participants may respond in a socially favorable but untruthful way.[1] telling others what we think they want to hear is making the socially desirable response. Falling prey to social desirability may cause us to distort our beliefs and experiences in interviews or on psychological tests. The bias toward responding in socially desirable directions is also a source of error in the case study, survey, and testing methods.[2]

Social desirability is commonly thought of as the tendency of individuals to project favorable images of them during social interaction.[3] The concept of social desirability derives its origin, more than 50 years ago, from a common observation by interviewers that what respondents say may not be true or not entirely true. The given answer is assumed to show a consistent distortion from reality: respondents portray themselves too positively. Scales were developed to assess this tendency, with the aim of designing measures that could indicate the level of veridicality of answers on other items. The Lie Scale of the Eysenck Personality Questionnaire and the Marlowe~Crowne Scale are examples of this line of thinking. Later research, however, has provided important extensions: some items are more susceptible than others to trigger socially desirable answers; also, some individuals are more likely to show socially desirable behavior than others. The consistency of individual differences in social desirability has led some theoreticians to argue that social desirability is not a response style but a personality characteristic related to conformism. It may not be superfluous to remark that these two views, at times, hardly seem compatible and refer to seemingly unrelated research traditions.[4]

Social desirability has been stated to consist of self deception, “the conscious tendency to see oneself in a favorable light” and impression management, “the conscious presentation of a false front, such as deliberatively falsifying test responses to create a false front”. Socially desirable responding can have three different manifestations: reporting incorrect information, omitting information or altering the magnitude of the reported information. This is often linked to the fear that information will be revealed publicly.[5]

Psychologists and other social scientists have argued that social desirability is composed of two distinct dimensions that relate to

• An individual-level stable personality characteristic, whereby some people are much more prone to exhibit social desirability in reporting information about themselves than are other people;

• characteristics of a survey—including the manner in which questionnaire items are worded, ordered, and formatted and the mode by which the data are gathered—which lead to more socially desirable behavior exhibited in the aggregate.

As noted above, social desirability consists of bias in responding that can be associated differentially with survey items and the mode of data collection as well as with individuals. That is, whereas certain persons more likely than others would provide socially desirable responses, certain survey items and modes also more

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likely would elicit socially desirable responses than others.[6]

Health-risk behaviors such as cigarette smoking, weapon-carrying, and unprotected sexual intercourse contribute to the leading causes of morbidity, mortality, and social problems among adolescents. Consequently, many reasons exist for collecting data on these and other health-risk behaviors. For example, policymakers and program directors use data on the prevalence of these behaviors to monitor trends, set program goals, identify target populations, seek funding, and advocate for support. Assessment of these behaviors also is a critical component of research that examines associations between health risk behaviors and other factors, builds theories of behavioral change, develops policies and programs designed to prevent these behaviors, and evaluates these policies and programs. Health-risk behaviors usually are measured among adolescents by administering questionnaires that require retrospective self-reports about engaging in these behaviors. The truthfulness and accuracy of these self-reports may be compromised because some health-risk behaviors are difficult to recall and some are so sensitive that respondents may not want to report them. In addition, adolescents may purposely underreport or over-report some health-risk behaviors because they believe engaging in these behaviors is socially undesirable or desirable, respectively.[7]

