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(RESEARCH ARTICLE)

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Effect of stress on voice of MNC professionals

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Abstract

The Multinational Company (MNC) professionals are those who works in shifts and they use their voice to carry out their job roles such as meetings, presentations, group conversations etc. Generally, lots of health issues may arise due to impact of stress on individuals. In general, the effects of stress on people can lead to a variety of health problems. If personal and workplace stress are combined, the quality of life may be impacted. In this regard, the goal of the current study was to determine whether stress had an impact on the voice of MNC professionals. There are 30 healthy participants in the current study, ranging in age from 32 to 55. Voice Handicap Index (VHI-10) and Perceived Stress Scales (PSS-10) were used, the obtained scores were analyzed by using statistical analysis such as paired t test, frequency and percentage analysis. According to the findings, 78% of the participants displayed moderate stress, and 33% of participants depicted mild voice problems. The participants who had voice issues were also under some moderate stress. The authors also highlighted out that voice problems are caused by stress and higher vocal loads. According to the authors of the current study, professionals working for MNCs should have screening and assessment programs for voice because they can help with early identification and appropriate treatment, both of which enhance quality of life.

Keywords: VHI-10; PSS-10; Stress; Voice and MNC professional

1. Introduction

A multinational corporation is an organization that has assets or facilities in multiple countries. While they typically have a main office in their home country, these organizations may have offices, factories and other locations spread out across the globe. To be considered a multinational corporation, an organization must have at least one location in another country, even if they already export goods abroad. A diverse network of cranial and spinal nerves, as well as subcortical and cortical regions of the brain and cardiorespiratory processes are all involved in both voice production and processing, which depends on the cooperation of about 100 muscles [9,3,2 & 6]. According to [1, 15] during phonation stress causes slight variations or asymmetrical tension in the cricothyroid muscle or it may change in subglottal pressure. [14] stated that the driving force of both stress and voice is respiration. A person who works for an MNC company is known as MNC professional who works in shifts. These professionals use their voice to carry out job duties such as meetings, ppt, group conversations etc. [16] Recent sources stated that in fact, stress related to hiring and recruiting caused 54% of HR leaders polled to leave a previous position. [17] As well as 55% of professionals are felt stressed at work as reported by a LinkedIn survey. [10] reviewed and stated that stress has a great impact on the professionals which may in turn affects the productivity at work place.

An individual efficacy, health and quality of work affected by the mental and physical condition, stress can be triggered to activate hormonal secretions in the sympathetic nervous system in the form of tension when and individual faces difficult situation. Flight and fight responses will be observed in humans. Stress also associated with chronic health

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problems such as cardiovascular, hypertension, musculoskeletal system and psychological disorders, reproductive disorders, and mental and neurological problems [8, 4 & 13]. [11] claimed that demographic factors have a significant influence on the role stress plays among IT professionals. According to a [7], 68.2% of people who reported feeling stressed at work were at risk of becoming depressed.

1.1. Need and Aim of the study

Previous studies have shown that work-related stress will have an impact on one's health and that it can also cause a number of issues, including voice problems, early ageing symptoms, hair greying, etc. In addition to using voice loads for their respective cores, MNC professionals may also experience sleeping disturbances, which may have an impact on their voice. The current study was aimed to examine the impact of stress on the voices of MNC professionals due to a lack of research in the field. The present study was carried out to examine these elements.

2. Material and methods

2.1. Participants

35 professionals who works in a night shift were participated in the present study. All the participants are in the age range of 32-55 yrs. All the participants were healthy without any neurological abnormalities.

2.2. Materials

Voice Handicap Index-10 (VHI-10) [12] and Perceived Stress Scale (PSS-10) [5] was used to check the level of the stress and voice quality.

2.3. Procedure

Prior to the research starting, all participants were given consent forms and informed of the research's process. All the participants were instructed to choose the appropriate answer by reading all the questions. Obtained scores were used for further analysis.

