Evaluation of Benzodiazepine Prescribing Practices in a Mental Health Center in Senegal

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ABSTRACT

Introduction: Benzodiazepines and related drugs are widely used in psychiatry for their anxiolytic, hypnotic, and sedative properties. Despite international recommendations limiting their use to short durations, prescribing practices in low-resource settings like Senegal remain poorly documented. This study aimed to assess the prevalence and characteristics of benzodiazepine prescriptions in a psychiatric center in Senegal.

Methods: This was a retrospective descriptive study conducted at the Dalal Xel Mental Health Center in Thiès, based on medical records of outpatients seen between January 2022 and December 2023. Included were patients aged 15 years and older, diagnosed with psychiatric disorders, and who received a prescription for benzodiazepines or related drugs. Data were collected from patient records and analyzed descriptively using Epi Info 7.2.6.0.

Results: Out of 9,195 records reviewed, 1,722 patients (18.73%) received a prescription for benzodiazepines or related drugs. Most patients were female (58.65%) and aged between 15 and 34 years. The main psychiatric conditions associated with prescriptions were acute psychotic disorders (31.08%) and depressive disorders (16.34%). Alprazolam was the most prescribed drug (74.60%). In more than half of the cases, the initial dosage exceeded the recommended minimum. Treatment duration was over 12 weeks for 40.20% of patients, and abrupt discontinuation occurred in 76.58% of cases, often initiated by the patient. Therapeutic follow-up was very limited, with only 0.57% of patients seen within one week of starting treatment. Overall, adherence to clinical guidelines was low.

Discussion: These findings highlight the frequent yet often inappropriate use of benzodiazepines in this psychiatric center, with significant deviations from international recommendations regarding dosage, duration, discontinuation, and follow-up. They underscore the need for stricter prescribing protocols, better prescriber training, and enhanced patient monitoring.

Conclusion: The use of benzodiazepines at Dalal Xel Mental Health Center remains high and poorly aligned with good clinical practice. Targeted interventions are essential to improve prescription quality and reduce the associated risks in mental health care.

Keywords

Benzodiazepines, Prescription, Senegal.

Introduction

Due to their anxiolytic, sedative, hypnotic, anticonvulsant and muscle relaxant properties, benzodiazepines and related drugs are a major therapeutic class in psychiatry. They are commonly prescribed to treat anxiety disorders, sleep disorders, acute psychotic episodes and certain psychiatric emergencies. While their short-term efficacy is well established, medium- and long-term use raises significant clinical and public health concerns. The risks of dependence, tolerance, abuse and cognitive and behavioural side effects are well documented, particularly in vulnerable individuals such as the elderly or those with multiple pathologies [1].

The World Health Organization (WHO) recommends their use be limited to a short period of time, at the minimum effective dose, and with close monitoring [1]. However, numerous studies show that clinical practices often deviate from these recommendations,

particularly in contexts where health systems are fragile or poorly regulated [2,3].

In Senegal, psychotropic drug management takes place within a specific structural context involving unequal access to specialised care, a shortage of mental health professionals, limited psychopharmacology training for general practitioners who prescribe these drugs and poorly controlled pharmaceutical distribution channels [4,5]. Although benzodiazepine use is common, quantitative data is scarce. A 2002 survey of pharmacy users in Saint-Louis revealed that 66.7% were taking benzodiazepines, 42% of whom had been doing so for more than three months [6]. Another study in Dakar showed that 10% of doctors were unaware of the limited prescription duration and that all general practitioners reported insufficient training [7]. More recently, a 2022 study in Mbour revealed that 85.3% of benzodiazepine dispensing occurred without a prescription, with an estimated dependence rate of 65.5% among patients [8].

The prescription of psychotropic drugs is often empirical and lacks standardised protocols. It is also dominated by a few available molecules, particularly benzodiazepines [9,10]. This observation highlights the need for targeted local studies to analyse practices and optimise treatments.

