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# Differences in mother's knowledge and dietary diversity toddlers before and after education with videos and leaflets

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## ABSTRACT

**Background:** The prevalence of malnutrition in East Java still tends to be high, one of which is in Banyuwangi City, namely 16.78%. One of the causes of under-five nutrition problems is the lack of knowledge of nutrition and health, attitudes and behavior of mother's feeding. This study aims to analyze differences in mothers' knowledge and dietary diversity of toddlers before and after being given health food education with video media and leaflets 2 times for 14 days.

**Method:** This is a quasi-experimental design with pre-post test control group design. The research subjects were 44 divided into 2 groups. The statistical test results showed p value < 0.05 on the variables of mother's knowledge and dietary diversity of toddlers before and after healthy food education from 2 groups.

**Result:** The knowledge of mothers of toddlers in The Intervention Group, before education was partially in the sufficient category as many as 12 people (59,1%), and almost all of them were in the good knowledge category as many as 19 people (86,4%) after education with a mean±SD value of 76,5 ± 23,2 before education, increased to 90,1 ± 10,8 after education. The Intervention Group's average dietary diversity score of toddlers was 4,27 ± 0,9. After education, most of the toddlers' dietary diversity was in the high category, namely 13 (59.1%), the moderate category was 9 (40,9%), and none were in the low category with an average score of 5,91 ± 1,27.

**Conclusion:** This study has identified a significant difference in knowledge of mothers and toddlers' dietary diversity before and after education with video media and leaflets. Education with video media and leaflets effectively increases mother's knowledge and toddler's dietary diversity.

**Keywords:** Educational videos and leaflets; Mother's Knowledge; Dietary Diversity; Toddler.
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## INTRODUCTION

Nutritional problems in children under five (toddlers) are still a significant global challenge and are the goals of the SDGs (1). Nutritional problems of toddlers in East Java are still a serious problem, this is indicated by the prevalence of malnutrition and undernutrition which tends to be high. Based on Riskesdas data in 2018, the prevalence of undernutrition and malnutrition of toddlers were 16,80%. Banyuwangi is a city in East Java with a fairly high prevalence of malnutrition and malnutrition, namely 16,78%.[1-2] This shows that toddlers are a group that is vulnerable to malnutrition. Infancy is an important age in the process of physical growth and development.

One of the causes of nutritional problems in toddlers is the low knowledge of nutrition and maternal health. A mother who has instilled good eating habits at an early age will easily direct the child's food. Feeding patterns are very important to note. Good feeding following the recommendations and needs can prevent malnutrition in toddlers. Factors that can affect the eating patterns of toddlers include the mother's level of knowledge, mother's level of education, household income, occupation, and number of family members. Mother's attitude and behavior is closely related to the occurrence of nutritional problems in toddlers. This can be seen from the mother's wrong habits towards eating arrangements such as choosing the wrong food ingredients, the availability of an insufficient amount of food and the diversity of food. The mother's level of knowledge strongly influences this.[3]

WHO recommends children to eat animal based foods from the age of 6 months because of the high availability of protein, iron, and other important nutrients in these foods.[4] Inadequate diet in children is associated with acute and chronic malnutrition, which can also lead to long-term adverse effects.[5] This diet is closely related to dietary diversity. Firdaus research (2021) on factors related to the diversity of consumption of toddlers aged 24-59 months suggests that the factor of maternal nutritional knowledge is significantly related to the diversity of consumption of toddlers (OR: 3,4, 95% CI 1.1-10.3).[6] The nutritional knowledge factor is closely related to exposure to nutritional information from the surrounding environment. The research of Sekartaji et al (2021) stated that access to information from the mass media was

significantly related to the diversity of food for toddlers.[7] A preliminary study conducted in Sarongan, Banyuwangi village showed that most mothers of children under five received minimal exposure to information related to healthy food. This results in inappropriate feeding practices for toddlers.

Nutrition education is one of the efforts that can be done to increase the knowledge of mother's toddlers. The increase in knowledge is expected to increase the toddler's dietary diversity. This education can be done through various media. Some of the media that can be used are videos and leaflets. Information provided to respondents using video media is considered more efficient and practical, this is because the media is more easily absorbed if there are images that can be seen and sounds that can be heard. This description is the basis for the urgency of research on "Differences in Mother's Knowledge and Dietary Diversity of toddlers before and after Healthy Food Education with Video and Leaflet Media. This study aims to analyze the differences in the level of knowledge of mothers and toddlers' dietary diversity before and after health food education with video media and leaflets.