2.4. Analysis

Statistical analysis such as paired t test and frequency tests were performed to check and compare stress and voice quality.

3. Results

The present study was aimed to check the effect of stress on the voice of MNC professionals. The results are explained in detailed based on various factors such as gender, age, voice usage, experience and severity of both VHI and PSS scales.

3.1. Gender

The gender was considered in this as the stress may also varies based on the daily living activities between the gender. In the present study 88.9% of males and 11.1% of females were participated. And it was observed that there is a gender difference of stress however there is no difference between voice. The data was given in tables 1 and 2.

Table 1 Frequency and percentage of the gender

Gender	Frequency	Percentage
Male	32	88.9
Female	4	11.1

There is a statistically significant difference ($p<0.05$) in PSS but not in VHI, according to an independent t test that was used to compare gender differences between different groups.

Table 2 Mean and SD between gender in PSS and VHI scales

Total	Gender	Mean	SD	t	sig
PSS	Male	16.34	4.50	-2.53	0.016*
	Female	22.25	2.87		
VHI	Male	8.72	4.46	-0.34	0.73
	Female	9.50	1.29		

*Statistically significant difference (p<0.05)

3.2. Age

Age was taken into consideration because it may also have an impact on voice problems caused by stress. In the current study, those between the ages of 32 and 40 made up 36.1% of participants, those between the ages of 51 and 55 made up 13.9%, and the majority, or 50%, of participants were between the ages of 41 and 50. The data was given in the tables 3 and 4. In this context we can observed that there is a significant difference on stress between 32-40 yrs and 41-50 yrs however, there is no statistical difference observed on voice. Age and stress are inversely correlated, with a negative significant difference, p=-0.046 (p<0.05) between those between 51-55 and 32-40 years old groups.

Table 3 Frequency and percentage of age

Age	Frequency	Percentage
32-40	13	36.1
41-50	18	50.0
51-55	5	13.9

Independent t test was between age groups which shows that there is a significant difference between age group 1 in PSS and negative statistical difference noted in group 5 in PSS.

Table 4 Mean and SD of various age groups of PSS and VHI

Total	AGE	Mean	SD	T	sig
PSS	32-40	19.85	3.78	2.83	0.007*
	41-50	15.83	3.85		
VHI	32-40	10.00	4.04	1.32	0.196
	41-50	7.89	4.61		
PSS	41-50	15.83	3.85	0.89	0.38
	51-55	13.80	6.57		
VHI	41-50	7.89	4.61	-0.50	0.61
	51-55	9.00	2.91		
PSS	51-55	13.80	6.57	-2.47	-0.046**
	32-40	19.85	3.78		
VHI	51-55	9.00	2.91	-0.50	-1.00
	32-40	10.00	4.04		

* Statistically significant (p<0.05) and **Negative statistical difference (p<0.05)

3.3. Experience

Table 5 The frequency and percent of experience

Experience (yrs)	Frequency	Percent
0-15	8	22.2
16-20	16	44.4
21-25	7	19.4
26-30	5	13.9

From the above table 5 it indicates that 16-20 yrs of experience are more in number than others. Independent t test was done to compare experience between PSS and VHI which reveals statistical difference present between 0-15 and 16-20 yrs 1st group in PSS and 0-15 and 16-20 yrs 1st group in VHI similarly there is a statistical difference found between 26-30 and 0-15 yrs 3rd group in PSS. The data was given in the table 6.

Table 6 Mean and SD of total PSS and VHI by experience wise

Total	Experience	Mean	SD	t	sig
PSS	0-15	21.13	2.64	3.06	0.006*
	16-20	16.06	4.25		
VHI	0-15	11.50	3.25	2.99	0.007*
	16-20	6.94	3.64		
PSS	16-20	16.06	4.25	-1.13	0.271
	21-25	18.14	3.53		
VHI	16-20	6.94	3.64	-1.62	0.12
	21-25	10.14	5.78		
PSS	26-30	11.80	4.71	-4.62	0.001**
	0-15	21.13	2.64		
VHI	26-30	8.60	2.51	-1.69	0.118
	0-15	11.50	3.25		

