Effect of Lifestyle and Dietary Intervention on Quality of Life and Self-care among Patients with Meniere's Disease

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Abstract

Background: Meniere's disease is a chronic illness that produces a triad of symptoms; vertigo, hearing loss and tinnitus, each of which is known to have the potential to impact on quality of life and patients' self-care. **Aim:** Evaluate the effect of life style and dietary intervention on quality of life and self-care among patients with Meniere's disease. **Patients and Method:** A quasi-experimental (pre-posttest nonequivalent control group design) was used for a purposive sample of sixty adult patients, diagnosed with Meniere's disease in the Ear, Nose and Throat (ENT) department and outpatient clinics at Assiut University Hospital. Patients were randomly divided into two equal groups (study and control) 30 patients for each. **Tools**: **Tool (I):** Demographic and medical background information form, Tool (II): Dizziness Handicap Inventory and Tool (**III**): Therapeutic self-care measure. **Results:** The mean age of the study and control groups was (44±9.8, 42.03±10.3) years respectively. There was a statistically significant difference between study and control groups regarding the total QoL scores (60.13±14.55, 57.33±13.58), (35.33±7.62, 47.87±17.62) respectively, pre and post lifestyle and dietary intervention with p. value <0.001**. Also, there was a significant improvement in total mean scores of self –care measure among study group as it increased from 20.1±5.52 on pre-intervention to 42.13±8.52 post. **Conclusion:** Life style and dietary intervention had a positive effect on improving quality of life and self-care activities among study group patients at 3- month follow up compared to the control group. **Recommendations**: Healthy lifestyle and dietary modifications should be considered as an initial step for both the prevention and management of Meniere's disease.

Keywords: Life style, Meniere's disease, Quality of life, Self-care.

Introduction

Meniere's disease (MD) is a long-lasting and potentially disabling condition that affects the inner ear. It is characterized by repeated attacks of vertigo, which can last from minutes to hours. These episodes are accompanied by sensorineural hearing loss (SNHL), tinnitus, and a sensation of fullness in the affected ear. One of the characteristic features of MD is the presence of an excess amount of fluid in the inner ear (Endolymph), known as endolymphatic hydrops (EH). This condition can occur due to irregularities in either the production or absorption of endolymph **Millennie et al., (2021)**. A population-based study on the epidemiology of MD found an overall incidence rate in the UK of 13.1 per 100000 person-years and a point prevalence between 120 and 513 per 100000 persons **(Bruderer et al., 2017)**.

There are various factors that can potentially trigger an episode of MD. These include inflammation in specific areas, particularly the maxillary sinus and teeth, functional disorders of the autonomic nervous system associated with stress, psychological factors, metabolic disorders, immunopathological changes, and excessive pressure in the fluid-filled spaces of the inner ear **Ishii et al., (2022).** The diagnosis of MD depends on a detailed review of the patient's medical history and a thorough physical assessment. Diagnostic criteria, along with functional inner ear tests such pure tone audiometry (PTA), vestibular-evoked myogenic potential testing (VEMP), caloric testing, electrocochleography, or head impulse tests, are utilized to support the clinical diagnosis. Treatment options for MD encompass oral medications, intratympanic injections, and

surgical interventions **(Jasińska-Nowacka et al., 2024).**

The unpredictable and episodic nature of MD, along with the severe and incapacitating episodes of vertigo, hearing loss, and tinnitus, significantly diminish the quality of life and self-care activities of individuals The episodes of vertigo and dizziness induce anxiety and prompt individuals to restrict their physical and social engagements, adversely affecting work, social connections, recreational activities, and significantly affecting the overall health and well-being of patients **Awad et al., (2021)**. Hearing loss gives rise to communication obstacles, potentially leading to work-related limitations, fatigue, social isolation, and emotional distress. Tinnitus can contribute to sleep disruption, feelings of depression, irritability, difficulties in concentration, and challenges in auditory perception **(Awad et al., 2021).**

Many dietary and lifestyle modifications have been recommended to potentially improve the condition of individuals with MD. Lifestyle interventions encompass changes in physical activity, sleep patterns, and stress management, which may involve psychological treatments like stress counseling or cognitive behavioral therapy. To benefit from these interventions, it is often advised to limit sodium intake to less than 2000 mg per day through salt restriction. Additionally, reducing caffeine consumption and adjusting water intake have been associated with positive outcomes in MD **Webster et al., (2023).** Recent suggestions include incorporating specially processed cereals into the diet as a potential therapy. Some individuals may also consider following a gluten-free diet as part of their dietary changes for MD **(Basura et al., (2020).**

Significance of the study:

The worldwide incidence of MD is estimated to range from 10 to 15 cases per 100,000 individuals annually **(Gacek and Gacek, 2023).** In Egypt, the occurrence of MD is relatively constrained due to disparities in healthcare availability and diagnostic practices. Each symptom of MD has a negative impact on an individual's quality of life and ability to take care of themselves. Therefore, this study is considered the first one in this geographical location that try to help those patients through lifestyle and dietary adjustments to improve the outcomes.

Aims of the study:

General aim:

The study aimed to evaluate the effect of lifestyle and dietary intervention on quality of life and self-care among patients with Meniere's disease.

Objectives:

– Assess quality of life, self-care and severity of disease among patients with MD.

– Evaluate the effect of applying lifestyle and dietary intervention on quality of life and self-care among patients with MD.

Hypotheses:

To accomplish the study's objective, the following research hypotheses were developed:

H1: Patients who receive lifestyle and dietary intervention would have higher total mean scores of quality of life than those patients who receive the routine hospital care only.

