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# HOME VISIT AS AN INTERVENTION INSTRUMENT IN EXTENDED HOME OXYGEN THERAPY

## A VISITA DOMICILIAR COMO INSTRUMENTO DE INTERVENÇÃO NA OXIGENOTERAPIA DOMICILIAR PROLONGADA

## LA VISITA DOMICILIARIA COMO INSTRUMENTO DE INTERVENCIÓN EN LA OXIGENOTERAPIA DOMICILIAR PROLONGADA

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**ABSTRACT**

***Objective***: to verify the contribution of home visits as a tool to evaluate the conditions of using home oxygen therapy. ***Method***: a descriptive and cross-sectional study with a quantitative approach, visiting 54 patients with COPD of a home oxygen therapy program in the city of Bauru/SP/Brazil. Data were collected with a form, analyzed by the Statistical Analysis System (SAS) v.9.3, presented in a single frequency. ***Results***: the patients had a mean age of 67.9 years old, 51.9% male. Active smoking was reported by 14.8% of patients. Most of them, 66.6% used $O_2$ only at night. The average time of use $O_2$ was 14.6 hours/day. ***Conclusion***: home visits identified inadequacies in the use of oxygen that interferes with treatment. ***Descriptors***: Primary Health Care; COPD; Smoking; Oxygen Therapy; Home Visit.

**RESUMO**

***Objetivo*:** verificar a contribuição da visita domiciliar como instrumento para avaliar as condições de uso da oxigenoterapia domiciliar. ***Método*:** estudo transversal descritivo, com abordagem quantitativa, no qual foram visitados 54 pacientes com DPOC de um programa de oxigenoterapia domiciliar na cidade de Bauru/SP/Brasil. Os dados foram coletados com um formulário, analisados pelo Statistical Analysis System (SAS) v.9.3 e apresentados em frequência simples. ***Resultados*:** os pacientes tinham idade média de 67.9 anos, sendo 51.9% do sexo masculino. O tabagismo ativo foi relatado por 14.8%. A maioria 66.6% utilizava $O_2$ apenas no período noturno. O tempo médio de uso do $O_2$ foi 14.6 h/dia. ***Conclusão*:** a visita domiciliar identificou inadequações no uso de oxigênio que interferem no tratamento. ***Descritores*:** Atenção Primária de Saúde; DPOC; Tabagismo; Oxigenoterapia; Visita Domiciliar.

**RESUMEN**

***Objetivo*:** verificar la contribución de la visita domiciliaria como instrumento para evaluar las condiciones de uso de la oxigenoterapia domiciliaria. ***Método*:** estudio transversal descriptivo, con enfoque cuantitativo, en el cual fueron visitados 54 pacientes con DPOC de un programa de oxigenoterapia domiciliaria en la ciudad de Bauru/SP/Brasil. Los datos fueron recogidos con un formulario, analizados por Statistical Analysis System (SAS) v.9.3, presentados en frecuencia simple. ***Resultados*:** los pacientes tenían edad media de 67.9 años, siendo 51.9% del sexo masculino. El tabaquismo activo fue relatado por 14.8%. La mayoría 66.6% utilizaba $O_2$ apenas en el período nocturno. El tiempo medio de uso de $O_2$ fue 14.6 h/día. ***Conclusión*:** la visita domiciliaria identificó inadecuaciones en el uso de oxígeno que interfieren en el tratamiento. ***Descriptores*:** Atención Primaria de Salud; DPOC; Tabaquismo; Oxigenoterapia; Visita Domiciliaria.

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## INTRODUCTION

Oxygen therapy is scientifically proven and validated for the treatment of patients with Chronic Obstructive Pulmonary Disease (COPD), being a non-pharmacological treatment that can be administered in three ways: while performing exercises to relieve acute dyspnea and prolonged use of therapy. The main goal of this therapy is to increase the $PaO_2$ 60 mm Hg or higher saturation to 90% ensuring transport of oxygen and preserving the function of vital organs.[1]

The scientific arguments for using Oxygen Therapy Homecare Extended (OTHE) in severe chronic hypoxemia individuals were based on two classic multicenter studies: the North American Nocturnal Oxygen Therapy Trial (NOTT) and the British Medical Research Council (MRC) that were published in the 80s.[2-3]

The OTHE is indicated when the patient has $PaO_2 \leq 55$ mm Hg or $SaO_2 \leq 88\%$ with or without hypercapnia (**Evidence B**); or $PaO_2$ between 55 mm Hg and 60 mm Hg or 88% $SaO^2$ if there is evidence of pulmonary hypertension, peripheral edema suggesting congestive heart failure, or polycythemia (hematocrit> 55%) (**Evidence D**).[1,4]

Although the OTHE therapy has evolved a lot over the years, there are still unresolved problems, such as the lack of specific guidelines on the prescription and the importance of the role of users and their caregivers in the use and maintenance of equipment. The home visit becomes an important tool in care to be used by health professionals, to promote and facilitate the population´s access to services and can provide both the knowledge of the real health needs for intervention in the community and when held by all professionals, it consolidates the bond, promotes health and prevents disease.[5]

