Respiratory, Cardio-vascular and other Physiological System Associated Illness Among Smokers and Revitalizing Effect of No Smoking: A Human Health Risk Assessment & Management Study at Jhansi, Uttar Pradesh, India

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Respiratory, cardio-vascular and other physiologic Illustrations
Illustration 1: Comparative health status of Smoker
Illustration 2: Specific physiological system rela
Illustration 3: Comparative measure of unhealthy s
Respiratory, Cardio-vascular and other Physiological System Associated Illness Among Smokers and Revitalizing Effect of No Smoking: A Human Health Risk Assessment & Management Study at Jhansi, Uttar Pradesh, India

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Abstract

Quality of life is determined by the sound health behaviors. Whereas behaviors like smoking, tobacco chewing and alcohol consumption persuade moderate to severe, acute and chronic illness of many vital organs of human body. Therefore, in the present study, a human health risk assessment questionnaire (HRAQ) based consented health survey of 2000 individuals of Jhansi city was done to distinguish the major biological systems generally suffer from the smoking and narcotic habits. As a result, about 68% ($n=739/1087$) individuals among smokers in comparison to only 24% ($n=218/913$) among non-smokers were found unhealthy. Total 957/2000 volunteers were assessed unhealthy. All volunteers were keenly observed for any illness related to Respiratory system, Nervous system, Cardio-vascular system, Teeth & Gums, Musculo-skeletal system, Gastrointestinal and Genito-urinary system. The highest complaints ($n=182$) were recorded from Respiratory system while cases related to Genito-urinary system were minimum. Interestingly, about 30% drop in quantity and intensity of illness was reported after dedicated counseling of individuals for passing the smoking free healthy life. So, at one hand where smoking leave a lethal impact on validity of body organs, at the same time proper and endured counseling of individuals for healthy and smoking free life can revitalize the health by some extent.

Introduction

Human health behaviors play a very crucial role in both morbidity and mortality [1]. In a study done by Belloc et al. in 1972 [2] ‘no smoking’ along with six other features of lifestyle was told linked to lower morbidity and healthier survival. Inevitably, the smoking is reported to augment the risk of Coronary Heart Diseases (CHDs) by 2 to 4 times [3, 4, 5] stroke by 2 to 4 times [4, 6] men developing lung cancer by 23 times,[4] women developing lung cancer by 13 times,[4] and dying from chronic obstructive lung diseases such as chronic bronchitis and emphysema by 12 to 13 times [4]. Moreover, many other ailing effects like infertility, preterm delivery, stillbirth, low birth weight and sudden infant death syndrome (SIDS) have also found associated with smoking habits [4, 7]. Therefore, not only the Cardio-vascular but also Respiratory system, Central Nervous system, Reproductive system, Immune system and nearly every organ of human body shows susceptibility for the toxic acquisition of smoking effluents. In India, about 120 million peoples are in grab of smoking related threats. Moreover, figure of tobacco-linked deaths is substantially jumping nearly 3% per year. 70% of all deaths are ranging between 30 to 69 years of age [8]. However, the governments and judiciary have shown their concern on this issue by constituting the laws to reduce smoking and their mortal effects, but flexibility in their pursuance and political interference have made them only hypothetical, not executed well on ground. Consequently, not any significant reduction is observed in smoking and their coupled effects. Since, the count of smokers and associated deaths are mounting every year therefore, serious efforts are needed to be done at ground level to sink the noxious effects of smoking. Generating smokophobia in common man by popularizing the side effects of smoking and turning in a health conscious individual may prove as an executive steps to reduce the sufferers’ agony. Therefore, in the present study, efforts are made to alert the common people from smoking related treacherous health risks, which may be generated because of malfunctioning of the major biological systems. A human health risk assessment questionnaire (HHRAQ)[9] based consented health survey of 2000 individuals of Jhansi city was done to assess and compare the health status of smokers and non-smokers. Description of study area Janhsi, a historical city of central India is globally known as a city of Maharani Laxmi Bai, a great woman warrior of
‘Bhartiya Swatantrata Sangram’. It is located in the plateau of Vidhyachal hill, an area dominated by rocky reliefs and minerals underneath the soil [9]. As per census 2011, Jhansi had population of 2,000,755 of which male and female were 1,061,310 and 939,445 respectively. The average literacy rate was 76.37 compared to 65.47 of 2001 [10].