H2: Patients who receive lifestyle and dietary intervention would have higher total mean scores of self-care than those patients who receive the routine hospital care only.

H3: There would be a significant correlation between quality of life and self-care.

Patients and Method:

Research design:

A quasi – experimental (pre-posttest nonequivalent control group design) was utilized to demonstrate causality between an intervention (lifestyle and dietary intervention) and outcomes (quality of life and self-care). In this design the investigator recruited two groups: one experimental and one control where the outcomes on the experimental group before and after the intervention were measured **(Miller et al., 2020).**

Setting:

The study was carried out in the Ear, Nose and Throat (ENT) department, outpatient clinic and Audio vestibular unit at Assiut University Hospital. The department was located on the fifth floor and included seven rooms; each room had eight beds. It provides diagnostic, medical and surgical facilities. The reason for selecting this setting was the significant patient flow rate, which adequately met the study objectives. As one of the primary medical hospitals in Assiut governorate, it provides healthcare services for large number of individuals residing in urban and rural areas.

Sample:

The study included a purposive sample of sixty adult patients diagnosed with MD using PTA and VEMP tests. These patients, whose ages varied between 21 and 65 years, were included in the study from the time they were admitted until the three-month follow-up period. The patients were assigned to two groups through a randomization process using a shuffled deck of cards. The control group was determined based on even-numbered cards, while the study group was determined based on odd-numbered cards. The study group received lifestyle and dietary intervention, while the control group only received routine hospital care.

Exclusion criteria:

Patients were not included in the study if they had uncontrolled hypertension, diabetes mellitus, or heart disease. Additionally, individuals with other conditions that could impact balance, equilibrium and heating such as acoustic neuroma, labyrinthitis, eardrum rupture, otitis externa, otitis media with effusion, and otosclerosis were also excluded.

Sample size:

According to G power software, an estimated sample of "60" patients (30 in each group) was required with considering the (10%) dropout rate. For assessing differences between two independent means, a sample size was generated. Effect size (0.8), power (95%) and error (0.05).

Data collection instruments:

According to recent scientific research, data collection was carried out utilizing three specific tools:

Tool I: Demographic and medical background information form:

Using detailed history to assess patients' demographic & medical data, it consisted of three parts.

Part 1: Demographic data: Such as age, gender, marital status, occupation, educational level, employment status and residence.

Part 2: Medical data: It included items to assess patients' past and present health history as family history and duration of disease.

Part 3: Meniere's disease Patient-Oriented Symptom Index (MD POSI): This index was developed by **(Gates, 2000)** and was adopted in this study by the researchers for determining severity of disease and to provide tool that would measure the influence of MD on the overall health and well-being of patients. This scale consisting of 20 items related to signs and symptoms, which assessed the patient's health condition over the three months prior. Each item had five response options. The average percentage of the total score was categorized as follows: a score less than 30 was classified as mild, a score between 30 and 60 was considered moderate, and a score between 60 and 100 was indicative of severe severity.

Tool II: Disease-specific health-related quality of life:

Health-related quality of life was measured with the Dizziness Handicap Inventory **(DHI) Jacobsen and Newman (1990),** The Dizziness Handicap Inventory (DHI) is a widely utilized scale for evaluating the impact of symptoms associated with MD on a person's

quality of life (QoL). The original scale had three subscales; a physical, functional, and emotional subscale. Each item in the questionnaire is answered with "yes," "sometimes," or "no," and these responses are assigned corresponding numeric values of 0, 2, and 4. The questionnaire comprises 25 items, resulting in a total score ranging from 0 to 100. A higher score on the scale indicates a greater level of impairment or handicap caused by the symptoms. The findings indicate that the Dizziness Handicap Inventory (DHI) is a valid, accurate, and responsive tool for measuring perceived disability. The DHI also demonstrated strong internal consistency for the overall score, with an alpha coefficient of 0.89. To assess the extent of impairment, a score between 16 and 34 was classified as mild handicap, a score between 36 and 52 was categorized as moderate handicap, and a score of 53 or higher indicated a severe handicap. It was used two times; one time before applying life style and dietary intervention and 3 months after applying intervention.

Tool III: The Therapeutic Self-Care (TSC) measure:

TSC measure was developed by **Sidani and Doran, (2014)** to assess self-care ability in acute-care settings. The TSC measure demonstrated reliability and validity in assessing patients' self-care ability, as perceived by patients who were being discharged from the hospital and returning home. The measure encompasses items that cover four essential aspects of self-care: adhering to prescribed medication, identifying and effectively managing symptoms, performing daily living activities, and effectively managing any changes in their condition. A numeric rating scale, ranging from 0 (not at all) to 6 (very much so), was employed to assess self-care ability. Higher scores on the scale indicated greater levels of self-care ability. The content validity of the TSC measure was supported by clinical experts who deemed the 13 items to be relevant. Additionally, the measure demonstrated strong internal consistency with a Cronbach's alpha coefficient of .89. It was used two times; one time before applying life style and dietary intervention and 3 months after applying intervention.

Method:

The study was conducted through the following:

Tools validity and reliability:

A group of five experts in the field of Medical-Surgical Nursing, Ear, Nose and Throat & Audio Vestibular Medicine at Assiut University evaluated research instruments' content validity and provide feedback on clarity of sentences, appropriateness of content and sequence of items. The researchers meticulously examined their recommendation to ensure its accuracy and uphold the integrity of the study.

