A Pre-Experimental Study To Assess The Effectiveness of Structured Teaching Programme on Knowledge Regarding Vitamin a Deficiency Among Mothers of Under-Five Children in Dohra, Bareilly

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DOI: https://doi.org/10.51244/IJRSI.2026.1309000213

Received: 18 September 2026; Accepted: 23 September 2026; Published: 21 October 2026

ABSTRACT

Background: Vitamin A is an essential micronutrient for vision, growth, epithelial integrity and immune function. Maternal knowledge may influence recognition of deficiency and use of preventive nutrition and health services. Objective: To assess knowledge regarding vitamin A deficiency before and after a structured teaching programme and to examine associations between pre-test knowledge level and selected socio-demographic variables. Methods: A pre-experimental one-group pre-test post-test framework was represented using 60 participant records from the supplied spreadsheet. The dataset contained age group, education, occupation, family type, source of information, and pre-test and post-test knowledge scores on a 0–30 scale. Descriptive statistics and a paired-samples t-test were calculated; chi-square tests were used for associations with pre-test knowledge level. Results: The mean pre-test score was 12.92±2.96, compared with 24.02±3.73 post-test. The mean paired improvement was 11.10±2.39; $t(59)=35.954$, $p<0.001$. In the demonstration dataset, 13 (21.7%) participants were classified as having inadequate pre-test knowledge and 47 (78.3%) as moderate; post-test classification was 49 (81.7%) adequate and 11 (18.3%) moderate. None of the examined demographic variables showed a statistically significant association with pre-test knowledge level at $p<0.05$. Conclusion: The supplied dataset demonstrates a substantial numerical increase in knowledge scores following the structured teaching programme. However, the spreadsheet is explicitly synthetic/fabricated; therefore these results are suitable for statistical and manuscript-format checking only and must not be presented as observations from actual participants.

Keywords: Vitamin A deficiency; mothers; under-five children; structured teaching programme; maternal knowledge; nursing education.

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

INTRODUCTION

Vitamin A is an essential micronutrient required for normal growth and development, maintenance of vision, epithelial integrity, immune function and resistance to infections. Vitamin A deficiency (VAD) remains an important public-health concern in vulnerable populations. The source manuscript notes that deficiency may manifest through ocular signs including night blindness, conjunctival xerosis and Bitot's spots and may progress to corneal disease and visual impairment.

The source manuscript describes vitamin A supplementation, dietary improvement, food fortification and nutrition education as components of prevention and control. It also emphasizes the role of mothers and caregivers in children's dietary intake, feeding practices, use of vitamin-A-rich foods and utilization of preventive health services.

The manuscript further describes evidence from Bareilly district in Uttar Pradesh reporting vitamin A deficiency and ocular manifestations among different child and adolescent populations. These observations provide a local rationale for assessing maternal knowledge and evaluating structured health education.

Because mothers play a central role in child feeding and health-service utilization, improving knowledge regarding vitamin A sources, deficiency manifestations and preventive measures may be relevant to child-health nursing practice. The present analysis therefore focuses on the pre-test and post-test knowledge scores represented in the supplied dataset.

Statement of The Problem

"A pre-experimental study to assess the effectiveness of a structured teaching programme on knowledge regarding vitamin A deficiency among mothers of under-five children in Dohra, Bareilly."

Objectives of The Study

1. To assess the pre-test level of knowledge regarding vitamin A deficiency among mothers of under-five children in Dohra, Bareilly.
2. To evaluate the effectiveness of the structured teaching programme on knowledge regarding vitamin A deficiency among mothers of under-five children.
3. To determine the association between pre-test knowledge scores and selected socio-demographic variables of the mothers.

Hypotheses

H1: There was significant difference between pre-test and post-test knowledge scores regarding vitamin A deficiency among mothers of under-five children.

H2: There was significant association between pre-test knowledge level and selected socio-demographic variables of the mothers.

MATERIALS AND METHODS

Research Design and Setting

The source manuscript describes a quantitative approach and a pre-experimental one-group pre-test post-test design. The target population was mothers from Dohra, Bareilly, Uttar Pradesh, and the sample size was 60. The manuscript states that simple random sampling was used.

