

Assessment of Dizziness Handicap Inventory (DHI) & Quality of Life (QOL) in a Tertiary Care Hospital

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ABSTRACT

Back ground: Dizziness Handicap Inventory (DHI) explores the dizziness of the individual in three domains. The presence of dizziness tends to affect the quality of life among the sufferers.

Objectives: To determine the pattern of QOL index among the above-mentioned patients and to correlate the DHI scores with QOL of the participants.

Material and Methods: The present study was a cross-sectional study carried out among patients aged more than 18 years with complaints of dizziness attending to the ENT department in a Tertiary Care Hospital at Puducherry over a period of three months. The total sample size was estimated as 140. A systemic random sampling was applied. Dizziness Handicap Inventory and WHO-quality of life assessment questionnaires were used to evaluate the severity of dizziness and quality of life, respectively. Pearson correlation test was used to assess the correlation between DHI and QOL.

Results: The mean total DHI score was 48.6 ± 22.4 and the mean QOL score was 47.91 ± 15.86 . The DHI score was significantly higher among those with higher age and also those with comorbidities. The QOL was significantly lower among those belonging to higher age groups and also among those with comorbidities. With each unit increase in DHI, the QOL decreased by 0.72 units.

Conclusion: The quality of life among those with dizziness was found to be lower. Higher the age and presence of comorbidities adversely affected quality of life. There was a negative correlation between DHI and QOL.

Key words: Dizziness, comorbidity, dizziness handicap inventory, Quality of life, correlation, age.

INTRODUCTION

The term 'DIZZY' as a symptom can indicate various sensations experienced by the patients. A clinician must know what a patient means by being dizzy. The four types of dizziness include disequilibrium, presyncope, vertigo and light headedness. The differential diagnosis also varies with each type of dizziness. An illusion of environmental motion is 'vertigo'. A disturbance in balance is referred as 'disequilibrium'. The presence of impending loss of consciousness is 'Presyncope' and when the dizziness is neither 'pre-syncope' nor 'vertigo', it is 'Lightheadedness'.¹

According to the earlier reports, between 15 and 20 percent of adults get dizziness annually. Vestibular vertigo was identified as the cause of almost 25% of the dizziness complaints. Vestibular migraine, comorbid anxiety, and benign paroxysmal positional vertigo (BPPV) are additional causes of vertigo.² It's crucial to evaluate the effect that dizziness has on daily tasks. For the aforementioned reason, the Dizziness Handicap Inventory (DHI), a 25-item questionnaire, was created. The DHI examines vertigo from three perspectives: 1. functional, 2. physical and emotional, and 3. unsteadiness. Jacobson GP and Newman CW reported that the DHI was reliable and had strong internal consistency.³

Dizziness appears to be a worldwide issue as the world's population ages. Therefore, it is still crucial to assess the quality of life for those who experience dizziness.⁴ Research has indicated a negative correlation between the burden of dizziness and people's quality of life.⁵ Patients with dizziness most often have a lower quality of life in both the physical and emotional dimensions.⁶ In the current study goals were to ascertain the mean dizziness handicap inventory (DHI) scores and handicap patterns among dizziness patients who visited the ENT department, as well as to ascertain the QOL index pattern among the aforementioned patients and correlate the DHI scores with the participants' quality of life.

MATERIAL AND METHODS

The present study was a cross-sectional study carried out among patients aged more than 18 years with complaints of dizziness attending to the ENT department in a Tertiary Care Hospital at Puducherry over

a period of three months (Ref no: 180/SVMCH/IEC-Cert/Dec./24). The ethical clearance for the study was obtained from the institutional ethics committee. Informed consent was obtained from all the participants included into the study. The inclusion criteria included any one with vertigo and dizziness for a period of more than 2 weeks. The exclusion criteria include presence of any history of seizures/epilepsy, presence of history of any head and neck injury and presence of cardiovascular disease and cervical spondylosis.

The formula that estimates sample size with respect to sample mean was used to determine the study's sample size. According to the study by Saxena A et al. e, $N = Z^2 * (SD^2 / e^2)$ was 1.96 at 95% confidence interval, SD was 11.41, and the calculation's margin of error was maintained at 2.⁷ A total sample size of 124 was determined. The ultimate sample size, rounded up to 140, was estimated to be 137 after adding 10% non-response rate. Systemic random sampling was the method used for sampling. During the study period, 300 patients with vertigo and dizziness are anticipated to visit the ENT department, according to the available historical data. The class interval was determined to be 2.14 (300/140) based on the data above. Every second patient from the initial number of two, which was chosen at random, was enrolled in the study.