Survey research often takes as a given that respondents' self-reported views are a direct reflection of their own, true opinions – and thus that by aggregating these views it is possible to arrive at collective or popular opinion.[8] The tendency for people to present a favourable image of themselves on questionnaires is called socially desirable responding (SDR). SDR confounds research results by creating false relationships or obscuring relationships between variables.[9] Avoiding a social desirability bias is important in smoking related questionnaires, since smoking is increasingly a socially undesirable behavior.[10] Tobacco is the only legal drug that kills many of its users when used exactly as intended by manufacturers. WHO has estimated that tobacco use (smoking and smokeless) is currently responsible for the death of about six million people across the world each year with many of these deaths occurring prematurely. This total includes about 600,000 people are also estimated to die from the effects of second-hand smoke. Although often associated with ill-health, disability and death from noncommunicable chronic diseases, tobacco smoking is also associated with an increased risk of death from communicable diseases.[11] Tobacco has been identified as an important risk factor contributing to the burden of non-communicable diseases. Control of tobacco epidemic in India is an issue of concern considering the enormity of population consuming tobacco. Globally, India is the third largest tobacco producer and second largest tobacco consumer after China. GATS (Global Adult Tobacco Survey) India reported tobacco consumption in more than one-third (35%) of adults in India. Importantly, tobacco epidemic is not uniform across the country. Inequalities in tobacco consumption exist across age, sex, regions and economic classes. Tobacco has also been identified as the single biggest cause of inequality in morbidity and mortality between rich and poor. Tobacco consumption is disproportionately higher among lower socio-economic groups, which is visible in terms of lower age of initiation, more consumption and lower quit rates.[12]

The reliability of self-reported smoking behavior reported at surveys is questioned widely. Social desirability and other biases may lead respondents to misrepresent their smoking status. When the reported smoking status is linked to a direct financial incentive as in the case of insurance premiums, a smoker has additional reasons to

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misreport. As a result, biochemical measurements, considered more objective, are commonly used to predict smoking behavior. However, biochemical measurements are subject to a variety of measurement and interpretation errors and thus do not provide the surety often attributed to them. In particular, in the aftermath of increased anti-tobacco legislation and more hostile social norms against smoking, some survey respondents are believed not likely to feel comfortable admitting that they currently smoke. Some groups such as pregnant women and parents of young children are more reluctant than others to admit that they are smoking as their smoking behavior is even more socially undesirable. Smokers typically pay a higher insurance premium than nonsmokers and face unfavorable labor market outcomes including higher unemployment and wage penalties. Providing financial motivation for smokers to hide their true status.[13]

For those of us working in social research and policy, social desirability bias is a problem. Firstly, it undermines attempts to obtain valid measures of public attitudes or behaviors and subsequently to devise appropriate policy responses. Secondly, it affects the wider opinion climate because, when these survey results are publicized, the social influences that helped shape responses ripple out into society and become even more deeply embedded.[8]

Many researchers rely on high-quality face-to-face national surveys conducted by the federal government to estimate the prevalence of nicotine product use, but some scholars have suggested that adults' self-reports in such surveys are intentionally distorted by social desirability response bias, thus raising questions about the validity of those data.

There are slim-picking of the studies on social desirability among smokers. Hence the present study will add more value to the literature and a conscious effort in the health research to assess the social desirability among smokers and to find relationship between them.

Aim

To assess smoking dependency and social desirability among smokers and to find relationship between them.

Methodology

A cross sectional study is carried out among the smokers visiting Dept. of Public Health Dentistry & Dept. of Oral Medicine and Radiology, VIDS & RC, Bengaluru city. A total of 150 smokers were included in the study.

Inclusion criteria:

- Male smokers 19-65 years old.

Exclusion criteria:

- Female smokers (women are generally higher in social desirability as a trait than are men)[14]
- Male smokers who did not give consent for the study.

Organization and Administration Workout

1. **Ethical clearance**: The study proposal was approved by institutional review board of Vydehi Institute of Dental Sciences and Research centre, Bangalore.
2. **Informed consent**: The purpose and details of the study was explained to the study participants and a written consent was then obtained from them.

Questionnaire design

The questionnaire was close ended, self-assessment instrument, containing demographic details, consent form, Fagerstorm dependency scale and Crowne-Marlowe social desirability scale 1960. The demographic details were name (optional), gender, age, qualification, occupation and income.