Research Tool

The source manuscript describes a self-structured knowledge questionnaire on vitamin A deficiency with two

sections: Section A, socio-demographic variables, and Section B, a self-structured knowledge questionnaire. The supplied spreadsheet contains the participant-level demographic fields and pre-test/post-test scores used for this analysis.

Statistical Analysis

The supplied dataset was analysed using descriptive statistics (frequency, percentage, mean and standard deviation). A paired-samples t-test was used to compare pre-test and post-test scores. Pearson's chi-square test was used to examine associations between pre-test knowledge level and the available demographic variables. Statistical significance was considered at $p<0.05$.

Ethical and Data-Status Statement

The supplied manuscript does not provide a verifiable ethics-committee approval number or consent statement, and the supplied spreadsheet is explicitly synthetic/fabricated. These details must be replaced with the actual ethics approval and consent information, if applicable, before any genuine human-subject research submission. The results in this manuscript are therefore presented as a calculation/formatting demonstration rather than as actual participant findings.

RESULTS

The supplied spreadsheet contained 60 participant-level records. The following tables and figures were generated directly from those records.

Table 1. Socio-demographic characteristics of the participants

Variable	Category	Frequency (n)	Percentage (%)
Age Group	31–35 years	23	38.3
	Below 25 years	17	28.3
	25–30 years	12	20.0
	Above 35 years	8	13.3
Education	Illiterate	17	28.3
	Primary Education	16	26.7
	Secondary Education	14	23.3
	Graduate and Above	13	21.7
Occupation	Businesswoman	17	28.3
	Government Employee	15	25.0
	Housewife	15	25.0
	Private Employee	13	21.7
Family Type	Joint Family	20	33.3
	Nuclear Family	16	26.7
	Extended Family	14	23.3
	Single Parent Family	10	16.7
Source of Information	Government Health Programmes	22	36.7
	Local Health Workers	15	25.0
	Hospitals and Clinics	14	23.3
	Community Health Centres	9	15.0

