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Optimizing health screening education to prevent the double burden of malnutrition in early childhood educational institutions (ECD)

Optimalisasi edukasi skrining kesehatan untuk mencegah beban gizi ganda di lembaga pendidikan anak usia dini (PAUD)

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Abstract

Background: Double nutritional burden is a health problem that often occurs in developing countries, one of which is Indonesia. A double nutritional burden is characterized by the presence of conditions of undernutrition and overnutrition at the same time in an area. The double nutritional burden is a serious problem that can impact children.s growth, development, and long-term health. The incidence of underweight, overweight, and stunting is still found at 6-10% in EDC Allifa.
Objectives: To evaluate the impact of health education as a preventive action to overcome the problem of double nutritional burden on young children at Early Childhood Education Institutions (ECD).
Methods: The research method used was a quasi-experimental design with the One-Group Pretest-Posttest Design. The research was conducted in July 2023 at EDC of Allifa with all 14 EDC teachers. The intervention is in the form of providing health education to EDC teachers. A paired T-Test was used to know the effectiveness of the education.
Results: The average pretest knowledge score was 78,21 while the posttest average was 92,50. The difference in average score before and after providing education is 14,92 with a p-value of 0,001 (CI 95%).
Conclusion: There is a significant difference in knowledge scores between before and after being given health education. This shows that the health education provided has had an impact on participants. knowledge, with an increase in knowledge scores.

Keywords
Double nutritional burden, early education, health screening

Abstrak

Latar Belakang: Beban gizi ganda merupakan masalah kesehatan yang sering terjadi di negara-negara berkembang, salah satunya Indonesia. Beban gizi ganda ditandai dengan adanya kondisi gizi kurang dan gizi lebih secara bersamaan di suatu daerah. Beban gizi ganda merupakan masalah serius yang dapat berdampak pada pertumbuhan, perkembangan, dan kesehatan anak dalam jangka panjang. Angka kejadian *underweight*, *overweight*, dan *stunting* masih ditemukan sebesar 6-10% di PAUD Allifa.
Tujuan: untuk mengevaluasi dampak pendidikan kesehatan sebagai tindakan preventif mengatasi masalah beban gizi ganda pada anak usia dini di Lembaga Pendidikan Anak Usia Dini (PAUD).
Metode: Metode penelitian yang digunakan adalah *One-Group Pretest-Posttest Design*. Penelitian dilaksanakan pada bulan Juli 2023 di PAUD Allifa dengan jumlah guru PAUD yang berjumlah 14 orang. Uji T berpasangan digunakan untuk mengetahui keefektifan pendidikan.

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Hasil: Rata-rata skor pengetahuan *pretest* sebesar 78,21 sedangkan rata-rata skor posttest sebesar 92,50. Selisih rata-rata skor sebelum dan sesudah diberikan edukasi adalah 14,92 dengan nilai p 0,001.
Kesimpulan: Terdapat perbedaan skor pengetahuan yang signifikan antara sebelum dan sesudah diberikan pendidikan kesehatan. Hal ini menunjukkan bahwa pendidikan kesehatan yang diberikan memberikan dampak terhadap pengetahuan peserta, dengan adanya peningkatan skor pengetahuan.

Kata Kunci
Beban gizi ganda, pendidikan dini, PAUD, pemeriksaan kesehatan

Introduction

Double nutritional burden is a health problem that often occurs in developing countries, one of which is Indonesia, which is characterized by conditions of undernutrition and overnutrition simultaneously in an area. This problem can occur in a family or population, and can even occur not only in adults but also in children under five years of age (toddlers) (Sekiyama et al., 2015; Barth-Jaeggi et al., 2020).