Crowne-Marlowe social desirability scale 1960

Social desirability is commonly thought of as the tendency of individuals to project favorable images of themselves during social interaction. Numerous measures of the tendency to respond in a socially desirable manner have been developed since World War II (Paulhus, 1991). One

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of the most commonly employed scales has been the Crowne-Marlowe (CM) Social Desirability, or Need for Approval, Scale (Crowne and Marlowe, 1960). As originally developed, this measure contains 33 true-false items that describe both acceptable but improbable behaviors, as well as those deemed unacceptable but probable. Perhaps as a consequence of the attention it has received, questions have been raised about the nature of the CM and how it functions. What we refer to as the classic social desirability interpretation suggests that the tendency to report information that is colored by social desirability concerns is best conceptualized as a personality trait which can be measured via the CM scale. A contrasting perspective, which we label the true behavior interpretation, suggests instead that the CM reliably measures actual respondent behaviors and attitudes, rather than a propensity to edit self-reports.[10]

Interpretation

Low Scorers (0–8). About one respondent in six earns a score between 0 and 8. Such respondents answered in a socially undesirable direction much of the time. It may be that they are more willing than most people to respond to tests truthfully, even when their answers might meet with social disapproval.

Average Scorers (9–19). About two respondents in three earn a score from 9 through 19. They tend to show an average degree of concern for the social desirability of their responses, and it may be that their general behavior represents an average degree of conformity to social rules and conventions.

High Scorers (20–33). About one respondent in six earns a score between 20 and 33. These respondents may be highly concerned about social approval and respond to test items in such as way as to avoid the disapproval of people who may read their responses. Their general behavior may show high conformity to social rules and conventions.[02]

Fagerstorm test

"Fagerström Test for Nicotine Dependence" (FTND), both designed by por Karl-Olov Fagerström, the first in 1978, and due to ease of use, this questionnaire has been the clinical standard in this field of work. The instrument enables measuring the nicotine addiction degree through 6 questions, where the sum of scores ranges from 0 to 10, and determines the individual's dependence degree on the substance, besides being self-administered. The results pointed out by applying the Fagerström test, it is regarded as extremely significant that the researchers and/or professionals who use it have a greater mastery of this research and work tool, that is, go further with the results obtained by means of it.

Interpretation

At low nicotine dependence, the score is less than 4; at moderate dependence, the score goes from 5 to 7; and at high dependence, the score is equal or higher than 8.[15]

Pilot study

A pilot study was done among 40 smokers visiting Vydehi institute of dental science and research centre, to check the feasibility and to validate the questionnaire and to calculate sample size. Face validity of the questionnaire was checked by asking experts to scrutinize the questions, while content validity was checked by ensuring that the questions covered all the areas of knowledge mapped out by initial objective. The reliability of the questionnaire was assessed by using Cronbach's α and it was found to be >0.7 (acceptable)

Sample size

The participants were included after meeting the inclusion and exclusion criteria, making a total sample of 150. Sample Size was obtained after Calculation based on the current pilot study

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The study design

- A cross sectional study was carried out among the sample of 150 male smokers. Confirmation of smoking was done by oral examination of cigarette stains (ADA type III Examination). Participants were divided in to two groups
- 1) smokers who accept they smoke.
- 2) smokers who don't accept it.

The questionnaires were distributed to the randomly selected smokers, and were self-completed by them. The total scores of all the sections were calculated by examiner. Fagerstorm test results were not taken in to consideration for the individual who didn't accept they smoke.

Statistical analysis

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented as Mean ± SD (Min-Max) and results on categorical measurements are presented in percentages. Level of significance is set at 5%.

Chi-square test has been used to find the significance of study parameters on categorical scale.

Statistical software

The Statistical software namely SPSS 15.0 was used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc**.**

Results

The present study was conducted to evaluate social desirability and smoking dependency level among smokers. The study was conducted on 150 subjects, out of them 104 responded they smoke and 46 had denied about smoking.