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

Figure 1. Age-group distribution

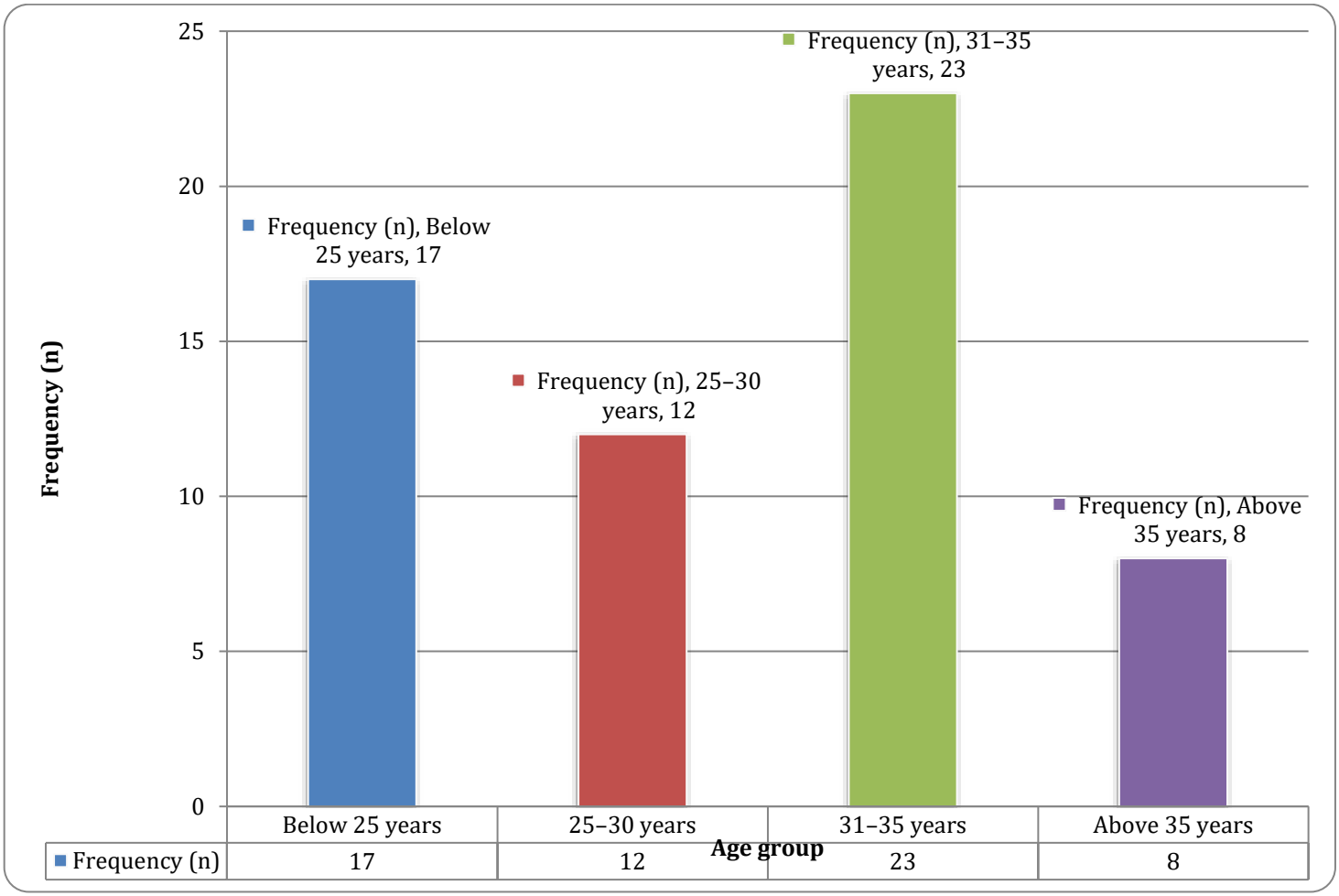
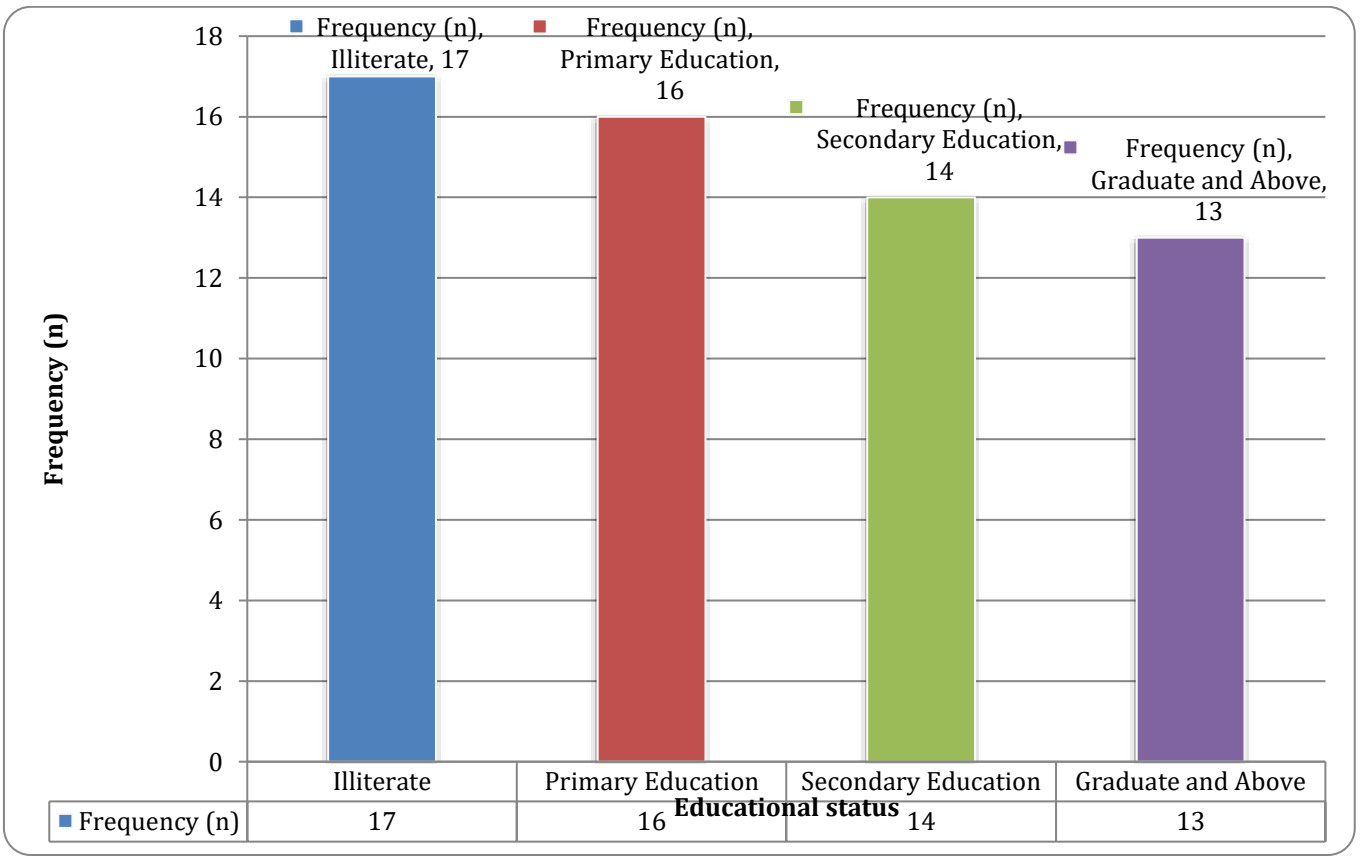