One of the interventions designed to provide effective and efficient care to patients who are using OTHE is the periodic monitoring by a team of home care. Often, patients and families receive oxygen therapy equipment but do not have a routine follow-up by health professionals, so that the cost is high and the form of improper use could harm the health of patients. This monitoring can provide better quality of life and increased survival of these patients, preventing and/or reducing the number of hospital admissions, and available hospital beds occupied by patients with unique need for oxygen supplemental.[6]

Home visits (HV) can be considered a key tool in providing comprehensive care to patients receiving OTHE, especially those that demonstrate the lack of adequate progress and uncertainty about the method of treatment.[7]

## OBJECTIVE

- To check the contribution of home visits as a tool to evaluate the conditions of using a home oxygen therapy.

## METHOD

Descriptive and cross-sectional study conducted from December 2012 to June 2013. The participants were 54 individuals enrolled in an Oxygen Therapy Program Extended Homecare city of Bauru, SP, Brazil. Patients were evaluated and interviewed during home visits.

The data collection instrument was developed for the study, and the variables were analyzed; the sociodemographic data, pulse oximetry using oximeter portable MD model: 300 brand Linde, breathing in the prescribed $O_2$ flow and ambient air after 20 minutes without using $O^2$, the amount of prescribed liters, adherence to treatment, care and maintenance of sources of oxygen.

Statistical analyzes were performed using the Statistical Analysis System software (SAS) for Windows v.9.3. Descriptive statistics were performed (absolute and percentage) for quantitative variables.

For the research, the project was approved by the Research Ethics Committee (CEP) of the Faculty of Medicine UNESP under CEP 4369-2012 protocol meeting on 05/11/2012.

## RESULTS

Of the subjects studied, there was 51.9% male, with a mean age of 67.9 (± 11.7) years old. There were 53.8% of the subjects in a stable relationship, and 25.9% widowers, the level of education were 55.6% of primary school, 29.6% were illiterate and 14.8% high school or higher education. About work, 27.9% were retired by disease, 20.3% received health assistance, and 68.5% had a monthly income of a federal minimum wage. The main diagnosis of all individuals was COPD.

Regarding influenza vaccination, 70.4% of users received the vaccine, the average time from application of the last dose was 0.7 (± 0.6) months. It is noted that there were patients who were never vaccinated, or they received the vaccine, at least, four years ago. The average $SpO_2$ use of $O_2$ was 94 ± 00.04% and ambient air 86 ± 0.05. There were 77.7%

of subjects knowing the worsening signs of the disease, and most of them, 87.1% reported dyspnea symptoms. Due to respiratory distress, 41.1% reported sleep sitting, 40.7% problems to feed and 90.7% for walking. The individual average of hospitalizations in the previous year the visit was 1.9 (± 2.1).

Regarding lifestyle, active smoking was reported by 14.8%, 75.9% were ex-smokers, and 9.3% had never smoked. Of smokers and former smokers, 5.5% of them did treatment cessation. The counseling for smoking cessation occurred in 81.4% of subjects, performed in 74.1% by medical professionals and 7.4% by nurses.

All study subjects had prescription $O_2$ performed by a pulmonologist. Of them, 66% used the device at night, 22.2% continuously, 9.3% only daytime and 1.9% only in times of worsening disease. The average time of $O_2$ use was 14.6 ± 7.3 hours/day. The average of liters of oxygen used at rest, the efforts and sleeping were 2.2 (± 0.7) liters. All were using the humidifier and performed the exchange of water in an average of 56.9 (± 52.7) hours, and most of them used the filtered tap water (37.1%).

As for equipment, all patients have hub and torpedo reserve oxygen, 96.3% used the nasal catheter, and 88.8% reported not knowing which of the catheter exchange period. Not all patients reported knowing when it is held the filter change and 87% reported not knowing the estimated time for device revision. The average length of the hub extension was 2.6 (± 2.3) meters.

## DISCUSSION

Most of the subjects in the study were men, elderly and low level of education similar to the results found in prior studies.[8-10]

The spouse is living with sick partner involuntarily suffer together with him, leaving only help and support during this course of the disease.[10] In this study, 53.8% of subjects had stable marital status. However, this should not be considered as a benefit, since dreams and the partner´s sex life may be affected by the situation of OTHE dependence users.[11]

Participants in this study had a monthly income of up to one minimum wage, therefore, low income. This condition in another study showed that the economic situation may influence the late diagnosis of the disease and the most frequent exacerbations, increasing the risk of COPD and hindering access to treatment.[12]

In Brazil, influenza vaccination is offered free of charge every year, and there is an ordinance of the Ministry of Health Secretariat of Health Care No. 609, June 6, 2013, approving the Clinical Protocol and Therapeutic Guidelines - Chronic Obstructive Pulmonary Disease indicating vaccination for this group of patients.[13] Despite the existence of this protocol, in this study, only 70.4% of users received the vaccine.

