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Effectiveness Of Government Nutrition Programs On Child Growth (Maternal And Child Health)

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Abstract
Child growth is a sensitive marker of maternal and child health because linear growth, weight gain, immunity, cognitive development and school readiness are shaped by nutrition, infection control, maternal care, household food security and timely public health services. India has implemented large-scale government nutrition and maternal health programmes such as Integrated Child Development Services, Poshan Abhiyaan, PM POSHAN, Janani Suraksha Yojana and supplementary nutrition services to reduce child undernutrition and improve access to growth monitoring, counselling and food support. Recent global estimates show that child undernutrition continues to remain a major public health concern, and India's national surveys show improvement but persistent levels of stunting, wasting and underweight among under-five children. A descriptive analytical crosssectional study design was used among 120 mothers of children aged 6-59 months attending selected Anganwadi and community health service areas. A structured questionnaire, programme utilization schedule, maternal knowledge scale and anthropometric assessment form were used. Weight, height/length and mid-upper arm circumference were assessed and interpreted with reference to standard growth. Overall, 90.8% of mothers had heard of ICDS, 76.7% knew about indicators.3 supplementary nutrition, 65.0% knew about growth monitoring and 70.8% knew about maternal health support. High utilization of nutrition services was observed among 38.3% of families, moderate utilization among 31.7% and low utilization among 30.0%. Normal growth status was observed in 48.3% of children, while underweight, stunting, wasting or multiple growth deficits were observed among the remaining children.

Keywords: Child growth, Maternal and child health, Government nutrition programmes

I. INTRODUCTION

Child growth is one of the most practical and sensitive indicators of population health because it reflects the combined influence of nutrition, infection, maternal care, household resources, sanitation and health service contact. In public health practice, a child who fails to gain adequate weight or height is not only experiencing a biological problem but also a programme signal indicating that food, care, counselling or medical follow-up may be insufficient. Global estimates continue to show a high burden of under-five undernutrition, with millions of children affected by stunting and wasting despite decades of policy attention. For a country such as

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India, where early childhood services are delivered through a wide network of Anganwadi centres, primary health facilities and schools, the effectiveness of nutrition programmes can be judged by whether children are reached early, monitored regularly and supported before growth faltering becomes severe. Government nutrition programmes in India were designed to address the life-cycle nature of malnutrition. A child's growth begins to be influenced before birth through maternal nutrition, anaemia status, antenatal care and birth weight. After birth, breastfeeding, complementary feeding, immunization, illness management, hygiene, care practices and household food diversity determine whether a child follows an adequate growth trajectory. The maternal and child health approach is therefore essential because the mother is both a beneficiary and a primary caregiver. Programmes such as ICDS, Poshan Abhiyaan, PM POSHAN and Janani Suraksha Yojana provide food supplementation, counselling, monitoring, school meals, institutional delivery support and community mobilisation, but their impact depends on awareness, regular use and quality of implementation.

Overview of Maternal and Child Health

Maternal and child health is a core branch of public health that focuses on women during pregnancy, childbirth and the postnatal period, and on children from birth through early childhood. Maternal health is not limited to safe delivery; it includes nutritional status, antenatal care, prevention of anaemia, counselling, birth preparedness and postnatal support. WHO defines maternal health as health during pregnancy, childbirth and the postnatal period, emphasizing that each stage should allow women and babies to reach their full potential for health and well-being.6 When maternal health services are strong, the likelihood of low birth weight, delayed breastfeeding, untreated illness and poor early child care decreases. In the Indian setting, maternal and child health services are delivered through a convergence of the health system and the women and child development system. ASHA workers, ANMs and Anganwadi workers form the frontline network that identifies pregnant women, supports institutional delivery, monitors children, promotes immunization and provides nutrition education. The effectiveness of government nutrition programmes therefore depends not only on food transfer but also on the functioning of this frontline system. For the present thesis, maternal and child health is viewed as a continuum in which a mother's awareness, service utilization and feeding practices directly influence the child's growth outcomes.

II. LITERATURE REVIEW

Concept of Child Growth and Development

Child growth refers to increase in physical size, while development refers to maturation of motor, cognitive, social and emotional functions. Growth is commonly assessed through anthropometry, whereas development requires observation of milestones and functional abilities. WHO child growth standards are widely used because they describe how children should grow under optimal health and nutrition conditions rather than how children in a particular deprived setting merely do grow. Growth faltering, especially in the first two years

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of life, can indicate nutritional inadequacy, repeated infection or inadequate care. From a public health perspective, growth assessment is a surveillance tool that can guide household counselling and programme planning. In relation to the present study, this evidence suggests that programme effectiveness should be interpreted as a chain of events. First, the mother must be aware of available services. Second, the family must be able to access and use those services regularly. Third, the service must be of sufficient quality to influence feeding, care, referral and monitoring. Finally, the child's growth must reflect these improvements over time. This chain provides the analytical basis for examining utilization, maternal knowledge and anthropometric status together.

