



MANAGEMENT OF DIZZINESS IN OLDER ADULTS: A RETROSPECTIVE STUDY ON FALL-RISK-INCREASING DRUG (FRID) ADJUSTMENTS IN PRIMARY CARE

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ABSTRACT

Background: Dizziness is a common complaint among older adults and poses a significant challenge for general practitioners (GPs) due to its diverse etiologies, including peripheral, central, and medication-related causes. The role of fall-risk-increasing drugs (FRIDs) in dizziness remains an area of concern, yet limited research has been conducted on FRID adjustments in older patients. **Objective:** This study aimed to assess the management of dizziness in older adults, with a particular focus on evaluating and modifying FRID prescriptions in primary care settings. **Methods:** A retrospective study was conducted at Indira Medical College & Hospitals, Pandur, and Melmaruvathur Adhiparasakthi Medical College and Hospitals, Melmaruvathur, Chengalpattu District, Tamilnadu, India, from October to December 2024. Data were extracted from electronic medical records of 5624 patients aged 51 and above who presented with dizziness. Statistical analysis included chi-square tests and logistic regression models to compare treatment strategies and FRID adjustments across different age groups. **Results:** The prevalence of dizziness among older adults was 12.8%, with a median patient age of 76 years. Most patients were female, and dizziness prevalence increased with age. The most common diagnoses were symptom-based, cardiovascular conditions, and peripheral vestibular disorders. Treatment strategies primarily included observation (28.4%), patient education and advice (28.0%), additional testing (26.8%), and medication adjustments (11.7%). FRIDs were prescribed to 88.2% of patients, with an average of 4.1 FRIDs per patient. FRID adjustments were infrequent, with dose reductions in 262 patients (4.7%) and discontinuations in 438 patients (7.8%). Referral rates to specialists were higher (19.0%) compared to previous studies. **Conclusion:** FRID adjustments were the least utilized management strategy, despite their significant association with dizziness. GPs should regularly assess and adjust FRID prescriptions to minimize dizziness-related risks in older adults. Given the increasing prevalence of dizziness in this population, a systematic approach to medication review and targeted interventions is essential to improve patient outcomes and reduce unnecessary referrals.

Keywords: - Dizziness, Fall-risk-increasing drugs (FRIDs), General practitioners, older adults, Medication adjustment

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INTRODUCTION

The complaint of dizziness can manifest alongside both benign and severe conditions, making it a complex issue for general practitioners (GPs) to assess.

Dizziness may present as sensations of giddiness, faintness, lightheadedness, instability, unsteadiness, a tendency to lose balance, or a feeling of imminent

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blackout [1].

The origins of dizziness vary, ranging from peripheral (vestibular) to central (neurological) causes, as well as general medical conditions [2]. Some researchers suggest that dizziness in older adults may be a multifaceted geriatric syndrome [3–6]. Geriatric syndromes are characterized by symptoms that arise from multiple contributing factors. Given the impact of dizziness on the elderly, effective management by GPs is essential. However, limited research in primary care settings has explored dizziness management, and studies often exclude older adults [7–12].

It is estimated that medications contribute to dizziness in up to 25% of elderly patients, highlighting the importance of conducting medication reviews for those experiencing dizziness [13]. However, it remains unclear whether GPs routinely consider medications as a potential factor in dizziness among older individuals. Medications associated with dizziness have significant similarities to fall-risk-increasing drugs (FRIDs) [14,15]. Since dizziness is linked to an increased likelihood of falls [16,17], and FRIDs negatively affect postural control [18], these medications may serve as indicators of potential dizziness-inducing effects. In light of this, Harun and Agrawal have recommended reassessing the use of FRIDs when diagnosing and managing dizziness [19]. The objective of this study is to enhance understanding of dizziness management in older adults, with a particular focus on evaluating and modifying FRID prescriptions.

MATERIALS AND METHODS

Patient Identification

The study population was identified through an electronic search strategy, targeting patients who visited their general practitioner (GP) with complaints of dizziness. In the medical database, patients were selected based on ICPC codes N17 ("vertigo/dizziness") and H82 ("vertiginous syndrome"). Anonymized patient records were analyzed to extract relevant data, including demographic details, consultation characteristics, prescribed medications, symptoms, physical examination findings, diagnostic assessments, and treatment approaches.

Review of Electronic Medical Records

A medical student (T.H.) and a physician (M.S.) conducted a comprehensive review of the full-text medical records of patient consultations. To enhance the reliability of data extraction, they randomly selected and discussed 10% of the collected data. The study excluded patients whose consultations mentioned dizziness but who were not actually experiencing it, cases where GPs

were consulted on behalf of the patient by a third party, and instances where multiple consultations for dizziness were coded—only the first three consultations were considered to minimize redundancy. When multiple consultations occurred, the ICPC codes from the most recent GP consultation were recorded as the final diagnosis.