## MATERIALS AND METHODS

### *Materials*

This study uses video media and leaflets to provide interventions in form of health food education. The mother's knowledge variable was measured using a knowledge questionnaire, and the dietary diversity variable was measured using the Individual Dietary Diversity Score (IDDS) questionnaire.

### *Data collection procedures*

The study was conducted by educating 44 mothers of toddlers in Sarongan Village Banyuwangi who were divided into 2 groups. Each group consists of 22 respondents. Education was provided by using video media and leaflets for the intervention group and the control group. Education was given 2 times for 14 days. Before the education, the knowledge and dietary diversity measurements were first carried out in the two groups. After the intervention, knowledge and dietary diversity were measured again. Dietary diversity data were obtained from 24-hour food recall interviews using the Individual Dietary Diversity Score (IDDS) questionnaire which consisted of 9 food groups based on FAO scores, including: starchy foods, green vegetables, fruit and vegetables sources of vitamin A, other fruits and vegetables, offal, meat and fish, eggs, nuts, and milk and dairy products with a score of 1 if consumed and 0 if not consumed. Consuming.[3]

### *Data analysis*

This type of research is quasi-experimental with pre-post test control group design. Analysis of differences in knowledge of mothers before and after education with video media and leaflets was carried out by using the Wilcoxon test. While the analysis of differences in the dietary diversity of toddlers before and after education was carried out using a paired t-test.

## RESULTS

### Differences in knowledge of mothers of toddlers before and after education with video media and leaflets

Mother's knowledge of toddlers was measured from the knowledge scores of both groups before and after education. The knowledge score data was analyzed descriptively which was then categorized into good (76-100), sufficient (56-75), poor (< 56). Knowledge scores of mothers of toddlers in both groups before and after education are presented in the following table.

The knowledge of mothers of toddlers in The Intervention Group, before education was partially in the sufficient category as many as 12 people (59,1%), and almost all of them were in the good knowledge category as many as 19 people (86,4%) after education with a mean±SD value of 76,5 ± 23,2 before education, increased to 90,1 ± 10,8 after education. Likewise in The Control Group, knowledge before education as many as 15 people (68,2%) was in the sufficient category, and changed to almost all in the good category as many as 19 people (86,4%) after education was carried out with a mean ± SD value of 70,4 ± 19,4 before education, increased to 90,5 ± 9,0 after education. The results of statistical tests using Wilcoxon obtained p value before and after education from the two groups < 0,005. This means there is a significant difference in the knowledge of mothers of toddlers in both The Intervention Group and The Control Group.

### Differences in the average score of toddlers' dietary diversity before and after education with video and leaflet media

Dietary diversity of toddlers was measured using the Individual Dietary Diversity Score (IDDS), then categorized into: low (≤ 3), moderate (4-5), high (≥ 6). Dietary diversity scores of toddlers in both groups before and after education are presented in Table 2.

In The Intervention Group, before education, most of the toddlers' dietary diversity was in the moderate category as many as 16 (72,7%) and 4 (18,2%) toddlers were in the low dietary diversity category. The average score of dietary diversity of toddlers in The Intervention Group was 4,27 ± 0,9. After education, most of the toddlers' dietary diversity was in the high category, namely 13 (59.1%), the moderate category was 9 (40,9%), and none were in the low category with an average score of 5,91 ± 1,27. The results of statistical tests using paired t-test (data normally distributed) obtained a p value of 0,000 (p < 0,005) so that it can be concluded that there is a significant difference in the dietary diversity of toddlers before and after education with video and leaflet media. Similar to The Intervention Group, the category of dietary diversity of toddlers in The Control Group before being given education was mostly in the moderate category as many as 13 (59,1%). This figure increased after education, which was mostly in the high category as many as 12 (54,5%), although there were still in the moderate dietary diversity category as many as 10 (45,5%), but none were in the low category. The average score of dietary diversity in The Control Group before education was 4,59 ± 1.14 then increased to 5,55 ± 1,26 after education. The results of statistical tests using paired t-test obtained p value of 0,000 (p < 0,005) so it can be concluded that there is a significant difference in the dietary diversity of toddlers before and after education with

