International Journal of Asian Education and Psychology (IJAEP)
Vol.1 , No. 2 , 2024 : 1- 11

Psikofarmaka Medications in Influencing Mental Activity and Behavior Through Selective Action on the Central Nervous System : Article Study

Fendy Prasetyawan[1]*, Achmad Wahdi[2], Yuneka Saristiana[3], Dewi Retno Puspitasari[4]
[1,2,3]Universitas Kadiri, Indonesia,
[4]STIKes Ganesha Husada Kediri, Indonesia
Corresponding Author: Fendy Prasetyawan fendy.pra@gmail.com

A R T I C L E I N F O

Keywords: Psikofarmaka, Metntal Activity, Central Nervous System

Received : 12, February
Revised : 12, March
Accepted: 12, April

A B S T R A C T

Psychotropic drugs are pivotal in managing a spectrum of mental health disorders, operating by selectively modulating the central nervous system (CNS). The CNS serves as the primary target for psychotropic drugs, where they modulate neurotransmitter systems to regulate neural activity and influence behavior. Understanding the neurobiological mechanisms underlying these medications is crucial for enhancing treatment efficacy and minimizing adverse effects. Psychotropic medications encompass various classes, each with distinct mechanisms and clinical applications. While these drugs demonstrate therapeutic efficacy, challenges persist in achieving optimal treatment outcomes, including medication adherence and managing side effects. Regulations play a vital role in ensuring the safe and appropriate use of psychotropic drugs. They encompass monitoring prescription and dispensing practices, categorizing drugs based on their abuse potential, and emphasizing patient education and informed consent. By adhering to stringent regulations and promoting ethical prescribing practices, the healthcare system aims to mitigate the risks associated with psychotropic medications while maximizing their therapeutic benefits.

DOI: https://doi.org/10.59890/ijaep.v1i2.8862
https://journal.formosapublisher.org/index.php/ijaep

INTRODUCTION

Psychotropic drugs play a critical role in addressing various mental health conditions by selectively modulating the central nervous system (CNS). This review endeavors to present a thorough comprehension of how psychotropic medications function and their therapeutic effectiveness in influencing mental processes and behavior (Frank, R. G, 2005). Mental health disorders, spanning from mood disorders to psychotic conditions, pose significant global challenges, impacting individual well-being and societal functioning. The advent of psychotropic drugs has transformed the management of these disorders, providing relief to countless individuals worldwide (Azab, M., 2024).

The CNS serves as the primary focal point for psychotropic drugs, acting upon neurotransmitter systems to regulate neural activity and impact behavioral responses. By targeting specific neurotransmitter pathways, these drugs can alleviate symptoms associated with a range of mental health disorders. Grasping the neurobiological underpinnings of these medications is pivotal for enhancing treatment outcomes and mitigating adverse effects (Parry, H. J., 1968).

The efficacy of psychotropic medications varies among different classes and individual responses, underscoring the intricate nature of neural circuits involved in mental processes (De Kuijper, G., 2024). Antidepressants, antipsychotics, anxiolytics, and mood stabilizers constitute the principal classes of psychotropic drugs, each possessing distinct mechanisms of action and clinical applications. Despite notable strides in pharmacotherapy, challenges persist in achieving optimal treatment outcomes, encompassing medication adherence, side effect management, and treatment resistance (Huang, X., 2022).

Psychotropic drugs exert their therapeutic effects through interactions with neurotransmitter receptors, transporters, and enzymes within the CNS. For instance, selective serotonin reuptake inhibitors (SSRIs) enhance serotonergic neurotransmission by impeding serotonin reuptake, thereby alleviating symptoms of depression and anxiety (Boehnke, T., 2024). Similarly, antipsychotic medications target dopamine and serotonin receptors, mitigating psychotic symptoms in conditions like schizophrenia (Raffi, E. R., 2009).

