



"ENHANCING COMPETENCY IN RHEUMATIC HEART DISEASE MANAGEMENT

"Bridging the Gap Between Clinical Theory and Management Practice"

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Abstract: **Background:** Rheumatic Heart Disease (RHD) remains a significant cause of cardiovascular disability in India. Since nurses are the primary coordinators of long-term prophylaxis and patient education, their clinical competence is vital for effective disease management. **Objectives:** The study aimed to: (1) Assess baseline knowledge and attitude levels of nursing students regarding RHD management; (2) Develop and administer a Structured Teaching Programme (STP); (3) Evaluate the effectiveness of the STP by comparing pre- and post-test scores; and (4) Associate findings with selected demographic variables. **Methods:** A quantitative research approach with a pre-experimental one-group pre-test/post-test design was adopted. The study was conducted in Jan 2026 at Swetha college of Nursing Bengaluru. Purposive sampling was used to select 50 B.Sc. Nursing 2nd-year students. Data were collected using a structured knowledge questionnaire and a 10-point attitude scale. The tool's reliability was established using the Spearman-Brown Rank Coefficient Correlation ($r = 7.73$). **Results:** Descriptive and inferential statistics were used for analysis. The pre-test revealed that several students scored below average. Post-intervention, the overall mean knowledge score increased from 10.9 (pre-test) to 14.1 (post-test). The obtained 't' value of 7.46 was significantly higher than the table value of 2.02 at a 0.05 level of significance. **Conclusion:** The study concludes that the Structured Teaching Programme was highly effective in significantly improving the knowledge and enhancing the attitude of nursing students toward RHD management.

Keywords: Effectiveness, Structured Teaching Programme, Knowledge, Attitude, Rheumatic Heart Disease,

I. INTRODUCTION

1.1 The Global and National Burden

Rheumatic Heart Disease (RHD) is a permanent cardiac consequence of Acute Rheumatic Fever (ARF). Despite being largely eradicated in high-income nations, it remains a major cardiovascular cause of death among children and young adults in India. Epidemiological data indicates that over six million children are affected nationwide, with RHD accounting for 33% to 50% of all cardiac hospital admissions. Studies show that more than half of those diagnosed suffer from mitral stenosis, with a staggering 25% of cases appearing in patients under the age of 20.

1.2 Pathophysiology and Prevention

RHD occurs as a late sequel to infections with Beta-hemolytic Streptococci (e.g., Tonsillitis or Nasopharyngitis). Streptococcal antigens cross-react with human heart muscle sarcolemma, leading to an autoimmune response. While socio-economic improvements and prompt penicillin treatment have reduced incidence in developed countries, the condition remains endemic among economically deprived populations in India due to overcrowding and lack of awareness regarding secondary prophylaxis.

1.3 Rationale for the Study

Nurses are the frontline coordinators for long-term RHD management. Their ability to educate patients on the necessity of a 10-to-20-year penicillin regimen is critical to preventing valvular failure. However, a significant gap exists between theoretical classroom learning and clinical application. This study seeks to evaluate if a Structured Teaching Programme (STP) can effectively bridge this gap.

1.4 Problem Statement

Effectiveness of structured teaching programme on knowledge and attitude regarding rheumatic heart disease management among nursing students at Swetha college of nursing, Bengaluru, Karnataka.

II. METHODS

2.1 Research Approach

The study utilized a **Quantitative Research Approach**. This approach was selected because it allows for the objective measurement of variables (knowledge and attitude) and the use of statistical analysis to determine if the changes observed after the intervention were mathematically significant.

2.2 Research Design

A **Pre-experimental, One-group Pre-test and Post-test Design** was adopted. In this design, a single group is observed at two points in time: before (O₁) and after (X) the introduction of an independent variable.

- **O₁**: Pre-test assessment of knowledge and attitude levels using the structured tool.
- **X**: Implementation of the Structured Teaching Programme (The Independent Variable).
- **O₂**: Post-test assessment using the same tool to measure the effect of the STP.

2.3 Research Setting

The study was conducted at the **Swetha College of Nursing, Bengaluru**. This setting was selected based on:

1. **Feasibility**: Availability of the required sample size of 2nd-year B.Sc. Nursing students.
2. **Affiliation**: The institution's focus on Medical-Surgical Nursing education.
3. **Homogeneity**: The students share a similar educational background and curriculum, reducing the risk of extraneous variables affecting the results.

2.4 Population and Sampling

- **Target Population**: All undergraduate nursing students.
- **Accessible Population**: 2nd-year B.Sc. Nursing students enrolled at the selected college.
- **Sample Size**: 50 students.
- **Sampling Technique**: **Non-probability Purposive Sampling**. This technique was used to select participants who were readily available and met specific criteria:
 - **Inclusion Criteria**: Students present during the study, those willing to give informed consent, and those who had not attended a similar workshop on RHD in the past six months.
 - **Exclusion Criteria**: Students on leave or those who were sick during the data collection period.

2.5 Variables

- **Independent Variable**: The Structured Teaching Programme (STP) on Rheumatic Heart Disease management.
- **Dependent Variables**: The levels of knowledge and the scores of the attitude scale.
- **Extraneous Variables**: Factors such as age, gender, religion, family income, and previous exposure to cardiac nursing.

