



## Original Research

# Effect of Educational Programs on Mothers` Knowledge and Children`s Nutritional Status: Narrative Review

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## Abstract

**Background:** The role of the mothers is very important in providing care and monitor their children`s health in general. Their awareness concerning quality of foods which is needed for each child`s developmental stage can effect on nutritional status. Traditional feeding practices, socioeconomic status, and educational level influence directly on quality of nutrition requirement. It is possible to raise mothers` awareness through engagement in a design educational programs related feeding practices for children, especially those under five years, in order to correct the misunderstanding of common concepts of feeding practices and promote child`s nutritional status.

**Aim:** To explore the effect of the previous nutrition education programs that provided to mothers to rise their knowledge and its influence on children nutritional status.

**Methods:** A systematic search procedure which applied to explore the effect of education program on mother's knowledge and their children nutritional status. approach to synthesis was used. Both published and grey literature written in English via a structured search of the following databases: PubMed, CINAHL, Scopus, Open Grey and ScienceDirect. In addition, search engines were used to identify additional grey literature using the same search strategy.

**Results:** of the selected publications was determined by reviewing their titles, key words, and abstracts. Overall a total 9 nutrition education programs on mother of and 7 for children nutrition status reviews were included in this review.

**Conclusions:** Nutrition education for mother is an important measure to improve dietary habits and food choices, since poor dietary habits are the main reason for poor nutritional status of children.

**Keywords:** Nutrition Education, Knowledge, Nutritional Status, nutrition programs, narrative Review.

## Introduction:

Healthy nutrition is essential for child's growth and development, it can maintain a general health, weight gain, and promote their recovery from diseases (WHO, 2015). An optimal nutrition has been associated with young children's growth and development, reduce their morbidity and mortality rate thereby increasing survival. World Health Organization (WHO) recommends continued breastfeeding for 2 years and started the complementary feeding at 6 months age (Bimpong et al., 2020). According to the Centers for Disease Control and Prevention (CDC), healthy eating in childhood is important for proper growth and development and to prevent various health conditions (Corkin et al., 2016). Better nutrition is related to improved children's health, stronger immune systems and decrease the risk of non-communicable diseases (Clark et al., 2021).

Children percentages of inappropriate weight for age, stunting, wasting, and obesity were the general key indicators of their health status in a community. Children with inappropriate nutritional status is higher for inadequate educational mothers, in 2013 reported indicated that about half of stunting children was associated with mothers of low educational (Enson, 2017). In many cultures, it is common for young children to depend on their mothers for feeding. Breastfeeding is a natural and healthy way to provide infants with the necessary nutrients for growth and development (Gyampoh et al., 2014). More countries recognize the need to give priority to adopted programs that improve mothers' ability to provide optimal care for young children, especially during the period from child's birth to second birthday (Haddad et al., 2015). In some developing countries mothers' knowledge about adequate and appropriate nutrition for their children was insufficient.

A study conducted in Ghana evaluated mothers' knowledge and attitudes regarding child feeding recommendations, the study found that 68% of the mothers knew the recommended duration of continued breastfeeding, 56.5% knew how to ensure dietary diversity and enrich their

children's diets, and 94% had a positive attitude towards recommended infant and young child feeding practices (Bimpong et al., 2020). Another two studies conducted in Iraq, to assess mothers' knowledge concerning nutrition practices of children under five years, the finding of the studies reported that mothers' knowledge about full exclusive breastfeeding until six months of child life was lacking, there is a high significant relationship between mothers' knowledge and nutritional status of their children (Abdul Ameer et al., 2008; Adai and Hussein, 2020).

Environmental factors play an important role in child's nutritional status, especially in Iraq. Thirteen years of economic sanctions of unstable socioeconomic and political security, especially in Baghdad city, have affected the daily life of Iraqi families and children, especially in respect of their nutritional status. Nutritional status is the result of a complex interaction between the food we eat, our overall health, and the environment in which we live. Food, health, and caring (Ghazi et al., 2013)

It is important to note that in low socioeconomic countries, mother's perception of breastfeeding insufficiency, which may be due to mothers' workload, poverty, food insecurity, and lack of family support. According to Nationwide Children's Hospital, healthy eating habits instilled by parents can have a positive impact on children's health (Al-Mudhwahi et al., 2015). What a young child eats is directly dependent on the knowledge, perceptions, and practices of their parents. Research shows that there is a strong linkage between maternal education and children's health (Adler-Baeder et al., 2018). Mothers are mainly the primary care providers of their children, due to their direct contact and nature of motherhood. Their basic knowledge on essential nutritional components, natural and artificial feeding, weaning, and balance nutrition influence on their children's dietary patterns, and health status (Zahari, 2017)