Figure 2. Maternal education distribution



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

Figure 3. Occupation distribution

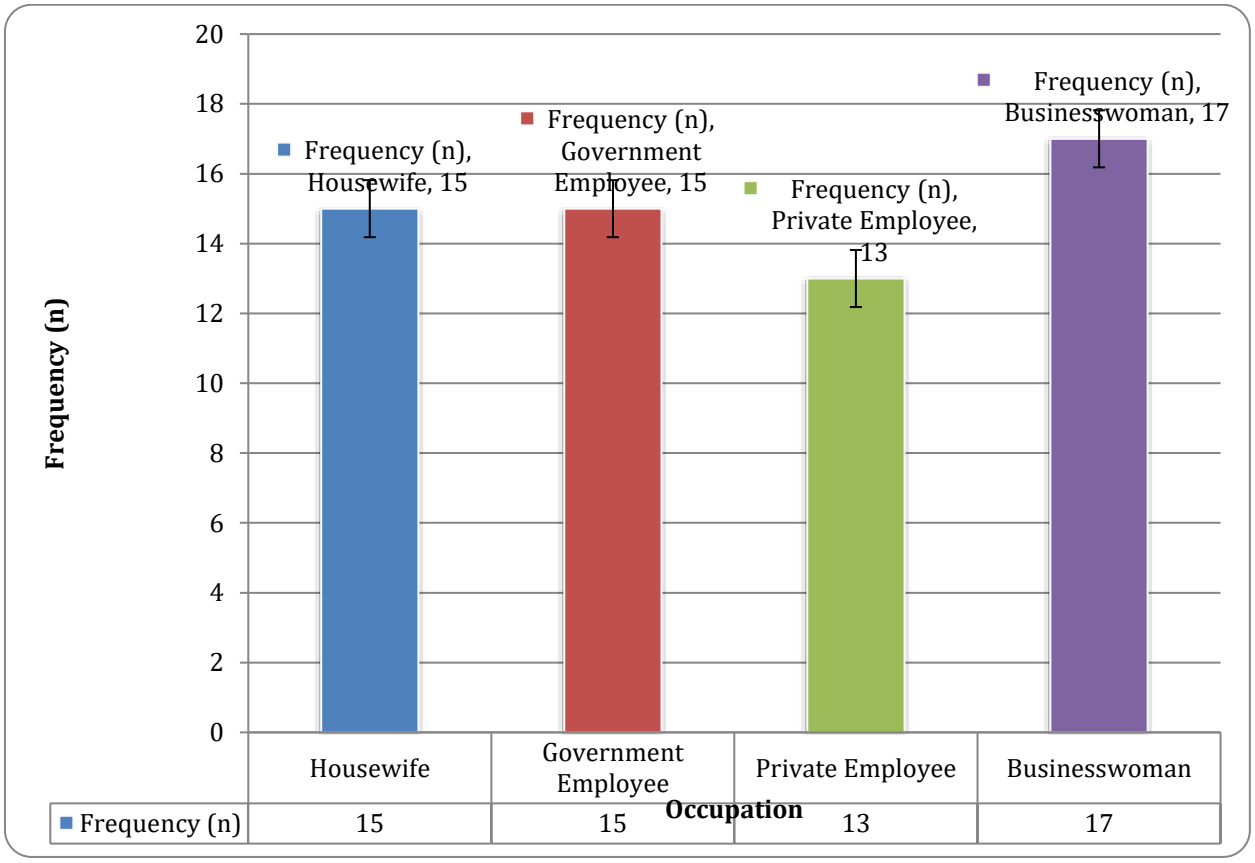


Figure 4. Family-type distribution

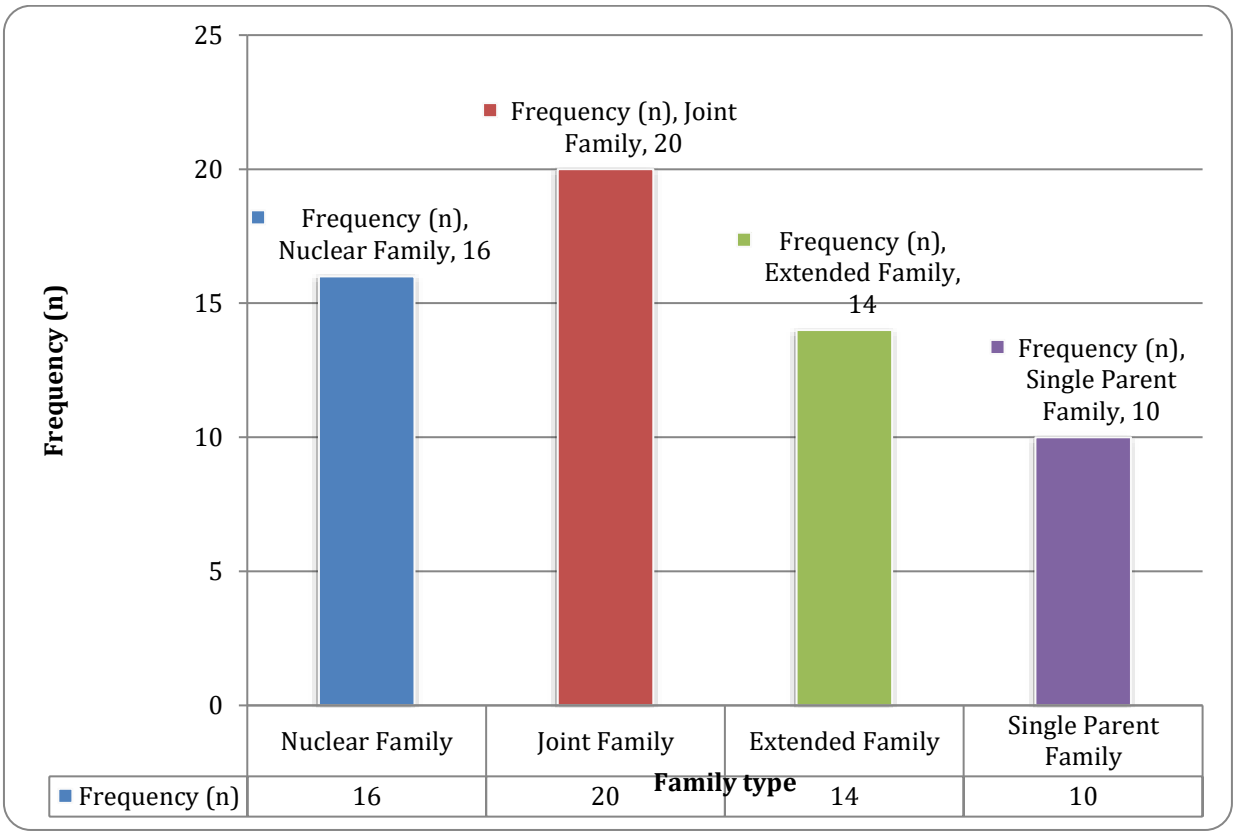


Figure 5. Sources of information