A double nutritional burden can have a negative impact on childrens health, considering that growth and development in the first five years of life, especially in the first two years of life, will have an impact on health as adults. The danger and negative impact of a double nutritional burden is that it increases the risk of developing degenerative diseases such as diabetes mellitus, stroke, cancer, heart and blood vessel disease (Rahmad et al., 2023; Putra, 2022). Studies in Indonesia show that growth and development are not optimal during toddler years, as can be seen from the presence of growth failure (5-10% of the toddler population), developmental failure, decreased cognitive function, and delays in speaking ability. Inoptimal handling of multiple nutritional problems can increasi the risk of obesity, diabetes mellitus, and heart disease in adulthood. In fact, under some conditions, it can increase mental health risks (Ardianti et al., 2021).

The double nutritional burden on toddlers can be caused by several factors, including a) lack of parental knowledge regarding the management of children.s health and nutrition, especially regarding breastfeeding and complementary foods; b) limited access to healthy and nutritious food; c) eating habits that are not balanced; and d) the process of monitoring health status and nutritional status which is less than optimal by health personnel or cadres (Sekiyama et al., 2015; Barth-Jaeggi et al., 2020; (Al Rahmad et al., 2020; Ardianti et al., 2021).

The prevention and treatment of multiple nutritional problems should be carried out as early as possible as individuals are still in the golden stage of growth and development (Ardianti et al., 2021; Korir et al., 2022). Optimal child health, including adequate nutrition, is very important for supporting childrens growth and development in the future (Badan Kebijakan Pembangunan Kesehatan. Kementerian Kesehatan RI, 2022). Therefore, Early Childhood Education Institutions (EDC) play an important role in providing education and health to young children.

However, the prevalence of double nutritional burden in Early Childhood Education Institutions (EDC) in Indonesia remain quite high. Based on the 2018 Riskesdas data, the prevalence of overweight in children aged 0-5 years reached 12,8% and the prevalence of stunting reached 27,7% (Kementerian Kesehatan RI, 2018). Landscape analysis in Indonesia in 2021 shows that the prevalence of wasting and stunting in Indonesia is 10,2% and 30,8%, respectively (UNICEF, 2022). In addition, there are 10,45% case of underweight and 4,48% case of overweight (Josri et al., 2023). Based on 2018 Riskesdas data, the prevalence of overweight in children aged 0-5 years in the DIY reached 9,9% and the prevalence of stunting was 30,3%. Meanwhile, the prevalence of malnutrition in DIY has reached 18,7% (Dinas Kesehatan DIY, 2018; Kementerian Kesehatan RI, 2018, 2019).

Based on a preliminary study conducted at EDC Allifa, of the 53 toddlers registered at EDC, there were 4 toddlers who experienced a double nutritional burden. 2 toddlerswere underweight and there are 2 toddlers were overweight. The prevalence of *stunting* was found to be 6% with almost 10% of toddlers experiencing malnutrition, and another 10% experiencing

overnutrition (obesity). In addition, 8% of toddlers still experienced developmental decline. Another 10% are at risk for malnutrition (failure to grow) and developmental failure. Therefore, effort are needed to overcome the problems that exist in the EDC of Allifa through a health education program for preschool teachers that can improve preschool teachers. skills related to health screening so that problems with childrens growth and development can be prevented and resolved properly.

Methods

This study was a quasy experiment with One-Group Pretes-Posttes Design. Data collection was carried out at EDC of Allifa Wedomartani, Sleman DI Yogyakarta in July 2023. The research population comprised all EDC of Allifa teachers who were actively teaching, totaling 15 people. All EDC teachers were involved in this research, but one respondent dropped out because she could not participate in educational activities until the end, so the total number of participant s in this study was 14 people.

The intervention is in the form of providing health education to EDC teachers. The process of data collection was carried out by giving a pretest and posttest (before and after) providing health education to early childhood teachers. The pretest was given in Google form, which was shared in the preschool teacher group. Material delivery, mentoring, and case discussions were then conducted in the groups. The material given to the teachers included the urgency of monitoring children.s growth and development, how to monitor and measure children.s development, errors in measuring growth status, and an introduction to the WHO Antro growth and development application.