The development of psychotropic drugs has been steered by advancements in neuroscience and psychopharmacology, resulting in the identification of novel drug targets and treatment modalities (Serapinas, D., & Narbekovas, A., 2024). Pharmacogenetic investigations have shed light on genetic factors influencing individual responses to psychotropic medications, laying the groundwork for personalized medicine approaches in psychiatry. Additionally, neuroimaging techniques have offered insights into the neurobiological impacts of psychotropic drugs, aiding in treatment monitoring

and prognostication. Despite their therapeutic merits, psychotropic drugs are accompanied by a spectrum of adverse effects, encompassing metabolic disruptions, cardiovascular complications, and neurological manifestations (Grover, S., 2014). Striking a balance between the risks and benefits of pharmacotherapy is imperative in clinical practice, necessitating meticulous consideration of individual patient characteristics and treatment preferences. Moreover, the stigma surrounding mental health and medication adherence poses supplementary hurdles in optimizing treatment outcomes and fostering recovery (Kreek, M. J., 2002).

LITERATURE REVIEW

Psychotropic drugs are essential components in the treatment of various mental health disorders as they specifically act on neurotransmitter systems in the central nervous system (CNS). These medications, which include selective serotonin reuptake inhibitors (SSRIs) and antipsychotics, regulate neurotransmitter activity to alleviate symptoms associated with psychiatric disorders. For instance, SSRIs increase serotonin neurotransmission by blocking its reuptake, effectively managing symptoms of depression and anxiety. Similarly, antipsychotic drugs alleviate symptoms of schizophrenia by blocking dopamine receptors in the brain (McIntyre, R. S., 2024).

Studies consistently demonstrate the effectiveness of psychotropic medications in treating psychiatric disorders. However, their therapeutic benefits are often accompanied by adverse effects. These adverse effects, such as weight gain, sedation, sexual dysfunction, and metabolic disturbances, underscore the importance of carefully assessing the risk-benefit ratio of each medication. Additionally, individual variations in response to psychotropic medications necessitate personalized treatment strategies tailored to factors like genetics, age, gender, and concurrent medical conditions (Dégardin, K., 2024).

Concerns about the prolonged use of psychotropic medications emphasize the need for comprehensive monitoring and evaluation. Extended use of these medications may result in tolerance, dependence, and potential changes in brain function, highlighting the importance of longitudinal studies to evaluate their effects on cognitive function, quality of life, and overall prognosis. Integrating pharmacotherapy with evidence-based psychotherapeutic interventions is crucial for providing comprehensive care to individuals with mental health disorders (Du, J., 2024).

Future advancements in neuroscience and pharmacology offer promise for developing new psychotropic medications with improved efficacy and tolerability profiles. Personalized medicine approaches, identification of biomarkers, and targeted interventions are areas of focus for future research

aimed at optimizing mental health treatment. By further investigating the mechanisms of action and clinical implications of psychotropic medications, clinicians and researchers can enhance the care and outcomes for individuals affected by mental illness (Hailemariam, M., 2024).

METHODOLOGY

This study adopts a Review Study methodology, which entails a thorough examination and reinterpretation of the article entitled "Mengenal Obat-obatan Jiwa (Psikofarmaka)" authored by apt. Ananta Budi Wicaksono, S.Farm., who serves as a practitioner at Dr. Radjiman Wediodiningrat Mental Hospital in Lawang. This article was originally published by the Ministry of Health: Directorat General of Health services. Article at https://yankes.kemkes.go.id/view_artikel/2155/mengenal-obat-obatan-jiwa-psikofarmaka.

The primary objective of this review is to delve into the content of the original article, extract key insights, and articulate them in a manner conducive to fostering a comprehensive understanding of psychotropic medications. To achieve this objective, the review process involves a meticulous analysis of the original article's content, wherein key points are identified, synthesized, and rephrased to facilitate clarity and coherence. Moreover, the review extends beyond the confines of the original article by consulting relevant literature from various credible sources. This additional literature serves to augment the findings derived from the original article, thereby ensuring the accuracy, depth, and completeness of the review.