In this context, the Dalal Xel Mental Health Centre in Thiès, a specialised facility and regional referral centre, is a suitable place to conduct such an analysis. Its diverse patient population, accessible clinical data and central role in psychiatric care justify its selection. The present study aims to evaluate the use of benzodiazepines and related drugs within the centre.

Methodology
Study setting
This study was conducted at the Dalal Xel Mental Health Centre, a specialised psychiatric facility located on the outskirts of Thiès city, on National Road No. 2 towards Saint-Louis. This non-profit centre was founded by the Hospitaller Order of St. John of God. Founded in 1995, it was recognised as a psychiatric hospital in 2000. Its infrastructure comprises an administrative block, four outpatient consultation blocks, an inpatient block, a pharmacy, a laundry room and an occupational therapy room.

The centre treats patients with a wide range of psychiatric disorders, from anxiety and depression to more severe conditions such as schizophrenia and bipolar disorder. Consultations are provided by a permanent psychiatrist, two psychiatric nurses and trainee doctors working towards a Specialised Studies Diploma (DES) in Psychiatry, who are temporarily assigned by the Psychiatry Department of the Fann University Hospital Centre.

Type of Study and Objectives
This was a retrospective, descriptive study conducted using a quantitative approach.
The study period covered two years, from 1 January 2022 to 31 December 2023.

The main objective was to evaluate the prescription of benzodiazepines and related drugs for patients receiving outpatient care at the centre.
The specific objectives were to:
Identify the prevalence of benzodiazepine prescriptions
Describe the reasons for consultation of patients who received these treatments.

- analyse the psychiatric conditions most frequently associated with these prescriptions;
- examine prescribing practices (molecule, dosage and duration) and discontinuation practices;
- assess therapeutic follow-up and compliance with clinical recommendations.

Inclusion and Exclusion Criteria
The study included all patient records of individuals aged 15 years and over who consulted for a psychiatric condition between January 2022 and December 2023, and who received a prescription for benzodiazepines or related drugs during an outpatient consultation.

The following were excluded:
Patients treated exclusively with other drug classes that did not include benzodiazepines or related drugs.
- Patients who were hospitalised or seen outside the study period;
- incomplete or unusable records.

Data Collection and Sources
Data were collected from medical records archived at the centre. A standardised form was developed to ensure consistency in data collection. The extracted variables concerned:
- demographic data: age, sex and place of residence;
- clinical data: psychiatric diagnosis and reasons for consultation.
  - prescription data: molecules prescribed, initial dosage, duration of treatment and presence or absence of combination therapy.
  - follow-up data: time to first post-prescription appointment and follow-up within one week of stopping treatment.

Compliance or non-compliance with clinical recommendations on dosage, duration, discontinuation and follow-up of treatment.

Data analysis
The data were analysed using Epi Info™ 7.2.6.0 software. The data were processed both quantitatively and descriptively. Frequencies and percentages were used to describe qualitative variables such as type of pathology, reason for consultation and type of prescriber. For quantitative variables (e.g. age, duration of treatment), means, medians and standard deviations were calculated.

Ethical considerations
The study was conducted in accordance with the ethical principles of confidentiality, anonymity and respect for medical privacy. Data from patient records were anonymised. Written authorisation from the management of the Dalal Xel Mental Health Centre was

obtained before the study began.

Results
Overall results
A total of 12,958 patients were registered with the Dalal Xël Mental Health Centre in Thiès between 1 January 2022 and 31 December 2023. However, only 9,195 outpatient consultation records were available for analysis. Of these, 1,722 patients had received at least one prescription for benzodiazepines or related drugs, representing a prevalence rate of 18.73%. After applying the inclusion and exclusion criteria, 1,567 records were selected for the study.

