International Journal of Research in Social Science and Humanities (IJRSS)

DOI: 10.47505/IJRSS.2025.3.10

E-ISSN : 2582-6220

Vol. 6 (3) March - 2025

An Interventional Study on the Assessment of the Knowledge and Awareness Related to Health at Upper Primary Level of School Education

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ABSTRACT

School health education is supposed to be one of the most efficient strategies for providing the instruction and experiences that prepare young people for their roles as healthy, productive adolescents and also prevent major health and social troubles. As per WHO data health status of school students is much compromised and health education is a good way to address this problem (SHS guidelines 2021). Lifestyle disorder totally depends on social, mental, physical and behavioral practices. So, inculcation of healthy practices among school students through Health Education may play a great role (2020 Manuela Pulimeno). School health programs are supposed to be one of the most efficient strategies in influencing students' health-related behaviours that society might use to prevent major health and social troubles. Appropriate school interventions can foster effective learning, prevent destructive behaviour, and promote enduring health practices. Notifying the importance of health education in schools, the NEP (2020) proposes the inclusion of training in health, including preventive health, mental health, good nutrition, personal and public hygiene, disaster response and first-aid, as part of the school curriculum.

Keywords: Adolescents, Ayurveda, Education, Health Education, School Health, Upper Primary Schools.

OBJECTIVE

To assess the knowledge & awareness related to health and right behavioural habits among the students of upper primary level.

RESULTS-: After the counselling and classroom teaching of health education content based on Ayurveda a significant improvement in the knowledge and awareness of students was found which also varied as per gender, location; the medium of instruction and family income.

NEED OF THE STUDY

This study explores the impact of the administration of health education content derived from Ayurveda on students' knowledge. Knowledge about their day-to-day requirement, their food habits, their eating pattern, and their association with their knowledge & awareness related to health and hygiene and their lifestyle is specifically measures mentioned in Ayurveda.

MATERIAL AND METHODS

The present study was carried out in the Department of Kriya Sharir, Faculty of Ayurveda, Banaras Hindu University, Varanasi, approved by the Institute ethical committee, IMS, BHU, Varanasi (letter no. Dean/2019/EC/1070D). A total

of 425 subjects of upper primary class, 6th 7th and 8th standard, session 2019-2020 were registered by incidental sampling technique from the schools situated in Varanasi city after taking written consent from the respective school authorities. The cluster sampling method was used to select schools in Varanasi city. The base line data was collected from the student of upper primary level by using validated tool and intervention was made through eight lesson plans based on different measures of Ayurveda.

AIM & OBJECTIVES

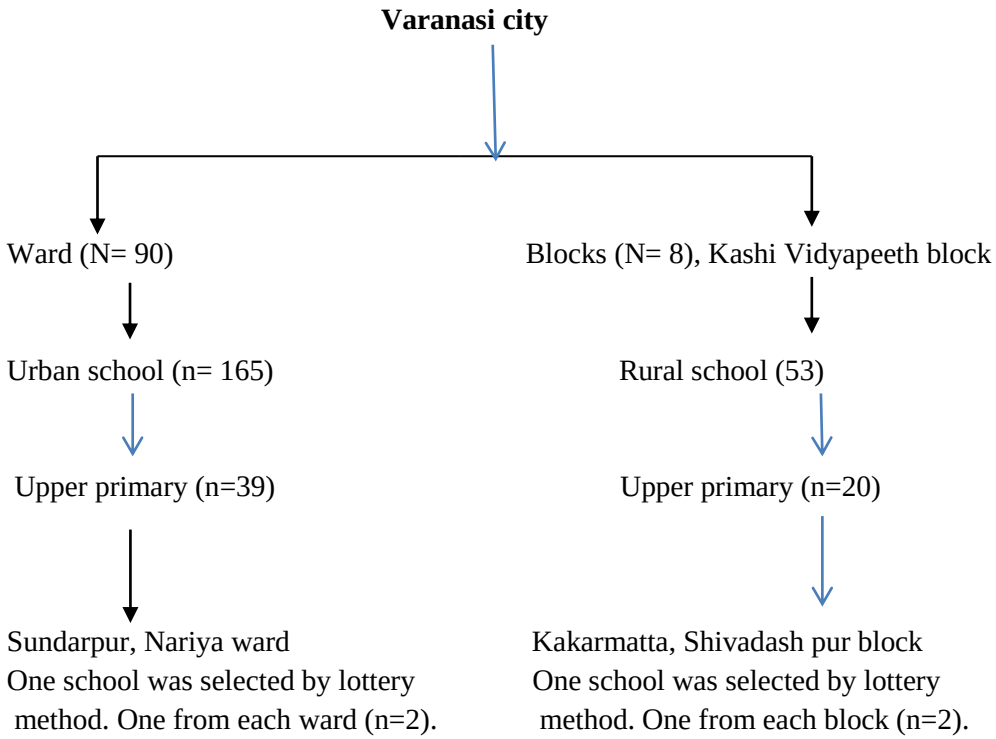
1. To intervene, a basic instructional cum counselling session introducing the health benefits of Ayurveda measures at the upper primary level.
2. To assess the students' awareness of health and introductory knowledge about the healthy practices of the Ayurveda system of medicine before and after the intervention at the upper primary level.

