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IULIU HAȚIEGANU
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**4th Congress
of European ORL - HNS**
Cornerstones in European ORL-HNS
7 - 11 October, 2017
Barcelona, Spain



Mobile System for Rehabilitative Vocal Assistance of laryngectomees. A Pilot Study of Romanian patients with total laryngectomy.

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Total laryngectomy - surgical aphonia

The psychological consequences:

Anxiety

Depression

Hopelessness and passivity

Compromise their quality of life



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Devices that allow them to speak again

Voice restoration may be obtained with any of three methods:

esophageal speech (ES)

voice prosthesis (TEP)

electrolarynx (EL)

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SWARA - "voice" in Javanese

A new system for assisting these patients

Patients refuse, avoid or fail to use today's vocal assistive methods to communicate with family and other members of society.

October 9, 2017

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A new interface involving smartphone technology which synthesizes an improved artificial voice

Technical team generated four synthetic voices

two female voices

two male voices

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Assessed the satisfaction of patients with a new vocal assistive technology (speech synthesis systems)

Twenty laryngectomees with smart phones and internet network access were included in this study

Patients were trained to use the assistive communication system, web-based text-to-speech synthesis service accessible from any device

Feedback on the voice synthesis system after 1 month

October 9,2017

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SWARA Voice Synthesis Assessment Questionnaire

The questions were short, simple and easy to answer

The questions investigated the ability to communicate in different situations:

- known and unknown people

- noise

- personal satisfaction

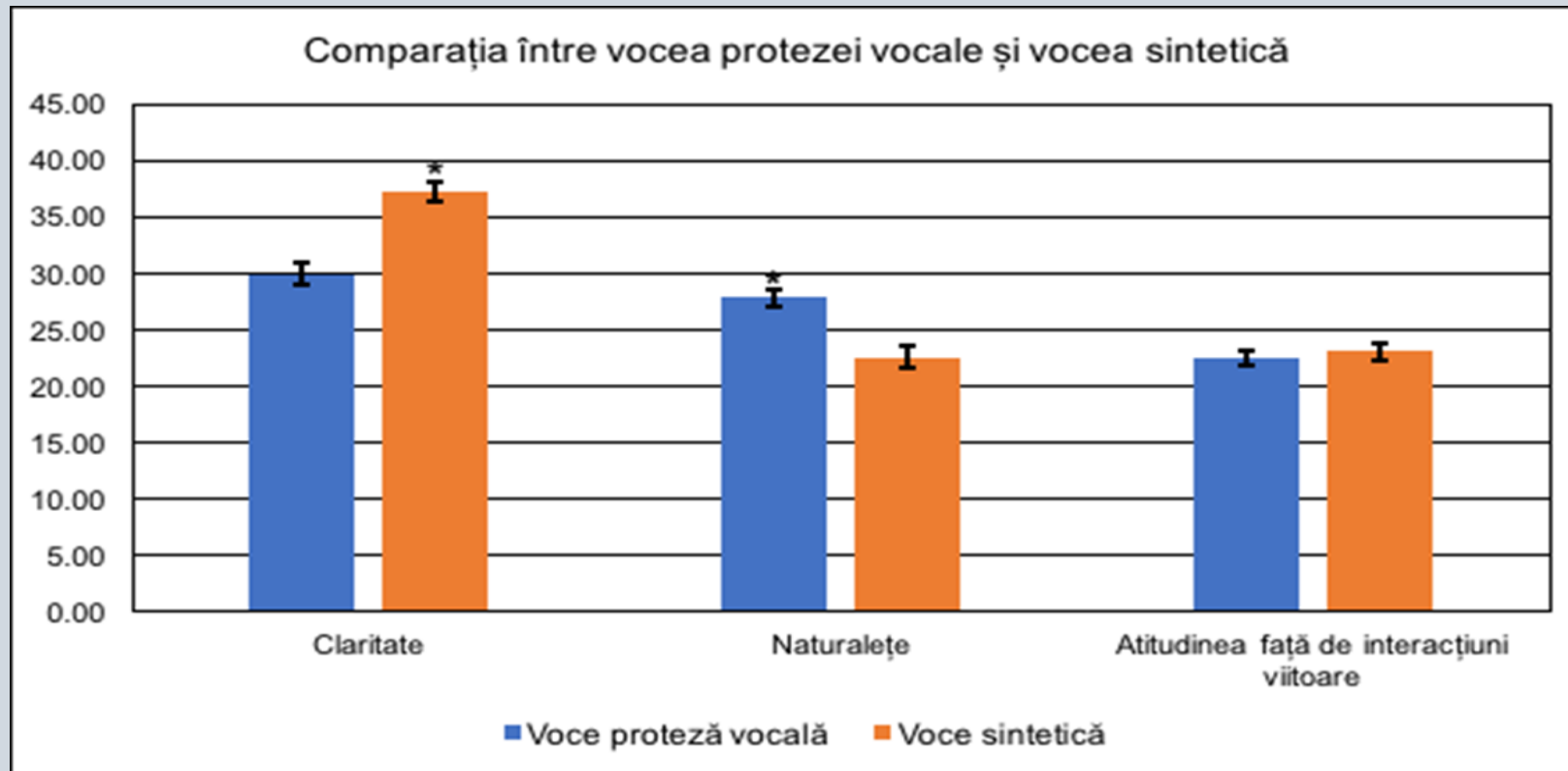
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Demographic and clinical characteristics of the sample

Sex	M	95%
	F	5%
Age		25 – 74 (mean age 59)
Vocal rehabilitation	Yes	60 %
	No	40%
Level of education	high school graduates	25%
	higher education	20%
Engagement	employed	35%
	retired	50%
	retired due to disability	15%

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Comparison between the voice of the vocal prosthesis with the synthetic voices on three key dimensions- the clarity of the voice, its naturalness, and the attitude towards future interactions



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The quality of synthetic voices:

80% of the patients reported being satisfied

20% were somewhat satisfied

The use of the application:

10% patients used the voice synthesis system

90% dropped the use of this speech assistant for various reasons

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The difficulty recorded in the routine use of the speech synthesis system

The functionality of mobile and internet networks

The inconsistent internet speed

The site is not mobile-friendly

Difficult to transform the written information into the spoken message

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Regard to text input:

80% of correspondents prefer lip reading

20% by typing.

Most of the patients considered the idea of using synthetic voices for patients with laryngectomy as useful, if it works in an application that can provide continuity in expression and not make users dependent on internet access.

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Synthetic voices are clearer but less natural

There is no difference in attitude towards possible future interactions with any type of voice

Difficulties in using the voice synthesis system would disappear if it were a synthesis system that could be used as an independent mobile application and be mobile-friendly

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Help people who have lost their ability to speak, especially those with surgical aphonia, to integrate and take part in everyday life

ACKNOWLEDGMENT

This research leading to these results has received funding from Romanian Ministry of Education under the grant agreement SWARA Project, PN-II-PT-PCCA-2013-4-1660, Contract no. 6/2014

Thank you!