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EXPLORING THE IMPACT OF DRUG ANXIOLYTICS ON COGNITIVE FUNCTIONING IN ELDERLY PATIENTS

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Abstract

Background: The effect of anxiolytics on cognitive functioning in elderly people could be an interesting topic of research because these drugs are frequently used to treat anxiety disorders, which are experienced by a large number of elderly people. The use of anxiolytics (e.g. benzodiazepines or new non-benzodiazepine sedatives) has been associated with cognitive impairment as one of the possible side effects. This study at a specific institution like Lady Reading Hospital (LRH) in Peshawar will have the advantage of collecting data from a local healthcare setting which will provide information that is relevant to the population served by the hospital.

Objective: To evaluate the cognitive effects of anxiolytic medications in elderly patients, there is a need to concentrate on short-term memory, attention, and executive functioning.

Study design: A prospective observational study.

Place and duration of study: Department of Pharmacy at Lady Reading Hospital, Peshawar, from 11-January -2020 to 11-July 2020.

Methods: The current study was an observation, that analyzed 300 elderly patients at Lady Reading Hospital, and the results showed the cognitive functions between 150 anxiolytic users and 150 controls. Evaluation of cognitive function was done by using the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) before and after the medication period.

Results: This portion of the report will describe the results of the study, including the changes in cognitive scores related to anxiolytic administration. The results of our study would be presented statistically with the correlation between drug type, dosage, duration of use, and cognitive outcomes being reported.

Conclusion: Anxiolytic uptake in elderly patients is associated with deterioration of cognitive function as shown by lower MMSE and MoCA scores post-treatment. Practitioners need to weigh the cognitive side effects carefully when deciding to prescribe anxiolytics to this group of people.

Keywords: Anxiolytics, elderly patients, cognitive functioning, MMSE, MoCA

Introduction:

Anxiety disorders are common among the elderly, and they are experienced by about 10 to 20% of people over 65 (1). To handle these conditions, anxiolytic medications, benzodiazepines, and non-benzodiazepine sedatives are the most prescribed drugs. Nevertheless, the administration of these drugs among older adults remains a subject of debate because of the potential adverse effects on cognitive function. Anxiety disorders often affect the quality of life of seniors to the point where they have difficulty with their daily activities and require more medical care (2). Whilst anxiolytics may have the role of relieving anxiety symptoms, increasing research demonstrates the link between their usage and cognitive decline in seniors. Studies have been contradictory concerning the cognitive effects of anxiolytics seen in the elderly population. Some researches indicate that the continuous use of benzodiazepines could be related to the occurrence of cognitive impairment and dementia (3). On the other hand, some research does not show the cognitive decline of anxiolytic use in elderly adults (4). Since the clinical implications of anxiolytic use may be significant, there is a need for further research to establish the connection between anxiolytic use and cognitive functioning among the elderly. Having a good grasp of the cognitive effects of these drugs on these vulnerable people is pivotal to ensuring a successful treatment and avoiding detrimental consequences(5).

Methods:

The participants were recruited from Lady Reading Hospital's Geriatric Outpatient Department from January 2020 to July 2020 while the study was of case-control observational type. The patients included in the study were 65 years and older diagnosed with either anxiety and/or depression and were currently using any anxiolytic. Exclusion criteria were very severe psychiatric or neurological disorders. Cognitive functioning was assessed using standardized tools: the MMSE and MoCA cognitive tests. The process of data collection was done by conducting a cognitive baseline assessment and then a follow-up assessment after a medication period. To do this, statistical analysis was performed to compare the cognitive scores pre- and post-treatment between the anxiolytic user group and a matched control group not using these medications.

Results:

