IMPACT OF INTEGRATED CHILD DEVELOPMENT SERVICE ON MALNUTRITION

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Abstract: Malnutrition is a universal public health problem in both children and adults globally. It is not only public health concerned but also global poverty eradication, productivity, and economic growth. Malnutrition robs the future of a child, reduces their physical and Cognitive development. Hence, Integrated Child Development services, a holistic intervention by Indian government introduced in 1975 to tackle the Malnutrition. Integrated Child Development Service has a Potential to Reduce Malnutrition and make nation Malnutrition free.

Index Terms – Coid-19, ICDS, Malnutrition, Nutrition.

I. INTRODUCTION

Malnutrition at Global level.

According to (De Onis et al., 2000), The Study was Conducted from various Surveys conducted in the 1970s. Still, it lacked Comparability between them has made it difficult to monitor trends in Child malnutrition. The objective of the study was to monitor trends in Child Malnutrition. The study's methodology was Cross-sectional Data on Child Nutrition's prevalence was obtained From Nationally Representative Nutritional Survey included in WHO Global Database on Child Growth and Malnutrition. The study estimated that 32.5% of children aged under five years in developing countries would be stunted in 2000. There has been a steady improvement since 1980 when the estimated global prevalence was 47.1%, an overall decline of 0.73 percentage points per year has occurred over the last 20 years. It is estimated that by 2005 the majority for all developing countries will be about 29%. A steady decrease also occurred in Asia and Latin America, and the Caribbean, although their stunting levels were very different. The prevalence in Asia decreased from 52.2% in 1980 to 34.4% in 2000, whereas in Latin America and the Caribbean, it fell from 25.6% to 12.6% over the same period. The numbers of stunted children remain incredibly high. By 2000 it is estimated that some 182 million stunted preschool children in developing countries, a decline of some 40 million since 1980; 70% live in Asia, mainly South-central Asia, about 26% live in Africa, about 4% in Latin America and the Caribbean.

According to (Payandeh et al., 2013), WHO identified Malnutrition as a severe problem worldwide. Malnutrition in preschool Children is a significant problem and is most lethal indirectly or directly causes an annual death of at least 5 million children worldwide. This study's objective was to estimate the rate of underweight, stunting, and wasting among preschool children in the northeast of Iran. Methodology of Study was a Cross-sectional Population-Based study was conducted in North east of Iran. The total sample Size was taken, 70339 children. From which, 35792 males and 34547 females were recruited. The primary outcome variables were; weight, height, Age, and gender of the children. The sex and age-specific rate and overall rate of underweight, stunting, and wasting were calculated. The study's result was found that a higher percent of stunted Children were found in Iran than Underweight and Wasting. From this, it is clear that Stunting is a major problem in Iran. The percentage of Underweight Children found in Iran was 7.5 percent, Stunted Children's were 12.5 Percent, and Wasted Children's were 4.4 percent. There were significant differences in stunting and wasting rate between boys and girls. The overall rate of stunting was significantly higher than the overall rate of underweight and wasting. The rate of Malnutrition increased with the child's Age. Conclusion of Study Was there is a higher rate of Stunting in Children. According to the Higher rate of stunting, future research and interventions must be finding the causes of deficiency in height growth and improving it. Under nutrition among children under five years in selected countries. From the above diagram, it is concluded that Malnutrition's prevalence is high, that is 48. The Dominican Republic has a significantly lower prevalence of Malnutrition that is 4.

