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Undernutrition And Risk of Infections in Under-Five Children from Low-Income Groups in Udaipur

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ABSTRACT
In most of the developing countries the majority of population is the rural population, following slum population they do not receive even the most basic health care or any nutritional advice. The under five children of the rural areas and urban slum areas, both are waiting for a bright present, a pleasant future. India is a land of contrasts. While agricultural, scientific technological and industrial developments have placed India among the top ten industrialised countries in the world, social and distributive justice have largely eluded under five children of the urban slum community, the people of the slum and rural community, and therefore ultimate goal of development- improvement in the quality of life of under five children in an urban slum community remains a dream.

Keywords: *pre-school children, urban slum community, P.E.M., inhabitants, BCG vaccination, palatine fistulas, inflammatory bowel diseases, celiac disease and cystic fibrosis.*

1. INTRODUCTION

India is a land of contrasts. While agricultural, scientific technological and industrial developments have placed India among the top ten industrialised countries in the world, social and distributive justice have largely eluded under five children of the urban slum community, the people of the slum and rural community, and therefore ultimate goal of development- improvement in the quality of life of under five children in an urban slum community remains a dream.

India harbours the third largest urban population in the world, after USA and USSR. A great proportion of urbanized population lives in slums. Mumbai for example has 50% of its inhabitants living in the slums. The health problems of the people living in urban slums stem from a double burden. The burden of health problems associated with poverty and environmental pollution. Several inherent factors make the urban slums a fertile ground for malnutrition to crop up. It has been observed that large proportion of the pre-school children in urban slums suffer from long duration malnutrition. Urban migration has failed to provide these children salvation from poverty and under nutrition.

In most of the developing countries the majority of population is the rural population, following slum population they do not receive even the most basic health care or any nutritional advice. The under five children of the rural areas and urban slum areas, both are waiting for a bright present, a pleasant future. The world's developing countries have failed to fulfil even their most fundamental needs, leave aside the joy and fantasies of the childhood. In view of the prevailing solemn state of the world's developing children, the general assembly of the united Nations had issued, "the declaration of the rights of the children", way back in 1959. It affirmed the right of the child to enjoy special protection, to be given opportunities and facilities to enable him to develop in a healthy and normal manner, to enjoy the benefits of social security, including adequate nutrition, housing, recreation and medical services and to be protected against all forms of neglect, cruelty, and exploitation. Twenty years later, the United Nations as the "International year of the child" declared 1979. Fourteen years have passed since then, and the state of the child still remains appalling.

2. LITERATURE REVIEW

It is seen that high death rates, prevalent malnutrition and frequent illnesses are closely linked to poverty. As the family income per person decreases, the infant mortality shows a sharp rise. It has been estimated that about 40% of the urban population live below absolute poverty line. The impact of poverty starts telling upon the unlucky 'newcomers' even before they are born, as shown by Harischandra (1971) in which poor class mothers were found to produce twice as many small for dates and half as many babies weighing over 3 kg, as compared to the better-off, considering that one-third of the infant mortality is caused by prematurity and low birth weight and that LBW babies are more likely to suffer from physical and mental handicap, the situation is alarming. The effects of poverty are also evident in the under-fives. In a survey in Tamil Nadu (1971) on families with yearly income Rs. 2400, it was found that in children between 1 to 5 years, the mean height and weight of boys fell below that of Indian rural standards. Surprisingly, the girls compared more favourably.

Santosh Sangwan (1992) found that nutrition status of an infant had no significant dependence on occupation of parents, education of parents, land holding and family income.

In a study by Kielmann A.A. et. al. (1983) in Narangwal, the prevalence figures indicated that children were ill 11% of the times with respiratory tract infections, 6% of the time with diarrhoea diseases, 6% of the time with eye infections and 4% of the time with fever.

Measles is a significant cause of malnutrition and diarrhoea. In a prospective study by Mathan V. T. et. al. (1984) where in 5775 children in 12 villages of Bangladesh were observed for a year, measles and diarrhoea were seen to interact synergistically to increase the mortality and irreversible effect of nutritional deprivation. 34% of the diarrhoea deaths were measles associated.

In a study of BCG vaccination in 504 pre-school children, by Bhaskaram, P. et. al. (1992), vaccinated malnourished children showed a significantly greater tendency to localise the tuberculosis lesions while most of the unvaccinated malnourished children suffered from progressive forms,

Pereira (1971) found that the principal causes of morbidity in pre-school children in a rural community near Delhi were respiratory illnesses, diarrhoea diseases, skin, eye and ear infections, stomatitis and undiagnosed fevers. Approximately 2/3 to 3/4 of children suffered from some illness during the age periods from 6 months to 4 years. Half the children in the first 6 months of life had some illnesses. Most vulnerable period was 6 months to 24 months.