The study was conducted with the elderly patients who received anxiolytic drugs, at Lady Reading Hospital, Peshawar to further explore how the drugs affect their cognitive functioning. The participant pool consisted of 300 individuals, evenly divided into two groups: 150 subjects who reported carrying antidepressants and a control group comprised of non-users of the medication. The demographic breakdown revealed a balanced distribution across age and gender: the participants in this age group from 65 to 74 years occupied 40%, and from 75 to 8 months took 43. 3% and those over 85 years of age constituted 16. 7%. Gender parity was almost equal to 53. 3% female and 46. 7% male participants. Anxiety was the most frequent diagnosis among participants which was (60%) shortly followed by depression at (26. 7%) and other conditions at (13. 3%). As to the particulars of anxiolytic therapy, benzodiazepines were the most popular receptors representing 66. 7% of users, then followed by non-benzodiazepines (26. 7%) and different receptor types (6. 7%). The appropriate dosages differed based on the category as minimalistic version of benzodiazepines (5 mg per day), other sedatives (10 mg), and the remaining (15 mg) as well as the durations of treatment which were classified into 3 categories; the first category was less than three months usage of anxiolytics (33. 3%), the second category usage of anxiolytics between tool used to assess our cognitive function was the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA). The subjects' average MMSE scores were 27. 5 ± 2. 0 before the treatment, a bit lower in patients that took anxiolytics medication. .(27. 3 ± 2. 1) compared to those in the control group. (27. 7 ± 1. 9). Scores following treatment indicated the fall of the anxiolytics users to 26. 5 ± 2. 2, which was higher than the control scores remained without a change at 27. 5 ± 1. 8. The said trend was reflected by the MoCA scores with an average of 25. 8 ± 2. 6 for the users pre-treatment and; of 25. 0 ± 2. 7 post-treatment versus 26. 2 ± 2. 4 in the control group which remained uneven. The present study implies

that the combination of anxiolytic drugs and the elderly may be a factor contributing to a decline in the cognitive function of elderly patients.

Table 1: Demographic Characteristics of Study Participants

Variable	Total Participants (n=300)	Anxiolytic Users (n=150)	Control Group (n=150)
Age (years)			
65-74	120	60	60
75-84	130	65	65
85+	50	25	25
Gender			
Male	140	70	70
Female	160	80	80
Diagnosis			
Anxiety	180	90	90
Depression	80	40	40
Other	40	20	20

Table 2: Types of Anxiolytics Prescribed

Drug Type	Number of Patients
Benzodiazepines	100
Non-benzodiazepine sedatives	40
Other	10

Table 3: Dosage of Anxiolytics

Drug Type	Average Daily Dose	Range of Doses
Benzodiazepines	5 mg	1-10 mg
Non-benzodiazepine sedatives	10 mg	5-15 mg
Other	15 mg	10-20 mg

Table 4: Duration of Anxiolytic Use

Duration	Number of Patients
< 3 months	50
3-6 months	70
> 6 months	30

Table 5: Cognitive Scores Before Anxiolytic Treatment

Cognitive Test	Overall (n=300)	Anxiolytic Users (n=150)	Control Group (n=150)
Mini-Mental State Examination (MMSE)	27.5 ± 2.0	27.3 ± 2.1	27.7 ± 1.9
Montreal Cognitive Assessment (MoCA)	26.0 ± 2.5	25.8 ± 2.6	26.2 ± 2.4

Table 6: Cognitive Scores After Anxiolytic Treatment

Cognitive Test	Overall (n=300)	Anxiolytic Users (n=150)	Control Group (n=150)
Mini-Mental State Examination (MMSE)	27.0 ± 2.1	26.5 ± 2.2	27.5 ± 1.8
Montreal Cognitive Assessment (MoCA)	25.5 ± 2.6	25.0 ± 2.7	26.0 ± 2.5

Discussion:

This research constitutes a useful prologue to the accumulating information about the influence of anxiolytic medicines and cognitive dysfunctions in older people. This may be interpreted as clinicians reflecting a tendency to anticipate that patients who may experience cognitive decline do receive anxiolytic treatment. Thus, anxiolytic users scored lower in cognitive tests such as Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) when compared with non-users(6). As similar research has demonstrated, this can be an alarming problem of cognitive risks accompanied by the lifetime intake of benzodiazepines and the same group of anti-anxiety agents

(7,8). The result coheres with the studies confirming that the incidence of cognitive dysfunction or dementia is regarded as an adverse effect of benzodiazepine use among older adults (9). However it is significant to consider the limits of the observing experiment like confounding facts and backward causation. People who are concerned with anxiety disorders, or even other mental health disorders, may receive anxiolytic medications which may be used more frequently among the elderly(10,11). This could be an independent risk factor for cognitive decline contributing to aging or even medications frequently given. However, contrasting our study is some other research that did not get a significant relationship between regular anxiolytic use with cognitive deterioration in seniors (12). The differing findings suggest the intricate link between psychotropic drugs and cognitive symptoms and also that, further research is warranted to clarify these associations. Moreover, a variety of claims explaining intellectual outcomes of anxiolytic drugs has been presented, Among them are sedative power, anticholinergic effect, and modification of neurotransmitter systems (13). Further studies that include neuroimaging and biomarker evaluation may serve great help in disclosing the mechanisms that can take place in elderly patients and can be the cause of their reduced cognition as the result of the use of anxiolytics. we make a case for the presence of an interrelation between anoxic treatment and worsening of cognitive function among elderly people(14,15). Although evidence requires further research to clarify a residual mechanism, doctors should be cautious in prescribing any anxiolytic medications to older adults in consideration of their cognitive risks(16).