Meanwhile, the mentoring and case discussion process was carried out by seven assistants who acted as facilitators during the educational activities and skills training provided to EDC teachers. All assistants had previously received the same perception so they could be accompanied by mentoring activities and case discussions. After the education and mentoring activities were completed, the teachers were then given the same posttest to assess their level of understanding of the material that had been provided.

All respondents were given an explanation of the entire research process, their rights, and their obligations. Respondents signed an informed consent form to participate in the study. The data collection process was conductedafter obtaining ethical clearance from the Health Research Ethics Commission, Faculty of Health Sciences, Universitas Respati Yogyakarta number 053.3/FIKES/PL/V/2023 and research permit number 086/PPPMPL-Eks/V/2023. The Shapiro-Wilk test was used for the data normality test because the sample size was <50 people. Pretest and posttest data were distributed normally with test results of p >0,05. To determine the effectiveness of the education program, the mean differences between the pretest and posttest scores (bivariate analysis) were analyzed using a Paired T-Test.

Result

Table 1 presents the data on respondent characteristics. All respondents were female 100%. The majority of the respondents. age categories were adults (36-59 years), namely 71,4%. There were the same number of secondary school and tertiary education level categories 50%. The majority of respondents in the class teacher category taught is daycare classes 50%.

Table 1. Characteristics of Allifa ECD teacher respondents

Respondent Characteristics	f	%
Gender		
Male	0	0,0
Female	14	100,0
Age		
Young adults (19-35 years)	4	28,6
Late adulthood (36-59 years)	10	71,4
Level of education		
Secondary school	7	50,0
Higher education (D3/S1)	7	50,0
Classroom teacher		
Daycare	7	50,0
Playgroup	5	35,7
Preschool	2	0,6
Total	14	100

Table 2. Effectiveness of knowledge level before and after being given health education

Knowledge Variable	Mean	SD	Diff. Mean ±SD	95% CI		p-value
				Lower	Upper	
Pretest	78,21	11,63	10,71 ± 2,48	20,47	8,09	0,001
Posttest	92,50	9,15				

Based on Table 2, it can be seen that the average knowledge score at the pretest was 78,21 while the average score of *posttes* increased to 92,50. The difference in scores between the pretest and posttest shows that there is an increase in knowledge of 14,29 among participants after taking part in EDC teacher education and training. This shows that there is a significant increase in knowledge among participants after attending EDC teacher education and training. Table 2 shows that the difference between the average knowledge of participants before and after being given education is 14,29, which indicates an increase in knowledge after receiving health education. The standard deviation value is 10,71 which shows the value of data distribution, especially the variance of values in pretest and posttest knowledge. The value of variation is quite large in the data, but the overall increase still looks significant. The P-value is 0,001, which indicates that the difference between pretest and posttest knowledge is statistically significant.

Discussion

Several studies have shown a relationship between the age of the respondent and their knowledge of child development. Research conducted by Nurhasanah and Ismarwati showed that the more information a respondent obtains, the better the level of knowledge that a person has regarding stimulating the development of children aged 1-3 years (Ramadia et al., 2021). Other research conducted by Zukhra & Amin also showed that respondents. knowledge in the sufficient category could be related to age characteristics, mothers education, and the age of the toddler. Most mothers with sufficient knowledge are aged 31-40 years or enter middle adulthood (Zukhra & Amin, 2019). Research conducted by Pratama (2021) also found that age, education, and employment factors were related to the mother.s level of knowledge and attitudes and the growth and development of children aged 0-6 years (Pratama, 2021).