Parental Self-Efficacy is a potentially important cognitive construct, related to child and family functioning that can be broadly defined as the expectation caregivers hold about their ability to

parent successfully. PSE was found to be related to parents' belief in their ability to supply the social, cultural, and emotional support their children need for efficient and successful functioning throughout their developmental trajectory. There are statistically significant positive correlations between family's socioeconomic status and pupils' eating for three or more serves of fruit/day, eating four or more serves vegetables/day, and minimizing high fats and sugar intake(Saadon and Neaama,2020).

Mothers play a important role in their children's nutritional status (Shawq et al., 2020). A systematic review conducted by the International Journal of Child Care and Education Policy found that maternal nutrition education and knowledge had a significant impact on children's nutritional status. The mother is the primary person to take care of child, especially during the first six years in life. Maternal care varies depending on mother's knowledge about nutrition and health. In this regard, mother's educational level is reported to be effective on child care. Children are more easily affected by inadequate nutrition. Mothers with nutrition knowledge can raise their children more healthily).

Maternal employment, high number of siblings, high birth orders, and female children were significantly associated with undernutrition among young children (Galgamuwa et al., 2017).

Nutrition is a critical feature of a lifetime and plays an important role in the growth and development of a healthy child free from illness and disability. The Descriptive Study was planned to assess mothers with information concerning the nutritional status of their children in Baghdad District (Karkh and Rasafa area) The found of the study have been of high significance between mothers' knowledge and age, occupation status, number of children in the family). The study recommendation educational level of the mother is very important in all periods of life and is not limited to a specific period or age of life. It is possible to raise the educational level of the mother through her participation in educational programs and programs that talk about feeding children in

health centers or television programs and the dissemination of correct and accurate nutritional information through Social media that the mother can apply to her child and take advantage of to make her child grow in a healthy way(Kareem, 2021 )

Parents' education especially mothers' in relation to food type, feeding practice, and health seeking behaviors were considered as a fundamental factor for human resource determinants (Ekwochi et al., 2015). Mothers' feeding practice, socioeconomic status, and inappropriate knowledge contributing as a main factors for child nutrition outcome. literatures approved significance relationship between mother's nutritional knowledge and child health condition (Headey et al., 2015).

Mothers understanding the appropriate method of feeding can helps to prevent children's malnutrition and nutrition related health status. Some of the researchers found that nutrition education program can enhance mothers knowledge and attitudes for appropriate feeding methods, and change their practices in providing feeding for their children, to prevent malnutrition(Black et al., 2020; Mejbil et al., 2018).

Mothers should be breastfeed their children exclusively for the first six months of their children's life, if they really want to protect their children from malnutrition, diseases, The previous study by (Habib et al.,2019 ) which aimed to assess breastfeeding knowledge, attitude and practice (KAP) among mothers attending outpatient clinic in Fatema Alzahra baby friendly hospital. A cross-sectional study, Three hundred mothers joined in the study, found All of the mothers know that breastfeeding is better for their children, but 180(60%) of them know that breastfeeding prevent disease in children. And 42(14%) mothers know that breast milk is easy to digestion, there was a deficiency in mother's knowledge about exclusive breastfeeding,.

Healthy eating behaviors during pregnancy enables optimal gestational weight gain and reduces complications, both of which are linked to

positive birth outcomes and contribute to women's overall health. Poor maternal nutrition is linked to low infant birth weight (Arkan Nagi. 2023)

It was recommended to raise the awareness of mothers by using different nutritional programs in order to improve their children's health status and others try to find the impact on such programs on child nutritional status (WHO, 2013) For that, this paper tries to focus on such educational nutritional programs by assessing their influence on mothers' knowledge and children's nutritional status through the available literature

All children under five years of age were surveyed excluding those who were diagnosed to have mal-absorption diseases and those less than one month of age for they are too young to show the effect of malnutrition, they may, rather, indicate malnutrition of the mothers, through the study by (Lafta et al., 2017) to assess the nutritional status of internally displaced children in Drem city-Salaheddin to provide a validated baseline information for further humanitarian responses that open the door for more interventional projects to help improve the health condition of this vulnerable group. found between under-nutrition and father's education, the less educated the father the more possibility of having malnutrition among his children, while the significant association with mother's education revealed that the categories that showed more child under-nutrition were the uneducated and those with secondary or upper education.

