

KNOWLEDGE OF THE MANAGEMENT OF EXTRAPYRAMIDAL SYNDROMES OF NEUROLEPTIC DRUGS AMONG NURSES IN NEUROPSYCHIATRIC HOSPITALS OF ANAMBRA AND ENUGU STATES

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Abstract

Background: Many patients on antipsychotic medication have reported experiencing Extrapyrimal Syndrome (EPS). Due to high rate of EPS developed in patients, antipsychotic medication guideline and rating scale were developed for the management of EPS while caring for patients on antipsychotic drugs.

Aim: The aim of this study was to determine the knowledge and management of Extrapyrimal syndrome of Neuroleptic Drugs among Nurses in Neuropsychiatric Hospitals of Anambra and Enugu State.

Materials and methods: A descriptive cross-sectional survey was carried out among 221 Nurses from Neuropsychiatric Hospital in Anambra State and Federal Neuropsychiatric Hospital in Enugu state. Data was collected using questionnaire adopted from a similar study. The data was summarized frequencies, percentages and Chi-square with level of significance set at < 0.05.

Results: More than half of the nurses in Federal Neuropsychiatric Hospital Enugu 164 (83.25%) had good knowledge of EPS, while 14 (66.67%) of Nurses in Neuropsychiatric Hospital Anambra State also had good knowledge of EPS and its management. While 197 (100%) and 21 (100%) in Federal Neuropsychiatric Hospital Enugu and Neuropsychiatric Hospital Nawfia Anambra respectively agreed that their hospitals had no policy/guideline for EPS management. There was a significant association between years of working as a registered nurse ($p < 0.001$), current grade level ($p = 0.001$) and knowledge of EPS among nurses.

Conclusion: Most of the participants had good knowledge of Extrapyrimal Syndrome; none of them used American Association guideline and rating scale in management of EPS.

Recommendation: As EPS continues to pose problem to psychiatric patients, nurses who are the ones administrating these medications need to adopt the standard guidelines stated for management of EPS to ensure its reduction.

Keywords: *Extrapyrimal Syndrome, Knowledge, Management, Psychiatric patients, Antipsychotics, Nurses*

Introduction

Extrapyramidal Syndrome have been identified as a medical and societal issue facing patients taking antipsychotic therapy¹. All hope is placed on antipsychotic drugs because of the debilitating characteristics of the condition, the fundamental issue with these medications is their propensity to have extremely negative effects to the point that it can make it difficult to understand why they were prescribed in the first place. These undesired effects have an impact on the patients' motor skills, daily living activities, social functioning, loss of employment, re-hospitalization and finally make them dependent on their family members¹. There are several strategies of administering antipsychotics to patients that will help to reduce the development of EPS and these involve the use of a rating scale, World Health Organisation (WHO) guidelines, and use of American Psychiatric Association Guideline^{2,3}. Studies suggest that nurses generally lack adequate pharmacological knowledge and this has frequently resulted in suboptimal care to patients⁴. Medication errors had been made by 64.55% of nurses⁵. Begum et al.,⁶ assessed the antipsychotic medication side effects knowledge amongst registered mental health nurses in England and found that many nurses had a suboptimal working knowledge of antipsychotic medication side effects which has the potential to compromise care. Stomski⁷ revealed that only one quarter of the respondents (26.5%) studied were currently using an assessment tool to identify antipsychotic medication side effects by nurses.

However, in Nigeria, there are limited studies with regards to the knowledge and management of Extrapyramidal syndrome of Neuroleptic drugs among nurses⁵. Nurses spend most of their clinical time with patients, therefore must possess a wealth of knowledge and competencies while caring for the psychiatric patients. However, it is disheartening to note that psychiatric patients come up with EPS under the nurses' watch. Therefore, this study aimed to assess the knowledge and management of EPS of neuroleptic drugs among nurses in Neuropsychiatric hospitals of Anambra and Enugu States, southeastern Nigeria.

Materials and methods

Study design: A cross descriptive design was adopted for the study. This was used to assess the Knowledge and management of Extrapyramidal syndrome of Neuroleptic drugs among nurses in Neuropsychiatric hospitals of Anambra and Enugu States.

Study setting: The study was conducted at Neuropsychiatric Hospital Nawfia Anambra State and Federal Neuropsychiatric Hospital Enugu. The first hospital is a state government-owned institution while the latter is a Federal institution located in the two different states, in the South –East geopolitical zone of Nigeria.

