Wikno, 16th–20th September 2025

VOICE FREQUENCY ANALYSIS IN PCOS SCREENING TESTS

Mariusz Ziółko[1], **Ewa Stogowska**[2], **Irina Kowalska**[2], **Karol Kamiński**[2], **Marcin Kondraciuk**[2], **Rafał Rzepka**[3], **Bartosz Ziółko**[2,3]

[1]Techmo sp. z o.o., Ul. Torfowa 1/5, 30-384 Kraków
[2]Medical University of Białystok, Ul. Jana Kilińskiego 1, 15-089 Białystok
[3]Hokkaido University, 060-0814, Kita-ku, Kita 14, Nishi 9, Sapporo

ABSTRACT

Voice analysis is a convenient and easily accessible method for conducting medical screening tests. A low-pitched voice in women may be a symptom of polycystic ovary syndrome (PCOS). This symptom is frequently observed by doctors, but confirming it requires a specific method of voice frequency analysis. Traditional frequency analysis methods did not yield satisfactory results. Our database includes recordings of text read by 42 patients and 38 subjects from the control group. We used the frequency analysis of 25-second voice samples. To distinguish the voices of women with PCOS from those of the control group, we used Fourier transform and analyzed the quotients of amplitude spectra between the PCOS group and the control group. The analysis is optimized by a function that selects the appropriate frequency ranges. Our method achieved an average diagnostic accuracy of 81% in the control group and 69% for patients with PCOS.

ACKNOWLEDGMENTS

This work was partially financed by The National Centre for Research and Development project "Speech analysis as a tool for early detection and monitoring of lifestyle diseases". Acronym VAMP no. POIR.04.01.04-00-0052/18-00, supported by the European Regional Development Fund and statutory funds of the Medical University of Bialystok.

REFERENCES

[1] Mariusz Ziółko, Ewa Stogowska, Irina Kowalska, Karol Kamiński, Marcin Kondraciuk, Rafał Rzepka, and Bartosz Ziółko: *Voice Frequency Analysis in Polycystic Ovary Syndrome Screening Tests*, Under review.