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Prevalence of Hypoxia in Ipd Patients in Medicine Department of a Teaching Hospital in Ahmednagar

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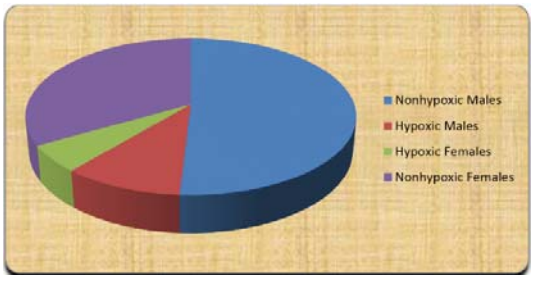
Abstract
Hypoxia may indicate presence of critical conditions where immediate oxygen therapy is required. Undiagnosed hypoxia may prove fatal and successful treatment of tissue hypoxia requires early recognition. This study was conducted to study the prevalence of hypoxia in IPD patients in Medicine department of a teaching hospital. We studied all IPD patients in medicine department during 30 days of study. Oxygen saturation (SpO_2) was measured with the help of a pulse oximeter in all the patients. Hypoxia was diagnosed in a patient when SpO_2 was less than 90%.
Unnoticed hypoxia was detected in a significant number of patients admitted in medicine department of the hospital. Hypoxia was also noticed in some patients with non-respiratory disease. Therefore, it is concluded that oxygen saturation measurements should be included with other vital parameters like pulse, temperature, and blood pressure, in the monitoring chart of all the patients. Measurement of O_2 saturation altered the management of all hypoxemic and several normoxemic patients. Diagnosis of hypoxemia via pulse oximetry at a low cost should be expanded in under-resourced settings.

Keywords: Hypoxia, SPO2.

1. Introduction
Hypoxia is a condition in which the body or a region of the body is deprived of adequate oxygen supply. Hypoxia may indicate presence of critical conditions where immediate oxygen therapy is required. Undiagnosed hypoxia may prove fatal and successful treatment of tissue hypoxia requires early recognition.
Pulse oximetry is a technology that is used routinely for diagnosis of hypoxia in high income countries. Pulse oximetry has been shown in large trials to be more effective than clinical judgment in the detection of hypoxia [1] and is well established in developed countries as the fifth vital sign in patients of all ages [2]. Pulse oximetry in emergency triage has also been shown to save costs in a hospital by enabling staff to target oxygen therapy more accurately. Unfortunately, pulse oximetry is often unavailable in resource limited clinical settings.
However, overall, the literature evaluating the impact of pulse oximetry in resource limited settings is sparse, and the prevalence of hypoxemia among adults in low income countries remains largely unknown.
Oxygen therapy is essential in clinical states of respiratory failure such as pneumonia, severe asthma, chronic bronchitis, myocardial infarction, pulmonary edema and postoperative states [3, 4]. Unnoticed hypoxia has been reported in admitted patients in many studies [3, 4].
Oxygen is still prescribed on the basis of clinical evaluation in majority of the hospitals. It may not be an accurate and reliable method. Though oximetry is available in some wards, it remains unutilized.
The aim of our study is to assess the prevalence of hypoxia in the patients admitted in medicine department with the help of pulse oximeter.

2. Materials and Methods
- A cross section study was conducted in the Department of General Medicine.
- We studied all the patients admitted in medicine department (wards and ICU) during one month of study.
- Explaining the purpose of the study verbal consent of every patient was taken.
- Details of patients were noted in a proforma that included name, age, sex, history of smoking, diagnosis, pulse, B.P. and SPO2 (oxygen saturation).
- Oxygen saturation (SpO2) of the patients was measured with a pulse oximeter.
- SpO2 reading less than 90% was taken as hypoxia.

3. Results
- In this study, a total of 648 IPD patients in medicine were evaluated over a period of one month.
- Out of them, 396 were males and 252 were females.
- Of all the patients, 102 (15.74%) were found to be hypoxic.
- Among 102 patients of hypoxia, 36(35.29%) were females and 66 (64.70%) were males.
- In patients with normal oxygen saturation [546], 216 (39.56%) were females and 330 (60.44%) were males.



- Hypoxia was noted in 36(35.29%) patients who had respiratory disease and 66(64.70%) hypoxic patients had non respiratory disease.
- Among 66 hypoxic males Respiratory disease was most frequently found whereas cardiovascular disease was commonly seen among hypoxic females.

Sr. No.	Disease	No of Male Patients	No of Female Patients	Total No of Patients
1	Rs	30	6	36
2	Cvs	12	18	30
3	Cns	12	6	18
4	Git	6	0	6
5	Nephro	6	0	6
6	Others	0	6	6
	Total	66	36	102

3.1. Frequency of Diseases in Hypoxic Patients

- Overall hypoxia was most frequently found in patients of Ischemic heart disease with congestive cardiac failure (30 out of 102 hypoxic patients).
- 36 (35.29%) of all the hypoxic patients were smokers while 66 (64.70%) were non-smokers.
- 88.23% of the total hypoxic patients were diagnosed for the first time.

4. Discussion

Early recognition of hypoxia leads to successful treatment and can prevent unwanted morbidity and mortality. The diagnosis of hypoxia is often difficult clinically and is delayed because the clinical features are nonspecific and may be related to the underlying conditions.

Symptoms of hypoxia such as altered mental state, cyanosis, dyspnea, tachypnea or hypoventilation, arrhythmias, peripheral vasodilatation, systemic hypotension, nausea, vomiting, gastrointestinal disturbances and coma are not confirmatory [5].

Pulse oximeter is a reasonably good indicator of oxygenation status of the patient although it has its limitations in low cardiac output states, anemia, carbon dioxide retention and shock [5]. Despite this, pulse oximeter should be used as a portable device in the wards to screen the patients of unnoticed respiratory failure.

In this study, 15.74% of the total admitted patients in medicine department had hypoxia. In previous studies [6] carried out in various hospitals, 7.8% to 40% of the study subjects had hypoxia. A similar study carried out by Singh *et al.* [7] in Rajasthan found 10.36% of the total patients admitted in the hospital had hypoxia. Another similar study by Amandeep *et al*. [8] in Gurgaon had 11% of the patients in their wards had hypoxia.

Hypoxia was noted in 35.29% patients who had respiratory disease and 64.70% hypoxic patients had non-respiratory disease. In our study the most common diagnosis among the patients of hypoxia was Ischemic heart disease with congestive cardiac failure. In an earlier study, [9] nocturnal hypoxia was found to be very common in the patients of stroke.

In our country continuous monitoring of the patients in not possible as the doctor-patient ratio in very low. Pulse oximeter proves to be an ideal handy device for an early recognition of a previously undiagnosed hypoxia.

In our study, 88.23% of the total hypoxic patients were diagnosed for the first time. By early recognition, this major group of the patients can be saved from serious consequences of hypoxia i.e. cardiac and respiratory arrest, hypotension and metabolic acidosis [10].

Early recognition of hypoxia helps for proper management of patients with oxygen or intubation if required and avoid unexpected complications**.**

5. Conclusion

- Significant number of patients (15.74%) in our study were found to be hypoxic.
- Hypoxia should be detected at an early stage so as to prevent serious consequences.
- Early recognition of hypoxia helps for proper management of patient with oxygen or intubation if required and avoid unexpected complications**.**
- Pulse oximeter is a simple, non-invasive, and reliable method to detect it and also for proper monitoring of oxygen therapy after diagnosis of hypoxia.
- Therefore, it should be included in the daily monitoring chart of all the admitted patients.

6. References

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