The internal consistency of the study instruments was assessed using the Cronbach's alpha test. Both the Dizziness Handicap Inventory and the Therapeutic Self-care Measure demonstrated exceptional reliability, achieving scores of 0.97 and 0.89, respectively.

Pilot study:

A pilot study involving 10 patients was carried out to evaluate the feasibility, applicability, and clarity of the assessment tools. Additionally, the pilot aimed to estimate the time needed to complete the tools. Importantly, the participants in the pilot study were separate from the primary sample of the study. The results of the pilot study indicated that the tools were straightforward and easily comprehensible, with no modifications deemed necessary

Ethical consideration:

The study received ethical approval from the Research Ethics Committee of Assiut University's Faculty of Nursing, under the approved number IRB: 1120240585. Furthermore, official permission was obtained from the administrators of the institutes where

the study was conducted. Every patient participating in the study provided written informed consent. The study procedures posed no risks to the patients. Participants retained the freedom to discontinue their involvement in the study at any time. Strict precautions were implemented to ensure the confidentiality and anonymity of the individuals. The privacy of study participants was taken into careful consideration during the data collection process.

Field work (procedure):

Administrative approval:

An official permission to carry out the study from the identified setting authorities (the head of the Ear, Nose and Throat department and outpatient clinics at Assiut University Hospital) were obtained, after explaining the purpose and nature of the study.

The study encompassed four distinct phases, which unfolded as follows.

I. Planning phase:

It focused on developing various data collection instruments following a review of the relevant literature **Oberman et al., (2017) & Tyrrell et al., (2017)**. The instructional booklet and educational sessions (one theoretical and three practical) were designed and written in a simple Arabic language to meet patient's needs and their different levels of understanding. Each patient in the study group received a copy of the life style and dietary intervention handout.

II. Assessment phase:

Data collection was started and continued for a period of seven months, from the beginning of November 2023 up to the end of May 2024. The data were gathered by the researchers three times / week on morning shifts. The researchers personally acquainted themselves with the eligible participants and provided a comprehensive explanation of the study's purpose and objectives, each participant provided written consent prior to their involvement in the study, then the demographic, medical data and severity of illness were gathered using tool I (Parts 1, 2 and 3) by the researchers through face to face interview. Initial assessment of the study participants' quality of life using (tool II) and assessment of patients' self-care using (tool III) was done for both groups before application of the life style and dietary intervention.

III. Implementation phase:

In this phase, Patients who accepted to participate in the study were randomly allocated to study and control groups. The researchers conducted individual interviews with each participant at the Ear, Nose, and Throat (ENT) department. The current assigned physician referred potential patients to the researchers who were available in the Audio vestibular unit.

Group (I): Control group.

The control group received the routine hospital care from the researchers as complete history taking including (frequency, duration, severity of vertigo episode and if it is associated with hearing loss, tinnitus and/or ear fullness), audio logical and vestibular evaluation to establish the diagnosis and finally to evaluate patient's understanding of the disease alongside conventional medical therapies such as diuretics, antiverteginous and antihistamines. Drugs.

Group (II): Study group.

The study group received the routine hospital care in addition to the items of lifestyle and dietary intervention through four sessions (one theoretical and three practical).

- **The first session**: **Aim**: To empower patients with basic information about MD. **Time**: 30 minutes. **Contents:** Educated patients overview about MD by providing information about definition, clinical manifestation, possible causes, stages and ways of diagnosis. Encouraged patients to ask questions and verify their understanding of the information conveyed to them.

- **The second session: Aim**: To educate patients on healthy life style habits that are necessary for good Meniere's prognosis. **Time**: 40 minutes. **Contents:** demonstrated stress management techniques, specifically relaxation methods to the patients. The researchers offered guidance on coping strategies, such as problem-solving approaches, to help individuals overcome and address challenges related to self-care, expressing difficult emotions, and maintaining emotionally supportive relationships. Teaching patients pain management such as guided imagery and meditation, guidance for smoking cession, measures to prevent relapses of trigger factors as well as measures to improve sleep patterns.

- **The third session: Aim**: To educate patients simple neck exercises to alleviate pain. **Time**: 30-45 minutes. **Contents:** Involved demonstration of eight stretching exercises, emphasizing the muscles in the front and back of the neck, along with those surrounding the shoulders. Theses rotational neck exercises including: 1- a relaxation exercise for the shoulders and neck; 2- a neck flexion exercise by looking down; 3- turning the face to both sides, the right and the left; 4- inclining the head to both sides; 5- shoulder shrugging exercise 6-nodding exercise on both sides 7: turning shoulders round in both directions; and 8: lifting arms fully, then lowering them. Patients were instructed to perform each exercise three times per day (morning, afternoon, and evening). (10 minutes each). Each exercise was repeated 5 times.

- **The fourth session: Aim**: To educate patients about healthy diet. **Time**: 30-45 minutes. **Contents:** included clarification on dietary intervention as eating well balanced diet, taking vitamins as prescribed, modification of salt intake, only 2 gm /day, when symptoms are severe, 1500 mg a day is advisable to keep the inner ear fluid low and help prevent vertigo. Abundant water intake, a low amount of caffeine, such as 100 mg/ day and refrain from consuming substances such alcohol, coffee, tea, soda, energy drinks, chocolate, diet pills, reduced intake of food that is rich in potassium. Dietary modifications also encompassed the use of specially processed cereals and adherence to a gluten-free diet. Finally, patients enforced about medication management and improve medication adherence

- **Monthly follow-up phone calls**: **Objectives**: To provide feedback and suggestions according to patients' input. **Time:** 20 minutes. **Contents:** Asked and emphasized the compliance with life style modification that should be followed by participants to maintain the achieved results. Summarized the discussion and advise patients to contact healthcare providers if they encounter any health issues.

