



## MAXIMUM PHONATION TIME IN MUAZZIN

### Speech & Hearing

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### ABSTRACT

Maximum phonation time (MPT) is frequently used to assess how long a person can sustain a vowel sound, and is widely used to evaluate glottal efficiency. The current study assesses the MPD of 60 muazzins (20 with 5–10 years, 20 with 10–15 years, and 20 with up to 5 years of experience). The findings indicated that because adhan syllables require the production of specific notes, more experienced Muazzins are able to sustain vowel sounds for longer than less experienced ones. Continued use of the voice without vocal care may increase the chance of developing voice issues. It also helps muazzins maintain their voice and vocal health by offering more and necessary ideas.

### KEYWORDS

Maximum phonation duration, Muazzins.

### INTRODUCTION

Voice is generated by air flow from the lungs, when the air from the lungs blows through the vocal folds, the vocal folds vibrate and the vibration led to sound called as voice (NIDCD, National Institute on deafness and other communication disorders, 2023).

Speaker's voice serves as their signature where voice is one of those medium, holds speech as a major means of conveying our thoughts, feelings, and personalities. (Tiwari, 2012).

Professional voice users use their voice for living, they might be particularly vulnerable to voice disorders (Professional Voice Center of Cincinnati, 2019-2020). Singers, lawyers, teacher, clergy and Muazzin are directly depended on the vocal communication (Sataloff, 2001).

Muazzin (from the Arabic mu'adhdhin), the one who pronounces the adhan, the person in charge of the mosque who from the top of the minaret modulates according to a chant, the established formula to call the faithful at the respective hours (Guidi, 1934).

Muslims are called to the five scheduled daily prayers/salat by a formal announcement called adhan, the adhan, is called out from the mosque by the muazzin (Abuwala, 2017) and during the narration of the adhan they use to elongate the vowels slightly. Also, as some people engaged in prolonged speech use to produce elaborated vowel production and when it comes to utterances as they are used to those the vowel productions alone seem to be more.

MPT is the maximum time in seconds that a person can sustain a vowel produced in a single breath with comfortable pitch and loudness. It measures glottal efficiency by depicting the ability of the vocal folds to adduct efficiently and to vibrate through rapid opening and closing cycles (Yahya, S., N., Kumar, V., Mustafa.N., Azman, Abdul, M., & Baki, M. 2022). Adult females should achieve between 15–25 seconds, where adult males exceed this between 25–35 seconds (Williamson, 2014).

A timer and an audio recorder are commonly used to assess MPT, which is the longest duration that a patient can maintain phonation of a vowel sound. Maslan, J., Leng, X., Rees, C., Blalock, D and Butler, S, G. (2011)

MPT is useful measure for evaluation of laryngeal pathology and efficiency of vocal function: voice quality and respiratory reserves (Toyoda, C., Ogawa, M., Oya, Y. 2004). MPT is one of the most used in the practice of clinical voice assessment, as because it can be easily measured and is considered as the measurement of the glottic efficiency and typically one with no presence of laryngeal pathology, adult males can able to sustain vowel sounds from 25 seconds to 35 seconds.

Renne, S., Bogaardt, H, C, Roodenburg, N, P., and Zumach, A. (2010) determined the maximum phonation time, variability and reliability in

dysphonic and control subjects, for a five-week period recording were done and resulted subject with dysphonia showed shorter MPT compared to control group, and concludes MPT is a highly reliable measure in voice assessment.

Maslan et al., (2011) Analysed MPT in healthy older adults, total of 69 people participated in the study, out of 34 men and 35 women, participants reported no history of swallowing, speech or voice problems, participants underwent MPT three times resulted MPT were longer and concluded it varies with age and gender.

Mara, K, C., Talita, M, S., and Cielo, C. (2013): Checked the maximum phonation time of vowels in future professional voice users among 50 women and 12 men within the age range of 24 and 25 years old resulted in both genders the maximum phonation time of vowels were within either nearly to normal.

