



Exploration of Parents' Perceptions of Nutrition Intervention Programs in Improving Early Childhood Cognitive and Social Development: A Case Study at an Early Childhood Institution

Zainul Arifin^{1✉}, Mohammad Zainuddin², Imron Arifin³, Eny Nur Aisyah⁴, Ula Nur Hayatiningsih⁵

Contact person: +62 81333946404

Zzainul.arifin.2401548@students.um.ac.id✉

¹Departement Early Childhood Education, Universitas Negeri Malang, Indonesia

²Departement Primary School teacher Education, Universitas Negeri Malang, Indonesia

³Departement Early Childhood Education, Universitas Negeri Malang, Indonesia

⁴Departement Early Childhood Education, Universitas Negeri Malang, Indonesia

⁵Departement Early Childhood Education, Universitas Negeri Malang, Indonesia

ABSTRACT

This study aims to explore parents' perceptions of nutrition intervention programs in supporting the cognitive and social development of early childhood at the An Nur Early Childhood Education Institution in Malang Regency. This study uses a qualitative approach with a case study design and involves 10 parents selected through purposive sampling based on their level of active participation in the program and diversity of backgrounds. Data were collected through semi-structured in-depth interviews, direct observation of daily PAUD activities, and program documentation. Analysis was conducted using thematic analysis techniques to identify patterns and main themes. The results of the study indicate that parents perceive various benefits from the nutrition intervention program, including improved immune system, learning concentration, and children's social skills such as sharing and empathy. However, challenges remain, particularly in maintaining healthy eating patterns at home. Parents also suggested nutrition training, cooking activities, and regular health check-ups as forms of ongoing support. This study emphasizes the importance of a collaborative approach between parents, teachers, and institutions in the success of nutrition intervention programs, and provides practical contributions for PAUD institutions seeking to adopt similar approaches.

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CONTACT Corresponding Author: Departement Early Childhood Education, Universitas Negeri Malang, Indonesia
Email: zainul.arifin.2401548@students.um.ac.id

1. Introduction

Nutrition is a critical component in supporting children's growth and development, especially in the early years, which is crucial for building the foundation of physical, cognitive and social health. At this age, a child's brain is developing rapidly, and the need for proper nutrition is essential to support their growing brain. Healthy nutrition not only supports physical growth, but also affects learning ability, emotional development and cognitive development. To support various bodily functions and brain development, young children need a wide range of nutrients. For example, macronutrients, such as fats, carbohydrates and proteins, are essential for providing energy and building body tissues. On the other hand, micronutrients, such as vitamins and minerals, especially calcium, omega-3, and iron, are known to have significant effects on children's mental health and cognitive function. According to research, children who eat a balanced diet tend to have better learning abilities, be more socially active, and have lower health risks in the future. (Anissa, 2021).

But early childhood nutrition is still a big problem in many places, including Indonesia. Malnutrition, both stunting and underweight, is still common, according to data. In early childhood education (ECE) institutions, nutrition interventions through specially designed programs to raise parents' awareness about the importance of nutrition and providing nutritious food are essential. Micronutrients are essential for children's growth and development, and micronutrient deficiencies can cause serious problems such as impaired growth and decreased cognitive function (Isang, 2024). It is important for parents to know how to provide healthy food to their children at an early age. Past research has shown that parents' knowledge about healthy food greatly influences children's

eating habits and their long-term health (Ilhami, 2024). Other research emphasizes that meeting children's micro- and macronutrient needs is essential to support optimal development in early childhood (Istiqomah, 2024). The importance of kindergarten teachers being educated on nutrition to help them inform parents and children about balanced nutrition and raise awareness of the importance of nutrition for child development (Faizah, 2024).

Early childhood is defined as children in the age range of 0 to 6 years, which is characterized by very rapid and fundamental development. Children experience profound changes in many ways, such as physical, cognitive, social and emotional, during this stage. New studies show that during this time, which is often referred to as the golden years, children become more sensitized and sensitive to the various stimuli they encounter around them (Maghfiroh, 2020). At this age, children's physical and mental functions develop, which allows them to respond to stimuli. Studies show that basic abilities are built in children from six to six years old, which will affect their development later in life. Gross and fine motor skills, language growth, and cognitive abilities such as problem solving and social interaction are all part of this (Maulana, 2024).

This phase of development is very important as it is the basis for the formation of a child's moral values and character. Early childhood education aims to assist this growth by providing appropriate encouragement to help the child's physical and mental development (Maghfiroh, 2020). Therefore, it is crucial to pay special attention to education and nutrition during this time to ensure that children can reach their full potential in various aspects of life. In Indonesia, nutrition remains a major problem, with a high prevalence of malnutrition. As a result of the Survey on the Status of Nutrition in Indonesia (SSGI) conducted in 2022, the stunting rate in Indonesia reached 21.6%, down from 24.4% in the previous year. While stunting is decreasing, problems such as wasting and obesity are increasing. The percentage of wasting increased from 7.1% in 2021 to 7.7% in 2022. The percentage of underweight also increased from 17.0 percent to 17.1 percent (jpg-indonesia.net, 2023).