Central to the methodology is the critical evaluation of the information presented in the original article. This involves scrutinizing the content for any inconsistencies, ambiguities, or gaps in information. By conducting a rigorous assessment, the review aims to elucidate the strengths and limitations of the original article, thereby providing readers with a well-rounded perspective on the topic of psychotropic medications.

The methodology endeavors to synthesize the findings of the review into a cohesive and insightful overview of the subject matter. By integrating information from both the original article and supplementary literature, the review seeks to present a comprehensive narrative that encapsulates the complexities and nuances of psychotropic medications. This synthesized overview serves as a valuable resource for further exploration and discussion of the topic. In essence, the methodology employed in this study underscores a commitment to rigor, thoroughness, and scholarly integrity. By adhering to a systematic approach to review and analysis, the study aims to contribute to the

existing body of knowledge on psychotropic medications while also fostering a deeper understanding of their clinical implications and societal relevance.

RESEARCH RESULT

Psychotropic drugs are substances or medications, whether natural or synthetic, that are not narcotics but have psychoactive properties through selective influence on the central nervous system, causing specific changes in mental activity and behavior. However, not all psychotropic drugs or psychotropic medications fall under the category of psychotropic drugs as regulated by the Psychotropic Drug Law and Ministerial regulations. Medications included in these laws and regulations related to psychotropic drugs have dependency or addiction effects, both physically and psychologically.

Psychotropic medications are divided into several types based on their use in treating mental disorders, including anti-anxiety drugs (medications for treating anxiety), antipsychotics (medications for treating psychosis/schizophrenia), antidepressants (medications for treating depression), mood stabilizers (for treating mood disorders/bipolar/mania), and others. Below are explanations of several types of psychotropic drugs:

1. Anti-anxiety (Sedative/Anxiolytic)

Anxiety or anxiety disorders generally involve excessive, uncontrollable worry and fear, accompanied by somatic and psychological symptoms that affect an individual's quality of life. These symptoms can include anxiety in social environments or general situations, as well as panic attacks. Medications that address anxiety belong to the benzodiazepine class, which work by increasing neurotransmitters in the brain called GABA, thereby interrupting brain impulses that cause anxiety or panic. Examples of these medications include Alprazolam, Lorazepam, Diazepam, Clonazepam, and others.

Benzodiazepine anti-anxiety medications mostly fall under the category of psychotropic drugs in the law due to the risk of dependence effects, where misuse or discontinuation of the medication can worsen anxiety conditions. Besides benzodiazepines, some other medications are used for anti-anxiety purposes, such as some antidepressants (escitalopram, sertraline, venlafaxine), Pregabalin, Buspirone, and others, which have minimal dependency effects.

2. Antidepressants

Depression is characterized by a loss of enthusiasm and passion, often accompanied by feelings of fatigue, guilt, thoughts of self-harm, and other symptoms. Antidepressants consist of several types, such as

Tricyclic/Tetracyclic groups like Amitriptyline, Imipramine, Maprotiline. The SSRi/SNRi group includes Fluoxetine, Escitalopram, Sertraline, and others. Antidepressants work by increasing the neurotransmitters Noradrenaline and Serotonin in the brain, thereby enhancing enthusiasm and passion to improve the condition of depression. Some antidepressants are also used for anxiety conditions, such as obsessive-compulsive disorder, like Fluvoxamine, Clomipramine.

3. Antipsychotics

Psychosis is a mental condition characterized by disturbances in reality perception, accompanied by hallucinations (auditory or sensory perceptual disturbances), delusions (delusions), disturbed thought processes and speech, and a set of other symptoms. Antipsychotics work by reducing the activity of the neurotransmitters Dopamine and Serotonin in the brain. There are two types of antipsychotics: typical antipsychotics (also known as first-generation antipsychotics) such as Haloperidol, Trifluoperazine, Chlorpromazine, Fluphenazine, which primarily act on Dopamine, and atypical antipsychotics (also known as second-generation antipsychotics) whose side effects are minimal and tend to work more on Serotonin such as Quetiapine, Olanzapine, Risperidone, Aripiprazole.

