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# Use of Benzodiazepines and Hypnotic Medications in Psychiatry Older Adult Outpatients

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### Introduction

Benzodiazepines have anxiolytic, hypnotic, anticonvulsant, and muscle-relaxing properties, therefore, a widely prescribed treatment for anxiety and insomnia. They bind to gamma-aminobutyric acid type A (GABAA) receptors, which are responsible for most of the inhibitory neurotransmission in the central nervous system and these receptors are a major target of alcohol, barbiturates, muscle relaxants, and other medications with sedative effects, resulting in tolerance and dependence [1]. Benzodiazepines are categorized into short (15 to 30 minutes), intermediate (30 to 60 minutes), and long-acting agents (one hour or longer). Benzodiazepines are frequently prescribed for elderly patients living in the community and for those in hospitals and institutions. Prolonged use of benzodiazepines is particularly likely in old age for the treatment not only of insomnia and anxiety, but also of a wide range of nonspecific symptoms. Long term users are likely to have multiple concomitant physical and psychological health problems [2].

Benzodiazepines produce dependence, reduce attention, memory, and motor ability. They can cause disinhibition or aggressive behavior, facilitate the appearance of delirium, and increase accident and mortality rates in people older than 60 [3].

According to Maudsley guidelines, benzodiazepines use in elderly are poorly supported for their link to cognitive decline, increase

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risk of falls and hip fractures [4]. And, if indicated, short acting agents should be avoided. Long acting agents should be started in low doses and patients need to be followed and reassessed regularly. Zolpidem or melatonin are

indicated for insomnia, clonazepam and diazepam for agitation and pregabalin for generalized anxiety disorder [5].

Benzodiazepine equivalents:

### Converting other types of benzodiazepines into medium dose of diazepam

1 mg clonazepam (<12 hours)	15 mg diazepam
1 mg lorazepam (6-8 hours duration)	8 mg diazepam
1 mg alprazolam (4 to 7 h duration)	15 mg
1 mg chlordiazepoxide (5- 30 h)	0.25 mg
1 mg midazolam (4 to 6 hours)	1.5
1 mg temazepam (5 to 20 h)	0.5 mg

### Method

Retrospective review of case records that included all older adult patients in outpatient clinics of the psychiatry department in Doha, Qatar.

Eighty-four patients were included above 65 years of age, who are currently under treatment with either benzodiazepines or z drugs regardless of their gender, or nationalities. We excluded older adult patients who are being followed up in the community outreach clinics. Data were collected during the whole month of March 2018. We used Hamad Medical Corporation (HMC) electronic records, CERNER, to establish the date of starting the medications and any follow up appointments the

patient had with the psychiatric team. We examined each patient file in detail to study variables that include: type of medication, duration of use, dose of medication, reason for prescription, diagnosis, side effects, use of different treatment approach prior to z drug or benzodiazepine prescription, any trial of withdrawing the medication and cause of failure of such an attempt. We analyzed the data using parametric and non-parametric tests using SPSS version 20.