* Statistically significant ($p<0.05$) and ** statistically highly significant ($p\leq0.001$)

3.4. Hours

Table 7 No. of hours of vocal load and frequency

Hours	Frequency	Percent
<2	1	2.8
2-3	7	19.4
3-4	10	27.8
4-5	7	19.4
>5	11	30.6

From the above table 7 it was observed that >5 hours usage of voice by maximum number of participants. Independent t test was done to compare hours of voice usage on stress which showed that 1st group showed statistical difference and

there is no statistical difference between increased no. of hours voice usage and stress. The data was given in the table 8.

Table 8 Mean and SD of vocal usage hours between PSS and VHI

Total	Hours	Mean	SD	t	Sig
PSS	<2	26.00	--	3.39	0.015*
	2-3	16.43	2.63		
VHI	<2	11.00	--	1.40	0.210
	2-3	6.14	3.23		
PSS	2-3	16.43	2.63	-0.18	0.85
	3-4	16.80	4.82		
VHI	2-3	6.14	3.23	0.094	-3.45
	3-4	9.60	4.32		
PSS	3-4	16.80	4.82	0.60	0.55
	4-5	15.14	6.54		
VHI	3-4	9.60	4.32	0.84	0.41
	4-5	7.86	4.01		
PSS	4-5	15.14	6.54	-1.13	0.27
	>5	17.91	3.91		
VHI	4-5	7.86	4.01	-1.09	0.28
	>5	10.18	4.57		
PSS	>5	17.91	3.91	-1.98	0.076
	<2	26.00	--		
VHI	>5	10.18	4.57	-0.17	0.868
	<2	11.00	---		

* Statistically significant

3.5. VHI Severity

The below table 9 shows the frequency and percent of VHI severity which indicates that 33.3% of the participants showed mild voice problem. This indicates that the voice problem is present among MNC professionals which could be due to stress or other factors. The same data was depicted in the figure 1.

Table 9 The frequency and percentage of VHI

VHI severity	Frequency	Percent
Normal	24	66.7
Mild	12	33.3

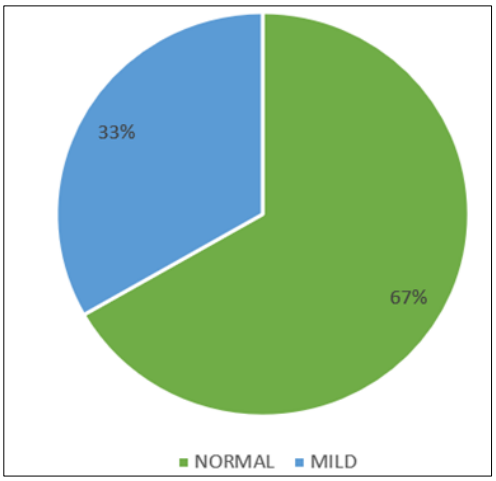

Figure 1 The severity of VHI

3.6. PSS Severity

It was noted that the percentages of stress were 78% (moderate), 17% (low), and 5% (normal), respectively. This shows that the majority of people are under moderate stress from their commitments to their jobs and other aspects of daily life. The table 10 and figure 2 shows the percentage of the data.