- At the beginning of each session, a brief summary of the content covered in the previous session was provided, along with accompanying feedback. Discussions, motivation, and reinforcement were employed during the sessions to facilitate the learning process. **By the end;** a summary was made and time allowed for questions and answers & plan for next session was made.

- **Teaching methods/media were used**: Lecture, demonstration and re-demonstration, illustrated pictures, recorded videos on mobile screen questions and answers, power point presentations, brain storming, and printed hand out.

IV: Evaluation phase:

After 3 months, patients in the both groups were reassessed individually using study tools **(II and III)**. Arrangements were made within the ENT outpatient clinics at Assiut University Hospital for scheduling follow-up appointment. Comparison was done between two groups in order to evaluate the effect of life style and dietary intervention on patients' quality of life and self-care. The session took approximately 20 minutes.

Statistical analysis:

The gathered data were assessed, organized into tables, and subjected to analysis utilizing the Statistical Package for Social Science (SPSS) software, specifically version 26. The qualitative variables were reported as a number (%) and the quantitative variables as mean ± SD. As well inferential tests were utilized such as student t-test to compare two independent sets of numerical variables that are normally distributed, pearson Chi-square test ($\chi 2$), or Fisher's exact test investigate the relationship between two qualitative data. A significance level of $P \leq 0.05$ was employed to determine statistical significance, and Pearson correlation analysis was utilized to demonstrate the relationship between variables.

Results:

Table (1): shows that the highest percentage of patients in both the study and control groups, their ages ranged from 40 to 50 years with a mean age of (44±9.8, 42.03±10.3) years, respectively. The majority of the study and control groups were females (66.7% and 60.0%) respectively. 73.3% of the study group and 76.7% of the control group were married. Concerning educational level, (46.7%) of the study and control groups had secondary education and in both groups (56.7% and 70.0%) respectively were not working. Finally, regarding residence, (70.0%) of the study group and (66.3%) of the control group were coming from rural areas whereas (60% and 73.3%) of the study and control groups respectively reported insufficient monthly income.

Figure (1): Reveals that more than half of the studied patients (53.3% and 60.0%) respectively had a positive family history of MD (p. value=0.301).

Figure (2): Illustrates that the majority of patients in both groups (63.3% and 53.3%) respectively were diagnosed as MD since more than one year (p. value=0.432).

Figure (3): Shows that the majority of patients in the study and control groups (70 % and 53.3%) respectively had severe degree of disease (p. value=0.414).

Table (2): Clarifies that there was no statistically significant difference in relation to dizziness handicap inventory between the study and control groups pre life style and dietary intervention (t= 0.53, P = 0.601). while, a statistically significant difference was found between both groups at 3-month follow up (t= 6.43, P = <0.001**)

Figure (4): Indicates that (60% and 66.7%) respectively of both study and control groups had severe disability level before intervention with no statistically significant difference (P.value = 0.659). While (59.3% and 16.7%) respectively of both study and control groups had mild disability level 3 months after lifestyle and dietary intervention with statistically significant difference (P.value = <0.001**).

Table (3): demonstrates that there was a significant improvement among patients in the study group in relation to items of therapeutic self-care measure with the mean (20.1±5.52, 42.13±8.52) respectively pre and 3 months' post intervention compared to the control group, no significant improvement was found between pre and 3-month follow (19.97±3.78, 26.37±7.64) respectively.

Table (4): Represents that, there was a positive correlation between total scores of dizziness handicap inventory with patients' age, gender and monthly family income among study and control groups pre and post lifestyle and dietary intervention.

Table (5): exhibits that a significant negative correlation between dizziness handicap inventory and therapeutic self-care measure pre life style and dietary intervention and after 3 months among study group patients.

Table (1): Demographic data of the study and control groups (n= 60).

Demographic data	Study group (n=30)		Control group (n=30)		X^2/t-test	P. value
	N	%	N	%		
Age groups						
– 21< 30	4	13.3	4	13.3	1.13	0.771
– 30 <40	6	20.0	4	13.3		
– 40 <50	15	50.0	14	46.7		
– 50-56	5	16.7	8	26.7		
Mean±SD	44±9.8		42.03±10.3		t: 1.20	0.234
Gender						
– Male	10	33.3	12	40.0	0.29	0.592
– Female	20	66.7	18	60.0		
Marital status						
– Single	5	16.7	4	13.3	0.80	0.849
– Married	22	73.3	23	76.7		
– Divorced	1	3.3	2	6.7		
– Widowed	2	6.7	1	3.3		
Educational level						
– Can't read and write	4	13.3	7	23.3	2.02	0.569
– Primary education	2	6.7	3	10.0		
– Secondary education	14	46.7	14	46.7		
– University or higher education	10	33.3	6	20.0		
Occupation						
– Working	13	43.3	9	30.0	1.15	0.284
– Not working	17	56.7	21	70.0		
Residence						
– Urban	9	30.0	10	33.3	0.08	0.781
– Rural	21	70.0	20	66.7		
Monthly family income						
– Sufficient	12	40.0	8	26.7	1.20	0.273
– Insufficient	18	60.0	22	73.3		