Population for the study: The target population consisted of all registered nurses practicing at Neuropsychiatric Hospital Nawfia Anambra State and Federal Neuropsychiatric Hospital Enugu. The total number of registered nurses in Neuropsychiatric Hospital Nawfia Anambra was 21 (Nurses'

Annual Report, 2022) while the number of nurses in Federal Neuropsychiatric Hospital Enugu was 200 (Nurses' Annual Report, 2022). The study involved the total population; thus, there was no sampling carried out. All the 221 Nurses in both hospitals were recruited for the study.

Instrument for Data Collection: Data was collected using questionnaire designed by the researcher in accordance with the set objectives of the study on Knowledge and Management of Extrapiramidal Syndrome of Neuroleptic Drugs among Nurses in Neuropsychiatric Hospitals of Anambra and Enugu States. The questionnaire has 6 sections containing seventeen (16) items. Section A has three (3) items which elicited information on participants' demographic characteristics. Section B contains five (5) items, which elicited information on Nurses' knowledge of EPS. Section C contains six (6) items, which elicited information on Relationship between years of experience with Knowledge and management of EPS. Section D contains four (4) items which elicited information on Location of facility. Section E contains one (1) item which elicited information on management of EPS and finally, Section F contains one (1) item which elicited information on factors affecting management of EPS. Face and content validation of the instrument was carried out by research experts in research ethical committee Federal Neuropsychiatric hospital Enugu and also by the research committee Neuropsychiatric Hospital Nawfia Anambra state and finally by a Data and Research consultant Flourish Data

Analytics School Nnewi. Their inputs were utilized in modifying the tool before actual field use. The reliability of the instrument was ensured by collecting pilot data at Synapse Psychological center Awka Anambra State which has similar characteristics with the study population. Ten percent of the total population was used. The internal consistency of the items was established using Cronbach's Alpha method at value of 0.83 which shows high consistency.

Data Collection: Data was collected with the aid of a questionnaire during all shifts for a period of one month.

Ethical Consideration: Ethical approval was obtained from the Research and Ethics Committee Neuropsychiatric Hospital Nawfia Anambra State and Research and Ethics Committee Federal Neuropsychiatric Hospital Enugu. Informed oral consent was obtained from respondents before administering the instrument and confidentiality of the data collected was ensured.

Data analysis: Descriptive statistics of frequency, percentages, mean, standard deviations and chi-square was used. The results were presented in tables. Level of significance was set at < 0.05 .

Results

Socio-demographic characteristics of the participants showed that majority of the participants involved in the study were from Federal Neuropsychiatric Hospital Enugu (90.37%) most of who were in the 41-50years age range (31.65%) and most had a degree in Nursing (56.88%). Most of the nurses from Enugu facility had a higher level of good knowledge than their counterparts in Nawfia (83.25% as compared to 66.7%). Also,

moderate knowledge was higher in Enugu than Nawfia. There was a statistical association between Years of work experience and Knowledge of EPS, while there was a statistically significant relationship between akathisia lower dose ($p < 0.001$), Switch to antipsychotic with lower risk ($p < 0.001$), Anticholinergic agent and benzodiazepines ($p = 0.006$) and facility (Federal Neuropsychiatric Hospital). Results from table 4b showed that there was a statistically significant relationship between Parkinsonism lower dose

($p < 0.001$) and facility (Federal Neuropsychiatric Hospital). Results (table 5) showed that there was a statistically significant relationship between Negligence of the nurses ($p < 0.001$), Non-management of EPS according to American Psychiatric Association guideline ($p = 0.002$) and facility (Federal Neuropsychiatric Hospital).

Table 1: Socio-demographics of study participants

| Variable | Frequency | Percent |
|---|------------------|----------------|
| Age (yrs.) | | |
| 21-30yrs | 32 | 14.68 |
| 31-40yrs | 60 | 27.52 |
| 41-50yrs | 69 | 31.65 |
| 51-60yrs | 57 | 26.15 |
| Facility | | |
| Federal Neuropsychiatric Hospital Enugu | 197 | 90.37 |
| Neuropsychiatric hospital Nawfia | 21 | 9.63 |
| Highest level of Education | | |
| BNSC | 124 | 56.88 |
| MSC | 4 | 1.83 |
| RN | 8 | 3.67 |
| RPN | 82 | 37.61 |