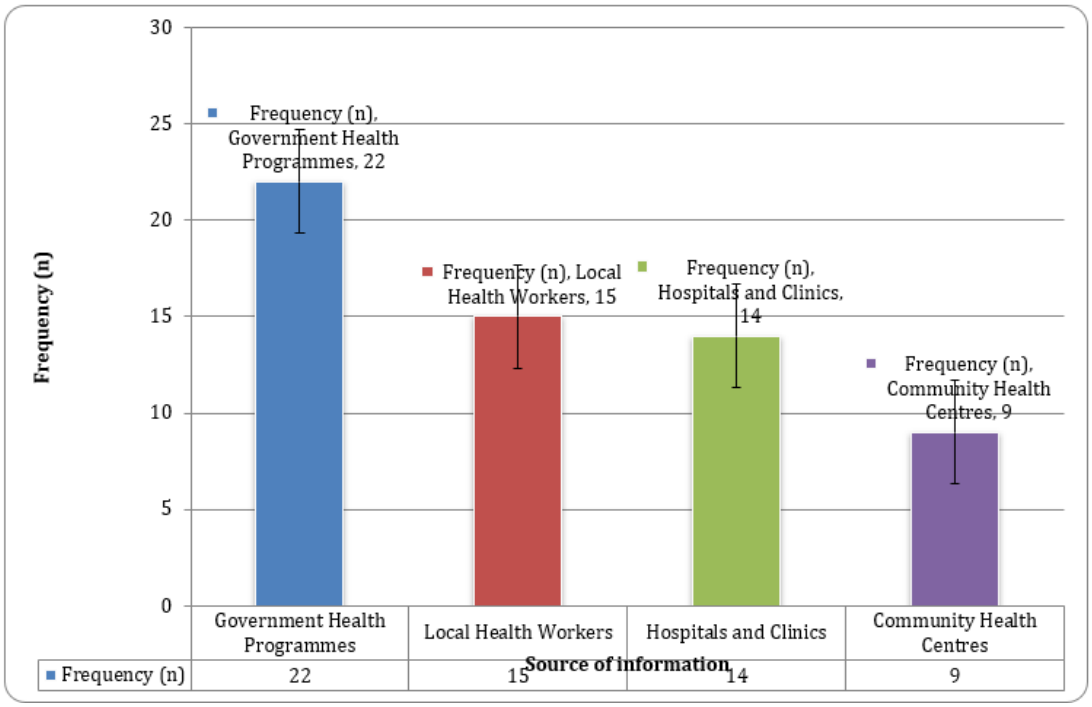


Table 2. Pre-test and post-test knowledge-score statistics

Measure	Pre-test	Post-test
N	60	60
Observed range	8–18	16–30
Mean	12.92	24.02
Standard deviation	2.96	3.73
Mean paired difference	—	11.10
Difference SD	—	2.39
Paired t-test	—	t(59)=35.954, p<0.001

