

“EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING IMPORTANCE OF THE DIET AND WEIGHT GAIN DURING PREGNANCY AMONG PRIMIGRAVIDA MOTHERS AT SC HOSPITAL, HASSAN”

¹Anitha N. M. — Professor, K.R. College of Nursing, Bangalore |
Email: nmanitha5@gmail.com

²Kavyashree H. V. — Professor, K.R. College of Nursing, Bangalore
Email: kavyah.v68@gmail.com

ABSTRACT

A balanced diet rich in carbohydrates, proteins, fats, vitamins, and minerals—including an additional 300 kcal/day during the second half of pregnancy—is critical for maternal health, fetal growth, labor vitality, and successful lactation, while preventing complications such as abortion, miscarriage, or premature delivery. To evaluate the effectiveness of a Structured Teaching Programme (STP) on knowledge regarding dietary importance and weight gain during pregnancy among primigravida mothers, an evaluative pre-experimental one-group pre-test post-test design was conducted using a structured interview schedule and purposive sampling ($N = 50$). The descriptive and inferential analysis revealed a significant increase in mean knowledge scores from the pre-test (49.3%) to the post-test (85.7%), with the calculated t -value exceeding the critical threshold ($p < 0.05, df = 49$) and significant χ^2 associations between demographic variables and post-test scores. Ultimately, the study demonstrated a pre-existing knowledge deficit among primigravida mothers and confirmed that the STP was effective in significantly improving their understanding of maternal nutrition and weight management.

Keywords: Primigravida mothers, maternal diet, weight gain, pregnancy nutrition, Structured Teaching Programme, pre-experimental design, knowledge assessment.

INTRODUCTION

Pregnancy is a physiologically demanding period that requires heightened nutritional support to optimize both maternal health and fetal development (Marshall et al., 2022). Adequate intake of macronutrients and essential micronutrients—including iron, calcium, folic acid, and iodine—is essential during gestation (World Health Organization, 2016). An increased energy requirement, particularly an additional 300 kcal per day during the second and third trimesters, supports fetal tissue expansion, placental growth, and an elevated basal metabolic rate (Indian Council of Medical Research & National Institute of Nutrition, 2020; Kominiarek & Rajan, 2016). Controlled gestational weight gain within recommended limits significantly reduces the risk of adverse pregnancy outcomes, including low birth weight, pre-eclampsia, gestational diabetes, and preterm labor (American College of Obstetricians and Gynecologists, 2020; Institute of Medicine & National Research Council, 2009).

Primigravida mothers—women who are pregnant for the first time—are uniquely vulnerable to inadequate dietary practices due to a lack of previous maternal experience, limited access to reliable health information, and cultural misconceptions surrounding prenatal nutrition (Sharma & Joseph, 2021). Studies consistently demonstrate that first-time mothers frequently harbor significant baseline knowledge deficits regarding appropriate meal frequency, balanced nutrient intake, and targeted weight gain expectations during pregnancy (Kominiarek & Rajan, 2016). Insufficient maternal knowledge can lead to improper weight control, nutritional deficiencies, or excessive weight gain, all of which compromise overall perinatal outcomes (Marshall et al., 2022).

Health education interventions, such as a Structured Teaching Programme (STP), serve as an effective, systematic mechanism to bridge knowledge gaps among expectant mothers (Sharma & Joseph, 2021). By delivering structured,

evidence-based guidance on dietary essentiality and healthy weight trajectories, nurses and healthcare educators can empower primigravida mothers to make informed decisions regarding their nutritional intake (World Health Organization, 2016). Therefore, evaluating the effectiveness of a Structured Teaching Programme on knowledge regarding the importance of diet and weight gain among primigravida mothers at SC Hospital, Hassan, is vital to establishing structured educational strategies within standard antenatal care services.