According to (Alemu et al., 2013), the study was conducted in Ethiopia to study the prevalence of Malnutrition among children 6-59 months at Hid Abu Abote District, North Shewa, Oromia regional state. According to an Ethiopia study, the child malnutrition rate is one of the most severe public health problems and the world's highest. High malnutrition rates in the country pose a significant obstacle to achieving better child health outcomes. The study's objective was to assess the prevalence of Malnutrition and associated factors among children aged 6-59 months at Hidabu Abote district, North Shewa, Oromia. The study's methodology was a community-based cross-sectional study conducted on 820 children aged 6-59 months from September 8-23, 2012, at Hidabu Abote district. Different houses were selected through the multistage sampling method. Children were chosen from each kebeles by simple random sampling—the tool used for data collection anthropometric measurements and structured questionnaires. Data were processed using EPi-info software and exported to SPSS for analysis. Then, sex, age, height, and weight transferred with HHs number to ENA for SMART 2007software to convert nutritional data into Z-scores of the indices; Height-for-age, weight-for-height, and weight-for-age. Bivariate and multivariate logistic regressions were used to identify associated factors of Malnutrition. The study results revealed that 47.6%, 30.9%, and 16.7% of children were stunted, underweight, and wasted, respectively. From this, it is clear that a high percent of stunted children found according to wasted and malnourished children. The stunting factor was child age, family monthly income, and children who received butter as pre-lacteal feeding and family planning. Underweight was associated with several children HHs, and children were accepted butter as per-lacteal feeding. Treatment of water in HHs the only variable associated with wasting. The study concludes that Malnutrition is still a significant problem among children aged 6-59 months. Therefore, special attention should be given to the intervention of Malnutrition.

According to (Manyike et al., 2014), The Study was Conducted in Southeast Nigeria. According to the Author, Malnutrition has posed a tremendous economic burden to the developing world. The study's objective was to assess the prevalence of Malnutrition among Pre-School children's in abakiliki in the Ebonyi state of Nigeria. The study's methodology was the cross-sectional studies were undertaken to determine the prevalence of Malnutrition among children aged 1-5 years attending Nursery and primary school. Nutritional assessment was done using anthropometry and Clinical Examination. The sample size was 616 children aged from one to five years. Of which 367(59.6%) were males while 249(40.4%) were females. Of 616 children, 60 (9.7 percent) were having Acute- Malnutrition based on the WHZ score. Moderate Acute Malnutrition (MAM) was present in 33 children (5.3 percent), while 27 children (4.4 percent) had Severe Acute Malnutrition. The study's conclusion was the prevalence of global and Severe Acute Malnutrition using Z-score is 9.7 percent and 4.4 percent, respectively, while that of stunting is 9.9 percent with male preponderance. This study also concluded that form of Malnutrition, i.e., stunting is higher than other forms such as wasting and underweight.

Malnutrition at India level.

According to (Steinhoff et al., 1986), the study's objective was to estimate Malnutrition's prevalence in Indian pre-school children in Tamil Nadu. The methodology of the study was a cross-sectional survey of the nutrition status was done. The sample size was 1223 preschool-age children from the developing area of Tamil Nadu. The result of the study found that 45 percent of the children were underweight (low weight- for- Age), 51 percent were stunted (low height- for- Age), and 21 percent were wasted(low weight- for -height).

The study was conducted in the rural area of Karnataka. The study's objective was to identify the prevalence of Malnutrition among 256 children of rural areas of Karnataka of south India who attended the Anganwadi. The study's methodology was to find children's nutritional status using anthropometric measurements and various field-based formulae. The study results revealed the prevalence of wasting and stunting, 31.2 percent and 9.4 percent, respectively. From this, it is concluded that wasting is more prevalent than stunting in Karnataka, India. (*Prevalence of Malnutrition in Rural Karnataka, South India: A Comparison of Anthropometric Indicators on JSTOR*, n.d.)

According (Dwivedi, S. N., Banerjee, N., & Yadav, O. P. (1992). Malnutrition among children in an urban Indian slum and its associations. *Indian journal of maternal and child health: official publication of Indian Maternal and Child Health Association*, 3(3), 79–81.)The study was conducted in Bhopal, India. The objective of the study was to study Malnutrition among children in an urban slum in India. The methodology used for the analysis was a cross-sectional study in Bhopal, India; mothers and other family members were surveyed by questionnaire, then 1000 randomly selected slum children were clinically examined to detect nutritional deficiency diseases. The sample was randomly from the slum area. Anthropometric measurements were also recorded. Of 1000 children's 520 were males, and 480 were female. Various micronutrients deficiency was found in children's such as the prevalence of protein-calorie Malnutrition was 63percent, vitamin A deficiency was 23.4 percent, vitamin B deficiency was (16.2 percent), vitamin C deficiency was (2.6 percent), vitamin D deficiency was(9.4 percent), fluorine deficiency was (2.9 percent), and anemia was (7.2 percent). The female (i.e., 65 percent) were more malnourished than males (i.e., 61.9 percent). The prevalence of Malnutrition was significantly higher among those children whose fathers were illiterate. In general, as the literacy status of fathers increased, the majority of Malnutrition among children decreased. The bulk of Malnutrition had a positive association with children's family size: 3 members (47percent), 4-6 members (63.9 percent), and seven members and above (70.6 percent).