Malnutrition has very serious effects, especially on children. Children with stunting have a higher risk of experiencing delays in physical and cognitive development that can continue into adulthood. They also have a lower immune system and are more susceptible to infections and death (jpg-indonesia.net, 2023). In Indonesia, the prevalence of stunting shows that although there is a decrease, it is still far from the target. The government hopes that the stunting rate will drop to 14% by 2024. Children affected by stunting not only experience reduced height, but also experience negative impacts on their mental development and learning ability (Paudpedia, 2025). On the other hand, the prevalence of underweight reflects a deeper nutrition problem. The increasing underweight rate indicates that many children are not getting enough nutrients for healthy growth. This indicates the need for more effective interventions to raise parents' awareness of the importance of balanced nutrition for their children (Purba, 2024).

Nutrition problems in early childhood in Indonesia are influenced by various interconnected factors. Parents' education level plays an important role in their understanding of the importance of balanced nutrition for their children. Research shows that parents' low knowledge of nutrition can lead to errors in children's diets, such as a lack of variety in the food served and a lack of understanding of children's nutritional needs (Pamungkas, 2022). Parents who do not have sufficient knowledge are less likely to provide healthy food to their children, which increases the risk of malnutrition. Poor parenting is also one of the causes of nutrition problems. Parenting practices that do not pay attention to children's nutritional needs, such as lack of attention to meal times and the type of food given, can lead to children not getting the nutrients necessary for optimal growth and development (Nuradhiani, 2023)(Hariawan et al., 2019). Also, following bad habits, such as eating fast food or foods that are high in sugar and fat, can also affect children's nutritional health.

Economic factors are one of the main causes of nutrition problems. Families with low incomes often find it difficult to afford nutritious food due to high food prices. These economic limitations also impact on families' food security, so they may not have adequate access to healthy food. Research shows that families with low economic status tend to have difficulty meeting their children's nutritional needs, leading to malnutrition (Trismanjaya, 2022). A nutrition intervention program is a set of actions designed to improve the nutritional quality of an individual or population. These interventions can include a wide range of activities, from supplementary feeding, to nutrition education, to dietary behavior change. The ultimate goal is to address existing nutrition problems, such as stunting, underweight and anemia, and to improve overall health (Makarim, 2023). These interventions are usually carried out through nutritional assessment, diagnosis, planned intervention actions, and monitoring and evaluation to assess the effectiveness of the program.

The main objective of the nutrition intervention program is to improve the nutritional status of children by ensuring they get adequate and balanced intake so that they can grow well and not experience nutritional problems. In addition, the program also aims to prevent nutritional problems such as stunting and obesity, especially in early childhood, by teaching parents about the importance of eating a healthy diet (Sofyana, 2023). Undernourished children receive supplementary food from this program to improve their nutritional intake. These supplementary foods can be local foods or processed foods that are rich in nutrients (Bkkbn, 2024). The program involves training and seminars for parents on the importance of balanced nutrition and how to prepare nutritious meals for their children (Handayani, 2020). PAUD often conducts regular child growth monitoring to find nutrition problems early on (Kemenkes, 2018).

Nutrition intervention programs are successful when parents are involved. Studies show that parents can better understand the importance of feeding their children a balanced diet if they are actively involved in nutrition training. Parents can act as role models and encourage healthy eating at home with this participation (Syafiq, 2022). In addition, collaboration between parents, teachers and nutrition experts creates a more holistic approach to educating children about the importance of nutrition, thereby increasing the effectiveness of intervention programs (Oktavirani, 2024). Parents' perceptions of nutrition intervention programs may vary. On the one hand, many parents have a positive view of the program, as they recognize its benefits in improving child health and development. They appreciate the education provided and feel more confident in providing nutritious food for their children (Munawaroh, 2022). However, on the other hand, there are also parents who are skeptical or less engaged due to a lack of knowledge about nutrition or busy daily lives that prevent them from actively participating (Bastian, 2023). Some parents may feel that the program is not suitable for their child's special needs or have difficulty applying the knowledge they learn to everyday life. Parents' perceptions have a significant impact on the success of nutrition intervention programs. Parents who are positive and active in the program are more likely to follow the nutrition principles taught. This improves children's nutritional status and helps them develop healthy eating habits early on (Maryumi, 2022). Therefore, it is important for program organizers to actively involve parents and provide the necessary support and information to increase parental understanding and participation. If parents do not trust or are not involved, the program will not work well and children will not get the maximum benefit from the intervention.

A child's brain development is greatly influenced by good nutrition. Studies show that brain growth and cognitive function are influenced by adequate nutritional intake, which includes protein, healthy fats, vitamins and minerals. Well-nourished children tend to have healthier brains, which helps them think, learn and solve problems. Nutritional deficiencies, on the other hand, can stunt brain growth and lead to problems with cognitive function such as difficulty concentrating and slow learning (Nurlaili, 2024). Children's learning ability is strongly linked to their nutritional intake. Studies show that children who receive balanced nutrition have better academic performance compared to children who suffer from malnutrition (Putri P. A., 2021). For example, research at TKIT Al-Uswah showed that children with good nutritional status had better cognitive development compared to children with poor nutritional status, suggesting that nutritional interventions are critical to improving children's learning outcomes (Nia, 2022).

