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A study to assess the effectiveness of a structured teaching program on knowledge and practice regarding hand washing among school children at a selected school in mangaluru

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Abstract:
Background: Hand hygiene is one of the most effective measures to prevent the spread of infectious diseases, especially among school children who are highly susceptible due to their close interactions in shared environments. Despite its importance, many children lack adequate knowledge and practice related to proper hand washing techniques. Objectives: This study aimed to assess the effectiveness of a structured teaching program on the knowledge and practices of hand hygiene among school children in a selected school at Mangaluru. Methods: A pre-experimental one-group pre-test post-test design was adopted among 30 students selected through simple random sampling. A structured teaching program was administered, and data were collected using a validated questionnaire. Results: The study found a significant improvement in both knowledge and practice scores after the intervention ($p < 0.05$). Conclusion: The structured teaching program was highly effective in enhancing knowledge and promoting good hand hygiene practices among school children.

Keywords: Knowledge, Hand Hygiene, Structured Teaching Program, Effectiveness, Assessment.

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INTRODUCTION

Hand washing is an effective and essential hygiene practice involving the mechanical removal of dirt, soil, and microbes using soap and water. While simple, it requires adherence to specific steps to reduce microbial load effectively. The process includes wetting hands, applying soap, scrubbing all surfaces, including palms, backs of hands, thumbs, fingertips, and wrists, rinsing thoroughly, and drying with a clean towel. According to the WHO, proper hand washing should last at least one minute.

Hand hygiene plays a vital role in preventing communicable diseases such as influenza, SARS, and COVID-19, especially in developing countries. Children, being highly susceptible to infections, benefit significantly from proper hand hygiene practices.

Annually, approximately 1.8 million children under five die from diarrheal diseases and pneumonia. Hand washing with soap can reduce diarrhoea cases by over 40% and respiratory infections by around 23%. Despite global awareness, only 19% of individuals wash their hands with soap after toilet. Schools and day-care centers can reduce the incidence of diarrhoea by an average of 30% through effective hand hygiene interventions.

This study was undertaken to assess the effectiveness of a structured teaching program aimed at improving knowledge and practice of hand hygiene among school children in Mangaluru.

STATEMENT OF THE PROBLEM: A Study to Assess the Effectiveness of a Structured Teaching Program on Knowledge and Practice Regarding Hand Washing Among School Children at a Selected School in Mangaluru.

OBJECTIVES:

1. To assess the pre-intervention knowledge and practice regarding hand washing.
2. To implement a structured teaching program on proper hand-washing techniques.
3. To evaluate the effectiveness of the structured teaching program by comparing pre- and post-intervention scores.
4. To determine the association between knowledge and practice scores with selected demographic variables.

RESEARCH HYPOTHESES:

- H1: The mean post-test knowledge score will be significantly higher than the mean pre-test knowledge score among school children.
- H2: There will be a significant association between pre-test knowledge and practice scores with demographic variables such as age, gender, class, and previous source of information.

MATERIALS AND METHODS

Research Approach: A **pre-experimental approach** was employed to evaluate the effectiveness of a structured teaching program on hand hygiene.

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Research Design:
The study adopted a **one-group pre-test post-test design**. This design helped to measure changes in knowledge and practice before and after the intervention within the same group.

Research Setting:
The study was conducted at **St. Mary's Higher Primary School, Mangaluru**, chosen for its accessibility and cooperation from school authorities.

Sample and Sampling Technique:
The sample consisted of 30 school children aged between 10 to 13 years, selected using the simple random sampling technique (lottery method) to ensure unbiased representation.

Inclusion & Exclusion Criteria:

The inclusion criteria for the study were as follows: students aged between 10 and 13 years, those who were willing to participate in the study with informed consent obtained from their parents or guardians, and students who were available during the data collection period.
The exclusion criteria included students with physical or cognitive limitations that could hinder their participation in the study, as well as those who had received similar training related to hand hygiene within the past three months.

Tool for Data Collection:

The instrument consisted of two parts:

- **Part I:** Demographic profile (age, gender, class, and previous source of information).
- **Part II:** Structured knowledge and practice questionnaire on hand hygiene (validated by subject experts).

Intervention: A structured teaching program on hand hygiene practices was designed based on WHO guidelines and CDC resources. The program was delivered through lectures, demonstrations, charts, and posters, focusing on the importance of hand hygiene, the correct steps, and critical times for handwashing.

Data Collection Procedure:

1. Pre-test conducted using the structured questionnaire.
2. Delivery of the structured teaching session.
3. Post-test conducted 7 days after the intervention using the same tool.

Statistical Analysis:

- Descriptive statistics: Frequency, percentage, mean, and standard deviation.
- Inferential statistics: Paired *t*-test and Chi-square test for the significance of difference and association, respectively.