Nutritional Requirements of Children

Children require adequate energy, protein, essential fatty acids, vitamins and minerals for tissue growth, immunity, brain development and activity. During the first six months, exclusive breastfeeding is the recommended source of nutrition for most infants. From six months onward, complementary foods must be introduced with sufficient meal frequency, dietary diversity, texture and hygiene, while breastfeeding continues. Deficiencies of iron, vitamin A, zinc, iodine and other micronutrients can affect immunity and development. The literature on complementary feeding in India has shown that minimum acceptable diet remains a concern, and dietary diversity is often limited by poverty, knowledge gaps and household food practices.10 Government programmes can address these gaps only when nutrition education and food support are delivered together. In relation to the present study, this evidence suggests that programme effectiveness should be interpreted as a chain of events. First, the mother must be aware of available services. Second, the family must be able to access and use those services regularly. Third, the service must be of sufficient quality to influence feeding, care, referral and monitoring. Finally, the child's growth must reflect these improvements over time. This chain provides the analytical basis for examining utilization, maternal knowledge and anthropometric status together.

Maternal Nutrition and Its Impact on Child Growth

Maternal nutrition affects child growth through fetal development, birth weight, breastmilk, maternal energy, care capacity and health-seeking behaviour. Poor maternal diet, anaemia and inadequate antenatal care increase the risk of intrauterine growth restriction and low birth weight. The first 1,000 days framework emphasizes the mother-child dyad and recognizes that child growth interventions are incomplete when maternal health is neglected. Nutritional supplementation during pregnancy and early childhood has been associated with improved growth outcomes when delivered with adequate coverage and adherence. Therefore, maternal nutrition services, counselling and institutional delivery support form an important background to child nutrition programmes. In relation to the present study, this evidence suggests that programme effectiveness should be interpreted as a chain of events. First, the mother must be aware of available services. Second, the family must be able to access and use those services

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Government Nutrition Programs for Maternal and Child Health

India's nutrition policy architecture includes long-standing schemes and newer mission-mode approaches. ICDS remains the principal community platform for children below six years, pregnant women and lactating mothers. Poshan Abhiyaan aims to improve key nutrition parameters through convergence, technology and community mobilisation. PM POSHAN addresses hunger and nutrition among school children by providing hot cooked meals and supporting school attendance. JSY addresses maternal and neonatal outcomes by promoting institutional delivery among poor pregnant women.8 Together, these programmes form a continuum from pregnancy to early childhood and school age. Their effectiveness depends on coverage, quality, correct targeting, frontline-worker capacity and community participation. In relation to the present study, this evidence suggests that programme effectiveness should be interpreted as a chain of events. First, the mother must be aware of available services. Second, the family must be able to access and use those services regularly. Third, the service must be of sufficient quality to influence feeding, care, referral and monitoring. Finally, the child's growth must reflect these improvements over time. This chain provides the analytical basis for examining utilization, maternal knowledge and anthropometric status together.

III. RESEARCH METHODLOGY

Research Design

A descriptive analytical cross-sectional research design was used. The design was selected because it allows assessment of maternal awareness, programme utilization and child growth status at one point in time. The analytical component was included to test associations between utilization and growth outcomes. This design is suitable for a Master of Public Health thesis because it is feasible in community settings and can generate programme-relevant evidence.

Study Setting

The study was conducted in selected Anganwadi centre catchment areas and nearby community health service areas. These settings were selected because they represent the routine delivery points for ICDS, supplementary nutrition, growth monitoring, maternal counselling, immunization linkage and referral services. The setting included both households and service points to capture actual beneficiary experience.

Study Population

The study population consisted of mothers of children aged 6-59 months who were residents of the selected service areas. Children in this age group were selected because growth faltering

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is common during infancy and preschool years, and because ICDS services are directly relevant to children below six years.

Target Population

The target population was all mothers of children aged 6-59 months eligible for government nutrition and maternal-child health services in similar community settings. The findings are intended to inform local public health planning and may be cautiously applied to comparable areas with similar service delivery patterns.

Accessible Population

The accessible population consisted of eligible mothers and children present in the selected Anganwadi catchment areas during the data collection period and willing to participate after informed consent. The accessible population was defined according to practical feasibility and ethical recruitment.

