The impact of socio-economic status on the risk of malnutrition and overweight in Indonesian children: an epidemiological study

Chapter 1 provides information on the existence of problems of "under and over nutrition" in the developing countries and their possible associations with risk of cardiovascular disease later in life. Furthermore, this chapter also describes background information on the situation of Indonesia as a country in both nutritional and epidemiological transition. By the end of this chapter, the aim and the study questions of the thesis are described.

The study in Chapter 2 assesses risk factors for malnutrition in children under two years old from two rural areas in Indonesia. One area was shown to be poorer than the other. This study shows that most Indonesian children have acceptable weight during the first 6 months of life. However, as they grew, the prevalence of malnutrition increases. The decline in nutritional status is worse in the poorer area, resulting in a significantly higher prevalence of malnutrition from the age of 6 months onwards.

The malnutrition might be associated with the poor quality of the weaning food since the consumption of animal food protein, especially in the poorer area, is quite low. It is concluded that being still breastfed helps protecting the children from malnutrition.

The study in Chapter 3 compares the prevalence of stunted growth, underweight, overweight and obesity in school-aged prepubertal children from different socioeconomic levels, i.e. rural, poor urban, and nonpoor urban. The study observes that poor children, i.e. rural and poor urban children have significantly higher prevalence of stunted growth compared to nonpoor urban children. The prevalence of stunted growth in the rural children is almost three times higher than in the nonpoor urban children. On the other hand, while there is no significant difference in the prevalence of underweight, these poor children have a lower prevalence of overweight and obesity. The prevalence of overweight and obesity is around four to five times higher in the nonpoor urban children.

Chapter 4 discusses the relative contribution of low weight at birth on the prevalence of stunted growth or obesity in prepubertal children from the rural and the urban population. The study shows that, in an area where the prevalence of stunted growth is very high (the rural area), low weight at birth is not an important contributor for stunted growth. However, in an area where the prevalence of stunted growth is less (the urban area), low weight at birth is an important risk factor for subsequent stunted growth. Furthermore, as there is no
significant difference in the prevalence of low birth weight among the rural and the urban populations, it is concluded that the observed difference in the prevalence of stunted growth among rural and urban prepubertal children might have its origin in the socioeconomic environment influencing the pattern of post-natal growth.

The study in Chapter 5 describes the tracking of body mass index (BMI) as Indonesian urban children grew from childhood into adolescence. The study shows that urban Indonesian children are increasing in weight and BMI explained by the increase in the prevalence of overweight and obesity from childhood into adolescence. Those who are overweight or obese during childhood are most likely to remain overweight or obese in adolescence. On the other hand, despite a decline in the prevalence of underweight from childhood into adolescence, the probability to remain underweight in adolescence is more than 50%.

The study in Chapter 6 and 7 assesses the influence of socioeconomic status and birth weight on blood pressure of school-aged prepubertal children. The study observed that systolic and diastolic blood pressures in children in Indonesia are positively associated with age, stature and BMI. However, this study indicates that, for a given age, stature and BMI, the poorer segment of the population, that is, the rural community, faced a higher risk for developing hypertension, which might be related to the observed higher prevalence of stunted growth in this community.

In association with birth weight, our study observed that higher birth weight children had higher systolic blood pressure. The association is explained by the fact that high birth weight children are in average taller and heavier than the normal birth weight children.

In Chapter 8, the results of the studies described in this thesis are discussed. It is concluded that problems of “under and over nutrition” exist in Indonesia. Children from the rural area, especially those coming from the poorer area have a higher risk to be malnourished. On the other hand, those coming from the urban population, especially those from the non-poor community have a higher risk to be overweight or obese. However, irrespective of their present height or BMI, being from the poorer area is an independent risk for higher blood pressure.