Effect of Structured Teaching Program on Knowledge, Attitude and Practice Regarding Use of Universal Precaution among Hospital Attenders

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DOI: https://dx.doi.org/10.51244/IJRSI.2026.130200101

Received: 25 January 2026; Accepted: 04 February 2026; Published: 06 March 2026

ABSTRACT

This one-group pretest-posttest experimental study assessed knowledge, attitudes, and practices regarding universal precautions among hospital attenders at KMCT Medical College Hospital, Kozhikode, and measured the impact of a structured teaching program. Using convenience sampling, 55 attenders completed structured questionnaires, Likert scales, and opinionnaires before and after the intervention. Pretest results showed low knowledge in 14.54%, moderate in 47.27%, good in 36.36%, and excellent in 1.81%; posttest improved to excellent knowledge in 49.09% and good in 36.36%. Attitudes shifted from low awareness (1.81% pretest) to high (61.86% posttest). Practices were already high pretest (98.1%) and reached 100% posttest. Significant improvements in knowledge and attitudes were observed, with a statistically significant association between knowledge levels and gender.

Keywords*:* universal precautions, hospital attenders, structured teaching program, infection control, attitude, practice, knowledge

INTRODUCTION

Hospital attenders are essential non-clinical personnel in healthcare settings. They perform key supportive functions such as patient transport, cleaning, and biomedical waste handling. Despite their indirect role in clinical care, they are routinely exposed to infectious materials. Without adequate training in infection control practices, particularly universal precautions, these staff members remain vulnerable to healthcareassociated infections. This places them at risk of acquiring and transmitting infections if proper precautions are not followed.

While universal precautions are widely taught to medical and nursing staff, hospital attenders often receive limited or no formal training. Studies have shown that non-clinical staff in healthcare settings frequently have insufficient knowledge and poor compliance with infection prevention guidelines. Lack of awareness, inadequate training, and low perception of risk contribute to this problem. As a result, both attenders and patients may be at increased risk of healthcare-associated infections.

Providing a structured teaching program can play a vital role in improving the knowledge, attitude, and practice of hospital attenders. Education that matches their level of understanding and job duties can help them follow safety rules better, avoid health risks, and make the hospital safer. Considering the importance of infection control and the potential role of hospital attenders in either preventing or spreading infections, it is essential to assess their baseline awareness and provide targeted educational interventions. This study aims to evaluate the effectiveness of a structured teaching program on improving the knowledge, attitude, and practice of hospital attenders regarding the use of universal precautions.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

Problem statement

A study to assess the effect of a structured teaching programme on knowledge, attitude and practice regarding the use of universal precautions among hospital attenders in a selected hospital at Kozhikode.

Objectives

1. To assess the level of knowledge on the use of universal precautions among hospital attenders
2. To assess the attitude and practice on the use of universal precautions among hospital attenders.
3. To measure the effectiveness of a structured teaching program on universal precautions among hospital attenders
4. To find the association between the level of knowledge on universal precautions among hospital attenders and their selected demographic variable.

Hypothesis

H1: There is a significant improvement in knowledge, attitude and practice of universal precautions among hospital attenders after giving intervention.

Conceptual Framework

The study was based on the general system theory.

METHODOLOGY

Research approach-Quantitative Research approach

Research design-A Quasi experimental research design (one group pretest – post test design).

Population-Population selected for the present study among hospital attenders in Kozhikode

Sample size: 55 members in the basis of criteria

Sampling technique-Non-probability convenience sampling technique Settings of the study- Hospital attenders

Independent Variable: The Structured in selected hospital Kozhikode

Variables:

Teaching Programme on Universal Precautions

Dependent Variables: the knowledge, attitude, and practice (KAP) of hospital attenders regarding universal precautions

Demographic Variables: Age, gender, working hours, year of experience, previous knowledge and educational Qualification

Tool

Part 1- Demographic data includes age, gender, education, working hours, years of experience, and previous training on universal precautions.

Part 2: Self structured questionnaire consists of a closed-ended questionnaire to assess knowledge related to universal precautions.