2.6 Description of the Tool

The research instrument was developed after an extensive review of literature and consultation with experts. It consisted of three distinct parts:

1. **Part I: Socio-Demographic Data**: A 5-item questionnaire assessing age, sex, religion, family income, and previous source of information.
2. **Part II: Structured Knowledge Questionnaire**: A 30-item multiple-choice tool. Each correct answer was awarded one mark. Knowledge was categorized as:
 - *Inadequate*: < 50%
 - *Moderate*: 50–75%
 - *Adequate*: > 75%
3. **Part III: Attitude Scale**: A 10-point Likert scale (or checklist) to assess professional outlook. Scores were categorized as Positive, Neutral, or Negative.

2.7 Reliability and Validity

1. **Content Validity:** The tool was submitted to five experts in the field of Nursing and Cardiology. Modifications were made based on their suggestions to ensure the questions accurately measured the intended objectives.
2. **Reliability:** Established through the **Spearman-Brown Rank Coefficient Correlation** method. The calculated 'r' value of **0.73** for knowledge and high consistency for attitude confirmed that the tool was highly reliable for data collection.

2.8 The Intervention (STP)

The Structured Teaching Programme was a 60-minute lesson plan titled "**Management of RHD: A Comprehensive Guide for Nurses.**"

- **Pedagogical Methods:** Lecture-cum-discussion using PowerPoint presentations and anatomical charts.
- **Content Pillars:** Pathophysiology of RHD, the Revised Jones Criteria, secondary prophylaxis regimens (Benzathine Penicillin G), nursing assessment of carditis, and community-based prevention strategies.

2.9 Data Collection Procedure

Data collection was executed in three phases in Jan 2025:

1. **Phase 1 (Pre-test):** Administration of the tool to the 50 students to establish baseline scores (Time: 30 minutes).
2. **Phase 2 (Intervention):** Implementation of the Structured Teaching Programme on the same day.
3. **Phase 3 (post-test):** Re-administration of the same tool after a gap of seven days to measure knowledge gain and attitude shift.

2.10 Ethical Considerations

- Formal permission was obtained from the Principal of Swetha College of Nursing.
- Informed consent was obtained from all 50 participants.
- Confidentiality of the students' responses was maintained throughout the study.

2.11 Plan for Data Analysis's

The data were analyzed using both **Descriptive Statistics** (Mean, Standard Deviation, Frequency, and Percentage) and **Inferential Statistics** (Paired 't' test to evaluate the effectiveness of the STP and Chi-Square test to find the association between variables and demographic data).

III. RESULTS

The data obtained from 50 B.Sc. Nursing students were analyzed using descriptive and inferential statistics based on the following four objectives:

Objective 1: To assess the pre-existing knowledge and attitude levels of nursing students regarding RHD management.

Before the intervention, the baseline data revealed significant gaps in clinical understanding.

- **Knowledge Analysis:** In the pre-test, the mean knowledge score was **10.9**. Data showed that 60% of students fell into the "Inadequate" category, while only 5% possessed "Adequate" knowledge. Students specifically struggled with the duration of secondary prophylaxis and the identification of minor Jones Criteria.
- **Attitude Analysis:** The pre-test mean attitude score was **6.2**. The majority of students (72%) held a "Neutral" attitude, viewing RHD as a standard clinical diagnosis rather than a long-term community health challenge requiring patient advocacy.

Objective 2: To develop and administer a Structured Teaching Programme (STP) on RHD management.

The intervention was a meticulously developed 60-minute module.

- **Content Depth:** The STP focused on the **Revised Jones Criteria (2015)**, emphasizing the difference between high-risk and low-risk populations.
- **Clinical Focus:** It detailed the administration of Benzathine Penicillin G, including sensitivity testing and the management of anaphylaxis, which are critical nursing responsibilities.
- **Pedagogy:** The program used visual aids to show valvular damage (mitral stenosis) to shift the students' attitude from theoretical to clinical empathy.

Objective 3: To evaluate the effectiveness of the Structured Teaching Programme by comparing pre- and post-test scores.

This objective tested the core research hypothesis (H₁). The comparison showed a statistically significant improvement across all domains.

Table 1: Statistical Significance of STP Effectiveness (N=50)

Domain	Test	Mean	Mean Diff	SD	't' Value	P-Value
Knowledge	Pre-test	10.9	3.2	2.15	7.46*	< 0.05
	Post-test	14.1		1.84		Significant
Attitude	Pre-test	6.2	2.3	1.4	6.12*	< 0.05
	Post-test	8.5		1.1		Significant

Interpretation: The calculated 't' value for knowledge (**7.46**) and attitude (**6.12**) far exceeded the table value of **2.02** at 49 degrees of freedom. This indicates that the 29.3% increase in knowledge scores was directly attributable to the Structured Teaching Programme.

Objective 4: To associate the findings with selected demographic variables.

The study used the **Pearson Chi-Square test** to determine if demographic factors influenced learning outcomes.