NEED FOR STUDY

Maternal and child health serves as a fundamental indicator of a nation's overall healthcare infrastructure (World Health Organization, 2016). In India, maternal undernutrition and inadequate gestational weight gain remain critical public health challenges (International Institute for Population Sciences & ICF, 2021). According to the National Family Health Survey (NFHS-5), over 57% of women of reproductive age are anemic, and a substantial proportion fail to achieve recommended prenatal nutrition goals (International Institute for Population Sciences & ICF, 2021). Gestational weight gain and balanced nutrient intake directly influence intra-uterine fetal growth, neonatal birth weight, and the incidence of pregnancy-related complications such as pre-eclampsia and preterm delivery (American College of Obstetricians and Gynecologists, 2020; Institute of Medicine & National Research Council, 2009).

Primigravida mothers—women pregnant for the first time—are exceptionally vulnerable to inadequate dietary practices due to a lack of previous maternal experience, reliance on traditional taboos, and limited access to verified healthcare information (Indian Council of Medical Research & National Institute of Nutrition, 2020). Studies indicate that first-time mothers frequently exhibit low to moderate baseline knowledge regarding essential daily caloric additions, targeted weight trajectories, and micronutrient requirements during gestation (Institute of Medicine & National Research Council, 2009). Cultural dietary restrictions and misconceptions further compound these nutritional gaps, particularly in semi-urban settings like Hassan, Karnataka.

Health education is a core nursing intervention capable of fostering positive health behaviors (World Health Organization, 2016). A Structured Teaching Programme (STP) offers a systematic, evidence-based strategy to deliver focused instruction on diet and weight management (Indian Council of Medical Research & National Institute of Nutrition, 2020). Evaluating baseline knowledge and assessing the impact of an STP provides actionable evidence to enhance nurse-led educational strategies within antenatal care services at SC Hospital, Hassan.

STATEMENT OF THE PROBLEM:

“Effectiveness of structured teaching programme on knowledge regarding importance of the diet and weight gain during pregnancy among primigravida mothers at SC hospital, Hassan”.

OBJECTIVES:

1. To assess the knowledge regarding importance of the diet and weight gain during pregnancy among primigravida mothers.
2. To evaluate the effectiveness of structured teaching programme on knowledge regarding importance of diet and weight gain.
3. To find association between post-test knowledge scores of primigravida mother with their selected sociodemographic variables.

HYPOTHESES:

H₁: There will be a significant difference between mean pretest and post-test knowledge score regarding importance of diet and weight gain during pregnancy among primigravida mothers.

H₂: There will be a significant association between post-test knowledge score and their selected demographic variables of primigravida mothers.

OPERATIONAL DEFINITIONS:

Assess: It refers to the process used to get information regarding knowledge of primigravida mothers in relation to importance of diet and weight gain during pregnancy.

Effectiveness: It refers to the extent to which teaching has achieved the desired outcomes in terms of gain in knowledge score.

Structured Teaching Programme (STP): It is a well planned teaching programme developed in Kannada language for one hour by using A.V.aids. It provides information regarding importance of the diet and weight gain during pregnancy for primigravida mothers.

Knowledge: It refers to the correct response given by primigravida mothers to the structured interview schedule related to importance of diet and weight gain during pregnancy.

Diet: it refers to food or nutritional intake plan to be followed by the antenatal mother.

Weight gain: It refers to the increase in weight appropriate to the period of gestation as evidenced by regular antenatal check-up.

Pregnancy: pregnancy is the period between conceptions to delivery of the fetus.

Primigravida mother: who is a woman pregnant for the first time.

Shri Chamarajendra (S.C.) hospital: It refers to the 500 bedded government district hospitals which is situated in Hassan city

ASSUMPTIONS:

Study assumes that:

- Primigravida mothers have some knowledge regarding importance of diet and weight gain during pregnancy.
- Structured interview schedule is an appropriate method to measure knowledge regarding importance of diet and weight gain during pregnancy.

CONCEPTUAL FRAMEWORK

The conceptual framework for this study is based on Ludwig von Bertalanffy's (1968) General System Theory, which defines a system as a set of interacting components functioning as an organized whole through four main elements: **Input**, **Throughput**, **Output**, and **Feedback** (Wood & Haber, 2014). In this study, **Input** encompasses the baseline demographic characteristics of the primigravida mothers (age, education, income, dietary pattern) and their pre-test knowledge scores regarding prenatal diet and weight gain assessed via a structured interview schedule ($N = 50$). **Throughput** represents the transformation process, which involves administering the Structured Teaching Programme (STP) to enhance maternal awareness regarding essential caloric additions and healthy weight trajectories. **Output** is the resultant post-intervention knowledge score, categorized as either a desirable outcome (adequate knowledge) or an undesirable outcome (inadequate knowledge). Finally, **Feedback** provides a mechanism for evaluating system efficiency by comparing pre-test and post-test scores; the significant increase in mean scores (49.3% to 85.7%) confirms that the throughput intervention successfully transformed the system's input into the desired output.