Table 2: The knowledge of nurses in Neuropsychiatric hospitals Anambra and Enugu on EPS

| Variable | Federal Hospital | Neuropsychiatric | Total (%) | X ² -value | p-value |
|--------------------|------------------|------------------|-------------|-----------------------|---------|
| | Enugu (n=197) | Nawfia (n=21) | | | |
| Knowledge | | | | | |
| Good Knowledge | 164 (83.25) | 14 (66.67) | 178 (81.65) | 9.75 | 0.008* |
| Moderate Knowledge | 29 (14.72) | 4 (19.05) | 33 (15.14) | | |
| Poor Knowledge | 4 (2.03) | 3 (14.29) | 7 (3.21) | | |

/-Statistically significant (p-value <0.05)/*

Table 3: Impact of years of experience on the knowledge and management of EPS

| Variable* | Federal Hospital | Neuropsychiatric | Total (%) | X ² -value | p-value |
|--|------------------|------------------|-------------|-----------------------|---------|
| | Enugu (n=197) | Nawfia (n=21) | | | |
| Years of working as a registered/working mental nurse | | | | | |
| Less than 1year | - | 2 (9.52) | 2 (0.92) | 47.24 | <0.001* |
| 1-2yrs | - | 2 (9.52) | 2 (0.92) | | |
| 3-5yrs | 28 (14.21) | 6 (28.57) | 34 (15.60) | | |
| 6-10yrs | 51 (25.89) | 7 (33.33) | 58 (26.61) | | |
| 11-15yrs | 65 (32.99) | 4 (19.05) | 69 (31.65) | | |
| 15 and above | 53 (26.90) | - | 53 (24.31) | | |
| Current Grade Level | | | | | |
| Grade level 7 | - | 4 (19.05) | 4 (1.83) | 47.56 | <0.001* |
| Grade level 8 | 28 (14.21) | 7 (33.33) | 35 (16.06) | | |
| Grade level 9 | 51 (25.89) | 6 (28.57) | 57 (26.15) | | |
| Grade level 10 and above | 118 (59.90) | 4 (19.05) | 122 (55.96) | | |

/-Statistically significant (p-value <0.05)/*

Table 4a: The management regimen that the study participants use for EPS

| Variable | Federal Hospital Enugu (n=197) | Neuropsychiatric Nawfia (n=21) | Total (%) | X ² -value | p-value |
|--|--------------------------------------|-----------------------------------|-------------|-----------------------|---------|
| Dystonia | | | | | |
| 1st choice use of anticholinergic medication like biperiden | | | | | |
| No | 7 (3.55) | - | 7 (3.21) | 0.77 | 0.380 |
| Yes | 190 (96.45) | 21 (100.0) | 211 (96.79) | | |
| 2nd choice the use of antihistamine | | | | | |
| No | 33 (16.75) | 2 (9.52) | 35 (16.06) | 0.74 | 0.391 |
| Yes | 164 (83.25) | 19 (90.48) | 183 (83.94) | | |
| Yes | 164 (83.25) | 19 (90.48) | 183 (83.94) | | |
| 3rd choice benzodiazepine | | | | | |
| No | 41 (20.81) | 5 (23.81) | 46 (21.10) | 0.10 | 0.749 |
| Yes | 156 (79.19) | 16 (76.19) | 172 (78.90) | | |
| Akathisia | | | | | |
| Lower dose | | | | | |
| No | - | 2 (9.52) | 2 (0.92) | 18.94 | <0.001* |
| Yes | 197 (100.0) | 19 (90.48) | 216 (99.08) | | |
| Switch to antipsychotic with lower risk | | | | | |
| No | - | 2 (9.52) | 2 (0.92) | 18.94 | <0.001* |
| Yes | 197 (100.0) | 19 (90.48) | 216 (99.08) | | |
| Concomitant use of beta –blocker like propranolol | | | | | |
| No | 8 (4.06) | 1 (4.76) | 9 (4.13) | 0.02 | 0.878 |
| Yes | 189 (95.94) | 20 (95.24) | 209 (95.87) | | |
| Anticholinergic agent and benzodiazepines | | | | | |
| No | 79 (40.10) | 2 (9.52) | 81 (37.16) | 7.60 | 0.006* |
| Yes | 118 (59.90) | 19 (90.48) | 137 (62.84) | | |