4. Mood stabilizers / antimania

Mood stabilizers are used to treat bipolar disorder and mania, conditions opposite to depression where there is an increase in activity and enthusiasm with symptoms such as increased self-confidence, speech frequency, decreased need for sleep, and others that can shift from manic episodes to depression or not. Lithium is the only drug used solely as a mood stabilizer. However, other drugs are being developed as alternatives to lithium as mood stabilizers, such as antiepileptic drugs (Valproate, Carbamazepine, Lamotrigine) and atypical antipsychotics (Risperidone, Quetiapine, Aripiprazole Olanzapine), which are currently also used as mood stabilizers.

Due to their effects on changes in mental and behavioral status, psychotropic medications that should be used according to mental disorder conditions are prone to abuse. Therefore, various regulations have been issued to regulate the circulation of these drugs, including the Psychotropic Drug Law, Minister of Health regulations, and Head of the National Agency of Drug and Food Control regulations.

Regulations pertaining to psychotropic drugs are vital due to their susceptibility to abuse and addiction. The Psychotropic Drug Law, in conjunction with Ministerial directives and oversight from the National Agency

of Drug and Food Control, seeks to regulate the distribution, prescription, and utilization of these medications.

A fundamental component of these regulations involves monitoring the prescription and dispensing of psychotropic drugs. Healthcare professionals are often obligated to adhere to stringent protocols when prescribing these medications, ensuring their appropriate and safe usage. This entails conducting thorough patient assessments, exploring alternative treatment options, and vigilantly observing for indications of misuse or dependency. Moreover, regulations may encompass the categorization and scheduling of psychotropic drugs based on their potential for abuse and addiction. Substances posing greater risks may be subject to tighter controls, such as restrictions on prescription quantities, specialized prescription protocols, and heightened monitoring of patients undergoing treatment.

Regulations underscore the significance of patient education and informed consent. Healthcare providers are typically mandated to educate patients about the benefits and risks associated with psychotropic medications, including potential side effects, withdrawal symptoms, and the importance of adhering to prescribed regimens. Informed consent procedures ensure that patients comprehend the implications of their treatment choices and actively participate in their healthcare decisions. Another crucial aspect of regulatory initiatives is the promotion of responsible prescribing practices and the deterrence of diversion and illicit distribution of psychotropic drugs. Healthcare providers and pharmacists may be obligated to maintain detailed records of prescriptions and dispensations, participate in monitoring programs for prescription drugs, and promptly report any suspicious activities to regulatory authorities.

DISCUSSION

The discourse surrounding psychotropic medications and their role in mental health treatment is intricate and encompasses a variety of factors, including effectiveness, safety, societal ramifications, and future research and clinical applications. This discourse aims to delve into these facets comprehensively to provide a thorough comprehension of the subject matter.

Initially, the effectiveness of psychotropic medications in addressing psychiatric disorders is a topic of ongoing discussion and investigation. While these medications have demonstrated efficacy in alleviating symptoms for many individuals, their effectiveness varies depending on factors such as the specific disorder being treated, individual variations in physiology, and adherence to treatment protocols. Moreover, the long-term efficacy of psychotropic medications is of interest, with certain studies suggesting that

their benefits may diminish over time or that alternative treatment modalities may be required to sustain symptom alleviation.

Safety considerations are of utmost importance in the prescription of psychotropic medications, as these substances can pose significant risks and adverse effects. Common side effects encompass weight gain, sedation, sexual dysfunction, and metabolic disturbances, which can negatively impact patients' quality of life and adherence to treatment plans. Additionally, certain psychotropic medications carry a potential risk of dependence or addiction, particularly those categorized as benzodiazepines or stimulants. Healthcare providers must carefully weigh the potential benefits of these medications against their associated risks and diligently monitor patients for any adverse effects.

