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Benzodiazepines Use and Its Risk Of Falls In The Elderly: A Review

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ABSTRACT

Falls are the major cause of morbidity and mortality among the elderly. Falls are caused by a combination of factors. Most of these falls are caused by intricate interactions between environmental and internal causes. The use of benzodiazepines is linked to a high proportion of falls among older people. Benzodiazepines are a class of drugs that can treat a range of conditions. Doctors often prescribe them to treat anxiety, seizures, and insomnia. The short-term use of these medications is usually safe and effective, but long-term use can lead to tolerance, dependence, and other adverse effects. After falls, older people frequently experience a loss in functional status and social activities, as well as a lower quality of life. Therefore, they should be provided to elderly patients under the current clinical standards and reviewed on a regular basis. The therapy of choice should be short-acting benzodiazepines in the elderly population. It should be given as a short-term treatment and gradually tapered thereafter. Benzodiazepines should be replaced with safer alternatives such as sleep restriction therapy, cognitive behavioural therapy, and sleep hygiene psychoeducation. In this article, we examine the evidence on the prevalence of benzodiazepine usage and drug dependence, as well as the fall risk of benzodiazepines in the elderly.

Keywords: Benzodiazepine use, Older people, drug dependence, adverse effects, fall risk, drug withdrawal.

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INTRODUCTION

Falls are a major cause of harm among the elderly. One-third of people over the age of 65 falls at least once a year, with 20% of these falls resulting in damage. Significant incidence and injury rates are accompanied by high healthcare expenses. Fall injuries are among the top 20 most costly medical issues for community-dwelling seniors. Furthermore, after a fall, older people frequently experience a loss in functional status and social activities, as well as a lower quality of life [1]. Falls are frequently caused by a combination of factors. Because benzodiazepines (BZDs) are commonly taken by older people, special care should be paid to them [2].

Since the discovery of chlordiazepoxide in 1961, BZDs have been used to treat anxiety and insomnia, but they are also used to treat many other disorders, despite the fact that there are few studies that prove efficacy for these other purposes [3]. Benzodiazepines are a class of drugs that can treat a range of conditions. Doctors often prescribe them to treat anxiety, seizures, and insomnia. The short-term use of these medications is usually safe and effective, but long-term use can lead to tolerance, dependence, and other adverse effects. The use of BZDs is linked to a high percentage of falls among older people. They should be provided to elderly patients under the current clinical standards, and their effectiveness should be monitored over time. BZD should be provided as a short-term treatment and gradually tapered off. The therapy of choice should be short-acting BZD [2].

PATTERNS OF BENZODIAZEPINE USE IN THE ELDERLY

Benzodiazepines are now recognized by the US FDA for the treatment of anxiety disorders, insomnia, seizure disorders, and status epilepticus, as well as muscle relaxants and acute alcohol withdrawal symptoms. Prescriptions for benzodiazepines are most commonly written for anxiety symptoms and sleep disorders in older individuals. They are also extensively used off-label to treat agitation and other behavioral symptoms associated with dementia in the elderly, in addition to these uses [3, 24].

BZD use rates vary based on the population investigated, definition, and length of use. We recommend categorizing BZD use into three categories: “acute”, “intermittent” and “continuous” to standardize the definition of use [3].

Acute Use

Acute usage is defined as a period of 7 days or less in which a single dose is administered. Termination of seizures, acute treatment of psychotic agitation in an emergency room, preoperative or premedication for unpleasant or painful procedures requiring an anamnestic

response, hospital treatment of insomnia, and treatment of alcohol withdrawal are all examples of acute use [3].

Intermittent Use

When a BZD is used, usually less than two or three per week or for periods of less than 60 to 90 days, it is called short-term intermittent use [4]. Long-term intermittent usage is the same as short-term intermittent use, except it lasts for four months or more. Both types of users can be seen in the treatment of insomnia and anxiety disorders with "as-needed "BZDs [5].

Continuous Use

Continuous use is defined as administering at least one dose of BZD on a daily basis (5 or more days per week) for at least 4 months. Insomnia, and psychiatric disorders particularly anxiety disorders, are continuously treated with BZDs [4].

COMPLICATIONS OF BENZODIAZEPINE USE IN ELDERLY

Although they are among the safest psychotropic medications in some aspects (overdose is not fatal), concern over a variety of side effects has been increasing [6].