**Table 1. Differences in knowledge of mothers of toddlers before and after education with video and leaflets media**

| Knowledge Category | The Intervention Group | | | | The Control Group | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-test | | Post-test | | Pre-test | | Post-test | |
| | n | % | n | % | n | % | n | % |
| Good | 12 | 59,1 | 1 9 | 8 6,4 | 0 | 0 | 1 9 | 8 6,4 |
| Sufficient | 2 | 9,1 | 3 | 1 3,6 | 15 | 6 8,2 | 3 | 1 3,6 |
| Poor | 7 | 31,8 | 0 | 0 | 7 | 3 1,8 | 0 | 0 |
| Total | **22** | **100** | **2 2** | **100** | **2 2** | **100** | **2 2** | **100** |
| Mean±SD | **76,5 ± 23,2** | | **90,1 ±10,8** | | **70,4 ±19,4** | | **90,5 ±9,0** | |
| p-value | **0,022** | | | | **0,000** | | | |

**Table 2. Differences in the average score of toddlers' dietary diversity before and after education with video and leaflet media**

| Dietary Diversity Category | The Intervention Group | | | | The Control Group | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-test | | Post-test | | Pre-test | | Post-test | |
| | n | % | n | % | n | %% | n | %% |
| **Low (≤ 3)** | 4 | 18,2 | 0 | 0 | 4 | 18,2 | 0 | 0 |
| **Moderate (4-5)** | 16 | 72,7 | 9 | 40,9 | 13 | 59,1 | 10 | 45,5 |
| **High (≥ 6)** | 2 | 9,1 | 13 | 59,1 | 5 | 22,7 | 12 | 54,5 |
| **Total** | **22** | **100** | **22** | **100** | **22** | **100** | **22** | **100** |
| **Mean±SD** | **4,27 ± 0,9** | | **5,91 ± 1,27** | | **4,59 ± 1,14** | | **5,55 ± 1,26** | |
| **p-value** | **0,000** | | | | **0,000** | | | |

leaflet media. The limitation of this study is using a 24-hour recall to provide food diversity data which has limitations on the respondent's memory.

## DISCUSSION

The results show that providing education with videos and leaflets is equally effective in increasing mother's knowledge about healthy food. This is because the material provided is interesting and easy to understand. Video media is able to provide an attraction for the material presented to mothers of toddlers. In leaflet media, the material content is presented in the form of images and in attractive colors. This is in line with the research of Puteri and Koeryaman (2021) which states that videos and leaflets can increase the knowledge of pregnant women about pre-eclampsia because the material presented is interesting.[8] Associating old and new information that is in one's memory can increase their understanding of educational subject matter.[9] Likewise with leaflets, good leaflets use simple language and are easily understood by readers and when the evaluation is carried out the results show that mothers of toddlers already understand the material presented. Video media and leaflets are able to strengthen mothers' understanding of the material provided and can provide opportunities for mothers of toddlers to observe and re-evaluate the material contained in the video.

WHO recommends toddlers consume at least 4 or more food groups.[10] Giving a variety of foods to toddlers is strongly influenced by the role of the mother. Mothers who have a fairly good understanding of proper feeding for toddlers have a big impact on toddlers' dietary diversity. The average dietary diversity of toddlers before education from the 2 groups in this study was around 4-5 food groups. The consumption is included in the category of moderate dietary diversity. After being given education, there was an increase in the toddler's dietary diversity with an average category of high dietary diversity. Research by Sekartaji et al (2021) obtained an overview of the dietary diversity of toddlers (6-23 months) in Indonesia, mostly (63,15%) the dietary diversity of toddlers consists of 4 food groups.[7] Food intake with low dietary diversity category can trigger the problem of undernutrition or underweight.[11]

Dietary diversity is closely related to parental consumption patterns and the availability of food in the surrounding area, including the availability of fruits and vegetables.[12] Parents have a big impact on toddler's eating behavior that contributes to weight, including food intake. Mothers provide a dominant role in the family in feeding toddlers. This can be seen from the types of food available, healthy feeding, and the types of snacks and a good environment.[13] A study found that nutritional education has an impact on the growth of children in food insecure conditions.[14] Mother's knowledge about nutrition is an important factor related to toddler's dietary diversity.[6,15] Research conducted in China concluded that preschool children with low knowledge of maternal nutrition were significantly associated with low child dietary diversity.[16-19]

## CONCLUSION

This study has identified that there is a significant difference in knowledge of mothers and toddlers' dietary diversity before and after education using video media and leaflets was carried out. Education with video media and leaflets is effective in increasing mother's knowledge and toddler's dietary diversity.

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## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.


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## ETHICAL APPROVAL

This study has been declared ethically by Health Research Commitee of Universitas Nahdlatul Ulama Surabaya No. 021/EC/KEPK/UNUSA/2022.

## AUTHOR CONTRIBUTION

All authors similarly contribute to the think about from the investigate concepts, information acquisitions, information investigation, factual investigations, data collect, changing the paper, until detailing the consider comes about through publication.

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