# CHAPTER V

# DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

## 5.1 Discussion

The objectives of this study were to compare the recent nutritional status among public primary school children with and without school snack program, and to ascertain other factors related to nutritional status in Jati Asih sub district, Indonesia. Three hundred public primary school children grade 1-3 and their parents participated in this study. The result of this study indicated that nutritional status among public primary school children with school snack program tended better nutritional status than children without school snack program. And other affecting factors related to nutritional status in that area which are statistically significant are, mother's education, father's education and occupation, status of having breakfast, and mother's food knowledge.

### 5.1.1 School snack program and nutritional status of children

In this study the nutritional status of children with school snack program was found to be higher (42.0%) compared to children without school snack program (26.0%), and the result has a significant association between nutritional status and school snack program (P-value=0.003), which was consistent with the statement of UNICEF, which said that there was evidence that school snack program has a positive impact on nutrition for participating children (UNICEF,2000). The result of another study conducted in India was also similar to the above findings (SCN News, 1998). In

South Africa, one of the case study also had shown that the introduction of school snack program leaded to the significant improvement the micronutrient status of school children (SCN News, 1998).

One case control study was carried out to collect information regarding school snack program to nutritional status of school children in Bogor, one of the place located in west Java Province nearby Jati Asih subdistrict, Indonesia and the result was that most of the children with school snack program had a good nutritional status and children without school snack program had a poor nutritional status and there are important messages developed to improve food consumption and nutritional status of the school children, i.e. eat breakfast before go to school, have complete meal 2-3 times a day and consumed vegetables every day ( Nutrition magazine, 2003).

### 5.1.2 Socio economic factors and nutritional status of children

#### 5.1.2.1 Level of education of parents

Nutritional status of children was influenced by various socioeconomic factors. In this study, an ordinal association was found between level of parent's education and the nutritional status of children, P-value was found highly significant in regards to the father's and mother's education with BMI of children (P-value= 0.003). This results similar with various studies conducted previously showing that maternal and father's education has significant influence on nutritional status of children. It has been argued that educated parents may have better knowledge, better access to health care services and understand (Hobcraft et al., 1984; Bhuiya A, 1986; Sommerfelt EA, 1991). Analysis of the 1989 national Indonesia socio economic household survey (SUSENAS)

has shown that the level of mother's education is an important predictor of child nutrition levels in Indonesia.

#### 5.1.2.2 Parent's occupation

Finding from bivariate analysis mother's occupation was found to have no significant association with the children's nutritional status This result was found to be similar to studies conducted in Panama and India (Majumder 1993; Sivakami, 1997; Tucker K & David Sanjur, 1988). This is maybe because few women do work out side the house and those who do work mainly in manual labor. According to Johnson, RK in Pensilvania nutritional status and variation intakes of nutrients was not related with mother's occupation (Johnson, RK., Wright H, Smiciklas., Crauter AC, Willits FK. Maternal employment and the quality of children's diets available at : http://www.ncbi.nlm.nih.gov/g4very/g4very.fegi). But in the bivariate analysis father's occupation was significantly associated with the children nutritional status (P-value=0.001). this is because father's occupation is more closed related with the income level of family.

#### 5.1.2.3 Religion

Religion as well as cultural believes and practices has important role in regards to giving and preparing children's food. The bivariate result showed that children with and without school snack program was not statistically significant with religion factor, it may be because almost 93% of respondent were Muslim

#### 5.1.2.4 Household possessions

Household possessions provide a socioeconomic indicator of the population studied. In the bivariate analysis, the children of the household who did not have any durable goods such as radio, television, and so on were not statistically significant different with the children who had any durable goods. This finding was found to be similar with the studies conducted in some Asia and African countries (Sommerfelt, 1991; Esrey SA & McGrill, 1991).

#### 5.1.2.5 Access to mass media

The children of families which had access to mass media such as radio, television and newspaper were found not have difference with children of families which had not access to mass media. Actually almost of children parents had access to get information about health and nutrition, even they did not had access to mass media they could get from other source, but statistically was not significant between nutritional status and access to mass media. It might because even they knew already about nutrition but they did not apply and practiced to their child.

### 5.1.3 Demographic factors

#### 5.1.3.1 Age of respondent

Mother's and father's age is determining factor of children care but it was not found statistically significant with nutritional status of children in the current study.

#### 5.1.3.2 Age of children

Age of child was found to have no association with the nutritional status of children in this study.

#### 5.1.3.3 Sex of children

Sex preference particularly in South Asian countries, is an important determinant in regards to the nutritional status of children. Various studies shows that female children are more likely to be better nutritional status than male children due to the socio cultural and economic reasons (Chen et al, Bhuiya et al, 1986). The studies have shown that because of male children had more activities in out side than female children e.g. played football, and whole day played out side with their friends. Also The boys in most countries tended to be more stunted than girls and in all countries boys were more underweight than girls (School age children; their nutrition and health retrieved on February 2005 from www.child development.org). In this study there was statistically significance between boys and girls to nutritional status where girls tended better nutritional status than boys (P-value: $< 0.001$).

#### 5.1.3.4 Duration of breast feeding

Breastfeeding was another factor shown to be an important indicator of malnutrition, particularly during the first six month of life when the children depend mostly on the breast milk for food. The current study shows that the nutritional status of school children was not associated with breastfeeding factors, according to test of chi square there was not statistically significant between nutritional status and breastfeeding. However in this study our population were school children grade 1-3, it may be because breastfeeding already passed long time ago, so in this time was difficult to access relationship between that variables.