anthropometric examination is the cornerstone for assessment of health and nutritional condition in childhood. Physical measurements like body weight, height, arm and calf circumference, triceps skinfold of children have been widely used to assess health and nutritional status of communities. Based on the age, body weight and height, a number of indices such as height-for-age and weight-for-height have been suggested for nutritional assessment of children

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Picky eating is a common problem among children and estimated to be quite high in the preschool age with nearly 14-50% were identified as picky eaters by their parents or caregivers. A descriptive cross-sectional study conducted by (Ibraheem and Tawfeeq, 2022) To determine the prevalence of picky eating among preschool children (one to 5 years old) attending kindergarten in both sides of Baghdad City (Al-Karkh & Al-Russafa) found revealed a prevalence of picky child of 57.5%, and those who were picky sometimes of 17.1%. a significant impact on growth, development and future health status of individuals and the community as a whole.

The neighborhood safety status reflects the daily life of Iraqi families and their children. there was some improvement in the living environment due to changes in the security situation in the capital Baghdad in the last 2 years as more than two-thirds of the children's parents were found to live in a good environment. ( Ghazi et al., 2014)

## 2. Methodology

The following databases were included during electronic searching: ProQuest, PubMed, Research gate, and Google scholar as a primary search engines, to look for previous published studies that cover the nutrition educational programs. The keywords in this paper are adjusted to the Medical Subject Heading, including: "educational nutrition program" OR "nutrition education" AND "nutritional status" AND "Mother" OR maternal

### - Selection Criteria

Studies with English language, systematic reviews, quazi-experimental, control and study groups, intervention, and randomized trial. published within the previous 10 years demonstrating the benefits of the effect of a nutrition education

program on mothers knowledge and children nutritional status. studies identified from literature searches that could provide evidence on the topic were screened for eligibility,.

### - Study Selection Process

The systematic reviews selected 16 published articles out of 940 articles. The selected articles were published within 10 years ago,. these studies that were deal with nutrition education programs impact on mothers knowledge and young children nutritional status, older children were excluded ,.The selected studies were determined by reviewing their titles, key words, and abstracts, .Overall a total 9 studies for nutrition education programs on mother and 7 studies for children nutritional status were included in this review,.

### Review design

A qualitative approach was used to review previous literatures, they summarized and categorized into themes. The process of thematic analysis was started with identifying patterns of the effect of nutritional education programs on mothers` knowledge and the effects of nutritional programs on children nutritional status,.

### Result:

#### -Effect of Nutritional Education Programs on Mothers` Knowledge

The interventional programs can improve mothers information concerning child`s requirement of essential nutritional components and feeding practice in order to promote child health. Mothers play a crucial role in shaping the eating behavior of their children. Several studies apply different education programs to improve mothers knowledge and try to modify their practice to enable better lifelong dietary habits,.

A previous study conducted by the researcher Mohammed et al. (2022) in Sudan, to assess the effect of a designed nutrition education program on maternal knowledge and practices. By used two groups in a quasi-experimental design, pre and post test program through a validated questionnaire mothers` knowledge was collected. The result showed no significant difference between the two

groups in mothers' Knowledge before applying the program, while the result approved a significant differences in developing mother's Knowledge in the experimental group, the authors concluded nutrition program has an effect in developing mother's awareness and Knowledge.

Muluye et al. (2020) in Ethiopia, have a randomized control trials on (200) mothers (100 for each group). The control trails aimed to determine the influence of nutrition education by a trained nutritionist. Media posters, brochures were used during nutrition education. Authors recommended such program can increased maternal knowledge about complementary feeding. Sugiarti et al. (2020) conducted a nutrition intervention program to enhance mothers` awareness about healthy nutrition, the program based on audiovisual media by using mobile application. A quasi-experimental design with two group was used, with participant of 23 mothers in each groups. The result found a significant increase of mothers' knowledge and confidence,.

A Randomized Controlled Trial by Rachmah et al.(2023), that aimed to determine the effectiveness of nutrition education using online digital platforms, WhatsApp, to improve a mother`s behavior in providing nutritious complementary food based on the theory of planned behavior approach. The result reported that such program can be effective in improving the mother`s knowledge and behavior in providing nutritious complementary food,.

Setia et al. (2020) in Indonesia in their quasi-experimental design pre-posttest, which aimed to assess the effect of family-Based Nutrition education on the Intention of changes in knowledge, attitude, behavior of mothers with toddlers in preventing stunting. The results showed that there was a significant influence between the education on the intention of knowledge, attitudes, behavior of mothers with toddlers to optimize nutrition in preventing stunting,.

