



***Isi Piringku* Education For Obesity Prevention Efforts in Children with Disabilities**

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Abstract

Background: Children with disabilities face limitations in their activities and environments. Currently, children with disabilities are vulnerable to nutritional issues, particularly obesity. Obesity is a condition where a child has a BMI of 30 or more, which can significantly impact their health. If left untreated, obesity can develop into more serious health problems. Therefore, there is a need for educational efforts to prevent obesity, one of which is through the *Isi Piringku* educational program. This program promotes a balanced diet with 50% fruits and vegetables and 50% carbohydrates and proteins, which has been proven effective in reducing obesity rates.

Aim: This community service project aims to prevent obesity and enhance children's understanding of disabilities through the *Isi Piringku* education program.

Method: This community service activity was conducted with 18 children with disabilities and their teachers. The activity began with screening, followed by providing education through the *Isi Piringku* program, which was delivered using visual media such as images and posters.

Result: The results of this program showed that 2 children with disabilities (11.1%) were classified as obese. However, after receiving education through the program, the children became more aware of the importance of healthy eating habits.

Conclusion: The education provided through the *Isi Piringku* program proved effective in enhancing the understanding of children with disabilities regarding the importance of a healthy diet.

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INTRODUCTION

Disability is a condition of the body or mind that hinders an individual from performing certain activities or interacting with their surroundings. Children with disabilities refer to those who experience developmental challenges from birth, which affect their sensory or mental functions, limiting their ability to interact in daily life (CDC, 2025). Globally, it is estimated that around 240 million children aged 0–17 years have disabilities. East Asia and the Pacific have 43.1 million children with disabilities, ranking second after South Asia, which has 64.4 million children. In Indonesia, according to the 2018 RISKESDAS survey, 3.3 percent of children aged 5–17 years have disabilities. The proportion of children with disabilities between girls and boys, as well as between urban and rural areas, is nearly the same. The 2018 and 2021 SUSENAS surveys found that the percentage of children aged 2–17 years with disabilities in Indonesia is even lower, at 1.1 percent and 0.6 percent, respectively. These estimates are much lower compared to the regional average of 8 percent and the global average of 10 percent (UNICEF, 2023).

People with disabilities are highly vulnerable to limitations in accessing healthcare services. Depending on the group and location, they may experience greater vulnerability to secondary

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conditions, unusual health problems, age-related conditions, engage in health-risk behaviors, and have higher rates of early mortality. Some studies indicate that one of the issues faced by people with disabilities is obesity (Erviana & Hidayati, 2019; Jeong & Chun, 2021).

Obesity is a medical condition caused by the excessive accumulation of body fat. If left untreated, this issue can lead to health problems and musculoskeletal disorders (Ahmed & Mohammed, 2025; Sari et al., 2024). In addition, obesity can also increase the risk of non-communicable diseases such as diabetes, heart disease, and musculoskeletal disorders, which reduce the quality of life and life expectancy of an individual. Obesity is defined as having a BMI of 30 or greater, while overweight is characterized by a BMI between 25.0 and 29.9 (Lin & Li, 2021).

Various factors can contribute to obesity and overweight in children and adolescents. Some of these include an imbalance between the calories consumed and burned, habits of eating processed foods high in sugar and fat and low in nutrients, a sedentary lifestyle, irregular sleep patterns or poor sleep duration, and hormonal changes that affect appetite (Alkautsar, 2022; Verma et al., 2025). Preventing obesity in children is crucial due to its negative impacts. One effective preventive measure is providing education about nutrition. Through this education, children's and adolescents' knowledge can be enhanced, which is expected to lead to positive changes in their daily eating habits. (Raut et al., 2024; Stefani & Fadlina, 2023).

One of the educational methods that can be implemented is using the *Isi Piringku* program. *Isi Piringku* is used to regulate balanced meal portions with 50% fruits and vegetables, and 50% carbohydrates and protein. Additionally, this initiative teaches about the ideal food proportions by using a plate presentation that includes staple foods, side dishes, vegetables, fruits, adequate water intake, as well as the importance of cleanliness and physical activity (Jia et al., 2022; Rahmi et al., 2024).

Several studies have mentioned that education using *Isi Piringku* has been proven to enhance knowledge, which in turn influences balanced and nutritious food consumption and helps prevent obesity. This engaging, communicative, and interactive visual approach can drive healthy behavior changes more engagingly (Aurelya et al., 2025; Effendy et al., 2025). Therefore, through lectures, visual images, interactive discussions, and BMI calculation simulations, this community service program is expected to help prevent obesity in children with disabilities at Sekolah Luar Biasa (SLB) Tuna Netra or SLB A YKAB (Yayasan Kesejahteraan Anak Bangsa). This community service project aims to prevent obesity and enhance children's understanding of disabilities through the *Isi Piringku* education program.

