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A Report on GIT Disorders and Related Complications in Coal Miners of Shaktinagar, Sonebhadra, Uttar Pradesh

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Abstract

Coal mines is one of the major source of energy in India, but its surrounding environment is very toxic to the persons living near these plants. A small case study has been done with relation to GIT problems and related disorders of the miners. In this study 200 people were selected including male and female and they were divided according to their age. Questionnaires related to GIT problems were prepared, asked to the miners individually and the responses were noted as yes or no. It was observed that people in the age group of 40-50 were more prone to the GIT complications and the total percentage of miner suffering from GIT problems was 60%. Apart from GIT disorders they also faced some other disorders. Hence, the people working in the coal mines must take some preventive measures to get rid of such complications and the authority may also go for routine counseling of the miners.

Keywords Coal mining, Gastro intestinal disorders, Coal miners.

INTRODUCTION

The 20th century is the era of globalization and industrialization, every sector has been developed so fast that anyone cannot imagine. The force of demand and supply leads to massive production of the commodity which leads to pressure on the workers who are working in different industrial sector and cause serious health problems.

Coal mining is an ancient occupation, long recognized as being arduous and liable to injury and disease [1, 2]. The use of large machinery and explosives is essential, inevitably increasing the risk of accident and death. They are potentially noisy, dusty and toxic environment of mines

possessed a constant additional threat to the health of those working in or living around mining projects [3, 4]. Coal miners are most commonly suffering life threatening hazards like, hearing loss in mining, gastritis, pre-existing spinal disorders, the risk of lung cancer, cataracts, chronic obstructive pulmonary disease, pneumoconiosis or 'black lung' and stress [5], gastrointestinal (GIT) disorders (abdominal pain, vomiting, indigestion, mouth ulcer, peptic ulcer, gastritis, jaundice, diarrhea and constipation etc), chronic bronchitis, dermatitis, photosensitization and liver damage etc. [6]

The present study was carried out with a specific aim to focus on health problem especially GIT disorders in miners who work in a difficult environment of coal mines and the related complications which took place and the present perspectives of coal mines environment which leads health problems.

MATERIALS AND METHODS

The study was conducted in the open cast miners of NCL Khadia Project part of Shaktinagar, Sonbhadra, Uttar Pradesh where approximately 1200 workers or coal miners are employed in the project. The project is bordered from east, west & north by other open cast mines i.e. Dudhichua & Bina projects and from the south by the reservoir of Rihand dam where NTPC's super thermal power plant is situated. The whole region is a plateau region where the extreme seasonal variation takes place.

Designing of Questionnaires

Study was planned to carry out questionnaire that comprises of closed / open ended questions and yes / no questions. Those who gave their consent to participate in the study were asked to answer the questions.

1. Age
2. Addiction:-
 - (a) Smoking (b) Alcohol intake (c) Tobacco
3. Do you ever have GIT problem / always encounter with GIT problem (time duration)
 - (a) 1 – 3 months (b) 3 – 6 months (c) 6 – 9 months (d) 1 year or over
4. Do you have / feel
 - (a) Abdominal pain (b) Acidity (c) Indigestion (d) Flatulence
 - (e) Diarrhoea (f) Constipation (g) Appetite (i) Mouth ulcer
5. Do you have any other disease (specify)
6. Total number of minors having GIT problems

Distribution of Questionnaire

A pilot study was conducted on miners after getting consent from the NCL Khadia Project officials to collect the information from the miners. The miners who co-operated were interviewed and information was collected through survey forms.

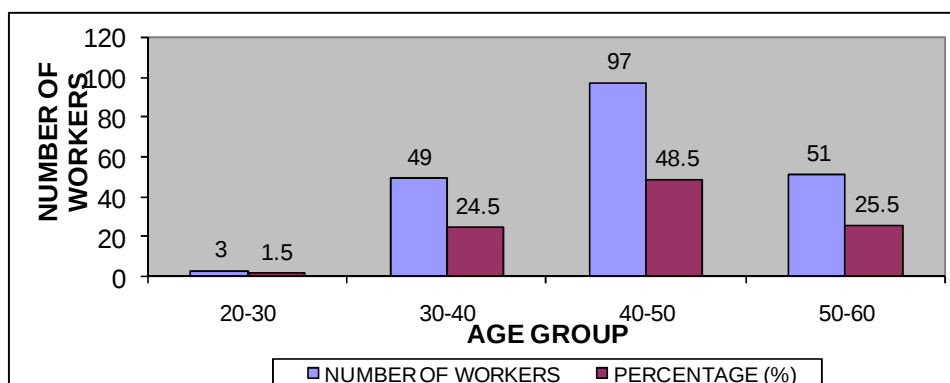
Interpretation and Outcome Assessment

After analyzing the data, the necessary interpretation was done and the outcome of the study was assessed.