*** Significant at p ≤ 0.05** **** Significant at p≤0.01**

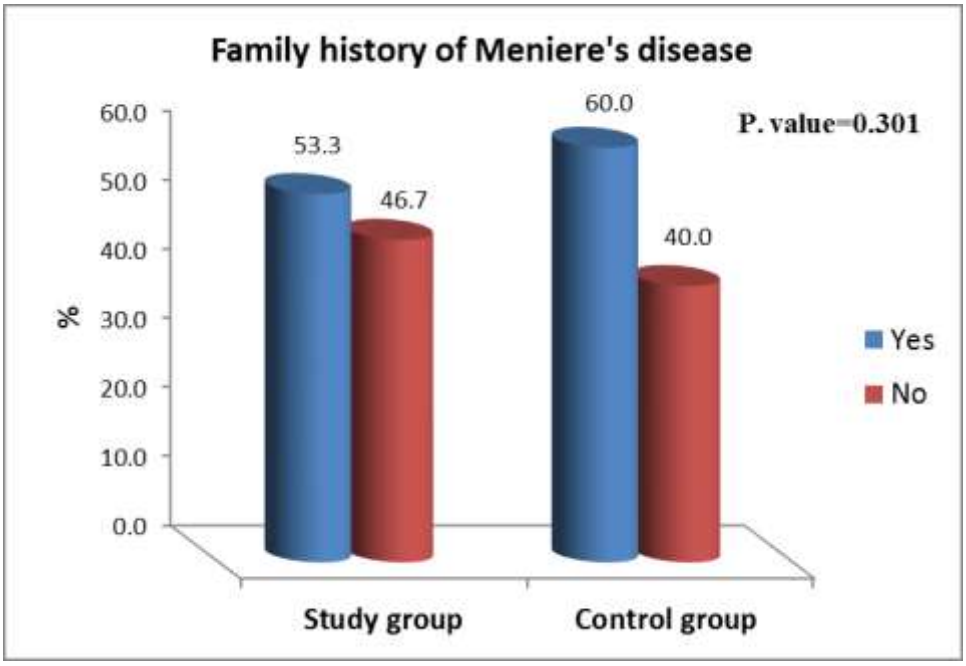

Figure (1): Family history of MD among the study and control groups (n= 60).

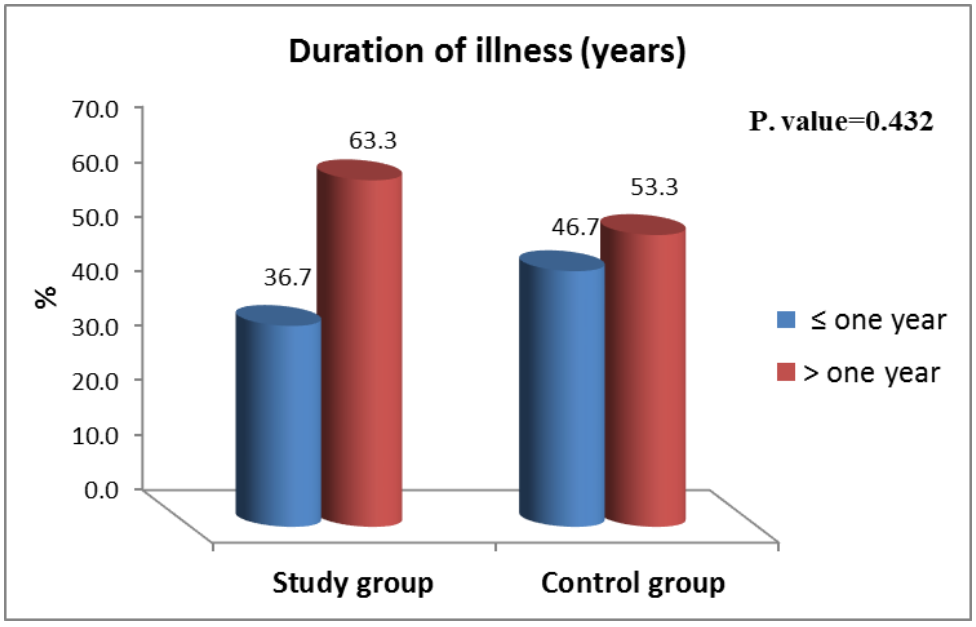

Figure (2): Duration of illness among the study and control groups (n= 60).

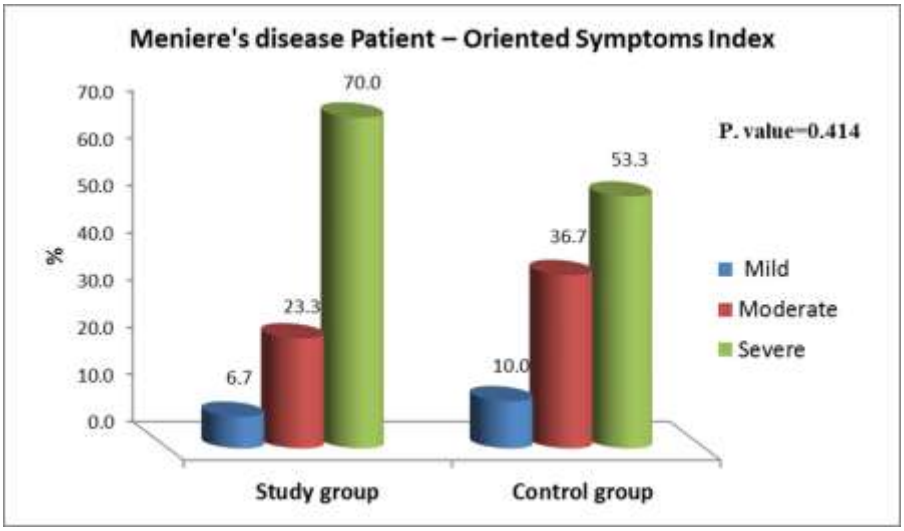

Figure (3): Severity of symptoms among the study and control groups before lifestyle and dietary intervention (n= 60).

