

# DIZZINESS AND ITS ASSOCIATED FACTORS IN GERIATRIC POPULATION IMPACTING FUNCTIONAL AND PSYCHOLOGICAL STATUS

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## ABSTRACT

**Objective:** To determine factors associated with dizziness/vertigo in the elderly population. (Factors include demographic, depression, living environment and activity level)

**Material and Methods:** Descriptive Cross sectional & Analytical study design was used. Healthy elderly population was included for data collection of Rawalpindi and Islamabad (Pakistan). 200 elderly were recruited in study. A pilot study (n=20) was conducted to validate the DHI. Different assessment tools were used to assess association i.e. Time Up and Go Test and Geriatric Depression Scale. The data was analyzed and chi square and correlation test was used to assess association and correlation respectively.

**Results:** The results indicate that females ( $32.61 \pm 23.70$ ) are more prone to dizziness as compared to males ( $17.85 \pm 21.979$ ). There is no association (0.819) between living environment and dizziness but strong association is present between activity and dizziness, and disease status of elderly population. Approximately 30% participants suffer from dizziness. Depression has no significant effect on the individuals with dizziness.

**Conclusion:** Elderly females are more prone to develop dizziness in comparison to males. Activity level in elderly population can influence dizziness. Improved activity level can reduce risk of developing dizziness in elderly population. No association was found between dizziness and depression though increasing age has a greater impact of developing symptoms of dizziness.

**Key Words:** Geriatric Population, Elderly, DHI, Aging, Dizziness, Vertigo.

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**This article may be cited as:** Akram M, Lain UQ, Abbasi HA, Bashir A, Malik NA. Dizziness and Its Associated Factors in Geriatric Population Impacting Functional and Psychological Status. *J Med Sci* 2017; 25: (3) 287-291.

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## INTRODUCTION

Aging, a progressive loss of physiological integrity that leads to impaired functioning and increases vulnerability to death.<sup>1</sup> Aging is a common disorder with vast impact on the community wellbeing.<sup>2</sup> To reduce the morbidity, increase the life span and extend the years of good life, requires the efficient strategies to be planned. In long living population studies on health shows that it is possible to avoid the major conditions/disorders for extended years of life, thus aging is controlled, at least to some extent<sup>1,3</sup> The rise in age related conditions

and the subsequent increase in health care expenses caused by the decrease in health conditions with aging have brought the burden and increasing pressure to the community, individuals, and families.<sup>4</sup>

Aging is associated with a greater number of neurodegenerative conditions among humans.<sup>5</sup> Majority of people aged above 65 years reported dizziness, and a most common complaint and a handicapping condition in geriatric age group.<sup>6</sup> Vertigo or dizziness is an amorphous/vague subjective sensation of instability in posture or illusive motion of environment or self either as a feeling of falling or spinning. It is the common problem among outpatients and single most general problem.<sup>6</sup> Dizziness is an intricate diagnostic complaint in elderly population because this has various latent/possible reasons and patients find this problematic to describe the characteristics of symptoms.<sup>7</sup> Vertigo/dizziness can be caused by central nervous system disorders or peripheral vestibular disorders or by both problems

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**Date Received:** April 20, 2017

**Date Revised:** June 10, 2017

**Date Accepted:** July 20, 2017

and by some other conditions.<sup>6</sup> Dizziness is related with other physical and psychological co morbidities. Its cause can be neurological, vestibular, psychological, or cardiovascular. People with dizziness describe multiple symptoms such as instability, emotional distress, nausea, and disruptions of normal activity patterns. These symptoms are recommended to handicap the people drastically. It often changes into a chronic disease.<sup>8</sup> The emotional, functional, and physical disturbances that are coupled with many types of dizziness/vertigo impair the domestic, social and professional activities of patients. Dizziness may cause the problems in daily life and can reduce the quality of life of the patients.<sup>6</sup>

Geriatric disorders are related with functional damage in elder adults and contribute to their intricate health status.<sup>9</sup> Older individuals have an increased susceptibility for injury due to a higher prevalence of co-morbidities, age related physiological changes, and delayed functional recovery, which in turn leads to further deconditioning.<sup>10</sup> Dizziness is common illness of older persons in primary care. Its point frequency rises with age up to a total of 30% of persons 65 years of age and elder.<sup>11</sup> The merely incidence of dizziness in the ageing is a solid interpreter of falls. Damages associated to falls lead to movement restriction and loss of independence, and rise the anxiety of falling, which also expects succeeding falls.<sup>12</sup> Dizziness may be tremendously wearisome for elderly persons. This may lead to significant loss in daily activities that is related to social separation, falls and functional frailty.<sup>13</sup> Many authors also relate dizziness to full or partial inability to accomplish professional, family activities, social, in addition to producing psychological and physical impairment, such as depression, deficit in concentration, loss of self-assurance and deficit in performance thus damagingly interfering in the fineness of life.<sup>14</sup> The dizzy persons mostly complain problems in memory loss, falling, mental concentration and fatigue. The physical or bodily anxiety produced by imbalance and dizziness may generate irritability, depression, loss of self-confidence, anxiety ,or terror and may change the daily routine and affect the social, professional and family relationships, which in turn producing loss of concentration, income and self-confidence.<sup>15</sup> Dizziness can cause severe restrictions in daily activities and is related with depressive signs , reduced self-rated fitness, and decreased excellence of life.<sup>16</sup> The commonly elder persons with long-standing dizziness difficulties also experience gait irregularities.<sup>17</sup> Balance calls upon contributions from vision, vestibular sense, proprioception, muscle strength and reaction time. With increased age, there is a progressive loss of functioning of these systems which can contribute to balance deficits. Balance disorders represent a growing public health

concern due to the association with falls and fall-related injuries, particularly in regions of the world in which high proportions of the population are elderly.<sup>18</sup>