Nutrition also plays an important role in a child's social development. Children with good nutrition tend to be more socially active and better at interacting with peers. They are also more motivated to participate in group activities and build positive social relationships (Sofyana, 2023). However, children who are nutritionally deficient may experience delays in social skills and have difficulty getting along with their peers. Boosting children's self-confidence can be achieved through healthy nutrition. Physically healthy children tend to be more confident when in social settings, which allows them to interact more easily and build positive relationships with others (Nurlaili, 2024). Healthy nutrition also helps children's mental health and reduces the risk of emotional problems such as depression and anxiety. This research emphasizes how important a good diet is to support young children's social and cognitive development. We can better appreciate the role of nutrition in shaping the future of young people by understanding the relationship between good nutrition and children's physical, mental and social growth. The results of this study suggest that effective nutrition interventions can not only improve children's nutrition but also enhance their ability to learn and interact socially. Therefore, a better understanding of child nutrition is essential to encourage parents, educators and policy makers to ensure that all children get the nutrition they need to grow and develop well.

This study is expected to provide concrete suggestions for nutrition policy in early childhood education (ECED) institutions. These suggestions could include more comprehensive education on nutrition for parents and caregivers, provision of healthy food in schools, and training of educators on the importance of nutrition for child growth. In addition, it is hoped that this study will encourage cooperation between the government, educational institutions, and communities to create a supportive environment to fulfill children's nutritional needs. Therefore, better nutrition policies can be created to combat malnutrition and ensure that every child has the opportunity to reach his or her full potential in physical, cognitive and social terms.

2. Method

This study uses a qualitative approach with a case study design to explore parents' perceptions of nutrition intervention programs in improving the cognitive and social development of early childhood in An Nur early childhood education institutions in Malang Regency. This study focuses on one early childhood education institution that has been actively implementing nutrition intervention programs for at least 3 months. The research subjects were 10 parents of children participating in the nutrition intervention program. Informants were selected using purposive sampling based on the following criteria:Memiliki anak yang mengikuti program selama minimal 3 bulan:

1. Actively participate in program support activities (such as outreach or nutrition classes),
2. Be willing to be interviewed and provide information,
3. Have diverse socioeconomic backgrounds to enrich perspectives.

The data in this study were collected through three main methods, namely semi-structured in-depth interviews, direct observation, and documentation study. The interviews were conducted with an average duration of 45–60 minutes per parent, using a guide compiled based on program perception and benefit indicators, and validated by

two experts in the fields of child education and nutrition. Direct observation was conducted over five days of visits to the early childhood education center, focusing on daily activities such as the provision of nutritious food, child interactions, and parental involvement, and was recorded narratively. The documentation study included a review of program records, child development reports, and educational materials provided to parents.

Data analysis was conducted using a thematic analysis approach involving several stages, namely verbatim transcription of interview data, open coding to mark units of meaning, identification of main themes based on recurring patterns and conceptual meanings, and interpretation between themes to understand the relationship between parents' perceptions and the impact of the program. Data validity was ensured through method triangulation by comparing interview results, observations, and documentation; source triangulation by comparing informants from different backgrounds; and member checking, which involved asking three informants to review the interview summary to ensure that the interpretation was consistent with their experiences.

3. Result And Discussion

Result

3.1 Initial Findings of Knowledge on Nutrition and Child Development

Interviewed respondents gave their opinions on how important nutrition is for early childhood. Respondents said that nutrition is essential to help children's physical, cognitive and social development. In addition, they emphasized the link between balanced nutrition and children's health, immunity and learning ability. These results show how important it is to provide nutritious food to children at an early age. When asked about her knowledge of nutrition and child development, Mrs. Mila said:

"I believe nutrition is very important for early childhood because it is the golden time of their development. With good nutrition, children can grow healthier and have optimal learning abilities. Without adequate nutrition, they may experience difficulties in their physical and cognitive development."

Nutrition is very important for early childhood development as it is the golden period of their development. If children get adequate nutrition, they can grow healthier and have optimal learning abilities, but if they lack nutrition, they may experience difficulties in their physical and cognitive development.

In addition, Mrs. Wulan added to what Mrs. Mila had said:

"In my opinion, nutrition is the main foundation for children's growth. Children who get balanced nutrition tend to be more socially active and have the energy to learn and play. In addition, good nutrition also helps improve their immune system so they don't get sick easily. I think nutrition has a huge impact on children's brain development and social skills. If they lack nutrition, it can have an impact on their concentration and ability to interact with their friends. So, I always try to provide nutritious food to support their development."