According to (FredArnold, n.d.) The NFHS-3 survey design permits an examination of children's nutritional status for each of eight cities and slum and Non- Slum areas in those Cities (Delhi, Chennai, Hyderabad, Indore, Kolkata, Meerut, Mumbai, and Nagpur.) Among the eight cities, underweight prevalence is highest in Indore (39 percent) and lowest in Hyderabad and Kolkata(20-21 percent). In every city except Meerut, underweight is much more Prevalent in slum areas than non- slum areas. However, even in non-slum areas of the eight cities, the prevalence of underweight is substantial (16- 37 percent). In Indore, half of the children in slum areas are underweight, and 19 percent are severely underweight. More than 4 out of every ten children in Mumbai, Meerut, and Delhi are stunted. Stunting is generally higher in slum areas than non- slum areas, but there is almost no

difference in Hyderabad, and the differences are relatively small in Chennai, Meerut, and Mumbai. The prevalence of wasting is exceptionally high in both slum and non- slum areas of Indore.

 Malnutrition is a severe significant health problem among under-five-age children of India. The study's objective was to assess nutritional status trends, nutrients, and food intake among children under five Age. The study was conducted in tribal areas of India. The methodology of the study was it was a cross-sectional study conducted in the tribal region. The sample size was 14,587 children under five-year-old. The study had covered nutritional assessment of underweight, stunting, and wasting. Twenty-four hours diet surveys were carried out in the sub-sample of households surveyed. A survey of the wealth index was also taken. The study found that underweight and stunting prevalence was reduced over a period (i.e.,49 percent vs. 57 percent, 51percent vs. 58 percent, respectively), while most wasting remained the same (i.e., 22 percent vs. 23 percent). There was a marginal reduction in food and Nutrient intake over a period and was below the recommended level. The rate of Malnutrition was high among children with illiterate mothers and the wealth index of families. The study concluded that undernutrition is a significant health problem among tribal children of India and is mainly associated with the literacy status of mothers, household wealth index, and morbidities. Therefore, implementing appropriate nutritional intervention strategies and improving household food security through public distribution systems, food intake, socioeconomic condition, literacy of parents, and personal hygiene may help improve the nutritional status of tribal children. (*Trends in the Prevalence of Undernutrition, Nutrient and Food Intake and Predictors of Undernutrition among under Five Year Tribal Children in India | Asia Pacific Journal of Clinical Nutrition*, n.d.)

Integrated Child Development services to tackle Malnutrition.

The first six-year of a child's life is crucial as the foundations for cognitive, social, emotional, physical, motor, and psychological development are laid at this stage. As per the Census of India 2001, there are 157.86 million children below six years of Age. Many of them have inadequate access to health care, nutrition, sanitation, child care, early stimulation, etc. To ensure that all young children, even those from vulnerable sections, have access to their basic rights, ICDs was launched in 1975 to provide a package of services to ensure their holistic development. ICDS provides health, nutrition, immunization, health and nutritional education, and referral services. To young children and their mothers. ICDS also empowers mothers to take better care of their children. Because of ICDS, Malnutrition had decreased marginally from 47 percent in 1998-1999 to 46 percent in 2005-06 was revealed in the National Family Health Survey III (2006). There is some Gap between Policy and Implementation. If this Gap bridges, then we increase the performance of ICDS, and thus, we can reduce Malnutrition. India's government represents one of the world's most extensive and unique programs for early childhood care and development. It is the foremost symbol of the country's commitment to its children and nursing mothers, as a response to the challenge of providing pre-school non-formal Education on the one hand and breaking the vicious cycle of Malnutrition, morbidity, reduced learning capacity, and mortality on the other. The beneficiaries under the scheme are Children in the age group of 0-6 years, pregnant women, and lactating mothers. ICDS not only does not eradicate Malnutrition but also has many other benefits for the child's overall development. ICDS plays a very crucial role in breaking a Vicious cycle of Malnutrition. The objective of ICDS is

- To improve the nutritional and health status of children in the Age- group 0-6 years;
- To lay the foundation for proper psychological, physical and social development of the child;
- To reduce the incidence of mortality, morbidity, Malnutrition, and school dropout;
- To achieve effective co-ordination of policy and implementation amongst the various departments to promote child development; and
- To enhance the mother's capability to look after the child's usual health and nutritional needs through proper nutrition and health education.