Treatment strategies were classified into four main categories: observation (wait-and-watch approach), advice and patient education, additional diagnostic evaluations, medication modifications, and referrals. Some consultations involved multiple treatment modalities within a single visit or across multiple visits. Medication adjustments were specifically categorized when they involved reducing FRID dosages, discontinuing FRIDs, or prescribing anti-vertigo or anti-emetic drugs. The list of FRIDs included psychotropic medications, cardiovascular drugs, and other medications known to increase fall risk [16].

Study Setting

This study was conducted at Indira Medical College & Hospitals, Pandur, Thiruvallur, Tamilnadu, India and Melmaruvathur Adhiparasakthi Medical College and Hospitals, Melmaruvathur, Chengalpattu District, Tamilnadu, India over a three-month period from October to December 2024.

Statistical Analysis

Descriptive statistical methods were applied to characterize the study population and categorize treatment modalities. The mid-time population was used to calculate prevalence rates based on hospital practice list sizes. Comparative analyses between different age groups were conducted using Chi-square tests and logistic regression models.

RESULTS AND DISCUSSION

The study included 5624 older dizzy patients who were all over the age of 51, and who were all suffering from dizziness. The study included 5624 older dizzy patients. It was estimated that the median age of the population was about 76 years of age. Most of the patients were female. The prevalence of dizziness was 12.8% over a 12-month period. As people grew older, dizziness prevalence increased significantly. In the dizziness episode, 2888 patients sought treatment more than three times. In 95.7% of cases, the follow-up could extend beyond a month after the initial consultation. Diagnosis of dizziness was most commonly associated with symptoms, cardiovascular conditions, and peripheral vestibular disorders.

Table 1: 5624 dizzy older patients based on their characteristics

Characteristics	N (%)
Female	3784
age years, mean (range)	78.0
65–74	2360
75–84	2172
≥85	1092
Diagnosis	
Symptom diagnoses	1802
Cardiovascular condition	1026
Peripheral vestibular disease	588
Infections	270
Psychiatric condition	146
Musculoskeletal condition	84
Neurological conditionb	74
An endocrine or metabolic disorder	64
Medical agents with adverse effects	58
Other	1336
No diagnosis recorded	220

Table 2: Management of 2812 older dizzy patients

Management	N(%)
No treatment	
Total	1598
Advice and education	174
Exercises for vestibular training	10
Exercises to improve breathing	1418
Education or advice in other areas	1572
Total	
Tests added	
Analyses of blood	1244
Analyses of urine	178
An electrocardiogram	130
Monitoring of blood pressure 24 hours a day	82
Other	68
Total	1510
Medication prescription and medication adjustment	
Prescription of antiemetics	166
Prescription of antivertigo drugs	286
in dizziness caused by M'eniè`re's disease	14
in other dizziness of vestibular origin	104
in other types of dizziness	168
Adjustment of FRIDs	660
dose reduction	262
discontinuation	438
Total	1052
Referral	
Neurologist	272
Cardiologist	220
Physical therapist	130
Internist	116
Otolaryngologist	74

Geriatrician	50
Ophthalmologist	38
Psychotherapist	32
Other	224
Total	1066

An overview of treatment modalities is provided in table 2. Most GPs used an educate-and-advise strategy rather than waiting and seeing what happened. 1510 patients underwent additional tests, most often blood analyses. In 1052 patients, medication was prescribed and adjusted. A total of 1066 patients sought medical attention from specialists. The majority of patients were referred to neurologists, cardiologists, or physiotherapists. Table 3 shows the frequency of FRID medication adjustments and the use of FRIDs. An average of 4.1 FRIDs were prescribed. At least 88.2% of patients received FRID prescriptions. 660 patients had their FRIDs adjusted. A GP reduced the dose of FRID by an average of 222 patients and discontinued it by an average of 398 patients. A GP reduced the FRID dose for

40 patients and discontinued a FRID for 40 patients. FRID dose reductions were significantly associated with age. The purpose of this study was to gain insight into how older adults manage dizziness. Wait-and-see (28.4%) and education and advice (28.0%) were the most common treatments. 26.8% of the sample underwent additional testing. GPs adjusted FRID prescriptions for 11.7% of patients. Age was associated with a significant reduction in FRID doses. Dizzy older patients were referred to specialized care by 19.0% of GPs. There was a 11.8% prevalence of dizziness. Circulatory conditions and peripheral vestibular disorders were the most common causes. In 32% of patients, the GP diagnosed a symptom. 3.9% of patients had no diagnosis recorded by their GP.