Nutrition is a key element in supporting children's growth, both physically and socially. With balanced nutrition, children have enough energy to move, learn and play. In addition, good nutrition contributes to a strong immune system, so that children are not susceptible to disease and are able to carry out daily activities optimally (Faizah, 2024). The importance of nutrition in supporting children's brain development and social skills. Ms. Wulan emphasizes that nutritional deficiencies can affect children's concentration and ability to interact with peers. Therefore, Ms. Wulan tries to ensure that children receive nutritious food to support their optimal development.

3.2 Relationship Between Nutrition And Children's Cognitive And Social Development

Children's cognitive abilities and social interactions are influenced by healthy nutrition. Good nutrition also improves children's physical health and helps them learn and interact with others. Mrs. Wulan had this to say about child development:

"Yes, I know that nutrition has a close relationship with children's cognitive and social development. Children who get adequate nutrition, especially from foods such as vegetables, fruits and protein, tend to find it easier to concentrate and understand lessons. They are also more confident and sociable because their bodies are healthy and energized. I've read that good nutrition greatly affects a child's brain, especially at an early age. For example, iron and omega-3 can help improve brain function. If a child's nutrition is not met, I think they may find it more difficult to learn or socialize with their peers."

Children who get adequate nutrition, especially protein and vegetables, tend to be better at concentrating and understanding lessons. In addition, previous research studies have shown that good nutritional status is positively correlated with children's cognitive development. A study found that 93.3% of children with good nutritional status had good cognitive development, while 85.7% of children with poor nutritional status showed poor cognitive development (Putri P. A., 2021). Iron and omega-3 are essential for brain function. Iron deficiency can lead to anemia, which negatively affects cognitive development (Effect of Nutrition on Cognitive Performance of School-Age

Children in Myanmar, 2018). Omega-3s, especially DHA, contribute to nervous system development and brain function. Vitamin B complex also improves children's verbal ability and memory.

Ms. Win added what Ms. Wulan said about her knowledge of children's cognitive development:

"In my opinion, there is a strong relationship between nutrition and children's cognitive and social development. Children whose daily nutrition is fulfilled are usually more active and cheerful, so they can play and learn well. On the other hand, children who are malnourished tend to get tired easily and are less eager to interact with their environment."

Children who get good nutrition tend to be more active and cheerful, which allows them to interact with friends. On the other hand, malnourished children often feel tired and lack the energy to socialize. Good nutrition promotes physical health and boosts a child's self-confidence. Healthy children are more likely to participate in social activities and learn better (Putri P. A., 2021).

3.3 Providing Balanced Nutritious Food For Children

Providing children with a nutritionally balanced diet is very important, based on the belief that it will have a positive impact on the child's growth and development. Vegetables, protein (such as fish or meat), carbohydrates and fruits are the main components of a nutritious diet. Ms. Mila gave her opinion on nutritious food for her child:

"I always try to give balanced nutritious food every day. Every meal, I make sure there are vegetables, protein such as fish or meat, carbohydrates, and fruits. I believe this is important to support children's growth and development."

To support children's growth and development, it is crucial to feed them a nutritionally balanced diet. The respondent confirmed that she is committed to consuming all the main components of food, namely vegetables, fruits, protein (e.g. from meat or fish), and carbohydrates, every time she eats. This fact shows that a complete and balanced nutritional intake is good for a child's overall health and development. Therefore, it is very important to maintain a diverse and balanced diet for children.

However, Ms. Ani has a different opinion from Ms. Mila:

"Honestly, I haven't been able to provide a balanced nutritious diet every day. Sometimes because I'm busy, I only give food that is practical or ready to eat. But I still try to include vegetables and fruit as often as possible in their menu. Maybe about three to four times a week I can provide food that is truly nutritionally balanced. The rest of the time, I sometimes cook on a whim because of time constraints, but I always provide milk and healthy snacks on the side."

Due to busy schedules and time constraints, some people find it difficult to maintain a healthy diet consistently. However, they still try to incorporate healthy foods such as vegetables and fruits into their daily menu. While it is not always possible to eat a full meal every day, some people add additional foods such as milk and healthy snacks to stay healthy.

3.4 Preliminary findings on Perceptions of the Nutrition Intervention Program

Ms. Mila and Ms. Wulan's knowledge of child development also adds to parents' perceptions of nutrition intervention programs for ECD children. Ms. Mila said that:

"I know that this program aims to ensure that children get balanced nutrition every day. In this PAUD institution, they provide healthy food such as fruits, vegetables and milk every morning. They also teach the children about the importance of eating nutritious food for their bodies and brains. "I think this nutrition intervention program is very useful. My child is often given nutritious food at school, such as healthy snacks and a full lunch. The teachers also educate the children on good eating habits, such as reducing sweets and eating more vegetables."

The nutrition intervention program in ECD institutions aims to ensure that children get a balanced nutritional intake every day. This includes providing milk and healthy foods such as fruits and vegetables every morning, as well as teaching children about the importance of eating nutritious foods to maintain their brain health and development. Nutrition intervention programs in ECD institutions are particularly beneficial if children are given a full lunch and healthy snacks. Teachers also teach good eating habits, such as reducing sweets and increasing vegetables.