Sandoughdar and R, Mohseni. (2016) Analysed the acoustic parameters of voice in Iranian female teachers and in comparison, with non-teachers ,90 teachers and 90 non-teachers were included within the age of 30–50 years old, resulted the fundamental frequency, jitter, shimmer were increased in teachers and MPT were lower in teachers from the normal values and more in lectures.

Sahin, S., Guclu, E., and Ertugrul. (2018) Analysed the spectral characteristics in Muslim community of Turkey. Total of 35 individuals participated in the study, the participants performed vowels /a/, /i/, /u/ and /o/ and resulted a greater mean value for the vowel /a/.

Zahide, C, B., Gokmen, M, F., Yildirim, S.,and Dursun, G. (2020) explore the Islamic religious officials voice use ,disorders and treatment methods by comparing with teachers ,total of 85 subjects participated in the study, smoking history, vocal hygiene knowledge ,allergies, vocal abuse -misuse ,systemic disorders were compared, concluded smoking history ,systemic disease ,vocal loads found to be significantly higher in teachers whereas vocal abuse-misuse ,vocal hygiene knowledge determined higher in religious officials ,where Islamic officials appear to developing voice disorders and the awareness of prevalence of voice disorders need to raise more.

Kumaraswamy, S., Moopan, N, M., Susan, J., John., and Mishal, K (2022): Compared the Maximum phonation time between pre-school teachers and college lectures among 20 each group resulted pre -school teachers have lesser phonation time than college lectures due to vocal abuse.

### Need Of The Study

Professionals who use their voice for daily living developed vocal pathologies, where their vocal parameters can vary from general populations. (Branski, R., & Gherson, S. 2021). The need of the study was to find the Maximum Phonation Duration among Muazzin population, as muazzins use their voice for daily career and due to daily use of voice there will be variation from normal MPT values, and there

are only limited existing findings focusing particularly on Muazzins, which can help the speech language pathologists in future to assist them by providing with better awareness ,preventative tips and if necessary intervention approaches to those who are at risk of developing voice problems among Muazzins.

## METHODOLOGY

### Aim

The aim of the study was to analyze distinction in Maximum phonation time in Muazzins.

### Subjects

Sixty Normal healthy Muazzins who are in the field for 1- 5 years ,5-10 years and 10-15 years participated in the study.

### Inclusive and Exclusive Criteria

Muazzins who have been working in this field for five years or more aged between 35 and 60 years were included in the study. Those with speech, language, hearing disorders, or any other health-related conditions were excluded from the study.

**Table 1: Showing the Comparison Across the Experiences (upto 5-year, 5-10 & 10-15 years).**

	N	Mean	Std. Deviation	95% Confidence Interval for Mean		ANOVA test	Post hoc analysis-Bonferroni test p value			
				Lower Bound	Upper Bound		F value	p value	UPTO 5 YEAR VS 5-10 YEAR	
/a/	UPTO 5 YEAR	20	22.01	0.52	21.77	22.26	270.779	0.000, HS	0.000, HS	0.000, HS
	5-10 YEAR	20	24.03	0.63	23.74	24.33				
	10-15 YEAR	20	28.63	1.37	27.99	29.27				
	Total	60	24.89	2.93	24.13	25.65				
/i/	UPTO 5 YEAR	20	21.35	0.67	21.04	21.66	201.235	0.000, HS	0.000, HS	0.000, HS
	5-10 YEAR	20	23.62	0.86	23.22	24.03				
	10-15 YEAR	20	28.27	1.59	27.53	29.01				
	Total	60	24.42	3.10	23.61	25.22				
/u/	UPTO 5 YEAR	20	21.81	0.47	21.59	22.03	316.28	0.000, HS	0.000, HS	0.000, HS
	5-10 YEAR	20	24.06	0.69	23.73	24.38				
	10-15 YEAR	20	28.74	1.29	28.14	29.35				
	Total	60	24.87	3.04	24.08	25.65				