In the previous study by Saaka et al. (2021) in Ghana, to find the effect of an education of nutrition to change the behavior of mothers` nutritional knowledge, through communication

delivered on radio. The study was conducted by participated of (712) mothers with children under 3 years. The results of the study showed that mothers in the radio listening intervention group had significantly higher scores of nutrition related knowledge but the control group has little effect.,

Widowati et al. (2021) in Indonesia which aimed to determine the effect of health education on mother's knowledge and behavior in the application of balanced nutrition for toddlers. uses quantitative method, 30 mothers who have children aged 1-5 year . the result found there was an effect of health education on the level of knowledge about balanced nutrition in toddlers.,

A randomized controlled trial study by the researcher Guled et al.,( 2018) ) in Ethiopia to assess the effect of nutrition education intervention on knowledge of 415 mothers about child feeding. The results showed a significant improvement in the knowledge of mothers. Babazadeh et al. (2015) in Tehran, to exam the effect of educational intervention on knowledge, attitude and behavior of mothers about proper nutrition in children aged 2-6years. The finding reflected an enhancing of mothers' knowledge, attitude and practice towards their children nutrition.

Mbogori and Murimi,(2019) in Turkana have a study, to determine the effect of a nutrition education intervention on maternal nutrition knowledge, dietary intake, and nutritional status. Sample were included 73 mothers with children under 5 years old. Results from this study found that nutrition education interventions was improve nutrition knowledge of the participated mothers.

### **-Effect of Nutrition Education Program on Child Nutrition Status**

The nutritional status of young children is influenced by a lot of interrelated factors, such factors are related to the level of parents' education, provide adequate food in both quantity and quality, mother's pattern of upbringing children, nutrition knowledge, and other socio-cultural factors.

A previous study conducted by Mitra et al. (2020) in Indonesia, which aimed to examine a

model design of nutritional education concerning mothers' knowledge and the changes of nutritional status among malnourished children,. Quasi-experiment design ,pre and posttest with control group was used. The intervention group was 30 mothers who had underweight malnourished children who received nutrition education and modules. The result showed nutrition education can improve mother's nutritional knowledge, but it has not significantly improved nutritional status in children with malnutrition.,

A systematic review by the researcher Ghodsi et al. (2021),. to analyze the impact of previous nutrition programs on the nutritional status of children under 5 years ,. had a significant effect on children nutrition under 5 compared to the control groups. Sub-group analysis showed that duration of intervention (more than 6 months) was one of factor that modify the effect,. This found is consistent with previous reviews that showed that community-based nutrition education interventions effectively improve the nutrition status of children under five in developing countries and their linear growth and weight gain.

Increasing access to foods was the other nutrition-specific strategy being used in the included studies,. Three studies, one from Iran and two from Pakistan ,evaluated the effect/cost-effectiveness of food distribution programs for the nourishment of children under five. Sharma et al. (2020) in India, conducted a quasi-experimental study to find the effect of used nutrition educational intervention to improve growth and complementary feeding of infants. The study found the used intervention can effectively improve the complementary feeding and growth of children aged from six months to one year.

Another previous study conducted by Goudet et al. (2019), to assess the impact of nutritional interventions to reduce stunting in infants and children under five years old. They showed in their result that, more evidence to the effects of the interventions program to improve low birth weight and stunting among young children.

In Indonesia, an experimental design by Sukandar et al. (2015) was exam the effects of

nutrition education on the nutritional knowledge, attitude and practice of mother and nutritional status of children under five, with participation of (240) mothers which divided into two groups. Their result showed the intervention of nutrition education did not have significant effects on the nutritional status among young children according to Z-score of height for age and weight for children according to WHO score. This is possible because the five-month intervention was not yet enough to improve the nutritional status,.

A cluster randomized trial by the researchers Kang et al. (2017) which focused on the effect of a community-based nutrition program to improve child growth in rural Ethiopia for about 12 months of follow up. A total of 1790 children aged 6 to 12 months were enrolled in the study,.The result reflected that the children in the intervention area had a greater increase in z scores for length-for-age and weight-for-length, while the control children did not showed significant improvement. They concluded the programmed was effective in improving child growth and reducing under nutrition in this setting.