Ms. Wulan also shared her opinion on the nutritional intervention program:

"I only know a little about this program, but what I see is that they pay special attention to the children's diet. Every week, parents are given information about the menu that will be served, and we can give input if there are allergies or special needs. It's a good program because it helps children get nutrients that may not always be met at home."

Nutrition intervention programs in ECD institutions pay special attention to children's diets. Parents are given information about the food menu each week and can comment on any allergies or special needs. This program is considered good because it helps children get nutrients that may not be available to them at home.

3.5 On The Benefits Of The Program For Children

Nutrition intervention programs have important benefits for young children, especially early childhood education (ECED) children. These interventions help improve nutrient intake that supports physical growth, cognitive development and overall health. With the right nutrition program, children can have enough energy to participate in learning activities, improve concentration, and prevent the risk of malnutrition that can affect long-term development. Therefore, this program is one of the strategic steps in supporting children's optimal growth and development during the golden age. Ms Wulan shared the benefits of the nutrition intervention program for her child:

"I see many benefits from this program. My child is more active and does not get sick easily. Before, he was often fussy about food, but now he is getting used to eating vegetables and fruit. His development is also better, he seems more focused when learning. In my opinion, this program is very helpful. My child has become more disciplined in eating and recognizes various types of healthy food. Socially, he is also more confident because he is often taught how to share food and eat with his friends."

This program provides many benefits, such as increasing children's activity, increasing endurance so that they don't get sick easily, changing children's eating habits to be healthier (accustomed to eating vegetables and fruit), and supporting children's overall development, including improving focus while learning. This program really helps children become more disciplined in their diet and get to know various types of healthy food. In addition, this program also improves children's social skills by building self-confidence through sharing food and eating with their friends.

In addition, Mrs. Win also conveyed the benefits of the intervention program that were felt and had an effect on the growth and development of her child:

"The benefit I feel the most is that my child has become more cheerful and energetic. I am also happy because he is starting to understand the importance of eating nutritious food. His cognitive development is faster, and he is starting to show interest in learning new things."

The program makes children more cheerful, energetic, and understand the importance of eating nutritious food. In addition, the program also supports children's cognitive development, so that children learn faster and show interest in new things.

3.6 Programs to help improve children's cognitive development

In this program, children are provided with foods rich in essential nutrients such as omega-3, vitamins, minerals and antioxidants, which play a crucial role in supporting brain function and nervous system development. In addition, the program also involves educating parents on the importance of a healthy diet and good eating habits. With this holistic approach, it is hoped that children can reach their full potential in cognitive aspects, such as the ability to think, learn, and solve problems, which in turn can improve their academic performance and overall quality of life. Bu Mila feels the benefits of this program:

"Yes, I feel this program is very helpful. For example, after joining the program, my son has become easier to remember the lessons given at school. He also began to understand instructions from the teacher more quickly, such as how to put together a puzzle or play an educational game. I noticed an improvement in my child's thinking skills. Before, he had difficulty recognizing colors and numbers, but now he can name colors and count small objects. I think it has something to do with the better nutrition from this program."

The program is proven to help improve children's cognitive development, especially in their ability to remember lessons, understand instructions, and complete educational tasks such as putting together puzzles and participating in games. This shows the effectiveness of the program in supporting children's learning process. The program also contributes to the improvement of children's thinking skills, especially in recognizing colors and numbers and counting objects. The improved nutrition provided by the program is also thought to play an important role in supporting children's cognitive development.

3.7 Programs Affecting Children's Social Development

According to Ms. Mila and Ms. Wulan, the nutrition intervention program at the ECD Institution has good benefits for their children. Mrs. Mila said that:

"I see my child becoming more confident interacting with his friends. In this program, children often eat together and share food. It makes him learn to share and respect others. He is also more outgoing and no longer shy when playing."

The program has a positive impact on children's social development, especially in improving self-confidence, sharing ability, and mutual respect. Children become more outgoing, actively interact with their friends, and overcome shyness when playing.

Mrs. Wulan said that:

"I think this program has a positive impact on my child's social skills. He has become more accustomed to working together, for example when they do group activities such as setting up the dining table together. Now he makes friends more easily and is more sensitive to other people's feelings. My child has become more active in communicating with his friends. In this program, they are taught to help each other, such as giving food to friends in need. It makes my child understand the importance of empathy and solidarity in social relationships."

The program has a positive impact on children's social skills, especially in terms of cooperation, sensitivity to other people's feelings, and ease in making friends. This can be seen from the increase in children's habit of working together in group activities such as setting the table together. It also helps children become more active in

communicating and instills values of empathy and solidarity, such as helping friends in need, which strengthens their social relationships.

3.8 Programs and Challenges Faced

The program teaches parents about the importance of healthy eating. This holistic method is expected to help children reach their full potential in cognitive areas such as problem solving, learning and thinking. In turn, this can help children improve their academic performance and their overall quality of life. Ms. Win shared what she felt about the program:

“Yes, the program is quite easy to follow as the PAUD provides clear guidelines. However, the challenge is to maintain consistency at home. Sometimes my child asks for unhealthy food, such as snacks or sugary drinks, so it is difficult to maintain the same diet as at school.”