MATERIAL AND METHODS

The present research work was conducted in the Department of Kriya Sharir, Faculty of Ayurveda IMS, Banaras Hindu University, Varanasi BHU during the session of 2017-2022, approved by the Institutional Ethical Committee, letter no. Dean/2019/EC/1070D dated 18/01/2019**.** In this study, 425 students were selected for data collection from four upper primary level schools in the Varanasi district from the academic year 2019-20.

The health awareness assessment scale developed by the researcher was administered before and after the intervention of instructional content to the students. The interventional contents, developed by the researcher in the form of lesson plans based on descriptions of Ayurveda about health and healthy practices and common medicinal herbs and spices used in daily life.

The collection of data was limited to age, gender, rural or urban, family occupation, class, board, type of school, medium of instruction, educational level of parents etc. Pre and post-test data were collected and analysed by using SPSS 2.0 IBM, the relevant statistical tool and assessing the effect of the intervention. To test the association between the levels of awareness of students regarding health promotion activity with their day-to-day lifestyle, the logistic regression was applied. The method of selecting schools in Varanasi city was as follows:



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The study includes the following steps:

1. Diagnostic step- This step involved the collection of pre-test data or baseline information by using the self-developed tool. Based on the information collected, a pilot study was planned and conducted among 38 students (13 students from class 6^{th}, 13 students from class 7^{th} and 12 students from class 8^{th}).

2. Intervention step- In this step, interventions were administered through teaching basic instructional cum counselling sessions introducing the health benefits of Ayurveda in School Health Education Curricula, for students of upper primary level. Learning material (lesson plans) on the selected units were developed in the Hindi language then these were translated by an expert in translation studies of English.

Administration of intervention

Phase 1. The assessment tool was applied to the students (Pre-test analysis)

Phase 2. To intervene in a basic instructional cum counselling session introducing some basics of Ayurveda related to human health and healthy practices (Lesson plans).

Phase 3. Refilling up the same assessment tool. (Post-test analysis).

3. Assessment step- This step was carried out after making the intervention (post-test data collection). Post-test was administered to the students to assess the impact of the intervention. The same questionnaire used in the pre-test was administered for the post-test also to 425 students and the scores of the post-test were compared and analysed with the pre-test score of the students.

Interventional content: This is an interventional study in which eight lesson plans on different topics incorporated with Ayurveda health measures have been developed by the researcher as per Bloom's taxonomy and administered to the students of upper primary level in the selected four schools in the Varanasi districts, through basic instructional cum counselling sessions in the classroom. The lesson plans administered as Interventional Content developed are Punchmhabhuta described in Ayurveda, Arrangement of Hindi Months and seasons, as per Indian Calendar, Ayurveda and Human Health, Balanced-diet, Common medicinal usages of plants used at dietary preparations and common ailments, Prakriti (Psychosomatic constitution), Different measures of Healthy Lifestyle (Dincharya, Ratricharya etc.), Factors affecting the quality of Food.

