Acil Serviste Oksijenin Nasıl Doğru Kullanılacağını Biliyormuyuz?

Do We Know How to Use Oxygen Properly in Emergeny Department?

Oksijen Tedavisi Bilgi Düzeyi / Knowledge of Oxygen Therapy

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Özet

Amaç

Acil serviste görev yapan hekim ve hemşirelerinin oksijen tedavisi ile ilgili bilgi düzeylerini belirlemektir.

Gereç ve Yöntemler

Oksijen tedavisi bilgi düzeylerini değerlendirebilmek amacıyla 7 sorulu bir anket geliştirilerek uygulandı. Çalışmaya 2 üniversite hastanesi acil servisinde görev yapan 20 hemşire, 30 asistan ve 50 intern doktor toplam 100 kişi dahil edildi.

Bulgular

Katılımcıların ankete cevap oranı %100'dü. Oksijen tedavisi ile ilgili soruların tamamına doğru cevap veren katılımcı sadece %9 olarak tespit edildi.

Sonuç

Çalışmamız acil serviste görev yapan doktor ve hemşirelerin doğru oksijen tedavisi ile ilgili bilgi düzeylerinde önemli eksiklikler olduğunu göstermiştir. Oksijen tedavisi konusundaki bilgi eksikliğinin hastaların tedavi sonuçlarını olumsuz yönde etkileyeceği göz önüne alındığında, acil servis hekim ve hemşirelerinin bu konuda eğitim almasını ve fakülte eğitim müfredatlarında bu konuya dikkat edilmesini tavsiye ediyoruz.

Anahtar Kelimeler

Oksijen, Tedavi, Acil, Bilgi Düzeyi, Maske.

Abstract

Aim

The aim of this study was to determine emergency department doctors' and nurses' knowledge regarding oxygen therapy.

Material and Methods

A 7-item questionnaire survey was developed and applied to assess knowledge of oxygen therapy. The questionnaire was administered to a total of 100 (20 nurses, 30 resident physicians and 50 intern doctors (last-year medical students) staff from two university teaching hospital in Ankara, Türkiye.

Results

A response rate of 100% was achieved from participants in the study. Only 9% of the participants answered all the questions correctly on oxygen therapy.

Conclusions

Our study shows that emergency medical staffs have significant gaps in their knowledge on appropriate oxygen therapy. Since deficiencies in emergency medicine staffs knowledge on treatment with oxygen deficits influence patient's outcome, we recommend that emergency medicine staff should be trained regarding oxygen therapy and medical schools should pay much more attention to this issue in their curricula.

Keywords

Oxygen, Treatment, Emergency, Knowledge, Mask.

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Introduction

Oxygen therapy is essential in many clinical situations that cause hypoxemia in emergency department. Therefore it becomes one of the routine interventions which are ordered and applied in everyday practice of emergency department (ED) staff. The idea that oxygen therapy is a simple and routine intervention can cause serious mistakes. Both insufficient and excessive use of oxygen can be harmful for patient in different clinical situations. Insufficient oxygen can lead tissue damage, on the other hand excessive oxygen therapy can cause respiratory depression and arrest in COPD patient. Beside this overestimation the risk of respiratory depression can cause insufficient oxygen therapy of COPD patient. There are several ways to administer oxygen such as low flow masks (nasal cannula, simple face masks and face masks with reservoir bag) and high flow masks (sometimes called Venturi masks). It is important to decide mask type and oxygen concentration (FiO_2), which should be chosen in different clinical situations.[1-4] Because of this emergency staff should know how to provide appropriate oxygen therapy in different clinical situations.

We believed that although oxygen is used routinely in emergency department, ED staff does not know how to use it properly. The aim of this study was to determine emergency department doctors' and nurses' knowledge regarding oxygen therapy.

Material and Methods

A 7-item questionnaire survey was developed and applied to assess knowledge of oxygen therapy. The questionnaire was administered to a total of 100 (20 nurses, 30 resident physicians and 50 intern doctors (last-year medical students) staff from two university teaching hospital in Ankara, Türkiye.

Subjects were questioned to name different oxygen masks, to determine the accurate flow of oxygen delivered in various patients and find out the most appropriate mask for a given clinical situation.

Table 1. Answers of the questions

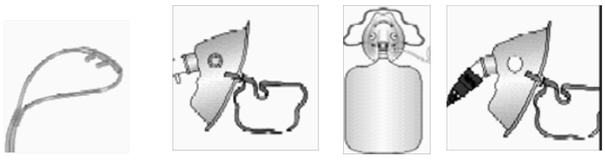
	Correct Answers
1	I. Venturi mask & d II. Nasal mask. & a III. Simple face mask. & b IV. Non-rebreather mask & c
2	1. Non-rebreather mask 2. Venturi mask 3. Simple face mask 4. Nasal mask
3	I. Asthma Bronchiole Simple face mask II. Cardiogenic Shock Non-rebreather mask III. COPD exacerbation Venturi mask IV. Post-op patient Nasal mask
4	COPD exacerbation patient & e) Amount of O2% vary from patient to patient
5	Level the flowmetre 10-15 L/min
6	Asthma Bronchiole patient & d) Until SpO2>95%
7	Moisturize the oxygen b) Distilled Water