Dizziness is thereof considered a serious social health problem in adults; the impact of dizziness is linked with depression, reduced self autonomy and thus social isolation. The affected individual's functional, social and psychological well being can be significantly hindered thus affecting their quality of life perception. It therefore requires an optimal management that includes rehabilitative program, along with QOL status management.<sup>19</sup> The aim of this research is to determine the impact of dizziness on functional and psychological status along with various factors associated with dizziness through different tools such as Dizziness handicap inventory (DHI), Geriatric Depression Scale (GDS), Time Up and Go Test, Fukuda Test, Schellong test and Functional Reach Test in frail elderly persons. There is currently general consensus that an exercise grounded practice of management known as "balance retraining" or "vestibular rehabilitation" is the most actual means of handling dizziness due to vestibular disorders.<sup>20</sup>

### MATERIAL AND METHODS

A Descriptive Cross sectional & Analytical study conducted on 200 elderly people. Data was collected from Healthy elder population of Islamabad, Rawalpindi and Lahore .This study was conducted for six months from September 2015 to February 2016. Research was approved by the Research Ethical Committee of Riphah college of Rehabilitation Sciences (RCRS).The inclusion criterion for the study was normal elderly people with no disability of either gender elder than 50 years were included in study. The exclusion criterion was people with any specific disability. 200 normal elderly participants with no specific disability were selected through purposive sampling technique. An informed consent was taken from participants before data collection.

The data was collected through well-structured questionnaire. Questionnaire was made up of 12 questions which were belonging to their history of fracture, fall, dizziness and any past illness. Different tests were performed to collect the data which includes Time Up and Go test (TUG) which was used to assess functional mobility, functional reach test (FRT) was applied to find out risk for falls in older adults, Geriatric depression scale (GDS) to assess the depression rate in older population, turning capacity (TC) for which Fekkuda test was used, dizziness handicap inventory (DHI) was used to evaluate the influence of dizziness on life and Schellong test that was used to study the circulatory functions and hypotension. SPSS Version 20.0 software {Statistical Procedure of Social Sciences} was

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used to analyze the data. To assess the correlation and association correlation and chi square tests were used respectively.

### RESULTS

Data from 200 Sample was included in data analysis and analyzed through SPSS 20.0. Mean age of the sample was 57.4 with 6.05 Standard Deviation. Out of total sample size 61.5 % (n=123) were females and 38.5 % (n=77) were male. Data analyzed using Independent Sample T test on gender variable shows that significant difference is present among elderly females and male's dizziness history, with increased prevalence of dizziness among females as compared to male elderly population.

40 % (n=80) individuals included in this study had diabetes, 18.5 % (n=37) participants had hypertension. Asthma, headache and other co-morbid conditions present in the participants were 8 % (n=16), 17 % (n=34) and 18% (n=32) respectively.

54 % (n=108) participants had good activity level i.e. walk whereas 9 % (n=18) and 6.5 % (n=13) participants involved in cycling and swimming activities.

Table shows the correlation between different factors i.e. TUG, TC, FR and GDS. Correlation between DHIT and TUG was computed as 0.125 (p = 0.07). Similarly, when correlation between DHIT, FR, TC and GDS was done it was observed as 0.128 (p = 0.07), 0.295(p < 0.001) and 0.205 (p = 0.004). This signifies that there is no association and significance is present between DHIT and all other measured variables.

The cross tabulation shows that p vale is less than 0.001, this indicates that there is association between DHI and activity level, the table also shows that with

**Table 1: Frequency and Percentage of activity level**

Do you involve in any activities.	Frequency Percent-age
Walk	108 (54.0%)
Cycling	18(9.0%)
Swimming	13(6.5%)
Other	61 (30.5%)

**Table 2: Correlation between DHIT, FR, TC and GD**

Variables	R-value	P-value
DHIT * TUG	0.125	0.077
DHIT * FR	0.128	0.071
DHIT * TC	0.295	0.000
DHIT * GDS	0.205	0.004

**Table 3: Activity \* DHI Category Cross Tabulation**

Do you involve in activity	DHI category		
	Mild	Moderate	Severe
Walk	57	48	3
Cycling	3	13	2
Swimming	4	8	1
Other	45	16	0
P-value	<0.001		

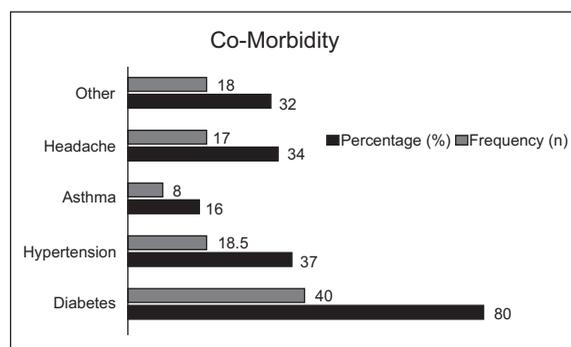


Figure 1: Frequency and Percentage of Co – Morbidities increased activity level ,dizziness level decreases in elderly population.