RESULT

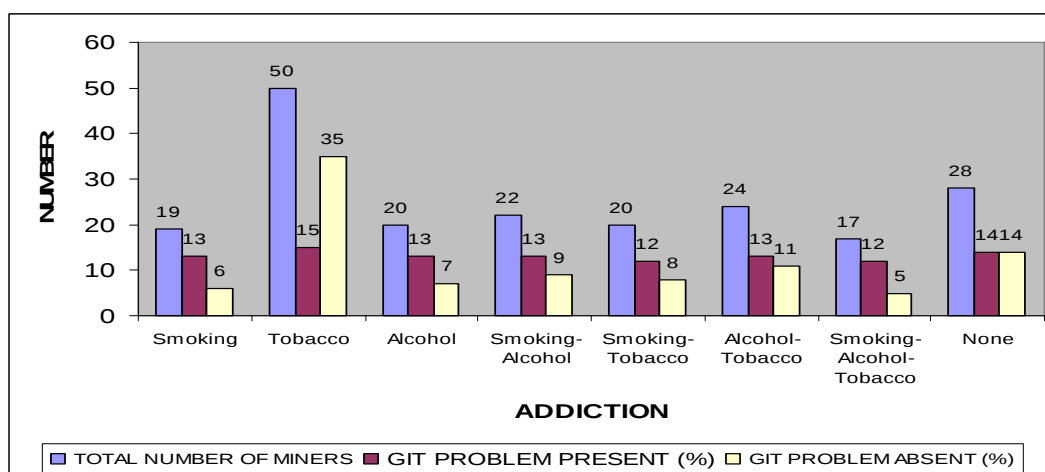
A total of 200 miners were randomly evaluated through the data obtained from the questionnaire. Recent study showed that the age group distribution of coal miners of 20-30, 30-40, 40-50 and 50-60 years were 1.5, 24.5, 48.5 and 25.5% respectively (Figure 1).

Figuer1: Graphical Representation of Demographic Details According to Age Group

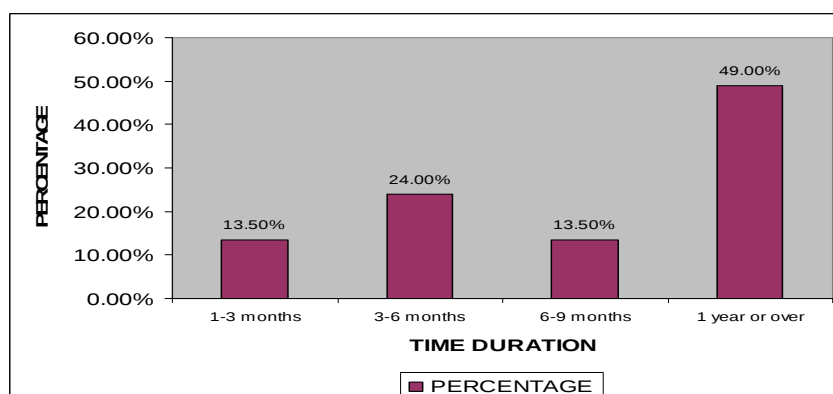


The addiction wise GIT problem in miners i.e. in smokers 68.42% have GIT problem, alcoholics 65.0%, tobacco chewers 30.0% while in combined addiction i.e. smoker-alcoholics (59.09%), smoker-tobacco chewers (60.0%), alcoholics-tobacco chewers (54.16%), smokers- alcoholics-tobacco chewers (70.58%) have GIT problem. Remaining 28 people have no addiction of any types, among these 14 people (50%) have GIT problem and rest 14 people (50%) do not have GIT problem (Figure 2).