Among the 104 study subjects (who accepted they smoke), 11 subjects i.e., 10.57% were below or the age of 25 years, 17 i.e., 16.34% were between 26-35 years of age, 37 i.e., 35.37% were between 36-45 years of age, 39 i.e., 37.50% were > 45 years of age (Table 1, Graph 2). The subjects were examined for socioeconomic status (acc.to Kuppuswami 2014 scale). There were 36 (35.6%) subjects belonging to upper class, 26 (25.7%) belong to upper middle class, 28 (27.7%) were belonging to lower middle class, 11 (10.9%) belonging to lower class (Table 2).

For the 104 subjects who accepted they smoke, it was estimated that around 23 (22.11%) participants had higher score social desirability, 41 (39.42%) participants had average score of social desirability, 40 (38.46%) participants had low score of social desirability (Table 3).

Among 46 subjects who did not accept they smoke, 16 subjects i.e., 34.78% were below or the age of 25 years, 16 i.e., 34.78% were between 25-35 years, 08 i.e., 17.39% were between 36-45 years of age, 06 i.e., 13.04% were >45 years (Table 4, Graph 2). The subjects were examined for socioeconomic status (acc.to Kuppuswami 2014 scale). There were 01 (2.3%) of the subject belong to upper class, 10 (22.7%) of the subjects belong to upper middle class, 18 (40.9%) of the subjects belong to lower middle class, 15 (34.1%) of the subjects belong to lower class (Table 5).

For the participants who have not accepted they smoke, it was estimated that around 40 (86.95%) participants had higher score of social desirability, 05 (10.86%) participants had average score of social desirability, 01 (02.17%) participant had low score of social desirability (Table 6).

It was estimated that out of 150 total 63 subjects were having higher social desirability score, 46 subjects had average social desirability score and 41 had lower social desirability score. when these finding checked with smoking status, it was found to be statistically significant $p< 0.01$* (Table 7).

In the present study, smoking dependency was assessed for the group who accepted they smoke. It was found that

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the smoking dependency level found to be high in 53 (50.96%), moderate in 28 (28.84%) and low in 23 (20.19%) of participants (Table 8).

It was noticed that the subjects with higher level of smoking dependency were having lower level of social desirability score and viceversa.(Table 9) And these findings were found to be statistically significant $p<0.01$ (table 10).

Discussion

Researchers rely heavily on self-reported data to monitor the prevalence of risky health behaviors, such as the use of products containing tobacco.[3] Interviews, therefore, involve social interaction with another person, which can lead to respondents taking social norms into account when responding, resulting in social desirability bias (the desire of respondents to present themselves in the best possible light), resulting in the over-reporting of desirable behaviours, and under-reporting of undesirable behaviours (confounding associations between variables by attenuating, inflating or moderating relationships).[4]

The present study was conducted on 150 male smokers, women were excluded for this study as women's responses to dietary questionnaires may be influenced more powerfully by social desirability than those of men, and women are generally higher in social desirability as a trait than are men . Social desirability is more likely to be a biasing factor in situations in which individuals experience some conflict between their true preferences and the socially desirable answer. Conflict and guilt around consumption of these foods is expressed early in childhood, especially by girls.[14]

Among 150 participants, 46 (30.66%) of them reported that they do not smoke. The present study shows overall 42% of participants had higher level of social desirability. These data do support the claim that a substantial number of respondents intentionally under-report nicotine consumption in face-to-face interviews. This finding was in accordance with the study done by Vidhura Tennekoon and Robert Rosenman.[13]

We have divided smokers (participants) in two groups for further analysis.

1) Who accept they smoke,
2) Who denied about smoking.