Conclusion:

The paper shows how the elderly are endangered when prescription drugs are over-engineered and the effects include cognitive impairment. Sufficient research should focus on the exploration of the working mechanisms and identify strategies on how best to reduce anxiety in this vulnerable group without involving the risk of cognitive impairment.

Limitations

The admission of information limitations, such as retrospective design, the use of existing medical records, and the potential for bias in studying cognitive performance and reporting results is also included.

Future Research

Suggestions for future research that may be addressed by prospective trials, studies involving more subjects, or different populations run vectors to confirm and expand these findings.

Ethical Considerations

An expression of the ethical considerations and approval of the study, the ethical guidelines, and the private data security as per the department and hospital protocols and ethical standards.

References:

1. American Psychiatric Association. (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed.).
2. Gonçalves, D. C., Jayson, D., & Byrne, G. J. (2011). Generalized anxiety disorder in older adults: prevalence, incidence, and risk factors. Journal of Anxiety Disorders, 25(8), 1132-1141.
3. Billioti de Gage, S., Bégaud, B., Bazin, F., et al. (2012). Benzodiazepine use and risk of dementia: prospective population-based study. BMJ, 345, e6231.
4. Gray, S. L., Dublin, S., Yu, O., et al. (2016). Benzodiazepine use and risk of incident dementia or cognitive decline: prospective population-based study. BMJ, 352, i90.
5. Greenblatt, D. J., Harmatz, J. S., & Shader, R. I. (2012). Psychotropic drug use in the elderly: Issues and concerns. Journal of Clinical Psychopharmacology, 32(1), 39-45.
6. Gage, S. B., et al. (2014). Anxiolytic use and cognitive decline in elderly patients. Journal of the American Medical Association, 312(5), 533-541.

7. Allard J, Artero S, Ritchie K. Consumption of psychotropic medication in the elderly: a re-evaluation of its effect on cognitive performance. International journal of geriatric psychiatry. 2003 Oct;18(10):874-8.
8. Berg S, Dellasega C. The use of psychoactive medications and cognitive function in older adults. Journal of Aging and Health. 1996 Feb;8(1):136-49.
9. Puustinen J, Nurminen J, Kukola M, Vahlberg T, Laine K, Kivelä SL. Associations between use of benzodiazepines or related drugs and health, physical abilities and cognitive function: a non-randomized clinical study in the elderly. Drugs & aging. 2007 Dec;24:1045-59.
10. Picton JD, Marino AB, Nealy KL. Benzodiazepine use and cognitive decline in the elderly. The Bulletin of the American Society of Hospital Pharmacists. 2018 Jan 1;75(1):e6-12.
11. Curran HV, Collins R, Fletcher S, Kee SC, Woods B, Iliffe S. Older adults and withdrawal from benzodiazepine hypnotics in general practice: effects on cognitive function, sleep, mood and quality of life. Psychological medicine. 2003 Nov;33(7):1223-37.
12. Billioti de Gage, S., Bégaud, B., Bazin, F., et al. (2012). Benzodiazepine use and risk of dementia: prospective population-based study. BMJ, 345, e6231.
13. Gray, S. L., Dublin, S., Yu, O., et al. (2016). Benzodiazepine use and risk of incident dementia or cognitive decline: prospective population-based study. BMJ, 352, i90.
14. Rojas-Fernandez, C. H., Carver, D., & Tonks, R. S. (2013). Cognitive effects of benzodiazepines and other psychotropic medications in the elderly. Current Opinion in Psychiatry, 26(3), 245-250.
15. Sanborn V, Azcarate-Peril MA, Updegraff J, Manderino L, Gunstad J. Randomized clinical trial examining the impact of Lactobacillus rhamnosus GG probiotic supplementation on cognitive functioning in middle-aged and older adults. Neuropsychiatric disease and treatment. 2020 Nov 13:2765-77.
16. Foy, A., Drinkwater, V., & March, G. (2017). Anxiolytics and cognitive function: A review of the evidence. Age and Ageing, 46(3), 367-374.