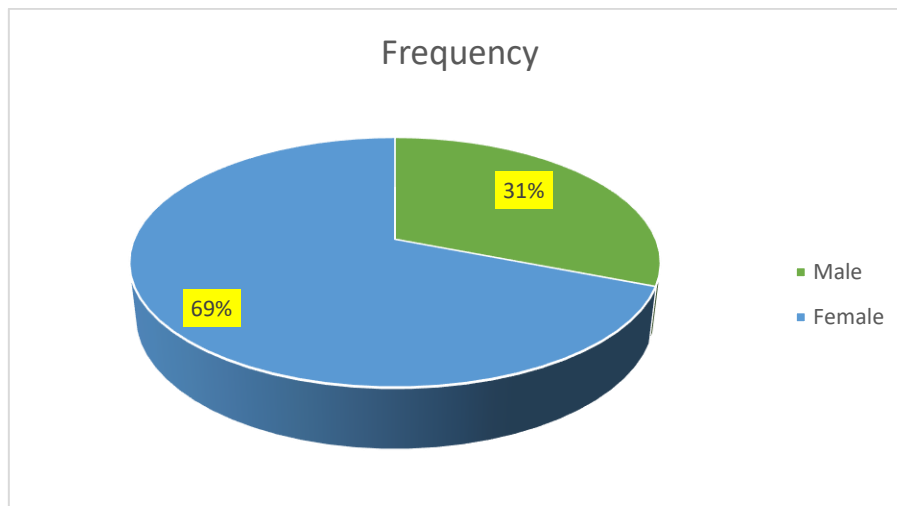
### Results

Total number of old age patients who used benzodiazepines or drugs were 84. Majority of them were between 71- 80 years old, and mostly were females (Table 1, figure 1).

**Table 1: Age distribution of the sample**

Age	Frequency	Percent
65-70 years old	21	25.0
71-80 years old	37	44.0
>80 years old	26	31.0
Total	84	100.0

**Figure 1: Gender distribution of the sample.**



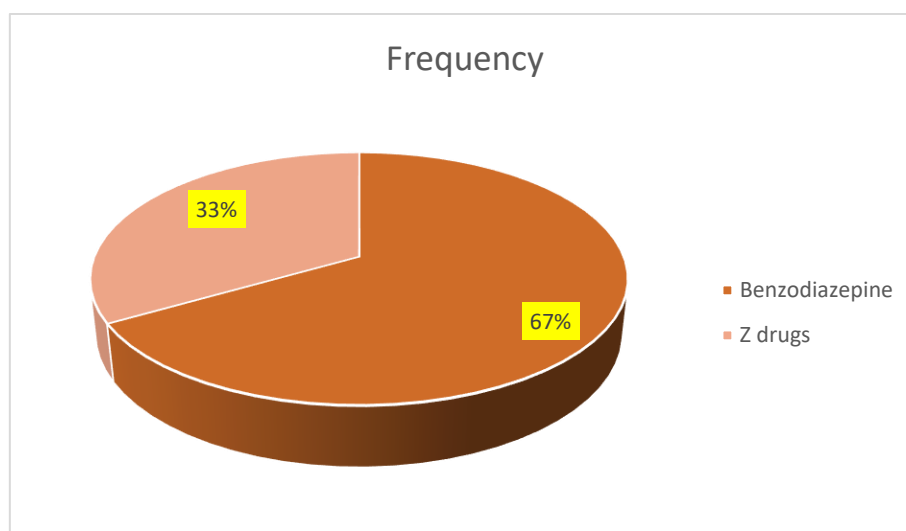
Majority of patients were using benzodiazepines or Z drugs significantly for less than one year ( $p = 0.001$ ), as showed in table 2.

**Table 2: Duration of use of medications.**

Duration	Frequency	Percent	P value
<1 year	48	57.1	0.001
1-2 years	19	22.6	
> 2 years	17	20.2	
Total	84	100.0	

Benzodiazepines were significantly more used than Z drugs ( $p = 0.001$ ). But when all drugs were included without their categories, Zolpidem was significantly more used ( $p = 0.001$ ). , as shown in figure (2), table (3)