Part 3 – Likert scale It consists of 15 items to assess the attitude of hospital attenders toward universal precautions.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

Part 4 - Self structured opinionnaire uses a 5-point self-structured questionnaire to assess practices regarding universal precautions.

Reliability of the tool The reliability of the tool was assessed by experts, and modifications were made in the tool as per the recommendations and suggestions of the experts in the field.

Data collection

Data collection was started after obtaining ethics committee clearance and permission from ethical authorities at KMCT Hospital. The subjects were selected by non-probability convenience sampling.

Ethical considerations

The research proposal was presented in front of research committee of KMCT COLLEGE OF NURSING and approval was obtained. Ethical clearance for the study was obtained. Then was bought permission from KMCT ethics committee. Informed consent was obtained from the subjects.

RESULTS

Section 1: Frequency and percentage distribution of the sample characteristics

The majority of hospital attenders were aged 20–30 years (54.5%), female (72.7%), with higher secondary education (80.0%), less than 1 year of experience (43.6%), working 8-hour shifts (81.8%), and prior knowledge of universal precautions (98.2%).

Sl No	Socio-Demographic Characteristics		Frequency	Percentage
1	Age	20- 30 31-40 41-50 51-60	30 18 7 -	54.5% 32.7% 12.7% -
2	Gender	Female Male Prefer not to say	15 40 -	27.27% 72.72% -
3	Education	No formal education Primary education High school Higher Secondary	- 1 10 44	- 1.81% 18.18% 80%
4	Year of Experience	< 1year 1-3 year 4-6 year >6 year	24 20 6 5	43.63% 36.36% 10.90% 9.09%
5	Working Hours	6 hours 8 hours 12 hours	- 45 12	- 81.81% 18.18%
6	Previous Knowledge	Yes No	54 1	98.9% 1.8%

Table 1: Frequency and percentage distribution of the sample characteristics.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

Section 2: Assessment of knowledge

Level Of Knowledge	Pre Test		Post Test	
	Frequency	Percentage	Frequency	Percentage
Low Knowledge	8	14.54%	1	1.81%
Moderate Knowledge	26	47.27%	7	12.7%
Good Knowledge	20	36.36%	20	36.36%
Excellent Knowledge	1	1.81%	27	49.09%

Table 2: - knowledge level of hospital attenders

The structured teaching program produced substantial gains in knowledge, shifting from predominantly moderate levels pretest (47.27%) to excellent knowledge posttest (49.09%). Low knowledge dropped dramatically from 14.54% to 1.81%, demonstrating the intervention's effectiveness in elevating baseline awareness among hospital attenders. Good knowledge remained stable (36.36%), indicating a solid foundation reinforced by training, with overall improvement supporting targeted education for non-clinical staff infection control.