Gopalan C. and Vijaya Raghavan K. (1981), in the Nutrition Atlas of India, had stated that 48.3% pre-school children suffer from anaemia, with 10.1% having haemoglobin between 8-10 gm%, 1.2% each having haemoglobin between 6-8 gm% and less than 6 gm%. The real cause of the widespread iron deficiency anaemia is probably attributed to two factors; decreased absorption of iron and increase loss due to intestinal parasites. Hookworm infestation is an important preventable cause of blood loss.

Datta J.K. (1974) in a study of morbidity pattern in relation to parasitic infestations in O.P.D. of a hospital, observed that ascariasis was highest in occurrence, while giardiasis, pinworm and amoebiasis came next in order.

Ganguly (1990) found that the inadequate intake of energy was the factor mainly responsible for both chronic as well as acute form of P.E.M.

Malnutrition can be classified according to its origin as primary or secondary. When primary, it results mainly from inadequate diets, and manifests itself, basically, in children belonging to families of low socioeconomic conditions; An inadequate diet is considered to be one that does not meet the daily needs of vitamins, mineral salts, carbohydrates, lipids and proteins. It is secondary when, even with adequate dietary intake, there is no normal utilization and utilization of nutrients and energy by the organism in the presence of underlying conditions, for example: palatine fistulas, inflammatory bowel diseases, celiac disease and cystic fibrosis, among others.Linear growth is a dynamic and continuous process, which begins at the moment of conception and extends until puberty, resulting in changes in length and weight, subject to the influence of the environment. During fertilization, a genetic load is transmitted that will interact with extrinsic factors (socioeconomic, nutritional, psychosocial conditions), with the phenotype being the result of this interaction. For example, the first trimester of pregnancy it is characterized by intense cellular hyperplasia and is influenced by genetic, maternal and placental components (Sahu et al., 2015).

In early childhood, the genetic component determines a speed of accelerated growth and the body directs a large part of the dietary calories to the growth process. In malnutrition, faced with restrictions in the quality and quantity of ingested food, the body tries to adjust its metabolism to avoid homeostatic imbalance, using adaptive mechanisms. Hormones play an important role in this adaptation, including growth hormone and cortisol.Therefore, the negative impact of malnutrition on growth and Child development is greater the younger the age of the child, especially those in an accelerated growth phase, such as, for example, the first trimester of pregnancy and the first two years of life. In these stages of life, the interaction of genetic factors with environmental factors is greater and constant, which may have repercussions in order to deviate the child's growth curve below the genetic potential inherited by the parents. However, depending on the period, intensity and

duration of exposure, the child can resume its channel of biological growth, especially when it comes to acute processes in younger children.However, when persistent, malnutrition can cause growth and development deviations that are difficult to reverse, since the body in training adapts to that situation of food deprivation with little reserve of substrates and energy, reducing caloric expenditure, aiming to guarantee the maintenance of life.Thus, the earlier the exposure to an environment unfavourable, the sooner this adaptation will take place and, consequently, its effects deleterious. For example, children of chronically malnourished mothers and, therefore, with in relation to height/age, they will have, from conception, an intrauterine environment with little nutritional offer, favouring the restriction of intrauterine growth right in the early pregnancy, progressing to the birth of small-for-gestational-age children or children with low birth weight. These situations indicate that fetal growth has been inhibited, and that the foetus has not reached its genetic potential due tofactors of maternal origin (smoking, short stature, mother's age, lack of prenatal care), placental and fetal origin (Ujunwa and Ezeonu, 2014).

There are studies showing that children born small to gestational age or even low birth weight, have the potential to impaired genetic growth, remaining below the growth curveof those children born with adequate weight for gestational age and above.Several studies have demonstrated the importance of social factors economic factors in determining child health. Among these, family income and maternal schooling have been considered fundamental elements because they areindicators of availability of resources and care in relation to the child's health (Broor et al., 2001).