Table (2): Comparison between the pre and post intervention mean scores of Dizziness Handicap Inventory among study and control groups (n = 60).

Dizziness Handicap Inventory	Pre intervention		t-test	P.value	3 months post- intervention		t-test	P.value
	Study group (n = 30)	Control group (n = 30)			Study group (n = 30)	Control group (n = 30)		
	Mean±SD	Mean±SD			Mean±SD	Mean±SD		
Physical aspect	20.93±5.91	20.1±6.37	0.53	0.601	8.6±3.24	15.8±6.61	5.36	<0.001**
Functional aspect	19.07±5.53	17.77±6.1	0.86	0.391	8.13±4.13	15.73±6.45	5.43	<0.001**
Emotional aspect	20.13±6.28	19.47±6.56	0.40	0.689	8.6±4.24	16.33±6.91	5.22	<0.001**
Total	**60.13±14.55**	**57.33±13.58**	**0.77**	**0.444**	**35.33±7.62**	**47.87±17.62**	**6.43**	**<0.001****

*** Significant at p≤ 0.05** **** Significant at p≤0.01**

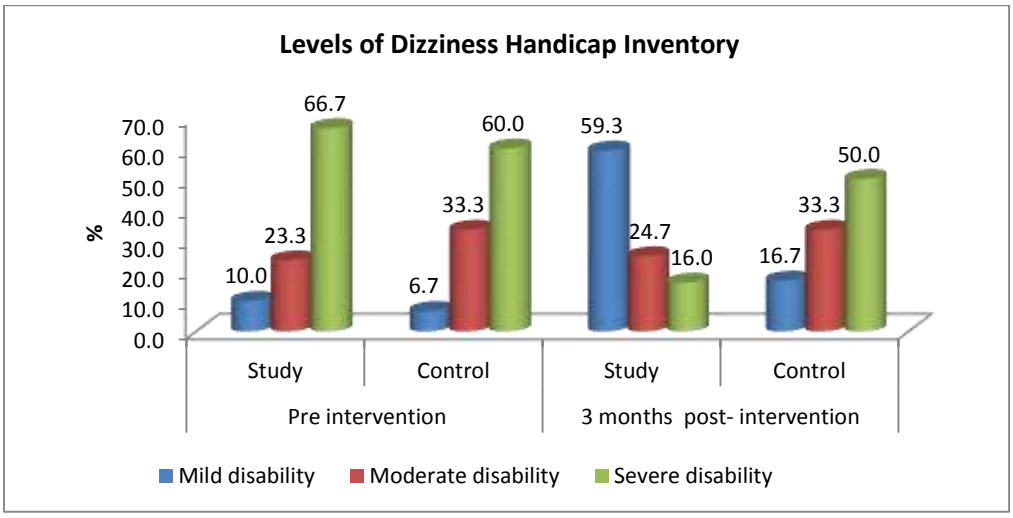

Figure (4): Distribution of study and control groups in relation to Dizziness Handicap inventory levels pre and post lifestyle and dietary intervention (n=60)

Table (3): Total and subtotal mean scores of therapeutic self-care measure among study and control groups pre and 3 months post intervention (n = 60).

Therapeutic self-care measure	Pre intervention		t-test	P.value	3 months post- intervention		t-test	P.value
	Study group (n = 30)	Control group (n = 30)			Study group (n = 30)	Control group (n = 30)		
	Mean±SD	Mean±SD			Mean±SD	Mean±SD		
Taking medications	4.97±1.9	4.77±1.17	0.49	0.625	10.93±2.36	6.07±1.91	8.77	<0.001**
Recognizing and managing symptoms	7.83±2.31	8±2.42	0.27	0.786	15.7±3.51	10.1±3.24	6.42	<0.001**
Carrying out activities of daily living	4.53±2.26	4.33±1.52	0.40	0.688	9.27±2.57	5.97±2.33	5.21	<0.001**
Managing changes in condition	2.77±1.45	2.87±1.57	0.26	0.799	6.23±1.33	4.23±1.52	5.41	<0.001**
Total	**20.1±5.52**	**19.97±3.78**	**0.11**	**0.913**	**42.13±8.52**	**26.37±7.64**	**7.55**	**<0.001****

*** Significant at p≤ 0.05** **** Significant at p≤0.01**

Table (4): Correlation between total scores of dizziness handicap inventory and demographic data for study and control groups pre and post intervention (n = 60).

Demographic data	Dizziness Handicap Inventory							
	Study group (n=30)				Control group (n=30)			
	Pre intervention		3 months post - intervention		Pre intervention		3 months post-intervention	
	r	P. value	r	P. value	r	P. value	r	P. value
Age	0.667	0.001**	0.318	0.027*	0.456	0.011*	0.363	0.049*
Gender	0.438	0.015*	0.593	0.023*	0.426	0.019*	0.394	0.031*
Marital Status	-0.331	0.074	0.081	0.670	0.086	0.651	0.030	0.877
Educational level	0.284	0.128	0.014	0.942	0.111	0.559	0.165	0.384
Occupation	0.012	0.951	0.246	0.190	0.312	0.093	.404	0.027
Residence	-0.139	0.464	-.452	0.012	-.373	0.042	-.426	0.019
Monthly income	0.487	0.049*	0.415	0.023*	0.520	0.003**	0.415	0.023*

Table (5): Correlation between total scores of dizziness handicap inventory and therapeutic self-care measure of the studied patients pre and post life style and dietary intervention (n = 60).