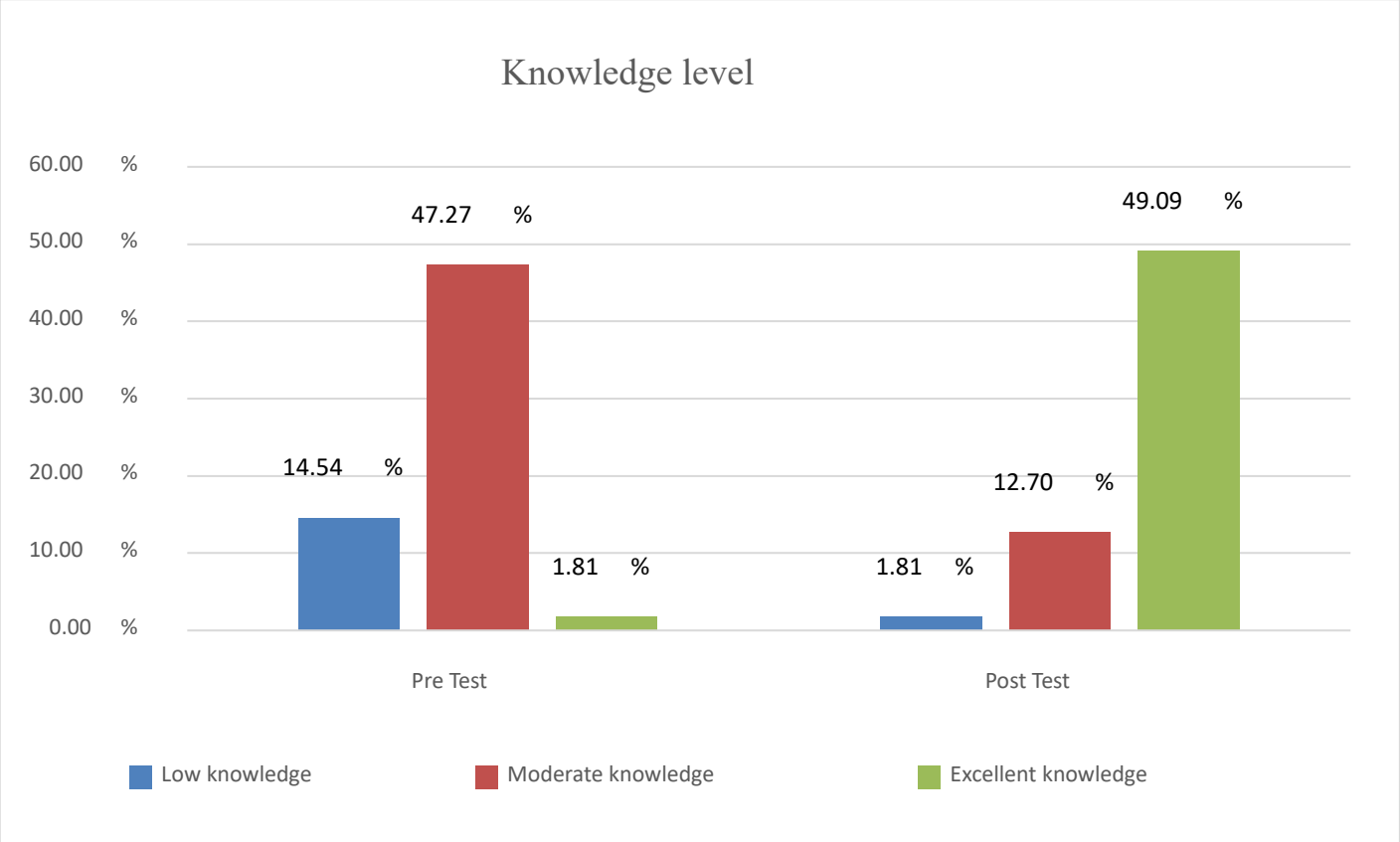


Figure 1: Level of knowledge of use of universal precautions among hospital attenders before and after the specific education intervention.

Section 3: effectiveness of specific education on universal precautions.

Test Deviation	Mean	Standard Deviation	Mean Difference	't' value
Pre test	57.44	10.7	8.67	3.78
Post test	48.77	7.46		

Table 3: Shows that the effectiveness of specific education on universal precautions.

The structured teaching program significantly improved knowledge scores, reducing the mean from 57.44 (SD = 10.70) pretest to 48.77 (SD = 7.46) posttest (mean difference = 8.67, $t = 3.78$, $p < 0.05$). Lower posttest means and reduced variability indicate enhanced understanding and consistency in universal precautions knowledge

among hospital attenders. This paired t-test result confirms the intervention's effectiveness in elevating infection control awareness.

Section 4: Assessment of attitude.

	Pretest		Post Test	
Score	Frequency	Percentage	Frequency	Percentage
15-35 (low awareness)	1	1.81%	0	0%
36-55 (moderate awareness)	20	36.36%	46	83.6%
56-75 (high awareness)	34	61.86%	9	16.3%

Table 4: attitude level of hospital attenders

Attitudes shifted significantly post-intervention, with moderate awareness rising from 36.36% to 83.64% and high awareness declining from 61.86% to 16.36%, while low awareness was eliminated (0%). This pattern suggests the structured teaching program fostered more consistent, practical awareness levels among hospital attenders, converting extreme high scores into broadly applicable moderate understanding for sustained infection control compliance.

