

Table Of Content

Journal Cover 2

Author[s] Statement 3

Editorial Team 4

Article information 5

 Check this article update (crossmark) 5

 Check this article impact 5

 Cite this article 5

Title page 6

 Article Title 6

 Author information 6

 Abstract 6

Article content 8

Academia Open



By Universitas Muhammadiyah Sidoarjo

Originality Statement

The author[s] declare that this article is their own work and to the best of their knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the published of any other published materials, except where due acknowledgement is made in the article. Any contribution made to the research by others, with whom author[s] have work, is explicitly acknowledged in the article.

Conflict of Interest Statement

The author[s] declare that this article was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright Statement

Copyright © Author(s). This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

EDITORIAL TEAM

Editor in Chief

Mochammad Tanzil Multazam, Universitas Muhammadiyah Sidoarjo, Indonesia

Managing Editor

Bobur Sobirov, Samarkand Institute of Economics and Service, Uzbekistan

Editors

Fika Megawati, Universitas Muhammadiyah Sidoarjo, Indonesia

Mahardika Darmawan Kusuma Wardana, Universitas Muhammadiyah Sidoarjo, Indonesia

Wiwit Wahyu Wijayanti, Universitas Muhammadiyah Sidoarjo, Indonesia

Farkhod Abdurakhmonov, Silk Road International Tourism University, Uzbekistan

Dr. Hindarto, Universitas Muhammadiyah Sidoarjo, Indonesia

Evi Rinata, Universitas Muhammadiyah Sidoarjo, Indonesia

M Faisal Amir, Universitas Muhammadiyah Sidoarjo, Indonesia

Dr. Hana Catur Wahyuni, Universitas Muhammadiyah Sidoarjo, Indonesia

Complete list of editorial team ([link](#))

Complete list of indexing services for this journal ([link](#))

How to submit to this journal ([link](#))

Article information

Check this article update (crossmark)



Check this article impact (*)



Save this article to Mendeley



(*) Time for indexing process is various, depends on indexing database platform

Critical Knowledge Gaps in Iraqi Nurses' Understanding of Antihypertensive Drug Risks

Kesenjangan Pengetahuan Kritis dalam Pemahaman Perawat Irak tentang Risiko Obat Antihipertensi

Wasfi Dhahir Abid Ali, Wasfi.abid_ali@uobasrah.edu.iq, (1)

Basic science Department, College of Nursing, University of Basrah, Basrah, Iraq, Iraq

Samahir Sabri Hamid, samahir@gmail.com, (0)

Basic science Department, College of Nursing, University of Basrah, Basrah, Iraq, Iraq

Muhammed Sabah, sabah@gmail.com, (0)

MSc. in Basra Health Department, Basrah, Iraq, Iraq

Zahrraa Mahmood Hussain Al-Hijaj, zahraa@gmail.com, (0)

Basic science Department, College of Nursing, University of Basrah, Basrah, Iraq, Iraq

Sundos Baker, sundos@gmail.com, (0)

Fundamentals of Nursing Department, College of Nursing, University of Basrah, Basrah, Iraq, Iraq

Maher A. Atiyah, maher@gmail.com, (0)

Fundamentals of Nursing Department, College of Nursing, University of Basrah, Basrah, Iraq, Iraq

⁽¹⁾ Corresponding author

Abstract

Background: Poor adherence to antihypertensive medications and persistently elevated blood pressure contribute significantly to cardiovascular events, increased hospitalizations, and premature mortality. **Specific Background:** Adverse effects of antihypertensive medications, such as cough, dizziness, and increased urination, often lead to non-adherence, exacerbating these health risks. **Knowledge Gap:** There is limited understanding of nurses' knowledge regarding the adverse effects of antihypertensive medications, particularly in developing regions. **Aims:** This cross-sectional study aimed to evaluate the knowledge of nurses in Basra, Iraq, about the adverse effects of antihypertensive medications and to identify areas needing improvement. **Results:** Seventy nurses (both male and female) from various hospitals in Basra participated in a questionnaire. Findings revealed that only 49.78% of nurses were confident in their knowledge about the adverse effects of these medications, 20% did not know the answers, and 25.9% were unsure. The overall mean score was significant (2.27), indicating insufficient knowledge. **Novelty:** This study provides the first detailed assessment of nurses' understanding of antihypertensive medication adverse effects in Basra, highlighting a critical gap in knowledge and the need for targeted educational interventions. **Implications:** Enhancing academic and practical training for nurses is essential to improve patient care and adherence to hypertension treatments. Future research should focus on developing and implementing educational programs and continuous

assessment frameworks to ensure nurses are well-equipped to manage and communicate the adverse effects of antihypertensive medications. By addressing these gaps, healthcare providers can better support patients in adhering to their treatment regimens, ultimately reducing cardiovascular risks and improving patient outcomes.