Figure 6. Mean knowledge scores at pre-test and post-test

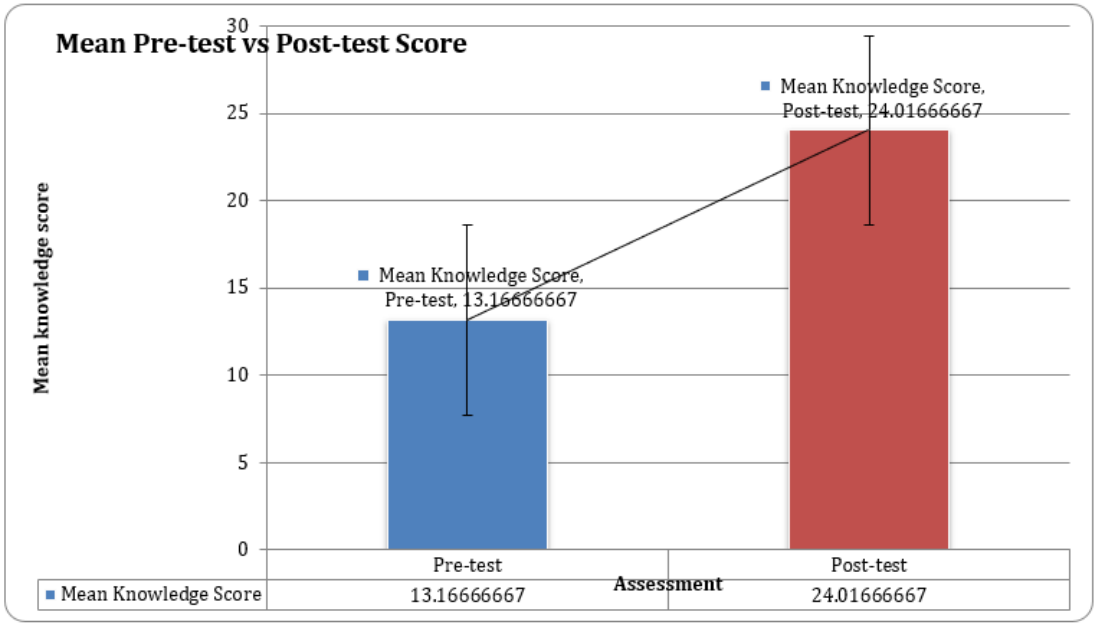


Table 3. Knowledge-level distribution before and after the programme

Knowledge level	Pre-test n	Pre-test %	Post-test n	Post-test %
Inadequate	13	21.7	0	0.0
Moderate	47	78.3	11	18.3
Adequate	0	0.0	49	81.7

