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Original Article

Prevalence of Vertigo in Headphone Users of Call Center of Faisalabad city

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ABSTRACT

In recent years, call center operations have become a global phenomenon. Call center operators reported headaches, tinnitus, and vertigo as the most common symptoms of wearing headphones for 7 to 9 hours daily. **Objectives:** To determine the association between vertigo in headphone users and in age, working hours and professional experience. **Methods:** This cross-sectional study was conducted to determine the prevalence of vertigo in headphone users in call centers of Faisalabad. This study followed pre-determined inclusion and exclusion criteria and the sample size of 450 participants were included in this study. SPSS 24 was used for data entry and analysis. **Results:** This study reported a significant association between working hours(p=.000), years of work experience (p=.000), and between age (p=.002) and percentage of people with vertigo in VSS. **Conclusion:** It can be concluded that vertigo has association with age, working hours, years of work experience. While, vertigo has no association with gender, life style, residence and smoking habits.

INTRODUCTION

Vertigo and lightheadedness are main indicators of disorders that disturbing the vestibular system. They can be persuaded by any of two prolonged or short-lived disorders, with impulsive reappearance, creating their clinical types inconstant [1]. Vertigo is stated as distorted insight of motion or imaginary rotation, is most widespread in elder population [2], associated to low physical health correlated standards of life [3], and a powerful factor to disability [4]. By the dysfunction of the balance system, either in the central nervous system or in the sensory parts (somatosensory, visual, vestibular). Multisensory vertigo is known as a vertigo that can be caused by the dysfunction of two of three sensory parts of the balance system [5]. Also, the headphone use as factor external to the balance system, can caused vertigo. Geriatric syndrome is known as a multifactorial vertigo in the adult population [6]. But the vertigo including benign paroxysmal positional vertigo (BPPV) or vestibular impairment may also have single causes [7]. In Europe, the unit sale for most mobile phones and portable audio devices has increased today including an audio playback function. Portable electronic devices became a common and natural part of everyday life, such as tablets, smartphones and computers with headphones [8]. A sound system sends radio frequency to a matching set of wireless headphones to deliver melody other audio programming to a customer within the field of

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transmission who is free to walk in any place. Wireless headphones receive alerting of arriving phone calls via telephone base component. The headphones might deliver an audio signal above or as an alternative of the audio programming to report the user of the arriving call. The headphones might as well integrate a microphone so that the consumer can collect the phone call with the earpieces [9]. The procedure of headphone has been supposed to produce aural sanitization complications and contamination in the ear canal. Not unusually the headphone consumer also precise alarm concerning the impending for this device to cause noise persuaded hearing loss. Conversely, recognized studies on the special effects of sustained routine of the headphone are infrequently defined in the literature. Amongst the sustained consumer of the earphone are telephones, radio deejays and mobile compact individual stereophonic [10]. Maximum call centers function as open office type settings in which employees (handset workers) carry on their duties mostly through consuming handsets to marketing goods, carry on investigations, deliver a facility and/or reply questions from callers. Handset workers in call centers mainly operate headphones to connect with customers as these permits them to organize further equipment corresponding entering records into CPU systems. Call centers characterize the speediest growing of any trade in the ecosphere with a predictable 220,000 handset ear set using employees (2.2% of the Australian staff) presently working in more than 4000 call centers through Australia. Rarely Call Centre telephone workers feel acoustic episodes for example an abrupt loud screech or high-pitched tone over their headphones. The telephone workers described feeling a 'startle effect' followed by dizziness, vertigo, feeling anxious, nausea and tingling at the left side of the face and tongue, headache and feeling anxious and teary. The audio signals can have special effects on handset workers, which are reflected to be directly associated to the level of anxiety in the worker. Consequences can variety from simple irritation to inability to carry on work, frequently for phases ranging among a limited hours to certainly not again capable to look after work including the usage of headphones [11]. The number of persons using headsets promptly increases, comprising those who were using headsets during the whole day in call center atmosphere, in the past twenty years. Respectively, the number of cases of trauma correlated with vulnerability to extreme noise produced by headphones and telephones has been increased [12]. This study was aimed to report the prevalence of vertigo among employee working at call centers who used headphone in the Faisalabad city and also find out the association of vertigo with demographic and working factors.