The difference between the posttest and pretest scores indicated an increase in the average knowledge score of participants after participating in health education. The range of knowledge scores on the *pretest* was 45 -90, and on the *posttest* was 70 - 100. A wider range of p*retest* scores showed that there were significant variations in participants prior health education, as proven by the standard deviation at the pretest, which was 11,53, while the posttest was 9,14. A lower standard deviation on the posttest indicates that the knowledge score on the posttest is more concentrated around the mean, compared with greater variation at the pretest. This shows that the participants tended to have more similar knowledge after attending the health education. In an educational context, these results can be considered an indicator of the success of training in increasing participants. knowledge close to the average posttest score. This analysis also shows that health education for EDC teachers has a positive impact on increasing the participants. knowledge.

This shows that the health education provided had an impact on participants. knowledge, with an average increase in knowledge of 14,29. This significant difference indicates that there was a fairly large positive change in knowledge before and after providing health education.

Most of the pretest results of the health screening questionnaire have been answered well, and there are several question items that still do not know about the use of the WHO Antro application and the assessment of nutritional status based on the WHO growth curve, (64,2%). WHO Anthro is software that allows users to enter a child.s anthropometric data and then provides an assessment of nutritional status based on the WHO growth curve. The child.s nutritional status will be depicted in color, such as a "red curve" to indicate poor nutritional status; a “yellow colored curve” for nutritional status of concern; and a "green curve" for good nutritional status (WHO, 2023). Other questionnaire pretest items that were still less related to the age limit for using the development measuring tool Pre-Developmental Screening Questionnaire (PDSQ) were 85,7% which is still wrong. The use of PDSQ can be related to the child.s age and is usually used for children aged 0 - 6 years (Sofiana et al., 2022).

The PDSQ is designed to identify children.s developmental achievements in several aspects, such as gross motor skills, fine motor skills, language, social skills, and independence. KPSP can be used by health workers, teachers, and parents to identify children who need additional intervention or support to achieve developmental milestones appropriate for their age (Sari & Mardalena, 2021). There was an improvement of more than 60% for question items that were still lacking after health education was implemented.

Health education is preventive step that can be taken to overcome the double nutritional burden in early childhood. Providing health education to preschool teachers is also expected to reduce the incidence of double the nutritional burden among toddlers in preschool (Octavia & Ratih, 2023). This is in line with several studies that show that health education can increase mothers. knowledge and attitudes toward childrens growth and development so that it can help prevent nutritional problems in children, especially double nutritional burdens. This study was conducted at the Pangirkiran Health Center, North Padang Lawas Regency, which shows that there is a relationship between maternal knowledge and attitudes and the growth and development of toddlers. Therefore, appropriate health education can help increase mothers. knowledge of and attitudes towards children.s growth and development (Harahap, 2022). Another study showed that nutrition education could increase mothers knowledge, and the percentage of mothers with good knowledge increased from 67% to 76,2%. Additionally, educating teachers regarding the urgency of monitoring children.s nutritional status can increase teacher knowledge by 29,2% (Rahadiyanti et al., 2022).

Research at the UPTD Puskesmas Klungkung II also showed that there is a relationship between mothers. knowledge about growth and development and the development of children aged 1-2 years. Health education can help to increase mothers knowledge about children.s growth and development, so that it can help prevent nutritional problems in children (Brahmani et al., 2023). Research at STIKes Ahmad Dahlan Cirebon also found that it is important to provide nutrition education from an early age (Mulya et al., 2021). Therefore, appropriate health screening education for preschool teachers can help increase teachers. knowledge in preventing a double nutritional burden on children.

Some weaknesses in this research are that the researchers did not provide direct intervention to EDC children. The effects of teacher education may not fully reflect direct improvements in understanding and implementation of nutritional measures among EDC children. In addition, in measuring the impact of interventions, other factors such as the family environment or the individual child.s health condition may also influence the results, but were not covered in this study.

Conclusion

There was an increase in average knowledge score before and after education. This shows that the health education provided had a significant impact on the participants. knowledge and understanding.
It is hoped that future research will can consider counseling or interactive activities that directly involve EDC children, along with the education provided to teachers.

Conflict of Interest Declaration

Authors declared that there is no conflict of interest in this study.

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