About the assessment tool: To assess the students' awareness of health and introductory knowledge about the Ayurveda system of medicine, a bilingual validated questionnaire "Health Education Awareness Scale at Upper Primary Level" has been developed from the view of experts in the respective field. This questionnaire has two sections, Section (A) regarding Knowledge and awareness related to health and hygiene and section (B) is related to Lifestyle. This tool contains 24 questions in the form of MCQs to assess the student's knowledge of health and Ayurveda and Personal health habits and hygienic practices.

Scoring pattern: Each right response to a question among the given four options carried one mark. All the answers given by a participant correctly will be scored 24 marks whereas getting all the answers wrongly will be scored Zero marks. Thus, the maximum score for the individual was 24 and the mini was 0.

Data collection

The collection of data was carried out after taking written consent from respective school authorities. The collection of data from two schools was done between August 2019 to January 2021 and the collection of data from the other two schools was delayed due to Covid 19 pandemic outbreak. This was completed when schools reopened in the month of October 2021. The entire duration of collecting data from a single school was 25 working days.

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Analysis of Data: The collected data were analysed as per three broad categories, i.e. descriptive, differential and relational. In the descriptive analysis, the demographic and personal characteristics of students were analysed (age, gender, rural or urban, family occupation). After descriptive analysis, these data were compared to identify the effect of the intervention strategy for assessing health awareness by appropriate statistical technique (SPSS 2.0 IBM). For differential analysis, ANOVA and "t' tests for the small group were applied (class, board, type of school, medium of instruction, educational level of parents etc.). To test the association between the levels of awareness of students regarding health promotion activity with their day-to-day lifestyle, the logistic regression was applied.

RESULTS DISCUSSION:

Table 1:1 Subject matrix on the basis of their class

Class wise subjects	Number of students	Percent
6th	140	32.9
7th	145	34.1
8th	140	32.9
Total	425	100.0

The upper primary level includes class 6th, 7th and 8th . The total collected sample was 425 out of which 140 students (32.9%) were from class 6th, 145 students (34.1%) were from class 7 and 140 students (32.9%) were selected from class 8. (table 1:1)

Table 1:2 Class-wise pre and post-test analysis of scores of the health education awareness scale

Test	Total score mean ± standard deviation (SD)			Intra group comparison Before intervention After intervention Paired t-test
	Class	Pre-test (Before Intervention)	Post Test (After intervention)	
Section A(Knowledge & awareness related to health and hygiene)	**6th** (n=140)	3.08 ± 1.338	9.464 ± 1.776	-6.37 ± 2.19 t =34.35 p=.000
	7th (n=145)	2.97 ± 1.246	9.67 ± 1.731	-6.70 ± 2.20 t = 36.605 p=.000
	8th (n=140)	2.56 ± 1.494	10.26 ± 1.647	7.70 ± 2.53 t = 35.937 p=.000
Comparison between class one-way ANOVA **6-7** **6-8** **7-8**		F = 5.686 p= .004 p= 1.000 p= 0.004 p= 0.035	F = 18.994 p= .000 p= 0.899 p= 0.000 p= 0.012	
Section B (Related to Lifestyle)	**6th** (n=140)	3.71 ± 2.292	8.79 ± 1.706	-5.07 ± 3.160 t= 19.015 p=.000
	7th (n=145)	3.71 ± 2.012	8.986 ± 1.767	-5.26 ± 3.023 t=20.984 p=.000
	8th (n=140)	2.47 ±1.471	9.107 ±1.955	-6.63 ±2.301 t=34.111 p=.000

DOI: 10.47505/IJRSS.2025.3.10

Comparison between class one way ANOVA	F = 8.149 p= .000	F = 1.071 p= 0.343	
Post Hoc test **6-7** **6-8** **7-8**	p= 1 .000 p= 0.000 p= 0.000		

Table 1:2 shows the mean increase in the total score of the health education awareness scale class-wise. For section A after the intervention, it was 6.37, 6.70 and 7.70 for the student of classes 6th ,7th and 8th respectively and all these changes were highly statistically significant. A similar trend was observed in section B also. The intergroup comparison of the mean of section A score after the intervention was statistically significant the score of class 8th was higher than class 6th and 7th. The mean score of section B score where the difference between classes after the intervention was not statistically significant among the students of different classes.