Sociodemographic characteristics
Gender (see Figure 1)
Of the 1,567 cases with complete data analysed, 919 patients (58.65%) were female and 648 (41.35%) were male, giving a sex ratio of 0.70.
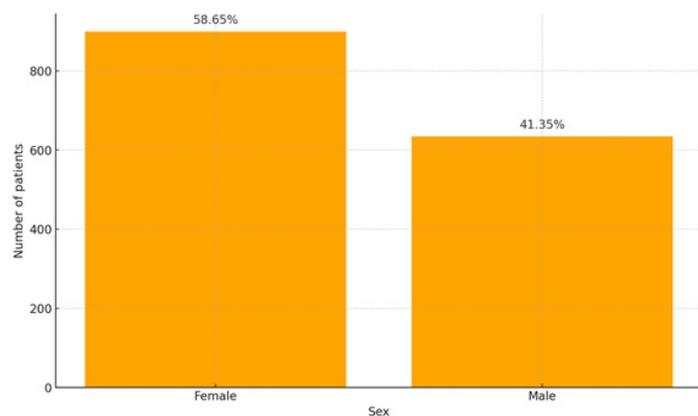

Figure 1: Distribution of patients by sex (n= 1567).

Age (see Table 1)
The average age of patients was 37.33 years, ranging from 15 to 95 years. The median age was 35 years. The largest age groups were 15–24 (25.27%) and 25–34 (24.19%) years old.

Table 1: Distribution of patients by age group (n=1567).

Age group (ans)	Number(n)	Percentage (%)
15-24	396	25,27
25-34	379	24,19
35-44	311	19,85
45-54	235	14,99
55-64	155	9,89
65 et plus	91	5,81
Total	1567	100

Place of residence
The majority of patients (66.43%) lived in the Thiès region, followed by Dakar (8.30%) and Louga (7.53%).

Clinical characteristics
Psychiatric disorders associated with prescriptions (see Figure 2)

The most common diagnoses were acute psychotic disorders (31.08%), followed by depressive disorders (16.34%) and anxiety disorders (13.53%).
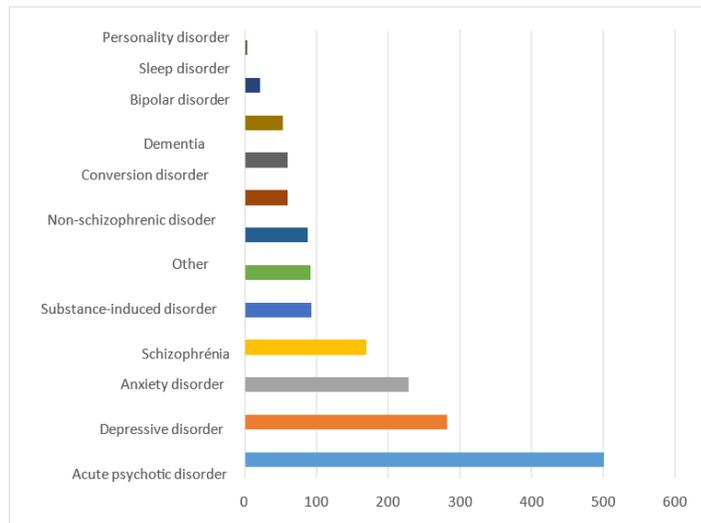

Figure 2: Distribution of psychiatric disorders associated with prescriptions.

Reasons for consultation (see Table 2)
The most common reason was insomnia (66.11%), followed by agitation (25.91%) and anxiety (21.25%).

Table 2: Distribution of patients according to reason for consultation.

Reason for consultation	Number (n)	Percentage (%)
Insomnia	1 036	66,11
Anxiety	333	21,25
Agitation	406	25,91
Sadness	133	8,49
fear	145	9,25
Clastic crisis	150	9,57
Auto or hetero-aggression	30	1,91

Characteristics of prescriptions
Initiator of treatment (see Table 3)
Prescriptions were primarily initiated by doctors undergoing psychiatric training (DES2: 30.5%; DES3: 26.55%), followed by psychiatrists (18.89%).