HS -Highly significant

Table shows the maximum phonation duration in comparison across the experiences, among muazzins with 5 years, 5-10 years, and 10-15

**Table 2: Shows the Maximum Phonation Duration Among Muazzins by Comparing Across /a/, /i/, /u/.**

	N	Mean	Std. Deviation	95% Confidence Interval for Mean		Repeated measures ANOVA test	Post hoc analysis-Bonferroni test p value				
				Lower Bound	Upper Bound		F value	p value	/a/ VS /i/		
UPTO 5 YEAR	/a/	20	22.01	0.52	21.77	22.26	22.47	0.000, HS	0.000, HS	0.270, NS	0.000, HS
	/i/	20	21.35	0.67	21.04	21.66					
	/u/	20	21.81	0.47	21.59	22.03					
5-10 YEAR	/a/	20	24.03	0.63	23.74	24.33	14.15	0.000, HS	0.001, HS	1.000, NS	0.003, HS
	/i/	20	23.62	0.86	23.22	24.03					
	/u/	20	24.06	0.69	23.73	24.38					
10-15 YEAR	/a/	20	28.63	1.37	27.99	29.27	13.91	0.000, HS	0.019, Sig	0.138, NS	0.000, HS
	/i/	20	28.27	1.59	27.53	29.01					
	/u/	20	28.74	1.29	28.14	29.35					
Total	/a/	60	24.89	2.93	24.13	25.65	46.15	0.000, HS	0.000, HS	1.000, NS	0.000, HS
	/i/	60	24.42	3.10	23.61	25.22					
	/u/	60	24.87	3.04	24.08	25.65					

HS -Highly significant, NS-No significance, Sig-significant

From the above table we compare the MPT in muazzins by within and across /a/, /i/ and /u/. When comparing /a/ vs /i/, muazzins with 5-year,5-10-year expertise showed highly significant differences. Significant differences were seen between /a/ and /i/ in muazzins with 10 to 15 years of experience. Muazzins with 5, 5, 10, and 15 years of experience, comparison across /i/ VS /u/ showed high significant differences. And no significant difference for /a/ VS /u/ muazzins with experience upto 5,5-10 and 10-15 years.

## DISCUSSION

The aim of the current study was to find the maximum phonation duration among muazzins in the age range of 35-60 years, who have 5-15 years of expertise in the field. The study included total of 60 muazzins, with 20 whom had upto 5-year of experience, 20 of whom had five to ten years, and 20 of whom had ten to fifteen years. The result of the current study suggested that Muazzins showed maximum phonation time of vowels within nearly to normal only and also

## Procedure

Subjects were made comfortably to seat and the recordings were made on to a laptop which was placed at about 3 inches from the mouth of the subjects, the subjects were asked to take a deep breath (inhale) and phonate /a/, /i/, /u/ vowels as long as possible. Three recording of each vowel were taken and maximum value in second for each vowel considered as MPT. The task was demonstrated prior to subject before starting the recording. Hence MPT among muazzins were analyzed.

## Statistical Analysis

Categorical data was summarised by frequency and percentages. Quantitative normal data was summarised by mean, s. d and confidence interval. Comparison of quantitative normal data was compared by one way ANOVA and repeated measures ANOVA along with Bonferroni post hoc analysis.

## RESULTS AND DISCUSSIONS

The MPT were analysed among Muazzins within the age range of 35-60 years who were in the field more than 5 years and above and the results obtained are discussed below.

years of experience, there were high significant differences for /a/, /i/, and /u/. MPT values for /a/ /i/ and /u/ vowels increased with respect to increase in the years of experiences and showed greater mean value for /a/ and /u/ vowels compared to /i/ vowel.

showed greater mean value for /a/ and /u/ vowels. The result of the present study is in accordance with the western studies in future voice professionals (Mara, 2013) and among Muslim community individuals (Shahin,2017).