A semi-structured proforma was used to gather the study's data. The participants' age, sex, socioeconomic level, and place of residence were among the sociodemographic details that were documented. The number of months that the dizziness persisted was noted. It was also noted if there were any comorbidities. The Dizziness Handicap Inventory (DHI) and the Quality of Life evaluation (QOL) tool were the two questionnaires that were employed. The 25 items on the DHI are self-administered and broken down into three subscales: physical (7 items), emotional (9 items), and functional (9 items). Every item receives a "Yes" score of four points, "Sometimes" (2 points), or "No" (0 points), with a maximum score of 100. Higher scores indicate a greater handicap due to dizziness.⁸ The WHOQOL-BREF or similar tool is used to assess QoL across four domains: physical health, psychological well-being, social relationships, and environment. Each domain score ranges from 0 to 100, with higher scores indicating better QoL.⁹

STATISTICAL ANALYSIS

To create the master chart, the gathered data was imported into Microsoft Excel 2019 and SPSS version 26 was used for statistical analysis. For this, both descriptive and inferential statistics were used. The mean and standard deviation were used to express the quantitative variables that were present. Analysis of variance (ANOVA) was performed to examine the mean DHI and QOL scores among the qualitative variables having more than two categories, respectively. The independent samples t test was performed to compare the means of the two groups. The person correlation test was utilized to determine the relationship between the DHI and QOL scores. Statistical significance was defined as a P value of less than 0.05.

RESULTS

Of the total participants, 45 (32.1%) were older than 60, and 78 (55.7%) were between the ages of 41 and 60. There were 87 (62.2%) females. 39 (27.8%) were lower class, and 71 (50.7%) were middle class. 64 people (45.8%) were from rural areas, while 76 people (54.2%) were from metropolitan areas. There were 45 (32.1%) comorbidities. According to Table 1, 39 people (27.9%) had hypertension, 21 people (15%) had diabetes, 14 people (10%) had bronchial asthma, 9 people (6.4%) had osteoarthritis, and 6 people (4.3%) had CAD. According to Figure 1, 56 people (40%) reported experiencing dizziness for three to four months, 49 people (35%) for five to six months, and 19 people (13.6%) for more than six months. The subjects' average overall DHI score was 48.6 ± 22.4 . The mean score for functional subscale was 18.2 ± 8.9 , for emotional subscale was 16.4 ± 7.8 and for physical subscale, it was 14 ± 6.7 . The mean overall QOL score was 47.91 ± 15.86 . The mean score for physical health domain was 48.59 ± 11.08 , for psychological health domain was 44.51 ± 18.94 , for social relationship, it was 43.17 ± 12.84 and for environment domain, it was 51.84 ± 19.84 (Table 2).

The average DHI score for people between the ages of 21 and 40 was 32.14 ± 19.41 ; for people between the ages of 41 and 60, it was 44.84 ± 21.84 ; and for people over 60, it was significantly higher than the average DHI scores for people in the age groups of 41 to 60 and 21 to 40, respectively. Those between the ages of 41 and 60 had a much higher mean than those between the ages of 21 and 40. Additionally, those with comorbidities had a substantially higher mean DHI score (53.84 ± 21.84) than those without comorbidities (42.91 ± 18.57). The mean DHI scores were similar between males and females (P value >

0.05). The mean DHI score was also similar between the socioeconomic status and residence categories, respectively (Table 3).

The average quality of life score for people aged 21 to 40 was 55.61 ± 14.84 , for people aged 41 to 60 it was 48.31 ± 20.84 , and for people over 60 it was 41.98 ± 15.81 . The age group between 21 and 40 years old had the highest mean quality of life (QOL), followed by those between 41 and 60 years old and those above 60. Additionally, those with comorbidities had a substantially poorer quality of life score (39.58 ± 21.54) than those without comorbidities (58.91 ± 18.41). The average quality of life was comparable for men and women. Additionally, the mean quality of life was comparable across the residence and socioeconomic class categories (P value > 0.05) (Table 4).

It was shown that there was a strong negative association between the DHI and QOL assessments. The QOL score dropped by 0.72 units for every unit rise in DHI scores (Figure 2).

DISCUSSION

About 30% of the elderly in the community at one point complained of dizziness, and it causes significant morbidity in adult populations. There are many different reasons of dizziness, and it can be difficult to get a precise diagnosis. Dizziness is invariably linked to significant functional impairment, even if it is rarely linked to life-threatening causes.¹⁰ Both dizziness and its incapacitating effects are self-perceived symptoms. It examines vertigo in three areas: the functional, emotional, and physical domains, and lastly the unsteadiness part of dizziness.³ DHI can also be used as a prognostic tool following the management of dizziness.¹¹ Dizziness can affect the health-related quality of life in the person it is present.¹² The present study was carried out to determine the pattern of QOL index among the patients attending with dizziness to the ENT department of a tertiary care unit and also to find the correlation between the DHI scores and the quality-of-life scores. For measuring quality of life world health organisation quality of life questionnaire was used.