Variables	Total dizziness handicap inventory scores			
	Study group (n = 30)		Control group (n = 30)	
	r	P	r	P
Pre intervention Total therapeutic self-care scores	-0.426	0.019*	-0.058	0.760
3 months post intervention Total therapeutic self-care scores	-0.488	0.006**	-0.267	0.153

Discussion:

MD is a long-term illness marked by frequent vertigo attacks, varying degrees of hearing impairment, tinnitus, ear pressure, and a gradual decline in audio vestibular functions. Due to the debilitating nature of the disease, a primary focus of management is to enhance patients' self-care and overall quality of life **Millennie et al., (2021).** Precision therapies designed to change the severity and prominence of symptoms must be given by

nurses **Cao et al., (2024)**. Therefore, the aim of the current study was to assess effect of life style and dietary intervention on quality of life and self-care among patients with MD.

Regarding the demographic characteristics of the studied participants, the results of the present study revealed that the majority of patients in both the study and control groups were females and their age ranged from 40 to 50 years with a mean age (44±9.8 and 42.03±10.3) years respectively. These findings could be explained by the fact that numerous hormonal effects occur during the premenstrual period. **Molnar et al. (2022) and Thompson-Harvey et al. (2023)** concurred with the findings of the present study, reporting that MD is most likely to strike individuals in their fourth decade of life and that females are anticipated to receive a diagnosis of MD three times more frequently than males. In addition, **Millennie et al., (2021)** mentioned that MD can manifest at any point in life, although it is more commonly observed in individuals aged between 40 and 60 years. However, **Xie et al., , (2021)** contradicted this study finding and found that MD was most prevalent among middle-aged patients. These discrepancies in age among studies could be due to culture and environmental differences.

As regard educational level and occupation, the main findings of the current study revealed that, the majority of the patients in both groups had secondary education and were unemployed. From the researchers' point of view inability to work might be due to chronicity and functional disabilities of the disease. This finding contradicted the results of the study by **Awad et al.,, (2021)**, entitled " Quality of Life of Patients with MD in Alexandria-Egypt." and found that fewer than half of the participants examined had no formal education. Our study aligned with their discovery that over a third of individuals in both groups were probably unable to work due to illness.

Regarding residence and monthly income, the current study indicated that the highest percentage of the study and control groups were living in rural areas and reported insufficient monthly income. These result findings were in the same line with **Tyrrell et al., (2017),** who studied" Living with Meniere's Disease: Understanding Patient Experiences of Mental Health and Well-Being in Everyday Life." and noted that Meniere's is more prevalent in less populated areas with lower income levels, and its occurrence diminishes with increasing population density. In contrast, a study conducted by **(Lee, et al.,2021),** entitled " Association between MD and air pollution in South Korea. ' documented that the highest percentage of the included sample were from urban areas.

Concerning family history, the results of the present study illustrated that more than one half of the study group and about two thirds of the control group had positive family history of Meniere's disease. These findings were consistent with study conducted by **Oberman et al., (2017**) entitled " The aetiopathologies of Meniere's disease: a contemporary review. " and stated that genetic factors may contribute to the development of MD, potentially by influencing the volume or control of endolymph fluid. Furthermore, this result was in accordance with **Martinez-Gomez et al., (2020)** who studied the genetics of MD and reported that MD is a collection of uncommon conditions that exhibit a significant genetic influence. While, on the other hand, **Xie, et al., (2021)** in their prospective study, titled " The relationship between clinical characteristics and magnetic resonance imaging results of Meniere's disease" found that the majority of their patients had no family history of the disease.

Regarding duration and severity of illness, the majority of patients diagnosed with MD had been living with the condition for over a year, with over half experiencing a severe form of the disease. From the researchers' point of view, it could be due to symptom is slowly progressive and cause severe discomfort to patients. These findings were matching with **Gurkov et al., 2016)** who studied" What is Meniere's disease? A contemporary re-evaluation of endolymphatic hydrops" and showed that MD is an inner ear disorder resulting in intense dizziness (vertigo), tinnitus, hearing impairment, and a sensation of fullness or blockage in the ear. Episodes of dizziness can occur abruptly or vfollowing a brief period of tinnitus. Furthermore, some individuals with

MD may experience such seere vertigo that they lose their equilibrium and fall. In this context, **Lui et al., (2020**) concluded that, MD represents a persistent issue.

In terms of quality of life, the study results revealed that there was no statistically significant difference existed between the study and control groups before application of life style and dietary intervention. This explained that QoL at baseline was lower in both groups. From the researchers' point of view, this might be attributed to the functional problems, disease chronicity and lack of knowledge. The current findings were similar to **Fernandes et al., (2021)** who reported that there were significant negative impacts of MD on the majority of study patients' quality of life aspects, Patients with MD had a lower quality of life compared to healthy individuals. Vertigo primarily affected the physical aspect, while tinnitus and hearing loss impacted the psychosocial aspect. The sense of coherence played a role in influencing the psychosocial dimension.