The societal implications of psychotropic medication utilization also warrant examination. Stigmatization surrounding mental illness and its treatment may result in individuals hesitating to seek assistance or adhere to prescribed medication regimens. Furthermore, disparities in access to mental healthcare and psychotropic medications persist, with marginalized communities often encountering greater obstacles to treatment. Addressing these disparities necessitates systemic changes to enhance access to care and diminish the stigma surrounding mental health treatment.

Looking forward, future avenues of research in the realm of psychotropic medications are varied and promising. Advances in neuroscience and pharmacology offer the potential for the development of novel medications with enhanced effectiveness and safety profiles. Personalized medicine strategies, such as pharmacogenetic testing, may aid in identifying individuals who are most likely to benefit from specific medications while minimizing the risk of adverse effects. Additionally, exploration into novel treatment targets, such as the glutamatergic system or inflammatory pathways, holds promise for broadening the array of pharmacological options available to healthcare providers.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

In conclusion, the discourse concerning psychotropic medications underscores the intricate and diverse role they play in the treatment of mental health conditions. Throughout this dialogue, various facets such as effectiveness, safety, societal repercussions, and future research pathways have been thoroughly examined.

Primarily, the effectiveness of psychotropic medications remains a topic of continual debate and study. While these treatments have shown efficacy in

alleviating symptoms for numerous individuals, variables such as the specific disorder being addressed and individual variations in response can impact their overall effectiveness. Moreover, the sustained efficacy over time and the potential necessity for alternative treatment modalities warrant further investigation.

Secondarily, safety considerations are paramount when prescribing psychotropic medications. These substances carry significant side effects and risks, encompassing weight gain, sedation, sexual dysfunction, and the potential for dependence or addiction. It is imperative for healthcare providers to meticulously balance the benefits of these medications against their potential risks and closely monitor patients for any adverse effects.

Furthermore, the societal implications associated with the use of psychotropic medications are noteworthy. Stigma surrounding mental illness and obstacles to accessing care can hinder individuals from seeking assistance or adhering to prescribed treatment regimens. Addressing these challenges necessitates systemic reforms aimed at enhancing access to care and mitigating stigma surrounding mental health treatment.

Looking forward, future research endeavors in the realm of psychotropic medications offer promise for developing novel treatments with enhanced effectiveness and safety profiles. Personalized medicine strategies, such as pharmacogenetic testing, hold potential for optimizing treatment outcomes while minimizing adverse effects. Additionally, exploration into novel treatment targets presents opportunities for expanding the array of pharmacological options available to clinicians.

Recommendations

Drawing from the insights gleaned from the discussions and findings presented, several recommendations emerge to bolster the utilization of psychotropic medications in mental health care:

1. Continued Research

   There is a pressing need for further exploration into the efficacy and safety of psychotropic medications, particularly over extended durations and across diverse patient populations. Research endeavors should also concentrate on identifying innovative treatment targets and cultivating personalized medicine approaches.

2. Education and Awareness

   Efforts to diminish the stigma surrounding mental illness and enhance awareness of psychotropic medications are imperative. Healthcare providers should receive comprehensive training on the

judicious prescription of psychotropic medications and vigilant monitoring of patients for adverse effects.

3. Access to Care

   Measures must be implemented to enhance access to mental healthcare and psychotropic medications, especially for underserved communities. This may entail expanding mental health services in marginalized areas and addressing socioeconomic barriers to care.

4. Multidisciplinary Collaboration

   Collaboration among various healthcare professionals, including psychiatrists, primary care physicians, psychologists, and social workers, is indispensable for delivering holistic mental health care. A multidisciplinary approach ensures that patients receive tailored treatment that addresses their unique needs.

By heeding these recommendations, stakeholders can endeavor to optimize the use of psychotropic medications to enhance outcomes for individuals grappling with mental illness and promote overall well-being.