METHOD

This community service activity is designed with consideration for the real conditions of the service location, which involves children with disabilities experiencing obesity in the environment of Sekolah Luar Biasa (SLB) A YKAB. Based on an initial needs assessment, it was found that many children at this school suffer from obesity, caused by limited mobility and a lack of proper nutrition education in the family environment. This situation exacerbates their health problems, as not only is movement difficult, but they also lack adequate knowledge about healthy eating and the importance of balanced nutrition.

The first step taken was a physical examination, including measuring weight, height, waist circumference, and body mass index (BMI). Following that, in-depth interviews were conducted with children with disabilities and their accompanying teachers to understand the obstacles and specific needs of the children. The results of the survey and examination were then analyzed to determine the main issues that need to be addressed.

The strategy of the activity includes education and counseling about balanced nutrition and healthy eating habits through interactive images and the *Isi Piringku* poster, which are engaging and easy for children with disabilities to understand. To measure and evaluate the results of the activity, a questionnaire was used to determine the number of students who are obese or still at risk, along with evaluations through Q&A sessions and group discussions. The main solution to this activity is to establish healthy eating habits based on simple nutrition education and provide psychosocial support so that lifestyle changes can be adopted and sustained in the long term. The role of parents, teachers, and school staff is crucial in supporting the implementation of healthy living at home, assisting with daily activities, and providing the necessary facilities and logistics for the program.

RESULTS AND DISCUSSION

Results

The results of this community service activity at SLB A YKAB, which focused on balanced nutrition education and the *Isi Piringku* concept, were conducted through direct lectures. The first education session was delivered through a lecture discussing the importance of healthy eating and balanced nutrition. The second session was conducted using visual media and a demonstration of a balanced menu following the *Isi Piringku* concept. This activity was attended by 18 children with disabilities who participated in the service process, with BMI measurements already taken (Table 1).

Table 1. Body Mass Index (BMI) Screening Data of Children with Disabilities at SLB A YKAB

No	Name	Gender	Age (y.o.)	Weight (Kg)	Height (Cm)	BMI Result
1.	ChiMd. E	M	13	69	161	26,6 (O)
2.	ChiMd. G	M	12	47.7	155	19,6
3.	ChiMd. N	F	16	74.4	153	31,6 (O)
4.	ChiMd. E	F	16	53.0	146	24,9 (R)
5.	ChiMd. A	F	14	52.7	155	22,1
6.	ChiMd. T	F	15	56.6	160	21,9
7.	ChiMd. R	F	16	47	147	21,8
8.	ChiMd. D	F	20	69.3	152	29,9 (R)
9.	ChiMd. N	F	20	37.5	141	18,6
10.	ChiMd. C	F	18	51	151	22,4
11.	ChiMd. T	M	20	52.6	163	19,6
12.	ChiMd. M	F	16	46.6	154	19,4
13.	ChiMd. W	F	21	71.4	160	27,7 (R)
14.	ChiMd. A	M	19	54.2	163	20,3
15.	ChiMd. N	F	20	50	154	21,1
16.	ChiMd. A	M	14	41.7	145	20
17.	ChiMd. A	M	19	54.8	152	21
18.	ChiMd. M	F	20	69.3	157	29,9 (R)

Note: y.o. (years old); M (male); F (female)

During the activity, children with disabilities were encouraged to listen to explanations, view images, and follow demonstrations with the goal of helping them better understand and apply the *Isi Piringku* concept in their daily lives. Based on the evaluation results, some children were found to be obese, but they reported understanding healthy eating habits and the importance of consuming balanced nutrition after participating in the education.

Table 2. Frequency Distribution of Body Mass Index at SLB A YKAB

BMI Category	Frequency (f)	Percentage (%)
Normal Weight	12	66,7
Risk of Obesity	4	22,2
Obesity	2	11,1
Total	18	100

Based on Table 1 and Table 2, it is known that the Body Mass Index (BMI) of children with disabilities at SLB A YKAB shows that 12 children (66.7%) fall into the normal weight category, 4 children (22.2%) are at risk of obesity, and 2 children (11.1%) are obese. The *Isi Piringku* educational media is presented in Figures 1 and Figure 2.



Figure 1. Educational Media at SLB A YKAB



Figure 2. Community Service Activities at SLB A YKAB

Discussion

The results of this community service activity include BMI screening for children with disabilities and educational sessions designed to help them understand the impact of obesity and learn about balanced nutrition through the *Isi Piringku* concept. Increasing knowledge about nutrition is one of the key aspects of education, where health knowledge can influence behavior, which is an intermediate impact of education (Darni, 2020; Egg et al., 2020). Nutrition education is a crucial strategy in preventing obesity and raising children's awareness of the importance of a balanced diet. Effective education must be delivered using an approach that is engaging, easy to understand, and relevant to the target audience, especially children with disabilities (Effendy et al., 2025; Hunt et al., 2021).