It was found that the participants who denied about smoking had higher level of social desirability compared to the other group (who accepted they smoke). It was found that among the participants who accepted they smoke, 22.11% of them were having higher level of social desirability. Among the participants who denied about the smoking, 86.95% of them had higher social desirability score. average social desirability score was also comparatively higher (mean score 28.29) among the participants who denied about smoking than who accepted they smoke (mean score 23). This study was in accordance with an American study focusing on drug abuse showed that under-reporters experienced more socio-desirability pressure than those who did not under-report.[5]

The present study shows that the group with higher social desirability score had higher numbers of young adults (34.78%) compare to group that had lower social desirability score (10.57%). This finding suggests that the young adults had higher social desirability. Some groups such as pregnant women and parents of young children are more reluctant than others to admit that they are smoking as their smoking behavior is even more socially undesirable (Florescu et al., 2009).[13]

In the present study, it was found that the group with higher social desirability score had less numbers of participants (2.3%) which belongs to upper socioeconomic status.compare to group that had lower social desirability score (35.6%). There were more numbers of participants

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belonging to lower middle socioeconomic class (40.9%) and lower socioeconomic class (34.1%) in the group with lower social desirability score.

A study shows that income and socio-economic status are inversely correlated with socially desirable responding.[5]

In this study, The participants who accepted they smoke, were questioned for smoking dependency. It was found that the smoking dependency level found to be high in 53 (50.96%), moderate in 28 (28.84%) and low in 23 (20.19%) of participants. It was in accordance with the study done by Heydari G R et al.[16] It was also found that higher level of smoking was related to lower level of social desirability and vice versa..This may be due to their preference to health and health related issues or they wanted to give all possible details to dentist/ doctor. Tobacco control research in other settings suggests that survey responses about wanting to quit are not subject to greater social desirability biases when collected face to face.[17]

The importance of assessing the prevalence of health-risk behaviors as part of research activities involving adolescents often necessitates the use of self-report measures. This study has demonstrated that self-reports of these types of behaviors are indeed affected by both cognitive and situational factors in varying degrees. Researchers should familiarize themselves with these threats to validity and design studies that minimize these threats as much as possible.

Recommendations

Researchers using questionnaires and interviews rely on truthful responses from participants to draw meaningful conclusions. Socially desirable responding is the tendency for participants to present a favourable image of themselves. The participant may believe the information they report (self-deception), or may 'fake good' to conform to socially acceptable values, avoid criticism, or gain social approval. Socially desirable responding is most likely to occur in responses to socially sensitive questions. Social desirability response bias affects the validity of a questionnaire. An instrument is valid if it accurately measures what it aims to measure. According to Nederhof (1985) between 10% and 75% of the variance in participants' responses can be explained by SDR which can confound relationships among the variables of interest by suppressing or obscuring relationships among variables or producing artificial relationships between variables Health related research often covers socially sensitive topics, therefore researchers must "identify situations in which data may be systematically biased toward respondents' perceptions of what is socially acceptable, to determine the extent to which this represents contamination of the data, and to implement the most appropriate methods of control".[09]

Methods exist to reduce this problem, including assurances of confidentiality and anonymity, although this can raise respondents' suspicions about the sensitivity of the topic, and thereby reduce response); checking responses against known 'facts'; indirect questioning; correlation of responses with social desirability measures; and randomized response techniques. With the latter technique, respondents are presented with pairs of questions, one of which is sensitive and one of which is not and they are asked to answer one question within the pair at random (e.g. by tossing a coin); the interviewer cannot see the outcome. In order to infer the response to the socially desirable question, the population distribution of responses to the nonsocially desirable question needs to be known from other sources, a truly random procedure needs to be used in the selection of the question, and a large population must be sampled. [04]

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Conclusion

Health-risk behaviors usually are measured among adolescents by administering questionnaires that require retrospective self-reports about engaging in these behaviors. Smoking is one of the health risk behaviors. The reliability of self-reported smoking behavior reported at surveys is questioned widely. Social desirability and other biases may lead respondents to misrepresent their smoking status. In the present study higher amount of under-reported case of smokers were reported, which were having higher social desirability score. In this study, there was high amount of social desirability score in the group who denied about smoking. It was also found that high dependency of smoking had low amount of social desirability. Bias in questionnaires is an important issue in public health research. To collect the most accurate data from respondents, investigators must understand and be able to prevent or at least minimize bias in the design of their questionnaires.