Sample Size

The sample size for the present study was 120 mother-child pairs. The size was considered adequate for descriptive analysis and for testing associations between programme utilization and child growth categories using chi-square analysis. The sample included children across age groups and both sexes to capture varied growth and utilization patterns.

Sampling Technique

A purposive sampling technique was used to select eligible mother-child pairs from the selected service areas. Mothers were approached through Anganwadi worker lists, community visits and service contact points. Purposive sampling was appropriate because the study required participants who were eligible for or exposed to nutrition programmes.

Inclusion Criteria

The inclusion criteria were: mothers having children aged 6-59 months; residence in the selected service area for at least six months; willingness to participate; availability of the child for anthropometric measurement; and ability of the mother or primary caregiver to respond to the questionnaire.

Data Collection Procedure

After obtaining permission, eligible mothers were contacted through Anganwadi centres and community visits. The purpose of the study was explained, informed consent was obtained and interviews were conducted in a private and respectful manner. Anthropometric measurements were taken after the interview. Completed forms were checked daily for completeness.

Ethical Considerations

Ethical principles of voluntary participation, informed consent, privacy, confidentiality and non-maleficence were followed. No invasive procedure was performed. Mothers were informed that refusal would not affect their access to services. Children identified with severe growth deficits were advised to contact the nearest health or nutrition service provider.

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Plan for Data Analysis

Data were coded and analysed using descriptive and inferential statistics. Frequencies and percentages were used for socio-demographic variables, awareness, utilization and nutritional status. Mean and standard deviation were used for growth indicators. Chi-square tests were used to assess associations between categorical variables, and t-test was used to compare mean growth scores between utilization groups. A p value below 0.05 was considered statistically significant.

IV. DATA ANALYSIS AND INTERPRETATION

The data were organized according to socio-demographic profile, maternal awareness, utilization of government nutrition services, nutritional status, growth indicators and associations between key variables. The analysis used frequencies, percentages, means, standard deviations, chi-square tests and t-test. The sample consisted of 120 mother-child pairs. Since the objective was to assess effectiveness, particular attention was given to the relationship between programme utilization and child growth status.

Table 1: Age Distribution of Mothers (n=120)

Age group of mothers	Frequency	Percentage
<20 years	10	8.3
20-24 years	38	31.7
25-29 years	44	36.7
30-34 years	20	16.7
>=35 years	8	6.7
Total	120	100.0

The majority of mothers were in the age group of 20-29 years, indicating that most respondents were in the active reproductive and early child-care phase. This age group is important for public health interventions because mothers are likely to have young children and repeated contact with Anganwadi and maternal-child health services. Younger mothers may require additional counselling on feeding, immunization and growth monitoring, while older mothers may benefit from reinforcement of correct practices and follow-up for younger siblings.

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Table 2: Educational Status of Mothers (n=120)

Education	Frequency	Percentage
Illiterate/Primary	31	25.8
Secondary	42	35.0
Higher secondary	28	23.3
Graduate and above	19	15.8
Total	120	100.0

Maternal education showed a mixed pattern. A notable proportion had education only up to primary level, while a smaller group had graduate-level education. Education can influence a mother's ability to understand growth charts, ration entitlement, feeding messages and danger signs. The distribution suggests that nutrition communication must remain simple, repeated and supported by visual demonstration rather than written messages alone.

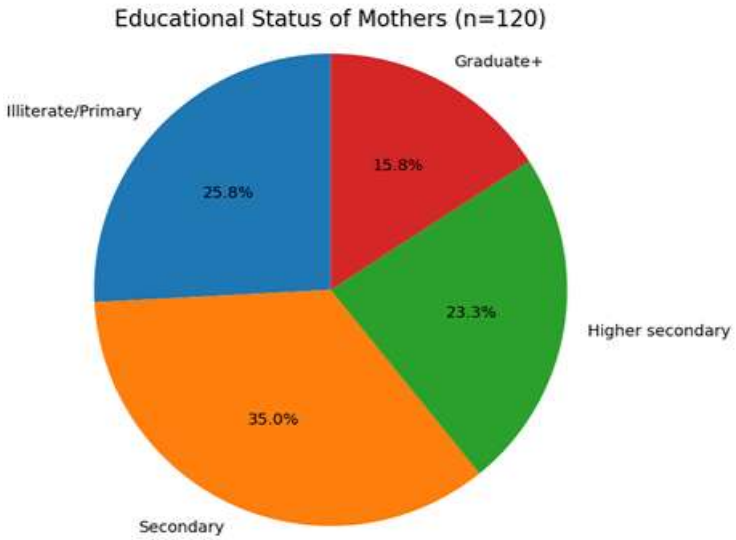

Figure 1: Educational Status of Mothers

Table 3: Socio-economic and Family Profile of Mothers (n=120)