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RESULTS

Table 1: Frequency and Percentage Distribution of Demographic Variables (N = 30)

Variable	Categories	Frequency (f)	Percentage (%)
Age	10 years	8	27%
	11 years	6	20%
	12 years	11	36%
	13 years	5	17%
Gender	Male	13	42%
	Female	17	58%
Class	5th Std	10	33%
	6th Std	10	33%
	7th Std	10	33%
Previous Source of Info	Mass media	2	7%
	Books	5	17%
	School	23	76%

A total of 30 primary school children participated. The majority (36%) of respondents are 12 years old. The gender distribution of participation from males 13% and females 58%. The class distribution is balanced with equal participation from the 5th, 6th, and 7th grades.
Schools are the primary source of information for most participants 76%, while mass media accounts for only 7% and books 17%.

Table 2: Item-wise Pre-test and Post-test Knowledge Scores on Hand Washing

Item No	Knowledge Component	Pre-test (n, %)	Post-test (n, %)
1	Importance of hand washing	22 (73%)	30 (100%)
2	Common preventable diseases	8 (26%)	30 (100%)
3	Duration of hand washing	12 (39%)	29 (97%)
4	Materials required for hand washing	16 (51%)	30 (100%)

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Item No	Knowledge Component	Pre-test (n, %)	Post-test (n, %)
5	Critical times for hand washing	15 (48%)	24 (79%)

Above table reveals that the item wise pre-test knowledge score, 22 (73%) of them knew the importance of hand wash, 8(26%) of them knew the Common preventable diseases 12 (39%) of them knew the time required for hand wash, 16 (51%) of them knew the things required for effective hand wash, 15 (48%) of them knew the hand washing at critical times. During the post-test, the improvement of knowledge was found in 30 (100%) of them aware of the importance of hand wash,30(100%)of them were aware of the of them knew the Common preventable diseases,29(97%)of them were aware of the time required for hand wash,30(100%) of them knew the things required for hand wash,24(79%)of them were aware of the hand washing at critical times.

Table 3: Item-wise Pre-test and Post-test Practice Scores on Hand Washing

Item No	Practice Component	Pre-test (n, %)	Post-test (n, %)
1	Timing of hand washing	19 (61%)	30 (100%)
2	Use of water and soap	19 (61%)	30 (100%)
3	Whether hand washing is done	28 (94%)	29 (97%)
4	Correct steps and duration of hand washing	25 (82%)	30 (100%)
5	Drying hands with a clean towel	20 (64%)	30 (100%)

The item-wise pre-test and post-test knowledge score on the practice of hand washing. 19(61%) of them new Timing of hand washing, 19(61%) of them knew the use of water and soap during hand washing, 28 (94%) of them knew Hand wash done, 25 (82%) of them knew the Steps and duration of hand wash, 20 (64%) of them knew Drying of hands done by. During the post-test, the improvement of knowledge was found 30 (100%) of them aware of the Timing of hand washing, 30(100%) of them were aware of the use of water and soap during hand washing, 29 (97%) of them were aware of when they needed to wash their hands, 30 (100%) of them was aware of the Steps and duration of hand wash, 30 (100%) of them knew the drying of hands done with a dry towel.

INTERPRETATION OF RESULTS

- **Knowledge Scores:** The mean pre-test score was 14.6, which increased to 28.6 in the post-test ($p < 0.05$), indicating significant improvement.
- **Practice Scores:** The mean practice score rose from 22.2 to 29.8 post-intervention ($p < 0.05$), indicating enhanced practices.
- **Association with Demographics:** Statistically significant association was found between knowledge/practice scores and age, gender, class, and previous information sources ($p < 0.05$).

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DISCUSSION

This study revealed that a structured teaching program significantly enhanced both knowledge and practice of hand hygiene among primary school children. The pre- and post-test analysis supports the hypothesis that education has a direct impact on behavioral change. The findings are consistent with studies conducted by Admasie et al. (2022) and the CDC (2023), which show that targeted interventions in school settings improve health practices and reduce disease transmission.

Despite the modest sample size, the study provides valuable insights into how simple, low-cost educational strategies can have a profound effect on health outcomes. Schools serve as critical platforms for health promotion and should leverage this by incorporating hygiene education into daily routines.

IMPLICATIONS FOR PRACTICE

1. **Health Promotion:** Educating children early on hand hygiene can create a culture of cleanliness that persists into adulthood.
2. **Curriculum Integration:** Hygiene education should be made a permanent part of health education in schools.
3. **Role of Teachers and Parents:** Reinforcement at home and school is vital to sustain behavioral change.
4. **Community Outreach:** Awareness programs in schools can indirectly benefit the larger community by reducing the transmission of infectious diseases.

CONCLUSION

The findings of the study clearly demonstrate that a structured teaching program is effective in improving both the knowledge and practical application of hand hygiene among school children. This intervention serves as a practical and scalable model for improving public health outcomes in school settings. With regular implementation, such programs can reduce the incidence of preventable diseases and improve the overall well-being of children.

RECOMMENDATIONS

1. Conduct similar studies with larger and more diverse samples to validate findings.
2. Introduce structured hand hygiene sessions as part of the school health curriculum.
3. Provide infrastructure such as soap dispensers and clean towels in school premises.
4. Encourage community partnerships to support ongoing hand hygiene campaigns.
5. Evaluate long-term retention of knowledge and practice through follow-up studies.

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