Drug Abuse

BZD abuse is thought to be relatively rare, with only one case per 5 million months of use. BZD abuse and recreational usage are believed to be particularly rare among elderly adults. BZD misuse is defined as unintentional use of the drug that results in severe impairment due to one or more of the following: BZD usage results in the failure to perform occupational or social roles, use in physically hazardous situations, substance-related legal issues, and use continues despite persistent or recurrent social or interpersonal problems linked to BZD usage or its effects. When it comes to individual misuse liability, BZDs offer significantly. For example, diazepam has a higher miss-use potential than Oxazepam [6].

Drug Dependence

Long-term use; withdrawal anxiety and insomnia; strong desire to use benzodiazepines; driving while under the influence of benzodiazepine; use of benzodiazepines despite falls; continued use of benzodiazepines despite physician's recommendation to discontinue are all "red flags" for an elderly-patients becoming dependent on the drugs. Despite the fact that these concerns are frequently encountered in clinical practice, the prevalence of diagnosed sedative, hypnotic, or anxiolytic use disorders is as low as 1% over a 12-month period. This may be due to anxiolytic use disorder, which may be identified more frequently in youthful, often antisocial, polysubstance users than in elderly iatrogenic consumers [7].

Risk of fall

BZD have often used drugs in the elderly, where they are linked to an increased risk of falling, with potentially fatal results. Sedation caused by BZD usage is a significant risk factor for falls and other fatalities [8]. BZDs are linked to falls for a variety of reasons, including increased reaction time, altered response time, altered balance and gait, drowsiness, and vision impairment [8].

Dementia and Cognitive Decline

BZDs are linked to the development of long-term cognitive deficits and dementia, especially in memory, learning attention, and visuospatial abilities. Various studies have found that long-term users' cognitive ability remains reduced in most cognitive domains even when benzodiazepines are stopped, implying that benzodiazepine usage causes long-term and perhaps irreversible cognitive abnormalities [7].

Mortality

When compared to unexposed individuals, benzodiazepine use is linked to a significant increase in all-cause mortality, with exposed patients dying at a 1.2 to 3.7 times higher rate each year. However, as with dementia, it's questionable if this link is casual or if these treatments are also prescribed more frequently to individuals who are more likely to die. Although benzodiazepine overdose suicidal behavior is common in clinical practice, it is uncertain whether administering benzodiazepines is associated with a high risk of falling [7].

SHORT-ACTING VS LONG-ACTING BENZODIAZEPINES

Long-term benzodiazepine use is common among elderly those aged 65 and above who make up about 12.5 percent of the general population [9]. The rationale for classifying benzodiazepines as inappropriate drugs for elderly patients is that older people have a higher risk of developing dementia, increased benzodiazepine sensitivity, and long-acting drugs have a slow metabolism. All benzodiazepines in general have an increased risk of delirium, falls, fractures, and cognitive impairment [10, 11]. While all benzodiazepines have comparable effects, there is some variance in their activity periods. Commonly used to treat anxiety are short-acting and intermediate-acting benzodiazepines. Longer-acting benzodiazepines are used to treat anxiety, while short-acting benzodiazepines are used to treat sleeplessness [12]. When deciding between long-acting benzodiazepines and short-acting benzodiazepines, the latter will leave an aged patient with persistent daytime sleeping and cognitive impairment [2].

FALL RISK IN ELDERLY

The most commonly and widely used psychomotor drugs are benzodiazepines, especially in the elderly [13]. The increased sensitivity to adverse effects, drug interactions, and potential for addiction associated with benzodiazepine use among adults is concerning. It is recommended that clinicians

use caution when prescribing benzodiazepines due to the danger and probable side effects. Because the data on the use of benzodiazepines is conflicting, it is recommended that doctors avoid using them as much as possible [14].

