# Prevalence of Adverse Events in Hyperbaric Oxygen Therapy (HBOT) in 2024: A Multicenter Retrospective Study



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# INTRODUCTION

Hyperbaric oxygen therapy (HBOT) is a therapeutic intervention based on the inhalation of 100% oxygen in a pressurized environment, with pressure higher than atmospheric. It is indicated for a range of pathologies, such as actinic lesions, chronic osteomyelitis, necrotizing fasciitis, difficult-to-heal wounds, and toxic gas poisoning, among others. HBOT acts through physiological and biochemical effects, promoting tissue hyperoxia, increased angiogenesis, inflammatory modulation, and antimicrobial action.<sup>1,2,3</sup>

Despite the benefits, the procedure is not free of adverse events (AEs), which, although infrequent, should be monitored. Most studies indicate a prevalence of less than 2%, but methodological variations hinder direct comparisons. Multicenter studies with a large volume of sessions are essential to validate the safety of HBOT in different healthcare settings.<sup>3,4</sup>

# OBJECTIVE

Analyze adverse events (AEs) from HBOT in seven Brazilian clinics, describing the safety profile of the procedure.

# **METHODOLOGY**

Retrospective cohort multicentric study in seven HBOT clinics (public



Table 1: Adverse Events Leading to Suspension of Hyperbaric Sessions in 2024

#### DISCUSSION

The data from this study corroborate the literature regarding the safety of HBOT. The low rate of adverse events, mostly mild and self-limiting, reinforces the robustness of the clinical protocols used. The only event classified as severe (acute pulmonary edema) resolved completely after clinical support, without the need for prolonged hospitalization. The absence of seizures or central oxygen toxicity, even with thousands of sessions performed, suggests appropriate patient selection and rational use of pressure parameters. The multicenter analysis confers greater external validity to the findings, reinforcing that, under controlled conditions and with a trained team, HBOT maintains an extremely low-risk profile.<sup>3</sup>,<sup>4</sup> This data is particularly relevant given the progressive expansion of the therapy's indications, including vulnerable populations such as patients with diabetes, chronic vascular diseases, those with complex wounds, post-surgical complications, as well as highperformance athletes and indications related to pre-operative conditioning, aiming for better surgical outcomes.

and private) from January to December 2024. Data collected from electronic medical records, classifying AEs by frequency, type, and severity (mild, moderate, severe). Incomplete cases were excluded.

## RESULTS

71,751 HBOT sessions, with 32 AEs (0.04%): 75% mild, 21.9% moderate, 3.1% severe. No deaths, hospitalizations, or sequelae. AEs: otalgia (0.02%), phobia (0.006%), visual changes (0.004%), pulmonary edema (0.004%), hypoglycemia (0.002%), barotrauma (0.002%), hypertension (0.001%), fall (0.001%). Overall incidence of AEs: 4.5/10,000 sessions. Otalgia (46.9% of AEs) and phobia (12.5%) were the most common. Severe AEs: 0.0013%.

Sessions per clinic: 10,250 ( $\pm$ 1,340), with no difference between units (p > 0.05)



## CONCLUSION

HBOT is safe, with few AEs, mostly mild. Severe pulmonary edema resolved without prolonged hospitalization. No seizures or oxygen toxicity. Multicenter study reinforces HBOT safety, important for vulnerable populations and athletes. Rigorous protocols and follow-up are essential.

HBOT is effective and safe, reducing hospitalization costs.

#### REFERENCES

#### I have no conflict of interest in this poster.

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