### DISCUSSION

This study is expected to add evidence to the importance of assessment of impacts of dizziness on functional and psychological status of geriatric population so as to minimize the associated factors. This imparts to improve their general health, fitness, strength and functional mobility. Present study highlights the frequency of dizziness attack among geriatric population. Mostly one in every five elders recently reports imbalance and dizziness. In our study approximately 30% of elderly describe the sensation and feeling of dizziness. This finding is proved by Teixeira et al that 40% of the geriatric population describe the feeling of dizziness and further supported by the authors of study conducted in Brazil, that 45% of elderly population reported the sensation of dizziness and the feeling of dizziness is substantial in elderly over the age of 65 years.<sup>14</sup>

Our study results concluded that means age was found to be slightly higher in females (32.61+23.70) compared to males (17.85+21.979). A study by Skøien et al stated that "In the current study, as well as in earlier studies, dizziness/vertigo was more common for women than for men in all age groups. However, women also have greater rates of illness absence in general, frequently clarified by occupational variances."<sup>21</sup> A study

by Analia et al reported that out of 257 participants, 76.3% were females and women are more vulnerable to dizziness, probably due to hormonal fluctuations and changes and also due to the fact that females more repeatedly look for medical services.<sup>15</sup>

With increasing number of morbidities, the older adults were found to be suffering more from balance and mobility issues. Functional mobility was assessed using TUG test which revealed that elderly required more time to complete the task hence supporting the fact of impaired dynamic balance among elderly. Hartholt et al reported that older people who experience dizziness are at increased risk of fall due to impaired balance leading to injury and high health care cost.<sup>22</sup>

Dizziness Handicap Inventory (DHIT) mean results showed that individuals elder than 50 years exhibit the mild handicapping in their daily activities and shows mild level of disability. The study conducted by Dros et al. reported that more than 60% of older dizzy people in primary care (age  $\geq$  65 years) experience moderate to severe impact on daily living due to dizziness. This signifies that with advancing age the disability level shows an incline with a greater incidence of dizziness and thus a greater impact on activity level.<sup>23</sup>

In the sample of this study, the point prevalence for vertigo or dizziness of any kind (i.e. without a definition of severity) was 57.5(n=115). The study by Teggi R et.al supports our result that the point prevalence for dizziness and vertigo was 40.3%. Previously published papers have reported different results, with a lifetime prevalence ranging between 23.2% and 59.2% , but when patients were asked if they experienced dizziness bad enough to hinder with daily activities, the positive responders reduced to 16.9-29.5%, In our study 41.0(n=82) participants were never evaluated previously with history of dizziness.<sup>24</sup>

Earlier studies have proposed that vestibular disorders could be a significant source of emotional complaints, including anxiety and depression. The result of this study supported by Best et al that performed a 1-year perspective study in 68 patients with acute vestibular vertigo and found no association between the severity of vestibular dysfunction and the occurrence and severity of anxiety and depression, which was in accordance with the findings of Liu et al. In the other study, Yuan Q et al, also found no association between the vestibular function and the occurrence of anxiety or depression in patients with vertigo; therefore, it is suggested that the severity of vestibular dysfunction should not be used as an evaluation indicator for the occurrence of anxiety and depression in vertigo patients<sup>25</sup>. The association of each co morbid illness i.e.

hypertension, diabetes mellitus, headache and BPPV had some significant consequence on dizzy elder persons.

The results of our study suggest that with increased activity level of individuals the chances of dizziness in these individuals are markedly reduced but the level of dizziness raised in those participants with the co-morbid conditions i.e. diabetes, hypertension, headache etc. So decreased and reduced level of activity increases the chances of dizziness attack in elderly population and restricts the individual's activities, movement and functional abilities.<sup>26</sup>

### CONCLUSION

Above results conclude that female population is more prone to develop dizziness as compared to males. Elderly population with dizziness shows great association between activity level and co morbid conditions. Improved activity level can reduce risk of developing dizziness in elderly population. No association was found between dizziness and depression though increasing age has a greater impact of developing symptoms of dizziness.

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**CONFLICT OF INTEREST:** Authors declare no conflict of interest

**GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL**

### **AUTHOR'S CONTRIBUTION**

Following authors have made substantial contributions to the manuscript as under:

<b>Akram M:</b>	Data Collection ,article writing
<b>Lain UQ:</b>	Compiling article and Review
<b>Abbasi HA:</b>	Article writing review
<b>Bashir A:</b>	Article writing review
<b>Malik NA:</b>	Data analysis critical review

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.