A previous systematic review by the researchers Prasetyo et al. (2023) to analyze the effect of mothers' nutritional education on children's nutritional status. The results of the study found that the Nutrition education has a significant impact on increasing maternal knowledge and children's nutritional status. The effects of nutrition education programs on children were promoting optimal child growth or development, better health, and reducing stunting.

## Discussion:

The purpose of this narrative review is to identify and summarize the available information on the effect of previous nutritional educational programs on mothers' knowledge to improve the nutritional status of their children under 5 in low socioeconomic countries. All the identified interventions had been integrated into routine health care, including breastfeeding promotion, and growth monitoring and promotion.

Mohammed et al. (2022) concluded the nutrition program which has an effect in

developing mother's awareness and Knowledge, the positive associations between maternal nutrition knowledge and child nutritional outcomes are well documented for children. As a proven factor, mothers' nutritional knowledge significantly affects children's nutritional status regardless of the family's income level,.The audiovisual media contains explanations of the basic messages of balanced nutrition in toddlers which are presented attractively and with easy-to-understand language so as to facilitate the receipt of balanced nutrition information conveyed.

In line with the research conducted by Muluye et al. (2020) and study by Sugiarti et al. (2020), that aimed to increase awareness for mothers education about nutrition by used technology which can effectively improves motivation for mothers ,.We found that the WhatsApp nutrition education session also successfully increases nutrition knowledge among mothers. The nutrition session consists of several topics: child growth monitoring, principle of complementary feeding practices, nutritional needs of infant and young children (Rachmah et al., 2023; Shawq & Ali, 2019). Another groups of authors by Saaka et al., (2021) stated that the benefits of educational media through radio are improve mother's knowledge about nutrition and the diversity of children's food. In addition Widowati et al., (2021) stated that the dissemination of a balanced nutrition message for the community requires appropriate and community-based educational strategies and methods to have an impact on changing mothers education towards balanced nutrition and healthy living behaviors. In an article by Guled et al. (2018) According to the training the mothers on appropriate eating habits could be effective in enhancing their knowledge, attitude and practice towards their children nutrition.

The overall knowledge of the mother/caregiver means that the intervention group score increased significantly after the intervention (Mbogori and Murimi,(2019) A high level of education does not necessarily mean more information about food,. The nutritional status of children may also influenced the ability to provide sufficient food both in quantity and quality

by their mothers. The low nutritional knowledge of mothers creates greater risk for malnutrition of infants. Mother's nutrition knowledge influences children's eating habits level, for that improving mother's education level is very important. It was supported by Mitra et al. (2020) study which found nutrition education can improve mother's nutritional knowledge, but it has not significantly improved nutritional status in under-fives.

The ability of the mothers to apply the recommended complementary feeding practices is associated with their knowledge and attitude on optimal complementary feeding (Sharma et al., 2020). Several factors could, in turn, affect mothers' knowledge and attitude towards complementary feeding (Egata et al., 2013). Goudet et al. (2019) to found the effected by the interventions program to improve low birth weight and stunting among young children. Sukandar et al. (2015) was found that intervention had not impact on the nutritional status among young children according to Z-score of height for age and weight for children according to WHO score. because the five-month intervention was not yet sufficient to improve the nutritional status.

Nutrition education and counselling were among the main strategies used in almost all the included studies and targeted either health workers or mothers (Saleem et al., 2014) Some programs had a great impact on the mother and child because some researchers used easy and simple methods to deliver information, based on audiovisual media such as using some pictures, video clips, mobile application that dealt with healthy methods for healthy eating. programs has an effect in developing mother's awareness and Knowledge. But other researchers did not find an effect on the mother and child because some mothers may neglect the instructions provided during the program, or there may be a lack of sufficient time to train the mothers because the researcher is limited to a specific period of time that cannot be exceeded.

### Conclusion:

In the present review, the mentioned studies approved Mothers' nutritional knowledge

significantly affects their children's nutritional status, mothers with low health literacy are unable to adequately meet their children's nutritional needs because they do not clearly understand their children's nutrition status. Nutrition education for mother should be importance on health children and the prevention of disease. Nutrition is a critical part of health and development, Better nutrition education for mother is related to improved child health and reduce the risk of chronic diseases.

Educated mothers may have better knowledge about health care and nutrition. The education program effect significantly improves the health child so that it can reduce the incidence of stunting, underweight, anemia in children. In addition, there is an impact of increasing knowledge by providing beneficial education. Nutrition education should emphasize on improving mothers' nutrition knowledge regarding infant and young child feeding recommendations and supporting mothers to overcome barriers to feed their children with adequate diets.

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