Table 3: Distribution of patients according to the initiator of treatment with benzodiazepines or related drugs.

Initiator	Number (n)	Percentage %
Psychiatry D.E.S1	214	13,66
Psychiatry D.E.S2	478	30,50
Psychiatry D.E.S3	416	26,55
Psychiatry D.E.S4	39	2,49
Psychiatry nurse	124	7,91
Psychiatrist	296	18,89
Total	1567	100

Prescribed molecules
The most used molecule was alprazolam (74.60%), followed by
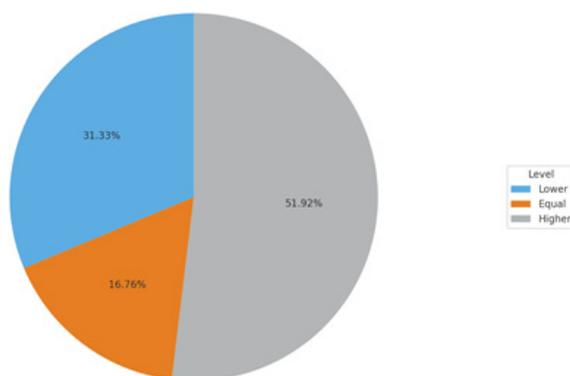
lorazepam (10.53%) and zolpidem (6%).
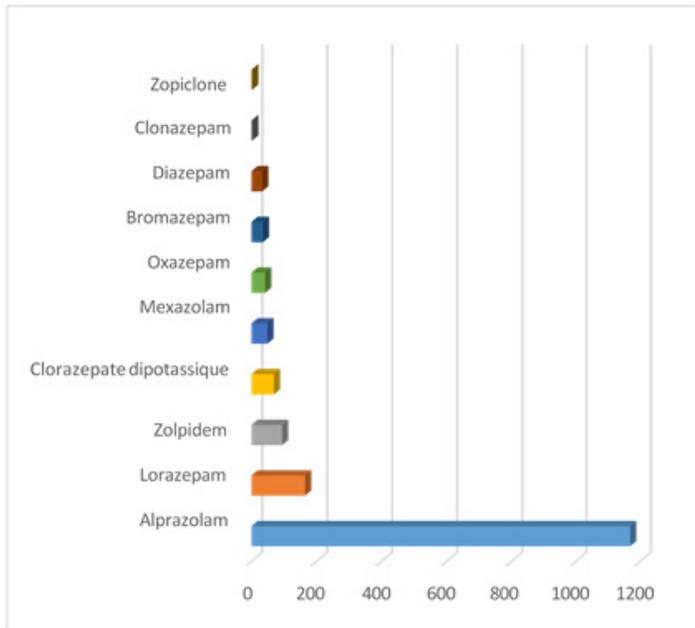
Figure 3: Distribution of benzodiazepine molecules and related compounds.

Drug combinations
Only 1.72% of cases involved the combination of benzodiazepines or related drugs.

Initial dosage
The initial dosage exceeded the minimum recommended dose in 52.02% of cases. An actual overdose was observed in four patients (0.26%).

Figure 4: Initial dosage compared to the minimum recommended daily dosage.

Duration of treatment (see Table 4)
40.20% of treatments lasted for more than 12 weeks, exceeding the recommended duration.

Table 4: Distribution of patients according to treatment duration.

| Treatement duration	Number (n)	Percentage (%)
≤ 1 week	7	0,45%
[1-4 weeks]	413	26,36%
[4-8 weeks]	342	21,83%
[8-12 weeks]	175	11,17%
>12 weeks	630	40,20%
Total	1567	100,00%

Methods of discontinuation
Discontinuation was abrupt in 1,200 patients (76.58% of cases). The patient was responsible for the abrupt discontinuation in 74% of cases.