**Figure 2: Type of drugs used in the sample.**



**Table 3: Specific Drugs used in the sample.**

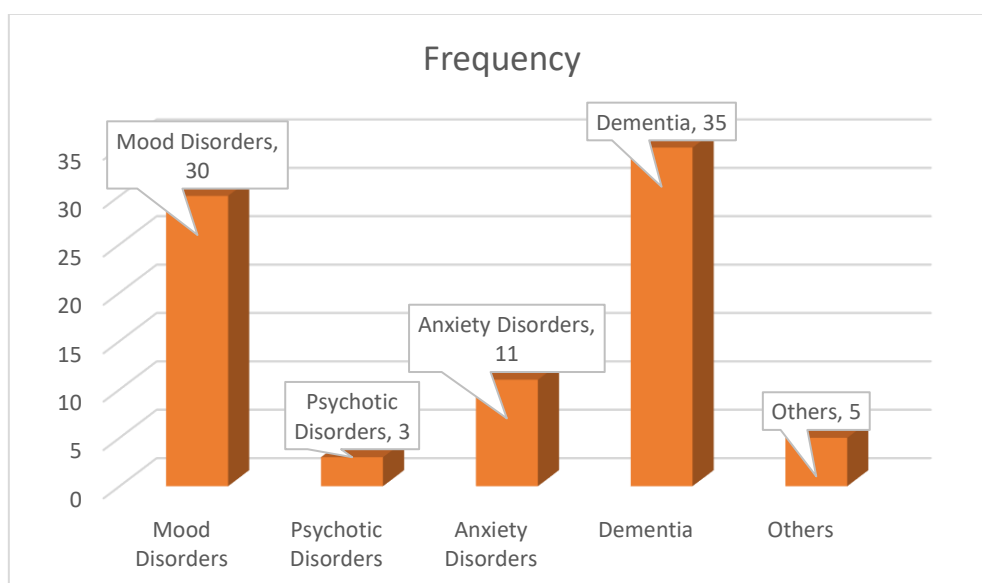
	Frequency	Percent	P value
Clonazepam	22	26.2	0.001
Diazepam	4	4.8	
Lorazepam	9	10.7	
Temazepam	8	9.5	
Zolpidem	28	33.3	
Albrazepam	9	10.7	
Temazepam	4	4.8	
Total	84	100.0	

Insomnia was significantly associated with the prescription of a benzodiazepine ( $p = 0.001$ ), as shown in table 4.

**Table 4: Reason of prescription.**

	Frequency	Percent	P value
Agitation	4	4.8	>0.001
Aggression	3	3.6	
Insomnia	56	66.7	
Anxiety	11	13.1	
Others	3	3.6	
Not specified	1	1.2	
More than one reason	6	7.1	
Total	84	100.0	

Most patients received a diagnosis of dementia ( $p = 0.001$ ), as shown in figure (3).

**Figure 3: Diagnoses of the study sample.**

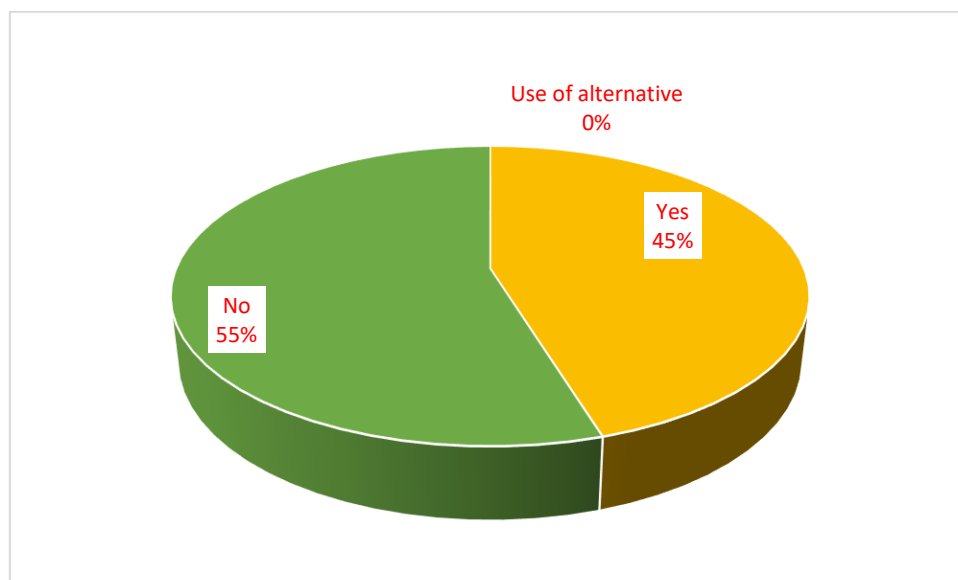
Documentation for side effects was significantly poor ( $p = 0.001$ ), as in table 5

**Table 5: Documentation.**

Documentation	Frequency	Percent	P value
Documented	7	8.3	>0.001
Not documented	76	90.5	
Total	83	98.8	
System	1	1.2	>0.001
Total	84	100.0	

Alternative approach to use of benzodiazepine or Z drugs was found in 45.2 % of cases and its use was significant compared to other medication ( $p = .001$ ), as in figure 4 and 6.