In addition, another important fact is the quality of food. acquired in relation to adequate nutritional values for children in the growth. Social factors (information disseminated by the media, degree of schooling of those responsible for the children, problems in the distribution and local marketing of food), environmental (insufficient supply of products agriculture, food grown by region, climate), cultural and religious may influence the decision to buy food.Among the cultural and religious factors that contribute to the adequacy of food in children are inserted the habits and customs individual and community food, acquired between generations and within a same generation.Within child care, the importance of the mother's education and the time available to dedicate to raising children is highlighted. The impact of the parents' low level of education on their children's height/age deficits has been recognized by several other authors. The schooling ofresponsible for the child reflects, in addition to a higher income, the care preventive (for example, food, hygiene, immunizations) and curative (managementdiseases and early search for care) to child health problems (Kumar et al., 2015).

According to data from a recent study, the mortality rate in children under five years of ageseveral causes among the children of women with up to three years of schooling(considered functionally illiterate) was 2.5 times higher than among the children of women with eight years or more of schooling. In a cross-sectional study carried outbyMeshram et al (2012) found that children of illiterate motherswere 17 times more likely to have growth deficits than children of mothers with 11 yearsof schooling.

Regarding maternal work, its effect on the child's nutritional status may vary from risk to protection according to some researchers.This will depend among other factors on the type of work performed and the power acquisition, in addition to maternal autonomy to direct the resources obtained from her work.It is also observed that the poorer the population, the less access to health services, either by housing location (distance, lack of health professionals), or the mismanagement of local public resources. This it can be observed on the outskirts of large cities, in rural areas and in urban areas. In addition, in these localities' poverty is more diffuse and homogeneous, the which contributes to the higher prevalence of malnutrition found in these places (Mondal and Paul, 2020).

In several studies, the health conditions that were most frequently related to nutritional deficit in childhood in regions with a high prevalence of poverty were: location and type of housing, greater number of inhabitants per room (crowding), water supply disabled, lack of bathroom, and inadequate disposal of garbage. These variables have the advantage of being more easily observed, reducing biases of information. In this way, they can be used as proxy variables for income or still used to assess health and nutrition conditions. For example, family crowding is strongly associated with greater risk of disease, representing an immediate factor of health conditions (Kumar et al., 2006).

The population served by the prevention centre in Assam is of very scarce and unstable resources, presenting high rates of unemployment and underemployment. The income of each household comes mainly from work in brick kilns (the main economic activity in the area), in orchards or casual jobs. The houses are deficient and extremely precarious, of a single environment of multiple uses. Sanitary facilities are located outside the house in the form of latrines, usually shared by several families. They lack basic services (water, gas, electricity). 100% of the beneficiary families of the CONIN programs do not own the houses they live in (Islam et al., 2013).

The homes present very poor family communication and little support and stimulation; the adult referents are illiterate or have not completed the primary cycle, a situation that worsens in the female population (69%). These characteristics are reflected in the poor assessment of education, which is clearly perceived in the high repetition and dropout rates. Regarding children, we could mention that they generally remain alone throughout the day, lacking the care and affection of an adult. They present delays and inconveniences due to the lack of care and lack of control suffered during the mother's pregnancy, as well as malnutrition and malnutrition during the first years of life (product of low income, poor nutritional habits and prioritizing the needs high schools) (Bhutia, 2014).

The creation of these centres is based on the idea of addressing the social pathology that gives rise to malnutrition, since it is useless to feed a child if he is later reintegrated into the unfavourable environment to which he belongs. In the prevention centres, the family and its environment are promoted as the basis for the correct physical and intellectual development of the child, together with an adequate supply of nutrients, as demonstrated in UNICEF projects where work with the family in their own community reverses malnutrition and prevents malnutrition of siblings born later.At first, diarrheal diseases, dehydration, hydro electrolytic alterations, depressed immunity, infections, weight loss, haematological, cardiorespiratory and renal disorders appear. Height deficit and a decrease in intelligence quotient will appear later. The statistics are based on three indicators: weight for age, which measures global malnutrition; height for age, which reflects chronic malnutrition, since short stature is the product of a prolonged lack of nutrients; and weight for height, which measures acute malnutrition (Murarkar et al., 2020).

Depending on the intensity of malnutrition, different degrees are admitted. McLaren established the following grades: I (mild), II (moderate) and III (serious), according to the percentage of weight loss referred to height and age. In mild cases, weight loss is estimated between 85 -90% of the ideal, in moderate between 75-85% and in severe when the weight is less than 75% of the ideal for height and age.The ravages caused by malnutrition suffered in childhood are the most lamented by society, since at this stage the greatest impact is suffered by the child's brain, in which irreversible metabolic and structural alterations would occur.Malnutrition in the first years of life can affect the growth of the individual. Although it is possible to later achieve an improvement in the adequacy of height, through a good diet, since the child continues to grow until the age of these individuals never reach a normal height (Chawla et al., 2021).