Table 10 Frequency and percentage of PSS

PSS severity	Frequency	Percent
Normal	2	5.6
Low	6	16.7
Moderate	28	77.8

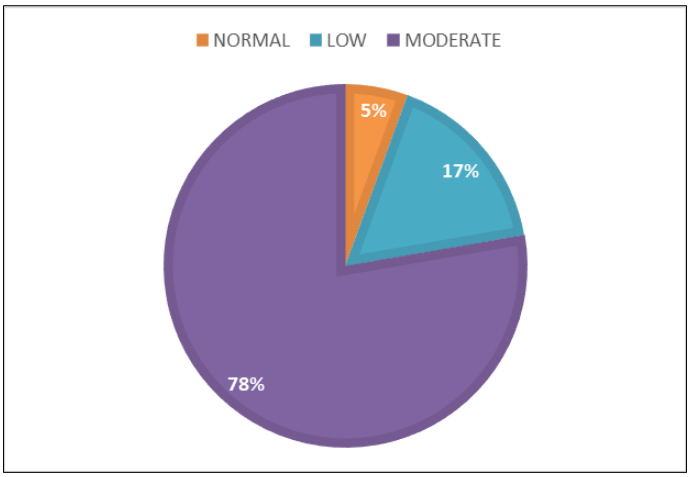

Figure 2 The percentage of PSS

3.7. Comparison of VHI and PSS

The percentage of dysphonia is 33% (mild), and the percentage of stress is higher at 78% (Moderate), according to the aforementioned figure 3. These 33% of people had vocal issues as a result of stress accompanied by increase of vocal loads. The remaining 45%, however, used their voices only occasionally. This suggests that the voices of the majority of participants are being impacted by stress in a subtle way.

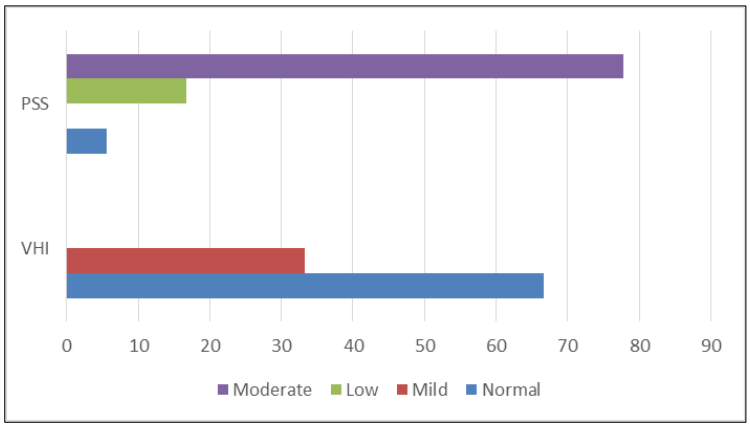

Figure 3 Percentage of VHI and PSS scores

3.7.1. Paired t test (comparison between VHI and PSS score)

Table 11 Mean and SD of VHI -PSS total and severity

Pair	Mean	SD	Correlation	Sig.	T	Sig
VHI Total	8.81	4.22	0.33	0.048*	-9.48	0.000**
PSS Total	17.00	4.75				
VHI Severity	1.33	0.47	0.14	0.413	-12.11	0.000**
PSS Severity	2.72	0.56				

*Statistically different and **Highly statistical different

From the table 11 it states that there was a high significant difference in VHI (M=8.8, SD=4.22) and PSS (M=17.00, SD=4.75); t (35) =-9.48, p=0.000. The correlation between voice and stress scores reveals positive (0.33) which states that 33% of possibility of stress has impact on voice of MNC professionals which accompanied by the increased vocal loads in total scores. However, 14% of the impact was showed between VHI and PSS severity and there is a high significant difference in VHI severity (M=1.33, SD=0.47) and PSS severity (M=2.72, SD=0.56); t (35) =-12.11, p=0.000.

4. Discussion

Professionals who work for MNC companies regularly deal with stress and heavy workloads. Depending on the experience and role, vocal loads will change. When compared to senior professionals, the person may be more stressed and have a heavier vocal load in the early stages. It was made clear in the current study that 78% of the participants displayed moderate stress, and 33% of the participants displayed mild voice symptoms. Stress from low vocal loads may affect the remaining 45%. By interfering with work and personal life, occupational stress has been shown to have a significant negative impact on health and quality of life.

5. Conclusion

The findings of the current study suggested that mild voice problems may be caused by stress and increased vocal loads. MNC professionals may benefit from assessment or screening programs that can help them recognize and treat voice-related issues.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declared that there are no conflicts of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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Author's short Biography

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