Therapeutic follow-up
Only 0.57% of patients had an appointment within a week of commencing treatment. No patients were seen again within a week of stopping treatment.

Table 5: Distribution of patients according to the time to first appointment after starting treatment with benzodiazepines or related drugs.

First appointment	Number (n)	Percentage (%)
≤1week	9	0,57
[1-4 weeks]	772	49,27
[4-8 weeks]	488	31,14
[8-12 weeks]	143	9,13
>12 weeks	155	9,89
Total	1567	100
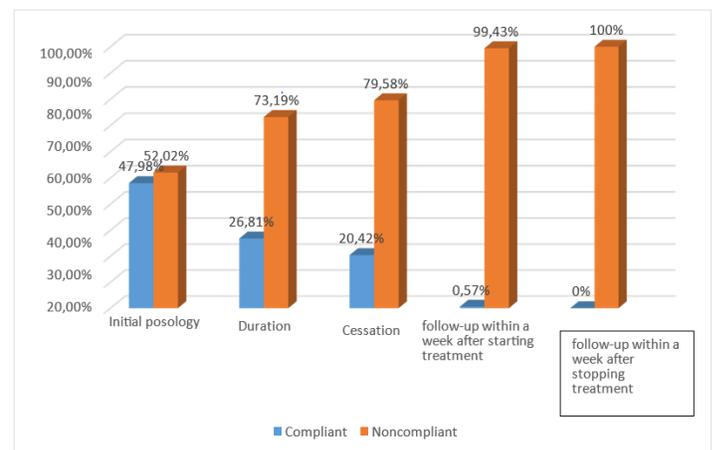
Figure 5: Compliance of requirements with recommendations.

Compliance with clinical recommendations
Analysis of benzodiazepine and related drug prescriptions revealed the following results regarding compliance with clinical recommendations. Regarding initial dosage, only 47.98% of cases complied with the minimum recommended daily dose. Therefore, more than half of prescriptions started at a higher dose than recommended.

The duration of treatment complied with the recommendations (i.e. ≤12 weeks) in only 26.81% of cases. This means that nearly three-quarters of patients received treatment beyond the limits

usually accepted by good practice guidelines.

Treatment was discontinued in accordance with guidelines (i.e. gradually and under supervision) in only 20.42% of cases. In the vast majority of cases, discontinuation was abrupt and often initiated by the patients themselves.

Regarding therapeutic follow-up, only 0.57% of patients had a consultation within a week of starting treatment. No patients were seen within a week of stopping treatment with benzodiazepines or related drugs.

Discussion
The main objective of this study was to assess the prevalence and characteristics of benzodiazepine and related drug prescriptions at the Dalal Xel Mental Health Centre in Thiès. The results obtained shed light on local trends and allow their significance to be discussed in relation to international recommendations and existing literature.

Prevalence of use
This study observed a prevalence of benzodiazepine and related drug prescriptions of 18.73%. While this rate is lower than some data reported in the region or elsewhere, it remains high. For instance, a 2002 survey in Saint-Louis found a prevalence rate of 66.7% among pharmacy attendees [6]. In South Africa, the rate was 23.8% in community psychiatric settings [11], while in Nigeria it was 21.4% [12]. In Asia, particularly Pakistan, the prevalence was as high as 45% among patients receiving psychiatric care [10].

These data confirm that benzodiazepine use remains common in many settings and often outside recommended strict guidelines. In Senegal, studies by Diedhiou et al. [6] and more recently in Mbour in 2022 [8] have highlighted widespread but poorly regulated practices.

Demographic profile of patients
Our study shows that the majority of patients receiving benzodiazepines were female (58.65%), with an average age of 37.33 years. This is consistent with existing literature showing higher benzodiazepine consumption among women, linked to a higher prevalence of anxiety and depressive disorders in this group [9,13]. The 2023 General Population and Housing Census (RGPH-5) in Senegal also reports an overrepresentation of women in the adult population, which could partly explain this distribution [14].