Dizziness Handicap inventory score and its associated factors

The current study, which was cross-sectional in nature, involved 140 dizzy participants. The subjects' average overall DHI score was 48.6 ± 22.4 . Dizziness is more of a handicap for people in higher age groups than for people in lower age groups, as seen by the mean DHI score rising as age categories increased. Additionally, dizziness had a greater handicapping effect on people with comorbidities than on people without any comorbidity. Vanspauwen R et al. found no correlation between study participants' age and DHI score, which is in contrast to the current study. According to the study, the emotional domain is where dizziness first has a significant impact, and as the duration increases, the effect was more in the functional and physical domains.¹³ Jang Y et al reported chronic dizziness to be associated with the presence of diabetes mellitus.¹⁴

Quality of life among those with dizziness and its associated factors

The mean QOL score among the participants was 47.91 ± 15.86 . Two factors that were found to affect QOL among those with dizziness; age and presence of comorbidities. Increased age groups were found to have significantly decreased quality of life and so do those positive for the presence of any comorbid conditions like diabetes, hypertension, bronchial asthma, CAD.

According to the study by Lindell E et al, presence of dizziness tends to affect negatively the health-related quality of life. The study compared QOL between dizzy and no dizzy patients. The study added that the sense of unsteadiness adds more to the decline in QOL than the rest of the symptoms.¹⁵ Weidt S et al in their study found that dizziness markedly affected both the physical and mental health related QOL and stressed on the importance of assessing these factors in a patient suffering from dizziness.¹⁶

Severity of Dizziness and its relationship with QOL

The present study established a negative correlation between DHI and QOL scores of the study participants. With each unit increase in DHI scores, the QOL score decreased by 0.72 units. Perez N et al also reported a similar correlation between severity of dizziness and the quality of life. The study established that more severe Dizziness score was associated with poor quality of life.¹⁷ Lindell E et al also reported a negative association between the presence of dizziness and the health related QOL.¹⁸

According to Cheng YY et al., there were notable differences in a number of QOL areas among the three dizziness severity categories. Physical functioning, role limitation brought on by physical issues, social functioning, and vitality are among the domains.¹⁹ The overall impact of dizziness, according to Bronstein AM et al., is mostly caused by the negative effects it has on social, professional, family, and travel life.²⁰ To lessen the effects of dizziness, Mendel B et al. advised giving the patient the right kind of psychosocial

support.²¹ To keep patients' quality of life from declining, Monzani D et al. suggested psycho-education for dizziness patients.²² According to Swain SK, a lower quality of life manifests as a higher risk of falls, a decline in social and professional involvement, they tend to avoid travel, will be panic, depression and also agoraphobia.²³

The goal of the current study was its strongest point; relatively few earlier studies addressed comparable goals. The study clarified the extent to which patients' quality of life can be impacted by the intensity of their dizziness and the significance of treating both the dizziness and the psychosocial aspects that contribute to a decline in QOL. Both of the used surveys are widely recognized and have undergone extensive testing under a variety of circumstances. One of the study's drawbacks was that it was only conducted in one location. A multicenter study will produce results that are more broadly applicable.

CONCLUSION

The quality of life among those with dizziness was found to be lower. Higher the age and presence of comorbidities adversely affects quality of life. There was a negative correlation between DHI and QOL. Evaluation of quality of life among the patients requiring treatment of dizziness is of vital importance. Health education of the patients especially that addresses the psychosocial domain can aid in improving QOL.

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TABLES AND FIGURES

Table 1: Sociodemographic characteristics and presence of comorbidities among the study participants (n=140).

Variables		Frequency (n=140)	Percentage (%)
Mean Age (in years)		52.3 ± 14.7 years	
Age group (in years)	21-40	17	12.1
	41-60	78	55.7
	>60	45	32.1
Sex	Male	53	37.8
	Female	87	62.2
Socioeconomic status	Upper	20	14.2
	Middle	71	50.7
	Lower	39	27.8
Residence	Urban	76	54.2
	Rural	64	45.8
Comorbidities	Diabetes	21	15
	Hypertension	39	27.9
	Bronchial Asthma	14	10
	Osteoarthritis	9	6.4
	CAD	6	4.3

Figure 1: Bar chart showing distribution according to the duration of dizziness symptoms.