/-Statistically significant (p-value <0.05)/*

Table 4b: The management regimen that the study participants use for EPS

| Variable | Federal Neuropsychiatric Hospital | | Total (%) | X ² -value | p-value |
|---|-----------------------------------|---------------|-------------|-----------------------|---------|
| | Enugu (n=197) | Nawfia (n=21) | | | |
| Parkinsonism | | | | | |
| Lower dose | | | | | |
| No | - | 4 (19.05) | 4 (1.83) | 38.23 | <0.001* |
| Yes | 197 (100.0) | 17 (80.95) | 214 (98.17) | | |
| Change antipsychotic | | | | | |
| No | 68 (34.52) | 3 (14.29) | 71 (32.57) | 3.54 | 0.060 |
| Yes | 129 (65.48) | 18 (85.71) | 147 (67.43) | | |
| Use of anticholinergic agent | | | | | |
| No | 44 (22.34) | 6 (28.57) | 50 (22.94) | 0.42 | 0.518 |
| Yes | 153 (77.66) | 15 (71.43) | 168 (77.06) | | |
| Tardive dyskinesia | | | | | |
| 1st choice Lower dose | | | | | |
| No | 2 (1.02) | 1 (4.76) | 3 (1.38) | 1.96 | 0.161 |
| Yes | 195 (98.98) | 20 (95.24) | 215 (98.62) | | |
| 2nd choice Use of Valbenazine or deutetrabenazine | | | | | |
| No | 177 (89.85) | 21 (100.0) | 198 (90.83) | 2.35 | 0.125 |
| Yes | 20 (10.15) | - | 20 (9.17) | | |
| 3rd choice use of Gingko | | | | | |
| No | 6 (3.05) | - | 6 (2.75) | 0.66 | 0.417 |
| Yes | 191 (96.95) | 21 (100.0) | 212 (97.25) | | |

/-Statistically significant (p-value <0.05)/*

Table 5: Factors militating against the management of EPS among study participants

| Variable | Federal Hospital Enugu (n=197) | Neuropsychiatric Nawfia (n=21) | Total (%) | X ² - value | p-value |
|--|-----------------------------------|--------------------------------------|-------------|---------------------------|---------|
| Negligence of the nurses | | | | | |
| No | 186 (94.42) | 8 (38.10) | 194 (88.99) | 61.44 | <0.001* |
| Yes | 11 (5.58) | 13 (61.90) | | | |
| Non-management of EPS according to American Psychiatric Association guideline | | | | | |
| No | - | 1 (4.76) | 1 (0.46) | 9.42 | 0.002* |
| Yes | 197 (100.0) | 20 (95.24) | 217 (99.54) | | |
| Poor knowledge of Psychopharmacology | | | | | |
| No | 34 (17.26) | 3 (14.29) | 37 (16.97) | 0.12 | 0.730 |
| Yes | 163 (82.74) | 18 (85.71) | 181 (83.03) | | |
| Yes | 163 (82.74) | 18 (85.71) | 181 (83.03) | | |
| Lack of seminars and/continue education | | | | | |
| Yes | 197 (100.0) | 21 (100.0) | 218 (100.0) | - | - |
| Employment of non-psychiatric nurses in psychiatric hospital | | | | | |
| Yes | 197 (100.0) | 21 (100.0) | 218 (100.0) | - | - |

/-Statistically significant (p-value <0.05)/*

Table 6: Relationship between Years of working as a registered/working mental nurse, current grade level and knowledge

| Variable | Knowledge | | | Total (%) | X ² -value | p-value |
|--|------------------------|---------------------------|----------------------|-------------|-----------------------|---------|
| | Good Knowledge (n=178) | Moderate Knowledge (n=33) | Poor Knowledge (n=7) | | | |
| Years of working as a registered/working mental nurse | | | | | | |
| Less than 1year | 2 (1.12) | - | - | 2 (0.92) | 34.46 | <0.001* |
| 1-2yrs | - | 1 (3.03) | 1 (14.29) | 2 (0.92) | | |
| 3-5yrs | 24 (13.48) | 9 (27.27) | 1 (14.29) | 34 (15.60) | | |
| 6-10yrs | 42 (23.60) | 11 (33.33) | 5 (71.43) | 58 (26.61) | | |
| 11-15yrs | 62 (34.83) | 7 (21.21) | - | 69 (31.65) | | |
| 15 and above | 48 (26.97) | 5 (15.15) | - | 53 (24.31) | | |
| Current Grade Level | | | | | | |
| Grade level 7 | 2 (1.12) | 1 (3.03) | 1 (14.29) | 4 (1.83) | 22.40 | 0.001* |
| Grade level 8 | 23 (12.92) | 9 (27.27) | 3 (42.86) | 35 (16.06) | | |
| Grade level 9 | 43 (24.16) | 11 (33.33) | 3 (42.86) | 57 (26.15) | | |
| Grade level 10 and above | 110 (61.80) | 12 (36.36) | - | 122 (55.96) | | |