Several studies in recent years have looked at the links between individual benzodiazepines and the incidence of falls or fractures. Short elimination half-life benzodiazepines have a lower risk of falling than long elimination half-life benzodiazepines. Another study discovered that shorter-acting benzodiazepines had a similar increased risk of hip fracture [15, 25]. Another study demonstrated that those who are taking multiple medications are at an increased risk of falling. Benzodiazepines can cause psychomotor impairment and raise the risk of falling and car accidents. Psychomotor impairment is defined by a slower reaction time as well as speed and agility. Benzodiazepines are commonly used by the geriatric population. The chance of falling has increased with a sharp rise in dosage and with the long-term use of benzodiazepines [15]. Prolonged use of benzodiazepines is associated with many adverse effects, including sedation, amnesia, cognitive impairment, and ataxia, in addition to an increase in the number of falls. These medications add to the development of psychological dependence in chronic benzodiazepine users so that the patients have a hard time adhering to the protocol to cut down on their usage. Benzodiazepines should be avoided in cases of increased risk of fall according to the Beers-Fick and STOPP criteria for medications that are inappropriate for the elderly regardless of drug half-life. Because of the sensitivity of the elderly, the use of benzodiazepines in geriatric care should be done with caution and according to certain criteria. The half-life of benzodiazepines increases with time [16].

PREVENTION AND MANAGEMENT OF FALL

Falls are a significant source of injury for the elderly, but they are not an inevitable part of the ageing process. All people over the age of 65 should be examined annually for a history of falls or balance impairment, according to the American Geriatric Society and the British Geriatric Society. For people who report a single fall with unsteadiness, two or more falls, gait or balance difficulties, or seek medical attention because of a fall, a personalized risk assessment with appropriate multifactorial intervention should be done [17].

Falls and fall-related injuries have emerged as major global health concerns for the elderly population. Falls are a major cause of mortality among the elderly, and even when they are not fatal, they can result in functional limitations, reduced mobility, and loss of independence [18].

For older people, falls constitute a high-impact, high-cost health risk. Nurses and healthcare providers access a variety of guidelines and online resources that can help them enhance clinical

practice and communication with older people and their families regarding fall risk and prevention. Clinicians can help older adults improve their outcomes by focusing interventions on both fall prevention and fall injury prevention [19]. To prevent falls in the elderly, the first step is to assess the risk of falls. Increasing fall risk is mainly due to inappropriate use of medication, polypharmacy, and use of fall risk-increasing drugs. While taking these medications, proper caution should be taken. Fall risk assessment and intervention can be provided using the below algorithm.