## SUMMARY AND CONCLUSION

MPT among muazzins vary significantly with respect to certain factors such as vocal training, lung capacity etc. Among trained and experienced muazzins the MPT can extend as it requires to sustain certain notes during the adhan which can which can occasionally cause vocal fold overstrain. To maintain a normal value, it is necessary to undergo practices like breathing exercise, proper posture control, and vocal health or else it will end up with risk of developing voice disorders (Anirban et al,2018).

## Limitation Of The Study

- Study focused on muazzins with 3 different range of experiences (5,5-10 & 10-15 years).
- Only Muazzins were selected from those who undergo voice use

- on daily basis.
- Study focused only on 60 individuals.

### Future Implications

- Study can be done on different age range and among individual with more experiences.
- Study can be done in greater number of muazzins.
- Comparison of MPT among muazzins and general population can be done.

### REFERENCES

- Anirban, D., Haripriya, C.H., & Sadiqunnisha, K. (2018) Vocal parameters of Quranic teachers and regular school teachers. International Journal of Science and Research Methodology. Vol:10(3).
- Abuwala, A., (2017) What is a Muezzin. World Atlas.<https://www.worldatlas.com/articles/>
- Branski, R., Gherson, S. (2021). Professions that are susceptible of voice disorders <https://www.speechpathology.com/>.
- Guidi, M. (1934). Muezzin. <https://www.treccani.it/enciclopedia/muezzin>.
- Kumaraswamy, S., Moopan, N., Susan, J., John., & Mishal, K. (2022). Comparison of Maximum Phonation Time between Pre-school Teachers and College Lecturers. International Journal of Science and Research. Vol:11(9).
- Maslan, J., Leng, X., Rees, C., Blalock, D & Butler, S. G. (2011). Maximum Phonation Time in Healthy Older Adults. Journal of Voice. Vol:25(6).
- Mara, K. C., Talita, M. S., Cielo, C. (2013) Maximum Phonation Time of Future Professional Voice Users. <https://www.scielo.br/j/rcefac/a/>.
- National Institute on Deafness and other Communication Disorders (NIDCD) (2023). <http://www.nih.gov/>.
- Professional Voice Center of Greater Cincinnati (2020). <https://www.provoicecenter.com/>.
- Renne, S., Bogaardt, H, C, Roodenburg, N, P, Zumach, A. (2010). Maximum Phonation Time: Variability and Reliability. Journal of Voice. Vol 24(3).
- Sataloff, R. T., Hawkshaw, M.J., & Brandon, J. (2022). Professional Voice Users: An Overview of Medical Disorders and Treatment. Springer International Publishing. vol:36(8).
- Sandoughdar, Mohsen, R. (2016). Survey of voice Acoustic Parameter in Iranian Female Teachers. Journal of Voice. Vol:30(4).
- Sahin, S., Guelu, E., Ertugrul. (2018). Spectrographic and Electroglossographic Findings of Religious Vocal Performance in Turkey. Journal of Voice. Vol:32(1).
- Tiwari, M (2012). How Humans Communicate. Journal of National Science Biological Medicine, vol:3(1).
- Toyoda, C., Ogawa, M., Oya, Y. (2004) Maximum Phonation Time as a Tool of Screening Respiratory Muscle Weakness. <https://www.maximumphonation/8119855>.
- Williamson, G. (2014).<https://www.sltinfo.com/maximum-phonation-time/>
- Yahya, S. N., Kumar, V., Mustafa, N., Azman, Abdul, M., & Baki, M. (2022). Maximum phonation Time Normative Values Among Malaysians and Its Relations. Journal of Voice. vol:36(4).
- Zahide, C. B., Gokmen, M. F., Yildirim, S., Dursun, G. (2020) Voice disorders in Islamic religious officials, well-known Professional Voice Users. Journal of Voice. vol:34(5).