While the PAUD program is easy to follow with clear guidelines, the main problem is maintaining a consistent diet at home. This is due to the child's desire to eat unhealthy foods, such as sugary drinks or snacks, which makes it difficult to maintain a diet similar to that at school.

Ms. Wulan also felt the same way:

“I find this program quite easy to follow because the school is very helpful by providing menu lists and education for parents. However, the challenge is that I often find it difficult to provide the same ingredients at home due to time and cost constraints. The program is also quite easy to implement because it involves children actively, but my child sometimes refuses to try new foods suggested by the program, so it takes time and patience to get him used to eating nutritious foods that he has never consumed before.”

Assistance from the school, such as the provision of menu lists and education for parents, makes the program easy to follow, although providing the same meals at home is often a challenge due to time and cost constraints. The program is also relatively easy to implement as it involves children actively, but the challenge is that children often reject new foods suggested, so it takes time and patience to get them used to nutritious foods that they have never tried before.

3.9 How to Engage

Active involvement in the ECD program by attending parent meetings that discuss diet and child development. In addition, respondents also create healthy menus in their homes according to school guidelines. Bu Mila said that she is actively involved in the program:

“Yes, I am actively involved in this program. I often attend parent meetings held by the PAUD to discuss the diet and child development. In addition, I also help to develop a healthy menu at home according to the guidelines from the school.”

In contrast to Ms. Mila, Ms. Win said that she was less involved in the program:

“I am involved, although not always active. Usually, I provide input when there is a survey about the food program in PAUD. I also try to support at home by providing lunch that is in accordance with the nutritional recommendations of this program. My involvement is more at home. I follow the advice of the program by making sure my child eats nutritious food. I also discuss with the teacher if there is a change in my child's diet or if he/she is not happy with a particular menu.”

Although not fully active, respondents demonstrated engagement in the ECD program by providing input through the survey on the food program and supporting its implementation at home by providing lunch that is in line with the program's nutrition recommendations. More focused engagement in the home environment. Respondents follow program recommendations by ensuring children eat healthy foods and talking to teachers about any dietary changes or menu discrepancies children experience.

3.10 Effectiveness of Nutrition Intervention Programs

The effectiveness of nutrition intervention programs has been the focus of research that shows variable results depending on the type and context of the intervention. Bu Win provided input so that this nutrition intervention program can be sustainable and provide benefits.

“I suggest that this program involves parents more in the form of training or workshops on how to cook healthy food at home. That way, we can be more consistent in implementing healthy eating patterns for children, both at school and at home.”

Bu Win suggested that the program should involve parents more by providing training or workshops on how to cook healthy food at home to ensure that children adopt a healthy diet both at school and at home.

In addition, Ms. Wulan also gave her input that:

“It would be better if this program is complemented with routine health checks, such as measuring children's weight, height, or nutritional status on a regular basis. That way, we can see the children's development more clearly and know whether this program

has been effective. I think the program can be more effective if the children are given more practical activities, such as cooking simple healthy meals. That way, they not only understand the importance of nutritious food, but also learn how to prepare it themselves.”

Bu Wulan suggests that the program be complemented with routine health checks, such as periodic measurements of children's weight, height and nutritional status to monitor children's development and determine how effective the program is. Bu Wulan also suggested that the program should include practical activities, such as cooking simple healthy meals. The purpose of this activity is to increase children's knowledge about the importance of nutritious food and teach them how to make their own food.

3.11 Your experience or views on the program

The program was considered very useful, particularly in providing an understanding of the importance of nutrition for child development, including its impact on cognitive and social skills. However, respondents felt that the information provided tended to be theoretical and needed more practical guidance that could be easily applied in daily life at home.

Ms Wulan gave her views on the nutrition intervention program:

“I find this program very helpful, especially in providing an understanding of the importance of nutrition for child development. Previously, I didn't know that certain foods can have a direct effect on children's cognitive and social abilities. However, I wish there were more practical guidelines that could be applied daily at home. Sometimes the information provided feels theoretical, so it is difficult to apply directly. I am very happy that my child is participating in this program. I see a change in his socialization skills, he is more willing to interact with his friends. But I feel that the assistance for parents is still lacking. I would like to be more involved, for example through special consultation sessions that can help me understand my child's development in more detail.”

This program has had a positive impact on the development of children's socialization skills, making them more willing to interact with their friends. However, Ms. Wulan feels that the assistance for parents is still inadequate. Ms. Wulan suggested a special consultation session to engage parents more actively and help them understand their child's development more deeply.

In addition to Ms. Wulan, Ms. Win also expressed her opinion on the nutrition intervention program:

“I think the program is good, especially because it pays attention to the balance between nutrition and overall child development. However, I feel that the portion is not enough to reach all children. I hope this program can be done more often and involve more children from various backgrounds, because not all parents have access or awareness about the importance of good nutrition.”