Table 1:3 Subjects' distribution as per Location of School

Location	Number of students	Percentage (%)
Rural	105	24.7
Urban	320	75.3
Total	425	100.0

In the above table 1:3, the selected four schools were situated in different locations in the Varanasi district. On the basis of address or location of school 105 students (24.7%) belong to rural while 320 students (75.3%) belong to urban.

Table 1:4 Comparative analysis on the basis of location (Rural & Urban)

Test	**Total score mean ± standard deviation (sd)**			**Intra group comparison Before intervention After intervention Paired t-test**
		Pre-test(Before Intervention)	Post Test (After intervention	
Section A (Knowledge & awareness related to health and hygiene)	Rural (n=105)	2.40 ± 1.510	10.61 ± 1.288	-8.21 ± 1.99 t =42.316 p=.000
	Urban (n=320)	3.03 ±1.295	9.53 ± 1.796	-6.5 ± 2.343 t = 49.615 p=.000
Comparison b/w Rural & Urban Unpaired t-test		t = 4.15 p= .000	t =5.73 p=.000	
Section B (Related to Life style)	Rural (n=105)	2.97 ± 1.522	9.83 ± 1.217	-6.86 ± 2.112 t= 33.37 p=.000
	Urban (n=320)	3.41 ± 2.171	8.67 ± 1.883	-5.26 ± 3.054 t=30.805 p=.000
Comparison b/w Rural & Urban Unpaired t test		t=1.94 p=0.052	t= 5.93 p=0.000	

Table 1:4 shows the mean and SD of the total score of section A and section B before intervention and after intervention for rural and urban students. Increases in the mean value of total score after intervention for rural students is (8.21 ±1.99) and for urban students (6.5 ± 2.34) for section (A) were statistically highly significant. The intergroup

DOI: 10.47505/IJRSS.2025.3.10

comparison of rural versus urban after the intervention was highly statistically significant for section A (p=0.000) as well as for section B (p=0.000) also. The mean increase in total score after the intervention was observed for rural and urban students in sections A and section B. The mean score after intervention in the rural group was higher than the urban group in both the sections.

Logistic regression analysis: To determine the relationship between the dependent variable (level of awareness of health and hygiene) and independent variables (gender, location class and medium of instruction) a logistic regression analysis has been carried outs. A 24-item scale for assessing the role of Ayurveda in Health Education was developed and administered on 425 students. The final 2-point scale (0 for the wrong answer and 1 for a correct answer) was used. If all the answers given by a student are correct the total score will be 24 and as such the total minimum score will be Zero. Thus the range of total score is from 0 to 24 for this proforma. The highest total score of 425 students at baseline (before intervention) was 13 and the median score at baseline was 6. Thus, for the present study the median score was 6 has been considered for grouping 425 students into two groups less than or equal to the median (258 students) and greater than the median (167 students). For dependent variables (awareness scale) greater than median taken as the reference category. The result of logistic regression analysis has given below, See (Table 1:5). This type of analysis may help us to predict the likelihood of an event or a choice being made.

Table 1:5 Logistic Regression Table

Factors	**Heath awareness Assessment scale score**		**B**	**SE(B)**	**Odds ratio (O.R.)**	**95% C.I. of O.R.**
	0 > median	**1< = median**				
Gender Girls Boys	60(35.9%) 107(64.1%)	128 (49.6%) 130 (50.4%)	0.514	. 230 ---	1.671 ---	1.065 - 2.625 ---
Location Rural Urban	31(18.6%) 136 (81.4%)	74 (28.7%) 184 (71.3%)	2.086 ---	0.33 2 ---	8.068 ---	4.210 - 15.462 ---
Class 6th 7th 8th	68 (40.7%) 66(39.5%) 33(19.8%)	72(27.9%) 79(30.6%) 107(41.5 %)	1.426 1.242 -- -	0.30 1 0.29 6 ---	0.240 0.289 ---	0.133 - 0 .433 0.162 - 0.516 ---
Medium Hindi English	109 (65.3%) 58 (34.7%)	101(39.1 %) 157 (60.9%)	2.24. --	0.296 ---	0.106 ---	0.060 - 0.190 ----

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DISCUSSION

The present study includes the students of upper primary level as a research sample taking four schools, in Varanasi city located in the Uttar Pradesh state of India. Additionally, this study not only compared the differences in knowledge and behaviour between the pre and post-data but also depicts the possible impact of introducing various health measures of the Indian system of medicine popularly known as Ayurveda among the students of Upper Primary Level. In this context the recommendations of the National Education Policy (NEP 2020) that the holistic view of development which focuses light on the Physical, mental, social and spiritual wellness of an individual is also remarkable. Health education in the view of Ayurveda suggests a balanced approach among all the domains of life.