Education using *Isi Piringku* has proven to be one of the effective approaches in efforts to reduce obesity. Research by Aurelya et al. (2025) supports this finding, where direct delivery of nutrition material in the classroom, involving active student participation through discussions and simple practices, significantly improved knowledge. This improvement was evident in the post-test questionnaire results, which showed a 20% increase in students' knowledge in the high category. Students who participated in the presentation of material using visual poster media, followed by discussions and Q&A sessions, showed a deeper understanding. Therefore, the educational method, delivered directly with visual media support and accompanied by interactive discussions, has proven effective in strengthening the understanding of the *Isi Piringku* concept and its role in preventing obesity.

Isi Piringku is a guideline provided by the government to help the public manage their daily food consumption. As part of this effort, the government, through the Ministry of Health, is also

actively promoting the concept of the four pillars of balanced nutrition, which include consuming a variety of foods, the importance of an active lifestyle and exercise, adopting clean and healthy living habits, and maintaining an ideal body weight. The *Isi Piringku* guideline can be visualized as dividing a plate into three sections, with 50% of the plate filled with vegetables and fruits, while the remaining 50% is divided between animal and plant-based protein sources and carbohydrates. Additionally, it is important to ensure that every meal is accompanied by sufficient water intake, which also plays a crucial role in supporting overall body health (Kusumawardani et al., 2022; Sato et al., 2024). By applying this principle, the improvement in knowledge about balanced nutrition should be followed by changes in attitudes and behaviors related to healthy eating after the educational sessions. This can be achieved by implementing the material that has been delivered, namely the application of balanced nutrition menus through the *Isi Piringku* concept, which not only enhances knowledge but also encourages children to adopt healthier eating habits in their daily lives.

Implications

The results of this community service demonstrate that education about healthy eating patterns using the *Isi Piringku* media can increase awareness among children with disabilities about the importance of healthy eating habits. This program implies that educational interventions using a visual and simple approach can be an effective solution in preventing obesity in children with disabilities, who are at higher risk of nutritional problems. This program is expected to be implemented more widely in various communities that need similar education.

Contribution of Community Service

This community service positively impacts children with disabilities in the local community by increasing their understanding of the importance of a balanced diet. The program helps them understand how to choose healthy foods, which in turn can prevent obesity and related health problems. Furthermore, the program benefits teachers by providing them with educational tools they can apply to their daily school activities.

Limitations

A limitation encountered in this community service is the challenge of delivering educational materials to children with disabilities, which may require more intensive and repeated communication adjustments to ensure full understanding. Each individual with a disability has different needs, so the approach applied needs to be more tailored to ensure optimal understanding. Time constraints also affect the effectiveness of material delivery, as the limited duration makes it difficult to provide in-depth and comprehensive explanations.

Suggestions

Based on the results of this community service, it is recommended that the *Isi Piringku* educational program be implemented more widely, involving more children with disabilities in various locations. Furthermore, further evaluation is expected to monitor changes in children's eating habits over the long term. To increase the program's effectiveness, it is also recommended to involve more stakeholders, such as parents and schools, in supporting its implementation.

CONCLUSION

This community service activity was conducted at Sekolah Luar Biasa Tuna Netra (SLB A YKAB) Surakarta with the aim of providing education on obesity prevention for children with disabilities. The education was delivered directly to the students, who were the primary target, with parents serving as companions during the activity. The educational material was presented verbally and interactively, in accordance with the Counseling Session Plan (SAP) that had been prepared. Based on observations during the activity, the students showed good enthusiasm for the material presented. They actively participated in the education through Q&A sessions and group activities that were prepared. Although some students still required parental guidance to fully understand the material, overall, there was an increase in the students' awareness of the importance of maintaining a healthy diet and engaging in physical activities in a balanced way. The screening results for 18 students at SLB A YKAB Surakarta showed that 2 students (11.1%) were obese, 4 students (22.2%) were at risk

of obesity, and 12 students (66.7%) had a normal weight. Therefore, 33.3% of the students had an overweight status, either in the category of obesity or at risk of obesity. These figures indicate the need for further attention and intervention in regulating the students' diet and physical activity.

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AUTHOR CONTRIBUTION STATEMENT

ALS served as the supervising lecturer, implementer of the community service activity, and co-author of the community service article. NI and II contributed as co-authors of the article, while HM acted as the speaker in the program.

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