- **Age and Gender:** No significant association was found ($p > 0.05$). This suggests that the STP is equally effective across different age groups and genders within the nursing student population.
- **Family Income:** A significant association was found ($p < 0.05$). Students from higher-income families tended to have slightly higher pre-test scores, potentially due to better access to digital health resources or health-related literature at home.
- **Previous Source of Knowledge:** Students who had previously seen an RHD patient during clinical postings had a significantly more "Positive" baseline attitude compared to those who had only read about it in textbooks. This reinforces the need for "Structured" clinical-theoretical integration.

IV. DISCUSSION

Objective 1 & 3

The inadequate baseline knowledge (10.9) confirms that standard curriculum delivery often overlooks the **prophylactic management** aspect of RHD, focusing instead on acute care. The jump to 14.1 after the STP proves that when information is "Structured"—meaning it follows a logical flow from cause to prevention—retention is higher. This aligns with **Sister Callista Roy's Adaptation Model**, where the STP acts as a "focal stimulus" that forces the student to adapt their clinical understanding.

Objective 2 & 4

The success of the STP development (Objective 2) was rooted in its multi-sensory approach. The association found with "Source of Knowledge" (Objective 4) highlights that nursing education must move toward **Case-Based Learning**. Since students with prior clinical exposure performed better, the STP was designed to simulate clinical scenarios, which explains the high 't' value.

IV. DISCUSSION

The findings of this study have significant implications for various domains of the nursing profession. The statistical significance ($t=7.46$) indicates that the Structured Teaching Programme (STP) is a vital tool for systemic improvement in healthcare delivery.

4.1 Nursing Practice

Patients with Rheumatic Heart Disease (RHD) require continuous, specialized nursing care and vigilant observation.

- **Standardized Care Plans:** The research proves that a standard nursing care plan is essential for understanding the patient's evolving condition. Registered nurses should use the knowledge gained from STPs to conduct comprehensive assessments of cardiac sounds, fluid balance, and signs of thromboembolism.
- **Prophylaxis Management:** Practice should focus on the "Sore Throat Clinic" model, where nurses screen for streptococcal infections in the community to prevent the onset of ARF.

4.2 Nursing Education

The study serves as a blueprint for nurse educators.

- **Curriculum Integration:** The STP utilized in this study can be adopted by nursing teachers to educate undergraduates on holistic, family-centered care.
- **In-Service Education:** Nurse administrators and educators must plan regular workshops and panel discussions. These sessions should focus on the latest nursing interventions required to prevent life-threatening complications like infective endocarditis or heart failure.

4.3 Nursing Administration

Nurse administrators are responsible for organizing and tendering services that align with the changing needs of society.

- **Resource Allocation:** Administrators should facilitate the use of structured modules during clinical induction.
- **Policy Advocacy:** By utilizing the findings of this study, administrators can advocate for the inclusion of RHD prevention programs in hospital outreach policies.

V. CONCLUSION

Based on the statistical findings of this study, the following conclusions are drawn:

1. **Effectiveness of STP:** There is a significant difference between pre-test and post-test knowledge scores. This confirms that the Structured Teaching Programme is a highly effective strategy for increasing the knowledge of nursing students regarding the prevention and management of RHD complications.
2. **Demographic Influence:** Certain demographic variables, such as family income and previous source of information, play a role in baseline knowledge, but the STP remains universally effective across age and gender.
3. **Pedagogical Value:** The study concludes that structured, goal-oriented education is superior to incidental learning in clinical settings.

VI. LIMITATIONS

While the study achieved its objectives, the following limitations were identified:

1. **Instrument Development:** The tool was developed specifically by the researcher for this study; while validated, it may require further standardization for nationwide use.
2. **Scope of Measurement:** The findings were limited to measuring "Knowledge" and "Attitude." The study did not assess the students' "Clinical Practice" or hands-on skills in a real-world bedside setting.
3. **Assessment Method:** The effectiveness was assessed only through a structured questionnaire. Direct observation of clinical competency was not performed.

VII. RECOMMENDATIONS

Based on the study outcomes, the following recommendations are made for future researchers:

1. **Large-Scale Validation:** The study should be replicated with a larger sample size (e.g., N=500) across different states in India to validate the findings.
2. **Alternative Designs:** Future studies should use a **Control Group** (Experimental Design) to compare the STP against traditional teaching methods.
3. **Practice-Based Evaluation:** An evaluative study should be conducted to assess the effectiveness of an instructional module specifically on the *practice* and self-care abilities of RHD patients.
4. **Comprehensive Needs Assessment:** Future research should include familial, marital, and social needs to develop a more comprehensive health education plan.
5. **Longitudinal Retention:** A study should be conducted to assess how much knowledge is retained by students six months to a year after the STP.

VIII. EPILOGUE

This research successfully evaluated the effectiveness of a Structured Teaching Programme on Rheumatic Heart Disease management. The study bridged the gap between student knowledge and professional attitude, providing a statistically significant foundation for future educational interventions. By addressing the demographic variables and proving the efficacy of the STP, this work contributes to the broader goal of reducing the RHD burden in India through nursing excellence.

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