Table 3: FRID use, adjustments, and new prescriptions of 5624 older dizzy patients

Drug group	Use of FRIDs n (%) a	Dose reductions n (%) b	Discontinuation n (%) b	Newly prescribed n (%) b
Cardiovascular FRIDs Diuretics	2398	54	112	
b-Blockers	2288	70	48	
Calcium channel blockers	1308	38	66	
Angiotensin converting enzyme inhibitors	1428	34	38	
Angiotensin receptor blockers	1240	26	18	
Nitrates	686	6	8	
Antiarrhythmic agents	122	2	0	
Digoxin	194	0	0	
Psychotropic FRIDs Antivertigo drugs	478	0	14	286
Analgesics (opioids)	1048	26	46	
Anxiolytics and hypnotics	1630	10	16	
Antidepressants	778	8	16	
Neuroleptics	182	4	6	
a-blockers and anticholinergics	660	2	28	
Hypoglycaemics	1016	6	6	
Antihistamines	584	2	2	
b-Blocker eye drops	196	0	0	
Other FRIDs	942	6	54	
No FRID use	718	na	na	na
Total medication adjustments	na	262	438	(280)e

Weaknesses and strengths

In general practice, few studies have investigated the management of dizziness in older patients [8–10]. This is the first study to examine the adjustment for older dizzy patients of FRIDs. Dutch

patients are all registered with a general practitioner. GPs provide care and act as gatekeepers to specialized care. Therefore, the data presented here are representative of general practice's older dizzy patients. Using electronic medical records (EMRs), we identified a large sample of

older dizzy patients. It is important to note, however, that the quality of the data depends on how accurately GPs register patients. The data for this study comes from general practices, where GPs are trained annually in registering and coding medical information.

Relationship between findings and other studies

Only a few studies have examined how dizziness is managed by general practitioners. [8–11] Wait-and-see was frequently used with dizzy patients of any age. [9] Older dizzy patients tended to be observed, reassured, and advised to change their behavior according to Sloane et al. [9] Among younger and older adults, 60–90% of the patients were prescribed drugs [8–10], which is much more frequent than our sample. This study reported a high referral rate to specialized care (19.0%); international studies reported referral rates of 4–16% [8–10] In Dutch studies, referral rates ranged from 3.2 to 4.5%. A complex mix of patient, physician, and health care system factors influences GPs' referral decisions [20–24] Since Dutch health care has not changed, doctor perceptions of patient expectations and patient reassurance might have affected referral rates. Neither the effectiveness nor the cost-effectiveness of the referrals are known. FRIDs are used and adjusted in older dizzy patients for the first time. Our study sample used FRIDs quite frequently, on average 3.1 prescriptions per patient. According to studies of older patients with fall histories and frail elderly patients, prescriptions for FRIDs were similar. [16,25] 11.7% of patients had their FRID discontinued or reduced by their GP. 19.0% to 28.4% of patients in our sample used another management strategy. FRID adjustment was the least common management strategy. GPs rarely considered drug use as a significant contributor to falls when relating FRIDs to falls in a qualitative study. [26] If a patient had fallen or presented with dizziness, GPs considered the drug prescribed. It was perceived as uncomfortable and challenging to be unable to predict drug treatment outcomes; the GPs suggested not changing prescriptions instead. [26] Four main barriers are described: ignorance,

inertia, lack of skills, and feasibility concerns. [27] It is evident that adjusting medication seems to be quite a challenge. Since 87.2% of patients in this sample had FRIDs prescribed, there is room for improvement. FRIDs can be adjusted to reduce dizziness in older patients, and medication reviews and evaluations are simple and effective management strategies. When the cause of dizziness has not yet been determined, FRIDs can also be adjusted. There is a higher incidence of dizziness among older adults than previously reported. Based on a highly comparable sample, Maarsingh et al. found 8.3% prevalence of dizziness, while this study found 11.8%. [28] Similarly, Sloane et al. found that 7.0% of patients over the age of 85 experienced dizziness. [8] Prescriptions of drugs have increased, resulting in a higher rate of adverse drug reactions. There may have been an increase in dizziness among older patients due to adverse drug reactions, which cause dizziness. [13] However, in general practice-based registration networks, from which the study is derived, GPs are trained to code and register medical records annually. In this study, GPs registered at a higher rate. The burden of dizziness on society, health care systems, and individuals will increase if dizziness prevalence rises in older adults. GPs recorded symptoms or no diagnosis 35.9% of the time. In a similar study, GPs recorded an unidentified cause of dizziness in 40.0% of patients in a similar study. [28] This high rate may reflect difficulties in determining the cause of dizziness.

CONCLUSION

FRID adjustments were carried out the least compared with other management strategies. FRIDs should always be evaluated for older dizzy patients and adjusted if necessary. If discontinuing FRIDs does not pose any health risks, or if it cannot be discontinued, reducing their dose is the best option. Dizziness referral rates were higher than in previous studies. Referrals for dizziness should be cost-effective as well as effective in achieving their objectives.

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