**Methods**

The human health risk assessment questionnaire (HHRAQ), containing variables of our interest was prepared to study the present health behavior and possible health risks of volunteer [9]. Thirty major questions related to smoking habits and volunteers’ health was incorporated. Moreover, about 10 questions from each, related to Sensory, Cardiovascular, Teeth & Gums, Gastrointestinal, Musculoskeletal, Nervous, and Respiratory and Genitourinary system were included in the study to conclude the volunteers’ health status. Furthermore, considering the education level of selected population the developed HHRAQ was translated in Hindi (mother language of India) for enhanced volunteers’ response and improved data quality [9] so that our extrapolated model could be more synchronized. The HHRAQ based health survey; a central element of study was done in the next step. The individuals were selected randomly with voluntary participation in the survey. Proper consent of every respondent was taken in advance and informed well about the liberty of quitting the survey at any stage as and when he/she feel so inclined. Prior approval from University Ethical Committee of Bundelkhand University, Jhansi was taken for survey. According to provided information, the volunteers were categorized into smokers and non-smokers and then analyzed by developed ‘in-silico tool’ [9] for any infirmity. Furthermore, they were sorted according to infirmity in either one system (out of eight aforementioned systems) or in combined category (if possess complaints related to more than one physiological system of human body). Healthy and unhealthy status of volunteers was decided on the strength of information they provided during survey. Lastly, compared health outcomes were populated to smokers and counselled for passing the smoking free healthy life. After one year, the same population was resurveyed to validate the benefits of counseling and smoking free healthy behavior.

**Results**

Total 2000 volunteers’ data was collected during study. As per smoking related information provided by respondents, about 54% (n=1087/2000) were measured as smokers, involved in Bidi/cigarette smoking, tobacco (Gutkha) chewing etc. Rests 46% (n=913/2000) had presented themselves as non-smokers (Illustration 1.). In comparative health assessment, about 68% individuals among smokers than only 24% among non-smokers were found unhealthy. Thus total 957 out of 2000 volunteers were assessed unhealthy (Illustration 1.). The decision of healthy and unhealthy status of volunteers was entirely based on the information provided by them during questionnaire based health survey. Each volunteer was meticulously surveyed for any illness related to aforementioned eight physiological system of human body. As an outcome, during assessment, highest 182 individuals were reported suffering from respiratory problems. Out of which 147 persons were amongst the smokers (Illustration 2.). Cardio-vascular system related problems with total 174 subjects were at second position. Again, the maximum of them (about 82%) were belonging to smokers’ (Illustration 2). However, problems related to genito-urinary system were least reported. Total 22/2000 individuals had only given the information about malfunctioning of this system. Remaining either denied or told ‘no problem’ in the system. A significant amount of surveyed population (n=92), kept in combined category were suffering from the diseases related to more than one physiological system of human body. Thus, considering the urgency of issue, the observations were populated to smokers and enlightened about the lethal impact of smoking on vital body organs. Concurrently, counseling for passing the smoking free healthy life was also done. Encouragingly, about 60% smokers after getting informed with devastating effects of smoking were agreed to relinquish the smoking and acquire the smoking free healthy life style. After one year, the same population was resurveyed to assess the effect of counseling and consequent cessation of smoking. During this period, they all were living in the similar social, environmental and occupational conditions. Interestingly, about 30% (n=517 than 739 before counseling) quantitative drops in unhealthiness were observed in them (Illustration-3). However, noteworthy revitalization was observed in nearly each system but Respiratory and Cardio-vascular systems were mainly recovered by smoking cessation. The 147, count of volunteers suffering from respiratory problems before counseling got reduced to 111 only within one year. Likewise, 143 cardiovascular sufferers were tracked down to 91. In addition, the people suffering from more
than one system related diseases were dwindled from 92 to 67 in a year (Illustration 3.).