Figure 2: Graphical Representation of Addiction wise GIT Problem



The time duration in which the coal miners encounter GIT problem were 13.5% in 1-3 months, 24.0% in 3-6 months, 13.5% in 6-9 months and 49.0% encounter yearly or have GIT problem from more than 1 year i.e. 1-8 years (Figure 3).

Figure 3: Graphical Representation of Time Duration for Encountering GIT Problem

The different symptoms related to GIT problem like abdominal pain, acidity, indigestion, flatulence and mouth ulcers present in the age group of 20-30 was 66.66, 33.33, 100, 66.66 and 33.33% respectively. 12.24, 28.5, 42.85, 36.74 and 24.48% respectively in age group of 30-40. In 40-50 age group 18.55, 30.92, 46.39, 39.17 and 16.49% respectively while 17.64, 41.17, 43.13, 37.25 and 19.60% respectively in the age group of 50-60 (Figure 4).

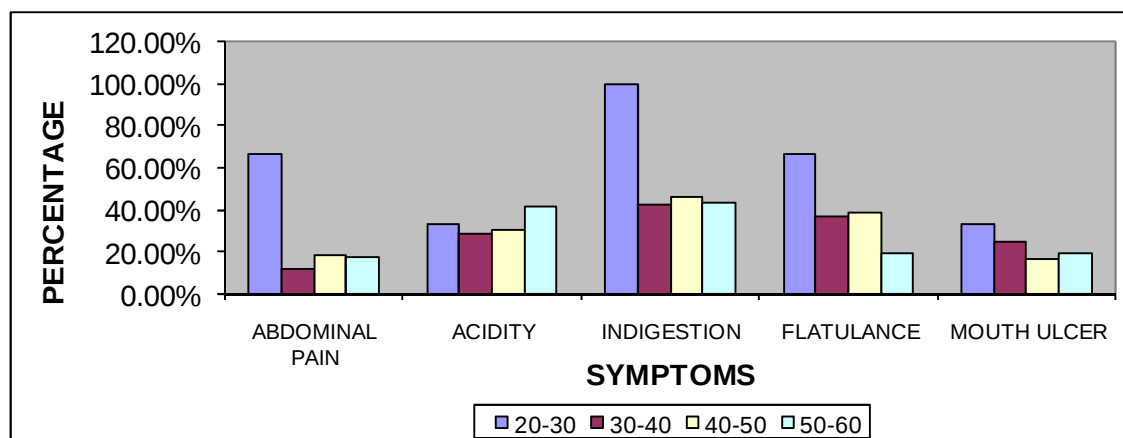
Figure 4: Graphical Representation of symptoms related to GIT problem

Figure 5 showed the miners having other diseases along with GIT problem: 0.5% (cardiac), 20.5% (diabetes), 1.0% (thyroid disorder), 21.9% (blood pressure), 0.5% (bone problem), 3.0% (skin problem), 1.0% (liver disorder), 2.5% (respiratory disorder) and 1.5% (blood disorder). Among 200 people, 120(60%) people have GIT problem (figure 6).

Figure 5: Graphical Representation of Other Diseases Along With GIT Problem
 C, cardiac disorder; Di, diabetes; Th, thyroid; BP, blood pressure; Bd, bone disorder; S, skin disorder; L, liver disorder; R, respiratory disorder; Bl, blood disorder.