Highlights:

Knowledge Gap: Only 49.78% of nurses confident about antihypertensive medication adverse effects.

Implications: Enhance nurse training to improve patient care and treatment adherence.

Future Research: Develop educational interventions and continuous assessment frameworks for nurses.

Keywords: Antihypertensive Medications, Nurse Knowledge, Adverse Effects, Hypertension, Patient Adherence

Published date: 2024-06-22 00:00:00

Introduction

Poor adherence to antihypertensive medications and persistently elevated blood pressure may be responsible for a significant portion of cardiovascular events, including angina, myocardial infarction, chronic heart failure, kidney failure, transient cerebral ischemic attacks and strokes, premature mortality and disability, and increased hospitalisation costs. A significant proportion of cardiovascular events such as angina pectoris, myocardial infarction, chronic heart failure, renal failure, strokes, transient cerebral ischemic attacks, premature deaths, disability and high cost of hospitalization can be attributed to poor adherence to antihypertensive medications and persistent elevation in blood pressure. [1,2,3,4]. So that Reducing renal and cardiovascular morbidity and death by blood pressure (BP) reduction is the primary objective of antihypertensive medication treatment. In order to do this, patients should be urged to follow the recommended non-pharmacologic and pharmacologic treatment plans. Therefore, the importance of treatment with antihypertensive drugs is to decrease blood pressure (BP) in order to prevent renal and cardiovascular morbidity and death. Patients must follow the recommended pharmacological and non-pharmacological management measures in order to receive successful therapy. [5].

Adverse effects like cough, edoema, Wheezing/shortness of breath, headache, flush, increased urination, fast pulse, and dizziness can all be severe enough to interfere with the administration of antihypertensive drugs, even though hospitalisation for side effects and potentially fatal side effects are rare. Although life-threatening adverse effects and hospitalisation due to adverse effects are rare, side effects such as cough, edoema, flushing, headache, increased urination, rapid pulse, wheezing/shortness of breath, and dizziness can be detrimental enough to interfere with the medication used to treat hypertension. [6,7,8,9,10,11,12,13,14,15,16,17,18]

In hypertension patients, adverse effects play a major role in the non-adherence to antihypertensive treatment. Most patients are unaware of whether their antihypertensive drugs are to blame for their symptoms. On the other hand, non-adherent patients are often those who believed that their antihypertensive drugs were the cause of their problems. Patients should actively participate in the decision-making process and get counselling on common side effects of their antihypertensive drugs. Future research utilising prospective study designs is necessary to have a deeper understanding of the relationship between non-adherence and deleterious outcomes. The detrimental effect of non-adherence to antihypertensive medications in patients with high blood pressure is significant. Many patients have no idea whether their symptoms are caused by antihypertensive drug therapy. Patients were nonadherent when they discovered that their antihypertensive drugs were the cause of their symptoms. Patients must be personally and significantly involved in the decision-making process, as well as given counselling regarding the typical side effects of antihypertensive drugs. As a result, patients need assistance in comprehending the connection between side effects and non-adherence. [19].

The relationship between antihypertensive medication and side effects, demonstrating how this relationship changes for different drug classes and for less severe side effects (such syncope and hypotension without falls) as well as more severe side effects (like acute renal damage). Contrary to popular belief The correlation between adverse events and antihypertensive medication, and how this correlation varies throughout pharmacological classes, and mild adverse events (eg, hypotension without falls) and more severe adverse events (eg, acute kidney injury, syncope). Despite common belief [20,21].