The results of this research indicated that 77.7% of subjects knew the worsening signs of the disease, dyspnea being the most frequent symptom (87.1%). Severe COPD patients perceive significant variability of respiratory symptoms during the day or throughout the week, and the morning is the part of the day when these symptoms are perceived with greater severity or intensity and in which more interfere with daily activities.[14-15] Results of other studies have also reported dyspnea as the main symptom and affecting the quality of life of patients with COPD.[16-17]

Dyspnea affects the activities of daily life. Although more information is needed regarding patient selection criteria for pulmonary rehabilitation programs, COPD patients at all stages of disease appear to benefit from training programs with exercises, improving tolerance the exercise and symptoms of dyspnea and fatigue (Evidence A).[1] In our study, as a result of respiratory distress, the subjects had difficulty in performing activities of daily living such as home, food, and movement.

A study on adherence to oxygen therapy in an Italian university hospital found that 13.6% continued to smoke, even considering smoking as an absolute contraindication to supplemental oxygen.[18] This result corroborates our data showed that 14.8% were smokers.

The advice is needed for smoking cessation conducted by a multidisciplinary team. The advice by the guidelines for the treatment of COPD becomes effective and viable not only in the clinical view but also from the economic point of view for smokers with COPD.[19] Counseling in health and in particular to smoking cessation is an effective plan for the treatment of patients with COPD using OTHE.[1] Studies emphasize that intensive individual counseling has better results when applied by physicians, followed by multi-professional staff as nurses, dentists, psychologists and others.[20-21] However, our study showed that most advice was carried out by the medical professional and that the nurse is only responsible for 7.4% of this activity, and other professionals were not reported.

In a study conducted in Spain, the results showed that only 7.2% of OTHE users had

pulmonologist prescription.[22] However, a study conducted in Korea, after the implementation of national health insurance coverage, to investigate the medical records, they observed the OTHE was prescribed in its majority by pulmonologist, similar to our results which showed that OTHE was prescribed exclusively by pulmonologists.[23]

According to the study Nocturnal Oxygen Therapy Trial (NORT), the use of continuous oxygen improves patient survival compared to individuals receiving oxygen only at night.[2] However, in our study, only 22% of subjects used oxygen continuously. Often, cases of oxygen prescription do not meet the recommended criteria, although studies recommend that the ideal time to use oxygen is ≥ 18 hours in continuous flow or for a period ≥15 hours a day.[1,4,24] One study showed that 45% of patients used oxygen for more than 15 hours, in another study, only 30% used in therapy according to the previous studies evidence.[25-26] Results showed that patients with COPD in use OTHE show variation efficiency, between 17% to 70% of cases.[27-28]

COPD patients in the use of OTHE by oxygen cylinders after the transition to concentrators showed a significant improvement in the quality of life.[29] However, recent studies infer that the use of portable liquid oxygen brings more benefits to the patient, giving autonomy to leave the house and maximizes adherence than those who use concentrator.[30] In our study, all fifty-four patients had concentrators and cylinder reserve oxygen type F in an emergency situation.

This study showed doubts about the catheter exchange, conservation and cleaning of equipment, exchange and cleaning the filter, use humidifiers. While there is no scientific evidence on the effectiveness of oxygen humidification to lower flows than five l/M.[7] These issues can be resolved with standard operating protocols (SOP) outlined in clear and understandable language for the patient and caregiver.

Provide oxygen becomes a team responsibility involved in care of these patients and should: guide and train the patient, caregiver or family in the use of equipment, perform the monthly preventive maintenance of equipment, ensure corrective maintenance or replacement of equipment 24 hours/day, every day of the week, answer the call for evaluation of equipment problems whenever necessary, in a maximum of 2 hours.[6]

The lack of specific information about oxygen supply operation brings insecurity to the patient and their family members related to the equipment. Basic guidelines for the ideal length of the $O^2$ extent of which should be approximately 20 meters, a single piece without connectors and or air leakage. Thus, it allows the patient to move through the house, carry out minimal activities of daily life without feeling trapped with the equipment and realize that the oxygen flow continues regardless of the distance of the hub.[7]

## CONCLUSION

In conclusion, the home visit enabled to identify several inadequacies in the use of $O^2$, particularly when referring to the information provided, questions of patients and their caregivers as the number of oxygen therapy hours using prescribed flow, smoking cessation, maintenance and cleaning of the concentrator, use of a humidifier, extension length. Thus, nurses with skills to perform the systematization of nursing care (SAE) and a home visit is a fundamental tool to improve adherence and effectiveness of OTHE, encompassing and permeating arrangements that view key features for ensuring the completeness, inter-subjectivity inherent in humanization and care centered on the user and their family.

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