The most prevalent age groups (15–24 and 25–34) suggest early use of these drugs, potentially due to increased exposure to psychosocial stress or greater access to psychiatric care among young adults.

Associated conditions and reasons for prescription
The psychiatric conditions most frequently associated with benzodiazepine prescription were acute psychotic disorders (31.08%), followed by depressive disorders (16.34%) and anxiety disorders (13.53%). This hierarchy is broadly comparable to that reported in other African and European countries, where these treatments are often used to manage anxiety, agitation or insomnia in various psychiatric conditions [15-17].

The main reasons for consultation were insomnia (66.11%), agitation (25.91%), and anxiety (21.25%), highlighting the symptomatic role of these drugs. However, it is important to remember that their use for these indications should be temporary only, in accordance with the recommendations [1].

Prescription patterns and molecules used
Alprazolam is the most commonly prescribed molecule by far (74.60%), followed by lorazepam (10.53%) and zolpidem (6%). This contrasts with the prescription profile reported in Boubacar Sy's study [18], which found greater use of prazepam and dipotassium clorazepate. The popularity of alprazolam could be explained by its availability, rapid anxiolytic effect and active pharmaceutical promotion [3]. However, its short half-life means it has a high potential for abuse, which justifies the WHO's warnings about it [19].

The initial dosage exceeded the minimum recommended dose in more than half of cases (52.02%). Although serious overdoses remained marginal (0.26%), this finding suggests a lack of knowledge or under-application of dosage recommendations in daily practice [1].

Duration of treatment and discontinuation
In 40.20% of cases, the duration of treatment exceeded 12 weeks, far exceeding the limits set by international recommendations (generally four to 12 weeks, depending on the indication) [1]. Prolongation of treatment has been documented in other contexts, for example in Germany where 15.6% of patients receive benzodiazepines for over six months [9], and in Senegal in previous studies by Diedhiou and Boubacar Sy [6,18].

Abrupt discontinuation, observed in 76.58% of cases, is an inappropriate practice that leads to withdrawal syndrome and relapse. The fact that discontinuation is initiated by the patient in 74% of cases highlights inadequacies in therapeutic education and follow-up, as well as a lack of coordination between prescriber and patient.

This method of discontinuation is contrary to recommendations, which emphasise gradual withdrawal to avoid withdrawal syndrome and symptomatic relapses [20].

Therapeutic follow-up and Compliance
Therapeutic follow-up was generally poor. Only 0.57% of patients were reviewed within a week of starting treatment and none were reviewed within a week of stopping. This lack of follow-up puts patients at risk of complications relating to tolerance, dependence or inadequate management of side effects.
Similar post-prescription follow-up rates have been reported in other studies in settings where workload and staff shortages affect the quality of follow-up for psychiatric patients [21].

Overall, compliance with the recommendations was low: 47.98% for dosage, 26.81% for duration, 20.42% for discontinuation procedures and less than 1% for the initial follow-up. These figures confirm the results of previous studies conducted in Senegal [22] and elsewhere [1,17], which emphasise the need for stricter prescription supervision, particularly through the development of institutional protocols and continuing education for prescribers.

The data reveal a significant discrepancy between current practices and the guidelines issued by international organisations such as the WHO and the Haute Autorité de Santé (HAS), particularly with regard to safety, dependence prevention, and therapeutic follow-up quality.

Strengths and limitations of the study
Our study was based on a large sample of records and provided original local data on prescribing practices in psychiatry. However, its retrospective nature implies limitations, including information bias due to the incompleteness of some records and the fact that a fairly large number of records could not be found. There was also an absence of qualitative assessment of patients' experiences.

Conclusion
The study reveals the frequent, yet inadequately supervised, use of benzodiazepines at the Dalal Xël Mental Health Centre in Thiès. This use is characterised by high dosages, prolonged treatment, abrupt discontinuation and poor follow-up. Compliance with clinical recommendations is generally low, which exposes patients to significant risks. These findings highlight the need for enhanced training of prescribers, the development of standardised protocols and improved therapeutic follow-up, to ensure the safer and more rational use of these drugs.