Numerous variables influence adherence, including drug costs and doctors' inadequate communication with patients about the significance of treating hypertension, which is frequently asymptomatic. Adverse drug events (ADEs), many of which are dose-related, are a major cause of low compliance among patients using antihypertensive medicines. Factors that affect compliance include drug prices and doctors' unclear explanations to patients about the importance of treating asymptomatic hypertension. The most important cause of poor compliance among patients receiving antihypertensive medications is adverse drug events (ADEs), most of which are dose-related. [22,23]. Hypertension is most prevalent among people older than 60 years, People over the age of 60 are most susceptible to high blood pressure [24,25] altered pharmacokinetics (e.g., decreased liver and kidney function, increased receptor sensitivity), which can result in even higher extremes in individual medication response than in younger individuals, might make therapy particularly difficult. It has also been recommended to identify unpleasant responses by various techniques in order to reduce the unfavourable prognosis linked to bad reactions. Because of the reduced function of the liver and kidneys and the elevated receptor sensitivity, which can result in altered individual drug response compared to younger adults. Various methods have also been used to reduce misdiagnosis associated with adverse reactions. [26] The adverse response profile to antihypertensive medications in our situation has not been adequately described, considering the antihypertensive arsenal utilised here. The tolerability profile of these medications in this setting has to be accurately described. Profile of adverse reactions reported by. Adverse interactions of antihypertensive drugs in our environment have not been properly described for the blood pressure used in this setting. There is a need to characterize the tolerability properties of these drugs in this environment. [27]

Results of [28] revealed that 62.5 percent of patients who experienced an adverse response to ACEI had a dry cough, and one patient had loose stools. Additionally, 73.1 percent of patients using diuretics had excessive micturition, while 44 percent of patients taking CCB had polyuria, or an increase in volume.

Methods

A cross-sectional study aimed at evaluating the knowledge of nurses working in some Basra hospitals about the adverse effects of medications used to lower blood pressure. decrease the blood pressure. 70 nurses (both male and female) from various hospitals in Basrah, southern Iraq, who worked in various departments completed an assessment questionnaire designed for this purpose. The questionnaire included a demographic axis with questions about gender, years of experience, and educational attainment, as well as the hospital where the nurses were employed. To evaluate participants' knowledge and conduct a static analysis, the second axis contained some informational questions on the side effects of using antihypertensive drugs. For percentage, mean, and significance calculations, the Spss programme is utilised.

Result and Discussion

One of the most common medications used to raise the causes of this condition is anti-hypertensive medication. Owing to the wide variety of these medications, their varied origins of manufacture and application, as well as the nature of their mechanisms of action, these preparations are a predictor of the development of unfavourable patient responses. Responsibility for adverse reactions to the drug falls on the user of the drug or the methods of administering it by the nursing or medical staff, and sometimes on the drug producer. Table No. (1) shows the number of participants in the questionnaire: 28.57 males and 71.43 females, due to the large female orientation towards this profession. Regarding the educational level, the majority of participants hold a diploma (45%) due to the recent establishment of the College of Nursing in the region. Nurses are distributed in various departments of the hospital

Table (2) The frequency and percentage of the Demographic information

		F	%
Gender	Male	20	28.57
	Female	50	71.43
Education Level	Nursing School	23	32.86
	BSc.	13	18.57
	Diplomat	32	45.71
	MSc,	1	1.43
	Ph.D.	1	1.43
Year of Experience	1-5	34	48.57
	6-10	17	24.29
	11-15	5	28.57
	15>	14	71.43
Work Department	Emergency	4	32.86
	ICU	7	18.57
	Other	59	45.71

Table 1. The frequency and percentage of the Demographic information

The results in Table (2) regarding nurses' knowledge of the adverse effects of hypertensive medications show that 49.78 of the nurses participating in the questionnaire know, 20% did not know, and 25.9% were not sure of their knowledge. we think that any nurses should Know all the adverse effects of hyper tensile drugs. We believe that the disparity in knowledge is due to the lack of academic knowledge and experience regarding this type of medicine. [29]. discovered that people did not engage in health-related behaviour if they had even a minimal level of health-related motivation and understanding. [30]