Table 2. Distribution of accuracy of questions in each group

Question	Resident Physicians (n=30)	Nurses (n=20)	Intern Doctors (n=50)	Total (n=100)
1	25 (83%)	6 (30%)	7 (54%)	58 (58%)
2	12 (40%)	5 (25%)	10 (20%)	27 (27%)
3	4 (13%)	0 (0%)	9 (18%)	13 (13%)
4	5 (16%)	3 (15%)	5 (10%)	13 (13%)
5	8 (26%)	1 (5%)	6 (12%)	15 (15%)
6	17 (56%)	9 (45%)	28 (56%)	54 (54%)
7	26 (86%)	20 (100%)	50 (100%)	96 (96%)

Figure1. Questionnaire on oxygen thearapy

1.Match the masks appropriately.



a b c d

I. Venturi mask.....
II. Nasal mask.....
III. Simple face mask.....
IV. Non-rebreather mask.....

2. Put them into the correct order from the highest to the lowest oxygen flow.
1..... 2..... 3..... 4.....

3. Match the appropriate mask with the patients given below?
I. Asthma Bronchiole.....
II. Cardiogenic Shock.....
III. COPD exacerbation.....
IV. Post-op patient.....

4. How many liters of oxygen can be given at most to COPD exacerbation patient?
a) 1-2 l/min b) 3-4 l/min c) 5-6 l/min d) Until SpO2>95% e) Amount of O2% vary from patient to patient

5. To which level the flowmetre (l/min) should be adjusted to obtain 100% O2 with facemask connected to a BVM?.....

6. How many liters of oxygen can be given at most to Asthma Bronchiole patient?
a) 1-2 l/min b) 3-4 l/min c) 5-6 l/min d) Until SpO2>95% e) Amount of O2% vary from patient to patient

7. Which is the correct substance used to moisturize the oxygen?
a) % 0.9 NaCl b) Distilled Water c) % 0.45 NaCl d) % 5 Dextrose e) Fresh tap water

Questions of the survey are shown in Figure1 and the answers of the questions are given in Table-1. After the questionnaires were completed correct answers were given to participants. Statistical analyses were calculated by Statistical Package for Social Sciences (SPSS) for Windows, Version 11.0.

Results

There were 100 participants in the study: 20 nurses, 30 resident physicians and 50 intern doctors. A response rate of 100% was achieved from participants in the study. Only 9% of the participants answered all the questions correctly on oxygen therapy. First question was answered correctly by 58% of participant. The other questions were answered correctly in following order; second question 27%, third question 13%, fourth question 13%, fifth question 15%, sixth question 54%, seventh question 96 %. Distribution of accuracy of questions in each group showed in Table-2.

Discussion

Our study showed that there are marked gaps in emergency de-

partment staff's knowledge about oxygen therapy. Unfortunately only 9% of the participants answered all the questions correctly on oxygen therapy. There are a few studies on knowledge of oxygen therapy. In one of those studies; Hacıevliyagil and friends showed the educational gaps of resident physicians about oxygen therapy from different clinics.[5] In another study that Ganeshan at al. tested the knowledge of junior doctors and nurses found that their participants do not have sufficient knowledge and understanding of oxygen therapy.[4] These study reports are consistent with our results.

On our survey, in the first question that was just asking the recognition of oxygen delivery devices, only 58% of the participants could able to answer it correctly. This unexpected result showed us the uncommon use of some of the oxygen delivery devices such as non-rebreather mask and Venturi mask. But both type of mask have real importance in clinical practice of emergency medicine. Venturi masks(high flow mask) fixes oxygen concentration in a desired level (24-60%), so using these masks in patient with COPD and type II respiratory failure reduce the risk of carbon dioxide retention while improving hypoxemia. On the other hand non-rebreather masks give us the opportunity to deliver high oxygen concentration (60-100%) to patients.

Third question gave us the worst news that only 13% of all health professionals (especially nurses which is 0%) working in an acute hospital settingwere able to treat the patiens by choosing appropriate mask at different clinical situations. We think that the reason of this that they are not aware of the differences of different oxygen delivery apparatus. Whereas all health professionals working in an acute hospital settingshould be familiar with all type of oxygen mask and their proper use.

Another worst worrying answer rate was of fifth question regarding Bag Valve Mask (BVM) oxygen flow rate. Only 15% of medical staff knew the right answer. Our results showed that BMV was mostly used with low oxygen flow rate like simple face mask. Whereas BVM is mostly used during cardiopulmonary arrest and like each steps of Basic Life Support and Advanced Life Support appropriate application of BMV including right oxygen flow rate affect the successful outcome.

The highest right answer rate 96% of our survey is moisturizing which is another issue regarding oxygen therapy. We have considered that distilled water was well known because of its routine use in daily clinical practice.

As a result of deficient knowledge of oxygen therapy,oxygen therapy mistakes showed up at an acute hospital setting. Fitzgerald's study showed that 21% of hospitalized patient having insufficient oxygen therapy and 85% of them not properly followed.[6] In another study that compared oxygen therapy with antibiotics therapy on internal medicine patient showed that oxygen prescription and delivery is associated with significantly greater error than antibiotics.[7]

Regarding the educational gap about oxygen therapy , during our study , by giving answers to participants, we aimed to contribute training the emergency medicine staffs at the same time., in order to ensure safe and effective oxygen administration , oxygen orders should cover the flow rate, delivery system, duration, and monitoring of treatment according to the guidelines for administration of oxygen.[1-3] Therefore medical schools and residency programs place more emphasis on teaching the principles and applications of oxygen therapy tobe able to order and administer the oxygen appropriately and safely.

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