**Figure 4: Use of alternative approach.**

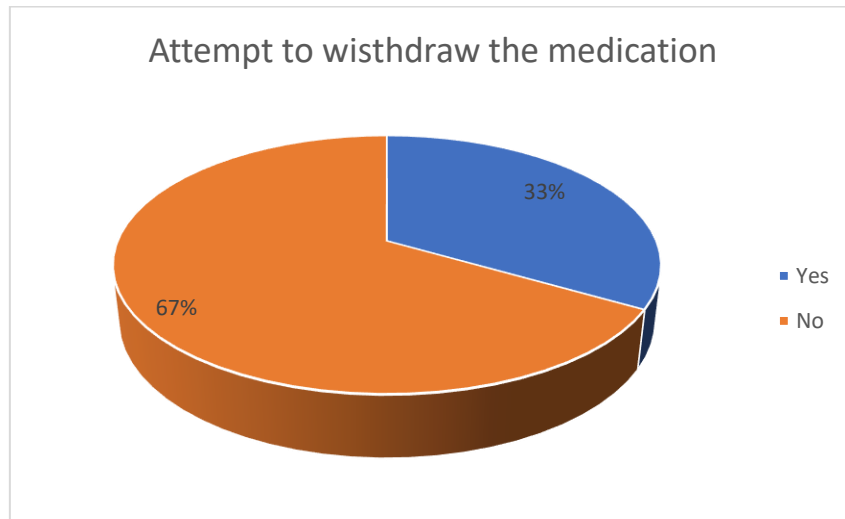


**Table 6: Alternative approach.**

	Frequency	Percent	P value
Other medication	34	40.5	>0.001
Sleep hygiene	1	1.2	
PRN	2	2.4	
Both other medication and sleep hygiene	1	1.2	
Total	84	100.0	

Attempt to withdraw the medication was tried in relapses or family or patient refusal, as in figure third of the case ( $p = 0.003$ ). And these trials were failed because of different reasons like

**Figure 5: Attempt to withdraw the medication.**



**Table 7: Outcome of trial of withdrawal of medications .**

	Frequency	Percent
Patient	1	1.2
Family	4	4.8
Relapse	6	7.1
Others	8	9.5
Stopped successfully	2	2.4
Not documented	7	8.3
Total	28	33.3

Side effects of medications were poorly documented Table (8).

**Table 8: Side effects of the medications.**

	Frequency	Percent
Paradoxical excitement	1	1.2
Lethargy	1	1.2
Hip fracture	1	1.2
Others	2	2.4
More than one side effects	2	2.4
Total	7	8.3

There was a tendency towards using low doses of benzodiazepine and Z drugs, for example, in Zolpidem (19) cases were using 5 mg and (9) was using 10 mg. clonazepam as another example (14) case were using 0.50 mg, (3) case using (1 mg), and (1) case only using 3 mg. Table 9.

**Table 9: Dose\*Drug.**

<b>Crosstab</b>									
Count									
Dose in mg		Drug							Total
		Clonazepam	Diazepam	Lorazepam	Temazepam	Zolpidem	Alprazolam	Temazepam	
	.25	2	0	1	0	0	8	0	11
	.50	14	0	2	0	0	1	0	17
	1.00	3	0	5	0	0	0	0	8
	2.00	2	0	1	0	0	0	0	3
	2.50	0	1	0	0	0	0	0	1
	3.00	1	0	0	0	0	0	4	5
	5.00	0	3	0	1	19	0	0	23
	10.00	0	0	0	7	9	0	0	16
Total		22	4	9	8	28	9	4	84