/-Statistically significant (p-value <0.05)/*

Discussion

On the knowledge of the participants about EPS, the result from the findings showed that more than half of the participants (164 nurses) in Federal Neuropsychiatric Hospital Enugu and Neuropsychiatric Hospital Nawfia 14(66.67) had good knowledge of EPS and its management although none have undergone any form of training on EPS. This result supported the findings of Sheela⁸, which stated that 80 percent of caregivers had average knowledge on EPS. Also, in a study conducted by Benedicta et al⁹ in India, result showed that 45% of the participants had good knowledge, same was reported by Idah¹⁰, there is a similarity in sample studied. This result contradicts a report from Begum⁶ which stated that many nurses have suboptimal working knowledge of antipsychotic side effects. Also Davis¹¹ reported that the knowledge level of EPS increased in post-test examination.

On the management of EPS using rating scale and guideline, all the participants stated that they were not aware of guidelines or hospital policy for management of EPS, but they managed EPS generally using medications. The options that were highly applied by more than 70% of the participants were the use of biperiden for management of dystonia, propranolol for management of Akathisia, lowering of dosage for management of Parkinsonism and finally lowering of dosage as the first choice for Tardive dyskinesia. The other elements were implemented by less than 50% of the participants. This findings were in line with the results of Celeste et al¹² in which 55% of staff believed that medications worked well

to manage resident behaviour. Wubeshet et al¹³ reported that 51 respondents accepted dose reduction as the first line treatment of every EPS and most of the participants' side effects were not managed according to American Psychiatric Association guideline 178 (82.4%). This contradicts the report of Haddad et al¹⁴, in which anticholinergics received greater use (five trials) and beta-blockers (two trials).

Most of the sociodemographic characteristics of the participants influenced the knowledge of EPS and its management. However, work experience had more influence on the knowledge of EPS; there was a significant relationship between years of working as a nurse, current Grade level and Facility type. This findings were contradicted by the findings of a similar study by Begum et al⁶ in which the years of clinical experience and clinical banding were directly related to knowledge of antipsychotic medication side effects.

Extrapyramidal Syndrome is one of the major challenges facing patients on antipsychotics and there is no way the psychiatric patients can do without the antipsychotic drugs. It can be reduced if some strategies like usage of American psychiatric Association guideline, rating scale and WHO guideline are been implemented by the nurses while caring for psychiatric patients. In this study, results showed that the participants had good knowledge of EPS and there is an association between years of work experience and level of knowledge. The two hospitals are not using the various EPS

rating scales in the assessment and management of EPS but all the drug of choice mentioned for treatment of EPS (except Valbenazine) are being used in the treatment of EPS. None of the guidelines stated by American Psychiatric Association were used in the management of EPS, yet they still have good knowledge Of EPS. Some of the barriers to effective management of EPS are: Nurses Poor knowledge of Psychopharmacology, lack of seminars /continue education and employment of non-psychiatric nurses in Psychiatric Hospitals. Therefore, it is important to improve knowledge as one progresses in his work for effective management of EPS, and this can be achieved through attending of training workshops/seminars on EPS management, encouraging the use of rating scales, American Psychiatric Association Guideline and Employment of Psychiatric Nurses in Psychiatric Hospitals.

Conclusion

Most of the participants had good knowledge of Extrapiramidal Syndrome; none of them used American Association guideline and rating scale in management of EPS.

Recommendation

As EPS continues to pose problem to psychiatric patients, nurses who are the ones administrating these medications need to adopt the standard guidelines stated for management of EPS to ensure its reduction.

Acknowledgment: We acknowledge nurses in NeuroPsychiatric Hospital Nawfia Anambra State and Federal NeuroPsychiatric Hospital Enugu State that consented and participated in the study. We also acknowledge the assistance of the Chief Medical Directors of both hospitals for granting us access for the study.