The program is considered good because it pays attention to nutritional balance and overall child development. However, respondents felt that the scope of the program was still limited and suggested that the program be conducted more frequently and involve more children from different backgrounds, especially to reach those who have less access or awareness about the importance of good nutrition.

Table 1. Summary of Research Findings

Findings	Summary Findings	Informant Quote
Nutrition & child development knowledge	Most understand the importance of nutrition for children's physical, cognitive and social development.	“Nutrition is very important for the golden period of child development” (Mrs. Mila). The results of the study are supported by (Hartjen et al., 2024) which states that nutritional status and micronutrient supplementation improve early childhood cognitive, physical and social development.
Relationship between nutrition and cognitive & social	Adequate nutrition (vegetables, fruits, protein, iron, omega-3) supports concentration, confidence, & interaction.	“well-nourished children are easier to concentrate & confident” (Mrs. Wulan) The results of this study are supported by (Roberts et al., 2022) that nutritional interventions and micronutrient supplementation improve early childhood cognitive, physical, and social development.
Providing balanced nutritious food	Trying to feed a balanced diet, but constrained by time, cost, & children sometimes refusing new foods.	“Kadang hanya bisa makanan praktis, tapi tetap usahakan sayur & buah” (Ibu Ani)
Perception of nutrition intervention programs	Program is considered positive, provides healthy food & education on eating habits, and involves parents.	“Program ini sangat bermanfaat, anak dapat makan sehat di sekolah” (Ibu Mila)

Findings	Summary Findings	Informant Quote
Benefits of the program for the child	Children are healthier, more active, disciplined in eating, less prone to illness, more focused on learning, and accustomed to healthy eating..	“Sometimes you can only eat practical food, but still try to eat vegetables & fruit” (Ibu Ani)
Program support for cognitive & social	Nutrient-rich food, diet education, and eating together improve empathy and social skills.	“This program is very useful, children can eat healthy at school” (Ibu Mila)
Challenges faced	Consistency of healthy eating patterns is difficult to maintain at home (time, cost, children's desire for unhealthy food)	“Children sometimes ask for snacks /sweet drinks, it's difficult to maintain a diet” (Mrs. Win)
Parent involvement	Level of involvement varies: actively joining meetings, developing menus, or supporting at home.	“Often participate in meetings & prepare a healthy menu at home” (Mrs. Mila)
Program effectiveness & suggestions	Need for healthy cooking training, regular health checks, hands-on practice, & wider outreach.	“Healthy cooking training is needed for parents” (Mrs. Win). The results of the study are supported by (Schanzenbach & Thorn, 2020) (Su et al., 2024) who say that school meal programs and food assistance improve children's health, behavior, and social development.

3. Discussion

The interview findings indicate that informants understand the importance of balanced nutrition for the physical, cognitive, and social development of young children. This is in line with Bronfenbrenner's developmental theory, which emphasizes the importance of the microenvironment (family and school) in supporting child growth and development. International systematic studies also confirm that optimal nutrient intake, particularly iron and omega-3, has a significant impact on brain development, memory, and executive function in preschool children. (Pizzol, 2021). The results of this study show that nutrition is essential to support early childhood physical, cognitive and social development. In child development theory, nutrition is essential for critical developmental phases, especially during the golden period of development. Healthy nutrition is essential for children's growth and cognitive development. Studies show that supporting the development of a child's brain and nervous system requires the proper intake of nutrients, including protein and fiber. (Anissa, 2021) (Febrian, 2024). Problems such as stunting can arise as a result of nutritional deficiencies during infancy, which negatively impact a child's physical and mental development (Dewi, 2024). Therefore, to ensure that children can reach their full potential in terms of growth and development, it is imperative to provide adequate nutritional needs (Febrian, 2024) (Sovira, 2024).

Children who are well-nourished are more active when learning, which in turn supports their cognitive development (Qiptiyah, 2024) (Monica, 2023) (Novita, 2023). Healthy nutrition not only improves one's health, but also enhances children's brain function and social skills. Respondents emphasized that healthy nutrition is essential for maintaining children's health, increasing endurance, and supporting daily activities. More efficient and cost-effective nutrition intervention approaches are needed to address the time and cost issues of providing nutritious food. One solution that can be implemented is to inform people about the importance of nutrition and how to choose nutritious foods at affordable prices, so that they can make wiser choices in providing their daily meals. In addition, non-pharmacological interventions, such as nutritional therapy, can help people become healthier. To better meet the nutritional needs of children, community programs, such as farmers' markets or food assistance programs, can also be established (Napisah, 2023).

