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## Assessment of lower respiratory tract infections in patients with diabetes mellitus

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### Abstract

Respiratory diseases are one of the most common diseases that occur in India. Assessment of respiratory infections in the patients with diabetes is essential to prevent damage of respiratory system. Early diagnosis helps to treat the patients adequately and to decrease the mortality rate. The present study was undertaken to assess the lower respiratory tract infections in patients with diabetes mellitus. A total of thirty cases of diabetes patients with respiratory infections were screened. Both males and females were included in the study. Male and female participant's ratio was 13: 17 in the present study. Majority of the participants were smokers. The present study presents the respiratory illness in the patients with diabetes mellitus. The results may not be generalized. Hence, the study recommends further detailed studies for better understanding of the relation between the respiratory infections and diabetes mellitus.

**Keywords:** Diabetes mellitus, tuberculosis, respiratory infections

### Introduction

Respiratory diseases are one of the most common diseases that occurs in India <sup>[1-2]</sup>. Due to drastic life style changes, diabetes became a global disease and both developed and developing countries are affected by it. India was labeled as diabetes capital of the world with highest number of cases of diabetes <sup>[3]</sup>. As there is depletion of proteins due to excessive use of proteins in place of carbohydrates, the immune system of these patients is compromised. Due to this reason, these patients become more prone to develop the infections. Further, the infections are more common in the lower respiratory tract. It was reported that there is declined movement in the cilia in the lining of the respiratory tract of diabetes patients. This will further increase the prevalence of development of infections <sup>[4, 5]</sup>. Earlier studies reported that the diabetic patients with respiratory infections possess severe clinical features and high mortality in these patients <sup>[6]</sup>. Tuberculosis is most common lower respiratory tract infection seen in the diabetic patients <sup>[7]</sup>. Hence, assessment of respiratory infections in the patients with diabetes is essential to prevent damage of respiratory system. Early diagnosis helps to treat the patients adequately and to decrease the mortality rate. The present study was undertaken to assess the lower respiratory tract infections in patients with diabetes mellitus.

### Materials and methods

**Study design:** The present study was observational study.

**Study setting:** The present study was conducted at department of pulmonary medicine, Government Medical College, Anantapuramu.

**Study participants:** A total of thirty cases of diabetes patients with respiratory infections were screened. Both males and females were included in the study. The age group of the participants included was 20- 60 years. Willing participants were included in the study. Those with severe respiratory illness were excluded from the study.

**Methods:** After recruiting the participants were subjected to complete physical examination. Demographic data was obtained from all the participants. Routine hematological, biochemical and microbiological tests were done to all the participants.

**Ethical considerations:** The present study was approved by the institutional human ethical

committee. Informed consent was obtained from all the participants after explaining the details of the study. Confidentiality was maintained about the results.

**Data analysis:** Data was analyzed using SPSS 20.0 version. Data was analyzed applying the qualitative statistics.

**Results:** Table 1 presents the age group of the participants. Male and female participant's ratio was 13: 17 in the present study. Table no 2 present's addiction status of the participants. Majority of the participants were smokers. Table no 3 presents the duration of diabetes of the participants. Table no 4 presents the details about the isolated organisms of the participants.

**Table 1:** Age group of the participants

| Age group     | Frequency and percentage |
|---------------|--------------------------|
| 20 – 30 years | 10 (33.3)                |
| 31-40 years   | 5 (16.6)                 |
| 41-50 years   | 5 (16.6)                 |
| 51-60 years   | 10 (33.3)                |

Data was presented as frequency and percentage

**Table 2:** Addiction status of the participants

| Addiction status | Frequency and percentage |
|------------------|--------------------------|
| Not addicted     | 8 (26.6)                 |
| Smoking          | 12 (40)                  |
| Alcohol          | 5 (16.6)                 |
| Tobacco chewing  | 5 (16.6)                 |

Data was presented as frequency and percentage

**Table 3:** Duration of diabetes of the participants

| Duration of diabetes | Frequency and percentage |
|----------------------|--------------------------|
| <1 year              | 2 (6.6)                  |
| 1-2 years            | 3 (10)                   |
| 2-3 years            | 5 (16.6)                 |
| 3-4 years            | 5 (16.6)                 |
| 4-5 years            | 15 (50)                  |

Data was presented as frequency and percentage

**Table 4:** Isolated organisms of the participants

| Organisms                  | Frequency and percentage |
|----------------------------|--------------------------|
| Mycobacterium tuberculosis | 6 (20)                   |
| Streptococcus pneumonia    | 6 (20)                   |
| Influenza A (H1N1)         | 6 (20)                   |
| Staphylococcus aureus      | 2 (6.6)                  |
| Klebsiella pneumonia       | 9 (30)                   |
| No pathogen isolated       | 1 (3.33)                 |

Data was presented as frequency and percentage

## Discussion

Assessment of respiratory infections in the patients with diabetes is essential to prevent damage of respiratory system. Early diagnosis helps to treat the patients adequately and to decrease the mortality rate. The present study was undertaken to assess the lower respiratory tract infections in patients with diabetes mellitus. Table 1 presents the age group of the participants. Male and female participant's ratio was 13: 17 in the present study. Table no 2 present's addiction status of the participants. Majority of the participants were smokers. Table no 3 presents the duration of diabetes of the participants. Table no 4 presents the details about the isolated organisms of the participants.

The relation between the respiratory infections and diabetes is very complicated. The diabetes causes decrease in the protein content of the body. This will lead to decrease in the immune functions of the patients. Decline in these immune functions cause increased prevalence to development of the respiratory infections. At the same time these respiratory infections will aggravate the hyperglycemia. Hence, there is a strong need to diagnose the respiratory infections at the earliest to offer adequate treatment to the patients [8-11]. The present study results are in accordance with earlier studies as we have observed high prevalence of respiratory infections in the patients with diabetes.

## Conclusion

The present study presents the respiratory illness in the patients with diabetes mellitus. The results may not be generalized. Hence, the study recommends further detailed studies for better understanding of the relation between the respiratory infections and diabetes mellitus.

**Conflicts of interest:** None declared

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