Stoch and Smythe were the first to formulate the hypothesis that malnutrition during the first two years of life could inhibit brain growth and this would produce a permanent reduction in its size and low intellectual development 10-12 ; The first two years of life not only correspond to the period of maximum brain growth, but at the end of the first year of life, 70% of the weight of the adult brain is reached, also constituting almost the total growth period of this organ.The severely malnourished child presents a smaller diameter of the skull, but it has also been possible to verify that not only brain growth stops, but that there is also brain atrophy, forming a space that is occupied by cerebrospinal fluid, as a consequence of Therefore, transillumination is intense. This evidences brain atrophy in malnourished patients (Acharya et al., 2015).

Social deprivation affects the brain development of the child, reflecting in a decrease in intellectual capacity that will negatively affect the learning process. Poverty is almost always accompanied by psycho-affective deprivation. The family is usually distorted, not fulfilling the normal parental roles. During this time of great learning, in which the child begins to explore the world that surrounds him, he finds himself with a familiar environment that does not stimulate his imagination or exacerbate his curiosity, leading to a very important deficiency, which is the lack of verbal stimulation, per se the vocabulary of parents is very restricted. The child is born and develops in an environment of insecurity and lacking psychological and affective stimulation. This damage not only affects the individual 25 but the entire society, since the main wealth of a country resides in its human capital. Therefore, actions on child malnutrition must be carried out in the first two years of life, through interventions aimed at preventing neuronal damage and preventing malnutrition. After this period, the child's recovery becomes more difficult, since permanent sequelae remain in the child, which significantly hinder the learning process at school age (Damor Raman et al., 2013).

3. RESEARCH METHODOLOGY

The information was collected from Google scholar and other academic search engines. The keywords which was used to search for past studies include nutritional assessment, under nutrition, under five children, low income group, risk of infection. The search was narrowed down to studies conducted on India and only between years 1970 to 2023. The shortlisted studies were analysed critically to formulate the findings.

4. FINDINGS AND ANALYSIS

The social problem that gives rise to child malnutrition has numerous determining factors that must be considered when proposing solutions. These determining factors have been identified by CONIN, and its intervention strategy has a great health impact since it promotes the family and its environment as the basis for the correct physical and intellectual development of the child, together with an adequate supply of nutrients, which allow the child to develop its genetic potential.

The humanitarian response to hunger needs to be rapid, well-coordinated, and based on solid epidemiological evidence. Nutritional intervention programs have been evolving shifting their primary emphasis from controlling protein deficiency, to energy deficiency, and now to micronutrient deficiencies. The most commonly used strategies for the control of micronutrient deficiency are supplementation and fortification, because they are profitable and to a certain degree easier to access to the population. However, little emphasis has been given to comprehensive nutritional intervention programs considering social and psycho-affective factors in conditions of poverty and underdevelopment perhaps due to the complexity of a multifactorial intervention that also makes its evaluation difficult.

There is ample evidence estimating the potential effect of nutritional interventions in the prevention of infant morbidity and

mortality in conditions of poverty and underdevelopment, however, Latin America presents weight gain trends in some regions, especially in urban areas, which indicate dietary changes, with excess fats and carbohydrates to the detriment of grains, fruits and vegetables, for this reason interventions in education and in the way of life that are required to optimize nutrition and health are a current imperative. This objective is rooted in CONIN's strategy, being one of the pillars on which its work is based.

The program developed by CONIN in Latin America constitutes a unique and comprehensive intervention experience in community nutrition, acting as a health promotion tool, which can be developed in other continents, adapting community intervention based on the prevailing problems in each latitude. In this sense, the Spanish Society of Community Nutrition (SENC) intends to promote interregional and regional cooperation in research, teaching and development of strategies to strengthen aspects related to nutrition and health.

5. CONCLUSIONS

Comprehensive care of malnourished children by specialized professionals, training and the incorporation of the mother into the daily care of her child, is a valid strategy that generates a significant recovery of the psychomotor evolutionary degree, weight and height of the patients.

In the evaluation of the prevention centre project, it has been possible to identify a series of benefits that show a positive health impact on the population in its area of influence, but some benefits have not been valued, such as cost savings due to the fact that the Serious illnesses detected in the CP are referred to the hospital immediately after their detection. This implies less risk of infecting other people, lower treatment costs, avoiding irreparable physical damage, reducing the risk of infant mortality, etc. Therefore, it is advisable to deepen the study of these benefits related to health. International cooperation, in order to eradicate child malnutrition, is not only feasible, but also necessary and a priority.

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