The impact of the intervention in the form of lesson plans to teach and counsel the students about the Ayurveda measures in the classroom shows significant improvement in 425 students in the following ways (Pre and post-test assessment score differences).

The mean score of overall pre and post-test analysis of obtained scores for 425 students before intervention and after intervention were 6.18 and 18.76 respectively. The mean increase (12.58) was found statistically significant shows improvement in the knowledge level of students related to Ayurveda and health. The tool developed for the study comprised of questions covering various dimensions of health not only physical but mental also.

All (425) students scored less than 30 per cent marks in the pre-test assessment, however, in the post-test assessment have scored more than 70 per cent marks showing a significant mean difference between pre-and post-test assessments. After the intervention, the mean increase in total score was significant shows the usefulness of health intervention among upper primary level students. The variation in the increase in the mean score of the awareness scale was also found as per gender, location of School, medium of instruction, and family income of respondents.

CONCLUSION

Health education contributes to student knowledge and their day-to-day activity toward dietary habits, physical activity, daily routine, desired seasonal routine, expected code of conduct and various primitive health practices. Also suggests the need for enrichment of health education content in school and its implementation at the upper primary level. The significant improvement has been recorded after intervention has been made among the students of upper primary level students.

The pre and post-test differences observed in different parameters were as follows:

1. The mean increase of section A (Knowledge and awareness related to health and hygiene) is 6.92 whereas the mean increase of section B (related to lifestyle mentioned in Ayurveda) is 5.66 both are statistically significant.
2. The mean score after intervention in the rural group was higher than the urban group in both sections. The mean score after the intervention was higher for girls than boys in section A.
3. The mean increase in total score class-wise of section A after the intervention was 6.37, 6.70 and 7.70 for the student of classes 6^{th}, 7^{th} and 8^{th} respectively and all these changes are statistically significant.
4. The mean score after intervention in English medium was higher than Hindi medium students in both sections.
5. The inter-group comparison of rural versus urban schools after the intervention was statistically significant for section A ($p=0.000$) as well as for section B ($p=0.000$).
6. The inter-group comparison of the mean of section A score after the intervention was statistically significant, the score of class 8^{th} was higher than class 6^{th} and 7^{th}.
7. The inter-group comparison of English medium versus Hindi medium students after the intervention was highly statistically significant for section A ($p=0.715$) as well as for section B ($p=0.067$) also.
8. In the present study, the socio-economic background, and the annual family income were also recorded. 226 (53.2 %) out of 425 students belong to low-income group families whereas 110 (25.9 %) students come from a lower middle-class family, 85 students (20%) were from a middle-class family, and 4 students (0.9 %) are basically belonging to an upper-middle-class family.

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In the total score of Section A and B in rural and urban sets up of living, the highest mean increase is in knowledge and awareness related to health and hygiene at the rural level. This may be because the students resident of rural place possibly follows desired way of health and hygiene and the least mean difference was at the urban level of section B (related to lifestyle mentioned in Ayurveda) may be because the students belong to urban set up of life might not follow the desired way of lifestyle as prescribed in Ayurveda.

A) Location of school: In view, the differences observed among residential settings (Rural and Urban) also show the opportunity and accessibility to the resources (Srivastava, et al., 1997), exposure to digitally available content or e-content based on network availability, family support in terms of late night study at various study centres 24x7 library facility situated in cities, peer working or study fellow,(Sibal, 1997; Kapur, 1992; Rangnathan, 2003), environmental features (natural surroundings urban settings).

B) Gender: The variation in the increase in the mean score of the awareness scale was also found as per gender, it was greater in girls than boys. The performance of girls in Section A (Knowledge and awareness related to health and hygiene) was found higher, it may be due to more involvement of girls in day-to-day domestic chores at their home.