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Legend Tables

Table 1: age wise distribution of participants who accepted they smoke

Sn.	Age groups	No. of participants	%
1	19-25	11	10.57%
2	26-35	17	16.34%
3	36-45	37	35.57%
4	>45	39	37.50%
	Total	104	100%

Table 2: Socioeconomic Distribution of Participants Who Accepted They Smoke

Sn.	Status	No. of participants	%
1	Upper	36	35.6%
2	Upper middle	26	25.7%
3	Lower middle	28	27.7%
4	Lower	11	10.9%
	Total	101(+3 missing)	100

Table 3: distribution of social desirability among participants who accepted they smoke

Sn.	Category social desirability	Total No. of participants	Mean value of social desirability score
1	High (20-33)	23 (22.11%)	23
2	Average (9-19)	41 (39.42%)	
3	Low (0-8)	40 (38.46%)	
	Total	104 (100%)	

Table 4: Age Wise Distribution of Participants Who Denied They Smoke

Sn.	Age groups	No. of participants	%
1	19-25	16	34.78%
2	26-35	16	34.78%
3	36-45	08	17.39%
4	>45	06	13.04%
	Total	46	100%

Table 5: Socioeconomic Distribution Of Participants Who Denied They Smoke

Sn.	Status	No. of participants	%
1	Upper	1	2.3%
2	Upper middle	10	22.7 %
3	Lower middle	18	40.9 %
4	Lower	15	34.1 %
	Total	44(+ 2 MISSSING)	100%

Table 6: Distribution of Social Desirability among Participants Who Denied They Smoke

Sn.	Category social desirability	Total No. of participants	Mean value of social desirability score
1	High (20-33)	40 (86.95%)	28.29
2	Average (9-19)	05 (10.86%)	
3	Low (0-8)	01 (2.17%)	
	Total	46 (100%)	

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Table 7: statistical relationship of social desirability with smoking status.

Sn.	Social desirability	Smoking status		Total	Chi square test	P value
		Yes	No			
1	High (20-33)	23	40	63	55.44	<0.01*
2	Average (9-19)	41	05	46		
3	Low (0-8)	40	01	41		
	Total	104	46	150		

p value≤ 0.05 set to be statistical significant

Table 8: distribution of smoking dependency among smokers who accepted they smoke.

Sn.	Category of smoking dependency	Total
1	High (8+)	53 (50.96%)
2	Moderate (5-7)	28 (28.84%)
3	Low (1-4)	23 (20.19%)
	Total	104 (100%)

Table 9: Relation of social desirability and smoking dependency

Sn.	Category of smoking dependency	Total	Mean value	social desirability score
1	High (8+)	53 (50.96%)	6.78	33 i.e.62.26% had low SDB.
2	Moderate (5-7)	28 (28.84%)		23 i.e.82.14% had mod-high level of SDB
3	Low (1-4)	23 (20.19%)		21 i.e. 91.30% had mod-high level of SDB
	Total	104 (100%)		64 i.e. 61.53% had mod-high level of SDB

Table 10: Statistical Relationship of Social Desirability with Smoking Dependency

Sn.	Smoking dependency	Social desirability			Total	Chi square test	P value
		High	Average	Low			
1	High (8+)	4	16	33	53	43.54	<0.01*
2	Moderate (5-7)	4	19	05	28		
3	Low (1-4)	15	06	02	23		
	Total	23	41	40	104		