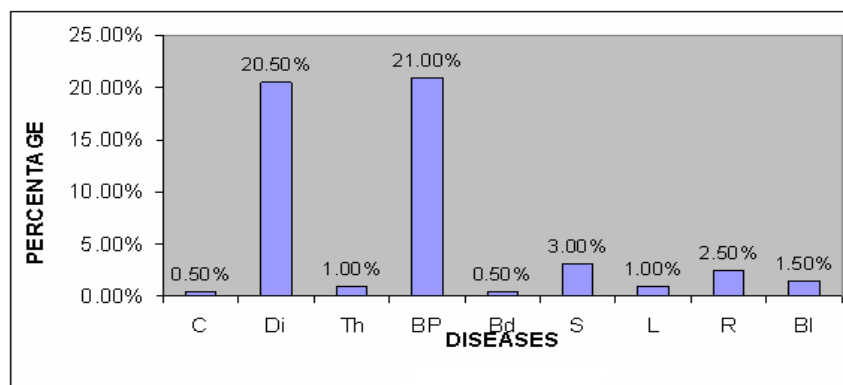
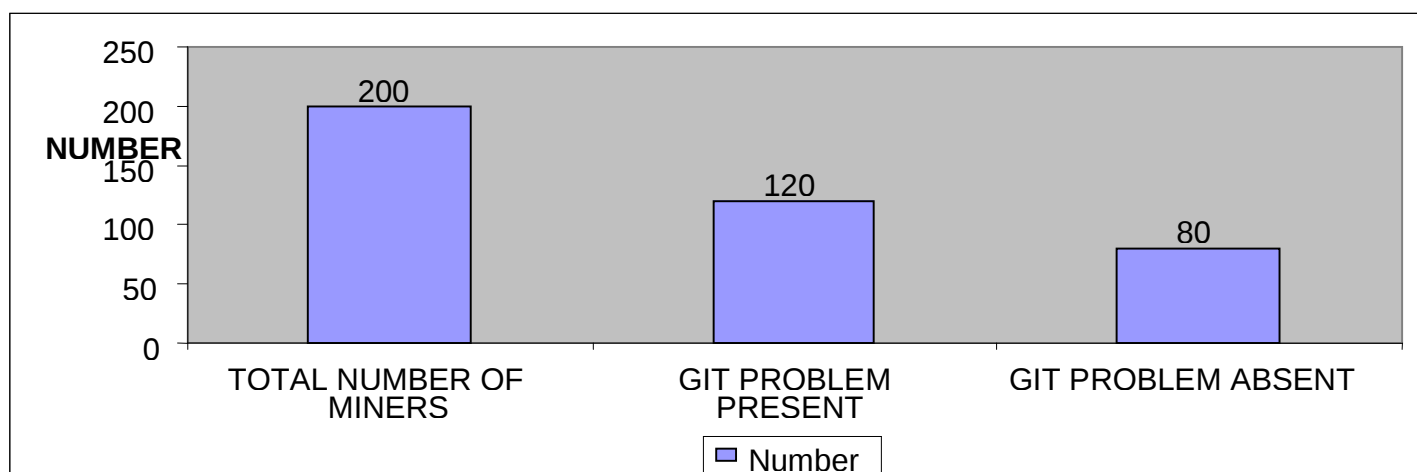


Figure 6: Graphical Representation of Number of Miners Having GIT



DISCUSSION

This present study revealed that maximum number of miners was found to be involved in GIT disorders mainly due to the toxic environment and additionally due to other factors. The maximum number of coal miners was in the productive age range of 40-50 i.e. 48.57% and maximum GIT problem was also present in this age group,

In coal miners, GIT problems may be due to Sulphuric acid which results from wetting of coal and hydrogen fluoride and other toxic dust particles which could be swallowed[7]. Additional reason for GIT problem may be due to decline in the population of colonic enteric neurons which begins early in life, with marked decreases in both submucosal and myenteric plexuses occurring as early as in the 4th yr. In later years, this neurodegeneration of aging in the myenteric plexus

continues with a further 37% reduction in the total population of neurons between ages 20-35 and 65. Age-related changes in the human colonic sub mucosal plexus in advanced age have not been reported [8]. Another additional reason may be smokes, alcohols and tobacco chewing which may lead to GIT disturbance. Tobacco, alcohol and psychotropic drugs are strong contributors to social disparities in health [9].

In tobacco chewers and smokers the GIT problem is due to the nicotine present in it. Nicotine is readily absorbed from the respiratory tract, buccal membrane, skin and causes the combined effect or activation of parasympathetic ganglia and cholinergic nerve endings result in increased tone and motor activity of the bowel along with nausea, vomiting and occasional diarrhea (10, 11). That is why smoking, tobacco chewing and alcohol addicted persons have more chance to develop GIT problem including toxic environment of mines.

In miners respiratory disease are due to the exposure to the coal dust and Sulphuric acid which is produced by rock wastes or spoil discarded in piles and when exposed to water and oxygen and also the exposure of sulphur bed present in mines [4].

This study reveals the complication of GIT problem in the coal miners who are working in a different environment. From day to day, the problem is being increasingly worsening which is affecting the coal miner's quality of life, family life, society and above all the nation. It needs to be seriously monitored before it's too late. The recent study revealed that environment of coal miners is very dangerous for the health which can produce havoc in the life of miners. They are more prone to various life threatening diseases including GIT disorders due to the surrounding toxic environment.

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