**Discussion**

At present, about 1.3 billion people of the world are involved in smoking. Approximately 5 million deaths per year are reported so far which are projected to rise beyond eight million per year by 2030 [11]. Under various extensive research approaches several deleterious effects of chronic cigarette smoking on human health has been described. As it besides the carcinogenic effects, impedes the cardiac, pulmonary as well as peripheral vascular systems' function [12,13,14,15]. Moreover, direct and indirect effect on brain neurobiology and neurocognition has also been reported in recent studies [16,17,18,19]. Finding of this study of increased illness among smokers shed light on the impact of smoking on health, which is reducing the life expectancy of smokers by inducing the malfunctioning of cardiovascular, respiratory and Nervous system mainly. The outcome of highest respiratory problems among smokers is as per expectation. Since the smoking and tobacco, use leaves its cruel effects on respiratory system of nearly every age smoker. It causes the infections like lower respiratory tract infections and tuberculosis in younger and middle aged smokers while leads to cardiovascular diseases, cancer and chronic lung diseases among elders [8,20,21]. Moreover, chronic cigarette smoking is also reported to cause nocturnal hypoxia [14] as well as chronic obstructive pulmonary disease (COPD) along with several other conditions that may impair lung function [15]. The observation of second highest illness of cardiovascular system among smokers correlates the smoking and tobacco use with prevalence of coronary heart disease and hypertension too [22,23]. During study, the smoking was observed an independent determinant of coronary heart disease in both rural and urban subjects. Finding of least cases from reproductive system may indicate the less effect of smoking on this system but hindered volunteer response was felt the chief reason for the observation of present study. Most of the people while asked about their reproductive system functioning, either denied or gave very little and vague information. Consequently, only 22 out of 2000 volunteers were reported with reproductive system problem. Practically, in India where illiteracy is rampant, educational status could be an important primordial determinant for survey results and many of the risk factors [24]. During study, we felt that educational status of volunteers was major obstruction into getting the actual survey results. Therefore, it is suggested to increase the literacy levels, which could possibly be an achievable solution to curb the tobacco epidemic. Since, cigarettes prematurely kill 50% of long-term users therefore an effective measure that may reduce deaths or illness was attempted in this study. Interestingly, the finding after counseling for passing the smoking free healthy life was encouraging. A significant educated population was agreed to follow the healthy life style. However, it only helps to motivated smokers who were ready to quit the smoking, but the majority of smokers who were neither ready nor willing to attempt to quit were not profited from the applied measure. Likewise, most unaided attempts, which are carried to decrease the health risks by reducing the smoking got, fail to achieve very good results because smokers, due to addiction revert to their 'usual' nicotine intake. However, Nicotine Replacement Therapy (NRT), supplying nicotine from sources other than cigarettes were applied for such smokers in other studies. Data suggest that smokers who use NRT can significantly reduce the withdrawal symptoms and desire caused by abstaining from cigarettes, and thereby reduces the number of cigarettes/day [25].

**Conclusions**

In conclusion, the health behaviors like smoking, tobacco use leads to several health inequities including respiratory, cardiovascular system failure, and finally pre aged death. However, quitting the smoking and following the healthy lifestyle may lessen the distress of smokers by many folds. In addition, the reduced smoking could legitimately treat and decrease the health risks load on those smokers who are currently unable or unwilling to quit the smoking. Literacy level of smokers plays a crucial role in this decision. As it intrinsically relate with the habit of smoking and tobacco use. A smoker with better literacy level can easily understand the cruel face of smoking and be ready to follow the healthy life style. Therefore, improving the educational status of Indian populations could help to control the adverse lifestyle-associated diseases.

**References**


Illustrations

Illustration 1

Comparative health status of Smokers and No Smokers
Illustration 2

Specific physiological system related ill individuals among unhealthy Smokers and Non-smokers.
Illustration 3

Comparative measure of unhealthy smokers
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