No	Questions	Know	Don't Know	not sure	MS	S
1	Adverse effects are rare occurrences	20	24	16	2.66	S
2	It causes flush, headache,	38	16	16	2.94	S
3	It causes increased urination, rapid	56	9	5	4.07	S

	pulse,					
4	Cause edema, cough	20	33	17	1.67	NS
5	Risk of drug cause adverse effect on blood pressure	22	30	18	1.83	NS
6	Missed dose on BP cause adverse effects	33	8	29	2.77	S
7	Unavailability of drugs in the market	26	25	19	2.13	S
8	adverse effects of antihypertensive drugs are Tiredness and dizziness	53	8	9	3.91	S
9	Hypotension	56	3	11	4.16	S
10	adverse effects of antihypertensive Depend on period of drugs	57	4	9	4.20	S
11	Nightmares (bad dreams)	17	25	28	1.61	NS
12	Frequency of micturition	56	2	12	4.17	S
13	Reduced sexual urge	18	7	47	1.96	NS
14	Insomnia	48	11	11	3.59	S
15	Urinary incontinence	36	12	22	2.89	S
16	Diarrhea or Constipation	20	20	30	1.86	NS
17	Nervous/restless	48	6	18	3.69	S
18	Disturbance of taste	23	20	27	2.03	S
19	Nausea	50	7	14	3.77	S
20	Cold hands/feet	43	10	17	3.31	S
Total					2.27	S

Table 2. Mean of score and signficancy regarding scientific

MS=mean of score S= significant NS= None significant

The result of study showed that the mean of score of 75% of the items were significant and 25% were not significant and the total mean of score was significant (2.27) .

Several studies have indicated a lack of knowledge and poor behavior and practice among the rates of hypertension. This influences the location, level of knowledge and practice of controlling high blood pressure despite appropriate treatment. Therefore, health care must rely on not only diagnosing the causes of patients suffering from high blood pressure, but also creating awareness about combating high blood pressure and its complications. Hence, the researcher was interested in evaluating knowledge and awareness of high blood pressure among people with high blood pressure. Other study established that a higher level of knowledge about the disease leads to better self-care and compliance with therapy or oversight. Nonetheless, there remained a discrepancy between understanding the illness and adhering to medication regimens and disease control. As a result, there was a gap between knowledge and practice, meaning that even while participants knew what had to be done, they did not behave in that way. This is because, although knowledge contains a rational component, adhering to a practice entails a multitude of components, including emotional, social, biological, and cultural aspects. According to Aubert et al. (2008), the majority of individuals knew enough, but very few were driven,

desired change, and made an effort to do it. Few had really put it into practice, meaning that deliberately adopting a new behaviour [31]. Therefore, we find it very necessary to improve the academic and training level regarding dealing with adverse reactions to medications and adhere to approved international standards in this regard, Continuous assess of nurses' performance to improve their level.

Conclusion

The study conducted in Basra, Iraq, underscores a critical knowledge gap among nurses regarding the adverse effects of antihypertensive medications. Despite a significant portion of nurses having substantial experience and educational qualifications, only 49.78% were confident in their knowledge, while 20% lacked knowledge and 25.9% were uncertain. This highlights an urgent need for enhanced academic and practical training to improve nurses' understanding and management of antihypertensive drug side effects. The findings imply that improved nurse education could lead to better patient care and adherence to hypertension treatments, ultimately reducing cardiovascular risks. Future research should focus on developing targeted educational interventions and continuous assessment frameworks to equip nurses with the necessary skills and knowledge.