References

1. D'Souza RS, Hooten WM. Extrapiramidal Symptoms. 2023 Jul 31. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2023 Jan-. PMID: 30475568.
2. Caroff SN. Overcoming barriers to effective management of tardive dyskinesia. *Neuropsychiatr Dis Treat.* 2019 Apr 4;15:785-794. Doi: 10.2147/NDT.S196541. PMID: 31040678; PMCID: PMC6459148.
3. Keepers GA, Fochtmann LJ, Anzia JM, Benjamin S, Lyness JM, Mojtabai R, Servis M, Walaszek A, Buckley P, Lenzenweger MF, Young AS, Degenhardt A, Hong SH; (Systematic Review). The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. *Am J Psychiatry.* 2020 Sep 1;177(9):868-872. Doi: 10.1176/appi.ajp.2020.177901. PMID: 32867516.
4. Wiernik PH; Public Policy Committee of the American College of Clinical Pharmacology. A

- dangerous lack of pharmacology education in medical and nursing schools: A policy statement from the American College of Clinical Pharmacology. *J Clin Pharmacol.* 2015 Sep;55(9):953-4. Doi: 10.1002/jcph.539. Epub 2015 Jun 18. PMID: 25969390.
5. Mohammad, AC, Human M, Esmail M, Syedeh RE. Types and causes of medication errors from nurse's viewpoint. *Iran J Nurs* 2013;18(3), 228–231.
 6. Begum F, Mutsatsa S, Gul N, Thomas B, Flood C. Antipsychotic medication side effects knowledge amongst registered mental health nurses in England: A national survey. *J Psychiatr Ment Health Nurs.* 2020 Oct;27(5):521-532. Doi: 10.1111/jpm.12600. Epub 2020 Apr 2. PMID: 31960574.
 7. Stomski NJ, Morrison P, Meehan T. Mental health nurses' views about antipsychotic medication side effects. *J Psychiatr Ment Health Nurs.* 2016 Aug;23(6-7):369-77. Doi: 10.1111/jpm.12314. Epub 2016 Jun 28. PMID: 27353448.
 8. Sheela S, Ranbhise, Ashok M, Kamat. A Study to Assess the Knowledge Regarding Adverse Effects of Selected Antipsychotic Drugs among the Caregivers of Patients Receiving Antipsychotic Drugs. *Int. J. Nur. Edu. and Research* 2(4): Oct.- Dec. 2014; Page 313-318.
 9. Benedicta J, Josna Mary Joseph, Glory J Waghela, et al. Knowledge on atypical antipsychotic drugs among caregivers of mentally ill patients. *Journal of Nursing Science & Practice.* 2015; 5(3)
 10. Idah. A Study To Assess The Effectiveness Of Structured Teaching Programme On Knowledge Regarding Antipsychotic Drugs Among Care Givers Of Psychiatric Patients In A Tertiary Care Setting, Coimbatore. Unpublished Master's thesis, Department of Nursing Science Medical University, Chennai, Branch V Mental Health Nursing 2018
 11. Davis J. Importance of Early Recognition of Extrapyrimal Symptoms (EPS) in a Community Mental Health Clinic Walden University college of Nursing 2020: <https://scholarworks.waldenu.edu/dissertations>
 12. Celeste LA, Mazor KM, Field TS, Donovan J, Kanaan A, Briesacher BA, Foy S, Harrold LR, Gurwitz JH, Tjia J. Knowledge of and perceived need for evidence-based education about antipsychotic medications among nursing home leadership and staff. *J Am Med Dir Assoc.* 2013 Dec;14(12):895-900. Doi: 10.1016/j.jamda.2013.08.009. Epub 2013 Sep 24. PMID: 24074962.
 13. Wubeshet YS, Mohammed OS, Desse TA. Prevalence and management practice of first-generation antipsychotics induced side effects among schizophrenic patients at Amanuel Mental Specialized Hospital, central

- Ethiopia: cross-sectional study. BMC Psychiatry. 2019 Jan 18;19(1):32. Doi: 10.1186/s12888-018-1999-x. PMID: 30658604; PMCID: PMC6339381.
14. Haddad PM, Correll CU. The acute efficacy of antipsychotics in schizophrenia: A review of recent meta-analyses. *Therapeutic Advances in Psychopharmacology*, 2018, 8(11), 303-318. Doi:10.1177/2045125318781475. Retrieved from: <https://www.researchgate.net/publication/313111184>