Services under ICDS

The ICDS scheme offers a package of six services, Viz

- Supplementary Nutrition
- Pre-school non-formal education.
- Nutrition and health education.
- Immunization
- Health check-up and
- Referral Services.

Impact of ICDs to tackle Malnutrition

According to(Patel & Udani, 1982), the study was conducted in the Mumbai slum area. The objective of the study was to evaluate the impact of ICDs on preschoolers of slum areas. The study's methodology was that by random sampling, six centers were selected for the study to assess the effect of ICDs. All the children in these centers were examined by going door to door and interviewing parents by a team of six junior doctors and two senior pediatricians. The study results revealed that ICDs services have tremendously impacted their nutritional status, immunization, and morbidity pattern, which is statistically significant. The study found that severe Malnutrition has been brought down from 15.7 percent to 4.6 percent. The prevalence of common illnesses was also brought down initially to a great extent, but there has been little change in morbidity patterns in the last two years. From this study, it is proved that ICDs interventions are helpful to reduce the prevalence of Malnutrition.

According to(Tandon, 1989) the Malnutrition is a severe problem in children under five Age. Therefore, the government's intervention known as ICDs (Integrated Child Development Services) was initiated in 1975. The objective of the study was to evaluate the impact of the ICDs project in India. The study's methodology was to observe the effects of ICDs on the nutritional status of the target population after 3-5 years and after eight years of ICDS interventions compared with non-ICDS (control) groups' nutritional status. The target population was preschool children (under six years old), pregnant women, and lactating mothers. The study results showed that the ICDS nutrition intervention programs achieved better coverage of the target population and led to a significant decline in Malnutrition among preschool children in the ICDS population, compared with the non-ICDS groups that received nutrition care education through separate programs.

According to (Saiyed & Seshadri, 2000), preschool children in 0-36 months of Age are nutritionally the most vulnerable group. The study was conducted in an urban ICDs block. The study's objective was to evaluate the impact of an integrated package of nutrition and health services. The study's methodology was that a sample of 610 preschool children (0-36 months) was taken. This sample was placed in three service utilization categories, viz. full, partial, and none. The duration of the study was one year. The impact of the extent of service utilization on nutritional status and morbidity was assessed over one year. Nutritional status was evaluated by anthropometric indices viz. height/age, weight/age, and weight/height as percent NCHS median standard. The study found that complete utilization of all services resulted in significant improvement in nutritional status. Data on morbidity in children showed that the number of episodes and the duration of illness (es) were significantly lower when the services were utilized fully than when used partially or not utilized at all. The study concludes that ICDs play an essential role in the reduction of Malnutrition.

According to(Vaid & Vaid, 2005), the study was conducted in the state of Jammu and Kashmir, India. The objective of the study was to assess the nutritional status of ICDs and Non-ICDs children. The study's methodology was two groups were prepared, i.e., preschool children who received a supplement diet in the ICDS Centers and their mother and preschool children not receiving supplement diet in the ICDS centers and their mothers of Resham Ghar Colony of Jammu city (Jammu and Kashmir State). A purposive sampling technique was used. For data collection interview was scheduled, checklist and recall dietary method was used. The study results showed that children who attended Anganwadi centers had good health or appearance compared to their counterparts who not attended Anganwadi. It was also observed that ICDS children had good dietary intake than those who did not participate in ICDS centers. The study concluded that ICDS has a positive outcome on children's and maternal health.