References
1. World Health Organization. Clinical guidelines for the management of benzodiazepine dependence. Geneva. WHO. 2009.
2. Lader M. Benzodiazepines revisited—will we ever learn? Addiction. 2011; 106: 2086- 2109
3. Olfson M, King M, Schoenbaum M. Benzodiazepine use in the United States. JAMA Psychiatry. 2015; 72: 136-142
4. Ndiaye M, Sow M, Gaye A, et al. Mental health in Senegal: current situation, challenges and prospects. Dakar Medical. 2018; 63: 55-62.
5. Ministry of Health and Social Action. Senegal's National Mental Health Policy. Dakar: MSAS. 2021.
6. Diedhiou A, Dia A T, Faye A, et al. Benzodiazepine prescribing practices in Saint-Louis, Senegal. Dakar Médical. 2002; 47: 22-26.
7. Dièye AM, Sy AN, Sy GY, et al. Prescription of benzodiazepines in Dakar: Study of prescribing habits and knowledge among general practitioners, neurologists, and psychiatrists. Fundam Clin Pharmacol. 2006; 20: 235-238.
8. Sarr M, Diouf I, Gning MM, et al. Dispensing of benzodiazepines in the department of Mbour: indications, uses, and dependence. Senegalese Journal of Public Health. 2022; 16: 45-51.
9. Jacob L, Rapp MA, Kostev K. Long-term benzodiazepine use in older patients in Germany. Ther Adv Psychopharmacol. 2017; 7: 191-200.
10. Bashir M, Riaz A, Niaz M, et al. Pattern of benzodiazepine use in psychiatric outpatients in Pakistan: a cross-sectional survey. JPMA. 2009; 59: 60-64.
11. Tau MA, Moosa MYH, Jeenah FY. Long-term benzodiazepine prescriptions in community psychiatry clinics. S Afr J Psychiatr. 2024; 30: a2181.
12. Okpataku CI. Use of benzodiazepines in a Nigerian psychiatric hospital: patterns and implications. Annals of African Medicine. 2018; 17: 35-42.
13. Vetrano DL. Prevalence of benzodiazepine and Z-drug use in long-term care across 7 European countries and Israel. BMC Geriatrics. 2024.
14. National Agency for Statistics and Demograp hy (ANSD), Senegal. Available online at: https://www.ansd.sn
15. Tau MA, Moosa MYH, Jeenah FY. Long-term benzodiazepine prescriptions in community psychiatry clinics. S Afr J Psychiatr. 2024; 30: a2181.
16. López J, Gutiérrez F, Martínez R, et al. Use of benzodiazepines in hospitalized patients in psychiatric units in Spain: a retrospective study. Spanish Journal of Psychosomatic Medicine and Liaison Psychiatry. 2017; 27: 56-63.
17. Goossens L, De Picker L, Van Audenhove C. Benzodiazepine prescribing in psychiatric hospitals in Belgium. Eur Psychiatry. 2016; 33: 72-78.
18. Sy Boubacar. Contribution to the evaluation of the prescription and use of benzodiazepines in the municipality of Saint-Louis. Thesis for the Doctor of Pharmacy degree, UCAD. 2002.
19. WHO. Psychotropic Substances: Statistics for 2022. United Nations. 2023.
20. Ashton H. Manual for benzodiazepine withdrawal. University of Newcastle upon Tyne; 2002.
21. Moukaddem A. Follow-up of patients treated with benzodiazepines in Algerian psychiatric services. Maghreb Medical. 2019; 44: 202-207.
22. Diop M. Evaluation of psychotropic drug prescriptions in Dakar. Dakar Medical Journal. 2016; 61: 55-62.