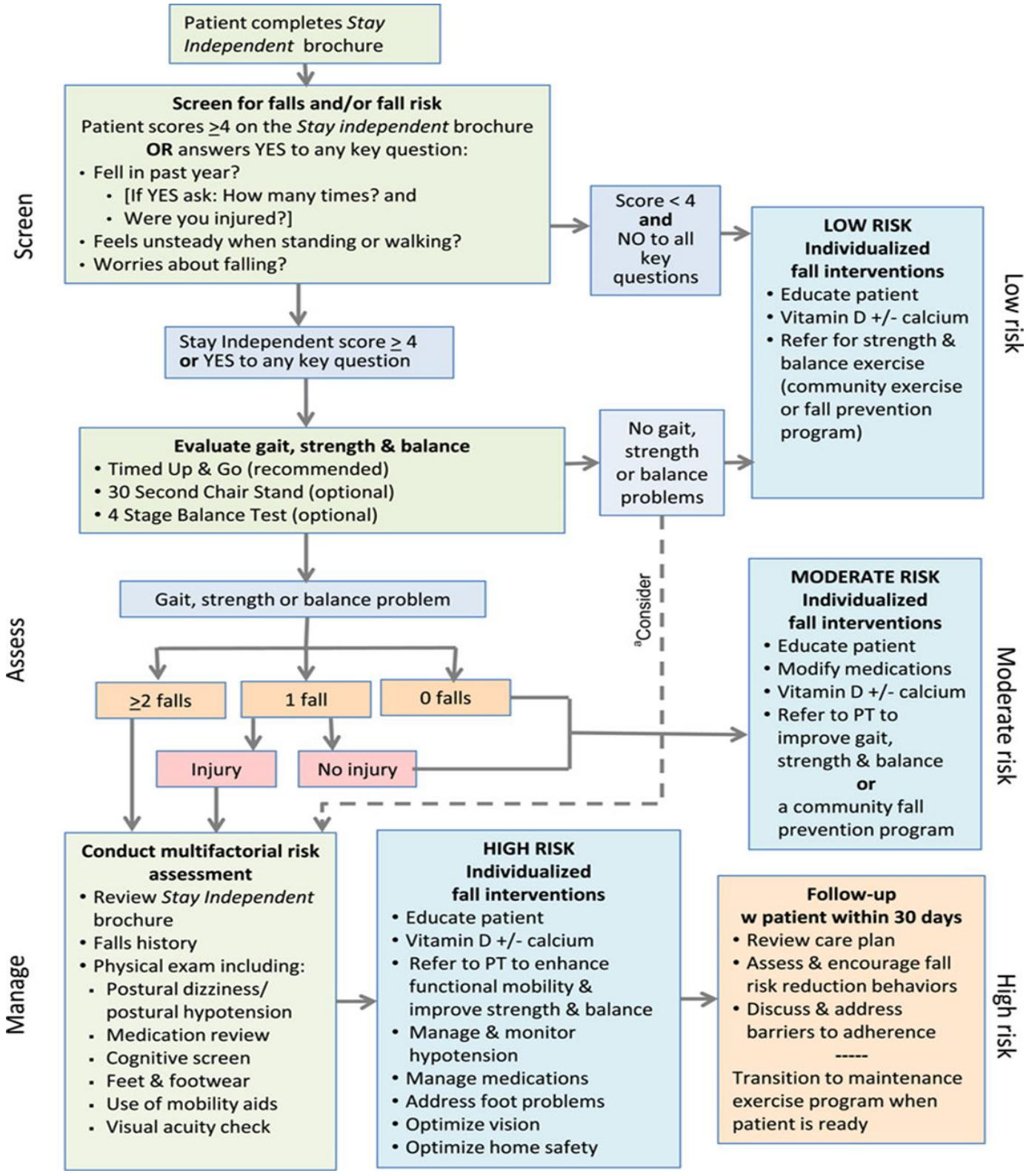

Figure 1: STEADI (Stopping Elderly Accidents, Deaths, and Injuries) algorithm. For patients who screen positive for falls but have no gait, strength, or balance problems, consider additional risk assessment. Algorithm for fall risk assessment & interventions[20].

The following are general principles for managing a patient who has fallen:

1. Address the underlying ailment.
2. Practice physical exercises such as gait retraining, and muscle strengthening.
3. Reduce psychotropic drugs.
4. Do regular eye check-ups.
5. Consume nutritious food and avoid alcohol.
6. Environmental modification to remove hazards.
7. Use assistive technology [21].

Drugs that enhance the risk of falling should be discontinued or administered in the smallest amounts possible. Hazards to the environment must be addressed. The elderly should be instructed on how to reduce danger in various situations [21].

DISCONTINUATION OF LONG-TERM BENZODIAZEPINE USE IN ELDERLY

The most effective initial step in tapering is to educate patients about the potential hazards of long-term benzodiazepine use. A seizure can occur if benzodiazepines are abruptly discontinued, and an extremely quick taper might trigger rebound anxiety [9]. In the elderly, benzodiazepine withdrawal under medical supervision coupled with psychotherapy has been shown to work. For pragmatic reasons (access to psychotherapy is not always available), medication review coupled with patient education should be tried. Starting with the benzodiazepine the patient is currently taking, tapering should be done. To assist with dosage reductions, multiple formulations of a single medicine should be examined [22], [23]. Cognitive Behaviour Therapy (CBT) might be considered during tapering the dose because it has been shown in the first three months after starting a benzodiazepine taper, albeit this impact is less noticeable six months after starting a taper [s]. The ideal length of withdrawal varies by patient, so a flexible tapering program at a rate that is comfortable for that person is recommended [22].

CONCLUSION

There is a high prevalence of medication-related falls in the geriatric population. Benzodiazepines are one class of medication that is highly linked to falls among older people. BZDs have been used to treat anxiety and insomnia, but they are associated with a larger number of complications such as drug abuse, drug dependence, risk of falls, dementia, cognitive decline, and mortality. These complications can be reduced by monitoring and providing proper assistance to the elderly population. Benzodiazepines should be replaced with safer alternatives such as sleep restriction therapy, cognitive behavioral therapy, and sleep hygiene psychoeducation. Benzodiazepines should be provided as short-term therapy and gradually tapered off. Benzodiazepines having a short elimination half-life should be favoured over medicines with a long half-life. The review of

works of literature leads us to the conclusion that benzodiazepines should be used with care in the elderly, in small doses, and for a brief period of time. More research is needed to better understand the risk factors and possible markers for benzodiazepine use in the elderly.

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