p value≤ 0.05 set to be statistical significant

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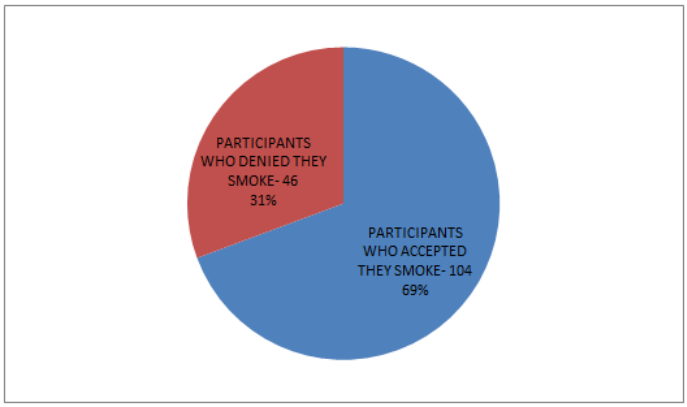
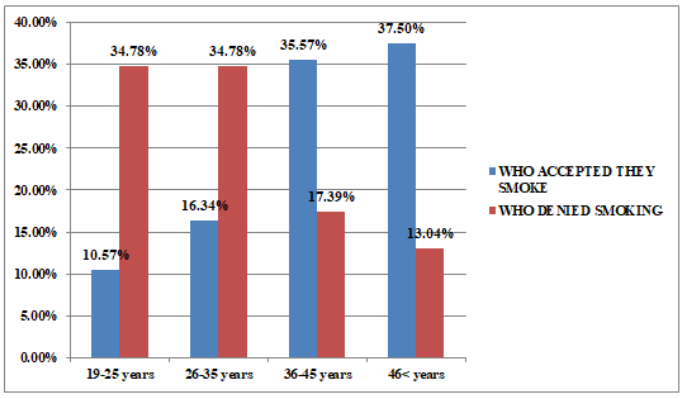
Graph 1: Distribution of Social Desirability among Participants



Graph 2: Age Wise Distribution of Participants



Graph 3: Socioeconomic Status Wise Distribution of Participants

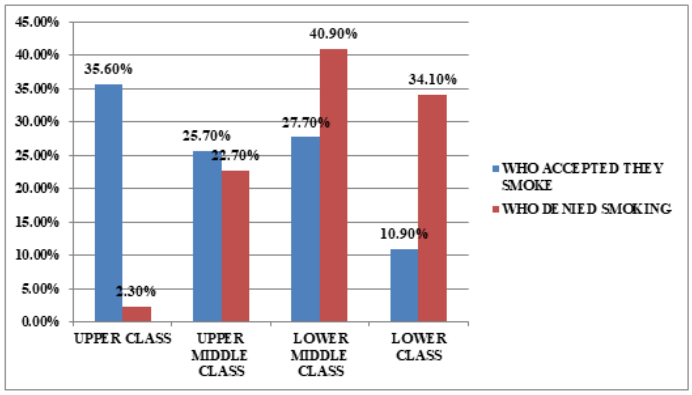
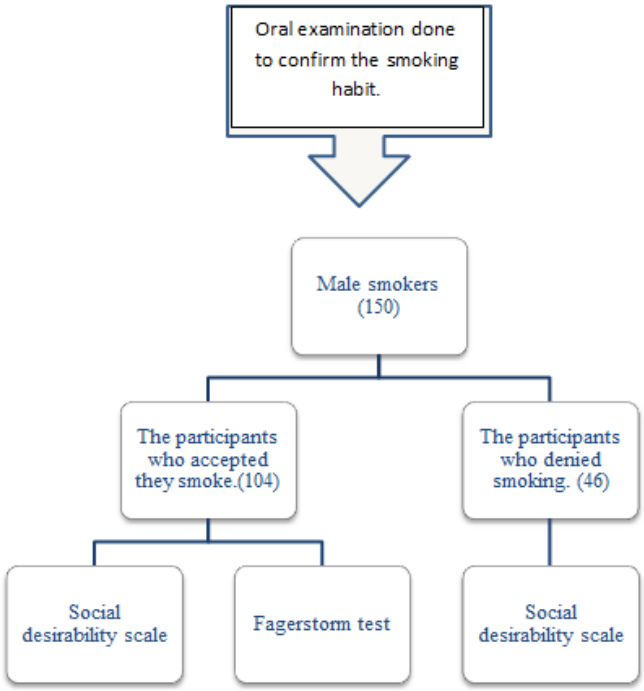


Fig.1 Flow diagram depicting study methodology



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