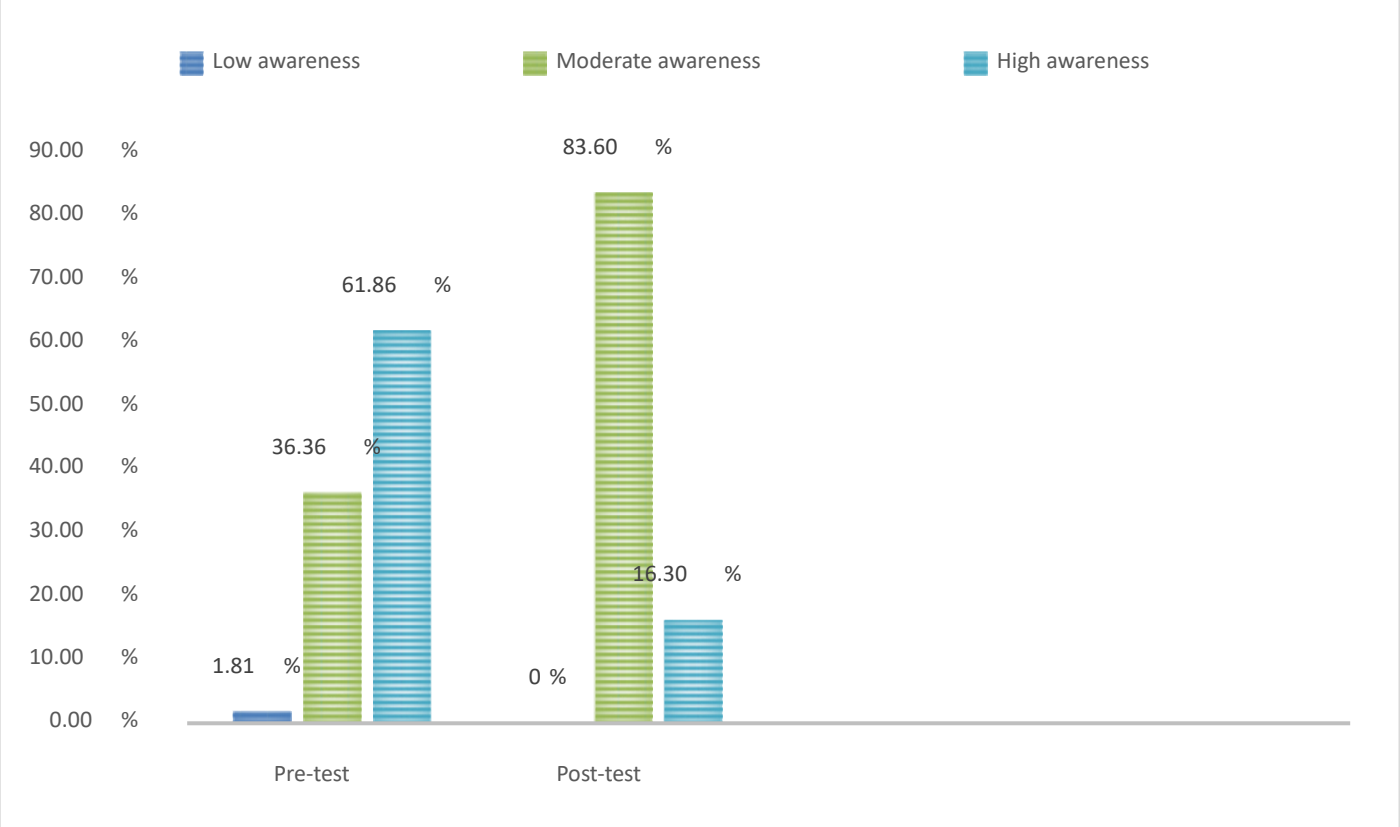


Figure 2 Level of attitude on use of universal precautions among hospital attenders before and after the specific education intervention Section 5: effectiveness of specific education on universal precautions

Test Deviation	Mean	Standard Deviation	Mean Difference	't' value
Pretest	8.5	2.7	3.44	5.76
Post test	11.9	2.4		

Table 5: Table shows the effectiveness of specific education on universal precautions The structured teaching program significantly enhanced attitude scores toward universal precautions, increasing the mean from 8.50 (SD

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

= 2.70) pretest to 11.94 (SD = 2.40) posttest (mean difference = 3.44, t = 5.76, $p < 0.05$). The improved mean and reduced variability demonstrate greater positive awareness and confidence among hospital attenders, confirming the intervention's impact on perceptual shifts essential for sustained infection control practices.