C) Level of class: In the same manner, when we look over the comparative response of students of class 6^{th},7^{th} and 8^{th} as expected the status of class 8 records a higher mean difference of 7.70 in comparison to below level class (6 &7) and this higher mean difference were in Section A (Knowledge and awareness related to health and hygiene) show their attentiveness in the domain of section A of the assessment.

D) Medium of Instruction: In the present study as per the medium of instruction, a significant increase in the mean score (7.10) was recorded in English medium students in comparison to Hindi medium students in Section A (Knowledge and awareness related to health and hygiene). In the Indian Scenario, mostly English medium schools are run under private ownership. To some extent, private schools are limited to an affordable class in our society. This affordable class of society belong to a better socioeconomic background. Parents belonging to a better socioeconomic background are capable to shape, nurture and being attentive to the educational adjustment of their children (Varma P. et al.2021). Parental involvement motivates educational attitudes toward education and increases self-learning tendency in school children (Gianzero 2001). In the present study, the mean increase for English medium students (13.51) is higher than for students of Hindi medium (11.62) perhaps depicting the same association as shown in the previous study.

E) Socio-economic status: The socio-economic status and student academic achievement had a marginally positive connection. Through advice, counselling, and efficient supervision, families who were educated were able to support their children's academic success, as opposed to families who were uneducated and were unable to do so (Gemechu Abera Gobena 2018).

A study reported that there is a relationship between low parental health literacy; socioeconomic status may hinder the outcomes of children, particularly in the areas of nutrition, exercise and dental health (De Buhr et al.2020). In the present study, more than 50 per cent of respondents belonging to a lower-middle-class group (family annual income less than one lac) might have the same implication as mentioned previous study conducted in a similar field.

The findings of the study reveal that it is useful to incorporate the health education content based on the concept of health and measures for healthy living described in Ayurveda into school health education curricula to enhance the knowledge level and awareness related to the health and well-being of our students in a holistic way.

The quality of education, type of educational institution and other institutional or infrastructural factors might independently influence health. They also focus on individual-level factors: individual attainment, and individual efforts.

The study compares the scores obtained in pre and post-test assessments and explored the factors impacting these scores. In another aspect, this study may have fruitfulness and help to provide some guidance for the design and carrying out of the health education project closely associated with the lifestyle of the students. Moreover, might have the limitations of this study maintain a space for some research ideas and direction for further studies

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CONCLUSION

Since schools significantly influence both health and education, they substantially determine not only the future of well-being but also economic productivity of populations. Recent research suggests that healthier students learn better in compare to students those are not as healthy. School health is treated as an interdisciplinary field of study that can be used to improve the outcomes derived from health and education simultaneously. The present study also highlights the relevance of the health education curriculum and its incorporation with existing curricula at the upper primary level focusing on various aspects of the healthy lifestyle comprehensibly described in Ayurveda may be directly extracted and summated with the curricula at the upper primary level. The result of the study shows that there is very low awareness about the basic knowledge of Ayurveda and the measures of healthy lifestyle among the students of upper primary level, the mean score before intervention was 6.18, improved up to a mean score of 18, shows the effects of instructional content about health and also suggests the need for enrichment of health education in school education content & its implementation at the upper primary level.

Recommendations

In current scenario school health programs are scattered in various form of discipline. These are somewhere in physical education or its part as physical activity or some extent nutrition education or in some way health and medical check-ups, psychological guidance and counselling, family engagement; and in large extent parent-teacher discussion. This paper attempted for both health and education point of view. For the above context with respect to school health education comprehensive school health education curricula need to be developed based on principles of Ayurveda with the somehow variations of the region, locational prerequisites and the need of the target population.

Limitations of the Study: This study was limited to the students of upper primary level only. Some factors such as geographical locations, local customs, economic status belonging to natives of the particular area or region etc. might have an effect on the results. The standard of schools as per their affiliation (CBSE/State Board) their medium of instruction (Hindi/English) their fund availability (Govt. funded/private owned) affects the level of knowledge of students, but due to time constraints, the sample of only Varanasi district (a north Indian Hindi spoken district) has been taken for sampling.

Funding: Nil

Conflict of Interest: Nil

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DOI: 10.47505/IJRSS.2025.3.10