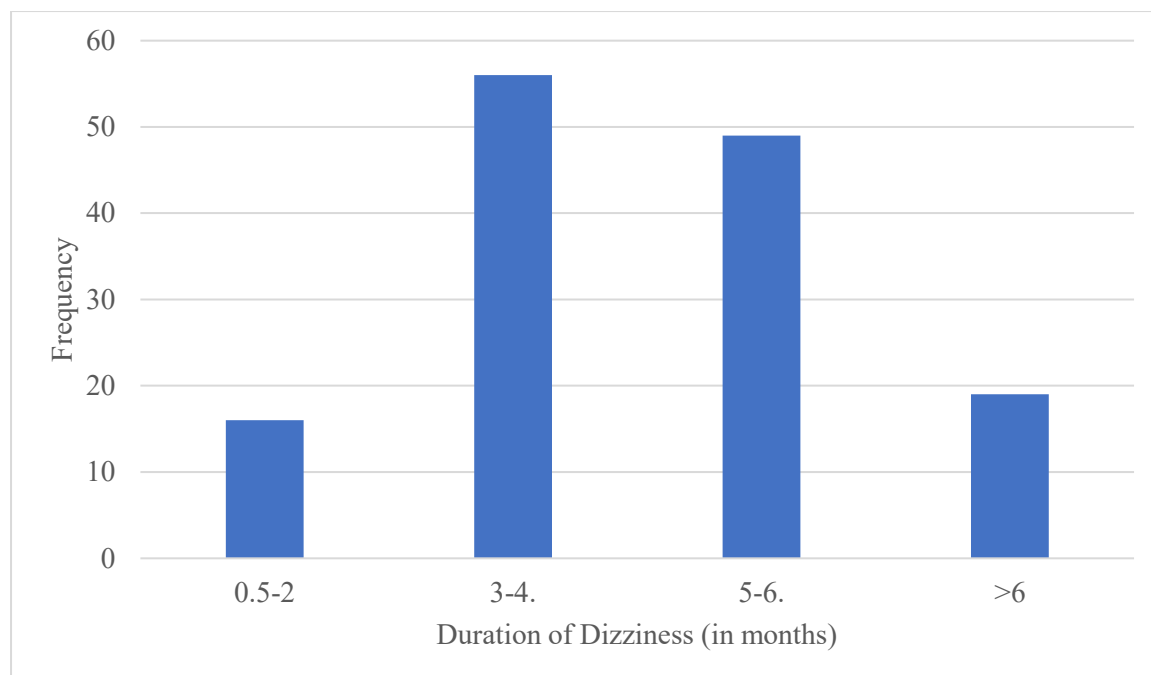


Table 2: Mean DHI and WHO-QOLscores among the study participants

Scales		Scores
DHI	Total DHI score	48.6 ± 22.4
	Functional subscale	18.2 ± 8.9
	Emotional subscale	16.4 ± 7.8
	Physical Subscale	14.0 ± 6.7
WHO-QOL	Overall QOL score	47.91 ± 15.86
	Physical Health	48.59 ± 11.08
	Psychological Health	44.51 ± 18.94
	Social Relationships	43.17 ± 12.84
	Environment	51.84 ± 19.84

Table 3: Comparison of mean DHI scores across various predictive factors

Variables		DHI scores	F value	P value
Age group (in years)	21-40	32.14 ± 19.41	5.03	0.008
	41-60	44.84 ± 21.84		
	>60	51.25 ± 20.87		
Sex	Male	46.91 ± 20.81	0.71	0.478
	Female	49.31 ± 18.47		
Socioeconomic status	Upper	46.29 ± 19.14	0.15	0.858
	Middle	44.94 ± 18.41		
	Lower	46.98 ± 20.05		
Residence	Urban	46.08 ± 20.84	0.03	0.970
	Rural	45.94 ± 24.03		
Comorbidities	Yes	53.84 ± 21.84	3.17	0.001
	No	42.91 ± 18.57		

Table 4: Comparison of mean WHO-QOL scores across various predictive factors (47.91 ± 15.86)

Variables		WHOQOL scores	F value	P value
Age group (in years)	21-40	55.61 ± 14.84	3.60	0.030
	41-60	48.31 ± 20.84		
	>60	41.98 ± 15.81		
Sex	Male	48.51 ± 15.94	0.21	0.670
	Female	47.84 ± 18.41		

Socioeconomic status	Upper	49.07 ± 20.84	0.02	0.973
	Middle	48.21 ± 19.57		
	Lower	49.04 ± 21.54		
Residence	Urban	48.51 ± 19.45	0.15	0.874
	Rural	47.98 ± 20.09		
Comorbidities	Yes	39.58 ± 21.54	5.68	0.001
	No	58.91 ± 18.41		

Figure 2: Correlation between DHI and QOL among the study participants