ACKNOWLEDGMENT

We extend our sincere gratitude to apt. Ananta Budi Wicaksono, S.Farm., for his invaluable contributions and expertise in the field of mental health. As a dedicated practitioner at Dr. Radjiman Wediodiningrat Mental Hospital in Lawang, his insights and experience have enriched our understanding of psychopharmacology and psychiatric care. We are grateful for his ongoing commitment to improving mental health outcomes and for serving as a source of inspiration for our research endeavors.

REFERENCES

Azab, M., Novella, A., Ianes, A., & Pasina, L. (2024). Potentially Inappropriate Psychotropic Drugs in Nursing Homes: An Italian Observational Study. *Drugs & Aging*, 41(2), 187-197.

Boehnke, T., Franke, C., Bauerfeind, A., Heinemann, K., Kolberg-Liedtke, C., & Koelkebeck, K. (2024). Systematic analysis of combined oral contraceptive prescription patterns in psychotropic drug users across twelve European countries. *Contraception*, 110375.

De Kuijper, G., Jonker, J., Sheehan, R., & Hassiotis, A. (2024). A survey on service users' perspectives about information and shared decision- making in psychotropic drug prescriptions in people with intellectual disabilities. *British Journal of Learning Disabilities*.

Dégardin, K., Guillemain, A., Feng, A., Saladin, C., Paratte, S., Zurbach, R., & Mohn, T. (2024). Forensic analysis of counterfeit psychotropic drugs. *Talanta Open*, 100295.

Du, J., Burger, H., Kupers, T., Sulim, K., Homburg, M. T., Muris, J. W., ... & Janus, S. I. (2024). Patterns of psychotropic drug prescriptions and general

practice consultations among community-dwelling older people with dementia during the first two years of the COVID-19 pandemic. *BMC geriatrics*, 24(1), 1-14.

Frank, R. G., Conti, R. M., & Goldman, H. H. (2005). Mental health policy and psychotropic drugs. *The Milbank Quarterly*, 83(2), 271-298.

Grover, S., Chakrabarti, S., Sharma, A., & Tyagi, S. (2014). Attitudes toward psychotropic medications among patients with chronic psychiatric disorders and their family caregivers. *Journal of neurosciences in rural practice*, 5(04), 374-383.

Hailemariam, M., Bustos, T. E., Montgomery, B. W., Brown, G., Tefera, G., Adaji, R., ... & Johnson, J. E. (2024). Mental health interventions for individuals with serious mental illness in the criminal legal system: a systematic review. *BMC psychiatry*, 24(1), 199.

Huang, X., Harris, L. M., Funsch, K. M., Fox, K. R., & Ribeiro, J. D. (2022). Efficacy of psychotropic medications on suicide and self-injury: a meta-analysis of randomized controlled trials. *Translational psychiatry*, 12(1), 400.

Kreek, M. J., LaForge, K. S., & Butelman, E. (2002). Pharmacotherapy of addictions. *Nature reviews Drug discovery*, 1(9), 710-726.

McIntyre, R. S., Kwan, A. T., Rosenblat, J. D., Teopiz, K. M., & Mansur, R. B. (2024). Psychotropic Drug–Related Weight Gain and Its Treatment. *American Journal of Psychiatry*, 181(1), 26-38.

Parry, H. J. (1968). Use of psychotropic drugs by US adults. *Public Health Reports*, 83(10), 799.

Raffi, E. R., Nonacs, R., & Cohen, L. S. (2019). Safety of psychotropic medications during pregnancy. *Clinics in Perinatology*, 46(2), 215-234.

Serapinas, D., & Narbekovas, A. (2024). -Bioethical Considerations for COMT gene Polymorphisms Testing in Psychotropic Drug Users. *Psychoneuroendocrinology*, 160, 106892.

Wicaksono, A.B., (2023). *Mengenal Obat-Obatan Jiwa (Psikofarmaka)*. Kemenkes : Direktorat Jenderal Pelayanan Kesehatan. Citited at April 20, 2024. https://yankes.kemkes.go.id/view_artikel/2155/mengenal-obat-obatan-jiwa-psikofarmaka.