METHODS

450 Participants from both the private and public call centers of Faisalabad were selected for this cross-sectional study on the basis of the availability of the signed consent form and fulfillment of the inclusion criteria by convenience sampling. Participants with ages 18-55, both males and females, must wear headphones for more than an hour and consent to participate in the study were included. Subjects to be selected from call centers of both public and private sector. The participant was excluded if they exhibit Tinnitus, psychiatric disorders or pregnancy. The Data Collection Tool for this study was Vertigo Symptom Scale.Vertigo symptom scale (VSS) tells us about frequency and severity of dizziness symptoms that occurred during the last 12 months and it consists of 36 items. Those patients who feels dizziness/vertigo can be find out through the VSS that was based on patient's interviews [13]. From the original scale a shortened version of the scale (VSS-SF) has been taken out, because it measures the symptom severity within the past month that's why it is introduced in the clinical trials [14]. 15 items are based on the VSS-SF. By adding the item scores symptom severity can be measured and each item is scored on 5-point scale (range 0-4). Higher score shows severe problems, as the total score is from 0-60. On the total scale if it shows ≥ 12 points it exhibits severe dizziness [15]. The scale is consisting of two further subscales: vertigo balance (VSS-V, scoring 0-32) as it consists of 8 items, and autonomic anxiety symptoms (VSS-A, scoring 0-32) as it consists of 7 items [9]. Satisfactory internal consistency and moderate test-retest reliability has been showed by the VSS-SF [16, 17]. Ethical approval of the study was taken from the Ethical & Research Review committee of Riphah International University. A questionnaire was given to each participant of the study. All the medical and scientific terms were explained clearly in a professional way, to the participants and they were requested to fill the questionnaire in front of us to avoid any false description of the parameters of the study or any deception. For the statistical processing or analysis of this data, Statistical package for social sciences (SPSS) 24.0 version was used. The frequency tables were used in order to calculate the trend of quantitative variables. To see the association between the main variables of the hypothesis p-value was interpreted accordingly.

RESULTS

The aim of the research study was to find the prevalence of vertigo in headphone users of call centres. 450 participants were included, out of them, 394 were male and were 56 were female. Majority of the participants 218 (48.4%) were between the age of 24-29 and 374 were

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belonged to urban area (Table 1).

Variables	Frequency (%)
Gender	
Male	394 (87.6%)
Female	56 (12.4%)
Age (years)	
19 or younger	23 (5.1%)
20-23	119 (26.4%)
24-29	218 (48.4%)
30-39	90 (19.8%)
BMI	
Underweight	16 (3.6%)
Normal	205 (45.6%)
Overweight	180 (40%)
Obese	49 (10.9%)
Residence	
Rural	76 (16.9%)
Urban	374 (83.1%)
Smoking habit	
Smoker	82 (18.2%)
Ex-smoker	24 (5.3%)
Non smoker	344 (76.4%)
Lifestyle	
Sedentary	328 (72.9%)
Active	122 (27.1%)
Job title	
RJ	192 (42.7%)
Rescuer	258 (57.3%)
Work status in last 12 months	
Full time	128 (28.4%)
Part time	322 (71.6%)
Work setting	
FM station	192 (42.7%)
Rescue 1122	258 (57.3%)
Working hours	
5	192 (42.7%)
More than 5	258 (57.3%)
Years of work experience	
5	281 (62.4%)
5 to 10	154 (34.2%)
More than 10	15 (3.3%)
No of off days due to vertigo issues	
1day	11 (2.4%)
2days	7 (1.6%)
No	432 (96%)
Total	450 (100%)

Table 1: Frequency distribution of demographic information

The finding of this study reported that there was significant association of years of work experience (p=0.002) and working hours (p=.000), with individual with vertigo in VSS. (Table 2 & 3).

Vertigo	Working Hoours					p- value
	2	3	4	6	12	
Never	7(14.6%)	10(20.8%)	2(4.2%)	15(31.2%)	14(29.2%)	.000
A few (1–3-time year)	13(61.9%)	4(19.0%)	4(19.0%)	0(0.0%)	0(0.0%)	
several times (4–12-time year)	16(14.2%)	27(23.9%)	10(8.8%)	26(23.0%)	34(30.1%)	
Quite Often (More than once a month)	40(14.9%)	42(15.7%)	17(6.3%)	89(33.2%)	80(29.9%)	
Total	76(16.9%)	83(18.4%)	33(7.3%)	130(28.9%)	128(28.4%)	

Table 2: Association between Working Hours and Percentage of People with Vertigo in VSS

Vertigo	Working Hoours												p- value
	1	2	3	4	5	6	7	8	9	10	11	12	
Never	3 (6.2 %)	6 (12.5 %)	9 (18.8 %)	4 (8.3 %)	6 (12.5 %)	14 (29.2 %)	0	3 (6.2 %)	2 (4.2 %)	0	1 (2.1 %)	0	0.002
A few (1–3-time year)	5 23.8 %)	7 (33.3 %)	7 (33.3 %)	1 (4.8 %)	0	0	0	1 (4.8 %)	0	0	0	0	
several times (4–12-time year)	10 (8.8 %)	22 (19.5 %)	10 (8.8 %)	18 (15.9 %)	10 (8.8 %)	13 (11.5 %)	7 (6.2 %)	8 (7.1 %)	3 (2.7 %)	5 (4.4 %)	4 (3.5 %)	3 (2.7 %)	
Quite Often (More than once a month)	17 (6.3 %)	32 (1.9 %)	49 (18.3 %)	43 (16 %)	22 (8.2 %)	35 (13.1 %)	16 (6 %)	17 (6.3 %)	17 (6.3 %)	13 (4.9 %)	1 (0.4 %)	6 (2.2 %)	
Total	35 (7.8 %)	67 (14.9 %)	75 (16.7 %)	66 (14.7 %)	38 (8.4 %)	62 (13.8 %)	23 (5.1 %)	29 (6.4 %)	22 (4.9 %)	18 (4 %)	6 (1.3 %)	9 (2 %)	