References

1. R. Chowdhury, H. Khan, E. Heydon, A. Shroufi, S. Fahimi, C. Moore, et al., "Adherence to Cardiovascular Therapy: A Meta-Analysis of Prevalence and Clinical Consequences," *Eur. Heart J.*, vol. 34, no. 38, pp. 2940-2948, 2013.
2. A. Dragomir, R. Côté, L. Roy, L. Blais, L. Lalonde, A. Bérard, et al., "Impact of Adherence to Antihypertensive Agents on Clinical Outcomes and Hospitalization Costs," *Med. Care*, vol. 48, no. 5, pp. 418-425, 2010.
3. World Health Organization, "Prevention of Cardiovascular Disease: Guidelines for Assessment and Management of Cardiovascular Risk," 2007. Available: http://apps.who.int/iris/bitstream/handle/10665/43685/9789241547178_eng.pdf?sequence=1.
4. World Health Organization, "A Global Brief on Hypertension: Silent Killer, Global Public Health Crisis," 2013. Available: https://www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/.
5. A. V. Chobanian, G. L. Bakris, H. R. Black, W. C. Cushman, L. A. Green, J. L. Izzo Jr., et al., "The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: The JNC 7 Report," *JAMA*, vol. 289, no. 19, pp. 2560-2571, 2003.
6. K. P. Lowry, T. K. Dudley, E. Z. Oddone, and H. B. Bosworth, "Intentional and Unintentional Nonadherence to Antihypertensive Medication," *Ann. Pharmacother.*, vol. 39, no. 7-8, pp. 1198-1203, 2005.
7. H. Black, A. Graff, D. Shute, R. Stoltz, D. Ruff, J. Levine, et al., "Valsartan, a New Angiotensin II Antagonist for the Treatment of Essential Hypertension: Efficacy, Tolerability and Safety Compared to an Angiotensin-Converting Enzyme Inhibitor, Lisinopril," *J. Hum. Hypertens.*, vol. 11, no. 8, pp. 483-489, 1997.
8. J. D. Curb, N. O. Borhani, T. P. Blaszkowski, N. Zimbaldi, S. Fotiu, and W. Williams, "Long-Term Surveillance for Adverse Effects of Antihypertensive Drugs," *JAMA*, vol. 253, no. 22, pp. 3263-3268, 1985.
9. R. Lakhdar, M. H. Al-Mallah, and D. E. Lanfear, "Safety and Tolerability of Angiotensin-Converting Enzyme Inhibitor Versus the Combination of Angiotensin-Converting Enzyme Inhibitor and Angiotensin Receptor Blocker in Patients with Left Ventricular Dysfunction: A Systematic Review and Meta-Analysis of Randomized Controlled Trials," *J. Card. Fail.*, vol. 14, no. 3, pp. 181-188, 2008.
10. T. Morimoto, T. K. Gandhi, J. M. Fiskio, A. C. Seger, J. W. So, E. F. Cook, et al., "An Evaluation of Risk Factors for Adverse Drug Events Associated with Angiotensin-Converting Enzyme Inhibitors," *J. Eval. Clin. Pract.*, vol. 10, no. 4, pp. 499-509, 2004.
11. C. Bardage and D. G. Isacson, "Self-Reported Side-Effects of Antihypertensive Drugs: An Epidemiological Study on Prevalence and Impact on Health-State Utility," *Blood Press.*, vol. 9, no. 6, pp. 328-334, 2000.
12. R. Düsing, B. Weisser, T. Mengden, and H. Vetter, "Changes in Antihypertensive Therapy-The Role of Adverse Effects and Compliance," *Blood Press.*, vol. 7, no. 5-6, pp. 313-315, 1998.
13. A. E. Fletcher, C. J. Bulpitt, D. M. Chase, W. C. Collins, C. D. Furberg, T. K. Goggin, et al., "Quality of Life with Three Antihypertensive Treatments: Cilazapril, Atenolol, Nifedipine," *Hypertension*, vol. 19, no. 6, pt. 1, pp. 499-507, 1992.
14. Z. H. Israili and W. D. Hall, "Cough and Angioneurotic Edema Associated with Angiotensin-Converting Enzyme Inhibitor Therapy," *Ann. Intern. Med.*, vol. 117, no. 3, pp. 234-242, 1992.
15. E. P. MacCarthy and S. S. Bloomfield, "Labetalol: A Review of Its Pharmacology, Pharmacokinetics, Clinical Uses and Adverse Effects," *Pharmacotherapy*, vol. 3, no. 4, pp. 193-217, 1983.
16. F. H. Messerli, "Vasodilatory Edema: A Common Side Effect of Antihypertensive Therapy," *Curr. Cardiol. Rep.*, vol. 4, no. 6, pp. 479-482, 2002.
17. H. Olsen, T. Klemetsrud, H. P. Stokke, S. Tretli, and A. Westheim, "Adverse Drug Reactions in Current Antihypertensive Therapy: A General Practice Survey of 2586 Patients in Norway," *Blood Press.*, vol. 8, no. 2, pp. 94-101, 1999.
18. E. Saunders, M. R. Weir, B. W. Kong, J. Hollifield, J. Gray, V. Vertes, et al., "A Comparison of the Efficacy and Safety of a β -Blocker, a Calcium Channel Blocker, and a Converting Enzyme Inhibitor in Hypertensive Blacks," *Arch. Intern. Med.*, vol. 150, no. 8, pp. 1707-1713, 1990.