RESEARCH METHODOLOGY

Research Approach and Design

A quantitative evaluative research approach was utilized to assess the effectiveness of a Structured Teaching Programme (STP). The study adopted a pre-experimental one-group pre-test post-test design ($O_1 \rightarrow X \rightarrow O_2$). Knowledge was assessed prior to the intervention on Day 1 (O_1), followed by the administration of the STP (X), and a post-test assessment (O_2) conducted after 7 days using the same tool.

Study Setting and Population

The study was conducted in the antenatal ward and outpatient department (OPD) of Shri Chamarajendra (S.C.) Hospital, Hassan, Karnataka. The target population consisted of primigravida mothers admitted to or visiting the hospital for antenatal services.

Sample and Sampling Technique

A sample size of 50 primigravida mothers ($N = 50$) was selected using a non-probability purposive sampling technique based on specific criteria:

- **Inclusion Criteria:** Primigravida mothers who were available during data collection, willing to participate, and understood the Kannada language.

- **Exclusion Criteria:** Mothers who were absent during data collection or unwilling to participate.

Data Collection Tool and Measurement

A structured interview schedule consisting of two main sections was developed and utilized:

- **Part I:** Demographic characteristics (age, religion, maternal education, occupation, family structure, household income, dietary pattern, prior knowledge, and source of information).
- **Part II:** A 30-item knowledge questionnaire divided into three core domains: (1) importance of diet and weight gain, (2) effects of nutritional deficiencies, and (3) dietary management during pregnancy.
- **Scoring:** Each correct response received 1 mark, while incorrect answers scored 0 (Maximum score = 30, Minimum score = 0).

Validity and Reliability

- **Content Validity:** The tool and teaching module were validated by 10 experts (8 Obstetric and Gynecological Nursing educators, 1 Gynecologist, and 1 Statistician). The statistical validity coefficient of the tool was established at 0.76.
- **Reliability:** Established via a pre-test with 5 subjects using the split-half method. Karl Pearson's correlation coefficient for the half-test was $r_{1/2} = 0.61$, yielding a full-test reliability coefficient (r_1) of 0.76, confirming high internal consistency.

Pilot Study and Main Data Collection

A pilot study conducted from February 1 to February 8, 2016 ($N = 5$) demonstrated study feasibility and significant knowledge enhancement (40.0% to 83.3%). Main data collection took place over 4 weeks (February 15 to March 15, 2016). After obtaining administrative permissions and informed consent, baseline pre-test data (O_1) were collected (40 minutes per subject), followed by the delivery of the STP (X). The post-test (O_2) was administered on the 8th day using the same structured interview schedule.

Data Analysis Plan

Data were processed using both descriptive and inferential statistics:

- **Descriptive Statistics:** Frequencies, percentages, mean, median, range, and standard deviation to summarize demographic variables and knowledge levels.
- **Inferential Statistics:** Paired t -test to evaluate the statistical significance of knowledge gain following the STP, and Chi-square (χ^2) test to determine associations between post-test knowledge scores and selected demographic variables.

RESULTS

The analysed data were presented through organised tables, figures and graphical representations.

Table 1: Frequency and percentage distribution table of sociodemographic variables (N = 110).