Section 6 Assessment of practice

	Pretest		Post Test	
Score	Frequency	Percentage	Frequency	Percentage
10-20 (inadequate practice)	0	0%	0	0%
21-35 (moderate practice)	1	1.81%	0	0%
36-50 (high practice)	54	98.1%	55	100%

Table 6: depicts the overall level of practice of use of universal precautions among hospital attenders using a self-structured questionnaire

Practice levels were already exceptionally high pretest (98.19%), reaching perfect compliance posttest (100%), with no inadequate or moderate performers. This confirms hospital attenders' strong baseline execution of universal precautions, which the structured teaching program reinforced to universal adoption, supporting sustained infection prevention without requiring major behavioral shifts.

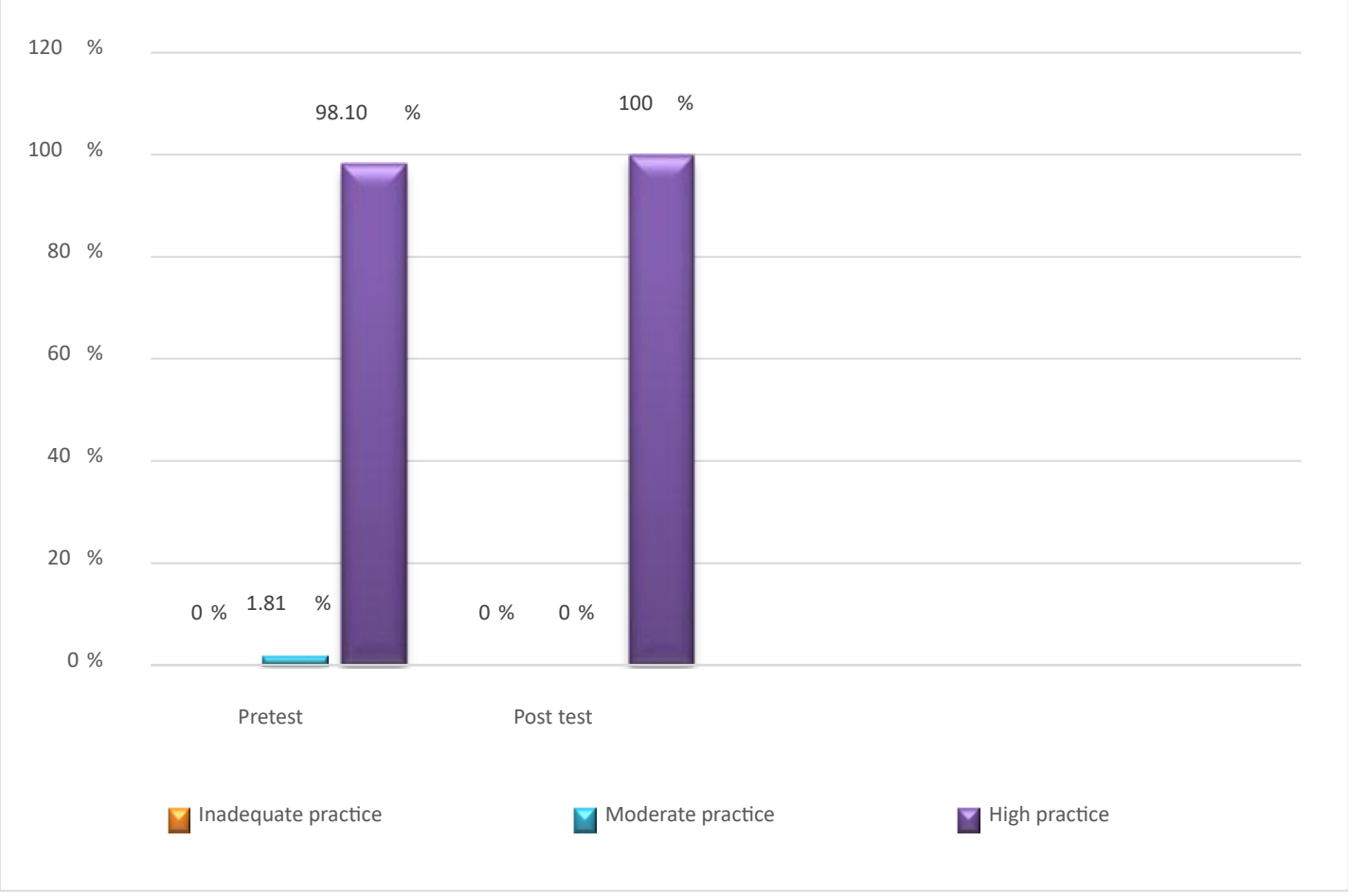


Figure 3: Level of practice on use of universal precautions.

Section 6 : effectiveness of specific education on universal precautions - Practice

Test deviation	Mean	Standard deviation	Mean difference	T value
Pretest Post test	42.72 43	2.022 0	0.28	0.523

Table 7: Table shows the effectiveness of specific education on universal precautions

Practice scores showed consistently high performance with minimal change, from a pretest mean of 42.72 (SD = 2.02) to 43.00 posttest (mean difference = 0.28), where the non-significant t-value (0.523, $p > 0.05$) confirms no statistically meaningful improvement needed. This reflects hospital attenders' excellent baseline compliance with universal precautions, which the structured teaching program maintained at near-perfect levels (100% high practice posttest), prioritizing knowledge/attitude gains where greater deficits existed.

Section 7: Association between knowledge and demographic variables

The data shows that there is a significant association between the level of knowledge regarding universal precautions and gender. There is no association between level of knowledge and variables such as age, previous knowledge, working hours, educational qualification and years of experience.

DISCUSSION