19. E. A. Gebreyohannes, A. S. Bhagavathula, T. B. Abebe, et al., "Adverse Effects and Non-Adherence to Antihypertensive Medications in University of Gondar Comprehensive Specialized Hospital," *Clin. Hypertens.*, vol. 25, no. 1, 2019. [Online]. Available: <https://doi.org/10.1186/s40885-018-0104-6>.
20. C. Thomopoulos, G. Parati, and A. Zanchetti, "Effects of Blood-Pressure-Lowering Treatment in Hypertension: 9. Discontinuations for Adverse Events Attributed to Different Classes of Antihypertensive Drugs: Meta-Analyses of Randomized Trials," *J. Hypertens.*, vol. 34, pp. 1921-1932, 2016. DOI: 10.1097/HJH.0000000000001052. PMID: 27454050.
21. L. Frey, I. Gravestock, G. Pichierri, J. Steurer, and J. Burgstaller, "Serious Adverse Events in Patients with Target-Oriented Blood Pressure Management: A Systematic Review," *J. Hypertens.*, vol. 37, pp. 2135-2144, 2019.
22. A. M. MacConnachie and D. MacLean, "Low Dose Combination Antihypertensive Therapy: Additional Without Additional Adverse Effects?" *Drug Safety*, vol. 12, pp. 85-90, 1995.
23. J. M. Flack, C. Yunis, J. Preiser, et al., "The Rapidity of Drug Dose Escalation Influences Blood Pressure Response and Adverse Effects Burden in Patients with Hypertension: The Quinapril Titration Interval Management Evaluation (ATIME) Study," *Arch. Intern. Med.*, vol. 160, pp. 1842-1847, 2000.
24. W. C. Cushman and H. R. Black, "Hypertension in the Elderly," *Cardiol. Clin.*, vol. 17, pp. 79-92, 1999.
25. M. Monane, R. Bohn, J. H. Gurwitz, et al., "The Effects of Initial Drug Choice and Comorbidity on Antihypertensive Therapy Compliance: Results from a Population-Based Study in the Elderly," *Am. J. Hypertens.*, vol. 10, pt. 1, pp. 697-704, 1997.
26. T. K. Gandhi, S. N. Weingart, J. Borus, A. C. Seger, J. Peterson, E. Burdick, et al., "Adverse Drug Events in Ambulatory Care," *N. Engl. J. Med.*, vol. 348, pp. 1556-1564, 2003.
27. A. O. Olowofela and A. O. Isah, "A Profile of Adverse Effects of Antihypertensive Medicines in a Tertiary Care Clinic in Nigeria," *Ann. Afr. Med.*, vol. 16, no. 3, pp. 114-119, Jul.-Sep. 2017. DOI: 10.4103/aam.aam_6_17. PMID: 28671151; PMCID: PMC5579894.
28. A. O. Olowofela and A. O. Isah, "A Profile of Adverse Effects of Antihypertensive Medicines in a Tertiary Care Clinic in Nigeria," *Ann. Afr. Med.*, vol. 16, no. 3, pp. 114-119, Jul.-Sep. 2017.
29. S. P. Bashyal and N. Thapa, "Knowledge and Perception Regarding Hypertension Among Hypertensive Patients at a Tertiary Hospital in Kathmandu, Nepal," *J. Adv. Acad. Res.*, vol. 7, no. 1, pp. 51-62, 2020.
30. S. Tomasović, J. Sremec, J. Koščak, N. Klepac, P. Draganić, and I. Bielen, "Epidemiological Characteristics of Dementia Treatment in Croatia," *Psychiatria Danubina*, vol. 28, no. 2, pp. 170-175, 2016.
31. B. A. Aubert, H. Barki, M. Patry, and V. Roy, "A Multi-Level, Multi-Theory Perspective of Information Technology Implementation," *Inf. Syst. J.*, vol. 18, no. 1, pp. 45-72, 2008.
32. M. Atiyah, "Nurses' Knowledge Regarding Management of Hypovolemic Shock: A Cross-Sectional Study," *Acopen*, vol. 9, no. 2, May 2024. DOI: 10.21070/acopen.9.2024.8925.