However, a highly statistically significant difference was found between the study and control groups in relation to the mean score of QoL 3 months after implementing life style and dietary intervention. This might indicate that a notable enhancement of QoL in the study group relative to the control group. From the researchers' point of view, this could be related to adherence of the study group to lifestyle and dietary issues provided for them by the researchers using different teaching strategies as lecture, discussion, and colored booklet. These result findings were in agreement with **Liu et al., (2020)** who evaluated the benefits of vestibular rehabilitation on the quality of life and fall risk in patients with MD and found that there were significantly improvements of quality of life post treatment intervention for the experimental group than the control group.

Moreover, the study findings were congruent with **Webster et al., (2023)** who mentioned that lifestyle changes targeting physical activity, sleep habits, and stress management are suggested to be advantageous for individuals with Meniere's disease. Lifestyle medicine has been defined as the "evidence-based practice of assisting individuals and families to adopt and sustain behaviors that can improve health and quality of life". Also, **Lahiji et al., (2022)** who studied " Prevalence of anxiety and depression in Meniere's disease; a comparative analytical study " confirmed that due to enhancements in physical symptoms, individuals regained the ability to engage in their usual activities that were formerly limited by dizziness or apprehension of symptoms. This progress subsequently enhanced functional and emotional well-being, which are closely linked to physical well-being.

The result findings were in contrast with the results of a study done by **Sharma and Gupta, (2020)** who examined the efficacy and comparison of vestibular rehabilitation exercises on quality of life in patients with vestibular disorders, and found that no significant improvement in the functional and emotional dimensions and no improvement in the physical aspect after vestibular rehabilitation.

In terms of self-care, the current study result showed that there was significant improvement in all items of therapeutic self-care measure (adherence to medication, symptom recognition and management, performing daily activities, and handling changes in health condition) for the study group after application of life style and dietary intervention compared to the control group. This result was in harmony with a national survey conducted in Italy by **Ward et al., (2019)** about patient perceptions of effectiveness in treatments for MD and reported that effectively managing and controlling symptoms through a combination of medical treatment and lifestyle adjustments can significantly reduce the functional limitations and handicaps linked to Meniere's disease.

Also, the previous study result was supported with **(Basura et al.,2020)** who evaluated clinical practice guidelines for MD and stated that the person gains confidence in going out alone and can now lift their head or change positions in bed without the fear of provoking symptoms. Also, the finding was in respect with **(Tyrrell et al., 2017)** who studied " Living with Ménière's Disease: Understanding Patient Experiences of Mental

Health and Well-Being in Everyday Life " and Clarified that their participants' improved ability to read their bodies and recognize signs of an impending attack suggests the development of Meniere's literacy. Drawing inspiration from interactive health literacy, this suggests that individuals are better equipped to autonomously apply knowledge with confidence and motivation, empowering them to utilize medical treatments and lifestyle adjustments to lessen the frequency of vertigo episodes and enhance their self-care capabilities.

Additionally, **Webster et al., (2023)** in their randomized clinical trial " Lifestyle and dietary interventions for MD " showed that the group with MD exhibited the most significant divergence from the control groups in their behavioral patterns. While the daily lifestyle and behavior pattern questions were consistent across all questionnaire forms in the study, certain items concerning stressors, relaxation methods, and physical symptoms were altered during the research and subsequently reverted to their initial format.

Regarding correlation between quality of life and demographic data, the findings of the current study displayed that there was a positive correlation between QoL scores and patients' age, gender and monthly income. This suggest that being younger, female gender, and lower occupational status are all factors linked to a lower quality of life. These results supported with **Awad et al., (2021)** in which, their results indicated that female patients with low educational attainment, unemployment, and insufficient income were more likely to report poor quality of life. Notably, a statistically significant correlation was observed between quality of life scores and all socio-demographic characteristics except marital status. Also this finding was in harmony with **Gunes-Bayir et al., (2023)** who revealed that there is an association between dizziness/vertigo and female gender and age.

Finally, regarding correlation between quality of life and self –care, the findings of the current study showed that a significant negative correlation between dizziness handicap inventory and therapeutic self-care measure pre life style and dietary intervention and after 3 months among study group patients, which mean that when the level of dizziness handicap increases the level of self-care decreases and vice versa. These findings were matching with **Walker et al., (2018)** who mentioned that The lasting and distressing symptoms can lead to physical and psychological impacts that may further hinder engagement in daily activities and interests. Also, **Talewar et al., (2020)** study, revealed that MD has an enduring influence on both physical and psychosocial aspects, emphasizing the necessity for patients to receive assistance in exploring new activities that could be crucial for enhancing their well-being.

Conclusion:

The results of the present study proved that lifestyle and dietary intervention were essential and fundamental. Furthermore, lifestyle intervention showed a positive effect on improving patients' quality of life and self-care activities. Additionally, the study revealed that there was a significant correlation between quality of life and self-care. These results supported all the proposed hypotheses

Recommendations:

The findings of this study suggest the following recommendations: Lifestyle and dietary intervention should be implemented as an initial step for the prevention, treatment, and management of Meniere's disease. All patients diagnosed with MD should receive illustrated colored booklets containing items of lifestyle and dietary modification and these booklets should be kept available in ENT outpatient clinics. Moreover, **Cao et al., (2024)** recommended that nurses should provide continuous health education about lifestyle changes to enhance patient care, home care, and adoption of healthy behavior.

Limitations of the study:

There were some difficulties for some patients to come in the 3-month follow-up appointments. The researchers contacted them several times by phone to avoid missing any patient from the research and try to find appropriate time for them to complete their 3 month follow –up, and finally we overcame this limitation.

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Conflict of interest:

A conflict of interest does not exist.

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