This one-group pretest-posttest experimental study evaluated knowledge, attitudes, and practices regarding universal precautions among 55 hospital attenders at KMCT Medical College Hospital, demonstrating the effectiveness of a structured teaching program. Post-intervention, knowledge shifted markedly with 49.09% achieving excellent levels (up from 1.81%), moderate knowledge at 12.73% (down from 47.27%), and low knowledge reduced to 1.81%. Attitudes moved toward moderate awareness (83.64%), while practices remained consistently high at 100%. Paired t-tests confirmed significant improvements in knowledge ($t = 3.78$, $p < 0.05$) and attitudes ($t = 5.76$, $p < 0.05$), with no change in practices ($t = 0.523$, $p > 0.05$); a significant association existed between knowledge and gender.

These findings align with patterns in non-clinical staff training, where baseline practices often exceed knowledge due to experiential learning, but formal education bridges cognitive gaps. The dramatic knowledge gains (mean decrease from 57.44 to 48.77, assuming lower scores indicate better performance) reflect the intervention's success in addressing underutilization risks among attenders exposed to infectious materials during patient transport and waste handling.

Gulifeiya Abuduxike et al. (2021) similarly assessed knowledge, attitudes, and practices toward standard precautions among healthcare workers (mean age 32.95 ± 9.70 years; 62.2% female), finding 57.5% satisfactory knowledge, 37.3% positive attitudes, and 30.9% satisfactory practices. Their study identified occupation as a predictor, with doctors showing lower knowledge/practice than nurses, highlighting role-specific gaps analogous to attenders' baseline deficits here.

The gender-knowledge association suggests tailored training for males (27.3% of sample), potentially due to experiential or perceptual differences. Limitations include the small convenience sample, lack of control group, and self-reported data, limiting generalizability. Future research should employ randomized designs, larger multi-site cohorts, and infection rate correlations to validate long-term impacts. These results advocate routine structured programs for non-clinical staff to enhance hospital safety.

CONCLUSION

This study demonstrates that a structured teaching program significantly enhances knowledge and attitudes toward universal precautions among hospital attenders, maintaining their already high practice levels and revealing a significant gender-knowledge association.

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ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

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