According to(Alim & Jahan, 2012), A survey was conducted among 16 Anganwadis in 5 villages in Aligarh, Uttar Pradesh (U.P.) The study's objective was to assess children's Nutritional status (0-3 years) registered under the ICDS scheme. The study's methodology was a self–prepared, structured interview schedule used to gather the qualitative information of the anthropometric measures, including height and weight, for assessing children's nutritional status. The stepwise analysis of two variables height for Age was applicable based on Waterlow's and Gomez's classification. A chi-square test was employed to examine the relationship between the child's nutritional status and the selected variable that affects children's nutritional quality. The study results showed that based on Gomez's classification, out of 300 children, only 229 (76.4 percent) of children received supplementary nutrition through ICDS, out of which 188 (62.7 percent) children were normal. In contrast, 41 (13.7 percent) were underweight. Based on Waterlow's classification, out of 300 children, only 229 (76.4 percent) of children received supplementary nutrition through ICDS. Out of these children, 148 (49.4percent) were normal, while 81 (27 percent) were stunted. It can thus be concluded that the majority of children were routine who received supplementary nutrition through ICDS. ICDs are very significant for tackling Malnutrition if the ICDs services coverage is good.

According to (Kiran & Umadevi, 2014), the study was conducted in Telangana. The study's objective was to evaluate the Impact of ICDS on the development milestones of children below two years in Telangana. The study's methodology was 76 children, of which 36 boys and 30 girls were ICDS beneficiaries purposively selected for the study, and Bayley Scales of Infant Development (BSID) is used to measure mental/ cognitive and motor development of the children. The investigator presented a series of test materials to the child based on the child's age, observed the child's responses and behaviors, scored their developmental status, and placed them in different development categories (high, average, low). Frequency, percentages were used to present the data. The study results revealed that the selected sample below two years of Age was average, primarily development levels. Though ICDS provides supplementary nutrition, education, training, and awareness programs, many children still have to reach their optimal developmental status.

According to (Jain, 2015) almost half of the Indian children are stunted, endangering their life and human capital formation significantly. India's only national program for combating widespread child malnutrition is Integrated Child Development Scheme (ICDS). The objective of the study was to evaluate of ICDs program in reducing Malnutrition. The research was done in India. The study's methodology was using DHS(District Health Society) data from 2005 to 2006 on child-level participation in ICDs was used to collect information. Matching and difference–in–difference estimators were done to analyzed information. The study concluded that the impact of ICDs flagship supplementary nutrition program on children's physical growth that girls 0–2 years old

received supplemental feeding intensely are at least 1 cm (0.4 z-score) taller than those not received it in rural India. The estimates are similar for boys aged 0–2 but less robust. The study concluded that ICDs have the potential to reduce Malnutrition.

According to (NAJINEEM, n.d.) The objective of the study was to evaluate the impact of ICDs on the physical growth of Children. The study's methodology was that preschoolers' physical growth and cognitive development was studied on a sample of 80 preschool children of Age 5'A to 6 years revealed that majority of non-ICDS children fell under below average category of cognitive ability while children of ICDS fell under intermediate sort. Two groups of preschool children, attending ICDS and the other not attending ICDS regularly, were matched for Age, gender, and socio-economic status. The cognitive development of preschoolers was measured by Pandey's scale of cognitive development (1992). The Tansey bar weighing scale and an anthropometric rod were used to measure weight (kg) and height (cm). The fiberglass measuring tape was used to measure the circumference of the head, chest, and arm. The mother's knowledge and socio-economic status (SES) were assessed using developed tools. The't' test was applied to know whether the two groups were matched on socio-economic variables. Chi-square ($x^{\wedge}$) test of association, two factorial analysis of variance, was used to compare the differences in preschoolers' developmental outcomes of ICDS and non-ICDS groups. The study found that mothers' knowledge regarding health, nutrition, and child care practices was also significantly better among the ICDS group than non-ICDS. In the case of the ICDS group, the father and mother's education had a significant influence on preschoolers' physical and cognitive development.

Conclusion

Malnutrition is a universal public health problem in both children and adults globally. It is not only public health concerned but also global poverty eradication, productivity, and economic growth. By eliminating Malnutrition, it is estimated that 32 percent of the worldwide disease burden would remove. As a severe widespread problem affecting children in developing countries, progress towards tackling Malnutrition's different forms remains relatively slow. Integrated Child Development service (ICDS)an initiative of Indian Government has a potential to tackle Malnutrition. ICDS is working very effectively to reach its goal to eradicating Malnutrition. But there is some gap between policy and implementation. So, to become nation malnutrition free , more Modification in policy and implementation should modified to increase the strength of Integrated Child Development Services.

II. ACKNOWLEDGMENT

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