Research results that support recommendations Research looking at community service efforts to improve maternal and child nutrition shows that community-based methods help communities better understand the importance of good nutrition (Iqbal, 2024)(Wahyuni et al., 2019). In addition, community-based health education studies show that cognitive stimulation aids child development, and findings show that parents are more aware of the actions (Yuliandari, 2024). In line with the findings of this study, the FAO recommendations emphasize the need for a comprehensive approach to addressing nutrition and food access issues (Supriati, 2019). This finding is in line with research that suggests that deficiencies in certain nutrients, such as iron and omega-3, can affect children's brain function and learning ability. Omega-3s, particularly DHA, have been shown to support the development of brain structures and improve cognitive abilities. Research shows that children with good nutritional status do better academically compared to children who are malnourished. Penelitian (Kalew, 2020) emphasizes that omega-3 deficiency, including DHA, can affect children's brain development and cognitive function. Other studies have found that children who are exclusively breastfed and receive DHA and arachidonic acid (AA) have better cognitive development than children who are not exclusively breastfed (Saputra, 2016).

Furthermore, research in Pakistan found that 70% of children with good nutritional intake reached developmental milestones on time, while malnourished children experienced developmental delays. These findings reinforce the argument that early nutritional intervention is essential to prevent long-term impacts on children's health and development (Khan et al., 2023). Compared to studies in China, school feeding programs not only improve nutritional status and physical health, but also improve children's behavior, independence, and social competence. These findings are consistent with interview results, where nutrition intervention programs in early childhood education were found to have a positive impact on children's eating habits, health, and social development. However, studies in China also highlight that the positive effects are greater among vulnerable groups, such as girls and children of low-educated mothers, which have not been extensively addressed in these interviews (Su et al., 2024). In addition, the 2022 review emphasized that nutritional interventions combined with psychosocial stimulation yield better cognitive outcomes in preschool-aged children. This indicates that nutritional intervention programs in early childhood education should not only focus on providing healthy food, but also on strengthening psychosocial stimulation through the active involvement of parents and teachers.

In this study, nutritional interventions provided to children improved their ability to understand lessons and interact with the environment. This reinforces that education and nutrition programs should be combined to support children's overall cognitive development. The results show that, in addition to impacting physical and cognitive aspects, good nutrition helps children learn social skills. Children who are physically and mentally healthy tend to be more active, confident, and enjoy socializing with others. These results are in line with research showing that nutrition interventions at an early age improve children's social skills, including their ability to cooperate, share and communicate with others. The nutrition intervention program in PAUD, which includes eating together and teaching healthy eating habits, has helped children understand the importance of sharing and empathy. According to respondents, children have become more confident when interacting with their peers. This supports the claim that children's social and emotional skills can be enhanced through group activities that involve eating together. These results are in line with research showing that games such as hide and seek can improve the social skills of 4-5 year old children in PAUD. This study showed that the intervention significantly improved social interaction (Meli, 2022). The nutrition intervention program in PAUD, which includes eating together and teaching healthy eating habits, has helped children understand the importance of sharing and empathy. According to respondents, children have become more confident when interacting with their peers. This supports the claim that children's social and emotional skills can be enhanced through group activities that involve eating together.

Nutrition intervention programs in ECD have shown many benefits, but there are still some problems. One of the main problems is resistance to following a healthy diet at home. This suggests that more comprehensive strategies are needed, such as providing training or workshops to parents to help them implement healthy eating patterns. The success of nutrition intervention programs relies heavily on the involvement of parents and communities in changing their children's eating habits. Respondents also suggested that children should better understand the importance of nutritious food through practical activities such as cooking healthy meals together. This method is in line with Piaget's idea of constructivist learning, which emphasizes the importance of gaining new knowledge through direct experience. By actively involving children, they will not only learn new concepts, but will also learn to apply healthy habits in their daily lives.

In addition, respondents suggested regular health checks to monitor children's development more systematically. This is relevant to the recommendations of WHO (2020), which emphasizes the importance of regular monitoring of nutritional status as part of nutrition intervention programs to ensure program effectiveness. The results of this study reinforce the theory that nutrition is an important component in supporting holistic child development. In addition, the findings add to the current literature by showing that nutrition interventions integrated with education can have positive effects on child development in the long term. In addition, the findings of this study can be used as a basis for building new theories that emphasize the importance of a holistic approach in nurturing child development. Penelitian ini memiliki banyak konsekuensi teoritis dan praktis yang signifikan. Theoretically, this study emphasizes that collaboration between educators, parents and communities is essential to ensure that children receive adequate nutrition. In addition, this study emphasizes the importance of community-based intervention programs that include training, education and regular nutritional supervision. In this way, nutrition interventions can sustainably improve the quality of life of children and their families.

4. Conclusion

This study confirms that good nutrition is the main foundation in supporting the physical, cognitive, and social development of early childhood. Specifically, the findings show that nutrition intervention programs implemented in early childhood education institutions contribute positively to improving children's immune systems and concentration, as well as their ability to interact socially, including sharing, showing empathy, and building self-confidence in a group environment. Additionally, children demonstrate a better understanding of healthy eating patterns through direct experiences such as shared meals and simple discussions about nutrition. However, challenges persist in implementing healthy eating patterns at home, primarily due to parents' time constraints and children's preferences for certain types of food. This underscores the importance of active involvement and support from families to ensure the success and sustainability of nutrition intervention programs.

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