Table 3: Association between Years of Work Experience and Percentage of People with Vertigo in VSS

Moreover, there is significant association between age and individual with vertigo. Age group of 20-23 and 24-29 shows more symptoms as (p=0.002). (Table 4)

Vertigo	Working Hoours					p- value
	19 or younger	20-23	24-29	30-39	40-55	
Never	1(2.1%)	17(35.4%)	24(50.0%)	6(12.5%)	0(0.0%)	0.002
A few (1–3-time year)	4(19.0%)	12(57.1%)	5(23.8%)	0(0.0%)	0(0.0%)	
several times (4–12-time year)	7(6.2%)	31(27.4%)	49(43.4%)	26(23.0%)	0(0.0%)	
Quite Often (More than once a month)	11(4.1%)	59(22.0%)	140(52.2%)	57(21.3%)	1(0.4%)	
Total	23(5.1%)	119(26.4%)	218(48.4%)	89(19.8%)	1(0.2%)	

Table 4: Association between Age and Percentage of People with Vertigo in VSS

DISCUSSION

Our study concluded that out of 450 subjects 402 subjects show vertigo in vertigo symptom scale. A study was conducted in Germany on the prevalence of vertigo supported our study which shows a generally demonstrative section of 4869 mature persons was examined for moderate or severe vertigo, following the clear analytical measures 1003 persons with vertigo experienced authorized neurologic dialogues to discriminate vestibular vertigo from non-vestibular vertigo. Vertigo had an occurrence (first incident of vertigo) of 3.1% and had an incidence of 22.9% in the previous 12 months. The incidence for vestibular vertigo was 1.4% and the prevalence was 4.8%. A curative discussion since of

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episode vertigo was described by 1.8% of unselected mature persons who referred a medical doctor in the previous 12 months for occurrence vertigo (0.9% for vestibular vertigo)[18]. A study conducted by Mizukoshi et al., on the prevalence of BPPV in Japan expected the prevalence to exist 10.7 to 17.3 per 100 000 per year, since maximum cases of BPPV resolve impulsively within months though it is expected to be miscalculate[19]. A study from Japan described a prevalence of BPPV was 0.01%, however it can be considered as miscalculation as merely patients came throughout the acute stage to medical doctor associated with the investigation commission were involved [19]. An additional study from Olmsted County, Minnesota predicted the prevalence of BPPV was 0.06% on the base of a residents established medical proceedings association system. Though, patients not looking for medicinal assistance were not involved and therefore this research does not seem to be demonstrative of the overall peoples [20]. In Germany a Cross-sectional study was conducted which generally illustrative neurological examination of overall mature inhabitants with a two-phase selection proposal examination of 4869 members from the German National Telephone Health Interview Survey 2003 (reaction ratio 52%) for severe and moderate vertigo, proceeding by authorized neurological conversations (n = 1003; reaction ratio 87%). Investigative measures for BPPV were not less than five outbreaks of vestibular vertigo lasting, 1 min deprived of associated neurological signs and consistently triggered by usual variations in head placement. In a concurrent validation study (n = 61) conducted in two specialised dizziness clinics, BPPV was perceived via our handset conversation with a compassion of 88% (positive analytical rate 88%, negative analytical rate 92%) and a specificity of 92%. BPPV considered for 8% of subjects with severe or moderate vertigo. The 1-year incidence of vertigo was 1.6%, the lifespan incidence of BPPV was 2.4% and the 1-year prevalence was 0.6%. 2 weeks was the average interval of an incident. BPPV bring about to medicinal discussion, disruption of everyday accomplishments or sickening vacation in 86% of stimulated persons. Over-all, only 8% of provoked members provided constructive therapy [21]. In 2001 a prospective study was carried out in the duration of 12-month. Documents were gained from the Second Dutch National Survey of General Practice. An exploration approach containing of 15 abbreviated exploration expressions (constructed on Dutch substitutes for vertigo), and recognized all subjects matured 65 or elder who go to their intimate medical doctor for vertigo (N = 3,990). In personal training in subject's elderly 65 or adult the one-year incidence of vertigo was 8.3%, it was greater in females rather than in males, and it becomes greater with time of life. In subject's elderly 85 or adult the incidence was parallel for males and females. The prevalence of vertigo was 47.1 per 1000 individuals-years. The personal medical doctor did not identify a conclusion, and documented a warning sign identification as the absolute judgment for 39% of the lightheaded subjects[22].

CONCLUSIONS

This study concluded that vertigo has association with age, working hours, years of work experience. While, vertigo has no association with gender, life style, residence and smoking habits. Further advance studies must be directed so that appropriate actions could be engaged to avoid and treat this public health and work-related problem.

Conflict of interest

The authors declare no conflict of interest

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