

Pulmo: Patient Education in Pulmonary Hypertension via Artificial Intelligence–Based Digital Characters

Pulmo: Yapay Zeka Tabanlı Dijital Karakterler Aracılığıyla Pulmoner Hipertansiyonda Hasta Eğitimi

To the Editor,

Patients with pulmonary hypertension (PH) and their caregivers often encounter technical, complex, and emotionally overwhelming terminology when seeking information; this can inadvertently increase anxiety and hinder understanding.^{1,2}

The key innovation of the Pulmo project lies in the strategic use of an anthropomorphic lung character, designed through artificial intelligence, to mediate the patient's relationship with medical information. The character's persona was meticulously crafted to be warm, explanatory, trustworthy, and mildly humorous, with the aim of transforming the learning experience from a formal, didactic session into a comfortable dialogue with a trusted peer.

The visual identity and personality of Pulmo were established through an iterative process involving large language models (e.g., ChatGPT) for initial conceptualization. Advanced generative AI tools (e.g., Gemini) were subsequently employed to create diverse stylistic variations, such as depicting Pulmo in different roles (e.g., a chef for nutrition content, a yoga instructor for respiratory information) (Fig. 1). This approach ensured that the character remained visually engaging and contextually relevant across various topics, while strictly maintaining a consistent and recognizable core identity to preserve the audience's trust.³

All content is prepared by pulmonary hypertension specialists to ensure clinical accuracy and compliance with current guidelines and is subsequently reviewed by the same specialists after AI processing. Only after this human-centered validation is the information translated into simplified, accessible language.

The Grok AI tool was used to generate natural, fluent, and engaging animations, utilizing facial expressions and gestures to reinforce messaging and increase relatability. Additionally, subtitles were systematically added to all videos to ensure accessibility for users who may be unable to listen to audio content due to their environment or circumstances. Despite being active on Instagram (@mypulmo) for only one month and currently providing content only in Turkish, Pulmo has already reached 425 followers. A YouTube channel has also been created to reach a wider audience and offer content in different languages (<https://youtube.com/@mypulmo?si=6-DL386gfB2NPr4P>).



Figure 1. Pulmo's different characters: (A) Pulmo; (B) Chef Pulmo; (C) Yogi Pulmo; (D) Traveler Pulmo.

LETTER TO THE EDITOR EDİTÖRE MEKTUP

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Table 1. Sample questions asked by patients to Pulmo

Secondary pulmonary hypertension was diagnosed. What is secondary pulmonary hypertension?
Why is it so difficult to access medication for pulmonary hypertension?
What should patients with pulmonary hypertension eat?
Is it safe for a patient with pulmonary hypertension to keep a cat at home?
Which vaccines should we receive?
What is NT-proBNP? What does a decrease indicate?
Can we use flu medication when we have the flu?
Which herbal teas are beneficial for patients with pulmonary hypertension?
Would using a triflo device be beneficial?
How far should I walk during the 6-minute walk test?
What should I do to treat anemia?
How much water should I drink daily?
Can undergoing an ablation cause pulmonary hypertension?
I want to do Pilates; is it safe?

Although the project is still in its early stages, the limited feedback received indicates that patients frequently ask Pulmo questions about symptom management and lifestyle changes (Table 1).

At this stage, the study does not include a quantitative or systematic evaluation of its impact (i.e., improvements in knowledge level, behavioral change, or clinical outcomes). A formal evaluation of

clinical outcomes and patient knowledge retention is planned. The current implementation of Pulmo is limited to a single language (Turkish) and a restricted number of social media platforms, which may limit the generalizability of the findings. Although the content is designed to be broadly accessible, its effectiveness across different age groups, biological sex, educational backgrounds, and levels of digital health literacy has not yet been systematically assessed. As an early-stage initiative, Pulmo has not yet evaluated whether engagement and comprehension differ across patient subgroups, such as age, biological sex, educational level, or digital health literacy. While the use of short-form content enhances engagement, it may also carry a risk of oversimplifying complex medical concepts, and sex-specific educational needs in PH have not yet been clearly addressed.

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