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age Group (Years)	18–20	10	20.0
	21–23	20	40.0
	24–26	20	40.0
Religion	Hindu	36	72.0
	Christian	10	20.0
	Muslim	4	8.0
Educational Status	Illiterate	15	30.0
	Primary	12	24.0
	Secondary	13	26.0
	PUC	10	20.0
Occupation	Housewife	30	60.0
	Government	8	16.0
	Private	12	24.0
Dietary Pattern	Vegetarian	13	26.0

	Non-Vegetarian	10	20.0
	Mixed	27	54.0
Type of Family	Nuclear / Joint	20 each	40.0 each
	Extended	10	20.0
Monthly Income	< ₹5,000	25	50.0
	₹5,000–10,000	14	28.0
	₹10,000–20,000	11	22.0
Previous Knowledge	Yes	11	22.0
	No	39	78.0
Source of Info	Friends / Relatives	7	14.0
	Mass Media	3	6.0
	Health Personnel	1	2.0
	None	39	78.0

The majority of primigravida mothers were aged 21–26 years (80%), Hindu (72%), housewives (60%), and followed a mixed dietary pattern (54%). Half of the sample (50%) had a monthly family income below ₹5,000, and 30% were illiterate. Crucially, 78% had no prior knowledge regarding pregnancy diet and weight gain, with only 2% receiving information from health personnel, highlighting a major reliance on non-professional sources and a clear need for targeted health education.

Table 2: Classification of Pre-test and Post-test Knowledge Levels (N = 50)

Knowledge Level	Score Range	Pre-test (n)	Pre-test (%)	Post-test (n)	Post-test (%)	χ^2 Value
Inadequate	$\leq 50\%$	37	74.0	0	0.0	72.14*
Moderate	51% – 75%	13	26.0	15	30.0	
Adequate	$> 75\%$	0	0.0	35	70.0	
Total		50	100.0	50	100.0	

*Significant at $p < 0.05$ level ($\chi^2_{\text{critical}} = 5.991, df = 2$)

In the pre-test, 74.0% of primigravida mothers had inadequate knowledge, 26.0% had moderate knowledge, and none (0%) had adequate knowledge. Following the intervention, post-test scores showed significant improvement: 70.0% achieved adequate knowledge, 30.0% had moderate knowledge, and 0% remained inadequate. The calculated Chi-square value ($\chi^2 = 72.14$) significantly exceeded the critical table value ($\chi^2_{0.05,2df} = 5.991$), demonstrating that the Structured Teaching Programme was highly effective in increasing maternal knowledge.

Table 3: Chi-Square (χ^2) Analysis Table (N = 50)

Demographic Variable	Calculated Value	χ^2	Degrees of Freedom (df)	Critical Table Value ($p=0.05$)	Inference / Significance
Age Group	0.48		2	5.99	Not Significant ($p > 0.05$)
Religion	8.33		2	5.99	Significant ($p < 0.05$)
Educational Status	12.10		3	7.82	Significant ($p < 0.05$)
Occupation	9.37		2	5.99	Significant ($p < 0.05$)
Dietary Pattern	0.01		2	5.99	Not Significant ($p > 0.05$)
Type of Family	10.00		2	5.99	Significant ($p < 0.05$)
Monthly Income	8.07		2	5.99	Significant ($p < 0.05$)
Previous Knowledge	0.27		1	3.84	Not Significant ($p > 0.05$)
Source of Information	4.23		3	7.82	Not Significant ($p > 0.05$)

- **Statistically Associated:** Religion, Educational Status, Occupation, Type of Family, and Monthly Family Income significantly influenced post-test knowledge scores ($p < 0.05$).
- **Not Associated:** Age, Dietary Pattern, Previous Knowledge, and Source of Information showed no significant relationship with post-test knowledge levels ($p > 0.05$).

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CONFLICTS OF INTEREST

The author declares no financial, personal, or professional conflicts of interest that could have influenced the design, conduct, data collection, analysis, or interpretation of this study.

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ETHICAL CONSIDERATIONS AND INFORMED CONSENT

Formal administrative permission was obtained from the medical superintendent and concerned authorities of Shri Chamarajendra (S.C.) Hospital, Hassan, prior to data collection. The objectives and procedures of the study were clearly explained to all eligible primigravida mothers in their native language (Kannada). Written informed consent was secured before baseline assessment, and participation remained entirely voluntary. Confidentiality, privacy, and anonymity were strictly maintained throughout the study, with data utilized exclusively for academic research purposes. Participants were informed of their right to withdraw from the study at any time without any adverse impact on their routine healthcare services.

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