## Discussion

Similar to other audits among older adult patients in community outreach settings previously by the authors, benzodiazepine and Z drugs, were frequently used in females (71-80 years old) and this is in keeping with international literature [6,7]. However, compared to the community outreach studies, our sample comprised relatively younger population and shorter duration (less than one year) of prescriptions. In the community outreach study, majority were above 80 years of age and were taking the medications for more than 2 years [8]. It is known that higher doses of benzodiazepines and longer duration of use are risk factors of benzodiazepine dependence [9].

Use of benzodiazepines was significantly more than Z drugs and the relatively more prescriptions of Benzodiazepines were most likely were given for their tranquilizing properties and effectiveness in controlling stress in old age, as shown in some North Americans studies [10]. In this study, Zolpidem was a frequently used medication for insomnia and this was consistent with Maudsley guidelines [11]. In our community outreach study, clonazepam was commonly used for insomnia similar to studies from Brazil [12,13]. Benzodiazepines use in the elderly have been associated with falls [14], exacerbation of cognitive decline, and sedation [15], particularly when used for extended periods.

Other studies showed tendency towards prescribing high doses of benzodiazepines to older patients in emergency department [16]. However, there was a clear tendency towards low dose prescriptions in both this study and the community outreach study.

Studies on unwanted effects during long term use are scarce, but there is some evidence of tolerance to side effects. However, benzodiazepines have been found to be frequently implicated in drug-associated hospital admissions. The incidence of benzodiazepine dependence in elderly patients is unknown. Problems due to both adverse reactions and to benzodiazepine withdrawal may easily be overlooked in multi morbid elderly patients.

In this study, and the community outreach study, documentation was found to be significantly poor for side effects, however, checking the records revealed some information about some side effects such like falls, respiratory and GIT problems, although we could not ascertain the cause. Some studies showed a relationship between benzodiazepines, opioids and anticholinergics use in old age population with cognitive and behavioral disorders [17]. A systematic review linking psychotropic drugs with falls in older people found that there is a small, but consistent, association between the use of most classes of psychotropic drugs and falls. Further, patients at higher risk of falling are those taking more than one psychotropic agent or having other risk factors for falls [18].

In this study, alternative approach to drug prescription was frequently used in third of the cases similar to our community outreach study and this was through using an alternative medication. As treatment guidelines stating that nonpharmacological approaches should be the first-line option for symptomatic treatment of Alzheimer disease [19]. As deaths due to Benzodiazepine use in Alzheimer disease was documented in some studies [20].

### Conclusions:

In this study:

1. We found little evidence for proper documentation of indication of benzodiazepines or Z drugs prescriptions, using of alternative approach, discussion about side effects and any attempt to taper off or withdraw medications.
2. Majority of our patients were females between 71- 80 years and on benzodiazepines or z drugs for less than one year.
3. Zolpidem and clonazepam were the most frequently prescribed medications in low doses.
4. Indication of prescription was mainly for insomnia and behavioral problems in dementia.

### Recommendations:

1. To develop guidelines for use of benzodiazepine and z drugs among old age patients in Qatar and similar settings like ours.
2. To use alternative approach first following which document a clear indication of prescription of benzodiazepine or z drugs.
3. Start with low dose for a short period of time to avoid dependence and regular reviews to assess the need to continue the treatment and monitor side effects.
4. To try to limit the number of patients on benzodiazepine or z drugs. Advantages and disadvantages of withdrawing Benzodiazepine must be studied carefully and discussed with the patients and care givers.
5. Use benzodiazepine monitoring tool to document each prescription. (annex)
6. Follow up research to assess our new intervention to monitor benzodiazepine and hypnotic drug use.

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## Annex

### Benzodiazepine and hypnotics monitoring tool

Pt information	type	dose	Alternative approach used	indication	diagnosis	Date of start	Date of withdraw	Side effects	Indication of continuous supply