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Characteristic	Category	Frequency	Percentage
Occupation	Homemaker	78	65.0
Occupation	Daily wage/Informal work	25	20.8
Occupation	Salaried/Self-employed	17	14.2

Characteristic	Category	Frequency	Percentage
Monthly family income	< Rs. 10,000	40	33.3
Monthly family income	Rs. 10,000-20,000	54	45.0
Monthly family income	> Rs. 20,000	26	21.7
Family type	Nuclear	62	51.7
Family type	Joint/extended	58	48.3

Most mothers were homemakers, and a considerable proportion of families belonged to lower or lower-middle income groups. Economic constraints can reduce dietary diversity, especially consumption of pulses, milk, eggs, fruits and green leafy vegetables. Joint families may provide caregiving support but may also influence feeding decisions through elders. These findings show that nutrition programme effectiveness must be interpreted within the household economy and family decisionmaking environment.

Table 4: Age and Sex Distribution of Children (n=120)

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Child characteristic	Category	Frequency	Percentage
Age	6-11 months	16	13.3
Age	12-23 months	28	23.3
Age	24-35 months	30	25.0

Child characteristic	Category	Frequency	Percentage
Age	36-47 months	26	21.7
Age	48-59 months	20	16.7
Sex	Male	64	53.3
Sex	Female	56	46.7

Children were distributed across the under-five age range, with a slightly higher proportion in the 12-47 month groups. This is relevant because complementary feeding, infection exposure and activity levels increase after infancy. The presence of both boys and girls allowed examination of growth patterns across sex groups, although the study was not powered for detailed sex-disaggregated analysis.

V. RESULTS AND DISCUSSION

Summary of Key Results

The study found that awareness of ICDS was high, but awareness of specific components such as growth monitoring and interpretation of poor weight gain was lower. High utilization was reported by 38.3% of families, moderate utilization by 31.7% and low utilization by 30.0%. Normal growth was present in 48.3% of children. Programme utilization, maternal knowledge and income were significantly associated with child growth or service use. These findings indicate that the existence of nutrition programmes is not sufficient; regular utilization and understanding are required for measurable benefit.

Discussion on Socio-demographic Characteristics

Most mothers were between 20 and 29 years of age, and education levels varied widely. This pattern is common in maternal-child health settings where young mothers are primary caregivers of under-five children. Education is an important determinant because it can influence health literacy, feeding practices and confidence in dealing with service providers.

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The socio-economic profile showed that many families had limited income, which can restrict household diet diversity. Therefore, government food supplementation and counselling are especially important for low-income households.

Discussion on Awareness of Government Nutrition Programs

Awareness was strongest for ICDS and Anganwadi services, which suggests that the community recognizes the Anganwadi centre as a visible service point. However, awareness of growth monitoring and PM POSHAN continuity was comparatively lower. Similar patterns have been reported in studies where beneficiaries knew about food distribution but had less understanding of preventive and counselling services.15 This indicates that frontline communication should explain not only what services exist but also why each service matters for growth.

Discussion on Utilization of Nutrition Programs

Only a little more than one-third of families were high utilizers. This finding is important because programme registration can overestimate effective coverage. Irregular utilization may result from service timing, work burden, migration, low perceived benefit, family constraints or dissatisfaction with service quality. Literature on ICDS utilization has shown that utilization has improved over time but remains uneven across groups. The present study supports the view that utilization should be actively monitored, especially among vulnerable households.

Discussion on Child Growth Outcomes

Normal growth was observed among 48.3% of children, while the rest had underweight, stunting, wasting or multiple deficits. This pattern is consistent with national evidence showing that undernutrition remains a significant problem in India despite improvements from earlier survey rounds. The presence of stunting and underweight suggests long-term nutritional deprivation, while wasting points to acute shortage or illness. The results show that nutrition programmes must integrate food support with illness prevention, immunization and counselling.

VI. CONCLUSION

The study concludes that government nutrition programmes are effective when they are regularly used and accompanied by maternal awareness, counselling and growth monitoring. High programme utilization was significantly associated with normal child growth, and adequate maternal knowledge was also significantly associated with better outcomes. However, the findings also show that awareness gaps, irregular utilization and socio-economic constraints limit programme benefit. Therefore, strengthening effective coverage is essential.

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