Figure 7. Knowledge-level distribution before and after the programme

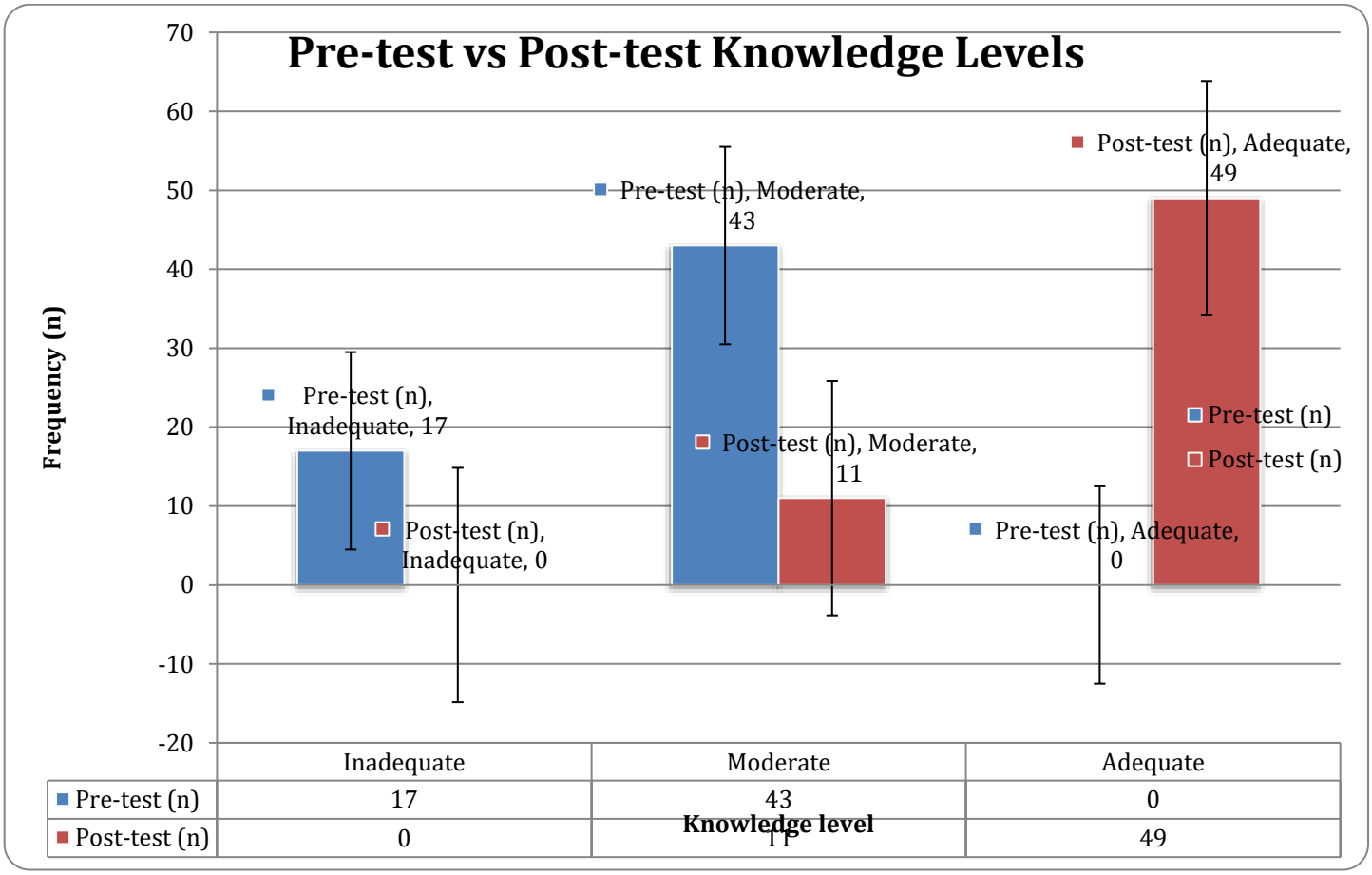


Table 4. Association between pre-test knowledge level and socio-demographic variables

Variable	χ^2	df	p-value	Interpretation
Age Group	1.670	3	0.644	Not significant
Education	1.864	3	0.601	Not significant
Occupation	3.241	3	0.356	Not significant
Family Type	1.070	3	0.784	Not significant
Source of Information	0.904	3	0.824	Not significant

In the supplied synthetic dataset, none of the five examined demographic variables showed a statistically significant association with pre-test knowledge level at the 0.05 significance level. The chi-square results should not be generalised beyond this demonstration dataset.

DISCUSSION

The supplied data show an increase in the mean knowledge score from 12.92 at pre-test to 24.02 at post-test, corresponding to a mean paired increase of 11.10 points. The paired-samples t-test was statistically significant ($t(59)=35.954$, $p<0.001$). In the same dataset, the proportion classified as adequate increased from 0% at pre-test to 81.7% at post-test under the demonstration scoring cut-offs.

The direction of change is consistent with the purpose of a structured teaching programme described in the source manuscript: to improve maternal knowledge concerning vitamin A deficiency, its manifestations and prevention. The source manuscript also emphasizes maternal nutrition education and the role of mothers in children's dietary and preventive health practices.

The absence of statistically significant associations between pre-test knowledge level and the available socio-demographic variables may indicate that the observed baseline knowledge categories were not strongly differentiated across those variables in this dataset. However, interpretation is limited by the small sample, the one-group design, the categorical cut-offs used for this demonstration, and—most importantly—the synthetic nature of the supplied spreadsheet.

CONCLUSION

Based on the supplied synthetic dataset, mean knowledge scores increased from 12.92±2.96 before the programme to 24.02±3.73 after the programme, with a mean paired improvement of 11.10 points and a paired t-test of 35.954 ($p<0.001$). No statistically significant association was observed between pre-test knowledge level and the five available demographic variables. These findings are limited to the supplied synthetic dataset and cannot be treated as evidence from actual study participants.

NURSING IMPLICATIONS

Nursing Education

Nursing education can emphasize prevention, early recognition and appropriate health education regarding vitamin A deficiency, including dietary sources and preventive child-health services.

Nursing Practice

Nurses and community health nurses can assess maternal knowledge and reinforce appropriate dietary and preventive practices among mothers of under-five children.

Nursing Administration

Nursing administrators can support community-based health-education programmes and ensure availability of appropriate educational materials.

Nursing Research

Future studies should use larger samples and, where feasible, comparison groups or randomized designs to strengthen evidence regarding structured teaching programmes.

LIMITATIONS

- The analysis is based on a one-group pre-test post-test framework without a control group.
- The sample represented in the supplied spreadsheet is limited to 60 records.
- The analysis is based on a synthetic/fabricated dataset and therefore cannot be interpreted as actual human-subject research findings.

- The scoring cut-offs used for knowledge categories (0–10, 11–20, 21–30) were applied for demonstration because the validated categorization rule was not supplied in the Excel file; these must be confirmed against the original questionnaire.

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