#### 5.1.3.5 Number of household members

According to household expenditure survey (HES) of Australian households, household was defined as a group of people who usually reside and eat together. A study in India by Shameera showed there was no significant among household member's size with nutritional status of children (Merchant, Shameera S., Udipi, Shobha A. The authors are affiliated with the food science and nutrition department in S.N.D.T women university, Mumbai, India) and in this study there was not found statistically significance between household member and nutrition status of children.

### 5.1.4 Environmental Factors

In this study the association of environmental factors such as electricity supply and sanitation facility with nutritional status had found no significance. However other studies conducted in other countries said that environmental factors are very important for the nutritional status of children. Sanitation services associated with increased risk of stunting (Bateman OM, 1991). The result of this study could be explained by the fact that the environmental factors had been assessed only based on the existence of sanitation facility and electricity supply situation, and nearly all of the respondents had no difference in sanitation facility and electricity supply situation. This resulted in non-significance between environmental factor and nutritional status.

#### 5.1.4.1 Toilet facilities

Sanitation facilities had not significant influences on the nutritional status of children in this study, the bivariate analysis shows that there was not statistically significant between nutritional status and sanitary facility in their home and it may be

because almost all of them had toilet facility inside of their home or had a good toilet facility in their home.

#### 5.1.4.2 Electricity supply

Electricity supply at the household shows an important environmental and economic factor. In this study almost all of study population had electricity supply in their home, and therefore, this variable had not strong effect on the nutritional status of children.

### 5.1.5 Mother's food practice and mother's food knowledge

#### 5.1.5.1 Mother's food practiced

In this study was found that there was no statistically significance between mother's food practice and nutritional status of children

#### 5.1.5.2 Mother's food knowledge

Block (2002) found that mother's food knowledge was more central determinant of child micronutrient outcomes than mother's education (Block, Steven. Nutritional knowledge, household coping, and the demand for micronutrient rich foods,1February2003.Available at http://fletcher.tufts.edu/faculty/block/pdf's/house holdcopying.pdf.) The result of this study was found that there was statistically significance between nutritional status and mother's food knowledge.

## 5.2 Conclusion

1) High prevalence of underweight (66.0%) was observed among primary school children in Jati asih sub district Bekasi, Indonesia.
2) Based on the results of this study, it is concluded that the public primary school children without school snack program are probably more likely to be underweight than public primary school children with school snack program, and school snack program has a good impact on public primary school children's nutritional status in Jati asih sub district Bekasi Indonesia.
3) The socioeconomic factors, such as the level of mother's and father's education, father's occupation, mother's food knowledge, and status of having breakfast were also found to have statistically significant associations with the nutritional status of public primary school children in Jati Asih sub district Bekasi Indonesia.
4) In conclusion, even though school snack program had a good impact to nutritional status with the statistic significance, school snack program is not the only factor which influenced nutritional status, and there were other factors such as mother's and father's education, father's occupation, mother's food knowledge and status of having breakfast. Multivariable analysis would be required to assess the importance of school snack program relative to these other factors.

## 5.3 Benefit of this Study

1) This study's results can give information to local government about recent nutritional status of public primary school children with and without school snack program, therefore can guide the authorities in improving quantity and quality of school snack program which now days are working.
2) This study's results can serve as useful baseline for future studies.

## 5.4 Limitation of Study

1) As the site of study is limited within certain areas, the result of the study may not represent the situation of other areas.
2) Even though random sampling technique was used, only 2 of 10 schools without the snack program were included. This could lead to the sampling bias.
3) Multivariable analysis was not conducted to assess the importance of school snack program relative to this other factors.

## 5.5 Recommendations

### 5.5.1 Recommendation for the school snack program

1) We need further study to follow the nutritional status of children.
2) This study indicated that school snack program had a good impact to nutritional status of children, therefore government should give more attention to this program such as add more budget so as to can increase frequency of school snack program, i.e from three times a week to once

every day to public primary school children. Also teacher and community member which related with this program can create new kinds of menu which more variation and nutrition's content is same with standards.

3) School snack program not only give the school children the snack or food but also should give more information related with food knowledge and practice to their parents.
4) We should pay attention to children and be informed to the parents for giving and motivate children having breakfast everyday.
5) The result of this study can be served as a stimulator for the community-level participation to the program, and further expansion of the program might be done without increase of the government budget
6) In this and other previous studies, less than 18.5 BMI was used as a cut off point for classifying underweight, which is the criteria of CDC in USA. However, this cutoff point might not be maximally appropriate in Indonesia and other developing countries, because their socioeconomic, demographic, environmental, and cultural situations are substantially different from the situation in the USA. It is recommended that future research address this issue in Indonesia and other developing countries. Also, the appropriateness of BMI relative to other metrics of nutritional status, such as weight for age, height for age, waist size, and triceps skin fold thickness, should be addressed.

### 5.5.2 Recommendation for the further study

1) A similar study could be conducted in public primary school children at grade 4-6 and also in other areas to determine the effect of school snack program and to find out other determinant that related with nutritional status.
2) To explore more deeply the effects of school snack program on nutritional status by conducting both qualitative and quantitative studies. Further qualitative studies would be helpful in clarifying the knowledge, perception and attitude of children and their parents on relationship between nutrition and its effect.
3) In the future study some question should be corrected properly, particularly mother's food practice related question.
4) In assessing nutritional status, nutritional status is measured not only by using BMI but also some other measurement such as height for weight and weight for height should be used.
5) The effect of school snack program can be also assessed by physical exercise ability but not only by nutritional status through BMI.
6) For the future study, study not only emphases on the result of school snack program but also is needed to assess the process of conducting school snack program, so as to improve the quality of school snack program.